Contents

# 5 - TeSys contactors and reversing contactors


- Contactors: definitions and comments . . . . . page 5/2
- Tests according to standard utilisation categories conforming to IEC 60947-4-1 and 5-1 . . . . . page 5/4
- Current of asynchronous squirrel cage motors at nominal load . . . . . page 5/5

***TeSys contactors selection guide . . . . . page 5/6***

## TeSys K contactors and reversing contactors

***Selection guide . . . . . page 5/8***

- Contactors
  - 6 to 16 A in category AC-3 and 6 to 12 A in category AC-4 . . . . . page 5/14
  - 6 to 12 A in categories AC-3 and AC-4 . . . . . page 5/15
  - 20 A in category AC-1 . . . . . page 5/17
- Reversing contactors
  - 6 to 16 A in category AC-3 and 6 to 12 A in category AC-4 . . . . . page 5/18
  - 6 to 12 A in categories AC-3 and AC-4 . . . . . page 5/19
  - 20 A in category AC-1 . . . . . page 5/20
- Auxiliary contact blocks, suppressor modules and accessories . . . . . page 5/23

## TeSys LC1 SK and LP1 SK mini-contactors

- For motor control in categories AC-3 and AC-1 . . . . . page 5/34
- Instantaneous auxiliary contact blocks and suppressor modules . . . . . page 5/35

## TeSys LC1 SKGC mini-contactors

- For use in modular panels . . . . . page 5/42
- Suppressor modules . . . . . page 5/43

## TeSys D contactors and reversing contactors

***Selection guide . . . . . page 5/46***

- Contactors for motor control
  - Up to 75 kW at 400 V, in category AC-3 . . . . . page 5/62
  - Up to 30 kW at 400 V, in category AC-3 . . . . . page 5/63
  - From 25 to 200 A, in category AC-1 . . . . . page 5/64
  - From 20 to 200 A, for the North American market, conforming to UL and CSA standards. . . . . page 5/71
- Reversing contactors for motor control
  - Up to 75 kW at 400 V, in category AC-3 . . . . . page 5/72
  - Up to 15 kW at 400 V, in category AC-3 . . . . . page 5/73
  - From 20 to 200 A, in category AC-1 . . . . . page 5/74
- Components parts for assembling reversing contactors . . . . . page 5/76
- Instantaneous auxiliary contact blocks and suppressor modules. . . . . page 5/79
- Coils for TeSys D contactors . . . . . page 5/86

## TeSys contactors for switching 3-phase capacitor banks

- Contactors used for power factor correction. . . . . page 5/102


5



Schneider Electric

## TeSys F contactors and reversing contactors


***Selection guide*** . . . . . ***page 5/104***

- Contactors for motor control
  - 115 to 800 A, in category AC-3 . . . . . *page 5/114*
  - 200 to 2100 A, in category AC-1 . . . . . *page 5/115*

- Reversing contactors
  - 115 to 265 A, in category AC-3 . . . . . *page 5/116*
  - 200 to 350 A, in category AC-1 . . . . . *page 5/117*
  - Components for assembling reversing contactors . . . . . *page 5/118*
  - Instantaneous contact blocks and accessories . . . . . *page 5/123*

  - Coils for TeSys F contactors . . . . . *page 5/130*


## High power changeover contactor pairs for distribution


- For customer assembly . . . . . *page 5/153*


## Capacitive delayed opening devices


- For TeSys D contactors . . . . . *page 5/156*
- For TeSys F contactors . . . . . *page 5/157*


## TeSys LC1 FG shockproof contactors


- Presentation, selection. . . . . *page 5/158*
- Characteristics . . . . . *page 5/166*
- References . . . . . *page 5/174*
- Dimensions and schemes . . . . . *page 5/180*


## TeSys LC1 B contactors


- 750 to 1800 A, in category AC-3 . . . . . *page 5/184*
- 800 to 2750 A, in category AC-1 . . . . . *page 5/185*
- Accessories and spare parts . . . . . *page 5/186*
- Replacement coils . . . . . *page 5/188*


## Variable composition contactors


***Selection guide*** . . . . . ***page 5/226***

- CV1 B from 80 to 1000 A and CV3 B from 80 to 500 A . . . . . *page 5/228*


## 3-pole vacuum contactors and reversing contactors


- LC1 V and CV2 V . . . . . *page 5/232*


## Magnetic latching contactors


- CR1 F and CR1 B . . . . . *page 5/242*


## Modular equipment


***Selection guide*** . . . . . ***page 5/268***

- TeSys GC standard contactor . . . . . *page 5/278*
- TeSys GF impulse relays . . . . . *page 5/286*
- TeSys GY “dual tariff” contactors . . . . . *page 5/292*

# TeSys contactors
## Definitions and comments

## Definitions

**Altitude**

The rarefied atmosphere at high altitude reduces the dielectric strength of the air and hence the rated operational voltage of the contactor. It also reduces the cooling effect of the air and hence the rated operational current of the contactor (unless the temperature drops at the same time).

No derating is necessary up to 3000 m.

Derating factors to be applied above this altitude for main pole operational voltage and current (a.c. supply) are as follows.

| Altitude | 3500 m | 4000 m | 4500 m | 5000 m |
|---|---|---|---|---|
| Rated operetional voltage | 0,90 | 0,80 | 0,70 | 0,60 |
| Rated operational current | 0,92 | 0,90 | 0,88 | 0,86 |

**Ambient air temperature**

The temperature of the air surrounding the device, measured near to the device.
The operating characteristics are given :
- with no restriction for temperatures between - 5 and + 55 °C,
- with restrictions, if necessary, for temperatures between - 50 and + 70 °C.

**Rated operational current** (Ie)

This is defined taking into account the rated operational voltage, operating rate and duty, utilisation category and ambient temperature around the device.

**Rated conventional thermal current** (Ith) *(1)*

The current which a closed contactor can sustain for a minimum of 8 hours without its temperature rise exceeding the limits given in the standards.

**Permissible short time rating**

The current which a closed contactor can sustain for a short time after a period of no load, without dangerous overheating.

**Rated operational voltage** (Ue)

This is the voltage value which, in conjunction with the rated operational current, determines the use of the contactor or starter, and on which the corresponding tests and the utilisation category are based. For 3-phase circuits it is expressed as the voltage between phases.
Apart from exceptional cases such as rotor short-circuiting, the rated operational voltage Ue is less than or equal to the rated insulation voltage Ui.

**Rated control circuit voltage** (Uc)

The rated value of the control circuit voltage, on which the operating characteristics are based. For a.c. applications, the values are given for a near sinusoidal wave form (less than 5% total harmonic distortion).

**Rated insulation voltage** (Ui)

This is the voltage value used to define the insulation characteristics of a device and referred to in dielectric tests determining leakage paths and creepage distances. As the specifications are not identical for all standards, the rated value given for each of them is not necessarily the same.

**Rated impulse withstand voltage** (Uimp)

The peak value of a voltage surge which the device is able to withstand without breaking down.

**Rated operational power** (expressed in kW)

The rated power of the standard motor which can be switched by the contactor, at the stated operational voltage.

**Rated breaking capacity** *(2)*

This is the current value which the contactor can break in accordance with the breaking conditions specified in the IEC standard.

**Rated making capacity** *(2)*

This is the current value which the contactor can make in accordance with the making conditions specified in the IEC standard.

**On-load factor** (m)

$m = \frac{t}{T}$

This is the ratio between the time the current flows (t) and the duration of the cycle (T)
Cycle duration: duration of current flow + time at zero current

**Pole impedance**

The impedance of one pole is the sum of the impedance of all the circuit components between the input terminal and the output terminal.
The impedance comprises a resistive component (R) and an inductive component ($X = L\omega$).
The total impedance therefore depends on the frequency and is normally given for 50 Hz.
This average value is given for the pole at its rated operational current.

**Electrical durability**

This is the average number of on-load operating cycles which the main pole contacts can perform without maintenance. The electrical durability depends on the utilisation category, the rated operational current and the rated operational voltage.

**Mechanical durability**

This is the average number of no-load operating cycles (i.e. with zero current flow through the main poles) which the contactor can perform without mechanical failure.

*(1) Conventional thermal current, in free air, conforming to IEC standards.*
*(2) For a.c. applications, the breaking and making capacities are expressed by the rms value of the symmetrical component of the short-circuit current. Taking into account the maximum asymmetry which may exist in the circuit, the contacts therefore have to withstand a peak asymmetrical current which may be twice the rms symmetrical component.*
***Note :** these definitions are extracted from standard IEC 60947-1.*

## Contactor utilisation categories conforming to IEC 60947-4

The standard utilisation categories define the current values which the contactor must be able to make or break.

These values depend on:
- the type of load being switched : squirrel cage or slip ring motor, resistors,
- the conditions under which making or breaking takes place: motor stalled, starting or running, reversing, plugging.

### a.c. applications

| | |
|---|---|
| **Category AC-1** | This category applies to all types of a.c. load with a power factor equal to or greater than 0.95 (cos φ ≥ 0.95).<br><br>Application examples: heating, distribution. |
| **Category AC-2** | This category applies to starting, plugging and inching of slip ring motors.<br>□ On closing, the contactor makes the starting current, which is about 2.5 times the rated current of the motor.<br>□ On opening, it must break the starting current, at a voltage less than or equal to the mains supply voltage. |
| **Category AC-3** | This category applies to squirrel cage motors with breaking during normal running of the motor.<br>□ On closing, the contactor makes the starting current, which is about 5 to 7 times the rated current of the motor.<br>□ On opening, it breaks the rated current drawn by the motor; at this point, the voltage at the contactor terminals is about 20% of the mains supply voltage. Breaking is light.<br>Application examples: all standard squirrel cage motors: lifts, escalators, conveyor belts, bucket elevators, compressors, pumps, mixers, air conditioning units, etc... . |
| **Category AC-4** | This category covers applications with plugging and inching of squirrel cage and slip ring motors. The contactor closes at a current peak which may be as high as 5 or 7 times the rated motor current. On opening it breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains<br>voltage. Breaking is severe<br>Application examples: printing machines, wire drawing machines, cranes and hoists, metallurgy industry. |

### d.c. applications

| | |
|---|---|
| **Category DC-1** | This category applies to all types of d.c. load with a time constant (L/R) of less than or equal to 1 ms. |
| **Category DC-3** | This category applies to starting, counter-current braking and inching of shunt motors.<br>Time constant ≤ 2 ms.<br>□ On closing, the contactor makes the starting current, which is about 2.5 times the rated motor current.<br>□ On opening, the contactor must be able to break 2.5 times the starting current at a voltage which is less than or equal to the mains voltage. The slower the motor speed, and therefore the lower its back e.m.f., the higher this voltage.<br>Breaking is difficult. |
| **Category DC-5** | This category applies to starting, counter-current braking and inching of series wound motors.<br>Time constant ≤ 7.5 ms.<br>On closing, the contactor makes a starting current peak which may be as high as 2.5 times the rated motor current. On opening, the contactor breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains voltage.<br>Breaking is severe. |

## Utilisation categories for auxiliary contacts & control relays conforming to IEC 60947-5

### a.c. applications

| | |
|---|---|
| **Category AC-14** *(1)* | This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is less than 72 VA.<br><br>Application example: switching the operating coil of contactors and relays. |
| **Category AC-15** *(1)* | This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is more than 72 VA.<br><br>Application example: switching the operating coil of contactors. |

### d.c. applications

| | |
|---|---|
| **Category DC-13** *(2)* | This category applies to the switching of electromagnetic loads for which the time taken to reach 95 % of the steady state current (T = 0.95) is equal to 6 times the power P drawn by the load (with P ≤ 50 W).<br><br>Application example: switching the operating coil of contactors without economy resistor. |

*(1) Replaces category AC-11.*
*(2) Replaces category DC-13.*

# Technical information

Tests according to standard utilisation categories conforming to IEC 60947-4-1 and 5-1
based on rated operational current Ie
and rated operational voltage Ue

## Contactors

| | | Electrical durability: making and breaking conditions | | | | | | Occasional duty: making and breaking conditions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **a.c. supply** | | | | | | | | | | | | | |
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** |
| Resistors, non inductive or slightly inductive loads | **AC-1** | Ie | Ue | 0.95 | Ie | Ue | 0.95 | 1.5 Ie | 1.05 Ue | 0.8 | 1.5 Ie | 1.05 Ue | 0.8 |
| **Motors** | | | | | | | | | | | | | |
| Slip ring motors: starting, breaking. | **AC-2** | 2.5 Ie | Ue | 0.65 | 2.5 Ie | Ue | 0.65 | 4 Ie | 1.05 Ue | 0.65 | 4 Ie | 1.05 Ue | 0.65 |
| Squirrel cage motors: starting, breaking whilst motor running. | **AC-3** | | | | | | | | | | | | |
| | Ie ⩽ *(1)* | 6 Ie | Ue | 0.65 | 1 Ie | 0.17 Ue | 0.65 | 10 Ie | 1.05 Ue | 0.45 | 8 Ie | 1.05 Ue | 0.45 |
| | Ie > *(2)* | 6 Ie | Ue | 0.35 | 1 Ie | 0.17 Ue | 0.35 | 10 Ie | 1.05 Ue | 0.35 | 8 Ie | 1.05 Ue | 0.35 |
| Squirrel cage motors: starting, reversing, inching | **AC-4** | | | | | | | | | | | | |
| | Ie ⩽ *(1)* | 6 Ie | Ue | 0.65 | 6 Ie | Ue | 0.65 | 12 Ie | 1.05 Ue | 0.45 | 10 Ie | 1.05 Ue | 0.45 |
| | Ie > *(2)* | 6 Ie | Ue | 0.35 | 6 Ie | Ue | 0.35 | 12 Ie | 1.05 Ue | 0.35 | 10 Ie | 1.05 Ue | 0.35 |

| **d.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) |
| Resistors, non inductive or slightly inductive loads | **DC-1** | Ie | Ue | 1 | Ie | Ue | 1 | 1.5 Ie | 1.05 Ue | 1 | 1.5 Ie | 1.05 Ue | 1 |
| Shunt wound motors: starting, reversing, inching | **DC-3** | 2.5 Ie | Ue | 2 | 2.5 Ie | Ue | 2 | 4 Ie | 1.05 Ue | 2.5 | 4 Ie | 1.05 Ue | 2.5 |
| Series wound motors: starting, reversing, inching | **DC-5** | 2.5 Ie | Ue | 7.5 | 2.5 Ie | Ue | 7.5 | 4 Ie | 1.05 Ue | 15 | 4 Ie | 1.05 Ue | 15 |

## Control relays and auxiliary contacts

| | | Electrical durability: making and breaking conditions | | | | | | Occasional duty: making and breaking conditions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **a.c. supply** | | | | | | | | | | | | | |
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** |
| Electromagnets | | | | | | | | | | | | | |
| ⩽ 72 VA | **AC-14** | – | – | – | – | – | – | 6 Ie | 1.1 Ue | 0.7 | 6 Ie | 1.1 Ue | 0.7 |
| > 72 VA | **AC-15** | 10 Ie | Ue | 0.7 | Ie | Ue | 0.4 | 10 Ie | 1.1 Ue | 0.3 | 10 Ie | 1.1 Ue | 0.3 |

| **d.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) |
| Electromagnets | **DC-13** | Ie | Ue | 6 P *(3)* | Ie | Ue | 6 P *(3)* | 1.1 Ie | 1.1 Ue | 6 P *(3)* | 1.1 Ie | 1.1 Ue | 6 P *(3)* |

*(1) Ie ⩽ 17 A for electrical durability, Ie ⩽ 100 A for occasional duty.*
*(2) Ie > 17 A for electrical durability, Ie > 100 A for occasional duty.*
*(3) The value 6 P (in watts) is based on practical observations and is considered to represent the majority of d.c. magnetic loads up to the maximum limit of P = 50 W i.e. 6 P = 300 ms = L/R.*
*Above this, the loads are made up of smaller loads in parallel. The value 300 ms is therefore a maximum limit whatever the value of current drawn.*

# Technical information

## Current of asynchronous squirrel cage motors at nominal load

### 3-phase 4-pole motors

**Current values for power in kW**

| Rated operational power (1) | Indicative rated operational current values at: 230 V | 400 V | 500 V | 690 V |
|---|---|---|---|---|
| kW | A | A | A | A |
| 0.06 | 0.35 | 0.2 | 0.16 | 0.12 |
| 0.09 | 0.52 | 0.3 | 0.24 | 0.17 |
| 0.12 | 0.7 | 0.44 | 0.32 | 0.23 |
| 0.18 | 1 | 0.6 | 0.48 | 0.35 |
| 0.25 | 1.5 | 0.85 | 0.68 | 0.49 |
| 0.37 | 1.9 | 1.1 | 0.88 | 0.64 |
| 0.55 | 2.6 | 1.5 | 1.2 | 0.87 |
| 0.75 | 3.3 | 1.9 | 1.5 | 1.1 |
| 1.1 | 4.7 | 2.7 | 2.2 | 1.6 |
| 1.5 | 6.3 | 3.6 | 2.9 | 2.1 |
| 2.2 | 8.5 | 4.9 | 3.9 | 2.8 |
| 3 | 11.3 | 6.5 | 5.2 | 3.8 |
| 4 | 15 | 8.5 | 6.8 | 4.9 |
| 5.5 | 20 | 11.5 | 9.2 | 6.7 |
| 7.5 | 27 | 15.5 | 12.4 | 8.9 |
| 11 | 38 | 22 | 17.6 | 12.8 |
| 15 | 51 | 29 | 23 | 17 |
| 18.5 | 61 | 35 | 28 | 21 |
| 22 | 72 | 41 | 33 | 24 |
| 30 | 96 | 55 | 44 | 32 |
| 37 | 115 | 66 | 53 | 39 |
| 45 | 140 | 80 | 64 | 47 |
| 55 | 169 | 97 | 78 | 57 |
| 75 | 230 | 132 | 106 | 77 |
| 90 | 278 | 160 | 128 | 93 |
| 110 | 340 | 195 | 156 | 113 |
| 132 | 400 | 230 | 184 | 134 |
| 160 | 487 | 280 | 224 | 162 |
| 200 | 609 | 350 | 280 | 203 |
| 250 | 748 | 430 | 344 | 250 |
| 315 | 940 | 540 | 432 | 313 |
| 355 | 1061 | 610 | 488 | 354 |
| 400 | 1200 | 690 | 552 | 400 |
| 500 | 1478 | 850 | 680 | 493 |
| 560 | 1652 | 950 | 760 | 551 |
| 630 | 1844 | 1060 | 848 | 615 |
| 710 | 2070 | 1190 | 952 | 690 |
| 800 | 2340 | 1346 | 1076 | 780 |
| 900 | 2640 | 1518 | 1214 | 880 |
| 1000 | 2910 | 1673 | 1339 | 970 |

**Current values for power in hp**

| Rated operational power (2) | Indicative rated operational current values at: 110 - 120 V | 200 V | 208 V | 220 - 240 V | 380 - 415 V | 440 - 480 V | 550 - 600 V |
|---|---|---|---|---|---|---|---|
| hp | A | A | A | A | A | A | A |
| 1/2 | 4.4 | 2.5 | 2.4 | 2.2 | 1.3 | 1.1 | 0.9 |
| 3/4 | 6.4 | 3.7 | 3.5 | 3.2 | 1.8 | 1.6 | 1.3 |
| 1 | 8.4 | 4.8 | 4.6 | 4.2 | 2.3 | 2.1 | 1.7 |
| 1 1/2 | 12 | 6.9 | 6.6 | 6 | 3.3 | 3 | 2.4 |
| 2 | 13.6 | 7.8 | 7.5 | 6.8 | 4.3 | 3.4 | 2.7 |
| 3 | 19.2 | 11 | 10.6 | 9.6 | 6.1 | 4.8 | 3.9 |
| 5 | 30.4 | 17.5 | 16.7 | 15.2 | 9.7 | 7.6 | 6.1 |
| 7 1/2 | 44 | 25.3 | 24.2 | 22 | 14 | 11 | 9 |
| 10 | 56 | 32.2 | 30.8 | 28 | 18 | 14 | 11 |
| 15 | 84 | 48.3 | 46.2 | 42 | 27 | 21 | 17 |
| 20 | 108 | 62.1 | 59.4 | 54 | 34 | 27 | 22 |
| 25 | 136 | 78.2 | 74.8 | 68 | 44 | 34 | 27 |
| 30 | 160 | 92 | 88 | 80 | 51 | 40 | 32 |
| 40 | 208 | 120 | 114 | 104 | 66 | 52 | 41 |
| 50 | 260 | 150 | 143 | 130 | 83 | 65 | 52 |
| 60 | – | 177 | 169 | 154 | 103 | 77 | 62 |
| 75 | – | 221 | 211 | 192 | 128 | 96 | 77 |
| 100 | – | 285 | 273 | 248 | 165 | 124 | 99 |
| 125 | – | 359 | 343 | 312 | 208 | 156 | 125 |
| 150 | – | 414 | 396 | 360 | 240 | 180 | 144 |
| 200 | – | 552 | 528 | 480 | 320 | 240 | 192 |
| 250 | – | – | – | 604 | 403 | 302 | 242 |
| 300 | – | – | – | 722 | 482 | 361 | 289 |
| 350 | – | – | – | 828 | 560 | 414 | 336 |
| 400 | – | – | – | 954 | 636 | 477 | 382 |
| 450 | – | – | – | 1030 | – | 515 | 412 |
| 500 | – | – | – | 1180 | 786 | 590 | 472 |

*(1) Values conforming to standard IEC 60072-1 (at 50 Hz).*
*(2) Values conforming to standard UL 508 (at 60 Hz).*

***Nota :*** *These values are given as a guide. They may vary depending on the type of motor, its polarity and the manufacturer.*

# TeSys contactors

| Applications | | Equipment based on standard contactors | | | | | Equipment requiring low consumption contactors which can be switched directly from solid state outputs | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| **Rated operational current** | AC-3 | 6 A | 6..0.16 A | 9…150 A | 115…800 A | 750…1800 A | 6...12 A | 9…25 A |
| | AC-1 | 12 A | 20 A | 25…200 A | 200…2100 A | 800…2750 A | 20 A | 20…40 A |
| **Rated operational voltage** | | 690 V | 690 V | 690 V | 1000 V | 1000 V | 690 V | 690 V |
| **Number of poles** | | 2 or 3 | 3 or 4 | 3 or 4 | 2, 3 or 4 | 1…4 | 3 or 4 | 3 |
| **Contactor type references** | | **LC1 SK LP1 SK** | **LC1 K LC7 K LP1 K** | **LC1 D** | **LC1 F** | **LC1 B** | **LP4 K** | **LC1 D** |
| **Pages** | | 5/8 and 5/9 | | 5/46 and 5/47 | 5/104 and 5/105 | | 5/15 | 5/48 and 5/49 |

| | | | |
|---|---|---|---|
| **Equipment requiring magnetic latching contactors** | **Motors, resistive circuits, rotor short-circuiting devices, electro lifting magnets, hoisting, mines, ⎓ motors, high operating rates. Variable composition bar mounted contactors.** | **Induction heating, heating of metal or of a metal part in a channel or crucible furnace by induction of a. c. currents.Contactors for induction heating applications.** | **Applications conforming to "NATO" specifications and references. Shockproof contactors** |
| | | | |
| 150…1800 A | 80...1800 A | – | 12…630 A |
| 250…2750 A | 80…2750 A | 80…16 300 A | 25…850 A |
| 1000 V | ∼ 1000 V<br>⎓ 440 or 1500 V | 3000 V | 690 V or 1000 V |
| 1…4 | 1…6 | 1…8 | 3 or 4 |
| **CR1 F<br>CR1 B** | **CV●** | **CE●<br>CS●** | **LC1 D●G<br>LP1 D●G<br>LC1 FG●●●** |
| 5/250 to 5/259 | 5/226 and 5/227 | Please consult your Regional Sales Office | |

5

# TeSys contactors
From 6 to 16 A

| Applications | | Simple automation systems | |
|---|---|---|---|
| | | | |
| **Rated operational current** | Ie max AC-3 (Ue ≤ 440 V) | 6 A | 6 A |
| | Ie AC-1 (θ ≤ 40 °C) | 12 A | – |
| **Rated operational voltage** | | 690 V | |
| **Number of poles** | | 2 or 3 | 3 |
| **Rated operational power in category AC-3** | 220/240 V | 1.1 kW | 1.5 kW |
| | 380/400 V | 2.2 kW | 2.2 kW |
| | 415/440 V | 2.2 kW | 2.2/3 kW |
| | 500 V | – | 3 kW |
| | 660/690 V | – | 3 kW |
| | 1000 V | – | – |
| **Add-on auxiliary contact blocks** | Front | Up to 2 N/C or N/O | Up to 4 N/C or N/O |
| | Side | – | – |
| | Front time delay | – | 1 N/C |
| | Front dust and damp protected | – | – |
| **Associated manual-auto thermal overload relays** | Class 10 A | – | 0.11…16 A |
| | Class 20 A | – | – |
| **Suppressor modules** | | Varistor or diode | Varistor, diode + Zener diode or RC circuit |
| **Contactor type references** | ∼ | **LC1 SK** | **LC1 or LC7 K06** |
| | ⎓ | **LP1 SK** | **LP1 K06** |
| **Reversing contactor with mechanical interlock type references** | ∼ | **–** | **LC2 or LC8 K06** |
| | ⎓ | **–** | **LP2 K06** |
| **Pages** | Contactors | 5/34 and 5/35 | 5/14 to 5/17 |
| | Reversing contactors | – | 5/18 to 5/21 |

| | | |
|---|---|---|
| 9 A | 12 A | 16 A |
| 20 A | – | – |

3 or 4

| | | |
|---|---|---|
| 2.2 kW | 3 kW | 3 kW |
| 4 kW | 5.5 kW | 7.5 kW |
| 4 kW | 5.5 kW | 7.5 kW |
| 4 kW | 4 kW | 5.5 kW |
| 4 kW | 4 kW | 4 kW |
| – | – | – |

| | | |
|---|---|---|
| **LC1 or LC7 K09** | **LC1 or LC7 K12** | **LC1 K16** |
| **LP1 K09** | **LP1 K12** | **–** |
| **LC2 or LC8 K09** | **LC2 or LC8 K12** | **LC2 K16** |
| **LP2 K09** | **LP2 K12** | **–** |

## Environment characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Conforming to standards** | | | IEC 60947, NF C 63-110, VDE 0660, BS 5424 | | |
| **Product certifications** | **LC● and LP● K06 to K12** | | UL, CSA | | |
| **Operating positions** | | | **Vertical axis** | **Horizontal axis** | |
| | | | | | |
| | | | Without derating | Without derating | Possible positions for **LC● K** only. Contactor pull-in voltage: 0.85 Uc |
| **Connection** | | | **Min.** | **Max.** | **Max. to IEC 60947** |
| Screw clamp terminals | Solid conductor | **mm²** | 1 x 1.5 | 2 x 4 | 1 x 4 + 1 x 2.5 |
| | Flexible conductor without cable end | **mm²** | 1 x 0.75 | 2 x 4 | 2 x 2.5 |
| | Flexible conductor with cable end | **mm²** | 1 x 0.34 | 1 x 1.5 + 1 x 2.5 | 1 x 1.5 + 1 x 2.5 |
| Spring terminals | Solid conductor | **mm²** | 1 x 0.75 | 1 x 1.5 | 2 x 1.5 |
| | Flexible conductor without cable end | **mm²** | 1 x 0.75 | 1 x 1.5 | 2 x 1.5 |
| Faston connectors | Clip | **mm** | 2 x 2.8 or 1 x 6.35 | | |
| Solder pins for printed circuit board | With locating device between power and control circuits | | 4 mm x 35 microns | | |
| **Tightening torque** | Philips head n° 2 and Ø 6 | **N.m** | 0.8 | | |
| **Terminal referencing** | Conforming to standards EN 50005 and EN 50012 | | Up to 5 contacts, depending on model | | |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947 | **V** | 690 | | |
| | Conforming to VDE 0110 gr C | **V** | 750 | | |
| | Conforming to BS 5424, NF C 20-040 | **V** | 690 | | |
| | Conforming to CSA 22-2 n° 14, UL 508 | **V** | 600 | | |
| **Rated impulse withstand voltage** (Uimp) | | **kV** | 8 | | |
| **Protective treatment** | Conforming to IEC 60068 (DIN 50016) | | "TC" (Klimafest, Climateproof) | | |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact | | |
| **Ambient air temperature** around the device | Storage | **°C** | - 50…+ 80 | | |
| | Operation | **°C** | - 25…+ 50 | | |
| **Maximum operating altitude** | Without derating | **m** | 2000 | | |
| **Vibration resistance** 5 ... 300 Hz | Contactor open | | 2 gn | | |
| | Contactor closed | | 4 gn | | |
| **Flame resistance** | Conforming to UL 94 | | Self-extinguishing materials V1 | | |
| | Conforming to NF F 16-101 and 16-102 | | Conforming to requirement 2 | | |
| **Shock resistance** (1/2 sine wave, 11 ms) | Contactor open | | On X axis: 6 gn<br>On Y and Z axes: 10 gn | | |
| | Contactor closed | | On X axis: 10 gn<br>On Y and Z axes: 15 gn | | |
| **Safe separation of circuits** | Conforming to VDE 0106 and IEC 60536 | | SELV (Safety Extra Low Voltage), up to 400 V | | |

## Pole characteristics

| Type | | LC● or LP● | | K06 | K09 | K12 | K16 |
|---|---|---|---|---|---|---|---|
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 50 °C | | **A** | 20 | | | |
| **Rated operational frequency** | | | **Hz** | 50/60 | | | |
| **Frequency limits of the operational current** | | | **Hz** | Up to 400 | | | |
| **Rated operational voltage** (Ue) | | | **V** | 690 | | | |
| **Rated making capacity** | I rms conforming to NF C 63 110 and IEC 60947 | | **A** | 110 | 110 | 144 | 160 |
| **Rated breaking capacity** | I rms conforming to NF C 63 110 and IEC 60947 | 220/230 V | **A** | 110 | 110 | – | – |
| | | 380/400 V | **A** | 110 | 110 | – | – |
| | | 415 V | **A** | 110 | 110 | – | – |
| | | 440 V | **A** | 110 | 110 | 110 | 110 |
| | | 500 V | **A** | 80 | 80 | 80 | 80 |
| | | 660/690 V | **A** | 70 | 70 | 70 | 70 |
| **Permissible short time rating** | In free air for a time "t" from cold state (θ ≤ 50 °C) | 1 s | **A** | 90 | 90 | 115 | 115 |
| | | 5 s | **A** | 85 | 85 | 105 | 105 |
| | | 10 s | **A** | 80 | 80 | 100 | 100 |
| | | 30 s | **A** | 60 | 60 | 75 | 75 |
| | | 1 min | **A** | 45 | 45 | 55 | 55 |
| | | 3 min | **A** | 40 | 40 | 50 | 50 |
| | | ≥ 15 min | **A** | 20 | 20 | 25 | 25 |
| **Short-circuit protection** | gG fuse U ≤ 440 V (aM fuse, see page 6/12) | | **A** | 25 | | | |
| **Average impedance per pole** | At Ith and 50 Hz | | **mΩ** | 3 | | | |
| **Use in category AC-1** resistive circuits, heating, lighting (Ue ≤ 440 V) | Maximum rated operational current for a temperature ≤ 50 °C | | **A** | 20 | | | |
| | Maximum rated operational current for a temperature ≤ 70 °C | | **A** | 16 for Ue only | | | |
| | Rated operational current limits in relation to the on-load factor and operating frequency | | | On-load factor | 90 % | 60 % | 30 % |
| | | | **A** | 300 operating cycles/hour | 13 | 15 | 18 |
| | | | **A** | 120 operating cycles/hour | 15 | 18 | 19 |
| | | | **A** | 30 operating cycles/hour | 19 | 20 | 20 |
| | Increase in rated operational current by paralleling of poles | | | Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles | | | |
| | | | | 2 poles in parallel: K = 1.60 | | | |
| | | | | 3 poles in parallel: K = 2.25 | | | |
| | | | | 4 poles in parallel: K = 2.80 | | | |
| **Use in category AC-3** squirrel cage motors | Operational power according to the voltage. Voltage 50 or 60 Hz | 115 V single-ph. | **kW** | 0.37 | 0.55 | – | – |
| | | 220 V single-ph. | **kW** | 0.75 | 1.1 | – | – |
| | | 220/230 V 3-ph. | **kW** | 1.5 | 2.2 | 3 | 4 |
| | | 380/415 V 3-ph. | **kW** | 2.2 | 4 | 5.5 | 7.5 |
| | | 440/480 V 3-ph. | **kW** | 3 | 4 | 5.5/4 (480) | 5.5/4 (480) |
| | | 500/600 V 3-ph. | **kW** | 3 | 4 | 4 | 4 |
| | | 660/690 V 3-ph. | **kW** | 3 | 4 | 4 | 4 |
| | Maximum operating rate (in operating cycles/hour in relation to % of rated power) | | | Op. cycles/h | 600 | 900 | 1200 |
| | | | | Power | 100 % | 75 % | 50 % |

5

References :
pages 5/14 to 5/21

Dimensions :
pages 5/26 and 5/28

Schemes :
pages 5/27 and 5/29

## Control circuit characteristics

| Type | | | LC1 | LC2 | LC7 | LC8 | LP1 | LP2 | LP4 | LP5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Rated control circuit voltage (Uc)** | | **V** | ∼ 12…690 *(1)* | | ∼ 24…240 *(1)* | | ⎓ 12…250 *(1)* | | ⎓ 12…120 | |
| **Control voltage limits** (≤ 50 °C) single voltage coil | Operation | | 0.8…1.15 Uc *(2)* | | 0.85…1.1 Uc | | 0.8…1.15 Uc | | 0.7…1.30 Uc | |
| | Drop-out | | ≥ 0.20 Uc | | ≥ 0.10 Uc | | ≥ 0.10 Uc | | ≥ 0.10 Uc | |
| **Average consumption at 20 °C and at Uc** | Inrush | | 30 VA | | 3 VA | | 3 W | | 1.8 W | |
| | Sealed | | 4.5 VA | | 3 VA | | 3 W | | 1.8 W | |
| **Heat dissipation** | | **W** | 1.3 | | 3 | | 3 | | 1.8 | |
| **Operating time** at 20 °C and at Uc | | | | | | | | | | |
| Between coil energisation and: | - opening of the N/C contacts | **ms** | 5…15 | | 25…35 | | 25…35 | | 25…35 | |
| | - closing of the N/O contacts | **ms** | 10…20 | | 30…40 | | 30…40 | | 30…40 | |
| Between coil de-energisation and: | - opening of the N/O contacts | **ms** | 10…20 | | 30 | | 10 | | 10…20 | |
| | - closing of the N/C contacts | **ms** | 15…25 | | 40 | | 15 | | 15…25 | |
| **Maximum immunity to microbreaks** | | **ms** | 2 | | 2 | | 2 | | 2 | |
| **Maximum operating rate** | In operating cycles per hour | | 3600 | | 3600 | | 3600 | | 3600 | |
| **Mechanical durability at Uc** In millions of operating cycles | 50/60 Hz coil | | 10 | 5 | 10 | 5 | – | – | – | – |
| | ⎓ coil | | – | – | – | – | 10 | 5 | – | – |
| | Wide range coil, Low consumption | | – | – | – | – | – | – | 30 | 5 |

*(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page 5/24.*
*(2) LC1 K16: 0.85…1.15 Uc.*

5

References :
pages 5/14 to 5/21

Dimensions :
pages 5/26 and 5/28

Schemes :
pages 5/27 and 5/29

## Auxiliary contact characteristics of contactors and instantaneous contact blocks

| | | | | |
|---|---|---|---|---|
| **Number of auxiliary contacts** | On **LC● K** or **LP● K** 3-pole | | | 1 |
| | On **LA1 K** | | | 2 or 4 |
| **Rated operational voltage** (Ue) | Up to | | **V** | 690 |
| **Rated insulation voltage** (Ui) | Conforming to BS 5424 | | **V** | 690 |
| | Conforming to IEC 60947 | | **V** | 690 |
| | Conforming to VDE 0110 group C | | **V** | 750 |
| | Conforming to CSA C 22-2 n° 14 | | **V** | 600 |
| **Conventional thermal current (Ith)** | For ambient temperature ≤ 50 °C | | **A** | 10 |
| **Frequency of the operational current** | | | **Hz** | Up to 400 |
| **Minimum switching capacity** | U min (DIN 19 240) | | **V** | 17 |
| | I min | | **mA** | 5 |
| **Short-circuit protection** | Conforming to IEC 60947 and VDE 0660, gG fuse | | **A** | 10 |
| **Rated making capacity** | Conforming to IEC 60947 | I rms | **A** | 110 |
| **Short-time rating** | Permissible for | 1 s | **A** | 80 |
| | | 500 ms | **A** | 90 |
| | | 100 ms | **A** | 110 |
| **Insulation resistance** | | | **MΩ** | > 10 |
| **Non-overlap distance** | LA1 K: linked contacts conforming to INRS, BIA and CNA specifications | | **mm** | 0.5 (see schemes pages 5/27 and 5/29) |

**Operational power of contacts** conforming to IEC 60947

**a.c. supply, category AC-15**

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | **V** | **24** | **48** | **110/ 127** | **220/ 230** | **380/ 400** | **440** | **600/ 690** |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 48 | 96 | 240 | 440 | 800 | 880 | 1200 |
| 3 million operating cycles | **VA** | 17 | 34 | 86 | 158 | 288 | 317 | 500 |
| 10 million operating cycles | **VA** | 7 | 14 | 36 | 66 | 120 | 132 | 200 |
| Occasional making capacity | **VA** | 1000 | 2050 | 5000 | 10 000 | 14 000 | 13 000 | 9000 |

**d.c. supply, category DC-13**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| **V** | **24** | **48** | **110** | **220** | **440** | **600** |
|---|---|---|---|---|---|---|
| **W** | 120 | 80 | 60 | 52 | 51 | 50 |
| **W** | 55 | 38 | 30 | 28 | 26 | 25 |
| **W** | 15 | 11 | 9 | 8 | 7 | 6 |
| **W** | 720 | 600 | 400 | 300 | 230 | 200 |

1 Breaking limit of contacts valid for:
- maximum of 50 operating cycles at 10 s intervals (power broken = making current x cos φ 0.7).

2 Electrical durability of contacts for:
- 1 million operating cycles (2a)
- 3 million operating cycles (2b)
- 10 million operating cycles (2c).

3 Breaking limit of contacts valid for:
- maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit.

Power broken in VA

Power broken in W

References : page 5/23
Dimensions : pages 5/26 and 5/28
Schemes : pages 5/27 and 5/29

# TeSys contactors

## Contactors for motor control, 6 to 16 A in category AC-3 and 6 to 12 A in category AC-4

Control circuit: a.c.

511137

LC1 K0910●●

Contactor selection according to utilisation category, see pages 5/194 to 5/197 and 5/200 to 5/203.
Mounting on 35 mm ⎓ rail or Ø 4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25.

### 3-pole contactors for standard applications

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Rated operational current in category AC-3 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) (2) | Weight |
|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 440/500 V 660/690 V | | | | | |
| kW | kW | kW | A | | | | kg |
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LC1 K0610●●** | 0.180 |
| | | | | – | 1 | **LC1 K0601●●** | 0.180 |
| 2.2 | 4 | 4 | **9** | 1 | – | **LC1 K0910●●** | 0.180 |
| | | | | – | 1 | **LC1 K0901●●** | 0.180 |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LC1 K1210●●** | 0.180 |
| | | 5.5 (440) | | – | 1 | **LC1 K1201●●** | 0.180 |
| 4 | 7.5 | 4 (> 440) | **16** | 1 | – | **LC1 K1610●●** | 0.180 |
| | | 5.5 (440) | | – | 1 | **LC1 K1601●●** | 0.180 |

511138

LC1 K09103●●

**Spring terminal connections**

For 6 to 12 A ratings only, in the references selected above, insert a figure **3** before the voltage code.
Example: **LC1 K0610●●** becomes **LC1 K06103●●.**

**Faston connectors, 1 x 6.35 or 2 x 2.8**

For 6 to 16 A ratings, in the references selected above, insert a figure **7** before the voltage code.
Example: **LC1 K0610●●** becomes **LC1 K06107●●**.

511139

LC1 K09107●●

**Solder pins for printed circuit boards**

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC1 K0610●●** becomes **LC1 K06105●●**.

5

### 3-pole silent contactors

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LC7 K0610●●** | 0.225 |
| | | | | – | 1 | **LC7 K0601●●** | 0.225 |
| 2.2 | 4 | 4 | **9** | 1 | – | **LC7 K0910●●** | 0.225 |
| | | | | – | 1 | **LC7 K0901●●** | 0.225 |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LC7 K1210●●** | 0.225 |
| | | 5.5 (440) | | – | 1 | **LC7 K1201●●** | 0.225 |

511140

LC1 K09105●●

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC7 K0610●●** becomes **LC7 K06107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC7 K0610●●** becomes **LC7 K06105●●**.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**a.c. supply**

**Contactors LC1 K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| Volts | **12** | **20** | **24 (2)** | **36** | **42** | **48** | **110** | **115** | **120** | **127** | **200/208** | | ***220/230*** | **230** | **230/240** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | *M7* | *P7* | *U7* |
| Volts | **256** | ***277*** | ***380/400*** | | **400** | ***400/415*** | | **440** | **480** | **500** | **575** | **600** | **660/690** | | |
| 50/60 Hz | W7 | UE7 | Q7 | – | V7 | *N7* | | R7 | T7 | S7 | SC7 | X7 | *Y7* | – | – |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**.

**Contactors LC7 K** (0.85…1.1 Uc)

| Volts | **24** | **42** | **48** | **110** | **115** | **220** | **230/240** |
|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | U7 |

*(2) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page 5/24*

511141

LC7 K0910●●

Selection : pages 5/194 and 5/196
Characteristics : pages 5/10 to 5/13
Dimensions : page 5/26
Schemes : page 5/27



Schneider Electric

# TeSys contactors

## Contactors for motor control, 6 to 12 A in categories AC-3 and AC-4

### Control circuit: d.c. or low consumption

511137

LP1 K0910●●

511138

LP1 K09103●●

511139

LP1 K09107●●

511140

LP1 K09105●●

511141

LP4 K0910●●

Contactor selection according to utilisation category, see pages 5/194 to 5/197 and 5/200 to 5/203.
Mounting on 35 mm ⎓ rail or Ø 4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25

## 3-pole contactors, d.c. supply

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Rated operational current in category AC-3 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) (2) | Weight |
|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 440/500 V 660/690 V | | | | | |
| kW | kW | kW | A | | | | kg |
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LP1 K0610●●** | 0.225 |
| | | | | – | 1 | **LP1 K0601●●** | 0.225 |
| 2.2 | 4 | 4 | **9** | 1 | – | **LP1 K0910●●** | 0.225 |
| | | | | – | 1 | **LP1 K0901●●** | 0.225 |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LP1 K1210●●** | 0.225 |
| | | 5.5 (440) | | – | 1 | **LP1 K1201●●** | 0.225 |

### Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP1 K0610●●** becomes **LP1 K06103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP1 K0610●●** becomes **LP1 K06107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP1 K0610●●** becomes **LP1 K06105●●**.

## 3-pole low consumption contactors

Compatible with programmable controller outputs.
LED indicator incorporated (except models **LP4 K●●●●FW3** and **LP4 K●●●●GW3**).
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LP4 K0610●●** | 0.235 |
| | | | | – | 1 | **LP4 K0601●●** | 0.235 |
| 2.2 | 4 | 4 | **9** | 1 | – | **LP4 K0910●●** | 0.235 |
| | | | | – | 1 | **LP4 K0901●●** | 0.235 |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LP4 K1210●●** | 0.235 |
| | | 5.5 (440) | | – | 1 | **LP4 K1201●●** | 0.235 |

### Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP4 K0610●●** becomes **LP4 K06103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP4 K0610●●** becomes **LP4 K06107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP4 K0610●●** becomes **LP4 K06105●●**.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**d.c. supply** (contactors LP1 K: 0.8º1.15 Uc)

| Volts | 12 | 20 | 24 (2) | 36 | 48 | 60 | 72 | 100 | 110 | 125 | 155 | 174 | 200 | 220 | 230 | 240 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**

**Low consumption** (contactors LP4 K: 0.7º130 Uc)

| Volts | 12 | 20 | 24 | 48 | 72 | 110 | 120 |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

*(2) For LP1 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∼ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*

# TeSys contactors

## Contactors for control in category AC-1, 20 A
Control circuit: a.c.

511137

LC1 K09004●●

511138

LC1 K09103●●

511139

LC1 K09107●●

511141

LC1 K09004●●

Contactor selection according to utilisation category, see pages 5/198 and 5/199.
Mounting on 35 mm ⎓ rail or Ø 4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25.

### 3 or 4-pole contactors for standard applications *(1)*

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code *(2) (3)* | Weight |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **Screw clamp connections** | | | | | | |
| **20** | 3 | – | 1 | – | **LC1 K0910●●** | 0.180 |
| | | | | | or **LC1 K1210●●** | 0.180 |
| | 3 | – | – | 1 | **LC1 K0901●●** | 0.180 |
| | | | | | or **LC1 K1201●●** | 0.180 |
| | 4 | – | – | – | **LC1 K09004●●** | 0.180 |
| | | | | | or **LC1 K12004●●** | 0.180 |
| | 2 | 2 | – | – | **LC1 K09008●●** | 0.180 |

**Spring terminal connections**

In the references selected above, insert a figure **3** before the voltage code.
Example: **LC1 K0910●●** becomes **LC1 K09103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC1 K0910●●** becomes **LC1 K09107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC1 K0910●●** becomes **LC1 K09105●●**.

### 3 or 4-pole silent contactors *(1)*

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | |
| **20** | 3 | – | 1 | – | **LC7 K0910●●** | 0.225 |
| | | | | | or **LC7 K1210●●** | 0.225 |
| | 3 | – | – | 1 | **LC7 K0901●●** | 0.225 |
| | | | | | or **LC7 K1201●●** | 0.225 |
| | 4 | – | – | – | **LC7 K09004●●** | 0.225 |
| | | | | | or **LC7 K12004●●** | 0.225 |
| | 2 | 2 | – | – | **LC7 K09008●●** | 0.225 |

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC7 K0910●●** becomes **LC7 K09107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC7 K0910●●** becomes **LC7 K09105●●**.

*(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page 5/198.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**a.c. supply**

**Contactors LC1 K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| Volts | **12** | **20** | **24 (3)** | **36** | **42** | **48** | **110** | **115** | **120** | **127** | **200/208** | | ***220/230*** | **230** | ***230/240*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | *M7* | P7 | *U7* |
| Volts | **256** | **277** | ***380/400*** | | **400** | ***400/415*** | | **440** | **480** | **500** | **575** | **600** | ***660/690*** | | |
| 50/60 Hz | W7 | UE7 | *Q7* | | V7 | *N7* | | R7 | T7 | S7 | SC7 | X7 | *Y7* | | |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72.**

**Contactors LC7 K** (0.8…1.1 Uc)

| Volts | **24** | **42** | **48** | **110** | **115** | **220** | **230/240** |
|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | U7 |

*(3) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page 5/24.*

# TeSys contactors

## Contactors for control in category AC-1, 20 A
## Control circuit: d.c. or low consumption

511142

*LC1 K09004●●*

511143

*LC1 K09103●●*

511144

*LC1 K09105●●*

511141

*LC1 K09004●●*

Contactor selection according to utilisation category, see pages 5/198 and 5/199.
Mounting on 35 mm ⎓ rail or Ø 4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25.

### 3 and 4-pole contactors, d.c. supply *(1)*

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code *(2) (3)* | Weight |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **Screw clamp connections** | | | | | | |
| **20** | 3 | – | 1 | – | **LP1 K0910●●** | 0.225 |
| | | | | | or **LP1 K1210●●** | 0.225 |
| | 3 | – | – | 1 | **LP1 K0901●●** | 0.225 |
| | | | | | or **LP1 K1201●●** | 0.225 |
| | 4 | – | – | – | **LP1 K09004●●** | 0.225 |
| | | | | | or **LP1 K12004●●** | 0.225 |
| | 2 | 2 | – | – | **LP1 K09008●●** | 0.225 |

**Spring terminal connections**

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP1 K0910●●** becomes **LP1 K09103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP1 K0910●●** becomes **LP1 K09107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP1 K0910●●** becomes **LP1 K09105●●**.

### 3 or 4-pole low consumption contactors *(1)*

Compatible with programmable controller outputs.
LED indicator incorporated (except models LP4 K●●●●FW3 and LP4 K●●●●GW3).
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | |
| **20** | 3 | – | 1 | – | **LP4 K0910●●●** | 0.235 |
| | | | | | or **LP4 K1210●●●** | 0.235 |
| | 3 | – | – | 1 | **LP4 K0901●●●** | 0.235 |
| | | | | | or **LP4 K1201●●●** | 0.235 |
| | 4 | – | – | – | **LP4 K09004●●●** | 0.235 |
| | | | | | or **LP4 K12004●●●** | 0.235 |
| | 2 | 2 | – | – | **LP4 K09008●●●** | 0.235 |

**Spring terminal connections**

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP4 K0910●●** becomes **LP4 K09103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP4 K0910●●** becomes **LP4 K09107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP4 K0910●●** becomes **LP4 K09105●●**.

*(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page 5/198.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**d.c. supply** (contactors LP1 K: 0.8º1.15 Uc)

| Volts ⎓ | 12 | 20 | 24 (3) | 36 | 48 | 60 | 72 | 100 | 110 | 125 | 155 | 174 | 200 | 220 | 230 | 240 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3.**

**Low consumption** (contactors LP4 K: 0.7º130 Uc)

| Volts ⎓ | 12 | 20 | 24 | 48 | 72 | 110 | 120 |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

*(3) For LP1 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*

Selection : pages 5/198 and 5/199
Characteristics : pages 5/10 to 5/13
Dimensions : page 5/26
Schemes : page 5/27

# TeSys contactors

## Reversing contactors for motor control, 6 to 16 A in category AC-3 and 6 to 12 A in category AC-4

Control circuit: a.c.

Reversing contactor selection according to utilisation category, see pages 5/194 to 5/197 and 5/200 to 5/203.Integral mechanical interlock.
**It is essential to link the contacts of the electrical interlock.**
Pre-wired power circuit connections as standard on screw clamp versions.
Mounting on 35 mm ⎍ rail or Ø 4 screw fixing. Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25.

511147

*LC2 K0910●●*

511148

*LC2 K09105●●*

### 3-pole reversing contactors for standard applications

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Rated operational current in category AC-3 440V up to | Instantaneous auxiliary contacts per contactor | | Basic reference, to be completed by adding the voltage code *(1) (2)* | Weight |
|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 440/500 V 660/690 V | | | | | |
| kW | kW | kW | A | | | | kg |
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LC2 K0610●●** | 0.390 |
| | | | | – | 1 | **LC2 K0601●●** | 0.390 |
| 2.2 | 4 | 4 | **9** | 1 | – | **LC2 K0910●●** | 0.390 |
| | | | | – | 1 | **LC2 K0901●●** | 0.390 |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LC2 K1210●●** | 0.390 |
| | | 5.5 (440) | | – | 1 | **LC2 K1201●●** | 0.390 |
| 4 | 7.5 | 4 (> 440) | **16** | 1 | – | **LC2 K1610●●** | 0.390 |
| | | 5.5 (440) | | – | 1 | **LC2 K1601●●** | 0.390 |

**Spring terminal connections**

For 6 to 12 A ratings only, in the references selected above, insert a figure **3** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

For 6 to 16 A ratings, in the references selected above, insert a figure **7** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06107●●**.

**Solder pins for printed circuit boards**

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06105●●**.

### 3-pole silent reversing contactors

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LC8 K0610●●** | 0.480 |
| | | | | – | 1 | **LC8 K0601●●** | 0.480 |
| 2.2 | 4 | 4 | **9** | 1 | – | **LC8 K0910●●** | 0.480 |
| | | | | – | 1 | **LC8 K0901●●** | 0.480 |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LC8 K1210●●** | 0.480 |
| | | 5.5 (440) | | – | 1 | **LC8 K1201●●** | 0.480 |

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC8 K0610●●** becomes **LC8 K06107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC8 K0610●●** becomes **LC8 K06105●●**.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**a.c. supply**

**Reversing contactors LC2 K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| Volts | **12** | **20** | **24 (2)** | **36** | **42** | **48** | **110** | **115** | **120** | **127** | **200/208** | | ***220/230*** | **230** | ***230/240*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | *M7* | P7 | U7 |
| Volts | **256** | ***277*** | ***380/400*** | | **400** | ***400/415*** | | **440** | **480** | **500** | **575** | **600** | ***660/690*** | | |
| 50/60 Hz | W7 | UE7 | *Q7* | | V7 | *N7* | | R7 | T7 | S7 | SC7 | X7 | *Y7* | | |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**

**Reversing contactors LC8 K** (0.8…1.1 Uc)

| Volts | **24** | **42** | **48** | **110** | **115** | **220** | **230/240** |
|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | U7 |

*(2) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page 5/24.*

# TeSys contactors

## Reversing contactors for motor control, 6 to 12 A in categories AC-3 and AC-4

### Control circuit: d.c. or low consumption

Reversing contactor selection according to utilisation category, see pages 5/194 to 5/197 and 5/200 to 5/203.
Integral mechanical interlock.
**It is essential to link the contacts of the electrical interlock.**
Pre-wired power circuit connections as standard on screw clamp versions.
Mounting on 35 mm ⎽⎽ rail or Ø 4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25

## 3-pole reversing contactors, d.c. supply

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Rated operational current in category AC-3 440V up to | Instantaneous auxiliary contacts per contactor | | Basic reference, to be completed by adding the voltage code *(1) (2)* | Weight |
|---|---|---|---|---|---|---|---|
| 220 V<br>230 V | 380 V<br>415 V | 440/500 V<br>660/690 V | | | | | |
| kW | kW | kW | A | | | | kg |
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | 6 | 1 | – | **LP2 K0610●●** | 0.480 |
| | | | | – | 1 | **LP2 K0601●●** | 0.480 |
| 2.2 | 4 | 4 | 9 | 1 | – | **LP2 K0910●●** | 0.480 |
| | | | | – | 1 | **LP2 K0901●●** | 0.480 |
| 3 | 5.5 | 4 (> 440) | 12 | 1 | – | **LP2 K1210●●** | 0.480 |
| | | 5.5 (440) | | – | 1 | **LP2 K1201●●** | 0.480 |

**Spring terminal connections**

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP2 K0610●●** becomes **LP2 K06103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06107●●**.

**Solder pins for printed circuit boards**

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06105●●**.

## 3-pole low consumption reversing contactors

Compatible with programmable controller outputs.
LED indicator incorporated (except models LP5-K●●●●FW3 and LP5-K●●●●GW3).
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | | |
| 1.5 | 2.2 | 3 | 6 | 1 | – | **LP5 K0610●●** | 0.490 |
| | | | | – | 1 | **LP5 K0601●●** | 0.490 |
| 2.2 | 4 | 4 | 9 | 1 | – | **LP5 K0910●●** | 0.490 |
| | | | | – | 1 | **LP5 K0901●●** | 0.490 |
| 3 | 5.5 | 4 (> 440) | 12 | 1 | – | **LP5 K1210●●** | 0.490 |
| | | 5.5 (440) | | – | 1 | **LP5 K1201●●** | 0.490 |

**Spring terminal connections**

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP5 K0610●●** becomes **LP5 K06103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP5 K0610●●** becomes **LP5 K06107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP5 K0610●●** becomes **LP5 K06105●●**.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**d.c. supply**

**Reversing contactors LP2 K** (0.8…1.15 Uc)

| Volts | 12 | 20 | 24 (3) | 36 | 48 | 60 | 72 | 100 | 110 | 125 | 155 | 174 | 200 | 220 | 230 | 240 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

**Low consumption**

**Reversing contactors LP5 K** (0.7…1.30 Uc)

| Volts | 12 | 20 | 24 | 48 | 72 | 110 | 120 |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

*(2) For LP2 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∼ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*

# TeSys contactors

## Reversing contactors for control in category AC-1, 20 A
Control circuit: a.c.

**Warning: reversing contactors LC2 K0910●● and LC2 K0901●● are pre-wired for reverse motor operation as standard.**
Reversing contactor selection according to utilisation category, see pages 5/198 and 5/199.
Integral mechanical interlock.
**It is essential to link the contacts of the electrical interlock.**
Mounting on 35 mm ⎍ rail or Ø 4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25.

511150

*LC2 K0910●●*

### 3 or 4-pole reversing contactors for standard applications *(1)*

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts per contactor | | | Basic reference, to be completed by adding the voltage code *(2) (3)* | Weight |
|---|---|---|---|---|---|---|---|
| A | | | | | | | kg |
| **Screw clamp connections** | | | | | | | |
| **20** | 3 | – | 1 | – | | **LC2 K0910●●** | 0.390 |
| | | | | | or | **LC2 K1210●●** | 0.390 |
| | 3 | – | – | 1 | | **LC2 K0901●●** | 0.390 |
| | | | | | or | **LC2 K1201●●** | 0.390 |
| | 4 | – | – | – | | **LC2 K09004●●** | 0.380 |
| | | | | | or | **LC2 K12004●●** | 0.380 |

511151

*LC2 K09105●●*

**Spring terminal connections**
In the references selected above, insert a figure **3** before the voltage code.
Example: **LC2 K0910●●** becomes **LC2 K09103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**
In the references selected above, insert a figure **7** before the voltage code.
Example: **LC2 K0910●●** becomes **LC2 K09107●●**.

**Solder pins for printed circuit boards**
In the references selected above, insert a figure **5** before the voltage code.
Example: **LC2 K0910●●** becomes **LC2 K09105●●**.

5

### 3 or 4-pole silent reversing contactors *(1)*

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

511152

*LC2 K09004●●*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | | |
| **20** | 3 | – | 1 | – | | **LC8 K0910●●** | 0.480 |
| | | | | | or | **LC8 K1210●●** | 0.480 |
| | 3 | – | – | 1 | | **LC8 K0901●●** | 0.480 |
| | | | | | or | **LC8 K1201●●** | 0.480 |
| | 4 | – | – | – | | **LC8 K09004●●** | 0.470 |
| | | | | | or | **LC8 K12004●●** | 0.470 |

**Faston connectors, 1 x 6.35 or 2 x 2.8**
In the references selected above, insert a figure **7** before the voltage code.
Example: **LC8 K0910●●** becomes **LC8 K09107●●**.

**Solder pins for printed circuit boards**
In the references selected above, insert a figure **5** before the voltage code.
Example: **LC8 K0910●●** becomes **LC8 K09105●●**.

*(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page 5/198.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**a.c. supply**

**Reversing contactors LC2 K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| Volts | 12 | 20 | 24 (3) | 36 | 42 | 48 | 110 | 115 | 120 | 127 | 200/208 | | 220/230 | 230 | 230/240 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | M7 | P7 | U7 |
| Volts | 256 | 277 | 380/400 | | 400 | 400/415 | | 440 | 480 | 500 | 575 | 600 | 660/690 | | |
| 50/60 Hz | W7 | UE7 | Q7 | | V7 | N7 | | R7 | T7 | S7 | SC7 | X7 | Y7 | | |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**.

**Reversing contactors LC8 K** (0.8…1.1 Uc)

| Volts | 24 | 42 | 48 | 110 | 115 | 220 | 230/240 |
|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | U7 |

*(3) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page 5/24.*

Selection : pages 5/198 and 5/199
Characteristics : pages 5/10 to 5/13
Dimensions : page 5/28
Schemes : page 5/29



Schneider Electric

# TeSys contactors

## Reversing contactors for control in category AC-1, 20 A

Control circuit: d.c. or low consumption

**Warning: reversing contactors LP2 K0910●● and LP2 K0901●● are pre-wired for reverse motor operation as standard.**
Reversing contactor selection according to utilisation category, see pages 5/198 and 5/199.
Integral mechanical interlock.
**It is essential to link the contacts of the electrical interlock.**
Mounting on 35 mm ⎍ rail or Ø 4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages 5/22 to 5/25.

### 3 or 4-pole reversing contactors, d.c. supply *(1)*

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts per contactor | | | Basic reference, to be completed by adding the voltage code *(2) (3)* | Weight |
|---|---|---|---|---|---|---|---|
| A | | | | | | | kg |
| **Screw clamp connections** | | | | | | | |
| **20** | 3 | – | 1 | – | | **LP2 K0910●●** | 0.480 |
| | | | | | or | **LP2 K1210●●** | 0.480 |
| | 3 | – | – | 1 | | **LP2 K0901●●** | 0.480 |
| | | | | | or | **LP2 K1201●●** | 0.480 |
| | 4 | – | – | – | | **LP2 K09004●●** | 0.480 |
| | | | | | or | **LP2 K12004●●** | 0.480 |

**Spring terminal connections**

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP2 K0910●●** becomes **LP2 K09103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP2 K0910●●** becomes **LP2 K09107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP2 K0910●●** becomes **LP2 K09105●●**.

### 3 or 4-pole low consumption reversing contactors *(1)*

Compatible with programmable controller outputs.
LED indicator incorporated (except models LP5 K●●●●FW3 and LP5 K●●●●GW3).
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | | |
| **20** | 3 | – | 1 | – | | **LP5 K0910●●●** | 0.490 |
| | | | | | or | **LP5 K1210●●●** | 0.490 |
| | 3 | – | – | 1 | | **LP5 K0901●●●** | 0.490 |
| | | | | | or | **LP5 K1201●●●** | 0.490 |
| | 4 | – | – | – | | **LP5 K09004●●●** | 0.490 |
| | | | | | or | **LP5 K12004●●●** | 0.490 |

**Spring terminal connections**

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP5 K0910●●** becomes **LP5 K09103●●**.

**Faston connectors, 1 x 6.35 or 2 x 2.8**

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP5 K0910●●** becomes **LP5 K09107●●**.

**Solder pins for printed circuit boards**

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP5 K0910●●** becomes **LP5 K09105●●**.

*(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page 5/198.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**d.c. supply** (reversing contactors LP2 K: 0.8…1.15 Uc)

| Volts ⎓ | 12 | 20 | 24 (3) | 36 | 48 | 60 | 72 | 100 | 110 | 125 | 155 | 174 | 200 | 220 | 230 | 240 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

**Low consumption** (reversing contactors LP5 K: 0.7…130 Uc)

| Volts ⎓ | 12 | 20 | 24 | 48 | 72 | 110 | 120 |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

*(3) For LP2 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*

Selection : pages 5/198 and 5/199
Characteristics : pages 5/10 to 5/13
Dimensions : page 5/28
Schemes : page 5/29

LC1, LC7, LP1 K
LA1 KN●●M
LA1 KN●●
LA2 KT2●
LP4
LA1 KN●●
LA2 KT2●
LC1, LC7, LP1 K
LA2 KT2●
LP4
LA1 KN●●3
LA1 KN●●P
LC1, LP1 K
LA1 KN●●3
LP4
LA1 KN●●7
LC1, LC7, LP1 K
LA1 KN●●7

# TeSys contactors

## TeSys K contactors and reversing contactors

### Auxiliary contact blocks

## Instantaneous auxiliary contact blocks

**Recommended for standard applications. Clip-on front mounting, 1 block per contactor**

| Connection | For use on contactors | Composition | | Reference | Weight |
|---|---|---|---|---|---|
| | | | | | kg |
| **Screw clamp terminals** | All products with screw clamp terminals | 2 | – | **LA1 KN20** | 0.045 |
| | | – | 2 | **LA1 KN02** | 0.045 |
| | | 1 | 1 | **LA1 KN11** | 0.045 |
| | All products with screw clamp terminals except low consumption | 4 | – | **LA1 KN40** | 0.045 |
| | | 3 | 1 | **LA1 KN31** | 0.045 |
| | | 2 | 2 | **LA1 KN22** | 0.045 |
| | | 1 | 3 | **LA1 KN13** | 0.045 |
| | | – | 4 | **LA1 KN04** | 0.045 |
| **Spring terminals** | All products with spring terminals | 2 | – | **LA1 KN203** | 0.045 |
| | | – | 2 | **LA1 KN023** | 0.045 |
| | | 1 | 1 | **LA1 KN113** | 0.045 |
| | All products with spring terminals except low consumption | 4 | – | **LA1 KN403** | 0.045 |
| | | 3 | 1 | **LA1 KN313** | 0.045 |
| | | 2 | 2 | **LA1 KN223** | 0.045 |
| | | 1 | 3 | **LA1 KN133** | 0.045 |
| | | – | 4 | **LA1 KN043** | 0.045 |
| **Faston connectors, 1 x 6.35 or 2 x 2.8** | All products with Faston connectors | 2 | – | **LA1 KN207** | 0.045 |
| | | – | 2 | **LA1 KN027** | 0.045 |
| | | 1 | 1 | **LA1 KN117** | 0.045 |
| | All products with Faston connectors except low consumption | 4 | – | **LA1 KN407** | 0.045 |
| | | 3 | 1 | **LA1 KN317** | 0.045 |
| | | 2 | 2 | **LA1 KN227** | 0.045 |
| | | 1 | 3 | **LA1 KN137** | 0.045 |
| | | – | 4 | **LA1 KN047** | 0.045 |

**With terminal referencing to standard EN 50012. Clip-on front mounting, 1 block per contactor**

| | | | | | |
|---|---|---|---|---|---|
| **Screw clamp terminals with referencing conforming to standard EN 50012** | All 3-pole + N/O products with screw clamp terminals except LP4 and LP5 K12 | – | 2 | **LA1 KN02M** | 0.045 |
| | | 1 | 1 | **LA1 KN11M** | 0.045 |
| | All 3-pole + N/O products with screw clamp terminals except LP4 or LP5 K06, K09 and K12 | 3 | 1 | **LA1 KN31M** | 0.045 |
| | | 2 | 2 | **LA1 KN22M** | 0.045 |
| | | 1 | 3 | **LA1 KN13M** | 0.045 |
| | All 4-pole products with screw clamp terminals except LP4 or LP5 K12 | 1 | 1 | **LA1 KN11P** | 0.045 |
| | All 4-pole products with screw clamp terminals except LP4 or LP5 K09 and K12 | 2 | 2 | **LA1 KN22P** | 0.045 |

## Electronic time delay auxiliary contact blocks

Relay output with common point changeover contact, ∿ or ⎓ 240 V, 2 A maximum.
Control voltage 0.85…1.1 Uc.
Maximum switching capacity 250 VA or 150 W.
Operating temperature -10…+ 60 °C.
Reset time: 1.5 s during the time delay period, 0.5 s after the time delay period.

**Clip-on front mounting, 1 block per contactor**

| Voltage | Type | Timing range | Composition | Reference | Weight |
|---|---|---|---|---|---|
| V | | s | | | kg |
| ∿ or ⎓ 24…48 | On-delay | 1…30 | 1 | **LA2 KT2E** | 0.040 |
| ∿ 110…240 | On-delay | 1…30 | 1 | **LA2 KT2U** | 0.040 |

Characteristics : page 5/13
Dimensions : pages 5/26 and 5/28
Schemes : pages 5/27 and 5/29

# TeSys contactors

## TeSys K contactors and reversing contactors

### Suppressor modules incorporating LED indicator

*LA4 K●●●*

## References

| Mounting and connection | Type | For voltages | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|
| **Clip-on fixing on the front of contactors LC1 and LP1, with locating device. No tools required.** | Varistor *(1)* | ∿ and ⎓ 12…24 V | 5 | **LA4 KE1B** | 0.010 |
| | | ∿ and ⎓ 32…48 V | 5 | **LA4 KE1E** | 0.010 |
| | | ∿ and ⎓ 50…129 V | 5 | **LA4 KE1FC** | 0.010 |
| | | ∿ and ⎓ 130…250 V | 5 | **LA4 KE1UG** | 0.010 |
| | Diode + Zener diode *(2)* | ⎓ 12…24 V | 5 | **LA4 KC1B** | 0.010 |
| | | ⎓ 32…48 V | 5 | **LA4 KC1E** | 0.010 |
| | RC *(3)* | ∿ 110…250 V | 5 | **LA4 KA1U** | 0.010 |

*(1) Protection provided by limiting the transient voltage to 2 Uc max.*
*Maximum reduction of transient voltage peaks.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(2) No overvoltage or oscillating frequency.*
*Polarised component.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(3) Protection by limiting the transient voltage to 3 Uc max. and limitation of the oscillating frequency.*
*Slight increase in drop-out time (1.2 to 2 times the normal time).*



Characteristics : page 5/13
Dimensions : pages 5/26 and 5/28
Schemes : pages 5/27 and 5/29

# TeSys contactors

## TeSys K contactors and reversing contactors

### Accessories

565019

DX1 AP25

## Mounting and marking accessories

| Description | Application | | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|
| **Mounting plates** *(1)* | For fixing on 1 ⊏ rail | Clip-on | 1 | **LA9 D973** | 0.025 |
| | For fixing on 2 ⊏ rails | 110/120 mm fixing centres | 10 | **DX1 AP25** | 0.065 |
| **Marker holder** | Clip-on | Onto front of contactor | 100 | **LA9 D90** | 0.001 |
| **Clip-in markers** | 4 maximum per contactor | Strips of 10 identical numbers 0…9 | 25 | **AB1 P●** *(2)* | 0.002 |
| | | Strips of 10 identical letters A…Z | 25 | **AB1 G●** *(2)* | 0.002 |

565020

LA9 E01

## Connection accessories

| Description | Application | | Sold in lots of | Unit preference | Weight kg |
|---|---|---|---|---|---|
| **Paralleling links** | For 2 poles | With screw clamps | 4 | **LA9 E01** | 0.010 |
| | For 4 poles | With screw clamps | 2 | **LA9 E02** | 0.015 |
| **Set of 6 power connections** | For 3-pole reversing contactors for motor control | For contactors with screw clamp terminals | 100 | **LA9 K0969** | 0.010 |
| **Set of 4 power connections** | For 4-pole changeover contactor pairs | For contactors with screw clamp terminals | 100 | **LA9 K0970** | 0.010 |

*(1) Order 1 mounting plate for fixing a contactor and 2 mounting plates for fixing a reversing contactor.*
*(2) Complete the reference by replacing the dot with the required character.*



Characteristics : page 5/13
Dimensions : pages 5/26 and 5/28
Schemes : pages 5/27 and 5/29

## Contactors

### LC1 K, LC7 K, LP1 K, LP4 K

On panel

On mounting rail AM1 DP200 or AM1 DE200 (ـ 35 mm)

### LA9 D973

On one asymmetrical rail DZ5 MB with clip-on mounting plates

On printed circuit board

### DX1 AP25

## Electronic time delay contact blocks

### LA2 KT

On contactor

## Suppressor modules

### LA4 K●

On contactor LC1 K or LP1 K

Characteristics : pages 5/10 to 5/13
References : pages 5/14 to 5/17
Schemes : page 5/27

# TeSys contactors
## TeSys K reversing contactors

### 3-pole contactors

3 P + N/O

3 P + N/C

### With integral suppression device

LC7 K

LP4 K

### 4-pole contactors

4 P

2 P N/O + 2 P N/C

### With integral suppression device

LC7 K

LP4 K

### Instantaneous auxiliary contacts LA1 K

**LA1 KN20, KN207, KN203**

2 N/O

**LA1 KN02, KN027, KN023**

2 N/C

**LA1 KN11, KN117, KN113**

1 N/O + 1 N/C

**LA1 KN40, KN407, KN403**

4 N/O

**LA1 KN31, KN317, KN313**

3 N/O + 1 N/C

**LA1 KN22, KN227, KN223**

2 N/O + 2 N/C

**LA1 KN13, KN137, KN133**

1 N/O + 3 N/C

**LA1 KN04, KN047, KN043**

4 N/C

### Terminal referencing conforming to standard EN 50012

**LA1 KN02M**

2 N/C

**LA1 KN11M**

1 N/O + 1 N/C

**LA1 KN31M**

3 N/O + 1 N/C

**LA1 KN22M**

2 N/O + 2 N/C

**LA1 KN13M**

1 N/O + 3 N/C

**LA1 KN11P**

1 N/O + 1 N/C

**LA1 KN22P**

2 N/O + 2 N/C

### Electronic time delay contact blocks

**LA2 KT**

1 C/O

### Suppressor modules

**LA4 KC**

**LA4 KE**

Characteristics : pages 5/10 to 5/13
References : pages 5/14 to 5/17
Dimensions : page 5/26

## Reversing contactors

### LC2 K, LC8 K, LP2 K, LP5 K

On panel

On mounting rail AM1 DP200 or AM1 DE200 (⊔ 35 mm)

### 2 x LA9 D973

On one asymmetrical mounting rail DZ5 MB with 2 clip-on mounting plates LA9 D973 or on 2 mounting plates DX1 AP25.

### 2 x DX1 AP25

On printed circuit board for reversing contactors or 2 contactors mounted side by side

## Electronic time delay contact blocks

### LA2 KT

On reversing contactors

## Suppressor modules

### LA4 K●

On reversing contactors LC2 K or LP2 K

Characteristics : pages 5/10 to 5/13
References : pages 5/18 to 5/21
Schemes : page 5/29

# TeSys contactors
## TeSys K reversing contactors

### 3-pole reversing contactors

**With screw clamp connections**

3 P + N/O

3 P + N/C

**With integral suppression device**

**LC8 K**

**LP5 K**

**With Faston connectors or solder pins (printed circuit board)**

3 P + N/O

3 P + N/C

### 4-pole reversing contactors

**With screw clamp connections**

4 P

**With Faston connectors or solder pins (printed circuit board)**

4 P

**Integral suppression device**

**LC8 K**

**LP5 K**

### Instantaneous auxiliary contacts LA1 K

Terminal referencing conforming to standard EN 50012

**LA1 KN20, KN207, KN203**

2 N/O

**LA1 KN02, KN027, KN023**

2 N/C

**LA1 KN11, KN117, KN113**

1 N/O + 1 N/C

**LA KN02M**

2 N/C

**LA1 KN11M**

1 N/O + 1 N/C

**LA1 KN11P**

1 N/O + 1 N/C

**LA1 KN40, KN407, KN403**

4 N/O

**LA1 KN31, KN317, KN313**

3 N/O + 1 N/C

**LA1 KN22, KN227, KN223**

2 N/O + 2 N/C

**LA KN13, KN137, KN133**

1 N/O + 3 N/C

**LA1 KN04, KN047, KN043**

4 N/C

### Electronic time delay contact blocks

**LA2 KT**

1 C/O

### Suppressor modules

**LA4 KC**

**LA4 KE**

Characteristics : pages 5/10 to 5/13
References : pages 5/18 to 5/21
Dimensions : page 5/28

## Environment

| | | | | |
|---|---|---|---|---|
| **Rated insulation voltage** (Ui) | Conforming to 60947, VDE 0110 gr C,BS 5424, CSA 22-2 n° 14, UL 508 | **V** | 690 | |
| **Conforming to standards** | | | IEC 60947, NF C 63-110, VDE 0660, BS 5424 | |
| **Approvals** | | | UL, CSA | |
| **Protective treatment** | Conforming to IEC 60068 (DIN 50015) | | "TC" (Klimafest, Climateproof) | |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact | |
| **Ambient air temperature around the device** | Storage | **°C** | - 50…+ 70 | |
| | Operation | **°C** | - 20…+ 50 | |
| **Maximum operating altitude** | Without derating | **m** | 2000 | |
| **Operating position** | | | **Vertical axis** Without derating | **Horizontal axis** Without derating |
| **Cabling, screw clamp terminals** | | | Min | Max |
| | Solid conductor | **mm²** | 1 x 1.5 or 2 x 1.5 | 1 x 6 or 2 x 4 |
| | Flexible cable without cable end | **mm²** | 1 x 0.5 or 2 x 0.35 | 1 x 6 or 2 x 2.5 |
| | Flexible cable with cable end | **mm²** | 1 x 0.35 or 2 x 0.35 | 1 x 6 or 2 x 1.5 |
| **Tightening torque** | Pozidriv n° 1 head | **N.m** | 0.8 | |
| **Terminal referencing** | | | Conforming to standards En 50005 | |



References:
pages 5/34 and 5/35

Dimensions:
page 5/36

Schemes:
page 5/37

## Pole characteristics

| | | | |
|---|---|---|---|
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 55 °C | **A** | 12 |
| **Rated operational frequency** | | **Hz** | 50/60 |
| **Frequency limits of the operational current** | | **Hz** | Up to 400 |
| **Rated operational voltage** (Ue) | | **V** | 690 |
| **Rated making capacity** | I rms conforming to NF C 63-110 and IEC 60947 | **A** | 66 |
| **Rated breaking capacity** (for Ue ≤ 400 V) | Conforming to NF C 63-110 and IEC 60947 (I rms) | **A** | 52 |
| **Short time rating** | In free air for a time "t" from cold state (θ ≤ 55 °C) | **A** | 50 |
| **Short-circuit protection** | gl fuse U ≤ 440 V | **A** | 16 |
| **Average impedance per pole** | At Ith and 50 Hz | **mΩ** | 4 |
| **Maximum rated operational current** | | | |
| For a temperature ≤ 55 °C | AC-3 *(1)* (Ue ≤ 400 V) | **A** | 6 |
| | AC-1 | **A** | 12 |
| **Utilisation in category AC-1 resistive circuits, heating, lighting** (Ue ≤ 440 V) | Increase in operational current by paralleling of poles | **A** | 20 |

## Auxiliary contact characteristics of add-on blocks

| | | | |
|---|---|---|---|
| **Rated operational voltage** (Ue) | Up to | **V** | 690 |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947, BS 5424, VDE 0110 group C, CSA C 22-2 n° 14 | **V** | 690 |
| **Conventional thermal current** (Ith) | For ambiant temperature ≤ 55 °C | **A** | 10 |
| **Frequency of operational current** | | **Hz** | Up to 400 |
| **Short-circuit protection** | Conforming to IEC 60947 and VDE 0660, gl fuse | **A** | 10 |

## Operational power of contacts conforming to IEC 60947

**a.c. supply, category AC-15**

Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the breaking current (cos φ 0.4).

| | **V** | **24** | **48** | **110/ 127** | **220/ 230** | **380/ 400** | **440** |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 48 | 96 | 240 | 440 | 800 | 880 |
| 3 million operating cycles | **VA** | 17 | 34 | 86 | 158 | 288 | 317 |
| 10 million operating cycles | **VA** | 7 | 14 | 36 | 66 | 120 | 132 |
| Occasional making capacity | **VA** | 1000 | 2050 | 5000 | 10000 | 14000 | 13000 |

**d.c. supply, category DC-13**

Electrical durability (valid up to 1200 operating cycles per hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| **V** | **24** | **48** | **110** | **220** | **440** |
|---|---|---|---|---|---|
| **W** | 120 | 80 | 60 | 52 | 51 |
| **W** | 55 | 38 | 30 | 28 | 26 |
| **W** | 15 | 11 | 9 | 8 | 7 |
| **W** | 720 | 600 | 400 | 300 | 230 |

*(1) For LC1 contactors.*

References: pages 5/34 and 5/35
Dimensions: page 5/36
Schemes: page 5/37

## Control circuit characteristics

| Type | | | LC1 SK06 | LP1 SK06 |
|---|---|---|---|---|
| **Rated control circuit voltage** (Uc) | | **V** | ∼ 24…400 | ⎓ 12…72 |
| **Control voltage limits** (θ ≤ 50 °C) | For operation | | 0.85…1.1 Uc | 0.85…1.1 Uc |
| | For drop-out | | ≥ 0.20 Uc | ≥ 0.10 Uc |
| **Average coil consumption at 20 °C and at Uc** | Inrush | | 16 VA | 2.2 W |
| | Sealed | | 4.2 VA | 2.2 W |
| **Heat dissipation** | | **W** | 1.4 | 2.2 |
| **Operating time at 20 °C and at Uc** | | | | |
| Between coil energisation and | opening of the N/C contacts | **ms** | 8…16 | 10…18 |
| | closing of the N/O contacts | **ms** | 7…14 | 8…12 |
| Between coil de-energisation and | opening of the N/O contacts | **ms** | 6…8 | 4…6 |
| | closing of the N/C contacts | **ms** | 8…10 | 6…8 |
| **Maximum operating rate** | In operating cycles per hour | | 1200 | 1200 |
| **Mechanical durability at Uc** In millions of operating cycles | 50/60 Hz coil | | 10 | – |
| | ⎓ coil | | – | 10 |

5

References:
pages 5/34 and 5/35

Dimensions:
page 5/36

Schemes:
page 5/37

## Use in category AC-3 (Ue ≤ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

## Use in category AC-1 (Ue ≤ 440 V)

Control of resistive circuits (cos φ ≥ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

References:
pages 5/34 and 5/35

Dimensions:
page 5/36

Schemes :
page 5/37

# TeSys contactors

## Mini-contactors TeSys LC1 SK and LP1 SK

- Width of contactor 27 mm.
- Mounting on 35 mm ⎍ rail.
- Screw clamp terminals.

511131

*LC1 SK06*

### Mini-contactors for motor in category AC-3

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 *(1)* 220 V 230 V | 380 V 415 V | 660 V 690 V | Rated operational voltage in AC-3 up to 400 V | Number of poles | Instantaneous auxiliary contacts | | Basic reference. Complete with code indicating control circuit voltage *(2)* | Weight |
|---|---|---|---|---|---|---|---|---|
| kW | kW | kW | A | | | | | kg |
| 1.1 | 2.2 | 2.2 | 6 | 2 | – | – | **LC1 SK0600●●** | 0.132 |

### Mini-contactors for motor in category AC-1

| Non inductive loads maximum current (θ ≤ 55 °C) utilisation category AC-1 | Control circuit supply | Number of poles | Instantaneous auxiliary contacts | | Basic reference. Complete with code indicating control circuit voltage *(2)* | Weight |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **12** | a.c. | 2 | – | – | **LC1 SK0600●●** | 0.132 |
| | d.c. | 2 | – | – | **LP1 SK0600●●** | 0.132 |

511132

*LA1 SK10*

### Add-on block with 1 power pole (for 3-phase circuits)

| For use on contactor | Number of poles | Instantaneous auxiliary contacts | | Reference | Weight kg |
|---|---|---|---|---|---|
| **LC1 SK06** clip-on front mounting | 1 | 1 | – | **LA1 SK10** | 0.022 |
| | 1 | – | 1 | **LA1 SK01** | 0.022 |

***Nota :*** *Auxiliary contact blocks and coil suppressor module, see next page.*

*(1) For use in AC-3 category and 3-phase circuits, an LA1 SK●● auxiliary contact block should be ordered separately for mounting on the contactor.*
*(2) Standard control circuit voltages (variable delivery times, please consult your Regional Sales Office):*

| Mini-contactors LC1 SK | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Volts ∼ 50/60 Hz** | **24** | **48** | **110** | **120** | **220** | **230** | **240** | **380** | **400** |
| **Code** | B7 | E7 | F7 | G7 | M7 | P7 | U7 | Q7 | V7 |
| **Mini-contactors LP1 SK** | | | | | | | | | |
| **Volts ⎓** | **12** | **24** | **36** | **48** | **72** | | | | |
| **Code** | JD | BD | CD | ED | SD | | | | |

Characteristics: pages 5/30 to 5/33
Dimensions: page 5/36
Schemes: page 5/37

# TeSys contactors

## Mini-contactors TeSys LC1 SK and LP1 SK

### Instantaneous auxiliary contact blocks and coil suppressor modules

511133

*LA1 SK11*

## Instantaneous auxiliary contact blocks

**Clip-on front mounting**

| For use on contactor | Maximum number of blocks per contactor | Composition | | Reference | Weight kg |
|---|---|---|---|---|---|
| **LC1 SK06** | 1 | 2 | – | **LA1 SK20** | 0.022 |
| | | – | 2 | **LA1 SK02** | 0.022 |
| | | 1 | 1 | **LA1 SK11** | 0.022 |

511134

*LA4 SK●1●*

## Coil suppressor modules

**Clip-on fixing and electrical connection on right-hand side, without use of tools**

| For use on contactors | Type | For voltages | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|
| **LC1 SK06 and LP1 SK06** | Varistor *(1)* | ∼ and ⎓ 24 V…48 V | 10 | **LA4 SKE1E** | 0.003 |
| | | ∼ and ⎓ 110 V…250 V | 10 | **LA4 SKE1U** | 0.003 |
| | Diode *(2)* | ⎓ 24 V…250 V | 10 | **LA4 SKC1U** | 0.003 |

*(1) Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(2) No overvoltage or oscillating frequency.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*

5

Characteristics: pages 5/30 to 5/33
Dimensions: page 5/36
Schemes: page 5/37

## Dimensions

### Mini-contactors

**LC1 and LP1 SK06**

*(1) Only on LC1 SK06.*

## Mounting

### Mini-contactors

**LC1 and LP1 SK06**

**On mounting rail AM1 DP200 or AM1 DE200 (ـ 35 mm)**

## Schemes

### 2-pole mini-contactors

**LC1 and LP1 SK06**

### Add-on power pole block

**1 pole + 1 "N/O" aux.**

**LA1 SK10**

**1 pole + 1 "N/C" aux.**

**LA1 SK01**

### Instantaneous auxiliary contacts

**2 "N/O"**

**LA1 SK20**

**2 "N/C"**

**LA1 SK02**

**1 "N/O" + 1 "N/C"**

**LA1 SK11**

Characteristics:
pages 5/30 to 5/33

References :
pages 5/34 and 5/35

Dimensions:
page 5/36

## Environment

| | | | | |
|---|---|---|---|---|
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947, VDE 0110 gr C, BS 5424, CSA 22-2 n° 14, UL 508 | **V** | 690 | |
| **Conforming to standards** | | | IEC 60947, NF C 63-110, VDE 0660, BS 5424 | |
| **Product certifications** | | | UL, CSA | |
| **Protective treatment** | Conforming to IEC 60068 (DIN 50015) | | "TC" (Klimafest, Climateproof) | |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact | |
| **Ambient air temperature around the device** | | | | |
| | Storage | **°C** | - 50…+ 70 | |
| | Operation | **°C** | - 20…+ 50 | |
| **Maximum operating altitude** | Without derating | **m** | 2000 | |
| **Operating position** | | | **Vertical axis** | **Horizontal axis** |
| | | | Without derating | Without derating |
| **Cabling, connectors** | | | **Min.** | **Max.** |
| | Solid conductor | **mm²** | 1 x 1.5 or 2 x 1.5 | 1 x 6 or 2 x 4 |
| | Flexible cable without cable end | **mm²** | 1 x 0.5 or 2 x 0.35 | 1 x 6 or 2 x 2.5 |
| | Flexible cable with cable end | **mm²** | 1 x 0.35 or 2 x 0.35 | 1 x 6 or 2 x 1.5 |
| **Tightening torque** | Pozidriv n° 1 head | **N.m** | 0.8 | |
| **Terminal referencing** | | | Conforming to standards En 50005 | |

5

References :
pages 5/42 and 5/43

Dimensions :
page 5/44

Schemes :
page 5/45

# TeSys contactors

## Mini-contactors TeSys LC1 SKGC, for use in modular panels

### Pole characteristics

| Mini-contactor type | | | | LC1 SKGC2 | LC1 SKGC3 and LC1 SKGC4 |
|---|---|---|---|---|---|
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 55 °C | | A | 20 | 20 |
| **Rated operational frequency** | | | Hz | 50/60 | |
| **Frequency limit of the operational current** | | | Hz | up to 400 | |
| **Rated operational voltage** (Ue) | | | V | 690 | |
| **Rated making capacity** | I rms conforming to NF C 63-110 and IEC 60947 | | A | 50 | 85 |
| **Rated breaking capacity** (for Ue ≤ 400 V) | Conforming to NF C 63-110 and IEC 60947 (I rms) | | A | 40 | 68 |
| **Permissible short time rating** | In free air for a time "t" from cold state (q ≤ 55 °C) | | A | 40 | 60 |
| **Short-circuit protection** | gl fuse U ≤ 440 V | | A | 20 | 20 |
| **Average impedance per pole** | At Ith and 50 Hz | | mΩ | 4 | 4 |
| **Maximum rated operational current** | For temperature ≤ 55 °C | AC-3 (Ue ≤ 400 V) | A | 5 | 9 |
| | | AC-1 | A | 20 | 20 |
| **Use in category AC-1 resistive circuits, heating, lighting** (Ue ≤ 440 V) | Increase in rated operational current by paralleling of 2 poles | | A | 32 | 32 |

### Auxiliary contact characteristics of mini-contactors

| | | | | |
|---|---|---|---|---|
| **Rated operational voltage** (Ue) | Up to | | V | 690 |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947, BS 5424, VDE 0110 group C, CSA C 22-2 n° 14 | | V | 690 |
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 55 °C | | A | 10 |
| **Frequency of the operational current** | | | Hz | Up to 400 |
| **Short-circuit protection** | Conforming to IEC 60947 and VDE 0660, gl fuse | | A | 10 |

**Operational power of contacts** conforming to IEC 60947

**a.c. supply, category AC-15**
Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

**d.c. supply, category DC-13**
Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | V | 24 | 48 | 110/127 | 220/230 | 380/400 | 440 | V | 24 | 48 | 110 | 220 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 48 | 96 | 240 | 440 | 800 | 880 | W | 120 | 80 | 60 | 52 | 51 |
| 3 million operating cycles | VA | 17 | 34 | 86 | 158 | 288 | 317 | W | 55 | 38 | 30 | 28 | 26 |
| 10 million operating cycles | VA | 7 | 14 | 36 | 66 | 120 | 132 | W | 15 | 11 | 9 | 8 | 7 |
| Occasional making capacity | VA | 1000 | 2050 | 5000 | 10000 | 14000 | 13000 | W | 720 | 600 | 400 | 300 | 230 |



References : pages 5/42 and 5/43
Dimensions : page 5/44
Schemes : page 5/45

## Control circuit characteristics

| Mini-contactor type | | | LC1 SKGC2 | LC1 SKGC3 and LC1 SKGC4 |
|---|---|---|---|---|
| **Rated control circuit voltage** (Uc) | | V | ∼ 24…400 | |
| **Control voltage limits** (θ ≤ 55 °C) | Operation | | 0.85…1.1 Uc | |
| | For drop-out | | ≥ 0.20 Uc | |
| **Average coil consumption at 20 °C and at Uc** | Inrush | VA | 16 | 23 |
| | Sealed | VA | 4.2 | 4.9 |
| **Heat dissipation** | | W | 1.4 | 1.5 |
| **Operating time at 20 °C and at Uc** | | | | |
| Between coil energisation and | opening of the N/C contacts | ms | 8…16 | |
| | closing of the N/O contacts | ms | 7…14 | |
| Between coil de-energisation and | opening of the N/O contacts | ms | 6…8 | |
| | closing of the N/C contacts | ms | 8…10 | |
| **Maximum operating rate** | In operating cycles per hour | | 1200 | |
| **Mechanical durability at Uc** in millions of operating cycles | 50/60 Hz coil | | 10 | |

5

References :
pages 5/42 and 5/43

Dimensions :
page 5/44

Schemes :
page 5/45

## Use in category AC-3 (Ue ≤ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current of the motor.

1 LC1 SKGC2
2 LC1 SKGC3 and SKGC4
- - - - - only up to 415 V

## Use in category AC-1 (Ue ≤ 440 V)

Control of resistive circuits (cos φ ≥ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

References : pages 5/42 and 5/43
Dimensions : page 5/44
Schemes : page 5/45

# TeSys contactors

## Mini-contactors TeSys LC1 SKGC, for use in modular panels

- Mounting on 35 mm ⎍ rail or fixing by four Ø 4 screws, except for LC1 SKGC200.
- Connection by connectors.
- Mini-contactor fitted with transparent, sealable protective cover to prevent front face access.

511135

*LC1 SKGC200*

### Mini-contactors, width 27 mm

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Rated operational current in AC-3 up to 400 V | Non inductive loads category AC-1 maximum current θ ≤ 50 °C | No. of poles | | | Basic reference, to be completed by adding the voltage code *(1)* | Weight |
|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 660 V 690 V | | | | | | | |
| kW | kW | kW | A | A | | | | | kg |
| – | – | – | 5 | 20 | 2 | – | – | **LC1 SKGC200●●** | 0.132 |

511136

*LC1 SKGC400*

### Mini-contactors, width 45 mm

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Rated operational current in AC-3 up to 400 V | Non inductive loads category AC-1 maximum current θ ≤ 50 °C | No. of poles | | | Basic reference, to be completed by adding the voltage code *(1)* | Weight |
|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 660 V 690 V | | | | | | | |
| kW | kW | kW | A | A | | | | | kg |
| 1.1 | 4 | 4 | 9 | 20 | 3 | 1 | – | **LC1 SKGC310●●** | 0.175 |
| | | | | | 3 | – | 1 | **LC1 SKGC301●●** | 0.175 |
| | | | | | 4 | – | – | **LC1 SKGC400●●** | 0.175 |

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)*

| Volts ∼ 50/60 Hz | 24 | 48 | 110 | 120 | 220 | 230 | 240 | 380 | 400 |
|---|---|---|---|---|---|---|---|---|---|
| Code | B7 | E7 | F7 | G7 | M7 | P7 | U7 | Q7 | V7 |

Characteristics : pages 5/38 to 5/41
Dimensions : page 5/44
Schemes : page 5/45

# TeSys contactors

## Mini-contactors TeSys LC1 SKGC, for use in modular panels

### Suppressor modules

511134

*LA4 SK●1●*

**Suppressor modules**

**Connection without need for tools by clipping onto right-hand side of contactor**

| For use on contactors | Type | For voltages | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|
| **LC1 SKGC** | Varistor *(1)* | ∿ and ⎓ 24…48 V | 10 | **LA4 SKE1E** | 0.003 |
| | | ∿ and ⎓ 110…250 V | 10 | **LA4 SKE1U** | 0.003 |
| | Diode *(2)* | ⎓ 24…250 V | 10 | **LA4 SKC1U** | 0.003 |

*(1) Protection provided by limiting the transient voltage to 2 Uc max.*
*Maximum reduction of transient voltage peaks.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(2) No overvoltage or oscillating frequency.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*

5

Characteristics : pages 5/38 to 5/41
Dimensions : page 5/44
Schemes : page 5/45

# TeSys contactors

## Mini-contactors TeSys LC1 SKGC, for use in modular panels

### Dimensions

**Mini-contactors LC1 SKGC2**

### Mounting

**On mounting rail AM1 DP200 or AM1 DE200 (ـ 35 mm)**

### Dimensions

**Mini-contactors LC1 SKGC3 and SKGC4**

### Mounting

**On panel**

**On mounting rail AM1 DP200 or AM1 DE200 (ـ 35 mm)**

5

Characteristics : pages 5/38 to 5/41
References : pages 5/42 and 5/43
Schemes : page 5/45



Schneider Electric

# TeSys contactors

## Mini-contactors TeSys LC1 SKGC, for use in modular panels

### 2-pole mini-contactors

**LC1 SKGC2**

### 3-pole mini-contactors

**LC1 SKGC310**

**LC1 SKGC301**

### 4-pole mini-contactors

**LC1 SKGC400**

5

Characteristics :
pages 5/38 to 5/41

References :
pages 5/42 and 5/43

Dimensions :
page 5/44

# TeSys contactors
## TeSys D contactors

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Applications** | | **All types of control system** | | | | | |
| | | | | | | | |
| **Rated operational current** | Ie max AC-3 (Ue ≤ 440 V) | 9 A | 12 A | 18 A | 25 A | 32 A | 38 A |
| | Ie AC-1 (θ ≤ 60 °C) | 20/25 A | | 25/32 A | 25/40 A | 50 A | |
| **Rated operational voltage** | | 690 V on ∿ and ⎓ | | | | | |
| **Number of poles** | | 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 | 3 | |
| **Rated operational power in AC-3** | 220/240 V | 2.2 kW | 3 kW | 4 kW | 5.5 kW | 7.5 kW | 9 kW |
| | 380/400 V | 4 kW | 5.5 kW | 7.5 kW | 11 kW | 15 kW | 18.5 kW |
| | 415/440 V | 4 kW | 5.5 kW | 9 kW | 11 kW | 15 kW | 18.5 kW |
| | 500 V | 5.5 kW | 7.5 kW | 10 kW | 15 kW | 18.5 kW | 18.5 kW |
| | 660/690 V | 5.5 kW | 7.5 kW | 10 kW | 15 kW | 18.5 kW | 18.5 kW |
| | 1000 V | – | – | – | – | – | – |
| **Auxiliary contacts** | | 1 N/C and 1 N/O instantaneous incorporated in the contactors, with add-on blocks common to the whole range comprising up to 4 N/C or N/O instantaneous, up to 1 N/O + 1 N/C time delay and up to 2 N/O or 2 N/C protected contacts and 2 screen continuity terminals. | | | | | |
| **Thermal overload relays manual-auto compatible** | Class 10 A | 0.10…10 A | 0.10…13 A | 0.10…18 A | 0.10…32 A | 0.10…38 A | 0.10…38 A |
| | Class 20 | 2.5…10 A | 2.5…13 A | 2.5…18 A | 2.5…32 A | | |
| **Suppressor modules** (⎓ and low consumption contactors are fitted with a built-in bidirectional peak limiting diode suppressor as standard) | Varistor | • | • | • | • | • | • |
| | Diode | – | – | – | – | – | – |
| | RC circuit | • | • | • | • | • | • |
| | Bidirectional peak limiting diode | • | • | • | • | • | • |
| **Interfaces** | Relay output | • | • | • | • | • | • |
| | Relay interface with manual override switch | • | • | • | • | • | • |
| | Solid state | • | • | • | • | • | • |
| **Contactor type references** | ∿ or ⎓ 3 pole | **LC1 D09** | **LC1 D12** | **LC1 D18** | **LC1 D25** | **LC1 D32** | **LC1 D38** |
| | ∿ 4 pole | **LC1 DT20/** | **LC1 DT25/** | **LC1 DT32/** | **LC1 DT40/** | **–** | **–** |
| | ⎓ 4 pole | **LC1 D098** | **LC1 D128** | **LC1 D188** | **LC1 D258** | **–** | **–** |
| **Reversing contactor type references** | ∿ 3 pole | **LC2 D09** | **LC2 D12** | **LC2 D18** | **LC2 D25** | **LC2 D32** | **LC2 D38** |
| | ⎓ 3 pole | **LC2 D09** | **LC2 D12** | **LC2 D18** | **LC2 D25** | **LC2 D32** | **LC2 D38** |
| | ∿ 4 pole | **LC2 DT20** | **LC2 DT25** | **LC2 DT32** | **LC2 DT40** | **–** | **–** |
| | ⎓ 4 pole | **LC2 DT20** | **LC2 DT25** | **LC2 DT32** | **LC2 DT40** | **–** | **–** |
| **Pages** | Contactors | 5/62 to 5/67 | | | | | |
| | Reversing contactors | 5/72 to 5/75 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 40 A | 50 A | 65 A | 80 A | 95 A | 115 A | 150 A |
| 60 A | 80 A | | 125 A | | 200 A | |
| 690 V ∼ or ⎓ | | | 1000 V on ∼ supply, 690 V on ⎓ supply | | | |
| 3 / 4 | 3 | 3 / 4 | 3 / 4 | 3 | 3 / 4 | 3 |
| 11 kW | 15 kW | 18.5 kW | 22 kW | 25 kW | 30 kW | 40 kW |
| 18.5 kW | 22 kW | 30 kW | 37 kW | 45 kW | 55 kW | 75 kW |
| 22 kW | 25/30 kW | 37 kW | 45 kW | 45 kW | 59 kW | 80 kW |
| 22 kW | 30 kW | 37 kW | 55 kW | 55 kW | 75 kW | 90 kW |
| 30 kW | 33 kW | 37 kW | 45 kW | 45 kW | 80 kW | 100 kW |
| – | – | – | 45 kW | 45 kW | 75 kW | 90 kW |

1 N/C and 1 N/O instantaneous incorporated in the contactors, with add-on blocks common to the whole range comprising up to 4 N/C or N/O instantaneous, up to 1 N/O + 1 N/C time delay and up to 2 N/O or 2 N/C protected contacts and 2 screen continuity terminals.

| | | | | | | |
|---|---|---|---|---|---|---|
| 13…40 A | 13…50 A | 13…65 A | 17…104 A | 17…104 A | 60…150 A | 60…150 A |
| 13…40 A | 13…50 A | 13…65 A | 17…80 A | | 60…150 A | 60…150 A |
| ● / ● | ● | ● / ● | ● / ● | ● | ● / ● | – |
| ● / ● | ● | ● / ● | ● / ● | ● | – / – | – |
| ● / ● | ● | ● / ● | ● / ● | ● | ● / ● | ● |
| ● / ● | ● | ● / ● | ● / ● | ● | – / – | – |
| ● / ● | ● | ● / ● | ● / ● | ● | ● / ● | ● |
| ● / ● | ● | ● / ● | ● / ● | ● | ● / ● | ● |
| ● / ● | ● | ● / ● | ● / ● | ● | ● / ● | – |
| **LC1 D40A** | **LC1 D50A** | **LC1 D65A** | **LC1 D80** | **LC1 D95** | **LC1 D115** | **LC1 D150** |
| **LC1 DT60A** | **–** | **LC1 DT80A** | **LC1 D80** | **–** | **LC1 D115** | **–** |
| **LC1 DT60A** | **–** | **LC1 DT80A** | **LC1 D80** | **–** | **LC1 D115** | **–** |
| **LC2 D40A** | **LC2 D50A** | **LC2 D65A** | **LC2 D80** | **LC2 D95** | **LC2 D115** | **LC2 D150** |
| **LC2 D40A** | **LC2 D50A** | **LC2 D65A** | **–** | **–** | **–** | **–** |
| **–** | **–** | **–** | **LC2 D80** | **–** | **LC2 D115** | **–** |
| **–** | **–** | **–** | **–** | **–** | **–** | **–** |

5/62 to 5/67
5/72 to 5/75

# TeSys contactors
## TeSys D low consumption contactors

| Applications | | Automation systems | | |
|---|---|---|---|---|
| | | | | |
| **Rated operational current** | Ie max AC-3 (Ue ≤ 440 V) | 9 A | 12 A | 18 A |
| | Ie AC-1 (θ ≤ 60 °C) | 20/25 A | 20/25 A | 25/32 A |
| **Rated operational voltage** | | 690 V | | |
| **Number of poles** | | 3 or 4 | 3 or 4 | 3 or 4 |
| **Rated operational power in AC-3** | 220/240 V | 2.2 kW | 3 kW | 4 kW |
| | 380/400 V | 4 kW | 5.5 kW | 7.5 kW |
| | 415/440 V | 4 kW | 5.5 kW | 9 kW |
| | 500 V | 5.5 kW | 7.5 kW | 10 kW |
| | 660/690 V | 5.5 kW | 7.5 kW | 10 kW |
| **Coil consumption** | | 2.4 W (100 mA - 24 V) | | |
| **Operating ranges** | | 0.7…1.25 Uc | | |
| **Operating time at 20 °C and at Uc** | Closing | 70 ms | | |
| | Opening | 25 ms | | |
| **Auxiliary contact block modules** | | 1 N/C and 1 N/O instantaneous contacts incorporated in the contactors, with add-on blocks common to the whole range, comprising up to 2 N/C or 2 N/O instantaneous standard contacts | | |
| **Interference suppression** | | Built-in suppression as standard, by bi-directional peak limiting diode | | |
| **Contactor type** | 3-pole | **LC1 D09** | **LC1 D12** | **LC1 D18** |
| | 4-pole | **LC1 DT20/D098** | **LC1 DT25/D128** | **LC1 DT32/D188** |
| **Reversing contactor type** | 3-pole | **LC2 D09** | **LC2 D12** | **LC2 D18** |
| | 4-pole | **LC2 DT20** | **LC2 DT25** | **LC2 DT32** |
| **Pages** | Contactors | 5/62 to 5/67 | | |
| | Reversing contactors | 5/72 to 5/75 | | |

*(1) With low consumption kit **LA4 DBL** (see page 5/83).*
*(2) With 2 low consumption kits **LA4 DBL** (see page 5/83).*

| | | | | | |
|---|---|---|---|---|---|
| 25 A | 32 A | 38 A | 40 A | 50 A | 65 A |
| 25/40 A | 50 A | 50 A | 60 A | – | 80 A |
| 690 V | | | 690 V | | |
| 3 or 4 | 3 | 3 | 3 | 3 | 3 |
| 5.5 kW | 7.5 kW | 9 kW | 11 kW | 15 kW | 18.5 kW |
| 11 kW | 15 kW | 18.5 kW | 18.5 kW | 22 kW | 30 kW |
| 11 kW | 15 kW | 18.5 kW | 22 kW | 25/30 kW | 37 kW |
| 15 kW | 18.5 kW | 18.5 kW | 22 kW | 30 kW | 37 kW |
| 15 kW | 18.5 kW | 18.5 kW | 30 kW | 33 kW | 37 kW |
| 2.4 W (100 mA - 24 V) | | | 0.6 W (25 mA - 24 V) for relay **LA4 DFB** + the power consumed by the contactor coil | | |
| 0.7…1.25 Uc | | | – | – | – |
| 70 ms | | | – | – | – |
| 25 ms | | | – | – | – |
| 1 N/C and 1 N/O instantaneous contacts incorporated in the contactors, with add-on blocks common to the whole range, comprising up to 2 N/C or 2 N/O instantaneous standard contacts | | | | | |
| Built-in suppression as standard, by bi-directional peak limiting diode | | | | | |
| **LC1 D25** | **LC1 D32** | **LC1 D38** | **LC1 D40A** *(1)* | **LC1 D50A** *(1)* | **LC1 D65A** *(1)* |
| **LC1 DT40/D258** | | | **–** | **–** | **–** |
| **LC2 D25** | **LC2 D32** | **LC2 D38** | **LC2 D40A** *(2)* | **LC2 D50A** *(2)* | **LC2 D65A** *(2)* |
| **LC2 DT40** | | | | | |
| 5/62 to 5/67 | | | | | |
| 5/72 to 5/75 | | | | | |

| Contactor type | | LC1 | D09…D18 DT20 and DT25 | D25…D38 DT32 and DT40 | D40A…D65A DT60A and DT80A | D80…D95 | D115 and D150 |
|---|---|---|---|---|---|---|---|
| **Environment** | | | | | | | |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-4-1, overvoltage category III, degree of pollution: 3 | **V** | 690 | | | 1000 | |
| | Conforming to UL, CSA | **V** | 600 | | | | |
| **Rated impulse withstand voltage** (Uimp) | Conforming to IEC 60947 | **kV** | 6 | | | 8 | |
| **Conforming to standards** | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 508, CSA C22.2 n°14. | | | | |
| **Product certifications** | | | UL, CSA *(1)*, CCC, GOST<br>GL, DNV, RINA, BV, LROS (pending for contactors LC1 D40A to D65A) | | | | |
| **Degree of protection** *(2)* (front face only) | Conforming to VDE 0106 and IEC 60529 | | | | | | |
| | Power circuit connections | | Protection against direct finger contact IP 2X | | | | |
| | Coil connection | | Protection against direct finger contact IP 2X | | | | |
| **Protective treatment** | Conforming to IEC 60068-2-30 | | "TH" | | | | |
| **Ambient air temperature around the device** | Storage | **°C** | - 60…+ 80 | | | | |
| | Operation | **°C** | - 5…+ 60 | | | | |
| | Permissible | **°C** | - 40…+ 70, for operation at Uc | | | | |
| **Maximum operating altitude** | Without derating | **m** | 3000 | | | | |
| **Operating positions** *(3)* | Without derating in the following positions | | ~/⎓ | | ~ | | ⎓ |
| | Positions that are not permissible | | For ⎓ contactors LC1 D09 to LC1 D65A. | | | | |
| **Flame resistance** | Conforming to UL 94 | | V1 | | | | |
| | Conforming to IEC 60695-2-1 | **°C** | 850 | | | | |
| **Shock resistance** *(4)* 1/2 sine wave = 11 ms | Contactor open | | 10 gn | 8 gn | 10 gn | 8 gn | 6 gn |
| | Contactor closed | | 15 gn | 15 gn | 15 gn | 10 gn | 15 gn |
| **Vibration resistance** *(4)* 5…300 Hz | Contactor open | | 2 gn | | | | |
| | Contactor closed | | 4 gn | 4 gn | 4 gn | 3 gn | 4 gn |

*(1) Contactor LC1 D95 with d.c. coil is not UL/CSA certified.*
*(2) Protection provided for the cabling c.s.a.'s indicated on the next page and for connection by cable.*
*(3) When mounting on a vertical rail, use a stop.*
*(4) Without modifying the contact states, in the most unfavourable direction (coil energised at Ue).*

| Contactor type | | LC1 | D09 and D12 DT20 and DT25 | D18 (3P) | D25 (3P) | D32 | D38 | D18 and D25 (4P) DT32 and DT40 | D40A to D65A DT60A and DT80A *(1)* | D80 and D95 | D115 and D150 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Power circuit connections** | | | | | | | | | | | |
| **Screw clamp terminal connections** | | | | | | | | | | | |
| **Tightening** | | | Screw clamp terminals | | | | | Connector 2 inputs | Screw clamp terminals | Connector 1 input | Connector 2 inputs |
| **Flexible cable without cable end** | 1 conductor | mm² | 1…4 | 1.5…6 | 2.5…10 | | | 2.5…10 | 1…35 | 4…50 | 10…120 |
| | 2 conductors | mm² | 1…4 | 1.5…6 | 2.5…10 | | | 2.5…10 | 1…25 and 1…35 | 4…25 | 10…120 + 10…50 |
| **Flexible cable with cable end** | 1 conductor | mm² | 1…4 | 1…6 | 1…10 | | | 2.5…10 | 1…35 | 4…50 | 10…120 |
| | 2 conductors | mm² | 1…2.5 | 1…4 | 1.5…6 | | | 2.5…10 | 1…25 and 1…35 | 4…16 | 10…120 + 10…50 |
| **Solid cable without cable end** | 1 conductor | mm² | 1…4 | 1.5…6 | 1.5…10 | | | 2.5…16 | 1…35 | 4…50 | 10…120 |
| | 2 conductors | mm² | 1…4 | 1.5…6 | 2.5…10 | | | 2.5…16 | 1…25 and 1…35 | 4…25 | 10…120 + 10…50 |
| **Screwdriver** | Philips | | N° 2 | N° 2 | N° 2 | | | N° 2 | – | – | – |
| | Flat screwdriver Ø | | Ø 6 | Ø 6 | Ø 6 | | | Ø 6 | – | Ø 6…Ø 8 | – |
| **Hexagonal key** | | | – | – | – | | | – | 4 | 4 | 4 |
| **Tightening torque** | | N.m | 1.7 | 1.7 | 2.5 | | | 1.8 | 5: ≤ 25 mm² 8: 35 mm² | 9 | 12 |
| **Spring terminal connections** *(2)* | | | | | | | | | | | |
| **Flexible cable without cable end** | 1 conductor | mm² | 2.5 (4: DT25) | 4 | 4 | 4 | – | 10 | – | – | |
| | 2 conductors | mm² | 2.5 (except DT25) | 4 | 4 | 4 | – | – | – | – | |
| **Connection by bars or lugs** | | | | | | | | | | | |
| **Bar c.s.a.** | | | – | – | – | – | | – | – | 3 x 16 | 5 x 25 |
| **Lug external Ø** | | mm | 8 | 8 | 10 | 10 | | 8 | 16.5 | 17 | 25 |
| **Ø of screw** | | mm | M3.5 | M3.5 | M4 | M4 | | M3.5 | M6 | M6 | M8 |
| **Screwdriver** | Philips | | N° 2 | N° 2 | N° 2 | N° 2 | | N° 2 | – | – | – |
| | Flat screwdriver Ø | | Ø 6 | Ø 6 | Ø 6 | Ø 6 | | Ø 6 | – | Ø 8 | – |
| **Key for hexagonal headed screw** | | | – | – | – | – | | – | 10 | 10 | 13 |
| **Tightening torque** | | N.m | 1.7 | 1.7 | 2.5 | 2.5 | | 1.8 | 6 | 9 | 12 |
| **Control circuit connections** | | | | | | | | | | | |
| **Connection by cable (tightening via screw clamps)** | | | | | | | | | | | |
| **Flexible cable without cable end** | 1 conductor | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| | 2 conductors | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| **Flexible cable with cable end** | 1 conductor | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…2.5 | 1…2.5 |
| | 2 conductors | mm² | 1…2.5 | 1…2.5 | 1…2.5 | 1…2.5 | | 1…2.5 | 1…2.5 | 1…2.5 | 1…2.5 |
| **Solid cable without cable end** | 1 conductor | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| | 2 conductors | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| **Screwdriver** | Philips | | N° 2 | N° 2 | N° 2 | N° 2 | | N° 2 | N° 2 | N° 2 | N° 2 |
| | Flat screwdriver Ø | | Ø 6 | Ø 6 | Ø 6 | Ø 6 | | Ø 6 | Ø 6 | Ø 6 | Ø 6 |
| **Tightening torque** | | N.m | 1.7 | 1.7 | 1.7 | 1.7 | | 1.7 | 1.7 | 1.2 | 1.2 |
| **Spring terminal connections** *(2)* | | | | | | | | | | | |
| **Flexible cable without cable end** | 1 conductor | mm² | 2.5 | 2.5 | 2.5 | 2.5 | – | 2.5 | 0.75…2.5 | – | – |
| | 2 conductors | mm² | 2.5 | 2.5 | 2.5 | 2.5 | – | 2.5 | 0.75…2.5 | – | – |
| **Connection by bars or lugs** | | | | | | | | | | | |
| **Lug external Ø** | | mm | 8 | 8 | 8 | 8 | | 8 | 8 | 8 | 8 |
| **Ø of screw** | | mm | M3.5 | M3.5 | M3.5 | M3.5 | | M3.5 | M3.5 | M3.5 | M3.5 |
| **Screwdriver** | Philips | | N° 2 | N° 2 | N° 2 | N° 2 | | N° 2 | N° 2 | N° 2 | N° 2 |
| | Flat screwdriver Ø | | Ø 6 | Ø 6 | Ø 6 | Ø 6 | | Ø 6 | Ø 6 | Ø 6 | Ø 6 |
| **Tightening torque** | | N.m | 1.7 | 1.7 | 1.7 | 1.7 | | 1.7 | 1.7 | 1.2 | 1.2 |

*(1) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page 5/85).*
*(2) If cable ends are used, choose the next size down (example: for 2.5 mm², use 1.5 mm²) and square crimp the cable ends using a special tool.*

| Contactor type | | LC1 | | D09 (3P) | DT20 D098 | D12 (3P) | DT25 D128 | D18 (3P) | DT32 D188 | D25 (3P) | DT40 D258 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pole characteristics** | | | | | | | | | | | |
| **Rated operational current** (Ie) (Ue ≤ 440 V) | In AC-3, θ ≤ 60 °C | | A | 9 | | 12 | | 18 | | 25 | |
| | In AC-1, θ ≤ 60 °C | | A | 25 *(1)* | 20 | 25 *(1)* | 25 | 32 *(1)* | 32 | 40 *(1)* | 40 |
| **Rated operational voltage** (Ue) | Up to | | V | 690 | | 690 | | 690 | | 690 | |
| **Frequency limits** | Of the operational current | | Hz | 25…400 | | 25…400 | | 25…400 | | 25…400 | |
| **Conventional thermal current** (Ith) | θ ≤ 60 °C | | A | 25 *(1)* | 20 | 25 *(1)* | 25 | 32 *(1)* | 32 | 40 *(1)* | 40 |
| **Rated making capacity** (440 V) | Conforming to IEC 60947 | | A | 250 | | 250 | | 300 | | 450 | |
| **Rated breaking capacity** (440 V) | Conforming to IEC 60947 | | A | 250 | | 250 | | 300 | | 450 | |
| **Permissible short time rating** No current flowing for preceding 15 minutes with θ ≤ 40 °C | For 1 s | | A | 210 | | 210 | | 240 | | 380 | |
| | For 10 s | | A | 105 | | 105 | | 145 | | 240 | |
| | For 1 min | | A | 61 | | 61 | | 84 | | 120 | |
| | For 10 min | | A | 30 | | 30 | | 40 | | 50 | |
| **Fuse protection** against short-circuits (U ≤ 690 V) | Without thermal overload relay, gG fuse | type 1 | A | 25 | | 40 | | 50 | | 63 | |
| | | type 2 | A | 20 | | 25 | | 35 | | 40 | |
| | With thermal overload relay | | A | See pages 6/20 to 6/22, for aM or gG fuse ratings corresponding to the associated thermal overload relay | | | | | | | |
| **Average impedance per pole** | At Ith and 50 Hz | | mΩ | 2.5 | | 2.5 | | 2.5 | | 2 | |
| **Power dissipation per pole** for the above operational currents | AC-3 | | W | 0.20 | | 0.36 | | 0.8 | | 1.25 | |
| | AC-1 | | W | 1.56 | | 1.56 | | 2.5 | | 3.2 | |
| **Control circuit characteristics, a.c. supply** | | | | | | | | | | | |
| **Rated control circuit voltage** (Uc) | | 50/60 Hz | V | 12…690 | | | | | | | |
| **Control voltage limits** | | | | | | | | | | | |
| 50 or 60 Hz coils | Operation | | | – | | | | | | | |
| | Drop-out | | | – | | | | | | | |
| 50/60 Hz coils | Operation | | | 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 60 °C | | | | | | | |
| | Drop-out | | | 0.3…0.6 Uc at 60 °C | | | | | | | |
| **Average consumption** at 20 °C and at Uc | ∼ 50 Hz Inrush | 50 Hz coil | VA | – | | | | | | | |
| | | Cos φ | | 0.75 | | | | | | | |
| | | 50/60 Hz coil | VA | 70 | | | | | | | |
| | Sealed | 50 Hz coil | VA | – | | | | | | | |
| | | Cos φ | | 0.3 | | | | | | | |
| | | 50/60 Hz coil | VA | 7 | | | | | | | |
| | ∼ 60 Hz Inrush | 60 Hz coil | VA | – | | | | | | | |
| | | Cos φ | | 0.75 | | | | | | | |
| | | 50/60 Hz coil | VA | 70 | | | | | | | |
| | Sealed | 60 Hz coil | VA | – | | | | | | | |
| | | Cos φ | | 0.3 | | | | | | | |
| | | 50/60 Hz coil | VA | 7.5 | | | | | | | |
| **Heat dissipation** | 50/60 Hz | | W | 2…3 | | | | | | | |
| **Operating time** *(2)* | Closing "C" | | ms | 12…22 | | | | | | | |
| | Opening "O" | | ms | 4…19 | | | | | | | |
| **Mechanical durability** in millions of operating cycles | 50 or 60 Hz coil | | | – | | | | | | | |
| | 50/60 Hz coil on 50 Hz | | | 15 | | | | | | | |
| **Maximum operating rate** at ambient temperature ≤ 60 °C | In operating cycles per hour | | | 3600 | | | | | | | |

*(1) Versions with spring terminal connections:*
*16 A for **LC1 D093** and **LC1 D123** (20 A possible with 2 x 2.5 mm² in parallel),*
*25 A for **LC1 D183** to **LC1 D323** (32 A possible for **LC1 D183** connected with 2 x 4 mm² cables in parallel; 40 A possible for **LC1 D253** and **LC1 D323** connected with 2 x 4 mm² in parallel).*
*(2) The closing time "C" is measured from the moment the coil supply is switched on to closure of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

| D32 | D38 | D40A | DT60A | D50A | D65A | DT80A | D80 | D95 | D115 | D150 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| 32 | 38 | 40 | – | 50 | 65 | – | 80 | 95 | 115 | 150 |
| 50 *(1)* | 50 | 60 | 60 | 80 | 80 | 80 | 125 | 125 | 200 | 200 |
| 690 | 690 | 690 | 690 | 690 | 690 | 690 | 1000 | 1000 | 1000 | 1000 |
| 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 |
| 50 | 50 | 60 | 60 | 80 | 80 | 80 | 125 | 125 | 200 | 200 |
| 550 | 550 | 800 | 800 | 900 | 1000 | 1000 | 1100 | 1100 | 1260 | 1660 |
| 550 | 550 | 800 | 800 | 900 | 1000 | 1000 | 1100 | 1100 | 1100 | 1400 |
| 430 | 430 | 720 | 720 | 810 | 900 | 900 | 990 | 1100 | 1100 | 1400 |
| 260 | 310 | 320 | 320 | 400 | 520 | 520 | 640 | 800 | 950 | 1200 |
| 138 | 150 | 165 | 165 | 208 | 260 | 260 | 320 | 400 | 550 | 580 |
| 60 | 60 | 72 | 72 | 84 | 110 | 110 | 135 | 135 | 250 | 250 |
| 63 | 63 | 80 | 80 | 100 | 125 | 125 | 200 | 200 | 250 | 315 |
| 63 | 63 | 80 | 80 | 100 | 125 | 125 | 160 | 160 | 200 | 250 |
| See pages 6/20 to 6/22 for aM or gG fuse ratings corresponding to the associated thermal overload relay | | | | | | | | | | |
| 2 | 2 | 1.5 | 1.6 | 1.5 | 1.5 | 1.6 | 0.8 | 0.8 | 0.6 | 0.6 |
| 2 | 3 | 2.4 | – | 3.7 | 6.3 | – | 5.1 | 7.2 | 7.9 | 13.5 |
| 5 | 5 | 5.4 | 5.8 | 9.6 | 9.6 | 10.2 | 12.5 | 12.5 | 24 | 24 |
| | | | | | | | | | | |
| 12…690 | | 12…690 | | | | | | | 24…500 | |
| – | | – | | | | | 0.85…1.1 Uc at 55 °C | | | |
| – | | – | | | | | 0.3…0.6 Uc at 55 °C | | 0.3…0.5 Uc at 55 °C | |
| 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 60 °C | | 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 60 °C | | | | | 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 55 °C | | 0.8…1.15 Uc on 50/60 Hz at 55 °C | |
| 0.3…0.6 Uc at 60 °C | | 0.3…0.6 Uc at 60 °C | | | | | 0.3…0.6 Uc at 55 °C | | 0.3…0.5 Uc at 55 °C | |
| – | | – | | | | | 200 | | 300 | – |
| 0.75 | | 0.75 | | | | | 0.75 | | 0.8 | 0.9 |
| 70 | | 160 | | | | | 245 | | 280…350 | 280…350 |
| – | | – | | | | | 20 | | 22 | – |
| 0.3 | | 0.3 | | | | | 0.3 | | 0.3 | 0.9 |
| 7 | | 15 | | | | | 26 | | 2…18 | 2…18 |
| – | | – | | | | | 220 | | 300 | – |
| 0.75 | | 0.75 | | | | | 0.75 | | 0.8 | 0.9 |
| 70 | | 140 | | | | | 245 | | 280…350 | 280…350 |
| – | | – | | | | | 22 | | 22 | – |
| 0.3 | | 0.3 | | | | | 0.3 | | 0.3 | 0.9 |
| 7.5 | | 13 | | | | | 26 | | 2…18 | 2…18 |
| 2…3 | | 4…5 | | | | | 6…10 | | 3…8 | 3…4.5 |
| 12…22 | | 12…26 | 12…26 | 12…26 | 12…26 | 12…26 | 20…35 | 20…35 | 20…50 | 20…35 |
| 4…19 | | 4…19 | 4…19 | 4…19 | 4…19 | 4…19 | 6…20 | 6…20 | 6…20 | 40…75 |
| – | | – | – | – | – | – | 10 | 10 | 8 | – |
| 15 | | 6 | 6 | 6 | 6 | 6 | 4 | 4 | 8 | 8 |
| 3600 | | 3600 | 3600 | 3600 | 3600 | 3600 | 3600 | 3600 | 2400 | 1200 |

5

| Contactor type | | | | LC1 D09…D38<br>LC1 DT20…DT40 | LC1 D40A…D65A<br>LC1 DT60A and DT80A | LC1 or LP1 D80<br>LC1 D95 | LC1 D115 and LC1 D150 |
|---|---|---|---|---|---|---|---|
| **d.c. control circuit characteristics** | | | | | | | |
| **Rated control circuit voltage** (Uc) | ⎓ | | **V** | 12…440 | 12…440 | | 24…440 |
| **Rated insulation voltage** | Conforming to IEC 60947-1 | | **V** | 690 | | | |
| | Conforming to UL, CSA | | **V** | 600 | | | |
| **Control voltage limits** | Operation | Standard coil | | 0.7…1.25 Uc at 60 °C | 0.75…1.25 Uc at 60 °C | 0.85…1.1 Uc at 55 °C | 0.75…1.2 Uc at 55 °C |
| | | Wide range coil | | – | – | 0.75…1.2 Uc at 55 °C | – |
| | Drop-out | | | 0.1…0.25 Uc at 60 °C | 0.1…0.3 Uc at 60 °C | 0.1…0.3 Uc at 55 °C | 0.15…0.4 Uc at 55 °C |
| **Average consumption** at 20 °C and at Uc | ⎓ | Inrush | **W** | 5.4 | 19 | 22 | 270…365 |
| | | Sealed | **W** | 5.4 | 7.4 | 22 | 2.4…5.1 |
| **Operating time** *(1)* **average at Uc** | Closing | "C" | **ms** | 63 ± 15 % | 50 ± 15% | 95…130 | 20…35 |
| | Opening | "O" | **ms** | 20 ± 20 % | 20 ± 20% | 20…35 | 40…75 |
| | | | | ***Note:*** *The arcing time depends on the circuit switched by the poles. For all normal 3-phase applications, the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.* | | | |
| **Time constant** (L/R) | | | **ms** | 28 | 34 | 75 | 25 |
| **Mechanical durability at Uc** | In millions of operating cycles | | | 30 | 10 | 10 | 8 |
| **Maximum operating rate** at ambient temperature ⩽ 60 °C | In operating cycles per hour | | | 3600 | 3600 | 3600 | 1200 |
| **Low consumption control circuit characteristics** | | | | | | | |
| **Rated insulation voltage** | Conforming to IEC 60947-1 | | **V** | 690 | – | | |
| | Conforming to UL, CSA | | **V** | 600 | – | | |
| **Maximum voltage** | Of the control circuit on ⎓ | | **V** | 250 | – | | |
| **Average consumption** d.c. at 20 °C and at Uc | Wide range coil (0.7…1.25 Uc) | Inrush | **W** | 2.4 | – | | |
| | | Sealed | **W** | 2.4 | – | | |
| **Operating time** *(1)* at Uc and at 20 °C | Closing | "C" | **ms** | 77 ± 15 % | – | | |
| | Opening | "O" | **ms** | 25 ± 20 % | – | | |
| **Voltage limits (θ ⩽ 60 °C) of the control circuit** | Operation | | | 0.8 to 1.25 Uc | – | | |
| | Drop-out | | | 0.1…0.3 Uc | – | | |
| **Time constant** (L/R) | | | **ms** | 40 | – | | |
| **Mechanical durability** | In millions of operating cycles | | | 30 | – | | |
| **Maximum operating rate** at ambient temperature ⩽ 60 °C | In operating cycles per hour | | | 3600 | – | | |

*(1) The operating times depend on the type of contactor electromagnet and its control mode.*
*The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.*
*The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate*

## Characteristics of auxiliary contacts incorporated in the contactor

| | | | | |
|---|---|---|---|---|
| **Mechanically linked contacts** | Conforming to IEC 60947-5-1 | | | Each contactor has 2 N/O and N/C contacts mechanically linked on the same movable contact holder |
| **Mirror contact** | Conforming to IEC 60947-4-1 | | | The N/C contact on each contactor represents the state of the power contacts and can be connected to a PREVENTA safety module |
| **Rated operational voltage** (Ue) | Up to | | **V** | 690 |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-1 | | **V** | 690 |
| | Conforming to UL, CSA | | **V** | 600 |
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 60 °C | | **A** | 10 |
| **Frequency of the operational current** | | | **Hz** | 25…400 |
| **Minimum switching capacity** $\lambda = 10^{-8}$ | U min | | **V** | 17 |
| | I min | | **mA** | 5 |
| **Short-circuit protection** | Conforming to IEC 60947-5-1 | | | gG fuse: 10 A |
| **Rated making capacity** | Conforming to IEC 60947-5-1, I rms | | **A** | ∿: 140, ⎓: 250 |
| **Short-time rating** | Permissible for | 1 s | **A** | 100 |
| | | 500 ms | **A** | 120 |
| | | 100 ms | **A** | 140 |
| **Insulation resistance** | | | **MΩ** | > 10 |
| **Non-overlap time** | Guaranteed between N/C and N/O contacts | | **ms** | 1.5 (on energisation and on de-energisation) |

**Operational power of contacts**
conforming to IEC 60947-5-1

**a.c. supply, categories AC-14 and AC-15**
Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | **V** | **24** | **48** | **115** | **230** | **400** | **440** | **600** |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million operating cycles | **VA** | 16 | 32 | 80 | 160 | 280 | 300 | 420 |
| 10 million operating cycles | **VA** | 4 | 8 | 20 | 40 | 70 | 80 | 100 |

**AC-15**

**d.c. supply, category DC-13**
Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| **V** | **24** | **48** | **125** | **250** | **440** |
|---|---|---|---|---|---|
| **W** | 96 | 76 | 76 | 76 | 44 |
| **W** | 48 | 38 | 38 | 32 | – |
| **W** | 14 | 12 | 12 | – | – |

**DC-13**

5

# TeSys contactors

## Auxiliary contact blocks without dust and damp protected contacts for TeSys D contactors

| Contact block type | | | | LAD N or LAD C | LAD T and LAD S | LAD R | LAD 8 |
|---|---|---|---|---|---|---|---|
| **Environment** | | | | | | | |
| **Conforming to standards** | | | | IEC 60947-5-1, NF C 63-140, VDE 0660, BS 4794, EN 60947-5-1 | | | |
| **Product certifications** | | | | UL, CSA | | | |
| **Protective treatment** | Conforming to IEC 60068 | | | "TH" | | | |
| **Degree of protection** | Conforming to VDE 0106 | | | Protection against direct finger contact IP 2X | | | |
| **Ambient air temperature around the device** | Storage | | **°C** | - 60…+ 80 | | | |
| | Operation | | **°C** | - 5…+ 60 | | | |
| | Permissible for operation at Uc | | **°C** | - 40…+ 70 | | | |
| **Maximum operating altitude** | Without derating | | **m** | 3000 | | | |
| **Connection by cable** | Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end | | **mm²** | Min: 1 x 1; max: 2 x 2.5 | | | |
| **Spring terminal connections** | Flexible or solid cable without cable end | | **mm²** | Max: 2 x 2.5 | | | |
| **Instantaneous and time delay contact characteristics** | | | | | | | |
| **Number of contacts** | | | | 1, 2 or 4 | 2 | 2 | 2 |
| **Rated operational voltage** (Ue) | Up to | | **V** | 690 | | | |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-5-1 | | **V** | 690 | | | |
| | Conforming to UL, CSA | | **V** | 600 | | | |
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 60 °C | | **A** | 10 | | | |
| **Frequency of the operational current** | | | **Hz** | 25…400 | | | |
| **Minimum switching capacity** | | U min | **V** | 17 | | | |
| | | I min | **mA** | 5 | | | |
| **Short-circuit protection** | Conforming to IEC 60947-5-1 and VDE 0660. gG fuse | | **A** | 10 | | | |
| **Rated making capacity** | Conforming to IEC 60947-5-1 | I rms | **A** | ∿: 140; ⎓: 250 | | | |
| **Short-time rating** | Permissible for | 1 s | **A** | 100 | | | |
| | | 500 ms | **A** | 120 | | | |
| | | 100 ms | **A** | 140 | | | |
| **Insulation resistance** | | | **MΩ** | > 10 | | | |
| **Non-overlap time** | Guaranteed between N/C and N/O contacts | | **ms** | 1.5 (on energisation and on de-energisation) | | | |
| **Overlap time** | Guaranteed between N/C and N/O contacts on **LAD C22** | | **ms** | 1.5 | – | – | – |
| **Time delay** (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the front face | Ambient air temperature for operation | | **°C** | – | - 40…+ 70 | - 40…+ 70 | – |
| | Repeat accuracy | | | – | ± 2 % | ± 2 % | – |
| | Drift up to 0.5 million operating cycles | | | – | + 15 % | + 15 % | – |
| | Drift depending on ambient air temperature | | | – | 0.25 % per °C | 0.25 % per °C | – |
| **Mechanical durability** | In millions of operating cycles | | | 30 | 5 | 5 | 30 |
| **Operational power of contacts** | | | | See page 5/58 | | | |

5

References :
pages 5/79 and 5/80

Dimensions :
pages 5/92 and 5/93

Schemes :
pages 5/96 and 5/97



Schneider Electric

# TeSys contactors

## Auxiliary contact blocks with dust and damp protected contacts for TeSys D contactors

| Contact block type | | | | LA1 DX | LA1 DZ | | LA1 DY |
|---|---|---|---|---|---|---|---|
| | | | | | Protected | Non protected | |
| **Environment** | | | | | | | |
| **Conforming to standards** | | | | IEC60947-5-1, VDE0660 | | | |
| **Product certifications** | | | | UL, CSA | | | |
| **Protective treatment** | Conforming to IEC 60068 | | | "TH" | | | |
| **Degree of protection** | Conforming to VDE 0106 | | | Protection against direct finger contact IP 2X | | | |
| **Ambient air temperature** | Storage and operation | | **°C** | - 25…+ 70 | | | |
| **Cabling** | Phillips N° 2 and Ø 6 mm Flexible or solid conductor with or without cable end | | **mm²** | Min: 1 x 1; max: 2 x 2.5 | | | |
| **Number of contacts** | | | | 2 | 2 | 2 | 2 |
| **Contact characteristics** | | | | | | | |
| **Rated operational voltage** (Ue) | Up to | | **V** | 50 | 50 | 690 | 24 |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-5-1 | | **V** | 250 | 250 | 690 | 250 |
| | Conforming to UL, CSA | | **V** | – | – | 600 | – |
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 40 °C | | **A** | – | – | 10 | – |
| **Maximum operational current** (Ie) | | | **mA** | 500 | 500 | – | 50 |
| **Frequency of the operational current** | | | **Hz** | – | – | 25…400 | – |
| **Minimum switching capacity** | | U min | **V** | 3 | 3 | 3 | 3 |
| | | I min | **mA** | 0.3 | 0.3 | 0.3 | 0.3 |
| **Short-circuit protection** | Conforming to IEC 609475-1 gG fuse | | **A** | – | – | 10 | – |
| **Rated making capacity** | Conforming to IEC 609475-1 | I rms | **A** | – | – | ∼:140; ⎓: 250 | – |
| **Short-time rating** | Permissible for | 1 s | **A** | – | – | 100 | – |
| | | 500 ms | **A** | – | – | 120 | – |
| | | 100 ms | **A** | – | – | 140 | – |
| **Insulation resistance** | | | **MΩ** | > 10 | > 10 | > 10 | > 10 |
| **Mechanical durability** | In millions of operating cycles | | | 5 | 5 | 30 | 5 |
| **Materials and technology** used for dust and damp protected contacts | | | | Silver - Single **break** | Silver - Single **break** | – | Gold - Single break with **crossed bars** |

5

References : page 5/79
Dimensions : pages 5/92 and 5/93
Schemes : pages 5/96 and 5/97

## Rated operational power of contacts (conforming to IEC 60947-5-1)

### a.c. supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | V | 24 | 48 | 115 | 230 | 400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million operating cycles | VA | 16 | 32 | 80 | 160 | 280 | 300 | 420 |
| 10 million operating cycles | VA | 4 | 8 | 20 | 40 | 70 | 80 | 100 |

### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | V | 24 | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|---|
| 1 million operating cycles | W | 120 | 90 | 75 | 68 | 61 |
| 3 million operating cycles | W | 70 | 50 | 38 | 33 | 28 |
| 10 million operating cycles | W | 25 | 18 | 14 | 12 | 10 |

References :
pages 5/79 to 5/83

Dimensions :
pages 5/92 and 5/93

Schemes :
pages 5/96 and 5/97

# TeSys contactors

## Control modules, coil suppressor modules and mechanical latch blocks for TeSys D contactors

| Environment | | | |
|---|---|---|---|
| **Conforming to standards** | | | IEC 60947-5-1 |
| **Product certifications** | | | UL, CSA |
| **Protective treatment** | Conforming to IEC 60068 | | "TH" |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact IP 2X |
| **Ambient air temperature around the device** | Storage | **°C** | – 40…+ 80 |
| | Operation | **°C** | – 25…+ 55 |
| | Permissible for operation at Uc | **°C** | – 25…+ 70 |

| Suppressor modules | | | | | | |
|---|---|---|---|---|---|---|
| **Module type** | | | **LA4 DA, LAD 4RC, LAD 4RC3** | **LA4 DB, LAD 4T, LAD 4T3** | **LA4 DC, LAD 4D3** | **LA4 DE, LAD 4V, LAD 4V3** |
| **Type of protection** | | | RC circuit | Bidirectional peak limiting diode | Diode | Varistor |
| **Rated control circuit voltage** (Uc) | | **V** | ∼ 24…415 | ∼ or ⎓ 24…440 | ⎓ 12…250 | ∼ or ⎓ 24…250 |
| **Maximum peak voltage** | | | 3 Uc | 2 Uc | Uc | 2 Uc |
| **Natural RC frequency** | 24/48 V | **Hz** | 400 | – | – | – |
| | 50/127 V | **Hz** | 200 | – | – | – |
| | 110/240 V | **Hz** | 100 | – | – | – |
| | 380/415 V | **Hz** | 150 | – | – | – |

| Mechanical latch blocks *(1)* | | | | |
|---|---|---|---|---|
| **Mechanical latch block type** | | | **LAD 6K10** | **LA6 DK20** |
| **For use on contactor** | | | **LC1 D09…D65A DT20…DT80A** | **LC1 D80…D150 LP1 D80 and LC1 D115** |
| **Product certifications** | | | UL, CSA | UL, CSA |
| **Rated insulation voltage** | Conforming to IEC 60947-5-1 | **V** | 690 | 690 |
| **Rated control circuit voltage** | ∼ 50/60 Hz and ⎓ | **V** | 24…415 | 24…415 |
| **Power required** | For unlatching ∼ | **VA** | 25 | 25 |
| | ⎓ | **W** | 30 | 30 |
| **Maximum operating rate** | In operating cycles/hour | | 1200 | 1200 |
| **On-load factor** | | | 10 % | 10 % |
| **Mechanical durability at Uc** | In millions of operating cycles | | 0.5 | 0.5 |

*(1) Unlatching can be manually operated or electrically controlled (pulsed).*
*The **LA6 DK** or **LAD 6K** latch coil and the **LC1 D** operating coil must not be energised simultaneously.*
*The duration of the **LA6 DK** or **LAD 6K** and **LC1 D** control signals must be ⩾ 100 ms.*



References :
pages 5/80 to 5/83

Dimensions :
pages 5/92 and 5/93

Schemes :
pages 5/96 and 5/97

# TeSys contactors
## Electronic serial timer module for TeSys D contactors

| Module type | | | LA4 DT (On-delay) |
|---|---|---|---|
| **Environment** | | | |
| **Conforming to standards** | | | IEC 60255-5 |
| **Product certifications** | | | UL, CSA |
| **Protective treatment** | Conforming to IEC 60068 | | "TH" |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact IP 2X |
| **Ambient air temperature around the device** | Storage | °C | – 40…+ 80 |
| | Operation | °C | – 25…+ 55 |
| | For operation at Uc | °C | – 25…+ 70 |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-1 | V | 250 |
| **Cabling** | Phillips n° 2 and Ø 6 mm Flexible or solid conductor with or without cable end | mm² | Min: 1 x 1; max: 2 x 2.5 |
| **Control circuit characteristics** | | | |
| **Built-in protection** | Of the input | | By varistor |
| | Contactor coil suppression | | By varistor |
| **Rated control circuit voltage** (Uc) | | V | ∿ or ⎓ : 24…250 |
| **Permissible variation** | | | 0.8…1.1 Uc |
| **Type of control** | | | By mechanical contact only |
| **Timing characteristics** | | | |
| **Timing ranges** | | s | 0.1…2; 1.5…30; 25…500 |
| **Repeat accuracy** | 0…40 °C | | ± 3 % (10 ms minimum) |
| **Reset time** | During time delay period | ms | 150 |
| | After time delay period | ms | 50 |
| **Immunity to microbreaks** | During time delay period | ms | 10 |
| | After time delay period | ms | 2 |
| **Minimum control pulse duration** | | ms | – |
| **Time delay signalling** | By LED | | Illuminates during time delay period |
| **Switching characteristics (solid state type)** | | | |
| **Maximum power dissipated** | | W | 2 |
| **Leakage current** | | mA | < 5 |
| **Residual voltage** | | V | 3.3 |
| **Overvoltage protection** | | | 3 kV; 0.5 joule |
| **Electrical durability** | In millions of operating cycles | | 30 |

## Function diagram
### Electronic on-delay timer LA4 DT

References : page 5/83
Dimensions : pages 5/92 and 5/93
Schemes : pages 5/96 and 5/97

## Environment

| | | | |
|---|---|---|---|
| **Conforming to standards** | | | IEC 60255-5 |
| **Product certifications** | | | UL, CSA |
| **Protective treatment** | Conforming to IEC 60068 | | "TH" |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact IP 2X |
| **Ambient air temperature around the device** | Storage | **°C** | – 40…+ 80 |
| | Operation | **°C** | – 25…+ 55 |
| | Permissible for operation at Uc | **°C** | – 25…+ 70 |

## Other characteristics

| **Module type** | | | | **LA4 DFB** With relay | **LA4 DWB** Solid state |
|---|---|---|---|---|---|
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 50 °C | | **A** | 8 | |
| **Rated insulation voltage** | Conforming to IEC 60947-5-1 | | **V** | 250 | |
| **Rated operational voltage** | Conforming to IEC 60947-5-1 | | **V** | 250 | |
| **Indication of input state** | | | | By integral LED which illuminates when the contactor coil is energised | |
| **Input signals** | Control voltage (E1-E2) | | **V** | ⎓ 24 | ⎓ 24 |
| | Permissible variation | | **V** | 17…30 | 5…30 |
| | Current consumption at 20 °C | | **mA** | 25 | 8.5 for 5 V<br>15 for 24 V |
| | State "0" guaranteed for | U | **V** | < 2.4 | < 2.4 |
| | | I | **mA** | < 2 | < 2 |
| | State "1" guaranteed for | U | **V** | 17 | 5 |
| **Built-in protection** | Against reversed polarity | | | By diode | By diode |
| | Of the input | | | By diode | By diode |
| **Electrical durability** at 220 A/240 V | In millions of operating cycles | | | 10 | 20 |
| **Maximum immunity to microbreaks** | | | **ms** | 4 | 1 |
| **Power dissipated** | At 20 °C | | **W** | 0.6 | 0.4 |
| **Direct mounting on contactor** | With coil | ∼ 24…250 V | | **LC1 D80…D150** | – |
| | | ∼ 100…250 V | | – | **LC1 D80…D115** |
| | | ∼ 380…415 V | | – | – |
| **Mounting with cabling adapter LAD 4BB** | With coil | ∼ 24…250 V | | **LC1 D09…D38, LC1 DT20…DT40** | **LC1 D09…D38, LC1 DT20…DT40** |
| | | ∼ 380…415 V | | – | – |
| **Mounting with cabling adapter LAD 4BB3** | With coil | ∼ 24…250 V | | **LC1 D40A…D65A** | **LC1 D40A…D65A** |
| | | ∼ 380…415 V | | **LC1 D40A…D65A** | **LC1 D40A…D65A** |

**Total operating time** at Uc (of the contactor)

The operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

| | | | | **LC1 D09…D38, LC1 DT20…DT40** | **LC1 D40A…D65A** | **LC1 D80 and D95** |
|---|---|---|---|---|---|---|
| | With **LA4 DFB** | "C" | **ms** | 20…30 | 28…34 | 28…43 |
| | | "O" | **ms** | 16…24 | 20…24 | 18…32 |

| | | | |
|---|---|---|---|
| **Cabling** | Phillips N° 2 and Ø 6 mm<br>Flexible or solid cable<br>with **or without cable end** | **mm²** | Min: 1 x 1; max: 2 x 2.5 |

References :
page 5/83

Dimensions :
pages 5/92 and 5/93

Schemes :
pages 5/96 and 5/97

# TeSys contactors

## TeSys D contactors for motor control up to 75 kW at 400 V, in category AC-3

For connection by screw clamp terminals and lugs

526216

LC1 D09●●

526217

LC1 D25●●

526218

LC1 D65A●●

526219

LC1 D95●●

526220

LC1 D115●●

### 3-pole contactors

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 (θ ≤ 60 °C) 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | Rated operational current in AC-3 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code (2) Fixing (1) | Weight (3) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| kW | kW | kW | kW | kW | kW | kW | A | | | | kg |
| **Connection by screw clamp terminals** | | | | | | | | | | | |
| **2.2** | 4 | 4 | 4 | 5.5 | 5.5 | – | **9** | 1 | 1 | **LC1 D09●●** | 0.320 |
| **3** | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | – | **12** | 1 | 1 | **LC1 D12●●** | 0.325 |
| **4** | 7.5 | 9 | 9 | 10 | 10 | – | **18** | 1 | 1 | **LC1 D18●●** | 0.330 |
| **5.5** | 11 | 11 | 11 | 15 | 15 | – | **25** | 1 | 1 | **LC1 D25●●** | 0.370 |
| **7.5** | 15 | 15 | 15 | 18.5 | 18.5 | – | **32** | 1 | 1 | **LC1 D32●●** | 0.375 |
| **9** | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | – | **38** | 1 | 1 | **LC1 D38●●** | 0.380 |
| **Power connections by EverLink® BTR screw connectors** *(4)* **and control by spring terminals** | | | | | | | | | | | |
| **11** | 18.5 | 22 | 22 | 22 | 30 | – | **40** | 1 | 1 | **LC1 D40A●●** *(5)* | 0.850 |
| **15** | 22 | 25 | 30 | 30 | 33 | – | **50** | 1 | 1 | **LC1 D50A●●** *(5)* | 0.855 |
| **18.5** | 30 | 37 | 37 | 37 | 37 | – | **65** | 1 | 1 | **LC1 D65A●●** *(5)* | 0.860 |
| **Connection by screw clamp terminals or connectors** | | | | | | | | | | | |
| **22** | 37 | 45 | 45 | 55 | 45 | 45 | **80** | 1 | 1 | **LC1 D80●●** | 1.590 |
| **25** | 45 | 45 | 45 | 55 | 45 | 45 | **95** | 1 | 1 | **LC1 D95●●** | 1.610 |
| **30** | 55 | 59 | 59 | 75 | 80 | 65 | **115** | 1 | 1 | **LC1 D115●●** | 2.500 |
| **40** | 75 | 80 | 80 | 90 | 100 | 75 | **150** | 1 | 1 | **LC1 D150●●** | 2.500 |

**Connection by lugs or bars**

In the references selected above, insert a figure **6** before the voltage code.
Example: **LC1 D09●●** becomes **LC1 D096●●**.

### Separate components

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85

*(1) LC1 D09 to D65A: clip-on mounting on 35 mm ⊔ rail AM1 DP or screw fixing.*
*LC1 D80 to D95 ∿: clip-on mounting on 35 mm ⊔ rail AM1 DP or 75 mm ⊔ rail AM1 DL or screw fixing.*
*LC1 D80 to D95 ⎓ : clip-on mounting on 75 mm ⊔ rail AM1 DL or screw fixing.*
*LC1 D115 and D150: clip-on mounting on 2 x 35 mm ⊔ rails AM1 DP or screw fixing.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1 D09…D150** (D115 and D150 coils with built-in suppression as standard, by bi-directional peak limiting diode). | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **LC1 D80…D115** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |
| **d.c. supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC1 D09…D65A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **LC1 D80…D95** | | | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – | | |
| **LC1 D115 and D150** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC1 D09...D38** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*
*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38**, 0.075 kg from **LC1 D40A** to **D65A** and 1 kg for **LC1 D80** and **D95**.*
*(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page 5/85).*
*(5) For low consumption kit **LA4 DBL** (see page 5/83).*

Selection : pages 5/194 to 5/225
Characteristics : pages 5/50 to 5/55
Dimensions : pages 5/92 to 5/95
Schemes : pages 5/96 and 5/97

# TeSys contactors

## TeSys D contactors for motor control up to 30 kW at 400 V, in category AC-3

For connection by spring terminals

526221

*LC1 D123●●*

526222

*LC1 D65A3●●*

### 3-pole contactors

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 (θ ≤ 60 °C) | | | | | | | Rated operational current in AC-3 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code *(2)* Fixing *(1)* | Weight *(3)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | | | | |
| kW | kW | kW | kW | kW | kW | kW | A | | | | kg |
| **Power and control connections by spring terminals** | | | | | | | | | | | |
| **2.2** | 4 | 4 | 4 | 5.5 | 5.5 | | **9** | 1 | 1 | **LC1 D093●●** | 0.320 |
| **3** | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | | **12** | 1 | 1 | **LC1 D123●●** | 0.325 |
| **4** | 7.5 | 9 | 9 | 10 | 10 | | **18** | 1 | 1 | **LC1 D183●●** | 0.330 |
| **5.5** | 11 | 11 | 11 | 15 | 15 | | **25** | 1 | 1 | **LC1 D253●●** | 0.370 |
| **7.5** | 15 | 15 | 15 | 18.5 | 18.5 | | **32** *(4)* | 1 | 1 | **LC1 D323●●** | 0.375 |
| **Power connections by EverLink® BTR screw connectors** *(5)* **and control by spring terminals** | | | | | | | | | | | |
| **11** | 18.5 | 22 | 22 | 22 | 30 | | **40** | 1 | 1 | **LC1 D40A3●●** *(6)* | 0.850 |
| **15** | 22 | 25 | 30 | 30 | 33 | | **50** | 1 | 1 | **LC1 D50A3●●** *(6)* | 0.855 |
| **18.5** | 30 | 37 | 37 | 37 | 37 | | **65** | 1 | 1 | **LC1 D65A3●●** *(6)* | 0.860 |

### Connection by Faston connectors

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil and auxiliary terminals.
For contactors LC1 D09 and LC1 D12 only, replace the figure **3** with a **9** in the references selected above.
Example: **LC1 D093●●** becomes **LC1 D099●●**.

### Separate components

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85.

*(1) LC1 D09 to D32: clip-on mounting on 35 mm ⊔ rail AM1 DP or screw fixing.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** |
| **LC1 D09…D65A** | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **d.c. supply** | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | |
| **LC1 D09…D65A** (coils with built-in suppression as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | |
| **Low consumption** | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | |
| **LC1 D09...D32** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*
*(3) The weights indicated are for contactors with a.c. control circuit.*
*For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D32** and 0.075 kg from **LC1 D40A** to **D65A**.*
*(4) Must be wired with 2 x 4 mm² cables in parallel on the upstream side. On the downstream side, outgoing terminal block **LAD 331** may be used (Quickfit technology, see page 1/197). When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).*
*(5) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page 5/85).*
*(6) For low consumption kit **LA4 DBL** (see page 5/83).*

# TeSys contactors

## TeSys D, 3-pole contactors
for control in category AC-1, from 25 to 200 A

526230

*LC1 D09●●*

526231

*LC1 D65A●●*

## 3-pole contactors

| Non inductive loads maximum current (θ ≤ 60 °C) utilisation category AC-1 | Number of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code *(1)* / Fixing *(2)* | Weight *(3)* |
|---|---|---|---|---|---|
| A | | | | | kg |
| **Connection by screw clamp terminals** | | | | | |
| **25** | 3 | 1 | 1 | **LC1 D09●●** | 0.320 |
| | | | | or **LC1 D12●●** | 0.325 |
| **32** | 3 | 1 | 1 | **LC1 D18●●** | 0.330 |
| **40** | 3 | 1 | 1 | **LC1 D25●●** | 0.370 |
| **50** | 3 | 1 | 1 | **LC1 D32●●** | 0.375 |
| | | | | or **LC1 D38●●** | 0.380 |
| **Connection by EverLink®, BTR screw connectors** *(4)* | | | | | |
| **60** | 3 | 1 | 1 | **LC1 D40A●●** *(7)* | 0.850 |
| **80** | 3 | 1 | 1 | **LC1 D50A●●** *(7)* | 0.855 |
| | | | | or **LC1 D65A●●** *(5) (7)* | 0.860 |
| **Connection by screw clamp terminals or connectors** | | | | | |
| **125** | 3 | 1 | 1 | **LC1 D80●●** | 1.590 |
| | | | | or **LC1 D95●●** *(5)* | 1.610 |
| **200** | 3 | 1 | 1 | **LC1 D115●●** | 2.500 |
| | | | | or **LC1 D150●●** *(6)* | 2.500 |

## 3-pole contactors for connection by lugs

In the references selected above, insert a figure **6** before the voltage code.
Example: **LC1 D09●●** becomes **LC1 D096●●**.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1 D09...D150** (coils D115 and D150 fitted with integral suppression device as standard) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | – |
| **LC1 D80...D150** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |
| **d.c. supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC1 D09...D65A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **LC1 or LP1 D80** and **D95** | | | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – | | |
| **LC1 D115** and **D150** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC1 D09...D38** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*
*(2) **LC1 D09** to **D65A**: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
*__LC1 D80__ and __D95__ ∿: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or 75 mm ⊔ rail **AM1 DL** or screw fixing.*
*__LC1__ or __LP1 D80__ to __D95__ ⎓: clip-on mounting on 75 mm ⊔ rail **AM1 DL** or screw fixing.*
*__LC1 D115__ and __D150__: clip-on mounting on 2 x 35 mm ⊔ rails **AM1 DP** or screw fixing.*
*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38**, 0.075 kg from **LC1 D40A** to **D65A** and 1 kg for **LC1 D80** and **D95**.*
*(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page 5/85).*
*(5) Selection according to the number of operating cycles, see AC-1 curve, page 5/198.*
*(6) 32 A with 2 x 4 mm² cables connected in parallel.*
*(7) For low consumption kit **LA4 DBL** (see page 5/83).*

Selection : pages 5/194 to 5/225
Characteristics : pages 5/50 to 5/55
Dimensions : pages 5/92 to 5/95
Schemes : pages 5/96 and 5/97



Schneider Electric

# TeSys contactors

## TeSys D, 3-pole contactors

For control in category AC-1, 25 to 200 A

526232

*LC1 D123●●*

## 3-pole contactors for connection by Faston connectors

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals. For contactors LC1 D09 and LC1 D12 only, in the references selected from the previous page, insert a figure **9** before the voltage code. Example: **LC1 D09●●** becomes **LC1 D099●●**.

## 3-pole contactors

| Non inductive loads maximum current (θ ≤ 60 °C) utilisation category AC-1 | Number of poles | Instantaneous auxiliary contacts | | | Basic reference, to be completed by adding the control voltage code *(1)* / Fixing *(2)* | Weight *(3)* |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **Connection by spring terminals** | | | | | | |
| **16** | 3 | 1 | 1 | | **LC1 D093●●** *(4)* | 0.320 |
| | | | | or | **LC1 D123●●** *(4)* | 0.325 |
| **25** | 3 | 1 | 1 | | **LC1 D183●●** *(5)* | 0.335 |
| | | | | or | **LC1 D253●●** *(6)* | 0.325 |
| | | | | or | **LC1 D323●●** *(6)* | 0.325 |
| **Power connections by EverLink® BTR screw connectors** *(7)* **and control by spring terminals** | | | | | | |
| **60** | 3 | 1 | 1 | | **LC1 D40A3●●** *(9)* | 0.850 |
| **80** | 3 | 1 | 1 | | **LC1 D50A3●●** *(8) (9)* | 0.855 |
| | | | | or | **LC1 D65A3●●** *(8) (9)* | 0.860 |

526233

*LC1 D65A3●●*

## Separate components

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1 D09...D65A** | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **d.c. supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC1 D09...D65A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC1 D09...D38** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*
*(2) **LC1 D09** to **D65A**: clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*
*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38** and 0.075 kg from **LC1 D40A** to **D65A**.*
*(4) 20 A with 2 x 2.5 mm² cables connected in parallel.*
*(5) 32 A with 2 x 4 mm² cables connected in parallel.*
*(6) 40 A with 2 x 4 mm² cables connected in parallel.*
*(7) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page 5/85).*
*(8) Selection according to the number of operating cycles, see AC-1 curve, page 5/198.*
*(9) For low consumption kit **LA4 DBL** (see page 5/83).*

# TeSys contactors

## TeSys D, 4-pole contactors

For control in category AC-1, 25 to 200 A

526227

*LC1 DT20●●*

526228

*LC1 DT80A●●*

526229

*LC1 D65008●●*

### 4-pole contactors for connection by screw clamp terminals or connectors

| Non inductive loads maximum current (θ ≤ 60 °C) utilisation category AC-1 | Number of poles | | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code *(1)* / Fixing *(2)* | Weight *(3)* |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **Connection by screw clamp terminals** | | | | | | |
| **20** | 4 | – | 1 | 1 | **LC1 DT20●●** | 0.365 |
| | 2 | 2 | 1 | 1 | **LC1 D098●●** | 0.365 |
| **25** | 4 | – | 1 | 1 | **LC1 DT25●●** | 0.365 |
| | 2 | 2 | 1 | 1 | **LC1 D128●●** | 0.365 |
| **32** | 4 | – | 1 | 1 | **LC1 DT32●●** | 0.425 |
| | 2 | 2 | 1 | 1 | **LC1 D188●●** | 0.425 |
| **40** | 4 | – | 1 | 1 | **LC1 DT40●●** | 0.425 |
| | 2 | 2 | 1 | 1 | **LC1 D258●●** | 0.425 |
| **Connection by EverLink®, BTR screw connectors** | | | | | | |
| **60** | 4 | – | 1 | 1 | **LC1 DT60A●●** | 1.090 |
| **80** | 4 | – | 1 | 1 | **LC1 DT80A●●** | 1.150 |
| **Connection by screw clamp terminals or connectors** | | | | | | |
| **60** | 2 | 2 | – | – | **LC1 D40008●●** | 1.440 |
| | | | | | or **LP1 D40008●●** | 2.210 |
| **80** | 2 | 2 | – | – | **LC1 D65008●●** | 1.450 |
| | | | | | or **LP1 D65008●●** | 2.220 |
| **125** | 4 | – | – | – | **LC1 D80004●●** | 1.760 |
| | | | | | or **LP1 D80004●●** | 2.685 |
| | 2 | 2 | – | – | **LC1 D80008●●** | 1.840 |
| | | | | | or **LP1 D80008●●** | 2.910 |
| **200** | 4 | – | – | – | **LC1 D115004●●** | 2.860 |

### 4-pole contactors for connection by lugs or bars

In the references selected above, insert a figure **6** before the voltage code.
Example: **LC1 DT20●●** becomes **LC1 DT206●●**.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1 D09...D150 and LC1 DT20...DT80A** (coils D115 and D150 fitted with integral suppression device as standard) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | – |
| **LC1 D80...D115** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |
| **d.c. supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC1 D09...D65A and LC1 DT20...DT80A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **LC1 or LP1 D80** | | | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – | | |
| **LC1 D115** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC1 D09...D38 and LC1 DT20...DT40** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*

*(2) **LC1 D09** to **D38** and **LC1 DT20** to **DT80A**: clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*
*__LC1 D80__ ∿: clip-on mounting on 35 mm ⊥ rail **AM1 DP** or 75 mm ⊥ rail **AM1 DL** or screw fixing.*
*__LC1__ or __LP1 D80__ ⎓: clip-on mounting on 75 mm ⊥ rail **AM1 DL** or screw fixing.*
*__LC1 D115__ and __D150__: clip-on mounting on 2 x 35 mm ⊥ rails **AM1 DP** or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38**, 0.075 kg from **LC1 DT60A** and **D80A** and 1 kg for **LC1 D80**.*

Selection : pages 5/194 to 5/225
Characteristics : pages 5/50 to 5/55
Dimensions : pages 5/92 to 5/95
Schemes : pages 5/96 and 5/97

# TeSys contactors

## TeSys D, 4-pole contactors

For control in category AC-1, 25 to 200 A

### 4-pole contactors

| Non inductive loads maximum current (θ ≤ 60 °C) utilisation category AC-1 | Number of poles | | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) / Fixing (2) | Weight (3) |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **Connection by spring terminals** | | | | | | |
| **20** | 4 | – | 1 | 1 | **LC1 DT203●●** | 0.380 |
| | 2 | 2 | 1 | 1 | **LC1 D0983●●** | 0.380 |
| **25** | 4 | – | 1 | 1 | **LC1 DT253●●** | 0.380 |
| | 2 | 2 | 1 | 1 | **LC1 D1283●●** | 0.380 |
| **32** | 4 | – | 1 | 1 | **LC1 DT323●●** | 0.425 |
| | 2 | 2 | 1 | 1 | **LC1 D1883●●** | 0.425 |
| **40** | 4 | – | 1 | 1 | **LC1 DT403●●** | 0.425 |
| | 2 | 2 | 1 | 1 | **LC1 D2583●●** | 0.425 |
| **Connection by by EverLink®, BTR screw connectors and control circuit by spring terminals** | | | | | | |
| **60** | 4 | – | 1 | 1 | **LC1 DT60A3●●** | 1.090 |
| **80** | 4 | – | 1 | 1 | **LC1 DT80A3●●** | 1.150 |

### Separate components

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1 D09...D25 and LC1 DT20...DT80A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | – |

| **d.c. supply** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** |
| **LC1 D09...D25 and LC1 DT20...DT80A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |

| **Low consumption** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** |
| **LC1 D09...D25 and LC1 DT20...DT40** (coils with integral suppression device fitted as standard) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*

*(2) **LC1 D09** to **D38** and **LC1 DT20** to **DT80A**: clip-on mounting on 35 mm ⊔ rail **AM1DP** or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38**, 0.075 kg for **LC1 DT60A** and **DT80A**.*

5

# TeSys contactors
for the North American market,
conforming to UL and CSA

1 Motor Disconnect (Disconnect switch)
2 Motor Branch Circuit Protection
(Short-circuit protection)
3 Motor Controller (Contactor)
4 Motor Overload Protection (Thermal overload relay)

## Starters for the North American market

In recent years, the North American market has started to harmonise UL, CSA and ANCE standards, as well as the industrial installation codes provided by national regulations (NEC for the United States, CEC for Canada and MEC for Mexico). *(1)*

Major improvements, carried out by the Canena *(2)* are aimed at harmonising product requirements based on IEC *(3)* standards.

However, the North American codes use specific terminology for defining the functions of a starter.

These functions can be fulfilled by standard IEC products, accompanied by appropriate certifications.

## Combination Starters

Combination Starters are the most common type of packaged motor starter. They are called "Combination" because of their structure and their combined functions.

The figure opposite shows the four combined functions that constitute a complete motor starter circuit, defined as a “Motor branch circuit” by the NEC (US National Electric Code) in article 430. Standard UL508 currently gives different types of combination starter that meet the requirements of a "Motor branch circuit".

**Type E**, called “**self-protected combination starter**”, covers all these functions and can be controlled manually (thermal-magnetic circuit-breaker) or remotely (starter-controller). Type E starters withstand faults within their declared nominal rating without sustaining damage, after which they can be put back into service. In addition, they can withstand more severe short-circuit and durability performance tests without welding or excessive wear of the contact tips.

**Type F,** called “**Combination motor starter**”, consists of a type E manual starter (thermal-magnetic circuit-breaker) combined with a contactor.
These starters are evaluated by means of basic short-circuit tests, but are not considered as “self-protected”.

For this combination, the type E starter must be marked “Combination Motor Controller when used with ...”, followed by the reference of the load side contactor.

*(1) **UL**: Underwriters Laboratories, **CSA**: Canadian Standards Association, **ACNE**: Association of Standardization and Certification, **NEC**: National Electric Code, **CEC**: Canadian Electrical Code, **MEC**: Mexican Electrical Code.*
*(2) **Canena**: Council for Harmonization of Electrotechnical Standardization of North America.*
*(3) **IEC**: International Electrotechnical Commission.*

## Control panels

To help users properly coordinate their motor control equipment with their distribution system in the event of a fault, article 409 of the 2005 NEC requires panel builders to list the short-circuit withstand rating of their motor control panels.

According to standard UL508A, manufacturers must use the short-circuit withstand value of the lowest rated device as the nominal withstand rating of the panel, unless the devices have been tested together for a higher coordinated rating.
The minimum "**short-circuit current rating**" (SCCR), on motor control components for horsepower ratings of 50 hp or below is 5 000 A.

Using a **type E** or **type F** combination starter eliminates the coordination problems of using individual components for the "motor branch circuit protection", "motor controller" and "motor overload protection" functions.

The panel builder uses the declared short-circuit current rating for the combination starter. This value is generally higher than 5 000 A.
This makes it easier to list the short-circuit current ratings and to check the compatibility of a UL508A motor control panel within a given distribution system.

## Group protection

Article 430.53 of the NEC allows a single short-circuit protection device to be used for more than one motor circuit if the components used are marked and listed for such use.

Components suitable for use in group protection, known as "**motor group installations**", can be marked in one of the following two ways:

### Case n° 1

The contactor and the motor overload relay are both listed as suitable for group installation.
An inverse time circuit-breaker can be used as the short-circuit protection device if it is also listed as suitable for group installation.

The panel builder must therefore make sure that the short-circuit protection device selected (fuses or inverse time circuit-breaker) does not exceed the value allowed by article 430.40 for the smallest overload relay used in the circuit.

Once these conditions have been met, the panel builder can reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one third of the size of the upstream circuit conductor supplying the protection device.

The panel builder must limit the length of the motor starter conductor (connecting the short-circuit protection device to the motor contactor/overload relay) to a maximum of 7.6 m (25 feet).

### Case n° 2

The motor contactor and overload relay are listed as suitable for "**tap conductor protection**" in group installations.
This category allows the panel designer to reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one tenth of the size of the upstream circuit conductor supplying the protection device.
The designer must limit the length of this conductor to a maximum of 3.05 m (10 feet).

In both cases, the supply circuits must not be less than 125 % of the connected motor FLA (Full Load Amps) rating.

For panel builders, using **type F** combination starters in group installations simplifies group motor considerations.
Each starter is a fully coordinated motor branch circuit.

The panel builder follows the same NEC requirements for sizing the supply conductors as those required for single motor branch circuits.
The size of the supply conductors can be reduced in accordance with the specifications of article 430.28.
This allows the same flexibility in conductor sizing as that offered in article 430.53 (D), without a requirement to check the short-circuit protection rating marked on the components and the overload relay limit.

A UL508A panel does not need a short-circuit protection device when each motor starter installed is a **type F**.
The upstream short-circuit protection device supplying the starter protects the panel.
The panel builder only has to consider the panel/enclosure disconnect requirements specified by the NEC or local codes.

# TeSys contactors

for the North American market,
conforming to UL and CSA standards, 20 to 200 A

526168

LC1 D09●●

526169

LC1 D25●●

526170

LC1 D65A●●

526171

LC1 D95●●

## Contactors

| Standard power ratings of motors 50/60 Hz: Single-phase 1 Ø 115 V | Single-phase 1 Ø 230 V 240 V | 3-phase 3 Ø 200 V 208 V | 3-phase 3 Ø 230 V 240 V | 3-phase 3 Ø 460 V 480 V | 3-phase 3 Ø 575 V 600 V | Size | Associated cable type 75 °C-Cu | Continuous current | Type of contactor required Basic reference, to be completed (1) / Fixing, connection (2) |
|---|---|---|---|---|---|---|---|---|---|
| HP | HP | HP | HP | HP | HP | | | A | |
| **Connection by screw clamp terminals** | | | | | | | | | |
| 0.5 | 1 | 2 | 2 | 5 | 7.5 | *00* | AWG10 | **20** | **LC1 D09●●** |
| 1 | 2 | 3 | 3 | 7.5 | 10 | *0* | AWG10 | **25** | **LC1 D12●●** |
| 1 | 3 | 5 | 5 | 10 | 15 | *0* | AWG8 | **32** | **LC1 D18●●** |
| 2 | 3 | 5 | 7.5 | 15 | 20 | *1* | AWG6 | **40** | **LC1 D25●●** |
| 2 | 5 | 7.5 | 10 | 20 | 30 | *1* | AWG6 | **50** | **LC1 D32●●** |
| **Power connections by EverLink® BTR screw connectors (4) and control by spring terminals** | | | | | | | | | |
| 3 | 5 | 10 | 10 | 30 | 30 | *2* | AWG3 | **60** | **LC1 D40A●●** |
| 3 | 7.5 | 15 | 15 | 40 | 40 | *2* | AWG3 | **70** | **LC1 D50A●●** |
| 5 | 10 | 20 | 20 | 40 | 50 | *2* | AWG3 | **80** | **LC1 D65A●●** |
| **Connection by screw clamp terminals or connectors** | | | | | | | | | |
| 7.5 | 15 | 20 | 25 | 60 | 60 | *2* | AWG2 | **110** | **LC1 D80●●** |
| 7.5 | 15 | 20 | 25 | 60 | 60 | *2* | AWG2 | **110** | **LC1 D95●●** |
| – | – | 30 | 40 | 75 | 100 | *3* | AWG2/0 | **175** | **LC1 D115●●** |
| – | – | 40 | 50 | 100 | 125 | *4* | AWG3/0 | **200** | **LC1 D150●●** |

## Applications with High-Fault Short-Circuit ratings

For contactors **LC1 D40A** to **LC1 D65A**, the High-Fault Short-Circuit ratings are 50 kA at 480 V and 25 kA at 600 V.
If these contactors are used, stick the **LAD UL1** warning sticker on the enclosure door..

| Description | Language | Sold in lots of | Reference |
|---|---|---|---|
| **Warning sticker** | English, Spanish, French | 10 | **LAD UL1** |

### Application example

**For a 15 HP-230 V motor**

Select a contactor type **LC1 D50A**.
Information: the contactor rating selected corresponds to "size 2", the associated cable is type AWG3 75 °C-Cu.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| a.c. supply | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1 D09…D150** (D115 and D150 coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **LC1 D80…D115** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |

| d.c. supply | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** |
| **LC1 D09…D65A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| **LC1 D80 and D95** | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – |
| **LC1 D115 and D150** (coils with integral suppression device fitted as standard) | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD |

| Low consumption | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** |
| **LC1 D09…D38** (coils with integral suppression device fitted as standard) | | | | | | | | |
| U 0.7…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*(2) **LC1 D09** to **D65A**: clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*
*__LC1 D80__ and __LC1 D95__: clip-on mounting on 35 mm ⊥ rail __AM1 DP__ or 75 mm ⊥ rail __AM1 DL__ or screw fixing.*
*__LC1 D115__ and __D150__: clip-on mounting on 2 x 35 mm ⊥ rails __AM1 DP__ or screw fixing.*

# TeSys contactors

TeSys D, 3-pole reversing contactors for motor control up to 75 kW at 400 V, in category AC-3
Horizontally mounted, pre-assembled

526172

*LC2 D12●●*

526173

*LC2 D65A●●*

526175

*LC2 D115●●*

## 3-pole reversing contactors for connection by screw clamp terminals

**Pre-wired power connections.**

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 (θ ≤ 60 °C) | | | | | | | Rated operational current in AC-3 440 V up to | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil Basic reference, to be completed by adding the control voltage code *(2)* Fixing *(1)* | Weight *(3)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | | | | |
| kW | kW | kW | kW | kW | kW | kW | A | | | | kg |
| **With mechanical interlock, without electrical interlocking, for connection by screw clamp terminals or connectors** | | | | | | | | | | | |
| **2.2** | 4 | 4 | 4 | 5.5 | 5.5 | – | **9** | 1 | 1 | **LC2 D09●●** *(4)* | 0.687 |
| **3** | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | – | **12** | 1 | 1 | **LC2 D12●●** *(4)* | 0.697 |
| **4** | 7.5 | 9 | 9 | 10 | 10 | – | **18** | 1 | 1 | **LC2 D18●●** *(4)* | 0.707 |
| **5.5** | 11 | 11 | 11 | 15 | 15 | – | **25** | 1 | 1 | **LC2 D25●●** *(4)* | 0.787 |
| **7.5** | 15 | 15 | 15 | 18.5 | 18.5 | – | **32** | 1 | 1 | **LC2 D32●●** *(4)* | 0.797 |
| **9** | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | – | **38** | 1 | 1 | **LC2 D38●●** *(4)* | 0.807 |
| **11** | 18.5 | 22 | 22 | 22 | 30 | – | **40** | 1 | 1 | **LC2 D40A●●** *(5)* | 1.870 |
| **15** | 22 | 25 | 30 | 30 | 33 | – | **50** | 1 | 1 | **LC2 D50A●●** *(5)* | 1.880 |
| **18.5** | 30 | 37 | 37 | 37 | 37 | – | **65** | 1 | 1 | **LC2 D65A●●** *(5)* | 1.890 |
| **22** | 37 | 45 | 45 | 55 | 45 | – | **80** | 1 | 1 | **LC2 D80●●** | 3.200 |
| **25** | 45 | 45 | 45 | 55 | 45 | – | **95** | 1 | 1 | **LC2 D95●●** | 3.200 |
| **With mechanical interlock and electrical interlocking, for connection by screw clamp terminals or connectors** | | | | | | | | | | | |
| **30** | 55 | 59 | 59 | 75 | 80 | 65 | **115** | 1 | 1 | **LC2 D115●●** | 6.350 |
| **40** | 75 | 80 | 80 | 90 | 100 | 75 | **150** | 1 | 1 | **LC2 D150●●** | 6.400 |

### Connection by lugs or bars

For reversing contactors LC2 D09 to LC2 D38, LC2 D115 and LC2 D150, in the references selected above, insert a figure **6** before the voltage code. Example: **LC2 D09●●** becomes **LC2 D096●●**.
To build a 40 to 65 A reversing contactor, for connection by lugs, order 2 contactors **LC1 D●●A6** and mechanical interlock **LAD 4CM** (see page 5/76).

## Component parts

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85.

*(1) LC2 D09 to D65A: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
*LC2 D80 and D95: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or 75 mm ⊔ rail **AM1 DL** or screw fixing.*
*LC2 D115 and D150: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
*(2) Standard control circuit voltages (for other voltages between 16 and 690 V, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC2 D09…D150** (D115 and D150 coils with integral suppression device fitted as standard)) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **LC2 D80…D115** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |
| **d.c.supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC2 D09…D65A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts** ⎓ | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC2 D09...D38** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*
*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for **LC2 D09** to **D38**, 0.150 kg for **LC1 D40A** to **D65A**.*
*(4) For reversing contactors with electrical interlocking pre-wired at the factory, add suffix **V** to the references selected above. Example: **LC2 D09P7** becomes **LC2 D09P7V**.*
*(5) For low consumption kit **LA4 DBL** (see page 5/83).*

***Note:** when assembling a reversing contactor, it is good practice to incorporate a 50 ms time delay.*

Selection : pages 5/194 to 5/225
Characteristics : pages 5/50 to 5/55
Dimensions, schemes : pages 5/98 and 5/99

# TeSys contactors

TeSys D, 3-pole reversing contactors for motor control up to 15 kW at 400 V, in category AC-3
Horizontally mounted, pre-assembled

LC2 D123●●

## 3-pole reversing contactors, for connection by spring terminals

**Pre-wired power connections.**
Mechanical interlock without electrical interlocking.

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 (θ ≤ 60 °C) | | | | | | Rated operational current in AC-3 440 V up to | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil Basic reference, to be completed by adding the voltage code (2) Fixing (1) | Weight (3) |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | | | | |
| kW | kW | kW | kW | kW | kW | A | | | | kg |
| **For connection by spring terminals** | | | | | | | | | | |
| **2.2** | 4 | 4 | 4 | 5.5 | 5.5 | **9** | 1 | 1 | **LC2 D093●●** | 0.687 |
| **3** | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | **12** | 1 | 1 | **LC2 D123●●** | 0.697 |
| **4** | 7.5 | 9 | 9 | 10 | 10 | **18** | 1 | 1 | **LC2 D183●●** | 0.707 |
| **5.5** | 11 | 11 | 11 | 15 | 15 | **25** | 1 | 1 | **LC2 D253●●** | 0.787 |
| **7.5** | 15 | 15 | 15 | 18.5 | 18.5 | **32** *(4)* | 1 | 1 | **LC2 D323●●** | 0.797 |
| **Power connection by EverLink®, BTR screw connectors** *(5)* **and control by spring terminals** | | | | | | | | | | |
| **11** | 18.5 | 22 | 22 | 22 | 30 | **40** | 1 | 1 | **LC2 D40A3●●** *(6)* | 1.870 |
| **15** | 22 | 25 | 30 | 30 | 33 | **50** | 1 | 1 | **LC2 D50A3●●** *(6)* | 1.880 |
| **18.5** | 30 | 37 | 37 | 37 | 37 | **65** | 1 | 1 | **LC2 D65A3●●** *(6)* | 1.890 |

### For connection by Faston connectors

**All power connections are to be made by the customer.**
These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals.
For reversing contactors LC2 D09 and LC2 D12 only, in the references selected above, replace the figure **3** before the voltage code with a figure **9**.
Example: **LC2 D093●●** becomes **LC2 D099●●**.

## Component parts

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85.

*(1) LC2 D09 to D32: clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC2 D09…D65A** | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **d.c. supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC2 D09…D65A** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC2 D09...D38** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91.*
*(3) The weights indicated are for reversing contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for **LC2 D09** to **D38**, 0.150 kg for **LC1 D40A** to **D65A**.*
*(4) Must be wired with 2 x 4 mm² cables in parallel on the upstream side. On the downstream side, outgoing terminal block **LAD 331** may be used (Quickfit technology, see page 1/197).When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).*
*(5) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page 5/85).*
*(6) For low consumption kit **LA4 DBL** (see page 5/83).*

# TeSys contactors

## TeSys D, 4-pole changeover contactor pairs for control in category AC-1, 20 to 200 A

526176

*LC2 DT20●●*

## Pre-assembled. Pre-wired power connections.

### For connection by screw clamp terminals or connectors

LC2 DT20 to LC2 DT40: mechanical interlock without electrical interlocking.
LC2 D80004: order separately 2 auxiliary contact blocks LAD N●1 to obtain electrical interlocking between the 2 contactors (see page 5/79). For electrical interlocking incorporated in the mechanical interlock, please consult your Regional Sales Office.
LC2 D115004: mechanical interlock with integral, pre-wired electrical interlocking.

| Utilisation category AC-1 Non-inductive loads Maximum rated operational current (θ ≤ 60 °C) | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil<br>Basic reference, to be completed by adding the voltage code *(1)*<br>Fixing *(2)* | Weight |
|---|---|---|---|---|
| A | | | | kg |
| 20 | 1 | 1 | LC2 DT20●● | 0.730 |
| 25 | 1 | 1 | LC2 DT25●● | 0.730 |
| 32 | 1 | 1 | LC2 DT32●● | 0.850 |
| 40 | 1 | 1 | LC2 DT40●● | 0.850 |
| 125 | – | – | LC2 D80004●● | 3.200 |
| 200 | – | – | LC2 D115004●● | 7.400 |
| **For connection by lugs or bars** | | | | |
| 20 | 1 | 1 | LC2 DT206●● | 0.730 |
| 25 | 1 | 1 | LC2 DT256●● | 0.730 |
| 32 | 1 | 1 | LC2 DT326●● | 0.850 |
| 40 | 1 | 1 | LC2 DT406●● | 0.850 |

## For customer assembly.

| | | | | |
|---|---|---|---|---|
| **For connection by screw clamp terminals or connectors** | | | | |
| 60 | 1 | 1 | LC1 DT60A●● *(3)* | – |
| 80 | 1 | 1 | LC1 DT80A●● *(3)* | – |
| **For connection by lugs or bars** | | | | |
| 60 | 1 | 1 | LC1 DT60A6●● *(3)* | – |
| 80 | 1 | 1 | LC1 DT80A6●● *(3)* | – |

## Accessories

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85.

*(1) See note (1) on next page.*
*(2) **LC2 DT20** to **LC2 DT80**: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
*__LC2 D80:__ clip-on mounting on 35 mm ⊔ rail **AM1 DP** or 75 mm ⊔ rail **AM1 DL** or screw fixing.*
*__LC2 D115__: clip-on mounting on 2 x 35 mm ⊔ rails **AM1 DP** or screw fixing.*
*(3) For these operational currents, order 2 identical contactors and a mechanical interlock **LAD 4CM** (see page 5/76).*

***Note**: when assembling changeover contactor pairs, it is good practice to incorporate a 50 ms time delay.*

# TeSys contactors

## TeSys D, 4-pole changeover contactor pairs for control in category AC-1, 20 A

### Pre-assembled. Pre-wired power connections.

**For connection by spring terminals.**

| Utilisation category AC-1 Non-inductive loads Maximum rated operational current (θ ≤ 60 °C) | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil<br>Basic reference, to be completed by adding the control voltage code *(1)*<br>Fixing *(2)* | Weight |
|---|---|---|---|---|
| A | | | | kg |
| **20** | 1 | 1 | **LC2 DT203●●** | 0.760 |

### For customer assembly.

**Power connection by EverLink®, BTR screw connectors *(3)* and control by spring terminals**

| | | | | |
|---|---|---|---|---|
| **60** | 1 | 1 | **LC1 DT60A3●●** *(4)* | – |
| **80** | 1 | 1 | **LC1 DT80A3●●** *(4)* | – |

### Separate components

**Auxiliary contact blocks and add-on modules**: see pages 5/78 to 5/85.

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC2 DT20…DT40, LC1 DT60…DT80** | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | – |
| **LC2 D80004…D115004** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |

| **d.c. supply** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** |
| **LC2 DT20…DT40, LC1 DT60…DT80** (coils with integral suppression device fitted as standard) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |

| **Low consumption** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** |
| **LC2 DT20...DT40** (coils with integral suppression device fitted as standard) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages 5/86 to 5/91*
*(2) Clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*
*(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page 5/85).*
*(4) For these operational currents, order 2 identical contactors and a mechanical interlock **LAD 4CM** (see page 5/76).*

# TeSys contactors

Component parts for assembling reversing contactors for motor control, low-speed/high-speed starters and star-delta starters

537729

*LAD 9R1*

537730

*LAD 9R3*

537731

*LA9 D8069*

## For 3-pole reversing contactors for motor control

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer

| Description | For contactors *(1)* (2 identical contactors) | Reference | Weight kg |
|---|---|---|---|
| **Kits for assembly of reversing contactors** | | | |
| **Kit comprising:**<br>■ a mechanical interlock **LAD 9V2** with electrical interlocking **LAD 9V1**.<br>■ a set of power connections **LAD 9V5** (parallel) and **LAD 9V6** (reversing) | LC1 D09 to D38 | **LAD 9R1V** | 0.045 |
| **Kit comprising:**<br>■ a mechanical interlock **LAD 9V2** without electrical interlocking<br>■ a set of power connections **LAD 9V5** (parallel) and **LAD 9V6** (reversing) | LC1 D09 to D38 | **LAD 9R1** | 0.045 |
| **Kit comprising:**<br>■ a mechanical interlock **LAD 4CM**,<br>■ a set of power connections **LA9 D65A69**. | LC1 D40A to D65A | **LAD 9R3** | 0.170 |
| **Mechanical interlocks** | | | |
| **Mechanical interlock with integral electrical interlocking** | LC1 D80 and D95 (∿) | **LA9 D4002** | 0.170 |
| | LC1 D80 and D95 (⎓) | **LA9 D8002** | 0.170 |
| | LC1 D115 and D150 | **LA9 D11502** | 0.290 |
| **Mechanical interlock without integral electrical interlocking** | LC1 D09 to D38 | **LAD 9V2** | 0.040 |
| | LC1 D40A to D65A | **LAD 4CM** | 0.040 |
| | LC1 D80 and D95 (∿) | **LA9 D50978** | 0.170 |
| | LC1 D80 and D95 (⎓) | **LA9 D80978** | 0.170 |
| **Sets of power connections** | | | |
| **Comprising:**<br>■ a set of parallel bars,<br>■ a set of reverser bars. | LC1 D09 to D38 with screw clamp terminals or connectors | **LAD 9V5** + **LAD 9V6** | – |
| | LC1 D09…D32 with spring terminal connections | **LAD 9V12** + **LAD 9V13** *(2)* | – |
| | LC1 D40A to D65A | **LA9 D65A69** | 0.130 |
| | LC1 D80 and D95 (∿) | **LA9 D8069** | 0.490 |
| | LC1 D80 and D95 (⎓) | **LA9 D8069** | 0.490 |
| | LC1 D115 and D150 | **LA9 D11569** | 1.450 |

## For low-speed/high-speed starter

| Description | For contactors with connection type | Reference | Weight kg |
|---|---|---|---|
| **Connection kit** enabling reversing of low and high speed directions using a reversing contactor and a 2N/O + 2N/C main pole contactor | Screw clamps or connectors | **LAD 9PVGV** | 0.016 |
| | Power connection module with spring terminal connections | **LAD 3PVGV** | 0.034 |
| | Outgoing terminal block with spring terminal connections | **LAD 3PVGV10** | 0.034 |

## For star-delta starter

| Description | For contactors | Reference | Weight kg |
|---|---|---|---|
| **Mounting kit** comprising:<br>■ 1 time delay contact block **LAD S2** (LC1 D09…D80),<br>■ power circuit connections (LC1 D09…D80),<br>■ hardware required for fixing the contactors onto the mounting plate (LC1 D80). | LC1 D09 and D12 | **LAD 91217** | 0.180 |
| | LC1 D18 to D32 | **LAD 93217** | 0.310 |
| | LC1 D40A and D50A | **LAD 9SD3** | 0.380 |
| | LC1 D80 | **LA9 D8017** | 0.680 |
| **Equipment mounting plates** | LC1 D09, D12 and D18 | **LA9 D12974** | 0.150 |
| | LC1 D32 | **LA9 D32974** | 0.180 |
| | LC1 D40A and D50A | – | – |
| | LC1 D80 | **LA9 D80973** | 0.300 |

*(1) To order the 2 contactors: see pages 5/65 and 5/72.*
*(2) To assemble a reversing contactor with spring terminal connections, the following components must be ordered:*
*- 1 mechanical interlock **LAD 9V2**,*
*- 1 upstream power connection kit and 1 downstream power connection kit..*
*Upstream power connection kit **LAD 9V10**: installed in the Quickfit system with power connection module **LAD 34**.*
*(If module **LAD 34** is not used, replace **LAD 9V10** with **LAD 9V12**).*
*Downstream power connection kit **LAD 9V11**: installed in the Quickfit system with outgoing terminal block **LAD 331**.*
*(If **LAD 331** is not used, replace **LAD 9V11** with **LAD 9V13**).*

Selection : pages 5/194 to 5/197
Characteristics : pages 5/50 to 5/55
Dimensions, Schemes : pages 5/98 and 5/99

# TeSys contactors

Component parts for assembling changeover contactor pairs

## For 4-pole changeover contactor pairs (3-phase distribution + neutral)

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

| Description | For contactors *(1)* (2 identical contactors) | Reference | Weight kg |
|---|---|---|---|
| **Kits for assembly of changeover contactor pairs** | | | |
| **Kit comprising:**<br>■ a mechanical interlock **LAD 9V2** with electrical interlocking **LAD 9V1**,<br>■ a set of power connections (changeover) **LAD 9V7**. | LC1 DT20 to DT40 with screw clamps or connectors | **LAD T9R1V** | 0.045 |
| **Kit comprising:**<br>■ a mechanical interlock **LAD 9V2** without electrical interlocking,<br>■ a set of power connections (changeover) **LAD 9V7**. | LC1 DT20 to DT40 with screw clamps or connectors | **LAD T9R1** | 0.045 |
| **Mechanical interlocks** | | | |
| **With integral electrical interlocking** | LC1 D80004 | **LA9 D4002** | 0.170 |
| | LP1 D80004 | **LA9 D8002** | 0.170 |
| | LC1 D115004 | **LA9 D11502** | 0.280 |
| **Without integral electrical interlocking** | LC1 DT20 to DT40 with screw clamps or connectors | **LAD 9V2** *(2)* | 0.040 |
| | LC1 DT203 to DT403 with spring terminals | **LAD 9V2** *(2)* | 0.040 |
| | LC1 DT60A and DT80A | **LAD 4CM** | 0.040 |
| | LC1 D80004 | **LA9 D50978** | 0.155 |
| | LP1 D80004 | **LA9 D80978** | 0.180 |
| **Sets of power connections** | | | |
| **Comprising a set of parallel bars** | LC1 DT60A and DT80A | **LA9 D65A70** ▲ | 0.150 |
| | LC1 D80004 | **LA9 D8070** | 0.280 |
| | LP1 D80004 | **LA9 D8070** | 0.280 |
| | LC1 D115004 | **LA9 D11570** | 1.100 |
| | LC1 DT203 to DT403 with spring terminals | **LAD 9V9** | 0.100 |
| | LC1 D80004 | **LA9 D8070** *(2)* | – |
| | LP1 D80004 | **LA9 D8070** *(2)* | – |

537733

*LA9 D50978*

537734

*LA9 D6570*

537735

*LA9 D8070*

## For 3-pole changeover contactor pairs

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

| Description | For contactors *(1)* (2 identical contactors) | Reference | Weight kg |
|---|---|---|---|
| **Mechanical interlocks** | | | |
| **Without integral electrical interlocking** | LC1 D40A…D65A | **LAD 9R3S** | 0.105 |
| **With integral electrical interlocking** | LC1 D115 and D150 | **LA9 D11502** | 0.280 |
| **Sets of power connections** | | | |
| **Comprising a set of parallel bars,** | LC1 D115 and D150 | **LA9 D11571** | 0.960 |

*(1) To order the 2 contactors: see pages 5/65 and 5/72.*
*(2) Order 2 contact blocks **LAD N●1** to build the electrical interlock, see page 5/79.*

▲ Available 1st quarter 2010.

See page opposite for mounting possibilities according to the contactor type

# TeSys contactors

## TeSys D contactors and reversing contactors

### Instantaneous auxiliary contact blocks

## Instantaneous auxiliary contact blocks for connection by screw clamp terminals

**For use in normal operating environments**

In order to mount an LAD 8N on an LC1 D80 to D95, a set of shims must be ordered separately, see page 5/85

| Clip-on mounting *(1)* | Number of contacts per block | Composition | | | | | Reference | Weight |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | kg |
| **Front** | 1 | – | – | – | 1 | – | **LAD N10** | 0.020 |
| | | – | – | – | – | 1 | **LAD N01** | 0.020 |
| | 2 | – | – | – | 1 | 1 | **LAD N11** | 0.030 |
| | | – | – | – | 2 | – | **LAD N20** | 0.030 |
| | | – | – | – | – | 2 | **LAD N02** | 0.030 |
| | 4 | – | – | – | 2 | 2 | **LAD N22** | 0.050 |
| | | – | – | – | 1 | 3 | **LAD N13** | 0.050 |
| | | – | – | – | 4 | – | **LAD N40** | 0.050 |
| | | – | – | – | – | 4 | **LAD N04** | 0.050 |
| | | – | – | – | 3 | 1 | **LAD N31** | 0.050 |
| | 4 incl. 1 N/O & 1 N/C make before break | – | – | – | 2 | 2 | **LAD C22** | 0.050 |
| **Side** | 2 | – | – | – | 1 | 1 | **LAD 8N11** | 0.030 |
| | | – | – | – | 2 | – | **LAD 8N20** | 0.030 |
| | | – | – | – | – | 2 | **LAD 8N02** | 0.030 |
| **For terminal referencing conforming to EN 50012** | | | | | | | | |
| **Front** on 3P contactors and 4P contactors 20 to 80 A | 2 | – | – | – | 1 | 1 | **LAD N11G** | 0.030 |
| | 4 | – | – | – | 2 | 2 | **LAD N22G** | 0.050 |
| **Front** on 4P contactors 125 to 200 A | 2 | – | – | – | 1 | 1 | **LAD N11P** | 0.030 |
| | 4 | – | – | – | 2 | 2 | **LAD N22P** | 0.050 |
| **With dust and damp protected contacts, for use in particularly harsh industrial environments** | | | | | | | | |
| **Front** | 2 | – | 2 | – | – | – | **LA1 DX20** | 0.040 |
| | | 1 | 1 | – | – | – | **LA1 DX11** | 0.040 |
| | | 2 | – | – | – | – | **LA1 DX02** | 0.040 |
| | | – | 2 | 2 | – | – | **LA1 DY20** *(2)* | 0.040 |
| | 4 | – | 2 | – | 2 | – | **LA1 DZ40** | 0.050 |
| | | – | 2 | – | 1 | 1 | **LA1 DZ31** | 0.060 |

## Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure **6** to the end of the references selected above.
Example: **LAD N11** becomes **LAD N116**.

## Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for LAD 8, LAD N with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the figure **3** to the end of the references selected above.
Example: **LAD N11** becomes **LAD N113**.

## Instantaneous auxiliary contact blocks for connection by Faston connectors

This type of connection is not possible for LAD 8, LAD N with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the figure **9** to the end of the references selected above.
Example: **LAD N11** becomes **LAD N119**.

*(1) Maximum number of auxiliary contacts that can be fitted:*

| Contactors | | | Instantaneous auxiliary contacts | | | | | Time delay Front mounted |
|---|---|---|---|---|---|---|---|---|
| Type | Number of poles and size | | Side mounted | | Front mounted | | | |
| | | | | | 1 contact | 2 contacts | 4 contacts | |
| ∼ | 3P | LC1 D09…D38 | 1 on LH side | **and** | – | 1 | or 1 | or 1 |
| | | LC1 D40A…D65A | 1 on LH or 1 on RH side | **and** | – | 1 | or 1 | or 1 |
| | | LC1 D80 and D95 (50/60 Hz) | 1 on each side | **or** | 2 | and 1 | or 1 | or 1 |
| | | LC1 D80 and D95 (50 or 60 Hz) | 1 on each side | **and** | 2 | and 1 | or 1 | or 1 |
| | | LC1 D115 and D150 | 1 on LH side | **and** | – | 1 | or 1 | or 1 |
| | 4P | LC1 DT20…DT40 | 1 on LH side | **and** | – | 1 | or 1 | or 1 |
| | | LC1 DT60A and DT80A | 1 on LH or 1 on RH side | **and** | – | 1 | or 1 | or 1 |
| | | LC1 D40008, D65008 and D80 | 1 on each side | **or** | 1 | or 1 | or 1 | or 1 |
| | | LC1 D115 | 1 on each side | **and** | 1 | or 1 | or 1 | or 1 |
| ⎓ | 3P | LC1 D09…D38 | – | | – | 1 | or 1 | or 1 |
| | | LC1 D40A…D65A | – | | – | 1 | or 1 | or 1 |
| | | LC1 D80 and D95 | – | | 1 | or 1 | or 1 | or 1 |
| | | LC1 D115 and D150 | 1 on LH side | **and** | – | 1 | or 1 | or 1 |
| | 4P | LC1 DT20…DT40 | – | | – | 1 | or 1 | or 1 |
| | | LC1 DT60A and DT80A | – | | – | 1 | or 1 | or 1 |
| | | LC1 D40008, D65008 and D80 | – | | 2 | and 1 | or 1 | or 1 |
| | | LC1 D115 | 1 on each side | | – | and 1 | or 1 | or 1 |
| BC *(3)* | 3P | LC1 D09…D38 | – | | – | 1 | – | – |
| | 4P | LC1 DT20…DT40 | – | | – | 1 | – | – |

*(2) Device fitted with 4 earth screen continuity terminals.*
*(3) LC: low consumption.*

# TeSys contactors

## TeSys D contactors and reversing contactors
## Time delay auxiliary contact blocks
## Mechanical latch blocks

*LAD T●*

### Time delay auxiliary contact blocks for connection by screw clamp terminals

Maximum number of auxiliary contact blocks that can be fitted per contactor, see page 5/79.
Sealing cover to be ordered separately, see page 5/85.
LAD T0 and LAD R0: with extended scale from 0.1 to 0.6 s.
LAD S2: with switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.

| Clip-on mounting | Number of contacts | Time delay | | Reference | Weight |
|---|---|---|---|---|---|
| | | Type | Setting range | | kg |
| **Front** | 1 N/O + 1 N/C | On-delay | 0.1…3 s | **LAD T0** | 0.060 |
| | | | 0.1…30 s | **LAD T2** | 0.060 |
| | | | 10…180 s | **LAD T4** | 0.060 |
| | | | 1…30 s | **LAD S2** | 0.060 |
| | | Off-delay | 0.1…3 s | **LAD R0** | 0.060 |
| | | | 0.1…30 s | **LAD R2** | 0.060 |
| | | | 10…180 s | **LAD R4** | 0.060 |

*LAD T●3*

### Time delay auxiliary contact blocks for connection by lugs

Add the figure **6** to the end of the references selected above. Example: **LAD T0** becomes **LAD T06**.

### Time delay auxiliary contact blocks for connection by spring terminals

Add the figure **3** to the end of the references selected above. Example: **LAD T0** becomes **LAD T03**

### Time delay auxiliary contact blocks for connection by Faston connectors

Add the figure **9** to the end of the references selected above. Example: **LAD T0** becomes **LAD T09**.

*LAD 6K10●*

### Mechanical latch blocks *(1)*

| Clip-on mounting | Unlatching control | For use on contactor | Basic reference, to be completed by adding the control voltage code *(2)* | Weight kg |
|---|---|---|---|---|
| **Front** | Manual or electric | LC1 D09…D38 (∿ or ⎓)<br>LC1 DT20…DT40 (∿ or ⎓) | **LAD 6K10●** | 0.070 |
| | | LC1 D40A…D65A (3 P ∿ or ⎓)<br>LC1 DT60A and DT80A (4 P ∿ or ⎓) | **LAD 6K10●** | 0.070 |
| | | LC1 D80…D150 (3 P ∿)<br>LC1 D80 and D115 (3 P ⎓)<br>LC1 D80 (4 P ∿)<br>LC1 D80 and D115 (4 P ∿)<br>LP1 D80 and LC1 D115 (4 P ⎓) | **LA6 DK20●** | 0.090 |

*(1) The mechanical latch block must not be powered up at the same time as the contactor.*
*The duration of the control signal for the mechanical latch block and the contactor should be:*
*⩾ 100 ms for a contactor operating on an a.c. supply,*
*⩾ 250 ms for a contactor operating on a d.c. supply.*
*Maximum impulse duration for the LAD 6K10● mechanical latch block: 10 seconds.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).*

| **Volts 50/60 Hz, ⎓** | **24** | **32/36** | **42/48** | **60/72** | **100** | **110/127** | **220/240** | **256/277** | **380/415** |
|---|---|---|---|---|---|---|---|---|---|
| Code | B | C | E | EN | K | F | M | U | Q |

Characteristics: pages 5/56 to 5/58
Dimensions: pages 5/92 to 5/95
Schemes: pages 5/96 and 5/97



Schneider Electric

# TeSys contactors

## TeSys D contactors and reversing contactors

### Suppressor modules

LAD 4●●

## RC circuits (Resistor-Capacitor)

Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal. i.e. less than 5% total harmonic distortion. Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max. Slight increase in drop-out time (1.2 to 2 times the normal time).

| Mounting | For use with contactor *(1)* Rating | Type V ∼ | Type V ⎓ | Reference | Weight kg |
|---|---|---|---|---|---|
| **Clip-on side mounting** *(3)* | D09…D38 (3P) DT20…DT40 | 24…48 | – | **LAD 4RCE** | 0.012 |
| | | 50…127 | – | **LAD 4RCG** | 0.012 |
| | | 110…250 | – | **LAD 4RCU** | 0.012 |
| **Clip-on front mounting** *(3)* | D40A…D65A (3P) DT60A…DT80A (4P) | 24…48 | – | **LAD 4RC3E** | 0.020 |
| | | 50…127 | – | **LAD 4RC3G** | 0.020 |
| | | 110…240 | – | **LAD 4RC3U** | 0.020 |
| | | 380…415 | – | **LAD 4RC3N** | 0.040 |
| **Screw fixing** *(4)* | D80…D150 (3P) D40…D115 (4P) | 24…48 | – | **LA4 DA2E** | 0.018 |
| | | 50…127 | – | **LA4 DA2G** | 0.018 |
| | | 110…240 | – | **LA4 DA2U** | 0.018 |
| | | 380…415 | – | **LA4 DA2N** | 0.018 |

LAD 4RC3●, LAD 4V3●, LAD 4D3U, LAD 4T3●

## Varistors (peak limiting)

Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

| | | | | | |
|---|---|---|---|---|---|
| **Clip-on side mounting** *(3)* | D09…D38 (3P) DT20…DT40 | 24…48 | – | **LAD 4VE** | 0.012 |
| | | 50…127 | – | **LAD 4VG** | 0.012 |
| | | 110…250 | – | **LAD 4VU** | 0.012 |
| **Clip-on front mounting** *(3)* | D40A…D65A (3P) DT60A…DT80A (4P) | 24…48 | 24…48 | **LAD 4V3E** | 0.020 |
| | | 50…127 | 50…127 | **LAD 4V3G** | 0.020 |
| | | 110…250 | 110…250 | **LAD 4V3U** | 0.020 |
| **Screw fixing** *(4)* | D80…D115 (3P) D80…D115 (4P) | 24…48 | – | **LA4 DE2E** | 0.018 |
| | | 50…127 | – | **LA4 DE2G** | 0.018 |
| | | 110…250 | – | **LA4 DE2U** | 0.018 |
| | D80…D95 (3P) D80 (4P) | – | 24…48 | **LA4 DE3E** | 0.018 |
| | | – | 50…127 | **LA4 DE3G** | 0.018 |
| | | – | 110…250 | **LA4 DE3U** | 0.018 |

LA4 D●●

## Flywheel diodes

No overvoltage or oscillating frequency. Increase in drop-out time (6 to 10 times the normal time). Polarised component.

| | | | | | |
|---|---|---|---|---|---|
| **Clip-on side mounting** *(5)* | D09…D38 (3P), DT20…DT40 | – | 24…250 | **LAD 4DDL** | 0.012 |
| **Clip-on front mounting** *(5)* | D40A…D65A (3P), DT60A…DT80A (4P) | – | 24…250 | **LAD 4D3U** | 0.020 |
| **Screw fixing** *(4)* | D80 and D95 (3P), D40…D80 (4P) | – | 24…250 | **LA4 DC3U** | 0.018 |

## Bidirectional peak limiting diodes

Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks.

| | | | | | |
|---|---|---|---|---|---|
| **Clip-on side mounting** *(3) (5)* | D09…D38 (3P) DT20…DT40 (4P) *(2)* | 24 | – | **LAD 4TB** | 0.012 |
| | | – | 24 | **LAD 4TBDL** | 0.012 |
| | | 72 | – | **LAD 4TS** | 0.012 |
| | | – | 72 | **LAD 4TSDL** | 0.012 |
| | | – | 125 | **LAD 4TGDL** | 0.012 |
| | | – | 250 | **LAD 4TUDL** | 0.012 |
| | | – | 600 | **LAD 4TXDL** | 0.012 |
| **Clip-on front mounting** *(3)* | D40A…D65A (3P) DT60A…DT80A (4P) *(2)* | 12…24 | 12…24 | **LAD 4T3B** | 0.020 |
| | | 25…72 | 25…72 | **LAD 4T3S** | 0.020 |
| | | 73…125 | 73…125 | **LAD 4T3G** | 0.020 |
| | | 126…250 | 126…250 | **LAD 4T3U** | 0.020 |
| | | 251…440 | 251…440 | **LAD 4T3R** | 0.020 |
| **Screw fixing** *(4)* | D80…D95 (3P) D40…D80 (4P) | 12…24 | 12…24 | **LA4 DB2B** | 0.018 |
| | | 25…72 | 25…72 | **LA4 DB2S** | 0.018 |
| | | – | 24 | **LA4 DB3B** | 0.018 |
| | | – | 72 | **LA4 DB3S** | 0.018 |

LAD 4DDL or LAD 4T●DL

*(1) For satisfactory protection, a suppressor module must be fitted across the coil of each contactor.*
*(2) From D09 to D65A and from LC1 DT20 to DT80A, d.c. and low consumption 3-pole contactors are fitted with a built-in bidirectional peak limiting diode suppressor as standard. This bidirectional peak limiting diode is removable and can therefore be replaced by the user. (See reference above). If a d.c. or low consumption contactor is used without suppression, the standard suppressor should be replaced with a blanking plug (reference **LAD 9DL** for LC1 D09 to D38 and LC1 DT20 to DT40; reference **LAD 9DL3** for LC1 D40A to D65A and LC1 DT60A to DT80A).*
*(3) Clipping-on makes the electrical connection. The overall size of the contactor remains unchanged.*
*(4) Mounting at the top of the contactor on coil terminals A1 and A2.*
*(5) In order to install these accessories, the existing suppression device must first be removed.*

See page opposite for mounting possibilities according to the contactor type

## Electronic serial timer modules *(1)*

■ 3-pole contactors LC1 D09 to D38:
mounted using adapter LAD 4BB, to be ordered separately, see below.
■ 3-pole contactors LC1 D40A to D65A:
mounted using adapter LAD 4BB3, to be ordered separately, see below.
■ 3-pole contactors LC1 D80 to D150 and 4-pole contactors LC1 D40 to D115:
mounted directly across terminals A1 and A2 of the contactor.

**On-delay type**

| Operational voltage ∼ | | Time delay | Reference | Weight |
|---|---|---|---|---|
| 24…250 V | 100…250 V | | | kg |
| LC1 D09…D65A (3P) | LC1 D80…D150 (3P) | 0.1…2 s | **LA4 DT0U** | 0.040 |
| | | 1.5…30 s | **LA4 DT2U** | 0.040 |
| | | 25…500 s | **LA4 DT4U** | 0.040 |

## Interface modules

■ 3-pole contactors LC1 D09 to D38: mounted using adapter LAD 4BB, to be ordered separately, see below.
■ 3-pole contactors LC1 D40A to D65A: mounted using adapter LAD4 BB3, to be ordered separately, see below.

**Relay interface**

| Operational voltage ∼ | Supply voltage E1-E2 (⎓) | Reference | Weight |
|---|---|---|---|
| 24…250 V | | | kg |
| LC1 D09…D150 (3P) | 24 V | **LA4 DFB** | 0.050 |

**Relay interface with "AUTO-I" manual override switch (output forced "ON"), solid state type**

| Operational voltage ∼ | | Supply voltage E1-E2 (⎓) | Reference | Weight |
|---|---|---|---|---|
| 24…250 V | 100…250 V | | | kg |
| LC1 D09…D65A (3P) | LC1 D80…D115 (3P) | 24 V | **LA4 DWB** | 0.045 |

## Low consumption kit

| For use on contactors | Composition | Reference | Weight kg |
|---|---|---|---|
| LC1 D40A…D65A (3P) *(2)* | Kit comprising:<br>■ a retrofit coil LAD 4BB3.<br>■ a relay interface module LA4 DFB. | **LA4 DBL** | 0.077 |

## Retrofit: coil for 3-pole contactor

**For adapting existing wiring to a new product**

| For use on contactors | | | Reference | Weight kg |
|---|---|---|---|---|
| LC1 D09…D38 | Without coil suppression | | **LAD 4BB** | 0.019 |
| | With coil suppression | ∼ 24…48 V | **LAD 4BBVE** | 0.014 |
| | | ∼ 50…127 V | **LAD 4BBVG** | 0.014 |
| | | ∼ 110…250 V | **LAD 4BBVU** | 0.014 |
| LC1 D40A…65A | Without coil suppression | | **LAD 4BB3** | 0.027 |

*(1) For 24 V operation, the contactor must be fitted with a 21 V coil (code Z). See pages 5/86 to 5/91.*
*(2) The kit is compatible with a coil voltage of ∼ 24 V to ∼ 250 V (B7 to U7) and ⎓ 24 V to ⎓ 250 V (BD to UD).*



Characteristics: pages 5/59 to 5/61
Dimensions: pages 5/92 to 5/95
Schemes: pages 5/96 and 5/97

# TeSys contactors

## TeSys D contactors and reversing contactors

### Accessories

*LA9 D3260*

*LA9 D11550●*

*LAD 96570*

*LA9 D11560●*

*LA9 D11570●*

*LA9 D80962*

*LA9 D11567*

**Accessories for main pole and control connections**

| Description | | For use with contactors LC1 ∼ | For use with contactors LC1 ⎓ | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|---|
| **Connectors for cable, size** (1 connector) | 4-pole 10 mm² | DT20, DT25 | DT20, DT25 | 1 | **LAD 92560** | 0.030 |
| | 3-pole 25 mm² | D09…D38 | D09…D38 | 1 | **LA9 D3260** | 0.040 |
| **EverLink® terminal block** | 3-pole | D40A…D65A | D40A…D65A | 1 | **LAD 96560** | 0.087 |
| **Connectors for cables** (2 connectors) | 3-pole 120 mm² | D115, D150 | D115, D150 | 1 | **LA9 D115603** | 0.560 |
| | 4-pole 120 mm² | D115 | D115 | 1 | **LA9 D115604** | 0.740 |
| **Connectors for lug type terminals** (2 connectors) | 3-pole | D1156, D1506 | D1156, D1506 | 1 | **LA9 D115503** | 0.300 |
| | 4-pole | D1156 | D1156 | 1 | **LA9 D115504** | 0.360 |
| **Protective covers for connectors for lug type terminals** | 3-pole | D40A6…D65A6 | D40A6…D65A6 | 1 | **LAD 96570** | 0.021 |
| | | D1156, D1506 | D1156, D1506 | 1 | **LA9 D115703** *(1)* | 0.250 |
| | 4-pole | D60A6…D80A6 | D60A6…D80A6 | 1 | **LAD 96580** | 0.027 |
| | | D1156, D1506 | D1156, D1506 | 1 | **LA9 D115704** | 0.300 |
| **IP 20 covers for lug type terminals** (for mounting with circuit-breakers GV3 P●●6 and GV3 L●●6) | 3 poles | D40A6…D65A6 | D40A6…D65A6 | 1 | **LAD 96575** | 0.010 |
| **Links for parallel connection of** | 2 poles | D09…D38 | D09…D38 | 10 | **LA9 D2561** | 0.060 |
| | | DT20, DT25 (4P) | DT20, DT25 (4P) | 10 | **LA9 D1261** | 0.012 |
| | | DT32, DT40 (4P) | DT32, DT40 (4P) | 10 | **LAD 96061** | 0.060 |
| | | D40A…D65A | D40A…D65A | 1 | **LAD 9P32** | 0.021 |
| | | D80, D95 | D80 | 2 | **LA9 D80961** | 0.060 |
| | 3 poles | D09…D38 | D09…D38 | 10 | **LAD 9P3** *(2)* | 0.005 |
| | | D40A…D65A | D40A…D65A | 1 | **LAD 9P33** | 0.021 |
| | | D80, D95 | D80, D95 | 1 | **LA9 D80962** | 0.080 |
| | 4 poles | DT20, DT25 | DT20, DT25 | 2 | **LA9 D1263** | 0.024 |
| | | D80, D95 | D80 | 2 | **LA9 D80963** | 0.100 |
| **Staggered coil connection** | | – | D80 | 10 | **LA9 D09966** | 0.006 |
| **Control circuit take-off from main pole** | | D80, D95 | D80, D95 | 10 | **LA9 D8067** | 0.010 |
| | | D115, D150 | D115, D150 | 10 | **LA9 D11567** | 0.014 |
| **Spreaders** for increasing the pole pitch to 45 mm | | D115, D150 | D115, D150 | 3 | **GV7 AC03** | 0.180 |

*(1) For 3-pole contactors: 1 set of 6 covers, for 4-pole contactors: 1 set of 8 covers.*
*(2) Separate connecting bar for connecting 2 poles in parallel.*

Dimensions:
pages 5/92 to 5/95

Schemes:
pages 5/96 and 5/97

# TeSys contactors

## TeSys D contactors and reversing contactors

### Accessories

GV2 G245

GV1 G09

GV3 S

LA9 D941

LAD 9ET●

LAD 7X3

## Sets of contacts and arc chambers

| Description | For contactor | | Reference | Weight kg |
|---|---|---|---|---|
| **Sets of contacts** | 3-pole | LC1 D115 | **LA5 D1158031** | 0.260 |
| | | LC1 D150 | **LA5 D150803** | 0.260 |
| | 4-pole | LC1 D115004 | **LA5 D115804** | 0.330 |
| **Arc chambers** | 3-pole | LC1 D115 | **LA5 D11550** | 0.395 |
| | | LC1 D150 | **LA5 D15050** | 0.395 |
| | 4-pole | LC1 D115004 | **LA5 D115450** | 0.470 |

## Power connection accessories

| | | | |
|---|---|---|---|
| **Terminal block** | For supply to one or more GV2 G busbar sets | **GV1 G09** | 0.040 |
| **Set of 63 A busbars** for parallelling of contactors | 2 contactors LC1 D09…D18 or D25…D38 | **GV2 G245** | 0.036 |
| | 4 contactors LC1 D09…D18 or D25…D38 | **GV2 G445** | 0.077 |
| **Set of 115 A busbars** for parallelling of contactors | 2 contactors LC1 D40A…D65A | **GV3 G264** | 0.150 |
| | 3 contactors LC1 D40A…D65A | **GV3 G364** *(1)* | 0.250 |
| **Set of S-shape busbars** | For circuit-breakers GV3 P●● and GV3 L●● and contactors LC1 D40A…D65A | **GV3 S** | 0.111 |

## Protection accessories

| Description | Use | Sold in lots of | Reference | Weight kg |
|---|---|---|---|---|
| **Miniature control circuit fuse holder** | 5 x 20 with 4 A-250 V fuse | 1 | **LA9 D941** | 0.025 |
| **Sealing cover** | For LAD T, LAD R | 1 | **LA9 D901** | 0.005 |
| **Safety cover** preventing access to the moving contact carrier | LC1 D09…D65A and DT20…DT80A | 1 | **LAD 9ET1** | 0.026 |
| | LC1 D80 and D95 | 1 | **LAD 9ET3** | 0.004 |
| | LC1 D115 and D150 | 1 | **LAD 9ET4** | 0.004 |

## Marking accessories

| Description | Use | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|
| **Sheet of 64 blank legends,** self-adhesive, 8 x 33 mm *(2)* | Contactors (except 4P) LC1 D80…D115 , LAD N (4 contacts), LA6 DK | 10 | **LAD 21** | 0.020 |
| **Sheet of 112 blank legends,** self-adhesive, 8 x 12 mm *(2)* | LAD N (2 contacts), LAD T, LAD R, LRD | 10 | **LAD 22** | 0.020 |
| **Sheet of 64 blank legends** for marking using plotter or 8 x 33 mm engraver | Contactors (except 4P) LC1 D80…D115, LAD (4 contacts), LA6 DK | 10 | **LAD 23** | 0.050 |
| **Sheet of 440 blank legends** for marking using plotter or 8 x 12 mm engraver | All products | 35 | **LAD 24** | 0.200 |
| **Marker holder** snap-in, 8 x 22 mm | 4-pole contactors, LC1 D80...D115, LA6 DK | 100 | **LA9 D92** | 0.001 |
| **Marker holder** snap-in, 8 x 18 mm | LC1 D09...D65A, LC1 DT20...DT80A, LAD N (4 contacts), LAD T, LAD R | 100 | **LAD 90** | 0.001 |
| **Bag of 300 blank legends** self-adhesive, 7 x 21 mm | On holder LA9 D92 | 1 | **LA9 D93** | 0.001 |
| **"SIS Label" labelling software** supplied on CD-Rom | Multi-language version: English, French, German, Italian, Spanish | 1 | **XBY 2U** | 0.100 |

## Mounting accessories

| | | | | |
|---|---|---|---|---|
| **Retrofit plate** for screw fixing | For replacement of LC1 D40 to D65 with LC1 D40A to D65A | 1 | **LAD 7X3** | 0.150 |
| **Mounting plate** | For replacement of LC1 F115 or F150 with LC1 D115 or D150 | 1 | **LA9 D730** | 0.360 |
| **Set of shims** | For fitting side mounting blocks LAD 8N on LC1 D80 and D95 | 1 | **LA9 D511** | 0.020 |
| **Size 4 Allen key, insulated, 1000 V** | For use on contactors LC1 D40A to LC1 D150 | 5 | **LAD ALLEN4** | 0.026 |

*(1) With this set of busbars, any one contactor can be supplied directly by its EverLink® double cage power terminal block. The other two contactors are supplied by the busbar set. The 115 A limitation is therefore applied to these two contactors. Example: 1 LC1 D65A supplied directly + 1 contactor LC1 D65A and 1 contactor LC1 D50 A supplied via the busbar set = 115 A. This combination is compatible with busbar set GV3 G364.*

*(2) These legends are for sticking onto the safety cover of the contactors or add-on block, if fitted.*

# TeSys contactors
a.c. coils
for TeSys D, 3 or 4-pole contactors

537496

*LXD 1●●*

## For ∼ contactors LC1 D09...D38 and LC1 DT20…DT40

### Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 70 VA,
- sealed (cos φ = 0.3) 50 Hz: 7 VA, 60 Hz: 7.5 VA

Operating range (θ ≤ 60 °C): 50 Hz: 0.8…1.1 Uc, 60 Hz: 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|
| V | Ω | H | | kg |
| | | | 50/60 Hz | |
| **12** | 1.33 | 0.05 | **LXD 1J7** | 0.070 |
| **21** *(2)* | 4.17 | 0.17 | **LXD 1Z7** | 0.070 |
| **24** | 5.37 | 0.22 | **LXD 1B7** | 0.070 |
| **32** | 10.1 | 0.39 | **LXD 1C7** | 0.070 |
| **36** | 12.8 | 0.49 | **LXD 1CC7** | 0.070 |
| **42** | 17 | 0.67 | **LXD 1D7** | 0.070 |
| **48** | 21.7 | 0.87 | **LXD 1E7** | 0.070 |
| **60** | 34.6 | 1.4 | **LXD 1EE7** | 0.070 |
| **100** | 100.4 | 3.8 | **LXD 1K7** | 0.070 |
| **110** | 124.1 | 4.6 | **LXD 1F7** | 0.070 |
| **115** | 129.8 | 5 | **LXD 1FE7** | 0.070 |
| **120** | 150.6 | 5.4 | **LXD 1G7** | 0.070 |
| **127** | 158.5 | 6.1 | **LXD 1FC7** | 0.070 |
| **200** | 410.7 | 15 | **LXD 1L7** | 0.070 |
| **208** | 430.4 | 16 | **LXD 1LE7** | 0.070 |
| **220** | 515.4 | 18 | **LXD 1M7** *(3)* | 0.070 |
| **230** | 538.6 | 20 | **LXD 1P7** | 0.070 |
| **240** | 562.3 | 22 | **LXD 1U7** | 0.070 |
| **277** | 800.7 | 29 | **LXD 1W7** | 0.070 |
| **380** | 1551 | 55 | **LXD 1Q7** *(4)* | 0.070 |
| **400** | 1633 | 60 | **LXD 1V7** | 0.070 |
| **415** | 1694 | 65 | **LXD 1N7** | 0.070 |
| **440** | 1993 | 73 | **LXD 1R7** | 0.070 |
| **480** | 2398 | 87 | **LXD 1T7** | 0.070 |
| **500** | 2499 | 95 | **LXD 1S7** | 0.070 |
| **575** | 3294 | 125 | **LXD 1SC7** | 0.070 |
| **600** | 3810 | 136 | **LXD 1X7** | 0.070 |
| **660** | 4656 | 165 | **LXD 1YC7** | 0.070 |
| **690** | 5020 | 180 | **LXD 1Y7** | 0.070 |

*(1) The last 2 digits in the reference represent the voltage code.*
*(2) Voltage for special coils fitted in contactors with serial timer modules, with 24 V supply.*
*(3) Suitable for use on **230 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages 5/52 and 5/53).*
*(4) Suitable for use on **400 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages 5/52 and 5/53).*

# TeSys contactors
a.c. coils
for TeSys D, 3 or 4-pole contactors

503984

*LXD 3●●*

## For ∼ contactors LC1 D40A…D65A, LC1 DT60A and LC1 DT80A

### Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 160 VA.
- sealed (cos φ = 0.3) 50 Hz: 15 VA, 60 Hz: 15 VA

Operating range (θ ≤ 60 °C): 50 Hz: 0.8…1.1 Uc, 60 Hz: 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10% | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|
| V | Ω | H | | kg |
| | | | 50/60 Hz | |
| **12** | 0.49 | 0.03 | **LXD 3J5** *(2)* | 0.070 |
| **24** | 1.98 | 0.12 | **LXD 3B7** | 0.070 |
| **32** | 3.76 | 0.22 | **LXD 3C7** | 0.070 |
| **42** | 6.18 | 0.37 | **LXD 3D7** | 0.070 |
| **48** | 7.97 | 0.48 | **LXD 3E7** | 0.070 |
| **100** | 37.63 | 2.07 | **LXD 3K7** | 0.070 |
| **110** | 42.28 | 2.50 | **LXD 3F7** | 0.070 |
| **115** | 48.76 | 2.74 | **LXD 3FE7** | 0.070 |
| **120** | 37.63 | 2.07 | **LXD 3G7** | 0.070 |
| **127** | 60.29 | 3.34 | **LXD 3FC7** | 0.070 |
| **200** | 149 | 8.27 | **LXD 3L7** | 0.070 |
| **208** | 105 | 6.22 | **LXD 3LE7** | 0.070 |
| **220** | 182 | 10 | **LXD 3M7** *(3)* | 0.070 |
| **230** | 192 | 10.9 | **LXD 3P7** | 0.070 |
| **240** | 202 | 11.9 | **LXD 3U7** | 0.070 |
| **277** | 193 | 11 | **LXD 3W7** | 0.070 |
| **380** | 512 | 29.9 | **LXD 3Q7** *(4)* | 0.070 |
| **400** | 607 | 33.1 | **LXD 3V7** | 0.070 |
| **415** | 635 | 35.6 | **LXD 3N7** | 0.070 |
| **440** | 682 | 40.1 | **LXD 3R7** | 0.070 |
| **480** | 607 | 33.1 | **LXD 3T7** | 0.070 |
| **500** | 878 | 51.7 | **LXD 3S7** | 0.070 |
| **575** | 1238 | 68.4 | **LXD 3SC7** | 0.070 |
| **600** | 1304 | 74.5 | **LXD 3X7** | 0.070 |
| **660** | 1593 | 90.1 | **LXD 3YC7** | 0.070 |
| **690** | 1683 | 98.5 | **LXD 3Y7** | 0.070 |

*(1) The last 2 digits in the reference represent the voltage code.*
*(2) This coil can only be used on 50 Hz.*
*(3) Suitable for use on **230 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages 5/52 and 5/53).*
*(4) Suitable for use on **400 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages 5/52 and 5/53).*

# TeSys contactors

a.c. coils
for TeSys D, 3 or 4-pole contactors

537497

*LX1 D6●●*

## For 3 or 4-pole contactors LC1D40, D50, D65, D80, D95

### Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 50 Hz: 200 VA, 60 Hz: 220 VA,
- sealed (cos φ = 0.3) 50 Hz: 20 VA, 60 Hz: 22 VA

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20°C ± 10 % | Inductance of closed circuit | Reference *(1)* | Average resistance at 20°C ± 10 % | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|---|---|---|
| V | Ω | H | | Ω | H | | kg |
| | | | 50 Hz | | | 60 Hz | |
| **24** | 1.4 | 0.09 | **LX1 D6B5** | 1.05 | 0.06 | **LX1 D6B6** | 0.280 |
| **32** | 2.6 | 0.16 | **LX1 D6C5** | – | – | – | 0.280 |
| **42** | 4.4 | 0.27 | **LX1 D6D5** | – | – | – | 0.280 |
| **48** | 5.5 | 0.35 | **LX1 D6E5** | 4.2 | 0.23 | **LX1 D6E6** | 0.280 |
| **110** | 31 | 1.9 | **LX1 D6F5** | 22 | 1.2 | **LX1 D6F6** | 0.280 |
| **115** | 31 | 1.9 | **LX1 D6FE5** | – | – | – | 0.280 |
| **120** | – | – | – | 28 | 1.5 | **LX1 D6G6** | 0.280 |
| **127** | 41 | 2.4 | **LX1 D6G5** | – | – | – | 0.280 |
| **208** | – | – | – | 86 | 4.3 | **LX1 D6L6** | 0.280 |
| **220** | – | – | – | 98 | 4.8 | **LX1 D6M6** | 0.280 |
| **220/230** | 127 | 7.5 | **LX1 D6M5** | – | – | – | 0.280 |
| **230** | 133 | 8.1 | **LX1 D6P5** | – | – | – | 0.280 |
| **240** | 152 | 8.7 | **LX1 D6U5** | 120 | 5.7 | **LX1 D6U6** | 0.280 |
| **256** | 166 | 10 | **LX1 D6W5** | – | – | – | 0.280 |
| **277** | – | – | – | 157 | 8 | **LX1 D6W6** | 0.280 |
| **380** | – | – | – | 300 | 14 | **LX1 D6Q6** | 0.280 |
| **380/400** | 381 | 22 | **LX1 D6Q5** | – | – | – | 0.280 |
| **400** | 411 | 25 | **LX1 D6V5** | – | – | – | 0.280 |
| **415** | 463 | 26 | **LX1 D6N5** | – | – | – | 0.280 |
| **440** | 513 | 30 | **LX1 D6R5** | 392 | 19 | **LX1 D6R6** | 0.280 |
| **480** | – | – | – | 480 | 23 | **LX1 D6T6** | 0.280 |
| **500** | 668 | 38 | **LX1 D6S5** | – | – | – | 0.280 |
| **575** | – | – | – | 675 | 33 | **LX1 D6S6** | 0.280 |
| **600** | – | – | – | 775 | 36 | **LX1 D6X6** | 0.280 |
| **660** | 1220 | 67 | **LX1 D6Y5** | – | – | – | 0.280 |

### Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 50/60 Hz: 245 VA at 50 Hz,
- sealed (cos φ = 0.3) 50/60 Hz: 26 VA at 50 Hz.

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | 50/60 Hz | |
| **24** | – | – | _ | 1.22 | 0.08 | **LX1 D6B7** | 0.280 |
| **42** | – | – | – | 3.5 | 0.25 | **LX1 D6D7** | 0.280 |
| **48** | – | – | – | 5 | 0.32 | **LX1 D6E7** | 0.280 |
| **110** | – | – | – | 26 | 1.7 | **LX1 D6F7** | 0.280 |
| **115** | – | – | – | – | – | **LX1 D6FE7** | 0.280 |
| **120** | – | – | – | 32 | 2 | **LX1 D6G7** | 0.280 |
| **220/230** *(2)* | – | – | – | 102 | 6.7 | **LX1 D6M7** | 0.280 |
| **230** | – | – | – | 115 | 7.7 | **LX1 D6P7** | 0.280 |
| **230/240** *(3)* | – | – | – | 131 | 8.3 | **LX1 D6U7** | 0.280 |
| **380/400** *(4)* | – | – | – | 310 | 20 | **LX1 D6Q7** | 0.280 |
| **400** | – | – | – | 349 | 23 | **LX1 D6V7** | 0.280 |
| **415** | – | – | – | 390 | 24 | **LX1 D6N7** | 0.280 |
| **440** | – | – | – | 410 | 27 | **LX1 D6R7** | 0.280 |

*(1) The last 2 digits in the reference represent the voltage code.*
*(2) For use on **230 V** / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see pages 5/52 and 5/53. This coil can be used on 240 V at 60 Hz.*
*(3) This coil can be used on 220/240 V at 50 Hz and on 240 V only at 60 Hz.*
*(4) For use on **400 V** / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see pages 5/52 and 5/53.*

# TeSys contactors

a.c. coils
for TeSys D, 3 or 4-pole contactors

## For 3 or 4-pole contactors LC1 D115

### Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.8) 50 or 60 Hz: 300 VA,
- sealed (cos φ = 0.3) 50 or 60 Hz: 22 VA

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

537502

*LX1 D8●●*

| Control circuit voltage Uc | Average resistance at 20°C ± 10 % | Inductance of closed circuit | Reference *(1)* | Average resistance at 20°C ± 10 % | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|---|---|---|
| V | Ω | H | | Ω | H | | kg |
| | | | 50 Hz | | | 60 Hz | |
| **24** | 1.24 | 0.09 | **LX1 D8B5** | 0.87 | 0.07 | **LX1 D8B6** | 0.260 |
| **32** | 2.14 | 0.17 | **LX1 D8C5** | – | – | – | 0.260 |
| **42** | 3.91 | 0.28 | **LX1 D8D5** | – | – | – | 0.260 |
| **48** | 4.51 | 0.36 | **LX1 D8E5** | 3.91 | 0.28 | **LX1 D8E6** | 0.260 |
| **110** | 26.53 | 2.00 | **LX1 D8F5** | 19.97 | 1.45 | **LX1 D8F6** | 0.260 |
| **115** | 26.53 | 2.00 | **LX1 D8FE5** | – | – | – | 0.260 |
| **120** | – | – | – | 24.02 | 1.70 | **LX1 D8G6** | 0.260 |
| **127** | 32.75 | 2.44 | **LX1 D8FC5** | – | – | – | 0.260 |
| **208** | – | – | – | 67.92 | 5.06 | **LX1 D8L6** | 0.260 |
| **220** | 104.77 | 7.65 | **LX1 D8M5** | 79.61 | 5.69 | **LX1 D8M6** | 0.260 |
| **230** | 104.77 | 8.29 | **LX1 D8P5** | – | – | – | 0.260 |
| **240** | 125.25 | 8.89 | **LX1 D8U5** | 97.04 | 6.75 | **LX1 D8U6** | 0.260 |
| **277** | – | – | – | 125.75 | 8.89 | **LX1 D8W6** | 0.260 |
| **380** | 338.51 | 22.26 | **LX1 D8Q5** | 243.07 | 17.04 | **LX1 D8Q6** | 0.260 |
| **400** | 368.43 | 25.55 | **LX1 D8V5** | – | – | – | 0.260 |
| **415** | 368.43 | 27.65 | **LX1 D8N5** | – | – | – | 0.260 |
| **440** | 441.56 | 30.34 | **LX1 D8R5** | 338.51 | 22.26 | **LX1 D8R6** | 0.260 |
| **480** | – | – | – | 368.43 | 25.55 | **LX1 D8T6** | 0.260 |
| **500** | 566.62 | 38.12 | **LX1 D8S5** | – | – | – | 0.260 |

## For 3 or 4-pole contactors LC1 D115, LC1 D150

### Specifications

Average consumption at 20 °C:
- inrush: cos φ = 0.9 - 280 to 350 VA,
- sealed: cos φ = 0.9 - 2 to 18 VA.

Operating range (θ ≤ 55 °C): 0.8…1.15 Uc.
Coils with integral suppression device fitted as standard, class B.

| Control circuit voltage Uc | Average resistance at 20°C ± 10 % | Inductance of closed circuit | Reference *(1)* | Average resistance at 20°C ± 10 % | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|---|---|---|
| V | Ω | H | | Ω | H | | kg |
| | | | | | | 50/60 Hz | |
| **24** | – | – | – | 147 | 3.03 | **LX1 D8B7** | 0.290 |
| **32** | – | – | – | 301 | 8.28 | **LX1 D8C7** | 0.290 |
| **42** | – | – | – | 498 | 13.32 | **LX1 D8D7** | 0.290 |
| **48** | – | – | – | 1061 | 24.19 | **LX1 D8E7** | 0.290 |
| **110** | – | – | – | 4377 | 109.69 | **LX1 D8F7** | 0.290 |
| **115** | – | – | – | 4377 | 109.69 | **LX1 D8FE7** | 0.290 |
| **120** | – | – | – | 4377 | 109.69 | **LX1 D8G7** | 0.290 |
| **127** | – | – | – | 6586 | 152.65 | **LX1 D8FC7** | 0.290 |
| **208** | – | – | – | 10 895 | 260.15 | **LX1 D8LE7** | 0.290 |
| **220** | – | – | – | 9895 | 210.72 | **LX1 D8M7** | 0.290 |
| **230** | – | – | – | 9895 | 210.72 | **LX1 D8P7** | 0.290 |
| **240** | – | – | – | 9895 | 210.72 | **LX1 D8U7** | 0.290 |
| **277** | – | – | – | 21 988 | 533.17 | **LX1 D8UE7** | 0.290 |
| **380** | – | – | – | 21 011 | 482.42 | **LX1 D8Q7** | 0.290 |
| **400** | – | – | – | 21 011 | 482.42 | **LX1 D8V7** | 0.290 |
| **415** | – | – | – | 21 011 | 482.42 | **LX1 D8N7** | 0.290 |
| **440** | – | – | – | 21 501 | 507.47 | **LX1 D8R7** | 0.290 |
| **480** | – | – | – | 32 249 | 938.41 | **LX1 D8T7** | 0.290 |
| **500** | – | – | – | 32 249 | 938.41 | **LX1 D8S7** | 0.290 |

*(1) The last 2 digits in the reference represent the voltage code.*

# TeSys contactors
d.c. coils
for TeSys D, 3 or 4-pole contactors

537503

*LX4 D7●D*

## For 3-pole contactors LC1 D80 or 4-pole contactors LP1 D80

### Specifications

Average consumption: 22 W.
Operating range: 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10% | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|
| V | Ω | H | | kg |
| **12** | 6.6 | 0.46 | **LX4 D7JD** | 0.680 |
| **24** | 27 | 1.89 | **LX4 D7BD** | 0.680 |
| **36** | 57 | 4 | **LX4 D7CD** | 0.680 |
| **48** | 107 | 7.5 | **LX4 D7ED** | 0.680 |
| **60** | 170 | 11.9 | **LX4 D7ND** | 0.680 |
| **72** | 230 | 16.1 | **LX4 D7SD** | 0.680 |
| **110** | 564 | 39.5 | **LX4 D7FD** | 0.680 |
| **125** | 718 | 50.3 | **LX4 D7GD** | 0.680 |
| **220** | 2215 | 155 | **LX4 D7MD** | 0.680 |
| **250** | 2850 | 200 | **LX4 D7UD** | 0.680 |
| **440** | 9195 | 640 | **LX4 D7RD** | 0.680 |

*(1) The last 2 digits in the reference represent the voltage code.*

# TeSys contactors
d.c. coils
for TeSys D, 3 or 4-pole contactors

537504

*LX4 D8●D*

## For contactors LC1 D115, D150

### Specifications

Consumption: inrush 270 to 365 W, sealed 2.4 to 5.1 W.
Operating range: 0.75…1.2 Uc.
Coils with integral suppression device fitted as standard, class B.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|
| V | Ω | H | | kg |
| **24** | 147 | 3.03 | **LX4 D8BD** | 0.300 |
| **48** | 1061 | 24.19 | **LX4 D8ED** | 0.300 |
| **60** | 1673 | 38.44 | **LX4 D8ND** | 0.300 |
| **72** | 2500 | 56.27 | **LX4 D8SD** | 0.300 |
| **110** | 4377 | 109.69 | **LX4 D8FD** | 0.300 |
| **125** | 6586 | 152.65 | **LX4 D8GD** | 0.300 |
| **220** | 9895 | 210.72 | **LX4 D8MD** | 0.300 |
| **250** | 18 022 | 345.40 | **LX4 D8UD** | 0.300 |
| **440** | 21 501 | 684.66 | **LX4 D8RD** | 0.300 |

## For 3-pole contactors LC1 D80 or 4-pole contactors LP1 D80

### Specifications

Wide range coils for specific applications
Average consumption: 23 W.
Operating range: 0.75 to 1.2 Uc.
Coils with "TH" treatment as standard.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | Inductance of closed circuit | Reference *(1)* | Weight |
|---|---|---|---|---|
| V | Ω | H | | kg |
| **12** | 6.2 | 0.49 | **LX4 D7JW** | 0.680 |
| **24** | 23.5 | 1.75 | **LX4 D7BW** | 0.680 |
| **36** | 51.9 | 4.18 | **LX4 D7CW** | 0.680 |
| **48** | 94.2 | 7 | **LX4 D7EW** | 0.680 |
| **72** | 204 | 15.7 | **LX4 D7SW** | 0.680 |
| **110** | 483 | 36 | **LX4 D7FW** | 0.680 |
| **220** | 1922 | 144 | **LX4 D7MW** | 0.680 |

*(1) The last 2 digits in the reference represent the voltage code.*

# TeSys contactors

## TeSys D contactors

Control circuit: a.c.

### LC1 D09…D18 (3-pole)

### LC1 D25…D38 (3-pole), LC1 DT20…DT40 (4-pole)

| LC1 | | D09…D18 | D093…D123 | D099…D129 | D25…D38 | D183…D323 | D098, D128, DT20 and DT25 | DT203 and DT253 | DT32 and DT40 | D188, D258, DT323 and DT403 |
|---|---|---|---|---|---|---|---|---|---|---|
| b | without add-on blocks | 77 | 99 | 80 | 85 | 99 | 85 | 99 | 91 | 105 |
| b1 | with LAD 4BB | 94 | 107 | 95,5 | 98 | 107 | 98 | – | – | – |
| | with LA4 D●2 | 110 *(1)* | 123 *(1)* | 111,5 *(1)* | 114 *(1)* | 123 *(1)* | 114 | – | – | – |
| | with LA4 DF, DT | 119 *(1)* | 132 *(1)* | 120,5 *(1)* | 123 *(1)* | 132 *(1)* | 129 | – | – | – |
| | with LA4 DW, DL | 126 *(1)* | 139 *(1)* | 127,5 *(1)* | 130 *(1)* | 139 *(1)* | 190 | – | – | – |
| c | without cover or add-on blocks | 84 | 84 | 84 | 90 | 90 | 90 | 90 | 97 | 97 |
| | with cover, without add-on blocks | 86 | 86 | 86 | 92 | 92 | 92 | 92 | 99 | 99 |
| c1 | with LAD N or C (2 or 4 contacts) | 117 | 117 | 117 | 123 | 123 | 123 | 123 | 131 | 131 |
| c2 | with LA6 DK10, LAD 6K10 | 129 | 129 | 129 | 135 | 135 | 135 | 135 | 143 | 143 |
| c3 | with LAD T, R, S | 137 | 137 | 137 | 143 | 143 | 143 | 143 | 151 | 151 |
| | with LAD T, R, S and sealing cover | 141 | 141 | 141 | 147 | 147 | 147 | 147 | 155 | 155 |

*(1) Including LAD 4BB.*

### LC1 D40A…D65A (3-pole), LC1 DT60A…DT80A (4-pole)

### LC1 D80 and D95 (3-pole), LC1 D80004 and D80008 (4-pole), D40008 and D65008 (4-pole)

| LC1 | | D40A…D65A | DT60A…DT80A | D40008 | D80 | D95, D65008 | D80004 | D80008 |
|---|---|---|---|---|---|---|---|---|
| a | | 55 | 70 | 85 | 85 | 85 | 96 | 96 |
| b1 | with LA4 D●2 | – | – | 135 | 135 | 135 | 135 | 135 |
| | with LA4 DB3 or LAD 4BB3 | 136 | – | – | 135 | – | – | – |
| | with LA4 DF, DT | 157 | – | 142 | 142 | 142 | 142 | 142 |
| | with LA4 DM, DW, DL | 166 | – | 150 | 150 | 150 | 150 | 150 |
| c | without cover or add-on blocks | 118 | 118 | 125 | 125 | 125 | 125 | 140 |
| | with cover, without add-on blocks | 120 | 120 | – | 130 | 130 | – | – |
| c1 | with LAD N (1 contact) | – | – | 139 | 150 | 150 | 150 | 150 |
| | with LAD N or C (2 or 4 contacts) | 150 | 150 | 147 | 158 | 158 | 158 | 158 |
| c2 | with LAD 6K10 or LA6 DK | 163 | 163 | 159 | 170 | 170 | 170 | 170 |
| c3 | with LAD T, R, S | 171 | 171 | 167 | 178 | 178 | 178 | 178 |
| | with LAD T, R, S and sealing cover | 175 | 175 | 171 | 182 | 182 | 182 | 182 |

### LC1 D115 and D150 (3-pole), LC1 D115004 (4-pole)

| LC1 | | D115, D150 | D115004 | D1150046 |
|---|---|---|---|---|
| a | | 120 | 150 | 155 |
| b1 | with LA4 DA2 | 174 | 174 | 174 |
| | with LA4 DF, DT | 185 | 185 | 185 |
| | with LA4 DM, DL | 188 | 188 | 188 |
| | with LA4 DW | 188 | 188 | 188 |
| c | without cover or add-on blocks | 132 | 132 | 115 |
| | with cover, without add-on blocks | 136 | – | – |
| c1 | with LAD N or C (2 or 4 contacts) | 150 | 150 | 150 |
| c2 | with LA6 DK20 | 155 | 155 | 155 |
| c3 | with LAD T, R, S | 168 | 168 | 168 |
| | with LAD T, R, S and sealing cover | 172 | 172 | 172 |

# TeSys contactors

## TeSys D contactors

Control circuit: d.c. or low consumption

### LC1 D09…D18 (3-pole)

### LC1 D25…D38 (3-pole)

| LC1 | | D09…D18 | D093…D123 | D099…D129 | D25…D38 | D183…D323 |
|---|---|---|---|---|---|---|
| b | | 77 | 99 | 80 | 85 | 99 |
| c | without cover or add-on blocks | 93 | 93 | 93 | 99 | 99 |
| | with cover, without add-on blocks | 95 | 95 | 95 | 101 | 101 |
| c1 | with LAD N or C (2 or 4 contacts) | 126 | 126 | 126 | 132 | 132 |
| c2 | with LA6 DK10 | 138 | 138 | 138 | 144 | 144 |
| c3 | with LAD T, R, S | 146 | 146 | 146 | 152 | 152 |
| | with LAD T, R, S and sealing cover | 150 | 150 | 150 | 156 | 156 |

### LC1 DT20…DT40 (4-pole)

| LC1 | | DT20 and DT25<br>D098 and D128 | DT203 and DT253<br>D0983 and D1283 | DT32 and DT40<br>D188…D258 | DT323 and DT403<br>D1883 and D2583 |
|---|---|---|---|---|---|
| b | | 85 | 99 | 91 | 105 |
| c | with cover | 99 | 99 | 107 | 107 |
| c1 | with LAD N or C (2 or 4 contacts) | 123 | 123 | 131 | 131 |
| c2 | with LA6 DK10 | 135 | 135 | 143 | 143 |
| c3 | with LAD T, R, S | 143 | 143 | 151 | 151 |
| | with LAD T, R, S and sealing cover | 147 | 147 | 155 | 155 |

### LC1 D40A…D65A (3-pole), LC1 DT60A…DT80A (4-pole)

### LC1 D80 and D95 (3-pole), LP1 D80004, LP1 D80008 (4-pole), LP1 D40008 and D65008 (4-pole)

| | | LC1 D40A … D65A | LC1 DT60A…DT80A | LP1 D40008 and D65008 | LC1 D80 and D95 | LP1 D80004 | LP1 D80008 |
|---|---|---|---|---|---|---|---|
| a | | 55 | 70 | 85 | 85 | 96 | 96 |
| b1 | with LAD 4BB3 | 136 | 136 | – | – | – | – |
| | with LA4 DF, DT | 157 | 157 | – | – | – | – |
| c | without cover or add-on blocks | 118 | 118 | 182 | 181 | 181 | 196 |
| | with cover, without add-on blocks | 120 | 120 | – | 186 | – | – |
| c1 | with LAD N (1 contact) | – | – | 196 | 204 | 204 | 204 |
| | with LAD N or C (2 or 4 contacts) | 150 | 150 | 202 | 210 | 210 | 210 |
| c2 | with LA6 DK10 | 163 | 163 | 213 | 221 | 221 | 221 |
| c3 | with LAD T, R, S | 171 | 171 | 221 | 229 | 229 | 229 |
| | with LAD T, R, S and sealing cover | 175 | 175 | 225 | 233 | 233 | 233 |

**LC1 D115●●●** and **LC1 D150●●●** with ⎓ coil: see page 5/92

## LC1 D09…D38, DT20…DT40

**On mounting rail AM1 DP200, DR200 or AM1 DE200** (width 35 mm)

| Control circuit: a.c. | | | | |
|---|---|---|---|---|
| **LC1** | **D09… D18** | **D25… D38** | **DT20 and DT25** | **DT32 and DT40** |
| b | 77 | 85 | 85 | 100 |
| c (AM1 DP200 or DR200) *(1)* | 88 | 94 | 94 | 109 |
| c (AM1 DE200) *(1)* | 96 | 102 | 102 | 117 |

| Control circuit: d.c. | | | | |
|---|---|---|---|---|
| **LC1** | **D09… D18** | **D25… D38** | **DT20 and DT25** | **DT32 and DT40** |
| b | 77 | 85 | 94 | 109 |
| c (AM1 DP200 or DR200) *(1)* | 97 | 103 | 103 | 118 |
| c (AM1 DE200) *(1)* | 105 | 110 | 111 | 1236 |

*(1) with safety cover.*

## LC1 D40A…D65A, LC1 DT60A and DT80A, LC1 D80 and D95, LC1 D40008 and D65008

**On mounting rail AM1 DL200 or DL201** (width 75 mm)
**On mounting rail AM1 ED●●● or AM1 DE200** (width 35 mm)

| Control circuit: a.c. | | | |
|---|---|---|---|
| **LC1** | **D40A…D65A DT60A…DT80A** | **D80 and D95** | **D40008 and D65008** |
| b | 122 | 127 | 127 |
| c (AM1 DL200) *(1)* | – | 147 | 143 |
| c (AM1 DL201) *(1)* | – | 137 | 133 |
| c (AM1 ED●●● or DE200) *(1)* | 128 | 137 | 133 |

| Control circuit: d.c. | | | |
|---|---|---|---|
| **LC1** | **D40A…D65A DT60A…DT80A** | **D80 and D95** | **D40008 and D65008** |
| c (AM1 DL200) *(1)* | – | 205 | 200 |
| c (AM1 DL201) *(1)* | – | 195 | 190 |
| c (AM1 ED●●● or DE200) *(1)* | 128 | 128 | 190 |

*(1) with safety cover.*

## LC1 D80 and D95, LP1 D80

**On 2 mounting rails DZ5 MB on 120 mm centres**

| Control circuit: a.c. | |
|---|---|
| **LC1** | **D80 and D95** |
| c with cover | 130 |

| Control circuit: d.c. | |
|---|---|
| **LC1** | **D80 and D95** |
| c with cover | 186 |

| | |
|---|---|
| **LP1** | **D80** |
| c | 181 |

## LC1 D115, D150

**On 2 mounting rails DZ5 MB on 120 mm centres**

| Control circuit: a.c. or d.c. | | |
|---|---|---|
| **LC1** | **D115 and D150** | **D1156 and D1506** |
| c (AM1 DP200 or DR200) | 134,5 | 117,5 |
| c (AM1 DE200 or ED●●●) | 142,5 | 125,5 |

## LC1 D09…D38 and LC1 DT20…DT40

**On 2 mounting rails DZ5 MB**

| Control circuit: | a.c. | | d.c. | |
|---|---|---|---|---|
| **LC1** | **D09…D18** | **D25…D38** | **D09…D18** | **D25…D38** |
| c with cover | 86 | 92 | 95 | 101 |
| **G** | **35** | **35** | **35** | **35** |
| H | 60 | 60 | 70 | 70 |
| **H1** | **70** | **70** | **70** | **70** |
| **4-pole contactors** | | | | |
| **LC1** | **DT20 and DT25** | **DT32 and DT40** | **DT20 and DT25** | **DT32 and DT40** |
| c | 92 | 100 | 101 | 109 |
| **G** | **35** | **35** | **35** | **35** |
| H | 60 | 60 | 70 | 70 |
| **H1** | **70** | **70** | **70** | **70** |

## LC1 D09…D38 and LC1 DT20…DT40

**On pre-slotted mounting plate AM1 PA, PB, PC**

| Control circuit: | a.c | | d.c | |
|---|---|---|---|---|
| **LC1** | **D09…D18** | **D25…D38** | **D09…D18** | **D25…D38** |
| c with cover | 86 | 92 | 95 | 101 |
| **G** | **35** | **35** | **35** | **35** |
| H | 60/70 | 60/70 | 70 | 70 |
| **LC1** | **DT20 and DT25** | **DT32 and DT40** | **DT20 and DT25** | **DT32 and DT40** |
| c with cover | 80 | 93 | 118 | 132 |
| **G** | **35** | **35** | **35** | **35** |
| H | 60 | 60 | 70 | 70 |

## LC1 D40A…D65A, LC1 DT60A…DT80A

**On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted**

| Control circuit: | a.c | d.c. |
|---|---|---|
| **LC1** | **D40A…65A , DT60A…DT80A** | **D40A…65A , DT60A…DT80A** |
| c with cover | 120 | 120 |

## LC1 D09…D38, LC1 DT20…DT40

**Panel mounted**

| Control circuit: | a.c | | d.c | |
|---|---|---|---|---|
| **LC1** | **D09…D18** | **D25…D38** | **D09…D18** | **D25…D38** |
| c with cover | 86 | 92 | 95 | 101 |
| **4-pole contactors** | | | | |
| **LC1** | **DT20 and DT25** | **DT32 and DT40** | **DT20 and DT25** | **DT32 and DT40** |
| c with cover | 90 | 98 | 90 | 98 |

## LC1 D80 and D95, LC1 D40008 and D65008, LP1 D80

**On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted**

| Control circuit: | a.c | | d.c. |
|---|---|---|---|
| **LC1** | **D80 and D95, D40008 and D65008** | | **D80 and D95 D40008 and D65008** |
| c with cover | 130 | | 186 |
| **LP1** | – | – | **D80** |
| c without cover | – | – | 181 |

## LC1 D115, D150

**Panel mounted**

| LC1 | D115 | D1156 | D150 | D1506 |
|---|---|---|---|---|
| c | 132 | 115 | 132 | 115 |
| **G (3-pole)** | **96/110** | **96/110** | **96/110** | **96/110** |
| **G (4-pole)** | **130/144** | **130/144** | **–** | **–** |

Selection: pages 5/194 to 5/225
Characteristics: pages 5/50 to 5/55
References: pages 5/62 to 5/67
Schemes: pages 5/96 and 5/97

## Contactors

**3-pole contactors** (References: pages 5/62 to 5/65)

**LC1 D09 to D150**

**4-pole contactors** (References: pages 5/66 and 5/67)

**LC1 DT20 to DT80A**

**LC1 D115004**

**LC1 D098 to D258**

**LC1 and LP1 D40008 to D80008**

## Front mounting add-on contact blocks

**Instantaneous auxiliary contacts** (References: page 5/79)

**1 N/O LAD N10** *(1)*

**1 N/C LAD N01** *(1)*

**1 N/O + 1 N/C LAD N11**

**2 N/O LAD N20**

**2 N/C LAD N02**

**2 N/O + 2 N/C LAD N22**

**1 N/O + 3 N/C LAD N13**

**4 N/O LAD N40**

**4 N/C LAD N04**

**2 N/O + 2 N/C including 1 N/O + 1 N/C make before break LAD C22**

**3 N/O + 1 N/C LAD N31**

**Instantaneous auxiliary contacts conforming to standard EN 50012** (References: page 5/79)

**1 N/O + 1 N/C LAD N11G**

**1 N/O + 1 N/C LAD N11P**

**2 N/O + 2 N/C LAD N22G**

**2 N/O + 2 N/C LAD N22P**

**3 N/O + 1 N/C LAD N31G**

**3 N/O + 1 N/C LADN31P**

**1 N/O + 3 N/C LAD N13G**

**1 N/O + 3 N/C LAD N13P**

*(1) Items in brackets refer to blocks mounted on right-hand side of contactor.*

Selection : pages 5/194 to 5/225
Caractéristiques : pages 5/50 to 5/55
References : pages 5/62 to 5/83
Dimensions : pages 5/92 to 5/95

## Front mounting add-on contact blocks

**Dust and damp protected instantaneous auxiliary contacts** (References: page 5/79)

| 2 N/O (24-50 V) LA1 DX20 | 2 N/C (24-50 V) LA1 DX02 | 2 N/O (5-24 V) LA1 DY20 | 2 N/O protected (24-50 V) 2 N/O standard LA1 DZ40 | 2 N/O protected (24-50 V) + 1 N/O + 1 N/C standard LA1 DZ31 |
|---|---|---|---|---|

**Time delay auxiliary contacts** (References: page 5/80)

| On-delay 1 N/O + 1 N/C LAD T | Off-delay 1 N/O + 1 N/C LAD R | On-delay 1 N/C + 1 N/O break before make LAD S |
|---|---|---|

## Mechanical latch blocks (References: page 5/80)

**LAD 6K10 and LA6 DK20**

## Side mounting add-on contact blocks

**Instantaneous auxiliary contacts** (References: page 5/79)

| 1 N/O + 1 N/C LAD 8N11 *(1)* | 2 N/O LAD 8N20 *(1)* | 2 N/O LAD 8N02 *(1)* |
|---|---|---|

*(1) Items in brackets refer to blocks mounted on right-hand side of contactor.*

## Electronic serial timer modules

**On-delay LA4 DT•U**

## Interface modules

| Relay output | Solid state |
|---|---|
| LA4 DFB | LA4 DWB |

References: page 5/83.

## LC2 D09 to D38

2 x **LC1 D09 to D38**

| **LC2** or 2 x **LC1** | **a** | **b** | **c** *(1)* | **e1** | **e2** | **G** |
|---|---|---|---|---|---|---|
| **D09 to D18** ∼ | 90 | 77 | 86 | 4 | 1.5 | **80** |
| **D093 to D123** ∼ | 90 | 99 | 86 | – | – | **80** |
| **D09 to D18** ⎓ | 90 | 77 | 95 | 4 | 1.5 | **80** |
| **D093 to D123** ⎓ | 90 | 99 | 95 | – | – | **80** |
| **D25 to D38** ∼ | 90 | 85 | 92 | 9 | 5 | **80** |
| **D183 to D383** ∼ | 90 | 99 | 92 | – | – | **80** |
| **D25 to D32** ⎓ | 90 | 85 | 101 | 9 | 5 | **80** |
| **D183 to D383** ⎓ | 90 | 99 | 101 | – | – | **80** |

e1 and e2: including cabling.

*(1) With safety cover, without add-on block.*

## LC2 DT20 to DT40

2 x **LC1 DT20 to DT40**

| **LC2** or 2 x **LC1** | **a** | **b** | **c** | **G** |
|---|---|---|---|---|
| **DT20 and DT25** | 90 | 85 | 90 | **80** |
| **DT32 and DT40** | 90 | 91 | 98 | **80** |

c, e: including cabling.

## LC2 D40A to D65A

2 x **LC1 D40A to D65A**

## LC2 D80 and D95

2 x **LC1 D80 and D95** ∼

2 x **LC1 D80 and D95** ⎓

| LC2 or 2 x LC1 | a | b | c | e1 | e2 | G | G1 |
|---|---|---|---|---|---|---|---|
| **D80 and D95** ∼ | 182 | 127 | 158 | 13 | – | **57** | **96** |
| **D80004** ∼ | 207 | 127 | 158 | – | 20 | **71** | **111** |

c, e1 and e2: including cabling.

| 2 x LC1 | a | b | c | e1 | e2 | G | G1 |
|---|---|---|---|---|---|---|---|
| **D80 and D95** | 207 | 127 | 215 | 13 | 20 | **96** | **111** |

c, e1 and e2: including cabling.

## LC2 D115 and D150

2 x **LC1 D115 and D150**

| LC2 or 2 x LC1 | a | c | e1 | e2 | G |
|---|---|---|---|---|---|
| **D115 and D150** | 266 | 148 | 56 | 18 | **242/256** |
| **D115004** | 334 | 148 | – | 60 | **310/324** |

c, e1 and e2: including cabling.

# TeSys contactors
## TeSys D reversing contactors

### Reversing contactors for motor control

**LC2 D09…D150**

Horizontally mounted

**LAD 9R1V**

With integral electrical interlocking

### Changeover contactor pairs

**LC2 DT20…DT40**

Horizontally mounted

**LAD T9R1V**

With integral electrical interlocking

5

**Electrical interlocking of reversing contactors fitted with:**

Mechanical interlock with integral electrical contacts

**LA9 D4002, LA9 D8002 and LA9 D11502**

Mechanical interlock without integral electrical contacts

**LAD 9V2, LAD 4CM, LA9 D50978 and LA9 D80978**

**Low speed-High speed cabling kit, screw clamp terminals**

**Low speed-High speed cabling kit, spring terminals**

5

# TeSys contactors

## For switching 3-phase capacitor banks, used for power factor correction,

Direct connection without choke inductors

## Special contactors

Special contactors **LC1 D●K** are designed for switching 3-phase, single or multiple-step capacitor banks; they conform to standards IEC 60070 and 60831, NFC 54-100, VDE 0560, UL and CSA.

## Contactor applications

### Specification

Contactors fitted with a block of early make poles and damping resistors, limiting the value of the current on closing to 60 In max.
This current limitation increases the life of all the components of the installation, in particular that of the fuses and capacitors.
The patented design of the add-on block (n° 90 119-20) ensures safety and long life of the installation.

### Operating conditions

**There is no need to use choke inductors for either single or multiple-step capacitor banks.**
Short-circuit protection must be provided by gl type fuses rated at 1.7…2 In.

### Maximum operational power

The power values given in the selection table below are for the following operating conditions:

| | | | |
|---|---|---|---|
| Prospective peak current at switch-on | LC1 D●K | | 200 In |
| Maximum operating rate | LC1 DFK, DGK, DLK, DMK, DPK | | 240 operating cycles/hour |
| | LC1 DTK, DWK | | 100 operating cycles/hour |
| Electrical durability at nominal load | All contactor ratings | 400 V | 300 000 operating cycles |
| | | 690 V | 200 000 operating cycles |

511555

*LC1 DFK11●●*

511556

*LC1 DPK12●●*

| Operational power at 50/60 Hz *(1)* θ ≤ 55 °C *(2)* | | | Instantaneous auxiliary contacts | | Tightening torque on cable end | Basic reference, to be completed by adding the voltage code *(3)* | Weight |
|---|---|---|---|---|---|---|---|
| 220 V 240 V | 400 V 440 V | 660 V 690 V | | | | | |
| kVAR | kVAR | kVAR | N/O | N/C | N.m | | kg |
| 6.7 | 12.5 | 18 | 1 | 1 | 1.2 | **LC1 DFK11●●** | 0.430 |
| | | | – | 2 | 1.2 | **LC1 DFK02●●** | 0.430 |
| 8.5 | 16.7 | 24 | 1 | 1 | 1.7 | **LC1 DGK11●●** | 0.450 |
| | | | – | 2 | 1.7 | **LC1 DGK02●●** | 0.450 |
| 10 | 20 | 30 | 1 | 1 | 1.9 | **LC1 DLK11●●** | 0.600 |
| | | | – | 2 | 1.9 | **LC1 DLK02●●** | 0.600 |
| 15 | 25 | 36 | 1 | 1 | 2.5 | **LC1 DMK11●●** | 0.630 |
| | | | – | 2 | 2.5 | **LC1 DMK02●●** | 0.630 |
| 20 | 33.3 | 48 | 1 | 2 | 5 | **LC1 DPK12●●** | 1.300 |
| 25 | 40 | 58 | 1 | 2 | 5 | **LC1 DTK12●●** | 1.300 |
| 40 | 60 | 92 | 1 | 2 | 9 | **LC1 DWK12●●** | 1.650 |

### Switching of multiple-step capacitor banks (with equal or different power ratings)

The correct contactor for each step is selected from the above table, according to the power rating of the step to be switched.
**Example:** 50 kVAR 3-step capacitor bank. Temperature: 50 °C and U = 400 V or 440 V.
One 25 kVAR step: contactor LC1 DMK, one 15 kVAR step: contactor LC1 DGK, and one 10 kVAR step: contactor LC1 DFK.

*(1) Operational power of the contactor according to the scheme on the page opposite.*
*(2) The average temperature over a 24-hour period, in accordance with standards IEC 60070 and 60831 is 45 °C.*
*(3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 24 | 42 | 48 | 110 | 115 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |

For other voltages between 24 and 440 V, please consult your Regional Sales Office

Dimensions, schemes :
page 5/103



Schneider Electric

# TeSys contactors

For switching 3-phase capacitor banks, used for power factor correction

## Dimensions

### LC1 DFK, DGK

| LC1 | c | Type of fixing | |
|---|---|---|---|
| **DFK** | 117 | LC1 D12 | See page 5/94 |
| **DGK** | 122 | LC1 D18 | See page 5/94 |

### LC1 DPK, DTK

| LC1 | Type of fixing | |
|---|---|---|
| **DPK** | LC1 D40 | See page 5/94 |
| **DTK** | LC1 D50 | See page 5/94 |

### LC1 DLK, DMK

| LC1 | c | Type of fixing | |
|---|---|---|---|
| **DLK** | 117 | LC1 D25 | See page 5/94 |
| **DMK** | 122 | LC1 D32 | See page 5/94 |

### LC1 DWK

| LC1 | Type of fixing | |
|---|---|---|
| **DWK** | LC1 D80 | See page 5/94 |

## Schemes

### LC1 D●K

R = Pre-wired resistor connections.

**Cabling** (maximum permissible c.s.a.)

| Contactor type LC1 | DFK | | DGK | | DLK | | DMK | | DPK, DTK | | DWK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of conductors | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Flexible cable with cable end ($mm^2$) | 2.5 | 1.5 | 4 | 2.5 | 4 | 4 | 6 | 4 | 16 | 6 | 50 | 25 |
| Solid cable with cable end ($mm^2$) | 4 | 4 | 6 | 6 | 10 | 6 | 16 | 10 | 25 | 16 | 50 | 35 |

References :
page 5/102

# TeSys contactors
From 115 to 2750 A

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Applications** | | **Control of all types of motor for standard or severe duty applications**<br>**Control of resistive, inductive and capacitive circuits:**<br>**heating, lighting, cos φ rectification, transformers, normal-standby** | | | | | |
| | | | | | | | |
| **Rated operational current** | Ie max. AC-3 (Ue ≤ 440 V) | 115 A | 150 A | 185 A | 225 A | 265 A | 330 A |
| | Ie max. AC-1 (θ ≤ 40 °C) | 200 A | 250 A | 275 A | 315 A | 350 A | 400 A |
| **Rated operational voltage** | | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V |
| **Number of poles** | | 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 |
| **Rated operational power in category AC-3** | 220/240 V | 30 kW | 40 kW | 55 kW | 63 kW | 75 kW | 100 kW |
| | 380/400 V | 55 kW | 75 kW | 90 kW | 110 kW | 132 kW | 160 kW |
| | 415 V | 59 kW | 80 kW | 100 kW | 110 kW | 140 kW | 180 kW |
| | 440 V | 59 kW | 80 kW | 100 kW | 110 kW | 140 kW | 200 kW |
| | 500 V | 75 kW | 90 kW | 110 kW | 129 kW | 160 kW | 200 kW |
| | 660/690 V | 80 kW | 100 kW | 110 kW | 129 kW | 160 kW | 220 kW |
| | 1000 V | 65 kW | 65 kW | 100 kW | 100 kW | 147 kW | 160 kW |
| **Add-on auxiliary contact blocks** | | Front mounting, identical to those used on LC1 D contactors (contacts: instantaneous LA1 DN●●, time delay LA2 DT or LA3 DR, dust and damp protected LA1 DX or DY or DZ) | | | | | |
| **Associated thermal overload relays and controllers** | Manual-auto | LR9 F | | | | | |
| | Electronic | TeSys T | | | | | |
| **Interfaces** | Specific | LA4 FWB | | | | | |
| | Universal | With or without, depending on the control circuit | | | | | |
| **Contactor type** | | **LC1 F115** | **LC1 F150** | **LC1 F185** | **LC1 F225** | **LC1 F265** | **LC1 F330** |
| **Reversing contactor type** | | **LC2 F115** | **LC2 F150** | **LC2 F185** | **LC2 F225** | **LC2 F265** | **For customer assembly** |
| **Pages** | Contactors | 5/114 and 5/115 | | | | | 5/114 and 5/115 |
| | Reversing contactors | 5/116 and 5/117 | | | | | 5/118 to 5/121 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 400 A | 500 A | 630 A | 780 A | 800 A | – | – | 750 A | 1000 A | 1500 A | 1800 A |
| 500 A | 700 A | 1000 A | 1600 A | 1000 A | 1700 A | 2100 A | 800 A | 1250 A | 2000 A | 2750 A |
| 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V |
| 2, 3 or 4 | 2, 3 or 4 | 2, 3 or 4 | 3 or 4 | 3 | 3 | 3 | 1 to 4 | 1 to 4 | 1 to 4 | 1 to 4 |
| 110 kW | 147 kW | 200 KW | 220 kW | 250 kW | – | – | 220 kW | 280 kW | 425 kW | 500 kW |
| 200 kW | 250 kW | 335 kW | 400 kW | 450 kW | – | – | 400 kW | 500 kW | 750 kW | 900 kW |
| 220 kW | 280 kW | 375 kW | 425 kW | 450 kW | – | – | 425 kW | 530 kW | 800 kW | 900 kW |
| 250 kW | 295 kW | 400 kW | 425 kW | 450 kW | – | – | 450 kW | 560 kW | 800 kW | 900 kW |
| 257 kW | 355 kW | 400 kW | 450 kW | 450 kW | – | – | 500 kW | 600 kW | 700 kW | 900 kW |
| 280 kW | 335 kW | 450 kW | 475 kW | 475 kW | – | – | 560 kW | 670 kW | 750 kW | 900 kW |
| 185 kW | 335 kW | 450 kW | 450 kW | 450 kW | – | – | 530 kW | 530 kW | 670 kW | 750 kW |
| Front mounting, identical to those used on LC1 D contactors (contacts: instantaneous LA1 DN●●, time delay LA2 DT or LA3 DR, dust and damp protected LA1 DX or DY or DZ) | | | | | | | 4 instantaneous contact compositions: 2 N/C + 2 N/O, 3 N/O + 1 N/C, 1 N/O + 3 N/C or 4 N/O | | | |
| LR9 F | | | | | – | – | LR9 F | | | |
| TeSys T | | | | | – | – | TeSys T | | | |
| LA4 FWB | | | | | – | – | – | | | |
| With or without, depending on the control circuit | | | | | – | – | – | | | |
| **LC1 F400** | **LC1 F500** | **LC1 F630** | **LC1 F780** | **LC1 F800** | **LC1 F1700** | **LC1 F2100** | **LC1 BL** | **LC1 BM** | **LC1 BP** | **LC1 BR** |
| **For customer assembly** | | | | | | | | | | |
| 5/114 and 5/115 | | | | | | | 5/184 and 5/185 | | | |
| 5/118 to 5/117 | | | | | | | 5/186 | | | |

5

# TeSys contactors

## TeSys F contactors (115 to 2100 A)

Control circuit: a.c. or d.c.

## Environment

| Contactor type | | | LC1 F115 | LC1 F150 | LC1 F185 |
|---|---|---|---|---|---|
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-4-1 | **V** | 1000 | 1000 | 1000 |
| | Conforming to VDE 0110 gr C | **V** | 1500 | 1500 | 1500 |
| **Rated impulse withstand voltage** (Uimp) | Coil not connected to the power circuit | **kV** | 8 | 8 | 8 |
| **Conforming to standards** | | | EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1, JEM 1038 | | |
| **Product certifications** | | | CSA, UL, BV, GL, DNV, RINA, RMROS, LROS, CCC | | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 2X front face with shrouds LA9 F | | |
| | Conforming to VDE 0106 | | Front face protected against direct finger contact with shrouds LA9 F | | |
| **Protective treatment** | Standard version | | "TH" | | |
| **Ambient air temperature around the device** | Storage | **°C** | - 60…+ 80 | | |
| | Operation | **°C** | - 5…+ 55 | | |
| | Permissible at Uc *(1)* | **°C** | - 40…+ 70 | | |
| **Maximum operating altitude** | Without derating | **m** | 3000 | | |
| **Operating positions** | Without derating | | (not to be used for LC1 F780, F1700 and F2100) | | |
| | With derating | | Apply the following derating coefficients: 0.75 on the pull-in voltage, 0.9 on the drop-out voltage and 0.8 on the operational current in AC-1<br>Apply the following derating coefficients: 1.15 on the pull-in voltage, 1.1 on the drop-out voltage and 0.8 on the operational current in AC-1<br>In either case: neither the making and breaking capacities nor the electrical and mechanical durabilities can be assured. | | |
| | Not to be used | | | | |
| **Shock resistance** *(2)* 1/2 sine wave = 11 ms | Contactor open | | 9 gn | 9 gn | 7 gn |
| | Contactor closed | | 15 gn | 15 gn | 15 gn |
| **Vibration resistance** *(2)* 5…300 Hz | Contactor open | | 2 gn | 2 gn | 2 gn |
| | Contactor closed | | 6 gn | 6 gn | 5 gn |

*(1) In these conditions, it is recommended that LX9 F coils be used for contactor sizes F115 to F225.*

*(2) In the least favourable direction, without change of contact state (coil at Uc). Where higher resistance to mechanical shock is required, select shock-proof contactors. Please consult your Regional Sales Office.*

| LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 F1700 | LC1 F2100 |
|---|---|---|---|---|---|---|---|---|---|
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 |
| 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1, JEM 1038 | | | | | | | | | |
| CSA, UL, BV, GL, DNV, RINA, RMROS, LROS, CCC | | | | | | | UL, CSA, GL, LROS | UL, CSA, CCC (pending) | |
| IP 20 front face with shrouds LA9 F | | | | | | | | – | |
| Front face protected against direct finger contact with shrouds LA9 F | | | | | | | | – | |
| "TH" | | | | | | | | | |
| - 60…+ 80 | | | | | | | - 60…+ 80 | - 60…+ 80 | |
| - 5…+ 55 | | | | | | | - 5…+ 55 | - 5…+ 40 | |
| - 40…+ 70 | | | | | | | - 5…+ 55 | - 40…+ 60 | |
| 3000 | | | | | | | | | |
| (not to be used for LC1 F780, F1700 and F2100) | | | | | | | | | |
| Apply the following derating coefficients: 0.75 on the pull-in voltage, 0.9 on the drop-out voltage and 0.8 on the operational current in AC-1.<br>Apply the following derating coefficients: 1.15 on the pull-in voltage, 1.1 on the drop-out voltage and 0.8 on the operational current in AC-1.<br>In either case: neither the making and breaking capacities nor the electrical and mechanical durabilities can be assured | | | | | | | | Not to be used | |
| | | | | | | | | | |
| 7 gn | 6 gn | 6 gn | 6 gn | 9 gn | 6 gn | 5 gn | 6 gn | 6 gn | 6 gn |
| 15 gn | 15 gn | 15 gn | 15 gn | 15 gn | 15 gn | 15 gn | 15 gn | 15 gn | 15 gn |
| 2 gn | 2 gn | 2 gn | 1.5 gn | 2 gn | 2 gn | 2.5 gn | 2 gn | 2 gn | 2 gn |
| 5 gn | 5 gn | 5 gn | 5 gn | 4 gn | 4 gn | 5.5 gn | 4 gn | 4 gn | 4 gn |

# TeSys contactors

## TeSys F contactors (115 to 2100 A)

Control circuit: a.c. or d.c.

### Pole characteristics

| Contactor type | | | LC1 F115 | LC1 F150 | LC1 F185 |
|---|---|---|---|---|---|
| **Number of poles** | | | 3 or 4 | 3 or 4 | 3 or 4 |
| **Rated operational current** (Ie)(Ue ≤ 440 V) | In AC-3, θ ≤ 55 °C | **A** | 115 | 150 | 185 |
| | In AC-1, θ ≤ 40 °C | **A** | 200 | 250 | 275 |
| **Rated operational voltage** (Ue) | Up to | **V** | 1000 | 1000 | 1000 |
| **Frequency limits** | Of the operational current *(1)* | **Hz** | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 |
| **Conventional thermal current** | θ ≤ 40 °C | **A** | 200 | 250 | 275 |
| **Rated making capacity** | I rms conforming to IEC 60947-4-1 | **A** | Making current: 10 x I in AC-3 or 12 x I in AC-4 | | |
| **Rated breaking capacity** | I rms conforming to IEC 60947-4-1 | **A** | Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4 | | |
| **Maximum permissible current** No current flowing for previous 60 minutes, at θ ≤ 40 °C | For 10 s | **A** | 1100 | 1200 | 1500 |
| | For 30 s | **A** | 640 | 700 | 920 |
| | For 1 min | **A** | 520 | 600 | 740 |
| | For 3 min | **A** | 400 | 450 | 500 |
| | For 10 min | **A** | 320 | 350 | 400 |
| **Short-circuit protection by fuses** U ≤ 440 V | Motor circuit (type aM) | **A** | 125 | 160 | 200 |
| | With thermal overload relay (type gG) | **A** | 200 | 200 | 315 |
| | gG fuses | **A** | 200 | 250 | 315 |
| **Average impedance per pole** | At Ith and 50 Hz | **mΩ** | 0.37 | 0.35 | 0.33 |
| **Power dissipation per pole** for the above operational currents | AC-3 | **W** | 5 | 8 | 12 |
| | AC-1 | **W** | 15 | 22 | 25 |
| **Connection** | | | Maximum c.s.a. | | |
| Bar | Number of bars | | 2 | 2 | 2 |
| | Bar | **mm** | 20 x 3 | 25 x 3 | 25 x 3 |
| Cable with lug | | **mm²** | 95 | 120 | 150 |
| Cable with connector | | **mm²** | 95 | 120 | 150 |
| Bolt diameter | | **mm** | Ø 6 | Ø 8 | Ø 8 |
| **Tightening torque** | Power circuit connections | **N.m** | 10 | 18 | 18 |

*(1) Sine wave without interference. Above these values, please consult your Regional Sales Office.*
*(2) With set of right-angled connectors **LA9 F2100** (see page 5/125.*
*(3) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.*

| LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | | LC1 F780 | LC1 F800 | LC1 F1700 | LC1 F2100 |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 or 4 | 3 or 4 | 3 or 4 | 2, 3 or 4 | 2, 3 or 4 | 2, 3 or 4 | | 3 or 4 | 3 | 3 | 3 |
| 225 | 265 | 330 | 400 | 500 | 630 | | 780 | 800 | – | – |
| 315 | 350 | 400 | 500 | 700 | 1000 | 1250 | 1600 | 1000 | 1700 | 2100 *(2)* |
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | | 1000 | 1000 | 1000 | 1000 |
| $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 |
| 315 | 350 | 400 | 500 | 700 | 1000 | 1250 | 1600 | 1000 | 1700 | 2100 *(2)* |
| Making current: 10 x I in AC-3 or 12 x I in AC-4 | | | | | | | | | Making current: 1.5 x I in AC-1 | |
| Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4 | | | | | | | | | Making and breaking current: 1.5 x I in AC-1 | |
| 1800 | 2200 | 2650 | 3600 | 4200 | 5050 | | 6250 | 5500 | – | – |
| 1000 | 1230 | 1800 | 2400 | 3200 | 4400 | | 5600 | 4600 | – | – |
| 850 | 950 | 1300 | 1700 | 2400 | 3400 | | 4600 | 3600 | – | – |
| 560 | 620 | 900 | 1200 | 1500 | 2200 | | 3000 | 2600 | – | – |
| 440 | 480 | 750 | 1000 | 1200 | 1600 | | 2200 | 1700 | – | – |
| 250 | 315 | 400 | 400 | 500 | 630 | | 800 | 800 | – | – |
| 315 | 500 | 500 | 630 | 800 | 800 | | 1000 | 1000 | – | – |
| 315 | 400 | 500 | 500 | 800 | 1000 | | 2 x 800 *(3)* | 1000 | 2 x 800 *(3)* | 2 x 1000 *(3)* |
| 0.32 | 0.3 | 0.28 | 0.26 | 0.18 | 0.12 | | 0.10 | 0.12 | 0.10 | 0.10 |
| 16 | 21 | 31 | 42 | 45 | 48 | | 60 | 77 | – | – |
| 32 | 37 | 44 | 65 | 88 | 120 | | 250 | 120 | 200 | 200 |
| | | | | | | | | | | |
| 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 4 |
| 32 x 4 | 32 x 4 | 30 x 5 | 30 x 5 | 40 x 5 | 60 x 5 | 60 x 5 | 100 x 5 | 60 x 5 | 100 x 5 | 100 x 5 |
| 185 | 240 | 240 | 2 x 150 | 2 x 240 | – | | – | – | – | – |
| 185 | 240 | – | – | – | – | | – | – | – | – |
| ∅10 | ∅ 10 | ∅ 10 | ∅ 10 | ∅ 10 | ∅ 12 | | 2 x ∅ 12 | ∅ 12 | ∅ 12 (∅ 10 with set of right-angled connectors LA9 F2100) | |
| 35 | 35 | 35 | 35 | 35 | 58 | | 58 | 58 | 58 (35 with set of right-angled connectors LA9 F2100) | |

5

# TeSys contactors

## TeSys F contactors (115 to 2100 A)

Control circuit: a.c.

### Control circuit characteristics with LX1 or LX9 coil

| Contactor type | | | | LC1 F115 | LC1 F150 | LC1 F185 |
|---|---|---|---|---|---|---|
| **Rated control circuit voltage** (Uc) | | 50 or 60 Hz | **V** | 24…1000 | | |
| **Control voltage limits** (θ ≤ 55 °C) | | | | | | |
| | 50 or 60 Hz coils | Operation | | 0.85…1.1 Uc | | |
| | | Drop-out | | 0.35…0.55 Uc | | |
| | 40…400 Hz coils | Operation | | – | | |
| | | Drop-out | | – | | |
| **Average consumption** at 20 °C and at Uc | | | | | | |
| | ∼ 50 Hz Inrush | 50 Hz coil | **VA** | 550 | 550 | 805 |
| | | 40…400 Hz coil | **VA** | – | – | – |
| | | Cos φ | | 0.3 | 0.3 | 0.3 |
| | Sealed | 50 Hz coil | **VA** | 45 | 45 | 55 |
| | | 40…400 Hz coil | **VA** | – | – | – |
| | | Cos φ | | 0.3 | 0.3 | 0.3 |
| | ∼ 60 Hz Inrush | 60 Hz coil | **VA** | 660 | 660 | 970 |
| | | 40…400 Hz coil | **VA** | – | – | – |
| | | Cos φ | | 0.3 | 0.3 | 0.3 |
| | Sealed | 60 Hz coil | **VA** | 55 | 55 | 66 |
| | | 40…400 Hz coil | **VA** | – | – | – |
| | | Cos φ | | 0.3 | 0.3 | 0.3 |
| **Heat dissipation** | | | **W** | 12…16 | 12…16 | 18…24 |
| **Operating time** *(1)* | | Closing "C" | **ms** | 23…35 | 23…35 | 20…35 |
| | | Opening "O" | **ms** | 5…15 | 5…15 | 7…15 |
| **Mechanical durability** at Uc | | In millions of operating cycles | | 10 | 10 | 10 |
| **Maximum operating rate** at ambient temperature ≤ 55 °C | | In operating cycles per hour | | 2400 | 2400 | 2400 |
| **Connection** | | | | Min/max c.s.a. | | |
| | Flexible cable without cable end | 1 or 2 conductors | **mm²** | 1/4 | 1/4 | 1/4 |
| | Flexible cable with cable end | 1 conductor | **mm²** | 1/4 | 1/4 | 1/4 |
| | | 2 conductors | **mm²** | 1/2.5 | 1/2.5 | 1/2.5 |
| | Solid cable without cable end | 1 or 2 conductors | **mm²** | 1/4 | 1/4 | 1/4 |
| **Tightening torque** | | | **N.m** | 1.2 | 1.2 | 1.2 |
| **Mechanical latching** | | | | Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors. For similar type of operation, use magnetic latching contactors CR1 F. See pages 5/240 to 5/267 | | |

*(1) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

*(2) Control circuit characteristics with LX1 coil.*



Selection : pages 5/194 to 5/217
References : pages 5/114 and 5/115
Dimensions : pages 5/140 to 5/145
Schemes : page 5/146



Schneider Electric

| LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 F1700 | LC1 F2100 |
|---|---|---|---|---|---|---|---|---|---|
| 24…1000 | | | 48…1000 | | 48…1000 | 110…500 | 110…400 | 110…500 *(2)* | 110…500 *(2)* |
| 0.85…1.1 Uc | – | | | | | | | | |
| 0.35…0.55 Uc | – | | | | | | | | |
| – | 0.85…1.1 Uc | | 0.85…1.1 Uc | | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc |
| – | 0.35…0.55 Uc | | 0.3…0.5 Uc | | 0.25…0.5 Uc | 0.2…0.4 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc |
| 805 | – | – | – | – | – | – | – | – | – |
| – | 650 | 650 | 1075 | 1100 | 1650 | 2100 | 1700 | 2200 | 2200 |
| 0.3 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| 55 | – | – | – | – | – | – | – | – | – |
| – | 10 | 10 | 15 | 18 | 22 | 50 | 12 | 36 | 36 |
| 0.3 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | – | 0.9 | 0.9 |
| 970 | – | – | – | – | – | – | – | – | – |
| – | 650 | 650 | 1075 | 1100 | 1650 | 2100 | 1700 | 2200 | 2200 |
| 0.3 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| 66 | – | – | – | – | – | – | – | – | – |
| – | 10 | 10 | 15 | 18 | 22 | 50 | 12 | 36 | 36 |
| 0.3 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | – | 0.9 | 0.9 |
| 18…24 | 8 | 8 | 14 | 18 | 20 | 2 x 22 | 25 | 2 x 18 | 2 x 18 |
| 20…35 | 40…65 | 40…65 | 40…75 | 40…75 | 40…80 | 40…80 | 60…80 | 40…75 | 40…75 |
| 7…15 | 100…170 | 100…170 | 100…170 | 100…170 | 100…200 | 130…230 | 150…180 | 100…170 | 100…170 |
| 10 | 10 | 10 | 10 | 10 | 5 | 5 | 5 | 5 | 5 |
| 2400 | 2400 | 2400 | 2400 | 2400 | 1200 | 600 | 600 | 600 | 600 |
| Min/max c.s.a. | | | | | | | | | |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |

Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors.
For similar type of operation, use magnetic latching contactors CR1 F.
See pages 5/240 to 5/267.

# TeSys contactors

## TeSys F contactors (115 to 2100 A)

Control circuit: d.c.

### Control circuit characteristics with LX4 coil

| Contactor type | | | | LC1 F115 | LC1 F150 | LC1 F185 |
|---|---|---|---|---|---|---|
| **Rated control circuit voltage** (Uc) | ⎓ | | V | 24…460 | 24…460 | 24…460 |
| **Control voltage limits** (θ ≤ 55 °C) | Operation | | | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc |
| | Drop-out | | | 0.15…0.2 Uc | 0.15…0.2 Uc | 0.15…0.2 Uc |
| **Average consumption** at 20 °C and at Uc | ⎓ | Inrush | W | 560 | 560 | 800 |
| | | Sealed | W | 4.5 | 4.5 | 5 |
| **Average operating time at Uc** *(1)* | Closing "C" | | ms | 30…40 | 30…40 | 30…40 |
| | Opening "O" | | ms | 30…50 | 30…50 | 30…50 |
| | | | ***Note:*** *The arcing time depends on the circuit switched by the poles. For all normal 3-phase applications, the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.* | | | |
| **Mechanical durability at Uc** | In millions of operating cycles | | | 10 | 10 | 10 |
| **Maximum operating rate** at ambient temperature ≤ 55 °C | In operating cycles per hour | | | 2400 | 2400 | 2400 |
| **Cabling** | | | | Min/max c.s.a. | | |
| Flexible cable without cable end | 1 conductor | | mm² | 1/4 | 1/4 | 1/4 |
| | 2 conductors | | mm² | 1/4 | 1/4 | 1/4 |
| Flexible cable with cable end | 1 conductor | | mm² | 1/4 | 1/4 | 1/4 |
| | 2 conductors | | mm² | 1/2.5 | 1/2.5 | 1/2.5 |
| Solid cable without cable end | 1 conductor | | mm² | 1/4 | 1/4 | 1/4 |
| | 2 conductors | | mm² | 1/4 | 1/4 | 1/4 |
| **Tightening torque** | | | N.m | 1.2 | 1.2 | 1.2 |
| **Mechanical latching** | | | Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors. For similar type of operation, use magnetic latching contactors CR1 F. See pages 5/240 to 5/267. | | | |

*(1) The operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

| LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 F1700 | LC1 F2100 |
|---|---|---|---|---|---|---|---|---|---|
| 24…460 | 24…460 | 24…460 | 48…440 | 48…440 | 48…440 | 110…440 | 110…400 | 110…440 | 110…440 |
| 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc |
| 0.15…0.2 Uc | 0.15…0.2 Uc | 0.15…0.2 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc | 0.2…0.4 Uc | 0.3…0.5 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc |
| 800 | 750 | 750 | 1000 | 1100 | 1600 | 2 x 1000 | 1900 | 2100 | 2100 |
| *5* | 5 | 5 | 6 | 6 | 9 | 2 x 21 | 12 | 10 | 10 |
| 30…40 | 40…50 | 40…50 | 50…60 | 50…60 | 60…70 | 70…80 | 60…80 | 50…60 | 50…60 |
| 30…50 | 40…65 | 40…65 | 45…60 | 45…60 | 40…50 | 100…130 | 40…50 | 45…60 | 45…60 |
| ***Note:*** *The arcing time depends on the circuit switched by the poles. For all normal 3-phase applications. the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.* | | | | | | | | | |
| 10 | 10 | 10 | 10 | 10 | 5 | 5 | 5 | 5 | 5 |
| 2400 | 2400 | 2400 | 2400 | 2400 | 1200 | 600 | 600 | 600 | 600 |
| Min/max c.s.a. | | | | | | | | | |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors.<br>For similar type of operation, use magnetic latching contactors CR1 F.<br>See pages 5/240 to 5/267. | | | | | | | | | |

# TeSys contactors

## TeSys F contactors for motor control in utilisation category AC-3 (115 to 800 A)

Control circuit: a.c. or d.c.

813080

*LC1 F225*

813079

*LC1 F630*

### 3-pole contactors

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | Rated operational current in AC-3 | Basic reference, to be completed by adding the voltage code (2) Screw fixing, cabling (1) | Weight |
|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | 440 V up to | | |
| kW | kW | kW | kW | kW | kW | kW | A | | kg |
| 30 | 55 | 59 | 59 | 75 | 80 | 65 | **115** | **LC1 F115●●** | 3.430 |
| 40 | 75 | 80 | 80 | 90 | 100 | 65 | **150** | **LC1 F150●●** | 3.430 |
| 55 | 90 | 100 | 100 | 110 | 110 | 100 | **185** | **LC1 F185●●** | 4.650 |
| 63 | 110 | 110 | 110 | 129 | 129 | 100 | **225** | **LC1 F225●●** | 4.750 |
| 75 | 132 | 140 | 140 | 160 | 160 | 147 | **265** | **LC1 F265●●** | 7.440 |
| 100 | 160 | 180 | 200 | 200 | 220 | 160 | **330** | **LC1 F330●●** | 8.600 |
| 110 | 200 | 220 | 250 | 257 | 280 | 185 | **400** | **LC1 F400●●** | 9.100 |
| 147 | 250 | 280 | 295 | 355 | 335 | 335 | **500** | **LC1 F500●●** | 11.350 |
| 200 | 335 | 375 | 400 | 400 | 450 | 450 | **630** | **LC1 F630●●** | 18.600 |
| 220 | 400 | 425 | 425 | 450 | 475 | 450 | **780** | **LC1 F780●●** | 39.500 |
| 250 | 450 | 450 | 450 | 450 | 475 | 450 | **800** | **LC1 F800●●** | 18.750 |

***Note:*** *auxiliary contact blocks, modules and accessories: see pages 5/122 to 5/127.*

*(1) Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately, except on contactors LC1 F780 (see page 5/126).*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office) .*

| Volts ∼ | 24 | 48 | 110 | 115 | 120 | 208 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1 F115…F225** | | | | | | | | | | | | | |
| 50 Hz (coil LX1) | B5 | E5 | F5 | FE5 | – | – | M5 | P5 | U5 | Q5 | V5 | N5 | – |
| 60 Hz (coil LX1) | – | E6 | F6 | – | G6 | L6 | M6 | – | U6 | Q6 | – | – | R6 |
| 40…400 Hz (coil LX9) | – | E7 | F7 | FE7 | G7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1 F265…F330** | | | | | | | | | | | | | |
| 40…400 Hz (coil LX1) | B7 | E7 | F7 | FE7 | G7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1 F400…F630** | | | | | | | | | | | | | |
| 40…400 Hz (coil LX1) | – | E7 | F7 | FE7 | G7 *(3)* | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1 F780** | | | | | | | | | | | | | |
| 40…400 Hz (coil LX1) | – | – | F7 | FE7 | F7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1 F800** | | | | | | | | | | | | | |
| 40…400 Hz (coil LX4) *(4)* | – | – | FW | FW | FW | – | MW | MW | MW | QW | QW | QW | – |

| Volts ⎓ | 24 | 48 | 110 | 125 | 220 | 230 | 250 | 400 | 440 |
|---|---|---|---|---|---|---|---|---|---|
| **LC1 F115…F330** | | | | | | | | | |
| (coil LX4 F) | BD | ED | FD | GD | MD | MD | UD | – | RD |
| **LC1 F400…F630** | | | | | | | | | |
| (coil LX4 F) | – | ED | FD | GD | MD | – | UD | – | RD |
| **LC1 F780** | | | | | | | | | |
| (coil LX4 F) | – | – | FD | GD | MD | – | UD | – | RD |
| **LC1 F800** | | | | | | | | | |
| (coil LX4 F) | – | – | FW | FW | MW | MW | – | QW | – |

*(3) F7 for **LC1 F630**.*
*(4) Coil LX4 F8●● + rectifier DR5TE●●.*

# TeSys contactors

## TeSys F contactors for control in category AC-1, (200 to 2100 A )

Control circuit: a.c. or d.c.

813082

LC1 F1854

813084

LC1 F4004

813083

LC1 F6304

568674

LC1 F1700

568675

LC1 F2100

### 2, 3 or 4-pole contactors

| Maximum current in AC-1 (θ ≤ 40 °C) | Number of poles | Basic reference, to be completed by adding the voltage code (2) Screw fixing, cabling (1) | Weight |
|---|---|---|---|
| A | | | kg |
| 200 | 3 | LC1 F115●● | 3.430 |
| | 4 | LC1 F1154●● | 3.830 |
| 250 | 3 | LC1 F150●● | 3.430 |
| | 4 | LC1 F1504●● | 3.830 |
| 275 | 3 | LC1 F185●● | 4.650 |
| | 4 | LC1 F1854●● | 5.450 |
| 315 | 3 | LC1 F225●● | 4.750 |
| | 4 | LC1 F2254●● | 5.550 |
| 350 | 3 | LC1 F265●● | 7.440 |
| | 4 | LC1 F2654●● | 8.540 |
| 400 | 3 | LC1 F330●● | 8.600 |
| | 4 | LC1 F3304●● | 9.500 |
| 500 | 2 | LC1 F4002●● | 8.000 |
| | 3 | LC1 F400●● | 9.100 |
| | 4 | LC1 F4004●● | 10.200 |
| 700 | 2 | LC1 F5002●● | 9.750 |
| | 3 | LC1 F500●● | 11.350 |
| | 4 | LC1 F5004●● | 12.950 |
| 1000 | 2 | LC1 F6302●● | 15.500 |
| | 3 | LC1 F630●● | 18.600 |
| | 4 | LC1 F6304●● | 21.500 |
| 1250 | 2 | LC1 F6302●●S011 | 15.500 |
| | 3 | LC1 F630●●S011 | 18.600 |
| | 4 | LC1 F6304●●S011 | 21.500 |
| 1600 | 3 | LC1 F780●● | 39.500 |
| | 4 | LC1 F7804●● | 48.000 |
| 1700 | 3 | LC1 F1700 | 30.000 |
| 2100 (3) | 3 | LC1 F2100 | 31.000 |

***Note:*** *auxiliary contact blocks, modules and accessories: see pages 5/122 to 5/127*

*(1) Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately (except **LC1 F780, LC1 F1700 and LC1 F2100**), see page 5/126 .*
*(2) Standard control circuit voltages, see previous page.*
*(3) With set of right-angled connectors **LA9 F2100** (see page 5/125).*

# TeSys contactors

## TeSys F reversing contactors for motor control in utilisation category AC-3 (115 to 265 A), pre-assembled

Control circuit: a.c. or d.c.

523097

*LC2 F115*

### 3-pole reversing contactors (horizontally mounted) *(1)*

**Pre-wired power connections**

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | Operational current in AC-3 | Maximum operational voltage | Contactors supplied without coil *(2)* Complete reference | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | 440 V up to | | Fixing, cabling *(3)* | |
| kW | kW | kW | kW | kW | kW | kW | A | V | | kg |
| 30 | 55 | 59 | 59 | 75 | 80 | 65 | **115** | 1000 | **LC2 F115** | 7.560 |
| 40 | 75 | 80 | 80 | 90 | 100 | 65 | **150** | 1000 | **LC2 F150** | 7.560 |
| 55 | 90 | 100 | 100 | 110 | 110 | 100 | **185** | 1000 | **LC2 F185** | 10.100 |
| 63 | 110 | 110 | 110 | 129 | 129 | 100 | **225** | 1000 | **LC2 F225** | 14.200 |
| 75 | 132 | 140 | 140 | 160 | 160 | 147 | **265** | 1000 | **LC2 F265** | 16.480 |

### Accessories (to be ordered separately)

| Description | For reversing contactors | Quantity required | Reference | Weight kg |
|---|---|---|---|---|
| **Power terminal protection shrouds** | LC2 F115 | 2 | **LA9 F701** | 0.250 |
| | LC2 F150, F185 | 2 | **LA9 F702** | 0.250 |
| | LC2 F225, F265 | 2 | **LA9 F703** | 0.250 |
| **Auxiliary contact blocks and add-on modules** | – | – | See pages 5/122 to 5/127 | |

*(1) Fitted with a mechanical interlock without electrical interlocking. Order separately 2 auxiliary contact blocks **LAD N●1** to obtain electrical interlocking between the 2 contactors, see page 5/123 For accessories, see pages 5/124 to 5/127*

*(2) Coils to be ordered separately:*
*- a.c. supply, see pages 5/130 and 5/131,*
*- d.c. supply, see page 5/133*

*(3) Screw fixing.*
*Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately, see above.*

# TeSys contactors

## TeSys F changeover contactor pairs for control in utilisation category AC-1 (200 to 350 A), pre-assembled

Control circuit: a.c. or d.c.

526098

*LC2 F1854*

### 4-pole changeover contactor pairs (horizontally mounted) *(1)*

**Pre-wired power connections**

| Utilisation category AC-1<br>Non inductive loads<br>Maximum operational current<br>θ < 40 °C | Maximum operational voltage | Contactors supplied without coil *(2)*<br>Complete reference<br>Fixing, cabling *(3)* | Weight |
|---|---|---|---|
| A | V | | kg |
| **200** | 1000 | **LC2 F1154** | 8.860 |
| **250** | 1000 | **LC2 F1504** | 8.860 |
| **275** | 1000 | **LC2 F1854** | 12.100 |
| **315** | 1000 | **LC2 F2254** | 15.200 |
| **350** | 1000 | **LC2 F2654** | 19.480 |

### Accessories (to be ordered separately)

| Description | For changeover pairs | Quantity required | Reference | Weight kg |
|---|---|---|---|---|
| **Power terminal protection shrouds** | LC2 F1154 | 2 | **LA9 F706** | 0.250 |
| | LC2 F1504, F1854 | 2 | **LA9 F707** | 0.250 |
| | LC2 F2254, F2654 | 2 | **LA9 F708** | 0.250 |
| **Auxiliary contact blocks and add-on modules** | – | – | See pages 5/122 to 5/127 | |

*(1) Fitted with a mechanical interlock without electrical interlocking. Order separately 2 auxiliary contact blocks **LAD N●1** to obtain electrical interlocking between the 2 contactors, see page 5/123 For accessories, see pages 5/124 to 5/127*
*(2) Coils to be ordered separately:*
*- a.c. supply, see page 5/130,*
*- d.c. supply, see page 5/136.*
*(3) Screw fixing.*
*Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately, see above.*

5

# TeSys contactors

## TeSys F reversing contactors and changeover contactor pairs

Components for assembling 3-pole reversing contactors and changeover contactor pairs, for customer assembly

### Horizontally mounted

Reversers assembled using 2 contactors of identical rating, type :

**LC1 F115**
**LC1 F150**
**LC1 F185**
**LC1 F225**
**LC1 F265**
**LC1 F330**
**LC1 F400**
**LC1 F500**
**LC1 F630**
**LC1 F800**

### Mechanical interlocks

**LA9 F•970** *(2)*

### Sets of power connections

**Reversing contactors**

**LA9 F•••76** *(2)*

**3-pole changeover contactor pairs** *(1)*

**LA9 F•••82** *(2)*

### Vertically mounted

Reversers assembled using 2 contactors of identical rating, type :

**LC1 F115**
**LC1 F150**
**LC1 F185**
**LC1 F225**
**LC1 F265**
**LC1 F330**
**LC1 F400**
**LC1 F500**
**LC1 F630**
**LC1 F800**

Reversers assembled using 2 contactors of different ratings, see page 5/120

### Mechanical interlocks

**LA9 FF4F**
**LA9 FG4G**

**LA9 FH4H**
**LA9 FJ4J**
**LA9 FK4K**
**LA9 FL4L**

**LC1 F780**

**LA9 FX970**

*(1) For 4-pole changeover contactor pairs, see pages 5/120 and 5/121*
*(2) Complete references: see page 5/119.*



Schneider Electric

# TeSys contactors

## TeSys F reversing contactors and changeover pairs

Components for assembling 3-pole reversing contactors and changeover contactor pairs, for customer assembly
Control circuit: a.c. or d.c.

### Reversers assembled using 2 contactors of identical rating

| Contactor type (1) | Set of power connections | | Mechanical interlock | |
|---|---|---|---|---|
| | Reference | Weight kg | Kit reference | Weight kg |
| **For assembly of 3-pole reversing contactors for motor control** | | | | |
| **Horizontally mounted** | | | | |
| **LC1 F115** | **LA9 FF976** | 0.600 | **LA9 FF970** | 0.060 |
| **LC1 F150** | **LA9 F15076** | 0.600 | **LA9 FF970** | 0.060 |
| **LC1 F185** | **LA9 FG976** | 0.780 | **LA9 FG970** | 0.060 |
| **LC1 F225** | **LA9 F22576** | 1.500 | **LA9 FG970** | 0.060 |
| **LC1 F265** | **LA9 FH976** | 1.500 | **LA9 FJ970** | 0.140 |
| **LC1 F330** | **LA9 FJ976** | 2.100 | **LA9 FJ970** | 0.140 |
| **LC1 F400** | **LA9 FJ976** | 2.100 | **LA9 FJ970** | 0.140 |
| **LC1 F500** | **LA9 FK976** | 2.350 | **LA9 FJ970** | 0.140 |
| **LC1 F630** or **F800** | **LA9 FL976** | 3.800 | **LA9 FL970** | 0.150 |
| **Vertically mounted** | | | | |
| **LC1 F115** or **F150** | *(2)* | – | **LA9 FF4F** | 0.345 |
| **LC1 F185** | *(2)* | – | **LA9 FG4G** | 0.350 |
| **LC1 F225** | *(2)* | – | **LA9 FG4G** | 0.350 |
| **LC1 F265** or **F330** | *(2)* | – | **LA9 FH4H** | 1.060 |
| **LC1 F400** | *(2)* | – | **LA9 FJ4J** | 1.200 |
| **LC1 F500** | *(2)* | – | **LA9 FK4K** | 1.200 |
| **LC1 F630** or **F800** | *(2)* | – | **LA9 FL4L** | 1.220 |
| **LC1 F780** | *(3)* | – | **LA9 FX970** *(3)* | 6.100 |
| **For assembly of 3-pole changeover contactor pairs** *(4)* | | | | |
| **Horizontally mounted** | | | | |
| **LC1 F115** | **LA9 FF982** | 0.460 | **LA9 FF970** | 0.060 |
| **LC1 F150** | **LA9 F15082** | 0.460 | **LA9 FF970** | 0.060 |
| **LC1 F185** | **LA9 FG982** | 0.610 | **LA9 FG970** | 0.060 |
| **LC1 F225** | **LA9 F22582** | 1.200 | **LA9 FG970** | 0.060 |
| **LC1 F265** | **LA9 FH982** | 1.200 | **LA9 FJ970** | 0.140 |
| **LC1 F330** | **LA9 FJ982** | 1.800 | **LA9 FJ970** | 0.140 |
| **LC1 F400** | **LA9 FJ982** | 1.800 | **LA9 FJ970** | 0.140 |
| **LC1 F500** | **LA9 FK982** | 2.300 | **LA9 FJ970** | 0.140 |
| **LC1 F630** or **F800** | **LA9 FL982** | 3.400 | **LA9 FL970** | 0.150 |
| **Vertically mounted** | | | | |
| **LC1 F115** or **F150** | *(2)* | – | **LA9 FF4F** | 0.345 |
| **LC1 F185** | *(2)* | – | **LA9 FG4G** | 0.350 |
| **LC1 F225** | *(2)* | – | **LA9 FG4G** | 0.350 |
| **LC1 F265** or **F330** | *(2)* | – | **LA9 FH4H** | 1.060 |
| **LC1 F400** | *(2)* | – | **LA9 FJ4J** | 1.200 |
| **LC1 F500** | *(2)* | – | **LA9 FK4K** | 1.200 |
| **LC1 F630** or **F800** | *(2)* | – | **LA9 FL4L** | 1.220 |
| **LC1 F780** | *(3)* | – | **LA9 FX970** *(3)* | 7.800 |

*(1) To order the 2 contactors: see pages 5/114 and 5/115.For the 2 auxiliary contact blocks **LAD N●1** required to obtain electrical interlocking between the 2 contactors, see page 5/123 For accessories, see pages 5/124 to 5/127*
*(2) With the exception of contactors **LC1 F780**, all power connections are to be made by the customer.*
*(3) Double mechanical interlock mechanism with 2 interlock connecting rods and 3 power connecting links.*
*(4) For assembly of 4-pole changeover contactor pairs, see pages 5/120 and 5/121*



Selection: pages 5/194 to 5/217
Dimensions: pages 5/148 to 5/150
Schemes: page 5/151

# TeSys contactors

## TeSys F changeover contactor pairs

Components for assembling 3 and 4-pole changeover contactor pairs, for customer assembly

### Horizontally mounted

Contactor pairs assembled using 2 contactors of identical rating, type :
**LC1 F1154**
**LC1 F1504**
**LC1 F1854**
**LC1 F2254**
**LC1 F2654**
**LC1 F3304**
**LC1 F4004**
**LC1 F5004**
**LC1 F6304**

#### Mechanical interlocks

**LA9 F●970**

#### Sets of power connections

**4-pole changeover contactor pairs** *(1)*

**LA9 F●●●77**

### Vertically mounted

Contactor pairs assembled using 2 contactors of identical rating, type :
**LC1 F1154**
**LC1 F1504**
**LC1 F1854**
**LC1 F2254**
**LC1 F2654**
**LC1 F3304**
**LC1 F4004**
**LC1 F5004**
**LC1 F6304**

#### Mechanical interlocks

**Assembly A**

**LA9 FF4F**
**LA9 FG4G**

**Assembly B**

**LA9 FH4H**
**LA9 FJ4J**
**LA9 FK4K**
**LA9 FL4L**

**Assembly C**

**LA9 FX971**

5

Contactor pairs assembled using 2 contactors of different ratings, type :
**LC1 F115** or **F1154**
**LC1 F150** or **F1504**
**LC1 F185** or **F1854**
**LC1 F225** or **F2254**
**LC1 F265** or **F2654**
**LC1 F330** or **F3304**
**LC1 F400** or **F4004**
**LC1 F500** or **F5004**
**LC1 F630** or **F6304**
**LC1 F800**

**Assembly A**

**LA9 FG4F**

**Assembly B**

**LA9 FH4F, LA9 FH4G**
**LA9 FJ4F, LA9 FJ4G**
**LA9 FK4F, LA9 FK4G**
**LA9 FL4F, LA9 FL4G**

**Assembly C**

**LA9 FJ4H**
**LA9 FK4H, LA9 FK4J**
**LA9 FL4H, LA9 FL4J and LA9 FL4K**

Contactor pairs assembled using 3 contactors of identical or different ratings, type :
**LC1 F115** or **F1154**
**LC1 F150** or **F1504**
**LC1 F185** or **F1854**
**LC1 F225** or **F2254**
**LC1 F265** or **F2654**
**LC1 F330** or **F3304**
**LC1 F400** or **F4004**
**LC1 F500** or **F5004**
**LC1 F630** or **F6304**
**LC1 F800**

**LA9 F●4●4● :** see pages 5/128 and 5/129

**Important**: the contactor ratings must be in decreasing size from top to bottom.

*(1) For 3-pole changeover contactor pairs, see pages 5/118 and 5/119.*

# TeSys contactors

## TeSys F changeover contactor pairs

Components for assembling 3 and 4-pole changeover contactor pairs, for customer assembly
Control circuit: a.c. or d.c.

### Contactor pairs assembled using 2 contactors of identical rating

**For assembly of 4-pole changeover contactor pairs** *(1)*

| Contactor type *(2)* | Set of power connections | | Mechanical interlock | |
|---|---|---|---|---|
| | Reference | Weight kg | Kit reference | Weight kg |
| **Horizontally mounted** | | | | |
| **LC1 F1154** | **LA9 FF977** | 0.460 | **LA9 FF970** | 0.060 |
| **LC1 F1504** | **LA9 F15077** | 0.460 | **LA9 FF970** | 0.060 |
| **LC1 F1854** | **LA9 FG977** | 0.610 | **LA9 FG970** | 0.060 |
| **LC1 F2254** | **LA9 F22577** | 1.200 | **LA9 FG970** | 0.060 |
| **LC1 F2654** | **LA9 FH977** | 1.200 | **LA9 FJ970** | 0.140 |
| **LC1 F3304** | **LA9 FJ977** | 1.800 | **LA9 FJ970** | 0.140 |
| **LC1 F4004** | **LA9 FJ977** | 1.800 | **LA9 FJ970** | 0.140 |
| **LC1 F5004** | **LA9 FK977** | 2.300 | **LA9 FJ970** | 0.140 |
| **LC1 F6304** | **LA9 FL977** | 3.400 | **LA9 FL970** | 0.150 |
| **Vertically mounted** | | | | |
| **LC1 F1154** or **F1504** | *(3)* | – | **LA9 FF4F** | 0.345 |
| **LC1 F1854** | *(3)* | – | **LA9 FG4G** | 0.350 |
| **LC1 F2254** | *(3)* | – | **LA9 FG4G** | 0.350 |
| **LC1 F2654** or **F3304** | *(3)* | – | **LA9 FH4H** | 1.060 |
| **LC1 F4004** | *(3)* | – | **LA9 FJ4J** | 1.200 |
| **LC1 F5004** | *(3)* | – | **LA9 FK4K** | 1.200 |
| **LC1 F6304** | *(3)* | – | **LA9 FL4L** | 1.220 |
| **LC1 F7804** | *(4)* | – | **LA9 FX971** *(4)* | 7.800 |

### Contactor pairs assembled using 2 contactors of different ratings

**For assembly of 3 or 4-pole changeover contactor pairs**

| Contactor type*(1)* | | Mechanical interlock | |
|---|---|---|---|
| At bottom | At top | Kit reference | Weight kg |
| **Vertically mounted** | | | |
| **LC1 F115** or **F1154** or **LC1 F150** or **F1504** | **LC1 F185** or **F1854** | **LA9 FG4F** | 0.350 |
| | **LC1 F225** or **F2254** | **LA9 FG4F** | 0.350 |
| | **LC1 F265** or **F2654** | **LA9 FH4F** | 0.870 |
| | **LC1 F330** or **F3304** | **LA9 FH4F** | 0.870 |
| | **LC1 F400** or **F4004** | **LA9 FJ4F** | 0.930 |
| | **LC1 F500** or **F5004** | **LA9 FK4F** | 0.940 |
| | **LC1 F630, F6304** or **F800** | **LA9 FL4F** | 0.940 |
| **LC1 F185** or **F1854** or **LC1 F225** or **F2254** | **LC1 F265** or **F2654** | **LA9 FH4G** | 0.860 |
| | **LC1 F330** or **F3304** | **LA9 FH4G** | 0.860 |
| | **LC1 F400** or **F4004** | **LA9 FJ4G** | 0.940 |
| | **LC1 F500** or **F5004** | **LA9 FK4G** | 0.940 |
| | **LC1 F630, F6304** or **F800** | **LA9 FL4G** | 0.950 |
| **LC1 F265** or **F2654** or **LC1 F330** or **F3304** | **LC1 F400** or **F4004** | **LA9 FJ4H** | 1.130 |
| | **LC1 F500** or **F5004** | **LA9 FK4H** | 1.130 |
| | **LC1 F630, F6304** or **F800** | **LA9 FL4H** | 1.140 |
| **LC1 F400** or **F4004** | **LC1 F500** or **F5004** | **LA9 FK4J** | 1.200 |
| | **LC1 F630** or **F6304** or **F800** | **LA9 FL4J** | 1.210 |
| **LC1 F500** or **F5004** | **LC1 F630** or **F6304** or **F800** | **LA9 FL4K** | 1.210 |

**For assembly of reversers using 3 contactors, vertically mounted**

See pages 5/128 and 5/129.

*(1) For assembly of 3-pole changeover contactor pairs, see pages 5/118 and 5/120*
*(2) To order the 2 contactors: see pages 5/114 and 5/115. For the 2 auxiliary contact blocks* ***LAD N●1*** *required to obtain electrical interlocking between the 2 contactors, see page 5/123. For accessories, see pages 5/124 to 5/127*
*(3) All power connections are to be made by the customer.*
*(4) Double mechanical interlock mechanism with 2 interlock connecting rods and 4 power connecting links.*

LAD N10, N01
LC1 F
LAD N
LAD N, LAD C
LAD T, LAD S
LAD R
LA1 DX, DY, DZ

# TeSys contactors

## TeSys F contactors

### Auxiliary contact blocks

## Instantaneous auxiliary contact blocks

**For use in normal operating environments**

| Number of contacts | Maximum number of blocks per contactor Clip-on mounting | Composition | | | | Reference | Weight kg |
|---|---|---|---|---|---|---|---|
| **1** | 1 | – | – | 1 | – | **LAD N10** | 0.020 |
| | | – | – | – | 1 | **LAD N01** | 0.020 |
| **2** | 2 | – | – | 1 | 1 | **LAD N11** | 0.030 |
| | | – | – | 2 | – | **LAD N20** | 0.030 |
| | | – | – | – | 2 | **LAD N02** | 0.030 |
| **4** | 2 | – | – | 2 | 2 | **LAD N22** | 0.050 |
| | | – | – | 1 | 3 | **LAD N13** | 0.050 |
| | | – | – | 4 | – | **LAD N40** | 0.050 |
| | | – | – | – | 4 | **LAD N04** | 0.050 |
| | | – | – | 3 | 1 | **LAD N31** | 0.050 |
| | | – | – | 2 | 2 *(1)* | **LAD C22** | 0.050 |
| **With terminal referencing conforming to EN 50012** | | | | | | | |
| **2** | 2 | – | – | 1 | 1 | **LAD N11P** | 0.030 |
| | | – | – | 1 | 1 | **LAD N11G** | 0.030 |
| **4** | 2 | – | – | 2 | 2 | **LAD N22P** | 0.050 |
| | | – | – | 2 | 2 | **LAD N22G** | 0.050 |

## Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure **6** to the end of the references selected above. Example: **LAD N11** becomes **LAD N116**.

## Instantaneous auxiliary contact blocks with dust and damp protected contacts

**Recommended for use in particularly harsh industrial environments**

| Number of contacts | Maximum number of blocks per contactor Clip-on mounting | Composition | | | | Reference | Weight kg |
|---|---|---|---|---|---|---|---|
| **2** | 2 | 2 | – | – | – | **LA1 DX20** | 0.040 |
| | | 2 | 2 *(2)* | – | – | **LA1 DY20** | 0.040 |
| **4** | 2 | 2 | – | 2 | – | **LA1 DZ40** | 0.050 |
| | | 2 | – | 1 | 1 | **LA1 DZ31** | 0.050 |

## Time delay auxiliary contact blocks

| Number of contacts | Maximum number of blocks per contactor Clip-on mounting | Time delay Type | Range s | Reference | Weight kg |
|---|---|---|---|---|---|
| **1 N/O + 1 N/C** | 2 | On-delay | 0.1…3 *(3)* | **LAD T0** | 0.060 |
| | | | 0.1…30 | **LAD T2** | 0.060 |
| | | | 10…180 | **LAD T4** | 0.060 |
| | | | 1…30 *(4)* | **LAD S2** | 0.060 |
| | | Off-delay | 0.1…3 *(3)* | **LAD R0** | 0.060 |
| | | | 0.1…30 | **LAD R2** | 0.060 |
| | | | 10…180 | **LAD R4** | 0.060 |

## Interface for PLC control

| Type of I/O | Reference | Weight kg |
|---|---|---|
| Inputs: ⎓ 24 V - 100 mA<br>Outputs: ∼ 480 V - 25 A | **LA4 FSRE** ▲ | – |

*(1) Including 1 N/O + 1 N/C make before break*
*(2) Device fitted with 4 earth screen continuity terminals.*
*(3) With extended scale from 0.1 to 0.6 s.*
*(4) With switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.*

▲*Available 2nd half 2009.*

Presentation : page 5/122
Schemes : page 5/147

# TeSys contactors

## TeSys F contactors

### Suppressor blocks

## Suppressor blocks

### RC circuits (resistor-capacitor)

- Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal, i.e. less than 5% total harmonic distortion.
- Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max.
- Slight increase in drop-out time (1.1 to 1.3 times the normal time).

| Mounting | Uc | | Reference | Weight kg |
|---|---|---|---|---|
| Clip-on mounting on all ratings and all a.c. coils. | ∼ | 24…48 V | **LA4 FRCE** | 0.040 |
| | | 50…110 V | **LA4 FRCF** | 0.040 |
| | | 127…240 V | **LA4 FRCP** | 0.040 |
| | | 265…415 V | **LA4 FRCV** | 0.040 |
| **Suppressor block bracket** | | | **LA9 D09981** | 0.010 |

### Varistors (peak limiting)

- Protection provided by limiting the transient voltage to 2 Uc max.
- Maximum reduction of transient voltage peaks.

| | | | | |
|---|---|---|---|---|
| Clip-on mounting on all ratings and all coils. | ∼ or ⎓ | 24…48 V | **LA4 FVE** | 0.040 |
| | | 50…110 V | **LA4 FVF** | 0.040 |
| | | 127…240 V | **LA4 FVP** | 0.040 |
| | | 265…415 V | **LA4 FVV** | 0.040 |

### Diodes

- No overvoltage or oscillating frequencies.
- Increase in drop-out time (3 to 4 times the normal time).
- Polarised component.

| | | | | |
|---|---|---|---|---|
| Clip-on mounting on all ratings and all d.c. coils. | ⎓ | 24…48 V | **LA4 FDE** | 0.040 |
| | | 55…110 V | **LA4 FDF** | 0.040 |
| | | 125…250 V | **LA4 FDP** | 0.040 |
| | | 280…440 V | **LA4 FDV** | 0.040 |

### Bidirectional peak limiting diodes (transil)

- Protection provided by limiting the transient voltage to between 2 and 2.5 times Uc max.
- Maximum reduction of transient voltage peaks.

| | | | | |
|---|---|---|---|---|
| Clip-on mounting on all ratings and all coils. | ∼ or ⎓ | 24…48 V | **LA4 FTE** | 0.040 |
| | | 50…110 V | **LA4 FTF** | 0.040 |
| | | 127…240 V | **LA4 FTP** | 0.040 |
| | | 265…415 V | **LA4 FTV** | 0.040 |

## Connection accessories

| For use on 4-pole contactors | Set of 4 links Set reference | Weight kg |
|---|---|---|
| **Links for parallel connection of poles** (in pairs) | | |
| LC1 F1154 | **LA9 FF602** | 0.200 |
| LC1 F1504, F1854 | **LA9 FG602** | 0.350 |
| LC1 F2254, F2654, F3304, F4004 | **LA9 FH602** | 1.000 |
| LC1 F5004 | **LA9 FK602** | 1.750 |
| LC1 F6304 | **LA9 FL602** | 3.000 |
| **Links for "star" connection of 3 poles** | | |
| LC1 F115 | **LA9 FF601** | 0.035 |
| LC1 F150, F185 | **LA9 FG601** | 0.050 |
| LC1 F225, F265, F330, F400 | **LA9 FH601** | 0.120 |
| LC1 F500 | **LA9 FK601** | 0.180 |
| LC1 F630, F800 | **LA9 FL601** | 0.550 |

### Control circuit voltage take-off from power terminals

| For use with contactors | Mounted on bolt size | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|
| LC1 F115 | M6 | 10 | **DZ3 FA3** | 0.004 |
| LC1 F150, F185 | M8 | 10 | **DZ3 GA3** | 0.004 |
| LC1 F225…F500 | M10 | 10 | **DZ3 HA3** | 0.006 |
| LC1 F630, F800 | M12 | 10 | **DZ3 JA3** | 0.009 |

Dimensions :
pages 5/143 and 5/144

# TeSys contactors

## TeSys Fcontactors

## Accessories

*LA9 F●981*

*LA9 F●979*

*LA9 FL980*

*LA9 F2100*

### Right-angled connectors

**For contactors or thermal overload relays**

| For use with | | With connector plates | | Set of 3 connectors | |
|---|---|---|---|---|---|
| Contactors | Thermal overload relays *(1)* | Width | Type | Set reference | Weight kg |
| LC1 F115 | LR9 F5●67, LR9 F67 | 15 mm | Rear | **LA9 FF981** | 0.060 |
| | | | Side | **LA9 FF979** | 0.240 |
| | | | Large surface area | **LA9 FF980** | 0.150 |
| LC1 F150, F185 | LR9 F5●69, F5●71, LR9 F69, F71 | 20 mm | Rear | **LA9 FG981** | 0.080 |
| | | | Side | **LA9 FG979** | 0.350 |
| | | | Large surface area | **LA9 FG980** | 0.200 |
| LC1 F225, F265, F330, F400 | LR9 F7●75,LR9 F75 | 25 mm | Rear | **LA9 FJ981** | 0.430 |
| | | | Side | **LA9 FJ979** | 0.750 |
| | | | Large surface area | **LA9 FJ980** | 0.490 |
| LC1 F500 | LR9 F7●79, F7●81, LR9 F79, F81 | 30 mm | Rear | **LA9 FK981** | 0.480 |
| | | | Side | **LA9 FK979** | 0.920 |
| | | | Large surface area | **LA9 FK980** | 0.800 |
| LC1 F630, F800 | LR9 F7●81,LR9 F81 | 40 mm | Rear | **LA9 FL981** | 1.210 |
| | | | Side | **LA9 FL979** | 2.570 |
| | | | Large surface area | **LA9 FL980** | 3.190 |

| For use with | | With connector plates | | Set of 6 connectors | |
|---|---|---|---|---|---|
| Contactors | Thermal overload relays *(1)* | Width | Type | Set reference | Weight kg |
| LC1 F1700, F2100 | – | 60 mm | Rear | **LA9 F2100** | 9.550 |

### Connection accessories

**For reversing contactors or "star-delta" contactors combined with a thermal overload relay**

| For use with | | Width of connector plates | Set of 3 busbars | |
|---|---|---|---|---|
| Contactors | Thermal overload relays *(1)* | | Set reference | Weight kg |
| LC1 F115 | LR9 F5●57, F5●63 LR9 F5●67, F5●69 LR9 F69, F71 | 15 mm | **LA7 F401** | 0.110 |
| LC1 F150 and **F185** | LR9 F5●57, F5●63 | 20 mm | **LA7 F402** | 0.110 |
| LC1 F185 | LR9 F5●71, LR9 F71 | 25 mm | **LA7 F407** | 0.160 |
| LC1 F225 and **F265** | LR9 F5●71, LR9 F71 | 25 mm | **LA7 F403** | 0.160 |
| | LR9 F7●75, F7●79 LR9 F75, F79 | 25 mm | **LA7 F404** | 0.160 |
| LC1 F330 and F400 | LR9 F7●75, F7●79 LR9 F75, F79 | 25 mm | **LA7 F404** | 0.160 |
| LC1 F400 | LR9 F7●81,LR9 F81 | 25 mm | **LA7 F404** | 0.160 |
| LC1 F500 | LR9 F7●75, F7●79 LR9 F7●81 LR9 F75, F79, F81 | 30 mm | **LA7 F405** | 0.270 |
| LC1 F630, F800 | LR9 F7●81, LR9 F81 | 40 mm | **LA7 F406** | 0.600 |

*(1) For protection relays class 10, replace the ● with a 3 and for class 20, replace the ● with a 5.*

Dimensions :
pages 5/143 and 5/144

# TeSys contactors

## TeSys F contactors

### Accessories

*LA9 F103*

*LA9 F701*

### Insulated terminal blocks

| For use on 3-pole contactors | Connection | Tightening tool | Set of 2 blocks Set reference | Weight kg |
|---|---|---|---|---|
| **LC1 F115, F150, F185** | 1 x 16…150 mm² or 2 x 16…95 mm² | 4 mm hexagonal socket key | **LA9 F103** | 0.560 |

### Power terminal protection shrouds

| For use on 2, 3 and 4-pole contactors | Number of shrouds per set | Set reference | Weight kg |
|---|---|---|---|
| **LC1 F115** | 6 | **LA9 F701** | 0.250 |
| **LC1 F150, F185** | 6 | **LA9 F702** | 0.250 |
| **LC1 F225, F265, F330, F400 and F4002 F500 and F5002** | 6 | **LA9 F703** | 0.250 |
| **LC1 F630, F6302 and F800** | 6 | **LA9 F704** | 0.250 |
| **LC1 F1154** | 8 | **LA9 F706** | 0.300 |
| **LC1 F1504 and F1854** | 8 | **LA9 F707** | 0.300 |
| **LC1 F2254, F2654, F3304, F4004, F5004** | 8 | **LA9 F708** | 0.300 |
| **LC1 F6304** | 8 | **LA9 F709** | 0.300 |

# TeSys contactors

## TeSys F contactors

### Spare parts

*LA5 FG431*

*LA5 F40050*

*LA5 F210050*

## Sets of contacts

Per pole: 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.

| For contactor | Type | Replacement for | Reference | Weight kg |
|---|---|---|---|---|
| **2-pole** | LC1 F4002 | 2 poles | **LA5 F400802** | 1.350 |
| | LC1 F5002 | 2 poles | **LA5 F500802** | 1.950 |
| | LC1 F6302 | 2 poles | **LA5 F630802** | 4.700 |
| | LC1 F6302S011 | 2 poles | **LA5 F630802S011** | 4.800 |
| **3-pole** | LC1 F115. F150 | 3 poles | **LA5 FF431** | 0.270 |
| | LC1 F185. F225 | 3 poles | **LA5 FG431** | 0.350 |
| | LC1 F265 | 3 poles | **LA5 FH431** | 0.660 |
| | LC1 F330. F400 | 3 poles | **LA5 F400803** | 2.000 |
| | LC1 F500 | 3 poles | **LA5 F500803** | 2.950 |
| | LC1 F630 | 3 poles | **LA5 F630803** | 6.100 |
| | LC1 F780 | 1 pole | **LA5 F780801** *(1)* | 4.700 |
| | | 3 poles | **LA5 F780803** | 13.200 |
| | LC1 F800 | 3 poles | **LA5 F800803** | 6.100 |
| | LC1 F630S011 | 3 poles | **LA5 F630803S011** | 6.200 |
| **4-pole** | LC1 F1504. F1154 | 4 poles | **LA5 FF441** | 0.360 |
| | LC1 F1854. F2254 | 4 poles | **LA5 FG441** | 0.465 |
| | LC1 F2654 | 4 poles | **LA5 FH441** | 0.880 |
| | LC1 F3304. F4004 | 4 poles | **LA5 F400804** | 2.700 |
| | LC1 F5004 | 4 poles | **LA5 F500804** | 3.900 |
| | LC1 F6304 | 4 poles | **LA5 F630804** | 8.150 |
| | LC1 F7804 | 1 pole | **LA5 F780801** *(1)* | 4.700 |
| | | 4 poles | **LA5 F780804** | 17.300 |
| | LC1 F6304S011 | 4 poles | **LA5 F630804S011** | 8.400 |

## Arc chambers

| For contactor | Type | Replacement for | Reference | Weight kg |
|---|---|---|---|---|
| **2-pole** | LC1 F4002 | 2 poles | **LA5 F400250** | 0.870 |
| | LC1 F5002 | 2 poles | **LA5 F500250** | 1.250 |
| | LC1 F6302 | 2 poles | **LA5 F630250** | 2.100 |
| | LC1 F6302S011 | 2 poles | **LA5 F630250** | 2.100 |
| **3-pole** | LC1 F115 | 3 poles | **LA5 F11550** | 0.490 |
| | LC1 F150 | 3 poles | **LA5 F15050** | 0.490 |
| | LC1 F185 | 3 poles | **LA5 F18550** | 0.670 |
| | LC1 F225 | 3 poles | **LA5 F22550** | 0.670 |
| | LC1 F265 | 3 poles | **LA5 F26550** | 0.920 |
| | LC1 F330 | 3 poles | **LA5 F33050** | 1.300 |
| | LC1 F400 | 3 poles | **LA5 F40050** | 1.300 |
| | LC1 F500 | 3 poles | **LA5 F50050** | 1.850 |
| | LC1 F630 | 3 poles | **LA5 F63050** | 3.150 |
| | LC1 F780 | 1 pole | **LA5 F780150** *(1)* | 2.100 |
| | LC1 F800 | 3 poles | **LA5 F80050** | 3.150 |
| | LC1 F630S011 | 3 poles | **LA5 F63050** | 3.150 |
| | LC1 F1700 | 6 poles | **LA5 F170050** *(2)* | 3.750 |
| | LC1 F2100 | 6 poles | **LA5 F210050** *(2)* | 3.750 |
| **4-pole** | LC1 F1154 | 4 poles | **LA5 F115450** | 0.660 |
| | LC1 F1504 | 4 poles | **LA5 F150450** | 0.660 |
| | LC1 F1854 | 4 poles | **LA5 F185450** | 0.910 |
| | LC1 F2254 | 4 poles | **LA5 F225450** | 1.000 |
| | LC1 F2654 | 4 poles | **LA5 F265450** | 1.220 |
| | LC1 F3304 | 4 poles | **LA5 F330450** | 1.740 |
| | LC1 F4004 | 4 poles | **LA5 F400450** *(3)* | 1.740 |
| | LC1 F5004 | 4 poles | **LA5 F500450** *(3)* | 2.500 |
| | LC1 F6304 | 4 poles | **LA5 F630450** *(4)* | 4.200 |
| | LC1 F7804 | 1 pole | **LA5 F780150** *(1)* | 2.100 |
| | LC1 F6304S011 | 4 poles | **LA5 F630450** | 4.200 |

*(1) Comprising 2 identical items per pole.*
*(2) Comprising three 2-pole arc chambers.*
*(3) Comprising two 2-pole arc chambers.*
*(4) Comprising single-pole arc chambers.*

# TeSys contactors

## TeSys F contactors

## Accessories for assembly of reversing contactors and changeover contactor pairs using 3 contactors, vertically mounted - for customer assembly

*LA9 F●4●4●*

Closing of one of the 3 contactors prevents closing of the other 2.

### Mechanical interlock kits

| Contactor type *(1)* | | | Mechanical interlock *(2)* | |
|---|---|---|---|---|
| **Top** | **Middle** | **Bottom** | **Kit reference** *(3)* | **Weight kg** |
| LC1 F115, F150, F1154 or F1504 | LC1 F115, F150, F1154 or F1504 | LC1 F115, F150, F1154 or F1504 | **LA9 FF4F4F** | 0.554 |
| LC1 F185, F225, F1854 or F2254 | LC1 F115, F150, F1154 or F1504 | LC1 F115, F150, F1154 or F1504 | **LA9 FG4F4F** | 0.559 |
| | LC1 F185, F225, F1854 or F2254 | LC1 F115, F150, F1154 or F1504 | **LA9 FG4G4F** | 0.559 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FG4G4G** | 0.562 |
| LC1 F265, F330, F2654 or F3304 | LC1 F115, F150, F1154 or F1504 | LC1 F115, F150, F1154 or F1504 | **LA9 FH4F4F** | 1.350 |
| | LC1 F185, F225, F1854 or F2254 | LC1 F115, F150, F1154 or F1504 | **LA9 FH4G4F** | 1.375 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FH4G4G** | 1.375 |
| | LC1 F265, F330, F2654 or F3304 | LC1 F115, F150, F1154 or F1504 | **LA9 FH4H4F** | 1.524 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FH4H4G** | 1.527 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FH4H4H** | 1.684 |
| LC1 F400, F4002 or F4004 | LC1 F115, F150, F1154 or F1504 | LC1 F115, F150, F1154 or F1504 | **LA9 FJ4F4F** | 1.421 |
| | LC1 F185, F225, F1854 or F2254 | LC1 F115, F150, F1154 or F1504 | **LA9 FJ4G4F** | 1.424 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FJ4G4G** | 1.428 |
| | LC1 F265, F330, F2654 or F3304 | LC1 F115, F150, F1154 or F1504 | **LA9 FJ4H4F** | 1.595 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FJ4H4G** | 1.598 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FJ4H4H** | 1.755 |
| | LC1 F400, F4002 or F4004 | LC1 F115, F150, F1154 or F1504 | **LA9 FJ4J4F** | 1.666 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FJ4J4G** | 1.669 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FJ4J4H** | 1.829 |
| | | LC1-F400, F4002 or F4004 | **LA9 FJ4J4J** | 1.890 |
| LC1 F500, F5002 or F5004 (continued on page 5/129) | LC1 F115, F150, F1154 or F1504 | LC1 F115, F150, F1154 or F1504 | **LA9 FK4F4F** | 1.421 |
| | LC1 F185, F225, F1854 or F2254 | LC1 F115, F150, F1154 or F1504 | **LA9 FK4G4F** | 1.424 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FK4G4G** | 1.428 |
| | LC1 F265, F330, F2654 or F3304 | LC1 F115, F150, F1154 or F1504 | **LA9 FK4H4F** | 1.595 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FK4H4G** | 1.598 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FK4H4H** | 1.755 |
| | LC1 F400, F4002 or F4004 | LC1 F115, F150, F1154 or F1504 | **LA9 FK4J4F** | 1.666 |
| | | LC1 F185, F225, F2654 or F3304 | **LA9 FK4J4G** | 1.669 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FK4J4H** | 1.829 |
| | | LC1 F400, F4002 or F4004 | **LA9 FK4J4J** | 1.896 |
| | LC1 F500, F5002 or F5004 | LC1 F115, F150, F1154 or F1504 | **LA9 FK4K4F** | 1.666 |

*(1) To order the 3 contactors, see pages 5/114 and 5/115. For auxiliary contact blocks **LAD N02** used for electrical locking, see page 5/123. For accessories, see pages 5/124 to 5/127*

*(2) Minimum distances between contactors, see page 5/129.*

*(3) The kit contains the lever arms, the 2 x Ø 8 mm rods and all parts required for assembly.*

Selection :
pages 5/194 to 5/217

# TeSys contactors

## TeSys F contactors

### Accessories for assembly of reversing contactors and changeover contactor pairs using 3 contactors, vertically mounted - for customer assembly

*LA9 F●4●4●*

**Mechanical interlock kits (continued)**

| Contactor type (1) | | | Mechanical interlock (2) | |
|---|---|---|---|---|
| **Top** | **Middle** | **Bottom** | **Kit reference (3)** | **Weight kg** |
| LC1 F500, F5002 or F5004 *(continued)* | LC1 F500, F5002 or F5004 | LC1 F185, F225, F1854 or F2254 | **LA9 FK4K4G** | 1.669 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FK4K4H** | 1.825 |
| | | LC1 F400, F4002 or F4004 | **LA9 FK4K4J** | 1.896 |
| | | LC1-F500, F5002 or F5004 | **LA9 FK4K4K** | 1.896 |
| LC1 F630, F800, F6302 or F6304 | LC1 F115, F150, F1154 or F1504 | LC1 F115, F150, F1154 or F1504 | **LA9 FL4F4F** | 1.428 |
| | LC1 F185, F225, F1854 or F2254 | LC1 F115, F150, F1154 or F1504 | **LA9 FL4G4F** | 1.431 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FL4G4G** | 1.436 |
| | LC1 F265, F330, F2654 or F3304 | LC1 F115, F150, F1154 or F1504 | **LA9 FL4H4F** | 1.602 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FL4H4G** | 1.606 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FL4H4H** | 1.751 |
| | LC1 F400, F4002 or F4004 | LC1 F115, F150, F1154 or F1504 | **LA9 FL4J4F** | 1.673 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FL4J4G** | 1.676 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FL4J4H** | 1.832 |
| | | LC1 F400, F4002 or F4004 | **LA9 FL4J4J** | 1.903 |
| | LC1-F500, F5002 or F5004 | LC1 F115, F150, F1154 or F1504 | **LA9 FK4K4F** | 1.666 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FK4K4G** | 1.669 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FK4K4H** | 1.825 |
| | | LC1 F400, F4002 or F4004 | **LA9 FK4K4J** | 1.896 |
| | | LC1-F500, F5002 or F5004 | **LA9 FK4K4K** | 1.896 |
| | LC1 F630, F800, F6302 or F6304 | LC1 F115, F150, F1154 or F1504 | **LA9 FL4L4F** | 1.680 |
| | | LC1 F185, F225, F1854 or F2254 | **LA9 FL4L4G** | 1.683 |
| | | LC1 F265, F330, F2654 or F3304 | **LA9 FL4L4H** | 1.910 |
| | | LC1 F400, F4002 or F4004 | **LA9 FL4L4J** | 1.896 |
| | | LC1 F500, F5002 or F5004 | **LA9 FL4L4K** | 1.896 |
| | | LC1 F630, F800, F6302, or F6304 | **LA9 FL4L4L** | 1.920 |

*(1) To order the 3 contactors, see pages 5/114 and 5/115. For auxiliary contact blocks **LAD N02** used for electrical locking, see page 5/123. For accessories, see pages 5/124 to 5/127.*
*(2) Minimum distances between contactors.*
*This is the distance, in mm, between the centres of two adjacent contactors (between the top and middle contactors or between the middle and bottom contactors).*

| Contactor | | | | | | |
|---|---|---|---|---|---|---|
| **Bottom or top** | **Middle** | | | | | |
| | **LC1 F115 or F150** | **LC1 F185 or F225** | **LC1 F265 or F330** | **LC1 F400** | **LC1 F500** | **LC1 F630 or F800** |
| LC1 F115 or F150 | 200 | 210 | 240 | 250 | 270 | 320 |
| LC1 F185 or F225 | 210 | 220 | 250 | 250 | 270 | 330 |
| LC1 F265 or F330 | 240 | 250 | 250 | 260 | 280 | 350 |
| LC1 F400 | 250 | 250 | 260 | 260 | 280 | 320 |
| LC1 F500 | 270 | 270 | 280 | 280 | 300 | 340 |
| LC1 F630 or F800 | 320 | 330 | 350 | 320 | 340 | 380 |

*(3) The kit contains the lever arms, the 2 x Ø 8 mm rods and all parts required for assembly.*

Selection :
pages 5/194 to 5/217

# TeSys contactors

## TeSys F contactors

## a.c. 50/60 Hz supply coils

*LX1 FF●●●*

### References

Maximum ambient air temperature: 55 °C. Above this, use an LX9 F coil, see page 5/135.
Operating cycles/hour (θ ≤ 55 °C): ≤ 2400.

| Control circuit voltage Uc - 50 Hz | Control circuit voltage Uc - 60 Hz | Average resistance at 20 °C ± 10 % | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| V | V | Ω | H | | | kg |
| **For contactors LC1 F115 and LC1 F150** | | | | | | |
| **24** | **–** | 0.27 | 0.04 | **B5** | **LX1 FF024** | 0.430 |
| **42** | **–** | 0.94 | 0.13 | **D5** | **LX1 FF042** | 0.430 |
| **–** | **48** | 0.78 | 0.11 | **E6** | **LX1 FF040** | 0.430 |
| **48** | **–** | 1.17 | 0.16 | **E5** | **LX1 FF048** | 0.430 |
| **–** | **110** | 4.55 | 0.59 | **F6** | **LX1 FF092** | 0.430 |
| **–** | **120** | 4.77 | 0.64 | **G6** | **LX1 FF095** | 0.430 |
| **110** | **–** | 6.38 | 0.86 | **F5** | **LX1 FF110** | 0.430 |
| **115** | **–** | 6.38 | 0.86 | **FE5** | **LX1 FF110** | 0.430 |
| **127/132** | **–** | 9.14 | 1.15 | **G5** | **LX1 FF127** | 0.430 |
| **–** | **200/208** | 14.5 | 1.87 | **L6** | **LX1 FF162** | 0.430 |
| **–** | **220** | 18.4 | 2.38 | **M6** | **LX1 FF184** | 0.430 |
| **–** | **240** | 18.9 | 2.5 | **U6** | **LX1 FF187** | 0.430 |
| **220** | **265/277** | 28.1 | 3.44 | **M5** | **LX1 FF220** | 0.430 |
| **230** | **–** | 28.1 | 3.44 | **P5** | **LX1 FF220** | 0.430 |
| **240** | **–** | 31.1 | 4.1 | **U5** | **LX1 FF240** | 0.430 |
| **–** | **380** | 57.2 | 7.05 | **Q6** | **LX1 FF316** | 0.430 |
| **–** | **440** | 72.6 | 9.21 | **R6** | **LX1 FF360** | 0.430 |
| **380** | **460/480** | 86.9 | 10.3 | **Q5** | **LX1 FF380** | 0.430 |
| **400** | **–** | 86.9 | 10.3 | **V5** | **LX1 FF380** | 0.430 |
| **415** | **–** | 95.1 | 12 | **N5** | **LX1 FF415** | 0.430 |
| **500** | **–** | 141 | 17 | **S5** | **LX1 FF500** | 0.430 |
| **–** | **660** | 172 | 20.3 | **Y6** | **LX1 FF550** | 0.430 |
| **660/690** | **–** | 254 | 28.9 | **Y5** | **LX1 FF660** | 0.430 |
| **–** | **1000** | 414 | 48.9 | **–** | **LX1 FF850** | 0.430 |
| **1000** | **–** | 610 | 68.5 | **–** | **LX1 FF1000** | 0.430 |

**Specifications**
Average consumption at 20°C:
- inrush 50Hz: 550VA; 60Hz: 660 VA,
- sealed 50Hz: 45VA; 60 Hz: 55 VA, cos φ= 0.3.

Heat dissipation: 12…16 W.
Operating time at Uc: closing = 23…35 ms, opening = 5…15 ms.

*LX1 FG●●●*

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactors LC1 F185 and LC1 F225** | | | | | | |
| **24** | **–** | 0.18 | 0.03 | **B5** | **LX1 FG024** | 0.550 |
| **42** | **–** | 0.57 | 0.09 | **–** | **LX1 FG042** | 0.550 |
| **–** | **48** | 0.47 | 0.08 | **E6** | **LX1 FG040** | 0.550 |
| **48** | **–** | 0.71 | 0.12 | **E5** | **LX1 FG048** | 0.550 |
| **–** | **110** | 2.74 | 0.44 | **F6** | **LX1 FG092** | 0.550 |
| **–** | **115/120** | 2.87 | 0.49 | **G6** | **LX1 FG095** | 0.550 |
| **110** | **–** | 4.18 | 0.65 | **F5** | **LX1 FG110** | 0.550 |
| **115** | **–** | 4.18 | 0.65 | **FE5** | **LX1 FG110** | 0.550 |
| **127/132** | **–** | 5.35 | 0.86 | **G5** | **LX1 FG127** | 0.550 |
| **–** | **200/208** | 8.8 | 1.41 | **L6** | **LX1 FG162** | 0.550 |
| **–** | **220** | 11.1 | 1.8 | **M6** | **LX1 FG184** | 0.550 |
| **–** | **240** | 11.4 | 1.87 | **U6** | **LX1 FG187** | 0.550 |
| **220** | **265/277** | 16.5 | 2.59 | **M5** | **LX1 FG220** | 0.550 |
| **230** | **–** | 16.5 | 2.59 | **P5** | **LX1 FG220** | 0.550 |
| **240** | **–** | 20.1 | 3.09 | **U5** | **LX1 FG240** | 0.550 |
| **–** | **380** | 34 | 5.32 | **Q6** | **LX1 FG316** | 0.550 |
| **–** | **440** | 43.5 | 6.94 | **R6** | **LX1 FG360** | 0.550 |
| **380** | **460/480** | 51.3 | 7.75 | **Q5** | **LX1 FG380** | 0.550 |
| **400** | **–** | 51.3 | 7.75 | **V5** | **LX1 FG380** | 0.550 |
| **415** | **–** | 62.3 | 9.06 | **N5** | **LX1 FG415** | 0.550 |
| **500** | **–** | 82.7 | 12.8 | **S5** | **LX1 FG500** | 0.550 |
| **–** | **660** | 103 | 15.3 | **Y6** | **LX1 FG550** | 0.550 |
| **660/690** | **–** | 154 | 21.8 | **Y5** | **LX1 FG660** | 0.550 |
| **–** | **1000** | 249 | 36.6 | **–** | **LX1 FG850** | 0.550 |
| **1000** | **–** | 370 | 51.6 | **–** | **LX1 FG1000** | 0.550 |

**Specifications**
Average consumption at 20 °C:
- inrush 50 Hz: 805 VA; 60 Hz: 970 VA,
- sealed 50 Hz: 55 VA; 60 Hz: 66 VA, cos φ= 0.3.

Heat dissipation: 18…24 W.
Operating time at Uc: closing = 20…35 ms, opening = 7…15 ms.

# TeSys contactors

## TeSys F contactors

## a.c. 40 to 400 Hz supply coils

*LX1 FH●●●2*

*LX1 FJ●●●*

### References

Low sealed consumption.
Operate on networks with harmonic numbers ≤ 7.
Operating cycles/hour (θ ≤ 55 °C): ≤ 2400.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactors LC1 F265 and LC1 F330** | | | | | | |
| **24** | 0.8 | 20 | *(1)* | **B7** | **LX1 FH0242** | 0.750 |
| **48** | 2.96 | 67 | *(1)* | **E7** | **LX1 FH0482** | 0.750 |
| **110** | 18.7 | 440 | *(1)* | **F7** | **LX1 FH1102** | 0.750 |
| **115** | 18.7 | 440 | *(1)* | **FE7** | **LX1 FH1102** | 0.750 |
| **120/127** | 22.9 | 536 | *(1)* | **G7** | **LX1 FH1272** | 0.750 |
| **200/208** | 58.4 | 1366 | *(1)* | **L7** | **LX1 FH2002** | 0.750 |
| **220** | 70.6 | 1578 | *(1)* | **M7** | **LX1 FH2202** | 0.750 |
| **230** | 70.6 | 1578 | *(1)* | **P7** | **LX1 FH2202** | 0.750 |
| **240** | 87.94 | 1968 | *(1)* | **U7** | **LX1 FH2402** | 0.750 |
| **277** | 113 | 2444 | *(1)* | **W7** | **LX1 FH2772** | 0.750 |
| **380** | 217 | 4631 | *(1)* | **Q7** | **LX1 FH3802** | 0.750 |
| **400** | 217 | 4631 | *(1)* | **V7** | **LX1 FH3802** | 0.750 |
| **415** | 217 | 4631 | *(1)* | **N7** | **LX1-FH3802** | 0.750 |
| **440** | 265 | 6731 | *(1)* | **R7** | **LX1 FH4402** | 0.750 |
| **480/500** | 329 | 8543 | *(1)* | **S7** | **LX1 FH5002** | 0.750 |
| **600/660** | 296 | 10 245 | *(1)* | **X7** | **LX1 FH6002** | 0.750 |
| **1000** | 696 | 25 880 | *(1)* | **–** | **LX1 FH10002** | 0.750 |

**Specifications**

Average consumption at 20 °C for 50 or 60 Hz and cos φ = 0.9:
- inrush: 600…700 VA,
- sealed: 8…10 VA.

Heat dissipation: 8 W.
Operating time at Uc: closing = 40…65 ms, opening = 100…170 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F400** | | | | | | |
| **48** | 1.6 | 29.5 | 0.18 | **E7** | **LX1 FJ048** | 1.000 |
| **110/120** | 9.8 | 230 | 1.35 | **F7** | **LX1 FJ110** | 1.000 |
| **115** | 9.8 | 230 | 1.35 | **FE7** | **LX1 FJ110** | 1.000 |
| **120/127** | 12.8 | 280 | 1.75 | **G7** | **LX1 FJ127** | 1.000 |
| **200/208** | 30 | 815 | 4.1 | **L7** | **LX1 FJ200** | 1.000 |
| **220** | 37 | 1030 | 5.1 | **M7** | **LX1 FJ220** | 1.000 |
| **230** | 37 | 1030 | 5.1 | **P7** | **LX1 FJ220** | 1.000 |
| **240** | 47.5 | 1320 | 6.4 | **U7** | **LX1 FJ240** | 1.000 |
| **265/277** | 61 | 1700 | 8.1 | **W7** | **LX1 FJ280** | 1.000 |
| **380** | 120 | 3310 | 15.8 | **Q7** | **LX1 FJ380** | 1.000 |
| **400** | 120 | 3310 | 15.8 | **V7** | **LX1 FJ380** | 1.000 |
| **415** | 145 | 4070 | 19.4 | **N7** | **LX1 FJ415** | 1.000 |
| **440** | 145 | 4070 | 19.4 | **R7** | **LX1 FJ415** | 1.000 |
| **500** | 190 | 4980 | 25.5 | **S7** | **LX1 FJ500** | 1.000 |
| **550/600** | 243 | 6310 | 27.4 | **X7** | **LX1 FJ600** | 1.000 |
| **1000** | 720 | 19 420 | 84.6 | **–** | **LX1 FJ1000** | 1.000 |

**Specifications**

Average consumption at 20 °C for 50 or 60 Hz and cos φ = 0.9:
- inrush: 1000…1150 VA,
- sealed: 12…18 VA.

Heat dissipation: 14 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170.

*(1) Please consult your Regional Sales Office.*

# TeSys contactors

## TeSys F contactors

a.c. 40 to 400 Hz supply coils

LX1 FK●●●

LX1 FL●●●

### References (continued)

Low sealed consumption.
Operate on networks with harmonic numbers ≤ 7.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactor LC1 F500** | | | | | | |
| **48** | 1.9 | 33.5 | 0.19 | **E7** | **LX1 FK048** | 1.150 |
| **110/120** | 9.55 | 260 | 1.25 | **F7** | **LX1 FK110** | 1.150 |
| **115** | 9.55 | 260 | 1.25 | **FE7** | **LX1 FK110** | 1.150 |
| **120/127** | 11.5 | 315 | 1.5 | **G7** | **LX1 FK127** | 1.150 |
| **200/208** | 29 | 735 | 3.75 | **L7** | **LX1 FK200** | 1.150 |
| **220** | 35.5 | 915 | 4.55 | **M7** | **LX1 FK220** | 1.150 |
| **230** | 35.5 | 915 | 4.55 | **P7** | **LX1 FK220** | 1.150 |
| **240** | 44.5 | 1160 | 5.75 | **U7** | **LX1 FK240** | 1.150 |
| **265/277** | 56.5 | 1490 | 7.3 | **W7** | **LX1 FK280** | 1.150 |
| **380** | 112 | 2980 | 14.7 | **Q7** | **LX1 FK380** | 1.150 |
| **400** | 112 | 2980 | 14.7 | **V7** | **LX1 FK380** | 1.150 |
| **415** | 143 | 3730 | 18.4 | **N7** | **LX1 FK415** | 1.150 |
| **440** | 143 | 3730 | 18.4 | **R7** | **LX1 FK415** | 1.150 |
| **500** | 172 | 4590 | 22.8 | **S7** | **LX1 FK500** | 1.150 |
| **550/600** | 232 | 5660 | 23.9 | **X7** | **LX1 FK600** | 1.150 |
| **1000** | 679 | 16 960 | 72 | **–** | **LX1 FK1000** | 1.150 |

**Specifications**

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1050…1150 VA,
- sealed: 16…20 VA.

Operating cycles/hour (θ ≤ 55 °C): ≤ 2400.
Heat dissipation: 18 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F630** | | | | | | |
| **48** | 1.1 | 17.1 | 0.09 | **E7** | **LX1 FL048** | 1.500 |
| **110/120** | 6.45 | 165 | 1.85 | **F7** | **LX1 FL110** | 1.500 |
| **115** | 6.45 | 165 | 1.85 | **FE7** | **LX1 FL110** | 1.500 |
| **127** | 8.1 | 205 | 1.05 | **G7** | **LX1 FL127** | 1.500 |
| **200/208** | 20.5 | 605 | 2.65 | **L7** | **LX1 FL200** | 1.500 |
| **220** | 25.5 | 730 | 3.35 | **M7** | **LX1 FL220** | 1.500 |
| **230** | 25.5 | 730 | 3.35 | **P7** | **LX1 FL220** | 1.500 |
| **240** | 25.5 | 730 | 3.35 | **U7** | **LX1 FL220** | 1.500 |
| **265/277** | 31 | 900 | 4.1 | **W7** | **LX1 FL260** | 1.500 |
| **380** | 78 | 2360 | 10.5 | **Q7** | **LX1 FL380** | 1.500 |
| **400** | 78 | 2360 | 10.5 | **V7** | **LX1 FL380** | 1.500 |
| **415** | 96 | 2960 | 13 | **N7** | **LX1 FL415** | 1.500 |
| **440** | 96 | 2960 | 13 | **R7** | **LX1 FL415** | 1.500 |
| **500** | 120 | 3660 | 16.5 | **S7** | **LX1 FL500** | 1.500 |
| **550/600** | 155 | 4560 | 19.5 | **X7** | **LX1 FL600** | 1.500 |
| **1000** | 474 | 12 880 | 56.2 | **–** | **LX1 FL1000** | 1.500 |

**Specifications**

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1500…1730 VA,
- sealed: 20…25 VA.

Operating cycles/hour (θ ≤ 55 °C): 1200.
Heat dissipation: 20 W.
Operating time at Uc: closing = 40…80 ms, opening = 100…200 ms.

# TeSys contactors

## TeSys F contactors

## a.c. 40 to 400 Hz supply coils

### References (continued)

Low sealed consumption.
Operate on networks with harmonic numbers ≤ 7.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactor LC1 F780** | | | | | | |
| **110/120** | 4.95 *(2)* | 230 *(2)* | 0.21 | **F7** | **LX1 FX110** *(1)* | 3.000 |
| **115** | 4.95 *(2)* | 230 *(2)* | 0.21 | **FE7** | **LX1 FX110** *(1)* | 3.000 |
| **127** | 6.1 *(2)* | 280 *(2)* | 0.26 | **G7** | **LX1 FX127** *(1)* | 3.000 |
| **200/208** | 15.5 *(2)* | 750 *(2)* | 0.66 | **L7** | **LX1 FX200** *(1)* | 3.000 |
| **220** | 19.5 *(2)* | 920 *(2)* | 0.82 | **M7** | **LX1 FX220** *(1)* | 3.000 |
| **230** | 19.5 *(2)* | 920 *(2)* | 0.82 | **P7** | **LX1 FX220** *(1)* | 3.000 |
| **240** | 19.5 *(2)* | 920 *(2)* | 0.82 | **U7** | **LX1 FX220** *(1)* | 3.000 |
| **265/277** | 29.8 *(2)* | 1330 *(2)* | 1.25 | **W7** | **LX1 FX280** *(1)* | 3.000 |
| **380** | 60.9 *(2)* | 2780 *(2)* | 2.3 | **Q7** | **LX1 FX380** *(1)* | 3.000 |
| **400** | 60.9 *(2)* | 2780 *(2)* | 2.3 | **V7** | **LX1 FX380** *(1)* | 3.000 |
| **415/480** | 74.3 *(2)* | 3340 *(2)* | 2.8 | **N7** | **LX1 FX415** *(1)* | 3.000 |
| **440** | 74.3 *(2)* | 3340 *(2)* | 2.8 | **R7** | **LX1 FX415** *(1)* | 3.000 |
| **500** | 92 *(2)* | 4180 *(2)* | 3.5 | **S7** | **LX1 FX500** *(1)* | 3.000 |

**Specifications**

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1900…2300 VA, sealed: 44…55 VA.

Operating cycles/hour (θ ≤ 55 °C): 600.
Heat dissipation: 2 x 22 W.
Operating time at Uc: closing = 40…80 ms, opening = 130…230 ms.

| For contactor LC1 F800 | | | | |
|---|---|---|---|---|
| Control circuit voltage Uc | Voltage code | Rectifier Reference *(3)* | Coil Reference | Weight |
| V | | | | kg |
| **110/127** | **FE7** | **DR5 TE4U** | **LX4 F8FW** | 1.650 |
| **220/240** | **P7** | **DR5 TE4U** | **LX4 F8MW** | 1.650 |
| **380/440** | **V7** | **DR5 TE4S** | **LX4 F8QW** | 1.650 |

**Specifications**

Operating cycles/hour (θ ≤ 55 °C): 600.
Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.8:
- inrush: 1700 VA, sealed: 12 VA

Operating time at Uc: closing = 60…80 ms, opening = 160…180 ms.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactors LC1 F1700 and LC1 F2100** | | | | | | |
| **110** | 5.92 | 106 | 0.72 | **F7** | **LX1 FK065** *(4)* | 1.150 |
| **120** | 5.92 | 106 | 0.72 | **G7** | **LX1 FK070** *(4)* | 1.150 |
| **220** | 9.55 | 260 | 1.25 | **M7** | **LX1 FK110** *(4)* | 1.150 |
| **230** | 9.55 | 260 | 1.25 | **P7** | **LX1 FK110** *(4)* | 1.150 |
| **240** | 11.5 | 315 | 1.50 | **U7** | **LX1 FK127** *(4)* | 1.150 |
| **277** | 16.5 | 420 | 2.25 | **W7** | **LX1 FK140** *(4)* | 1.150 |
| **380** | 29 | 735 | 3.75 | **Q7** | **LX1 FK200** *(4)* | 1.150 |
| **400** | 29 | 735 | 3.75 | **V7** | **LX1 FK200** *(4)* | 1.150 |
| **415** | 35.5 | 915 | 4.55 | **N7** | **LX1 FK220** *(4)* | 1.150 |
| **440** | 35.5 | 915 | 4.55 | **R7** | **LX1 FK220** *(4)* | 1.150 |
| **500** | 44.5 | 1160 | 5.75 | **S7** | **LX1 FK240** *(4)* | 1.150 |

**Specifications**

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1600…2400 VA, sealed: 29…37 VA.

Operating cycles/hour (θ ≤ 55 °C): 600.
Heat dissipation: 2 x 18 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170 ms.

*(1) Reference of set of 2 identical coils, to be connected in series.*
*(2) Value for the 2 coils in series.*
*(3) Rectifier to be ordered separately: 0.100 kg.*
*(4) Order 2 coils and connect them in series.*

# TeSys contactors

## TeSys F contactors

a.c. 40 to 400 Hz supply coils
for specific applications *(1)*

## References

Low sealed consumption.
High tolerance to inrush voltage drops.
Immune to micro-breaks (mains supply or contact chain).
Operate on networks with harmonic numbers ≤ 7.

813188

*LX9 FF●●●*

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % Inrush | Sealed | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| V | Ω | Ω | H | | | kg |
| **For contactors LC1 F115 and LC1 F150** | | | | | | |
| **48** | 3.03 | 80.2 | 0.3 | **E7** | **LX9 FF048** | 0.430 |
| **110** | 14.8 | 579 | 2.08 | **F7** | **LX9 FF110** | 0.430 |
| **115** | 14.8 | 579 | 2.08 | **FE7** | **LX9 FF110** | 0.430 |
| **120/127** | 19 | 746 | 2.65 | **G7** | **LX9 FF127** | 0.430 |
| **208** | 45 | 1788 | 5.95 | **L7** | **LX9 FF200** | 0.430 |
| **220** | 59.4 | 2190 | 7.7 | **M7** | **LX9 FF220** | 0.430 |
| **230** | 59.4 | 2190 | 7.7 | **P7** | **LX9 FF220** | 0.430 |
| **240** | 73.5 | 2750 | 9.68 | **U7** | **LX9 FF240** | 0.430 |
| **380** | 173 | 6540 | 23 | **Q7** | **LX9 FF380** | 0.430 |
| **400** | 173 | 6540 | 23 | **V7** | **LX9 FF380** | 0.430 |
| **415** | 218 | 8460 | 30 | **N7** | **LX9 FF415** | 0.430 |
| **440** | 218 | 8460 | 30 | **R7** | **LX9 FF415** | 0.430 |
| **500** | 262 | 10 **300** | 36 | **S7** | **LX9 FF500** | 0.430 |

**Specifications**
Average consumption at 20 °C: inrush: 690…855 VA, sealed: 6.6…8.1 VA.
Heat dissipation: 5.9…7.2 W.
Operating cycles/hour (θ ≤ 55 °C): < 2400.
Operating time at Uc: closing = 35 ms, opening = 130 ms.

5

813189

*LX9 FG●●●*

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactors LC1 F185 and LC1 F225** | | | | | | |
| **48** | 2.2 | 60 | 0.23 | **E7** | **LX9 FG048** | 0.550 |
| **110** | 10.4 | 411 | 1.46 | **F7** | **LX9 FG110** | 0.550 |
| **115** | 10.4 | 411 | 1.46 | **FE7** | **LX9 FG110** | 0.550 |
| **120/127** | 13 | 520 | 1.85 | **G7** | **LX9 FG127** | 0.550 |
| **208** | 33 | 1339 | 4.9 | **L7** | **LX9 FG200** | 0.550 |
| **220** | 42.1 | 1680 | 5.84 | **M7** | **LX9 FG220** | 0.550 |
| **230** | 42.1 | 1680 | 5.84 | **P7** | **LX9 FG220** | 0.550 |
| **240** | 50.6 | 2060 | 7.22 | **U7** | **LX9 FG240** | 0.550 |
| **380** | 128 | 4730 | 16.4 | **Q7** | **LX9 FG380** | 0.550 |
| **400** | 128 | 4730 | 16.4 | **V7** | **LX9 FG380** | 0.550 |
| **415** | 157 | 5930 | 20.6 | **N7** | **LX9 FG415** | 0.550 |
| **440** | 157 | 5930 | 20.6 | **R7** | **LX9 FG415** | 0.550 |
| **500** | 194 | 7550 | 26.3 | **S7** | **LX9 FG500** | 0.550 |

**Specifications**
Average consumption at 20 °C: inrush: 950…1180 VA, sealed: 8.9…10.9 VA.
Heat dissipation: 8…9.8 W.
Operating cycles/hour (θ ≤ 55 °C): < 2400.
Operating time at Uc: closing = 35 ms, opening = 130 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactors LC1 F265 and LC1 F330** | | | | | | |
| **48** | 2.96 | 72 | *(2)* | **–** | **LX9 FH0482** | 0.750 |
| **110/115** | 18.7 | 415 | *(2)* | **–** | **LX9 FH1102** | 0.750 |
| **120/127** | 22.9 | 156 | *(2)* | **–** | **LX9 FH1272** | 0.750 |
| **220/230** | 71.6 | 1621 | *(2)* | **–** | **LX9 FH2202** | 0.750 |
| **240** | 88 | 1968 | *(2)* | **–** | **LX9 FH2402** | 0.750 |
| **380/415** | 222 | 5075 | *(2)* | **–** | **LX9 FH3802** | 0.750 |
| **500** | 345 | 7990 | *(2)* | **–** | **LX9 FH5002** | 0.750 |

**Specifications**
Average consumption at 20 °C: inrush: 560…660 VA, sealed: 8…10 VA.
Heat dissipation: 8.4…10.4 W.
Operating cycles/hour (θ ≤ 55 °C): < 3600.
Operating time at Uc: closing = 45 ms, opening = 25 ms.

*(1) Application examples: hoisting (inching, high operating rates), Main-Standby (unstable mains supplies). These coils are particularly suited for use at higher operating temperatures (mounting in non-ventilated compartments, enclosures, etc.).*
*(2) Please consult your Regional Sales Office.*

# TeSys contactors

## TeSys F contactors

a.c. 40 to 400 Hz supply coils
for specific applications

*LX9 FJ●●●*

*LX9 FK●●●*

*LX9 FL●●●*

## References (continued)

Coils with short operating times (at Uc):
- N/O: 60 ms,
- N/C: 50 ms (∿ side); 20 ms (⎓ side).

Coils with high operating rates (θ ⩽ 70 °C):
- 3600 operating cycles/hour,
- 1800 for LC1 F630.

Coils with low inrush consumption.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | | Inductance of closed circuit | Rectifier Reference *(1)* | Coil Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactor LC1 F400** | | | | | | |
| **48** | 4.03 | 43 | 0.22 | **DR5 TF4V** | **LX9 FJ917** | 0.970 |
| **110** | 25.7 | 246 | 1.3 | **DR5 TE4U** | **LX9 FJ925** | 0.970 |
| **127** | 32.3 | 302 | 1.7 | **DR5 TE4U** | **LX9 FJ926** | 0.970 |
| **220/230** | 99.5 | 919 | 5 | **DR5 TE4U** | **LX9 FJ931** | 0.970 |
| **380/415** | 311 | 3011 | 15 | **DR5 TE4S** | **LX9 FJ936** | 0.970 |
| **440** | 386 | 3690 | 19 | **DR5 TE4S** | **LX9 FJ937** | 0.970 |
| **500** | 478 | 4380 | 23 | **DR5 TE4S** | **LX9 FJ938** | 0.970 |

**Specifications**

Average consumption:
- inrush: 500 VA,
- sealed: 23 VA

Heat dissipation: 11.4…13.9 W.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F500** | | | | | | |
| **48** | 3.73 | 30.7 | 0.18 | **DR5 TF4V** | **LX9 FK917** | 1.080 |
| **110** | 24 | 204 | 1.1 | **DR5 TE4U** | **LX9 FK925** | 1.080 |
| **127** | 29.8 | 250 | 1.4 | **DR5 TE4U** | **LX9 FK926** | 1.080 |
| **220/230** | 89.9 | 770 | 4 | **DR5 TE4U** | **LX9 FK931** | 1.080 |
| **380/415** | 274 | 2075 | 12 | **DR5 TE4S** | **LX9 FK936** | 1.080 |
| **440** | 361 | 3060 | 16 | **DR5 TE4S** | **LX9 FK937** | 1.080 |
| **500** | 448 | 3750 | 19 | **DR5 TE4S** | **LX9 FK938** | 1.080 |

**Specifications**

Average consumption:
- inrush: 550 VA,
- sealed: 31 VA

Heat dissipation: 15…18.3 W.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F630** | | | | | | |
| **48** | 2.81 | 20.8 | 0.17 | **DR5 TF4V** | **LX9 FL917** | 1.450 |
| **110** | 13.5 | 114 | 0.77 | **DR5 TE4U** | **LX9 FL924** | 1.450 |
| **127** | 20.8 | 167 | 1.2 | **DR5 TE4U** | **LX9 FL926** | 1.450 |
| **220** | 52 | 425 | 2.9 | **DR5 TE4U** | **LX9 FL930** | 1.450 |
| **220/240** | 64.5 | 518 | 3.6 | **DR5 TE4U** | **LX9 FL931** | 1.450 |
| **380/400** | 163 | 1360 | 8.8 | **DR5 TE4S** | **LX9 FL935** | 1.450 |
| **415/440** | 204 | 1670 | 11 | **DR5 TE4S** | **LX9 FL936** | 1.450 |
| **500** | 312 | 2510 | 17 | **DR5 TE4S** | **LX9 FL938** | 1.450 |

**Specifications**

Average consumption:
- inrush: 830 VA,
- sealed: 47 VA

Heat dissipation: 22.8…27.8 W.

*(1) Rectifier to be ordered separately: 0.100 kg.*

# TeSys contactors

## TeSys F contactors

d.c. supply coils

*LX4 FF●●●*

*LX4 FH●●●*

## References

Low sealed consumption.
Operating cycles/hour (θ ≤ 55 °C): ≤ 2400.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % Inrush | Sealed | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| V | Ω | Ω | H | | | kg |
| **For contactors LC1 F115 and LC1 F150** | | | | | | |
| **24** | 1.12 | 177 | 11 | **BD** | **LX4 FF024** | 0.430 |
| **48** | 4.52 | 715 | 42.7 | **ED** | **LX4 FF048** | 0.430 |
| **110** | 21.7 | 2940 | 179 | **FD** | **LX4 FF110** | 0.430 |
| **125** | 26.8 | 3560 | 223 | **GD** | **LX4 FF125** | 0.430 |
| **220/230** | 84 | 11 100 | 704 | **MD** | **LX4 FF220** | 0.430 |
| **250** | 105 | 13 000 | 868 | **UD** | **LX4 FF250** | 0.430 |
| **440/460** | 301 | 48 200 | 4000 | **RD** | **LX4 FF440** | 0.430 |

**Specifications**
Average consumption:
- inrush: 543…665 W,
- sealed: 3.94…4.83 W.

Operating time at Uc: closing = 30…40 ms, opening = 30…50 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactors LC1 F185 and LC1 F225** | | | | | | |
| **24** | 0.79 | 169 | 14.9 | **BD** | **LX4 FG024** | 0.550 |
| **48** | 3.2 | 662 | 55.3 | **ED** | **LX4 FG048** | 0.550 |
| **110** | 14.9 | 2810 | 241 | **FD** | **LX4 FG110** | 0.550 |
| **125** | 19 | 3320 | 289 | **GD** | **LX4 FG125** | 0.550 |
| **220/230** | 57.7 | 10 200 | 890 | **MD** | **LX4 FG220** | 0.550 |
| **250** | 76 | 12 400 | 1140 | **UD** | **LX4 FG250** | 0.550 |
| **440/460** | 223 | 39 700 | 4210 | **RD** | **LX4 FG440** | 0.550 |

**Specifications**
Average consumption:
- inrush: 737…902 W,
- sealed: 4.13…5.07 W.

Operating time at Uc: closing = 30…40 ms, opening = 30…50 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactors LC1 F265 and LC1 F330** | | | | | | |
| **24** | 0.9 | 192 | 26.3 | **BD** | **LX4 FH024** | 0.740 |
| **48** | 3.49 | 707 | 92.9 | **ED** | **LX4 FH048** | 0.740 |
| **110** | 16.8 | 3180 | 424 | **FD** | **LX4 FH110** | 0.740 |
| **125** | 20.8 | 3840 | 530 | **GD** | **LX4 FH125** | 0.740 |
| **220/230** | 65.7 | 11 500 | 1590 | **MD** | **LX4 FH220** | 0.740 |
| **250** | 84 | 13 900 | 1910 | **UD** | **LX4 FH250** | 0.740 |
| **440/460** | 255 | 44 000 | 7570 | **RD** | **LX4 FH440** | 0.740 |

**Specifications**
Average consumption:
- inrush: 655…803 W,
- sealed: 3.68…4.53 W.

Operating time at Uc: closing = 40…50 ms, opening = 40…65 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F400** | | | | | | |
| **48** | 2.5 | 558 | 56 | **ED** | **LX4 FJ048** | 0.970 |
| **110** | 12.7 | 2660 | 270 | **FD** | **LX4 FJ110** | 0.970 |
| **125** | 15.8 | 3130 | 330 | **GD** | **LX4 FJ125** | 0.970 |
| **220** | 47 | 8820 | 910 | **MD** | **LX4 FJ220** | 0.970 |
| **250** | 61 | 10 **500** | 1200 | **UD** | **LX4 FJ250** | 0.970 |
| **440** | 236 | 33 **750** | 4435 | **RD** | **LX4 FJ440** | 0.970 |

**Specifications**
Average consumption:
- inrush: 920…1140 W,
- sealed: 4…7.5 W.

Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

# TeSys contactors

## TeSys F contactors

## d.c. supply coils

*LX4 FK●●●*

### References (continued)

Low sealed consumption.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % Inrush | Sealed | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| V | Ω | Ω | H | | | kg |
| **For contactor LC1 F500** | | | | | | |
| **48** | 2.35 | 515 | 67 | **ED** | **LX4 FK048** | 1.080 |
| **110** | 11.5 | 2450 | 280 | **FD** | **LX4 FK110** | 1.080 |
| **125** | 15 | 2930 | 400 | **GD** | **LX4 FK125** | 1.080 |
| **220** | 44 | 8150 | 1080 | **MD** | **LX4 FK220** | 1.080 |
| **250** | 56 | 9650 | 1350 | **UD** | **LX4 FK250** | 1.080 |
| **440** | 225 | 31 300 | 5270 | **RD** | **LX4 FK440** | 1.080 |

**Specifications**

Average consumption:
- inrush: 990…1220 W,
- sealed: 4.54…8 W.

Operating cycles/hour (θ ≤ 55 °C): 2400.
Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F630** | | | | | | |
| **48** | 1.7 | 353 | 40.5 | **ED** | **LX4 FL048** | 1.450 |
| **110** | 8.1 | 1680 | 180 | **FD** | **LX4 FL110** | 1.450 |
| **125** | 10 | 2110 | 230 | **GD** | **LX4 FL125** | 1.450 |
| **220** | 31 | 5160 | 650 | **MD** | **LX4 FL220** | 1.450 |
| **250** | 38 | 6080 | 815 | **UD** | **LX4 FL250** | 1.450 |
| **440** | 152 | 23 120 | 2910 | **RD** | **LX4 FL440** | 1.450 |

**Specifications**

Average consumption:
- inrush: 1420…1920 W,
- sealed: 6.5…12.5 W.

Operating cycles/hour (θ ≤ 55 °C): 1200.
Operating time at Uc: closing = 60…70 ms, opening = 40…50.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F780** | | | | | | |
| **110** | 6.1 *(2)* | 280 (2) | 0.26 | **FD** | **LX4 FX110** *(1)* | 3.000 |
| **125** | 7.7 *(2)* | 410 *(2)* | 0.33 | **GD** | **LX4 FX125** *(1)* | 3.000 |
| **220** | 24.6 *(2)* | 1100 *(2)* | 1 | **MD** | **LX4 FX220** *(1)* | 3.000 |
| **250** | 29.8 *(2)* | 1330 *(2)* | 1.25 | **UD** | **LX4 FX250** *(1)* | 3.000 |
| **440** | 92 *(2)* | 4180 *(2)* | 3.5 | **RD** | **LX4 FX440** *(1)* | 3.000 |

**Specifications**

Average consumption:
- inrush: 1960…2420 W,
- sealed: 42…52 W.

Operating cycles/hour (θ ≤ 55 °C): 600.
Operating time at Uc: closing = 70…80 ms, opening = 100…130 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1 F800** | | | | | | |
| **110/120** | – | – | – | **FW** | **LX4 F8FW** | 1.650 |
| **220/240** | – | – | – | **MW** | **LX4 F8MW** | 1.650 |
| **380/400** | – | – | – | **QW** | **LX4 F8QW** | 1.650 |

**Specifications**

Heat dissipation: 25 W.
Operating time at Uc: closing = 60…80 ms, opening = 40…50 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactors LC1 F1700 and LC1 F2100** | | | | | | |
| **110** | 2.94 | 734 | 98 | **FD** | **LX4 FK055** *(3)* | 1.080 |
| **125** | 3.73 | 916 | 122 | **GD** | **LX4 FK065** *(3)* | 1.080 |
| **220** | 11.5 | 2450 | 280 | **MD** | **LX4 FK110** *(3)* | 1.080 |
| **250** | 15 | 2930 | 400 | **UD** | **LX4 FK125** *(3)* | 1.080 |
| **440** | 44 | 8150 | 1080 | **RD** | **LX4 FK220** *(3)* | 1.080 |

**Specifications**

Average consumption:
- inrush: 2000…2200 W,
- sealed: 8…10 W.

Operating cycles/hour (θ ≤ 55 °C): 600.
Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

*(1) Reference of set of 2 identical coils, to be connected in series.*
*(2) Value for the 2 coils in series.*
*(3) Order 2 coils and connect them in series.*

# TeSys contactors

## TeSys F contactors
d.c. supply coils
for specific applications



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LX9 FJ●●●

813196

LX9 FK●●●

813195

LX9 FL●●●

## References

Coils **with short operating times (at Uc)** :
- N/O: 60 ms,
- N/C: 20 ms.

Coils **with high operating rates (q ≤ 70 °C)**:
- 3600 operating cycles/hour,
- 1800 for LC1 F630.

Coils with low inrush consumption.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % Inrush | Sealed | Inductance of closed circuit | Resistor (1) Qty required | Reference | Coil Reference | Weight |
|---|---|---|---|---|---|---|---|
| V | Ω | Ω | H | | | | kg |
| **For contactor LC1 F400** | | | | | | | |
| **48** | 5.11 | 99 | 0.27 | 1 | **DR2 SC0047** | **LX9 FJ918** | 0.970 |
| **110** | 32.3 | 632 | 1.7 | 1 | **DR2 SC0330** | **LX9 FJ926** | 0.970 |
| **125** | 39.4 | 760 | 2 | 1 | **DR2 SC0390** | **LX9 FJ927** | 0.970 |
| **220** | 123 | 2320 | 6.1 | 1 | **DR2 SC1200** | **LX9 FJ932** | 0.970 |
| **440/460** | 478 | 9080 | 23 | 1 | **DR2 SC4700** | **LX9 FJ938** | 0.970 |

**Specifications**

Average consumption:
- inrush: 430 **W,**
- sealed: 22 **W.**

| For contactor LC1 F500 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **48** | 4.67 | 76.7 | 0.22 | 1 | **DR2 SC0039** | **LX9 FK918** | 1.080 |
| **110** | 29.8 | 470 | 1.4 | 1 | **DR2 SC0220** | **LX9 FK926** | 1.080 |
| **125** | 37.4 | 637 | 1.7 | 1 | **DR2 SC0330** | **LX9 FK927** | 1.080 |
| **220** | 115 | 1935 | 5.1 | 1 | **DR2 SC1000** | **LX9 FK932** | 1.080 |
| **440/460** | 448 | 7050 | 19 | 1 | **DR2 SC3300** | **LX9 FK938** | 1.080 |

**Specifications**

Average consumption:
- inrush: 470 **W.**
- sealed: 29 **W.**

| For contactor LC1 F630 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **48** | 3.43 | 52.9 | 0.20 | 2 | **DR2 SC0047** | **LX9 FL918** | 1.450 |
| **110** | 17.2 | 272 | 0.98 | 2 | **DR2 SC0270** | **LX9 FL925** | 1.450 |
| **125** | 20.8 | 333 | 1.2 | 2 | **DR2 SC0330** | **LX9 FL926** | 1.450 |
| **220** | 64.5 | 1018 | 3.6 | 2 | **DR2 SC1000** | **LX9 FL931** | 1.450 |
| **440/460** | 260 | 4010 | 14 | 2 | **DR2 SC3900** | **LX9 FL937** | 1.450 |

**Specifications**

Average consumption:
- inrush: 733 **W.**
- sealed: **48 W.**

*(1) Resistor to be ordered separately, weight of resistor: 0.030 kg.*

# TeSys contactors

## TeSys F contactors

## Wide range d.c. supply coils for specific applications

*LX4 FF●●●*

*LX4 FH●●●*

### References (continued)

Wide range coils: 0.7…1.25 Uc.
Operating cycles/hour: ≤ 60 *(1)*.
Ambient temperature (operation): - 55 to + 70 °C.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % Inrush | Sealed | Inductance of closed circuit | Reference | Weight |
|---|---|---|---|---|---|
| V | Ω | Ω | H | | kg |
| **For contactors LC1 F115 and LC1 F150** | | | | | |
| **24** | 0.71 | 120 | 7.4 | **LX4 FF020** | 0.430 |
| **48** | 2.86 | 392 | 27 | **LX4 FF040** | 0.430 |
| **72** | 7.05 | 1055 | 66 | **LX4 FF060** | 0.430 |
| **110** | 13.2 | 1970 | 121 | **LX4 FF090** | 0.430 |
| **125** | 16.9 | 2340 | 149 | **LX4 FF100** | 0.430 |

**Specifications**
Average consumption:
- inrush: 415…1300 W,
- sealed: **3…9 W.**

| | | | | | |
|---|---|---|---|---|---|
| **For contactors LC1 F185 and LC1 F225** | | | | | |
| **24** | 0.52 | 112 | 9.3 | **LX4 FG020** | 0.550 |
| **48** | 2 | 359 | 34.4 | **LX4 FG040** | 0.550 |
| **72** | 5.07 | 984 | 85 | **LX4 FG060** | 0.550 |
| **110** | 9.66 | 1840 | 157 | **LX4 FG090** | 0.550 |
| **125** | 12 | 2230 | 196 | **LX4 FG100** | 0.550 |

**Specifications**
Average consumption:
- inrush: 580…1820 W,
- sealed: **3.1…9.5 W.**

| | | | | | |
|---|---|---|---|---|---|
| **For contactors LC1 F265 and LC1 F330** | | | | | |
| **24** | 0.58 | 129 | 17.3 | **LX4 FH020** | 0.740 |
| **48** | 2.19 | 400 | 59.5 | **LX4 FH040** | 0.740 |
| **72** | 5.58 | 1110 | 149 | **LX4 FH060** | 0.740 |
| **110** | 11 | 2120 | 287 | **LX4 FH090** | 0.740 |
| **125** | 13.8 | 2520 | 353 | **LX4 FH100** | 0.740 |

**Specifications**
Average consumption:
- inrush: 515…1600 W,
- sealed: **2.7…8.5 W.**

| Operational voltage | Average resistance at 20 °C ± 10 % | Inductance of closed circuit | Coil Reference | Economy resistor Resistors in // No. | Ω | Reference | Reference of the assembly *(2)* | Weight |
|---|---|---|---|---|---|---|---|---|
| V | Ω | H | | | | | | kg |
| **For contactor LC1 F400** | | | | | | | | |
| **24** | 1.05 | 0.049 | **LX2 FJW11** | 3 | 56 | **DR2 SC0056** | **LX5 FJW11** | 0.970 |
| **48** | 4.8 | 0.22 | **LX2 FJW18** | 3 | 220 | **DR2 SC0220** | **LX5 FJW18** | 0.970 |
| **72** | 9.6 | 0.44 | **LX2 FJW21** | 3 | 470 | **DR2 SC0470** | **LX5 FJW21** | 0.970 |

**Specifications**
Average consumption:
- inrush: 290…860 W,
- sealed: **16…47 W.**

*(1) The mechanical durability of the contactor is limited to 1 million operating cycles.*
*(2) The set comprises: 1 coil **LX2 FJ** and 3 resistors **DR2 SC**.*

## LC1 F115 to F330

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 600…1000 V |
|---|---|---|
| **F115, F150** | 10 | 15 |
| **F185** | 10 | 15 |
| **F225, F265** | 10 | 15 |
| **F330** | 10 | 15 |

*(1) Power terminal protection shroud (see page 5/126).*

| LC1 | | a | b | b1 | b2 | c | f | G | G1 | J | J1 | L | M | P | Q | Q1 | S | S1 | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **F115** | 3P | 163.5 | 162 | 137 | 265 | 171 | 131 | 106 | 80 | 106 | 120 | 107 | 147 | 37 | 29.5 | 60 | 20 | 26 | 44 | 13.5 |
| | 4P | 200.5 | 162 | 137 | 265 | 171 | 131 | 143 | 80 | 106 | 120 | 107 | 147 | 37 | 29.5 | 60 | 20 | 26 | 44 | 13.5 |
| **F150** | 3P | 163.5 | 170 | 137 | 301 | 171 | 131 | 106 | 80 | 106 | 120 | 107 | 150 | 40 | 26 | 57.5 | 20 | 34 | 44 | 13.5 |
| | 4P | 200.5 | 170 | 137 | 301 | 171 | 131 | 143 | 80 | 106 | 120 | 107 | 150 | 40 | 26 | 55.5 | 20 | 34 | 44 | 13.5 |
| **F185** | 3P | 168.5 | 174 | 137 | 305 | 181 | 130 | 111 | 80 | 106 | 120 | 113.5 | 154 | 40 | 29 | 59.5 | 20 | 34 | 44 | 13.5 |
| | 4P | 208.5 | 174 | 137 | 305 | 181 | 130 | 151 | 80 | 106 | 120 | 113.5 | 154 | 40 | 29 | 59.5 | 20 | 34 | 44 | 13.5 |
| **F225** | 3P | 168.5 | 197 | 137 | 364 | 181 | 130 | 111 | 80 | 106 | 120 | 113.5 | 172 | 48 | 21 | 51.5 | 25 | 44.5 | 44 | 13.5 |
| | 4P | 208.5 | 197 | 137 | 364 | 181 | 130 | 151 | 80 | 106 | 120 | 113.5 | 172 | 48 | 17 | 47.5 | 25 | 44.5 | 44 | 13.5 |
| **F265** | 3P | 201.5 | 203 | 145 | 375 | 213 | 147 | 142 | 96 | 106 | 120 | 141 | 178 | 48 | 39 | 66.5 | 25 | 44.5 | 38 | 21.5 |
| | 4P | 244.5 | 203 | 145 | 375 | 213 | 147 | 190 | 96 | 106 | 120 | 141 | 178 | 48 | 34 | 66.5 | 25 | 44.5 | 38 | 21.5 |
| **F330** | 3P | 213 | 206 | 145 | 375 | 219 | 147 | 154.5 | 96 | 106 | 120 | 145 | 181 | 48 | 43 | 74 | 25 | 44.5 | 38 | 20.5 |
| | 4P | 261 | 206 | 145 | 375 | 219 | 147 | 202.5 | 96 | 106 | 120 | 145 | 181 | 48 | 43 | 74 | 25 | 44.5 | 38 | 20.5 |

f = minimum distance required for coil removal.

## LC1 F400 and F500

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 600…1000 V |
|---|---|---|
| **F400** | 15 | 20 |
| **F500** | 15 | 20 |

*(1) Power terminal protection shroud (see page 5/126).*

| LC1 | | a | b | b2 | c | f | G supplied | G min. | G max. | G1 supplied | G1 min | G1 max. | J | L | M | P | Q | Q1 | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **F400** | 2P | 213 | 206 | 375 | 219 | 146 | 80 | 66 | 102 | 170 | 156 | 192 | 19.5 | 145 | 181 | 48 | 69 | 96 | 25 |
| | 3P | 213 | 206 | 375 | 219 | 146 | 80 | 66 | 102 | 170 | 156 | 192 | 19.5 | 145 | 181 | 48 | 43 | 74 | 25 |
| | 4P | 261 | 206 | 375 | 219 | 146 | 80 | 66 | 150 | 170 | 156 | 240 | 67.5 | 145 | 181 | 48 | 43 | 74 | 25 |
| **F500** | 2P | 233 | 238 | 400 | 232 | 150 | 80 | 66 | 120 | 170 | 156 | 210 | 39.5 | 146 | 208 | 55 | 76 | 102 | 30 |
| | 3P | 233 | 238 | 400 | 232 | 150 | 80 | 66 | 120 | 170 | 156 | 210 | 39.5 | 146 | 208 | 55 | 46 | 77 | 30 |
| | 4P | 288 | 238 | 400 | 232 | 150 | 140 | 66 | 175 | 230 | 156 | 265 | 34.5 | 146 | 208 | 55 | 46 | 77 | 30 |

f = minimum distance required for coil removal.

Selection : pages 5/194 to 5/217
Characteristics : pages 5/106 to 5/113
References : pages 5/114 to 5/117
Schemes : page 5/146

## LC1 F630 and F800

| LC1 | | a | G supplied | G min. | G max. | J1 | Q | Q1 |
|---|---|---|---|---|---|---|---|---|
| **F630** | 2P | 309 | **180** | **100** | **195** | **68.5** | 102 | 127 |
| **F630, F800** | 3P | 309 | **180** | **100** | **195** | **68.5** | 60 | 89 |
| **F630** | 4P | 389 | **240** | **150** | **275** | **68.5** | 60 | 89 |

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| Voltage | 200…500 V | 690…1000 V | 200…690 V | 1000 V |
|---|---|---|---|---|
| **LC1 F630** | 20 | 30 | – | – |
| **LC1 F800** | – | – | 10 | 20 |

*(1) Power terminal protection shroud (see page 5/126).*
*(2) Minimum distance required for coil removal.*

## LC1 F780

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| Voltage | 200…500 V | 690…1000 V |
|---|---|---|
| X1 (mm) | 30 | 35 |

*(1) Minimum distance required for coil removal.*

## Fixing centres of LC1 F7804

## Fixing centres of LC1 F780

Selection : pages 5/194 to 5/217
Characteristics : pages 5/106 to 5/113
References : pages 5/114 to 5/117
Schemes : page 5/146

## LC1 F1700 and LC1 F2100

X1 (mm) = **Minimum electrical clearance according to operating** voltage and breaking capacity.

| **Voltage** | **200…500 V** | **690…1000 V** |
|---|---|---|
| X1 (mm) | 90 | 100 |

*(1) Minimum distance required for coil removal.*

## Fixing centres of LC1 F1700 and 2100

5

## Right-angled connectors LA9 F●981 (set of 3) for rear connection

| LA9 | FF981 | FG981 | FJ981 | FK981 | FL981 |
|---|---|---|---|---|---|
| a | 15 | 20 | 25 | 30 | 40 |
| b | 18 | 23 | 29 | 35 | 48 |
| b1 | 3 | 3 | 4 | 5 | 8 |
| c | 42 | 45 | 55 | 52 | 86 |
| G | 24 | 26 | 32.5 | 26 | 45 |
| H | 10.5 | 13 | 16.5 | 20 | 28 |
| Ø | 6.5 | 9 | 11 | 11 | 13 |

## Right-angled connectors LA9 F●979 (set of 3) for side connection

| LA9 | FF979 | FG979 | FJ979 | FK979 | FL979 |
|---|---|---|---|---|---|
| a | 15 | 20 | 25 | 30 | 40 |
| b | 54 | 58 | 63.5 | 68 | 117 |
| b1 | 5 | 5 | 6 | 6 | 10 |
| c | 80 | 92 | 120 | 120 | 130 |
| G | 24 | 28 | 37 | 37 | 37.5 |
| G1 | 20 | 22 | 29 | 29 | 35 |
| H | 36 | 39 | 41 | 42 | 76 |
| Ø | 6.5 | 9 | 11 | 11 | 13 |

## Right-angled connectors LA9 F●980 with large surface area (set of 3)

| LA9 | FF980 | FG980 | FJ980 | FK980 | FL980 |
|---|---|---|---|---|---|
| a | 35 | 40 | 50 | 60 | 100 |
| b | 70.5 | 82.5 | 98.5 | 114 | 154 |
| b1 | 40 | 45 | 55 | 65 | 85 |
| c | 29 | 29 | 33 | 33 | 43 |
| c1 | 3 | 3 | 5 | 5 | 10 |
| G | 18 | 20 | 25 | 29 | 53 |
| H | 18 | 20 | 22 | 26 | 40 |
| H1 | 10 | 12 | 14 | 17 | 20 |
| H2 | 60.5 | 72.5 | 84.5 | 97 | 132 |
| Ø | 6.5 | 9 | 11 | 11 | 13 |
| *(1)* | Ø 7 x 10 | Ø 9 x 12 | Ø 11 x 14 | Ø 12.5 x 15 | Ø 12.5 x 15 |

## Right-angled connectors LA9 F2100 (set of 6) for rear connection

References :
page 5/125

## Paralleling links (set of 4)

### LA9 FF602, FG602, FH602

### LA9 FK602, FL602

| LA9 | FF602 | FG602 | FH602 | FK602 | FL602 |
|---|---|---|---|---|---|
| a | 25 | 30 | 40 | 50 | 60 |
| b | 45 | 55 | 60 | 85 | 100 |
| b1 | 30 | 35 | 40 | 55 | 65 |
| c | 4 | 5 | 8 | 10 | 10 |
| G | – | – | – | 22 | 26 |
| H | 37.5 | 45 | 52.5 | 70 | 85 |
| H1 | 12.5 | 15 | 15 | 14 | 17 |
| H2 | – | – | – | 22 | 26 |
| Ø1 | 6.5 | 9 | 11 | 11 | 13 |
| Ø2 | 11 | 11 | 13 | 11 | 14 |

## Links for "star" connection of 3 poles

### LA9 F●601

| LA9 | FF601 | FG601 | FH601 | FK601 | FL601 |
|---|---|---|---|---|---|
| a | 69 | 100 | 121 | 140 | 200 |
| b | 15 | 20 | 20 | 30 | 40 |
| c | 3 | 3 | 5 | 5 | 8 |
| Ø | 6.5 x 8.5 | 8.5 x 10.5 | 10.5 x 13 | 11 | 13 |

5

References :
page 5/124



Schneider Electric

## LC1 F115 to F330

### On panel

| LC1 | | F115 F150 | F185 F225 | F265 | F330 |
|---|---|---|---|---|---|
| c (2) | 3P | 171 | 181 | 213 | 219 |
| | 4P | 171 | 181 | 213 | 219 |
| G | 3P | 80 | 80 | 96 | 96 |
| | 4P | 80 | 80 | 96 | 96 |
| J | 3P | 26.5 | 29 | 44.5 | 44.5 |
| | 4P | 45 | 49 | 68.5 | 68.5 |
| J1 | 3P | 57 | 59.5 | 61.5 | 61.5 |
| | 4P | 75.5 | 79.5 | 85.5 | 85.5 |

### On pre-slotted mounting plate AM1 PA, PB, PC

| LC1 | | F115 F150 | F185 F225 | F265 | F330 |
|---|---|---|---|---|---|
| c (2) | 3P | 171 | 181 | 213 | 219 |
| | 4P | 171 | 181 | 213 | 219 |
| G | 3P | 80 | 80 | 96 | 96 |
| | 4P | 80 | 80 | 96 | 96 |

### On rails DZ5 MB on 120 mm centres

| LC1 | | F115 F150 | F185 F225 | F265 | F330 |
|---|---|---|---|---|---|
| c (2) | 3P | 171 | 181 | 213 | 219 |
| | 4P | 171 | 181 | 213 | 219 |
| G | 3P | 80 | 80 | 96 | 96 |
| | 4P | 80 | 80 | 96 | 96 |

## LC1 F

### On 2 notched rails AM1 EC●●●

## LC1 F115 to F330

## LC1 F400 to F800

| LC1 | | F115, F150 | F185, F225 | F265 | F330 | F400 | F500 | F630 | F780 | F800 |
|---|---|---|---|---|---|---|---|---|---|---|
| c | 3P | 165 (5) | 176 | 207 | 213 | 219 | 232 | 255 | 255 | 255 |
| | 4P | 165 (5) | 176 | 207 | 213 | 219 | 232 | 255 | 255 | – |
| G (M6) | 3P | 80 | 80 | 96 | 96 | – | – | – | – | – |
| | 4P | 80 | 80 | 96 | 96 | – | – | – | – | – |
| G1 (∅ 8.5) | 3P | – | – | – | – | 80 | 80 | – | – | – |
| | 4P | – | – | – | – | 80 | 140 | – | – | – |
| G2 (∅ 10.5) | 3P | – | – | – | – | – | – | 180 | See page 5/141 | 180 |
| | 4P | – | – | – | – | – | – | 240 | | – |

*(1) Power terminal protection shroud (see page 5/126).*
*(2) See X1 (minimum electrical clearance) pages 5/140 and 5/141.*
*(3) AF1 CD●●● and AF1 VA●●●.*
*(4) This AM1 EC200 upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).*
*(5) + 6 mm with time-delay block on LC1 F.*

## Contactors

### 2, 3 and 4-pole contactors

**LC1 F115 to F630**
**(coil LX1 F ∿)**

**LC1 F115 to F630 (coil LX4 F ⎓)**
**LC1 F115 to F265 (coil LX9 F ∿)**
**LC1 F800 (coil LX8 F ∿/ ⎓)**

**LC1 F780 ∿ or ⎓**

**LC1 F1700 ∿ or ⎓**
**LC1 F2100 ∿ or ⎓**

## Coils

### Standard ∿ coils

**LX1 FF, FG, FJ…FL**
**LX1 FH0422…FH3802**

**LX1 FH0202…FH0362**
**LX1 FH4402…FH10002**
**LX1 F8●**

**LX1 FX**
Rectifier supplied and fixed on the contactor

### Standard ⎓ coils

**LX4 FF, FG, FH, FJ, FK, FL, FX** *(1)*, **LX4 F8●**

*(1) 2 coils in series.*

### Special ∿ coils

**LX9 FF, FG**

**LX9 FH●●●2**

**LX9 FJ, FK, FL**

**LX4 F8●**

*(1) Breaking on ∿ side.*
*Drop-out time 50 ms .*
*(2) Breaking on ⎓ side.*
*Drop-out time 20 ms .*

## Add-on blocks

### Instantaneous auxiliary contacts

**1 N/O LAD N10** *(1)*

**1 N/C LAD N01** *(1)*

**1 N/O + 1 N/C LAD N11**

**2 N/O LAD N20**

**2 N/C LAD N02**

**2 N/O + 2 N/C LAD N22**

**1 N/O + 3 N/C LAD N13**

**4 N/O LAD N40**

**4 N/C LAD N04**

**2 N/O + 2 N/C (2) LAD C22**

**3 N/O + 1 N/C LAD N31**

*(1) Items in brackets: See "TeSys D contactors".*

*(2) 1 N/O + 1 N/C make before break.*

### Instantaneous auxiliary contacts with terminal referencing conforming to standard EN 50012 (References: pages 5/122 and 5/123)

**1 N/O + 1 N/C**
**LAD N11P**

**1 N/O + 1 N/C**
**LAD N11G**

**2 N/O + 2 N/C**
**LAD N22P**

**2 N/O + 2 N/C**
**LAD N22G**

### Dust and damp protected instantaneous auxiliary contacts

**2 N/O (24-50 V)**
**LA1 DX20**

**2 N/O (5-24 V)**
**LA1 DY20**

**2 N/O protected (24-50 V) + 2 N/O standard**
**LA1 DZ40**

**2 N/O protected (24-50 V) + 1 N/O + 1 N/C standard**
**LA1 DZ31**

### Time delay auxiliary contacts

**On-delay 1 N/O +1 N/C LAD T●**

**Off-delay 1 N/O + 1 N/C LAD R●**

**On-delay 1 N/C + 1 N/O break before make LAD S●**

# TeSys contactors

## TeSys F reversing contactors and changeover contactor pairs

### Horizontally mounted

**Pre-assembled**

**LC2 F115 to F265** (reverser supplied on 2 bars which can be used for fixing the device)

f - Minimum distance required for coil removal.

Bar fixing centres
Vertical: 120 mm
Horizontal: a2 see table

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 660…1000 V |
|---|---|---|
| **F115, F150** | 10 | 15 |
| **F185** | 10 | 15 |
| **F225, F265** | 10 | 15 |

| LC2 | | a | a2 | b | b1 | c | G1 | J | J1 | L | M | P | P1 | Q1 | S | f | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **F115** | 3P | 345 | 317 | 162 | 137 | 171 | 80 | 71 | 57 | 107 | 147 | 37 | 77 | 60 | 20 | 131 | M6 |
| | 4P | 419 | 378 | 162 | 137 | 171 | 80 | 108 | 75.5 | 107 | 147 | 37 | 77 | 60 | 20 | 131 | M6 |
| **F150** | 3P | 345 | 317 | 170 | 137 | 171 | 80 | 71 | 57 | 107 | 150 | 40 | 71 | 57 | 20 | 131 | M8 |
| | 4P | 422 | 381 | 170 | 137 | 171 | 80 | 111 | 75.5 | 107 | 150 | 40 | 71 | 55.5 | 20 | 131 | M8 |
| **F185** | 3P | 357 | 326 | 174 | 137 | 181 | 80 | 78 | 59.5 | 113.5 | 154 | 40 | 78 | 59.5 | 20 | 130 | M8 |
| | 4P | 437 | 390 | 174 | 137 | 181 | 80 | 118 | 79.5 | 113.5 | 154 | 40 | 78 | 59.5 | 20 | 130 | M8 |
| **F225** | 3P | 357 | 326 | 197 | 137 | 181 | 80 | 78 | 59.5 | 113.5 | 172 | 48 | 62 | 51.5 | 25 | 130 | M10 |
| | 4P | 437 | 390 | 197 | 137 | 181 | 80 | 118 | 79.5 | 113.5 | 172 | 48 | 54 | 47.5 | 25 | 130 | M10 |
| **F265** | 3P | 425 | 386 | 203 | 145 | 213 | 96 | 109 | 61.5 | 141 | 178 | 48 | 100 | 66.5 | 25 | 147 | M10 |
| | 4P | 521 | 464 | 203 | 145 | 213 | 96 | 157 | 85.5 | 141 | 178 | 48 | 100 | 66.5 | 25 | 147 | M10 |



Selection :
pages 5/194 to 5/217

References :
pages 5/116 to 5/121

Schemes :
page 5/151



Schneider Electric

# TeSys contactors

## TeSys F reversing contactors and changeover contactor pairs

### Horizontally mounted

**For customer assembly,** fixing recommended on AM1 EC uprights, please consult your Regional Sales Office.

2 x **LC1 F115 to F330**

2 x LC1 F400, F500, F630, F800

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 660…1000 V | 200…690 V | 1000 V |
|---|---|---|---|---|
| **F115, F150** | 10 | 15 | – | – |
| **F185** | 10 | 15 | – | – |
| **F225, F265** | 10 | 15 | – | – |
| **F330** | 10 | 15 | – | – |
| **F400** | 15 | 20 | – | – |
| **F500** | 15 | 20 | – | – |
| **F630** | 20 | 30 | – | – |
| **F800** | – | – | 10 | 20 |

| 2 x **LC1** | | a | b | b1 | c | G | G1 | J | J1 | J2 | J3 | L | P1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **F115** | 3P | 345 | 162 | 137 | 171 | – | 80 | 71 | 57 | – | – | 107 | 77 |
| | 4P | 419 | 162 | 137 | 171 | – | 80 | 108 | 75.5 | – | – | 107 | 77 |
| **F150** | 3P | 345 | 170 | 137 | 171 | – | 80 | 71 | 57 | – | – | 107 | 71 |
| | 4P | 422 | 170 | 137 | 171 | – | 80 | 111 | 75.5 | – | – | 107 | 71 |
| **F185** | 3P | 357 | 174 | 137 | 181 | – | 80 | 78 | 59.5 | – | – | 113.5 | 78 |
| | 4P | 437 | 174 | 137 | 181 | – | 80 | 118 | 79.5 | – | – | 113.5 | 78 |
| **F225** | 3P | 357 | 197 | 137 | 181 | – | 80 | 78 | 59.5 | – | – | 113.5 | 62 |
| | 4P | 437 | 197 | 137 | 181 | – | 80 | 118 | 79.5 | – | – | 113.5 | 54 |
| **F265** | 3P | 425 | 203 | 145 | 213 | – | 96 | 109 | 61.5 | – | – | 141 | 100 |
| | 4P | 521 | 203 | 145 | 213 | – | 96 | 157 | 85.5 | – | – | 141 | 100 |
| **F330** | 3P | 447 | 206 | 145 | 219 | – | 96 | 124 | 65.5 | – | – | 145 | 107 |
| | 4P | 543 | 206 | 145 | 219 | – | 96 | 172 | 89.5 | – | – | 145 | 107 |
| **F400** | 3P | 446 | 206 | 209 | 219 | 80 | 170 | 157 | 64.5 | 67 | 19.5 | 145 | 107 |
| | 4P | 542 | 206 | 209 | 219 | 80 | 170 | 157 | 112.5 | 67 | 67.5 | 145 | 107 |
| **F500** | 3P | 485 | 238 | 209 | 232 | 80 | 170 | 156 | 84.5 | 66 | 39.5 | 146 | 112 |
| | 4P | 595 | 238 | 209 | 232 | 140 | 230 | 156 | 79.5 | 66 | 34.5 | 146 | 112 |
| **F630** | 3P | 636 | 304 | 280 | 255 | 180 | – | 139 | 68.5 | – | – | 155 | 137 |
| | 4P | 796 | 304 | 280 | 255 | 240 | – | 139 | 88.5 | – | – | 155 | 137 |
| **F800** | 3P | 636 | 304 | 280 | 255 | 180 | – | 139 | 68.5 | – | – | 155 | 137 |

*(1) Except LC1 F630 and F800 : 4 x Ø 10.5.*
*(2) Except LC1 F630 and F800.*

For other dimensions: see pages 5/140 and 5/141.

# TeSys contactors

## TeSys F reversing contactors and changeover contactor pairs

### Vertically mounted

For customer assembly, with mechanical interlock (MI) **LA9 F**, fixing recommended on AM1 EC uprights (please consult your Regional Sales Office).
2 x **LC1** identical or different ratings (**LC1 F115 to F630 and F800**). See pages 5/118 to 5/121

**Assembly A**

*(1) Mechanical interlock shaft.*
*(2) For assembly of contactors of different ratings only.*
*(3) 4 x Ø6.5 for LC1 F115 to F225.*

**Assembly B**

*(4) 4 x Ø6.5 for LC1 F265.*
*(5) Mechanical interlock guide bracket.*

**Assembly C**

*(6) 4 x Ø8.5 for LC1 F400, F500 or 4 x Ø10.5 for LC1 F630 and F800.*

**Assembly A** *(7)* **- Mechanical interlock reference**

| | G3 3P | G3 4P | H min. | H max. | H1 min. | H1 max. | J1 3P | J1 4P |
|---|---|---|---|---|---|---|---|---|
| **LA9 FF4F** | 0 | 0 | 200 | 310 | 80 | 190 | 137 | 155.5 |
| **LA9 FG4F** | 3 | 4 | 210 | 300 | 90 | 180 | 139.5 | 159.5 |
| **LA9 FG4G** | 0 | 0 | 220 | 310 | 100 | 190 | 139.5 | 159.5 |

| | J2 3P | J2 4P | J3 3P | J3 4P | J4 3P | J4 4P |
|---|---|---|---|---|---|---|
| **LA9 FF4F** | 137 | 155.5 | 48.5 | 67 | 48.5 | 67 |
| **LA9 FG4F** | 137 | 155.5 | 53 | 73 | 54 | 69 |
| **LA9 FG4G** | 139.5 | 159.5 | 53 | 73 | 53 | 73 |

For customer assembly, fixing recommended on AM1 EC uprights, please consult your Regional Sales Office
2 x **LC1 F780**

X1 and fixings, see page 5/141.

*(7) Only 3P for F800.*
*(8) In this case, G4 is greater than G5.*

**Assembly B** *(7)* **- Mechanical interlock reference**

| | G1 3P | G1 4P | G3 3P | G3 4P | G5 3P | G5 4P | H min. | H max. |
|---|---|---|---|---|---|---|---|---|
| **LA9 FH4F** | 96 | 96 | 21 | 27 | 60 | 83 | 240 | 380 |
| **LA9 FJ4F** | 80 | 80 | 45 | 26 | 83 | 83 | 250 | 380 |
| **LA9 FK4F** | 80 | 140 | 45 | 26 | 83 | 83 | 270 | 380 |
| **LA9 FL4F** | 180 | 240 | 35 | 17 | 74 | 74 | 310 | 380 |
| **LA9 FH4G** | 96 | 96 | 19 | 23 | 60 | 83 | 250 | 380 |
| **LA9 FJ4G** | 80 | 80 | 42 | 22 | 83 | 83 | 250 | 380 |
| **LA9 FK4G** | 80 | 140 | 42 | 22 | 83 | 83 | 270 | 380 |
| **LA9 FL4G** | 180 | 240 | 33 | 13 | 74 | 74 | 310 | 380 |

| | H1 min. | H1 max. | J1 3P | J1 4P | J2 3P | J2 4P | J4 3P | J4 4P |
|---|---|---|---|---|---|---|---|---|
| **LA9 FH4F** | 110 | 250 | 157.5 | 181.5 | 137 | 155.5 | 48.5 | 67 |
| **LA9 FJ4F** | 80 | 210 | 144.5 | 192.5 | 137 | 155.5 | 48.5 | 67 |
| **LA9 FK4F** | 100 | 210 | 164.5 | 219.5 | 137 | 155.5 | 48.5 | 67 |
| **LA9 FL4F** | 140 | 210 | 248.5 | 328.5 | 137 | 155.5 | 48.5 | 67 |
| **LA9 FH4G** | 120 | 250 | 157.5 | 181.5 | 139.5 | 159.5 | 53 | 73 |
| **LA9 FJ4G** | 90 | 220 | 144.5 | 192.5 | 139.5 | 159.5 | 53 | 73 |
| **LA9 FK4G** | 110 | 220 | 164.5 | 219.5 | 139.5 | 159.5 | 53 | 73 |
| **LA9 FL4G** | 150 | 220 | 248.5 | 328.5 | 139.5 | 159.5 | 53 | 73 |

**Assembly C** *(7)*

| | G1 3P | G1 4P | G2 3P | G2 4P | G3 3P | G3 4P | G4 3P | G4 4P | G5 3P | G5 4P |
|---|---|---|---|---|---|---|---|---|---|---|
| **LA9 FH4H** | 96 | 96 | 96 | 96 | 0 | 0 | 60 | 83 | 60 | 83 |
| **LA9 FJ4H** | 80 | 80 | 96 | 96 | 23 | 0 | 60 | 83 | 83 | 83 |
| **LA9 FK4H** | 80 | 140 | 96 | 96 | 23 | 0 | 60 | 83 | 83 | 83 |
| **LA9 FL4H** | 180 | 240 | 96 | 96 | 14 | 9 *(8)* | 60 | 83 | 74 | 74 |
| **LA9 FJ4J** | 80 | 80 | 80 | 80 | 0 | 0 | 83 | 83 | 83 | 83 |
| **LA9 FK4J** | 80 | 140 | 80 | 80 | 0 | 0 | 83 | 83 | 83 | 83 |
| **LA9 FL4J** | 180 | 240 | 80 | 80 | 9 *(8)* | 9 *(8)* | 83 | 83 | 74 | 74 |
| **LA9 FK4K** | 80 | 140 | 80 | 140 | 0 | 0 | 83 | 83 | 83 | 83 |
| **LA9 FL4K** | 180 | 240 | 80 | 140 | 9 *(8)* | 9 *(8)* | 83 | 83 | 74 | 74 |
| **LA9 FL4L** | 180 | 240 | 180 | 240 | 0 | 0 | 74 | 74 | 74 | 74 |

| | H min. | H max. | H1 min. | H1 max. | J1 3P | J1 4P | J2 3P | J2 4P |
|---|---|---|---|---|---|---|---|---|
| **LA9 FH4H** | 250 | 380 | 130 | 260 | 157.5 | 181.5 | 157.5 | 181.5 |
| **LA9 FJ4H** | 260 | 380 | 110 | 230 | 144.5 | 192.5 | 157.5 | 181.5 |
| **LA9 FK4H** | 280 | 380 | 130 | 230 | 164.5 | 219.5 | 157.5 | 181.5 |
| **LA9 FL4H** | 330 | 380 | 170 | 220 | 248.5 | 328.5 | 157.5 | 181.5 |
| **LA9 FJ4J** | 260 | 380 | 60 | 200 | 144.5 | 192.5 | 144.5 | 192.5 |
| **LA9 FK4J** | 280 | 380 | 100 | 200 | 164.5 | 219.5 | 144.5 | 192.5 |
| **LA9 FL4J** | 325 | 380 | 140 | 195 | 248.5 | 329.5 | 144.5 | 192.5 |
| **LA9 FK4K** | 300 | 380 | 120 | 200 | 164.5 | 329.5 | 164.5 | 219.5 |
| **LA9 FL4K** | 345 | 380 | 160 | 195 | 248.5 | 328.5 | 164.5 | 219.5 |
| **LA9 FL4L** | 380 | 380 | 200 | 200 | 248.5 | 328.5 | 248.5 | 328.5 |

Selection :
pages 5/194 to 5/217

References :
pages 5/116 to 5/121



Schneider Electric

# TeSys contactors

## TeSys F reversing contactors and changeover contactor pairs

### Reversing contactors for motor control LC2 F

2 x **LC1 F**

Horizontally mounted

2 x **LC1 F**

Vertically mounted

### Changeover contactor pairs for distribution LC2 F

2 x **LC1 F**

Horizontally mounted

2 x **LC1 F**

Vertically mounted

### Electrical interlocking of reversers fitted with mechanical interlock without integral electrical contacts

**LA9 F**

Selection :
pages 5/194 to 5/217

References :
pages 5/116 to 5/121

# TeSys contactors

## High power changeover contactor pairs for distribution

Control circuit: a.c. or d.c.

## General

A changeover contactor pair ensures continuity of operation of an installation and energy management.

It switches between:
- a power supply source M (main) which normally supplies the installation,
- and a power supply source S (standby) which may be an incoming line from an additional network or a generating set.

The supply sources may be 3-phase or 3-phase + neutral.

**Supply - 3-phase**

**Supply 3-phase + neutral**

The 2 contactors must be mechanically and electrically interlocked to prevent any paralleling, even transitory, of the two supplies.

Dimensions :
pages 5/154 and 5/155

Schemes :
page 5/155

# TeSys contactors

## High power changeover contactor pairs for distribution

Control circuit: a.c. or d.c.

813221

*LA9 FX970*

### Changeover contactor pairs for customer assembly: 3-phase

Vertically mounted.
Maximum operational voltage: 1000 V
Utilisation category: AC-1
Maximum temperature in the vicinity of the devices: 40 °C

| Maximum operational current | | Contactors *(1)* | | Mechanical interlock *(2)* |
|---|---|---|---|---|
| Main 3-phase | Standby 3-phase | Main Reference | Standby Reference | Reference |
| 1600 A | 1000 A | **LC1 F780** | **LC1 F6309** | **LA9 FX970** |
| 1600 A | 1600 A | **LC1 F780** | **LC1 F780** | **LA9 FX970** |

813222

*LA9 FX971*

### Changeover contactor pairs for customer assembly: 3-phase + neutral

Vertically mounted.
Maximum operational voltage: 1000 V
Utilisation category: AC-1
Maximum temperature in the vicinity of the devices: 40 °C

| Maximum operational current | | Contactors *(1)* | | Mechanical interlock *(2)* |
|---|---|---|---|---|
| Main 3-phase + N | Standby 3-phase + N | Main Reference | Standby Reference | Reference |
| 1600 A + 1000 A | 1000 A + 1000 A | **LC1 F78041** | **LC1 F63049** | **LA9 FX970** *(3)* |
| 1600 A + 1000 A | 1600 A + 1000 A | **LC1 F78041** | **LC1 F78040** | **LA9 FX970** *(3)* |
| 1600 A + 1600 A | 1000 A + 1000 A | **LC1 F7804** | **LC1 F63049** | **LA9 FX971** |
| 1600 A + 1600 A | 1600 A + 1600 A | **LC1 F7804** | **LC1 F7804** | **LA9 FX971** |

*(1) Coils to be ordered separately, see pages 5/132 to 5/137.*
*(2) Double mechanical interlock mechanism with 2 interlock connecting rods and 4 power connecting links. To order the the 2 auxiliary contact blocks **LAD N●1** required to obtain electrical interlocking between the 2 contactors: see page 5/123.*
*(3) Neutral connecting link not supplied (to be ordered separately).*



Dimensions :
pages 5/154 and 5/155

Schemes :
page 5/155

## Dimensions

**Contactors used to assemble high power changeover contactor pairs LC1 F780**: see page 5/141

**LC1 F6309**

Common side view

**LC1 F63049**

**LC1 F78040**

Common side view

**LC1 F78041**

*(1) Minimum distance required for removal of each coil.*

### 3-phase changeover contactor pairs

**LC1 F780 + LC1 F780 + LA9 FX970**: see page 5/150
**LC1 F780 + LC1 F6309 + LA9 FX970**

References :
page 5/153

## Dimensions (continued)

### 3-phase + neutral changeover contactor pairs

**LC1 F78041 + LC1 F63049 + LA9 FX970**

**LC1 F78041 + LC1 F78040 + LA9 FX970**

**LC1 F7804 + LC1 F63049 + LA9 FX971**

**LC1 F7804 + LC1 F7804 + LA9 FX971**

## Schemes

### 3-phase changeover contactor pairs

### 3-phase + neutral changeover contactor pairs

References :
page 5/153

# TeSys contactors

## Capacitive delayed opening devices

### For TeSys D contactors

## References

These devices prevent inadvertent opening of a contactor in the event of a brief volt drop or momentary supply failure.

*LAZ R90F*

*LAZ R91F*

**Control circuit : d.c. supply**

| For use with contactor | | Corresponding delayed opening device | | | |
|---|---|---|---|---|---|
| Type *(1)* | Contactor reference to be completed *(2)* | Supply voltage 50/60 Hz | Non-adjustable delay time (Tr) | Reference | Weight |
| | | V | s | | kg |
| LC1 D09, LC1 D12, LC1 D18, LC1 D25, LC1 D32 or LC1 D38 | **LC1 D●●PD** | 110…115 | 1.5…5 | **LAZ R90F** | 0.215 |
| | **LC1 D●●QD** | 120…127 | 2.5…5 | **LAZ R90F** | 0.215 |
| | **LC1 D●●TD** | 220 | 4…8 | **LAZ R90M** | 0.215 |
| | **LC1 D●●VD** | 240 | 5…10 | **LAZ R90M** | 0.215 |
| | **LC1 D●●WD** | 380 | 4…8 | **LAZ R90Q** | 0.215 |
| | **LC1 D●●XD** | 415…440 | 5.5…13 | **LAZ R90Q** | 0.215 |
| LC1 D40, LC1 D50 or LC1 D65 | **LC1 D●●PD** | 110…115 | 0.5…1 | **LAZ R90F** | 0.215 |
| | **LC1 D●●QD** | 120…127 | 0.5…1.5 | **LAZ R90F** | 0.215 |
| | **LC1 D●●TD** | 220…240 | 1…2.5 | **LAZ R90M** | 0.215 |
| | **LC1 D●●WD** | 380 | 1…2.5 | **LAZ R90Q** | 0.215 |
| | **LC1 D●●XD** | 415…440 | 1…3 | **LAZ R90Q** | 0.215 |
| LC1 D80 | **LC1 D●●PD** | 110…120 | 0.4…1 | **LAZ R90F** | 0.215 |
| | **LC1 D●●QD** | 120…127 | 0.5…1 | **LAZ R90F** | 0.215 |
| | **LC1 D●●TD** | 220 | 0.5…2 | **LAZ R90M** | 0.215 |
| | **LC1 D●●VD** | 240 | 1…2.5 | **LAZ R90M** | 0.215 |
| | **LC1 D●●WD** | 380 | 1…2 | **LAZ R90Q** | 0.215 |
| | **LC1 D●●XD** | 415…440 | 1…2.5 | **LAZ R90Q** | 0.215 |

**Add-on blocks for delayed opening devices**

| Application | For use with delayed opening device | Operational voltage | Non-adjustable delay time | Reference | Weight |
|---|---|---|---|---|---|
| | | V | s | | kg |
| To double the delay time | LAZ R90F | 110…127 | Tr x 2 | **LAZ R91F** | 0.165 |
| | LAZ R90M | 220…240 | Tr x 2 | **LAZ R91M** | 0.165 |
| | LAZ R90Q | 380…440 | Tr x 2 | **LAZ R91Q** | 0.165 |

*(1) These contactors can be supplied as standard for this application or can be adapted by replacing the coil (except for contactors LC1 D09●●●● to LC1 D38●●●● on which the coil is not replaceable).*

*(2) Reference to be completed : see page 5/62.*

## Dimensions

**LAZ R9●●**

## Schemes

**LAZ R9●●** + LC1 D

**LAZ R9●●** + LC1 F

**Other versions** Delayed opening devices for use with other types of contactor. Please consult your Regional Sales Office.

# TeSys contactors
## Capacitive delayed opening devices
### For TeSys F contactors

## References

These devices prevent inadvertent opening of a contactor in the event of a brief volt drop or momentary supply failure.

**Control circuit : d.c. supply** *(1)*

| For use with contactor | | Corresponding delayed opening device | | | |
|---|---|---|---|---|---|
| Type | With coil | Supply voltage 50/60 Hz | Non-adjustable delay time (Tr) | Reference | Weight |
| | | V | s | | kg |
| LC1 F115 or LC1 F150 | LX4 FF110 | 110 | 2…5 | **LAZ R90F** | 0.215 |
| | LX4 FF125 | 127 | 2…5 | **LAZ R90F** | 0.215 |
| | LX4 FF220 | 220 | 2…5 | **LAZ R90M** | 0.215 |
| | LX4 FF250 | 240 | 2…5 | **LAZ R90M** | 0.215 |
| | LX4 FF375 | 380…415 | 2…5 | **LAZ R90Q** | 0.215 |
| | LX4 FF440 | 440 | 2…5 | **LAZ R90Q** | 0.215 |
| LC1 F185 or LC1 F225 | LX4 FG110 | 110 | 2…5 | **LAZ R90F** | 0.215 |
| | LX4 FG125 | 127 | 2…5 | **LAZ R90F** | 0.215 |
| | LX4 FG220 | 220 | 2…5 | **LAZ R90M** | 0.215 |
| | LX4 FG250 | 240 | 2…5 | **LAZ R90M** | 0.215 |
| | LX4 FG375 | 380…415 | 2…5 | **LAZ R90Q** | 0.215 |
| | LX4 FG440 | 440 | 2…5 | **LAZ R90Q** | 0.215 |
| LC1 F265 or LC1 F330 | LX4 FH110 | 110 | 2…5 | **LAZ R90F** | 0.215 |
| | LX4 FH125 | 127 | 2…5 | **LAZ R90F** | 0.215 |
| | LX4 FH220 | 220 | 2…5 | **LAZ R90M** | 0.215 |
| | LX4 FH250 | 240 | 2…5 | **LAZ R90M** | 0.215 |
| | LX4 FH375 | 380…415 | 2…5 | **LAZ R90Q** | 0.215 |
| | LX4 FH440 | 440 | 2…5 | **LAZ R90Q** | 0.215 |
| LC1 F400 | LX4 FJ110 | 110 | 1…2 | **LAZ R90F** | 0.215 |
| | LX4 FJ125 | 127 | 1…2 | **LAZ R90F** | 0.215 |
| | LX4 FJ220 | 220 | 1…2 | **LAZ R90M** | 0.215 |
| | LX4 FJ250 | 240 | 1…2 | **LAZ R90M** | 0.215 |
| | LX4 FJ375 | 380 | 1…2 | **LAZ R90Q** | 0.215 |
| | LX4 FJ400 | 415 | 1…2 | **LAZ R90Q** | 0.215 |
| | LX4 FJ440 | 440 | 1…2 | **LAZ R90Q** | 0.215 |
| LC1 F500 | LX4 FK110 | 110 | 1…2 | **LAZ R90F** | 0.215 |
| | LX4 FK125 | 127 | 1…2 | **LAZ R90F** | 0.215 |
| | LX4 FK220 | 220 | 1…2 | **LAZ R90M** | 0.215 |
| | LX4 FK250 | 240 | 1…2 | **LAZ R90M** | 0.215 |
| | LX4 FK375 | 380 | 1…2 | **LAZ R90Q** | 0.215 |
| | LX4 FK400 | 415 | 1…2 | **LAZ R90Q** | 0.215 |
| | LX4 FK440 | 440 | 1…2 | **LAZ R90Q** | 0.215 |
| LC1 F630 | LX4 FL110 | 110 | 1…2 | **LAZ R90F** | 0.215 |
| | LX4 FL125 | 127 | 1…2 | **LAZ R90F** | 0.215 |
| | LX4 FL220 | 220 | 1…2 | **LAZ R90M** | 0.215 |
| | LX4 FL250 | 240 | 1…2 | **LAZ R90M** | 0.215 |
| | LX4 FL375 | 380 | 1…2 | **LAZ R90Q** | 0.215 |
| | LX4 FL400 | 415 | 1…2 | **LAZ R90Q** | 0.215 |
| | LX4 FL440 | 440 | 1…2 | **LAZ R90Q** | 0.215 |

**Add-on blocks for delayed opening devices** *(1)*

| Application | For use with delayed opening device | Operational voltage | Non-adjustable delay time | Reference | Weight |
|---|---|---|---|---|---|
| | | V | s | | kg |
| To double the delay time | LAZ R90F | 110…127 | Tr x 2 | **LAZ R91F** | 0.165 |
| | LAZ R90M | 220…240 | Tr x 2 | **LAZ R91M** | 0.165 |
| | LAZ R90Q | 380…440 | Tr x 2 | **LAZ R91Q** | 0.165 |

*(1) Dimensions and schemes: see page 5/156.*

**Other versions** Delayed opening devices for use with other types of contactor. Please consult your Regional Sales Office.

# TeSys contactors
## 3-pole shockproof contactors LC1 FG

PF537334

*LC1 FG150*

PF537336

*LC1 FG265*

## Presentation

In an environment subject to severe mechanical shocks, unwanted closing of a contactor's poles and the serious consequences of this, is not permissible.

Shockproof contactors **LC1 FG150** to **FG630** are equipped with an auxiliary electromechanical device which ensures that the contactor is mechanically locked in the “open” position when it’s main electromagnet is not energised.

If the contactor is subjected to mechanical impact, from back to front or from front to back, accidental closing of the poles is then impossible.

In addition, accidental opening of the poles (when the contactor is in the “on” position), is virtually impossible due to the significant pull-in force characteristic of these contactors.

## Applications

- **Marine:** on-board equipment, windlasses, capstans, winches, etc…
- **Military equipment :** land, sea, launching silos.
- **Heavy mechanical handling systems:** travelling cranes, cranes, gantries.
- **Conveying and handling:** lifts, hoists, conveyors.
- **Equipment for power stations.**
- **Distribution boards.**

-

5

Selection :
pages 5/160 to 5/165

Characteristics :
pages 5/166 to 5/171

References :
page 5/174

Dimensions, schemes :
pages 5/180 and 5/181

## Description of shockproof device

Shockproof contactors **LC1 FG●●●** are equipped with:

■ A lever 1 that is rotated by the core of the contactor's electromagnet.

■ An auxiliary electromagnet (EV) for the locking function.

■ An RC circuit (Resistor-Capacitor) to limit overvoltage.

## Operation

■ In the 'off' position (contactor open and not energised) the core **2** of the electromagnet (EV) locks the lever **1** and therefore the contactor.

■ The coils (KM1) and (EV) are energised simultaneously, the core **2** releases the lever **1** and allows the contactor to close.

■ De-energisation of the locking electromagnet (EV) is achieved by an auxiliary contact within the contactor.
The core **2** rests freely in lever **1**.

■ On de-energisation of coil KM1, the moving contact drops out. Core **2**, under spring pressure, once again locks lever **1**.

5

# TeSys contactors

## 3-pole shockproof contactors LC1 FG
## a.c. supply
According to the utilisation category and required electrical durability

## Use in category AC-3 (Ue ≤ 440 V)

### Operational current and power (θ ≤ 55 °C)

| Contactors | | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|---|---|---|---|---|
| **Operational current** | | **A** | 150 | 185 | 265 | 400 | 500 | 630 |
| **Operational power** Standard power ratings of motors) | 220/230 V | **kW** | 40 | 55 | 75 | 110 | 147 | 200 |
| | | *hp* | *54* | *75* | *100* | *150* | *200* | *270* |
| | 380/400 V | **kW** | 75 | 90 | 132 | 200 | 250 | 335 |
| | | *hp* | *100* | *185* | *180* | *270* | *340* | *450* |
| | 415 V | **kW** | 80 | 100 | 140 | 220 | 280 | 375 |
| | | *hp* | *110* | *136* | *180* | *300* | *380* | *500* |
| | 440 V | **kW** | 80 | 100 | 140 | 250 | 295 | 400 |
| | | *hp* | *110* | *136* | *190* | *340* | *400* | *545* |
| | 500 V | **kW** | 90 | 110 | 160 | 257 | 355 | 400 |
| | | *hp* | *125* | *150* | *220* | *350* | *480* | *545* |
| | 660/690 V | **kW** | 100 | 110 | 160 | 280 | 335 | 450 |
| | | *hp* | *136* | *150* | *220* | *380* | *450* | *600* |
| | 1000 V | **kW** | 65 | 100 | 147 | 185 | 335 | 450 |
| | | *hp* | *85* | *136* | *200* | *250* | *450* | *610* |

### Maximum operating rate (operating cycles/hour) *(1)*

| On-load factor | Operational power | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|---|---|---|---|
| **≤ 85 %** | P | 750 | 750 | 750 | 500 | 500 | 500 |
| **≤ 85 %** | 0.5 P | 2000 | 2000 | 2000 | 1200 | 1200 | 1200 |
| **≤ 25 %** | P | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 |

*(1) Depending on the operational power and the on-load factor (θ ≤ 55 °C)*

5

## Electrical durability in utilisation category AC-3 (Ue ≤ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ie) in category AC-3 is equal to the rated operational current of the motor.
**Example:**
Asynchronous motor with P = 55 kW - Ue = 380 V - Ie = 105 A
4 million operating cycles required.
The above selection curves show the contactor rating needed: **LC1 FG265**.

Presentation : pages 5/158 and 5/159
Characteristics : pages 5/166 to 5/171
References : page 5/174
Dimensions, schemes : pages 5/180 and 5/181

# TeSys contactors

## 3-pole shockproof contactors LC1 FG
## a.c. supply
According to the utilisation category and required electrical durability

### Use in category AC-1 (Ue ≤ 440 V)

| Contactors | | | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|---|---|---|---|---|---|
| **Connection** | Cable | C.s.a. | **mm²** | 120 | 150 | 240 | – | – | – |
| | Bar | Number | | – | – | – | 2 | 2 | 2 |
| | | C.s.a. | **mm** | – | – | – | 30 x 5 | 40 x 5 | 60 x 5 |
| **Maximum operating rate in operating cycles/hour** | | | | 600 | 600 | 600 | 600 | 600 | 600 |
| **Operational current AC-1** | | ≤ 40 °C | **A** | 250 | 270 | 350 | 500 | 700 | 1000 |
| | | ≤ 55 °C | **A** | 220 | 240 | 300 | 430 | 580 | 850 |
| | | ≤ 70 °C *(1)* | **A** | 170 | 180 | 250 | 340 | 500 | 700 |

*(1) Only for operation with coil supplied at Uc.*

### Increase in operational current by parallel connection of poles

Apply the following multiplying factors to the current values given above. The factors take into account the often unbalanced current distribution between the 2 poles:
- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8

Recommended connection scheme to equalise the currents in each pole (see opposite).

### Electrical durability in utilisation category AC-1 (Ue ≤ 440 V)

**Example:**
Control of resistive circuits (cos φ ≥ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.
Ue = 220 V - Ic = Ie = 300 A - θ = 40 °C.
1 million operating cycles required.
The above selection curves show the contactor rating needed: **LC1 FG400**.

# TeSys contactors

## 3-pole shockproof contactors LC1 FG
## a.c. supply
## According to the utilisation category and required electrical durability

### Thermal limits in utilisation categories AC-2/AC-4

| Contactors | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|---|---|---|---|
| **Thermal limit zone** | **Operating cycles/hour** *(1)* **and on-load factor** | **Maximum current broken according to the duty requirements** (thermal limit, ambient temperature ≤ 55 °C) | | | | | |
| **A** | From 150 and 15 % to 300 and 10 % | 310 | 380 | 560 | 780 | 1100 | 1400 |
| **B** | From 150 and 20 % to 600 and 10 % | 280 | 350 | 500 | 700 | 950 | 1250 |
| **C** | From 150 and 30 % to 1200 and 10 % | 240 | 300 | 400 | 600 | 750 | 950 |
| **D** | From 150 and 55 % to 2400 and 10 % | 190 | 240 | 320 | 450 | 600 | 720 |
| **E** | From 150 and 85 % to 3600 and 10 % | 145 | 170 | 230 | 350 | 500 | 660 |

*(1) Do not exceed the maximum limit for the mechanical operating cycles.*

### Counter current braking (plugging)

The current varies from the maximum plug-braking current to the rated motor current.
The current made must be compatible with the making and breaking capacities of the contactor.

In most cases, breaking occurs at a current value close to the locked rotor current and contactor selection can therefore be made using the criteria for utilisation categories AC-2 and AC-4.

### Electrical durability in utilisation categories AC-2/AC-4 (Ue ≤ 440 V)

**Example: Contactor selection**

For an on-load factor of 10 % at 400 operating cycles per hour, the curve on the left indicates zone B. If the current broken is 600 A, the above table leads to selection of an **LC1 FG400** contactor. Referring to the electrical durability curves, it can be seen that the contactor will be able to perform 350 000 operating cycles. Where a higher value of electrical durability is required, 1 million operating cycles for example, an **LC1 FG630** contactor would be recommended.

# TeSys contactors

## For switching 3-phase capacitor banks, used for power factor correction
## Switching the primaries of 3-phase transformers (LV/LV)

## Switching 3-phase capacitors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz).
The contactors are used for direct switching. The values of peak current at switch-on must not exceed the values indicated below.

An inductor or an early break resistor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. This must be done when switching multiple step capacitor banks.
Inductance values are determined according to the selected operating temperature: please refer to our “Motor starter solutions - Control and protection components” catalogue.

In addition, in accordance with standards IEC 60070, NF C 54 100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched.
The rated operational powers given in table the below take this overload into account.

Short-circuit protection is normally provided by g1 fuses rated at 1.3 to 1.6 In.

## Maximum operational power of contactors

Maximum operating rate: 120 operating cycles/hour.
Electrical durability at maximum load: 100 000 operations.
With choke inductors connected, where necessary.

| Operational power at 50/60 Hz | | | | | | Maximum peak current | Contactor to be used |
|---|---|---|---|---|---|---|---|
| θ ≤ 40 °C | | | θ ≤ 55 °C | | | | |
| 220 V 240 V | 400 V 440 V | 600 V 660 V | 220 V 240 V | 400 V 440 V | 600 V 660 V | | |
| kvar | kvar | kvar | kvar | kvar | kvar | A | |
| 60 | 100 | 135 | 40 | 85 | 90 | 3200 | **LC1 FG150** |
| 70 | 125 | 160 | 50 | 100 | 100 | 3500 | **LC1 FG185** |
| 90 | 160 | 225 | 75 | 125 | 125 | 5000 | **LC1 FG265** |
| 125 | 220 | 300 | 100 | 160 | 200 | 8000 | **LC1 FG400** |
| 180 | 300 | 400 | 125 | 220 | 300 | 10 000 | **LC1 FG500** |
| 250 | 400 | 600 | 190 | 350 | 500 | 12 000 | **LC1 FG630** |

## Switching the primaries of 3-phase transformers (LV/LV)

When a transformer is switched on, there is generally an initial current surge which can reach 20 to 40 times the rated current for the power ratings shown below.
This current reaches its peak value almost instantaneously and then decreases in a largely exponential manner, quickly dropping back down to its steady state value.

## Contactor selection

Operating rate less than 120 operating cycles/hour.
Maximum operational voltages: 1000 V 50/60 Hz.
The value of the peak magnetising current must be lower than the values indicated below.
Maximum ambient temperature: 55 °C.

| Contactor | | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|---|---|---|---|---|
| **Maximum permissible current peak at switch-on** | | **A** | 1700 | 2800 | 3500 | 5500 | 6800 | 9000 |
| **Maximum operational power** *(1)* | 220 V | **kVA** | 25 | 40 | 50 | 75 | 100 | 140 |
| | 380 V | **kVA** | 50 | 75 | 90 | 130 | 170 | 225 |
| | 415/440 V | **kVA** | 55 | 80 | 100 | 140 | 190 | 250 |
| | 500 V | **kVA** | 65 | 95 | 110 | 170 | 225 | 280 |
| | 660 V | **kVA** | 80 | 120 | 140 | 200 | 270 | 315 |
| | 1000 V | **kVA** | 100 | 150 | 200 | 250 | 375 | 470 |

*(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.*

Presentation : pages 5/158 and 5/159
Characteristics : pages 5/166 to 5/171
References : page 5/174
Dimensions, schemes : pages 5/180 and 5/181

# TeSys contactors

## 3-pole shockproof contactors LC1 FG
## d.c. supply
## Selection guide for utilisation categories DC-1 to DC-5

### Use in category DC-1 (resistive loads; time constant L/R ⩽ 1 ms)

**Rated operational current Ie**

| Operational voltage (Ue) | Number of poles to be wired in series | Contactors | | | | | |
|---|---|---|---|---|---|---|---|
| | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
| V | | A | A | A | A | A | A |
| 24 | 1 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 2 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 3 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 4 | 160 | 220 | 300 | 400 | 600 | 850 |
| 48/75 | 1 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 2 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 3 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 4 | 160 | 220 | 300 | 400 | 600 | 850 |
| 125 | 1 | – | – | – | – | – | – |
| | 2 | 130 | 170 | 300 | 400 | 550 | 850 |
| | 3 | 130 | 170 | 300 | 400 | 600 | 850 |
| | 4 | 130 | 170 | 300 | 400 | 600 | 850 |
| 225 | 1 | – | – | – | – | – | – |
| | 2 | 100 | 150 | 250 | 350 | 450 | 700 |
| | 3 | 130 | 170 | 300 | 400 | 600 | 850 |
| | 4 | 130 | 170 | 300 | 400 | 600 | 850 |
| 300 | 3 | 100 | 150 | 250 | 350 | 450 | 700 |
| | 4 | 130 | 170 | 300 | 400 | 600 | 850 |
| 460 | 4 | 100 | 150 | 250 | 350 | 450 | 700 |

5

### Use in category DC-2 to DC-5 (inductive loads; time constant L/R ⩽ 15 ms)

**Rated operational current Ie**

| Operational voltage (Ue) | Number of poles to be wired in series | Contactors | | | | | |
|---|---|---|---|---|---|---|---|
| | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
| V | | A | A | A | A | A | A |
| 24 | 1 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 2 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 3 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 4 | 140 | 180 | 280 | 350 | 550 | 850 |
| 48/75 | 1 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 2 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 3 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 4 | 140 | 180 | 280 | 350 | 550 | 850 |
| 125 | 1 | – | – | – | – | – | – |
| | 2 | 100 | 140 | 250 | 350 | 550 | 850 |
| | 3 | 120 | 160 | 280 | 350 | 550 | 850 |
| | 4 | 120 | 160 | 280 | 350 | 550 | 850 |
| 225 | 1 | – | – | – | – | – | – |
| | 2 | 80 | 100 | 200 | 280 | 450 | 700 |
| | 3 | 100 | 140 | 250 | 350 | 550 | 850 |
| | 4 | 120 | 160 | 280 | 350 | 550 | 850 |
| 300 | 3 | 80 | 100 | 200 | 280 | 450 | 700 |
| | 4 | 120 | 160 | 280 | 350 | 550 | 850 |
| 460 | 4 | 80 | 100 | 200 | 280 | 450 | 700 |

# TeSys contactors

3-pole shockproof contactors LC1 FG
d.c. supply
Selection guide for utilisation categories DC-1 to DC-5

## Electrical durability

**Utilisation categories DC-1 to DC-5**

## Determining the electrical durability

The electrical durability can be read directly from the curve above, having previously calculated the power broken Pc. The following table gives, for each utilisation category, the value of Pc according to the operational current Ie and the operational voltage Ue.

| Utilisation categories | | **Pc** (Power broken) |
|---|---|---|
| **DC-1** | Non-inductive loads | Pc = Ue x Ie |
| **DC-2** | Shunt motors, breaking whilst running | Pc = 0.1 Ue x Ie |
| **DC-3** | Shunt motors, reversing | Pc = Ue x 2.5 Ie |
| **DC-4** | Series wound motors, breaking whilst running | Pc = 0.3 Ue x Ie |
| **DC-5** | Series wound motors, reversing | Pc = Ue x 2.5 Ie |
| **Counter current braking (plugging)** | | Pc = 1.5 Ue x 1.5 Ie |

**Example:**
Series wound motor, breaking whilst motor running, category DC-4.
P = 50 kW, Ue = 200 V, Ie = 250 A.
Select contactor **LC1 FG265** with 3 poles in series.
The power broken is: Pc = 0.3 Ue x Ie = 0.3 x 200 x 250 = 15 kW.
The electrical durability read from the curve is 8 million operating cycles.

## Maximum operating rate

The following operating rate used at Ie must not be exceeded: 120 operating cycles/hour.

## Use of poles in parallel

The electrical durability is equal to the number of operating cycles performed by a pole, multiplied by the number of poles in parallel, multiplied by a coefficient of 0.70.

# TeSys contactors

## 3-pole shockproof contactors LC1 FG
Control circuit: a.c.

## Environment

| Contactor type | | | LC1 FG150 | LC1 FG185 |
|---|---|---|---|---|
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-4-1 | **V** | 1000 | |
| | Conforming to VDE 0110 gr C | **V** | 1500 | |
| **Rated impulse withstand voltage** (Uimp) | Coil not connected to the power circuit | **kV** | 8 | |
| **Conforming to standards** | | | EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1 | |
| **Product certifications** | | | N.A.T.O. | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 20 front face with shrouds LA9 F | |
| | Conforming to VDE 0106 | | Front face protected against direct finger contact with shrouds LA9 F | |
| **Protective treatment** | Standard version | | "TH" | |
| **Ambient air temperature around the device** | Storage | **°C** | - 60…+ 80 | |
| | Operation | **°C** | - 5…+ 55 | |
| | Permissible at Uc *(1)* | **°C** | - 40…+ 70 | |
| **Maximum operating altitude** | Without derating | **m** | 3000 | |
| **Operating positions** | Without derating | | | |
| | With derating *(3)* | | **Fixing A** **Fixing B** | |
| | Not to be used | | | |
| **Shock resistance** *(2)* | | | 12 g, 50 ms on the three axes: X, Y, Z | |
| | | | 15 g, 11 ms on the three axes: X, Y, Z | |

*(1) In these conditions, it is recommended that coils LX9F be used for contactor sizes **FG150** to **FG265**.*
*(2) In the least favourable direction, without change of contact state (coil at Uc).*
*(3) Horizontal fixing:*
- *The operational current AC-1 is equivalent to 80% of the value indicated in the catalogue*
- *Breaking and making capacities not guaranteed*
- *Mechanical and electrical durabilities not guaranteed*

### Derating of pull-in and drop-out voltage

| Contactors LC1 | | FG150 | FG185 | FG265 | FG400 | FG500 | FG630 |
|---|---|---|---|---|---|---|---|
| **Fixing A** | Pull-in | 75% | 75% | 75% | 80% | 80% | 80% |
| | Drop-out | 105% | 105% | 105% | 110% | 110% | 110% |
| **Fixing B** | Pull-in | 115% | 115% | 115% | 120% | 120% | 120% |
| | Drop-out | 90% | 90% | 90% | 95% | 95% | 95% |

Presentation : pages 5/158 and 5/159
Selection : pages 5/160 to 5/165
References : page 5/174
Dimensions, schemes : pages 5/180 and 5/181

| LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|
| 1000 | | | |
| 1500 | | | |
| 8 | | | |
| EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1 | | | |
| N.A.T.O. | | | |
| IP 20 front face with shrouds LA9 F | | | |
| Front face protected against direct finger contact with shrouds LA9 F | | | |
| “TH” | | | |
| - 60…+ 80 | | | |
| - 5…+ 55 | | | |
| - 40…+ 70 | | | |
| 3000 | | | |
| | | | |
| A B | | | |
| | | | |
| 12 g, 50 ms on the three axes: X, Y, Z | | | |
| 15 g, 11 ms on the three axes: X, Y, Z | | | |

5

# TeSys contactors

## 3-pole shockproof contactors LC1 FG
Control circuit: a.c.

### Pole characteristics

| Contactor type | | | | LC1 FG150 | LC1 FG185 |
|---|---|---|---|---|---|
| **Number of poles** | | | | 3 | 3 |
| **Rated operational current** (Ie) (Ue ≤ 440 V) | In AC-3, θ ≤ 55 °C | θ ≤ 70 °C | **A** | 150/150 | 185/180 |
| | In AC-1, θ ≤ 55 °C | θ ≤ 70 °C | **A** | 220/170 | 240/180 |
| **Rated operational voltage** (Ue) | Up to | | **V** | 1000 | 1000 |
| **Frequency limits** | Of the operational current *(1)* | | **Hz** | 25 to 200 | 25 to 200 |
| **Conventional thermal current** | θ ≤ 40 | | **°C** | 250 | 275 |
| **Rated making capacity** | I rms conforming to IEC 60947-4-1 | | **A** | Making current: 10 x I in AC-3 | |
| **Rated breaking capacity** | I rms conforming to IEC 60947-4-1 | | **A** | Making and breaking current: 8 x I in cat. AC-3 | |
| **Permissible short time rating** No current flowing for preceding 60 minutes with θ ≤ 40 °C | For 1.5 or 10 s | | **A** | 1200 | 1500 |
| | For 30 s | | **A** | 700 | 920 |
| | For 1 mn | | **A** | 600 | 740 |
| | For 3 mn | | **A** | 450 | 500 |
| | For 10 mn | | **A** | 350 | 400 |
| **Fuse protection** against short-circuits (U ≤ 440 V) | Motor circuit (type aM) | | **A** | 160 | 200 |
| | With thermal overload relay (type gG) | | **A** | 200 | 315 |
| | gG fuses | | **A** | 250 | 315 |
| **Average impedance per pole** | At Ith and 50 Hz | | **mΩ** | 0.35 | 0.33 |
| **Power dissipation per pole** for the above operational currents | AC-3 | | **W** | 8 | 12 |
| | AC-1 | | **W** | 22 | 25 |
| **Cabling** Minimum c.s.a. | Bar | No. of bars | | 2 | 2 |
| | | Bar | **mm** | 25 x 3 | 25 x 3 |
| | Cable with lug | | **mm²** | 120 | 150 |
| | Cable with connector | | **mm²** | 120 | 150 |
| | Bolt diameter | | **mm** | Ø 8 | Ø 8 |
| **Tightening torque** | Power circuit connections | | **N.m** | 18 | 18 |

*(1) Sine wave without interference. Above these values, please consult your Regional Sales Office.*

| LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|
| 3 | 3 | 3 | 3 |
| 265/250 | 400/340 | 500/500 | 630/630 |
| 300/250 | 430/340 | 580/500 | 850/700 |
| 1000 | 1000 | 1000 | 1000 |
| 25 to 200 | 25 to 200 | 25 to 200 | 25 to 200 |
| 350 | 500 | 700 | 1000 |
| Making current: 10 x I in AC-3 | | | |
| Making and breaking current: 8 x I in AC-3 | | | |
| 2200 | 3600 | 4200 | 5050 |
| 1230 | 2400 | 3200 | 4400 |
| 950 | 1700 | 2400 | 3400 |
| 620 | 1200 | 1500 | 2200 |
| 480 | 1000 | 1200 | 1600 |
| 315 | 400 | 500 | 630 |
| 500 | 630 | 800 | 800 |
| 400 | 500 | 800 | 1000 |
| 0.3 | 0.26 | 0.18 | 0.12 |
| 21 | 42 | 45 | 48 |
| 37 | 65 | 88 | 120 |
| 2 | 2 | 2 | 2 |
| 32 x 4 | 30 x 5 | 40 x 5 | 60 x 5 |
| 240 | 2 x 150 | 2 x 240 | – |
| 240 | – | – | – |
| Ø 10 | Ø 10 | Ø 10 | Ø 12 |
| 35 | 35 | 35 | 58 |

# TeSys contactors

3-pole shockproof contactors LC1 FG
Control circuit: a.c.

## Control circuit characteristics with LX1 coil

| Contactor type | | | | | LC1 FG150 | LC1 FG185 |
|---|---|---|---|---|---|---|
| **Rated control circuit voltage** (Uc) | | 50 or 60 Hz | | **V** | 48…440 | |
| **Control voltage limits** (θ ≤ 55 °C) | 50 or 60 Hz coils | Operation | | | 0.85…1.1 Uc | |
| | | Drop-out | | | 0.35…0.55 Uc | |
| | 40…400 Hz coils | Operation | | | – | |
| | | Drop-out | | | – | |
| **Average consumption** at 20 °C and at Uc | ∿ 50 Hz | Inrush | 50 Hz coil | **VA** | 550 | 805 |
| | | | 40…400 Hz coil | **VA** | – | – |
| | | | Cos φ | | 0.3 | 0.3 |
| | | Sealed | 50 Hz coil | **VA** | 45 | 55 |
| | | | 40…400 Hz coil | **VA** | – | – |
| | | | Cos φ | | 0.3 | 0.3 |
| | ∿ 60 Hz | Inrush | 60 Hz coil | **VA** | 660 | 970 |
| | | | 40…400 Hz coil | **VA** | – | – |
| | | | Cos φ | | 0.3 | 0.3 |
| | | Sealed | 60 Hz coil | **VA** | 55 | 66 |
| | | | 40…400 Hz coil | **VA** | – | – |
| | | | Cos φ | | 0.3 | 0.3 |
| **Heat dissipation** | | | | **W** | 12…16 | 18…24 |
| **Operating time** *(1)* | | Closing "C" | | **ms** | 23…35 | 20…35 |
| | | Opening "O" | | **ms** | 5…15 | 7…15 |
| **Mechanical durability** at Uc | | In millions of operating cycles | | | 10 | 10 |
| **Maximum operating rate** at ambient temperature ≤ 55 °C | | In operating cycles per hour | | | 2400 | 2400 |
| **Cabling** Min/max c.s.a. | Flexible cable without cable end | | 1 or 2 conductors | **mm²** | 1/4 | 1/4 |
| | Flexible cable with cable end | | 1 conductor | **mm²** | 1/4 | 1/4 |
| | | | 2 conductors | **mm²** | 1/2.5 | 1/2.5 |
| | Solid cable without cable end | | 1 or 2 conductors | **mm²** | 1/4 | 1/4 |
| **Tightening torque** | | | | **N.m** | 1.2 | 1.2 |

## Characteristics of the locking electromagnet (shockproof device)

| Contactor type | | | LC1 FG150 | LC1 FG185 |
|---|---|---|---|---|
| **Control circuit voltage 50/60 Hz** | | **V** | 48…440 | 48…440 |
| **Inrush consumption** | | **VA** | 100 | 100 |
| **Maximum energisation time** at Uc | | **ms** | 20 | 20 |
| **Maximum operating rate** | In operating cycles per hour | | 2400 | 2400 |
| **Mechanical durability** at Uc | In millions of operating cycles | | $1 \times 10^6$ | $1 \times 10^6$ |

*(1) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.*
*The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

Presentation: pages 5/158 and 5/159
Selection : pages 5/160 to 5/165
References: pages 5/178 and 5/179
Dimensions, schemes: pages 5/180 and 5/181



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| LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|
| 48…440 | 110…440 | 110…440 | 110…440 |
| – | – | – | – |
| – | – | – | – |
| 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc |
| 0.35…0.55 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.25…0.5 Uc |
| – | – | – | – |
| 650 | 1075 | 1100 | 1650 |
| 0.9 | 0.9 | 0.9 | 0.9 |
| – | – | – | – |
| 10 | 15 | 18 | 22 |
| 0.9 | 0.9 | 0.9 | 0.9 |
| – | – | – | – |
| 650 | 1075 | 1100 | 1650 |
| 0.9 | 0.9 | 0.9 | 0.9 |
| – | – | – | – |
| 10 | 15 | 18 | 22 |
| 0.9 | 0.9 | 0.9 | 0.9 |
| 8 | 14 | 18 | 20 |
| 40…65 | 40…75 | 40…75 | 40…80 |
| 100…170 | 100…170 | 100…170 | 100…200 |
| 10 | 10 | 10 | 10 |
| 2400 | 2400 | 2400 | 1200 |
| 1/4 | 1/4 | 1/4 | 1/4 |
| 1/4 | 1/4 | 1/4 | 1/4 |
| 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 |
| 1/4 | 1/4 | 1/4 | 1/4 |
| 1.2 | 1.2 | 1.2 | 1.2 |

| LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|
| 48…440 | 110…440 | 110…440 | 110…440 |
| 100 | 100 | 100 | 100 |
| 20 | 20 | 20 | 20 |
| 2400 | 2400 | 2400 | 1200 |
| $1 \times 10^{6}$ | $1 \times 10^{6}$ | $1 \times 10^{6}$ | $1 \times 10^{6}$ |

# TeSys contactors

## Auxiliary contact blocks for 3-pole shockproof contactors LC1 FG

## Environment

| Contact block type | | | LAD N | LAD T and LAD S | LAD R |
|---|---|---|---|---|---|
| **Conforming to standards** | | | IEC 60947-5-1, NF C 63-140, VDE 0660, BS 4794, EN 60947-5-1 | | |
| **Product certifications** | | | UL, CSA | | |
| **Protective treatment** | Conforming to IEC 60068 | | "TH" | | |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact IP2X | | |
| **Ambient air temperature around the device** | Storage | °C | - 60…+ 80 | | |
| | Operation | °C | - 5…+ 60 | | |
| | Permissible for operation at Uc | °C | - 40…+ 70 | | |
| **Maximum operating altitude** | Without derating | m | 3000 | | |
| **Cabling** | Phillips N° 2 and Ø 6 mm. Flexible or solid cable with or without cable end | mm² | Min: 1 x 1; max: 2 x 2.5 | | |

## Instantaneous and time delay contact characteristics

| Contact block type | | | LAD N | LAD T and LAD S | LAD R |
|---|---|---|---|---|---|
| **Number of contacts** | | | 1 or 4 | 2 | 2 |
| **Rated operational voltage** (Ue) | Up to | V | 660 | | |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-5-1 | V | 690 | | |
| | Conforming to UL, CSA | V | 600 | | |
| **Conventional thermal current** (Ith) | For ambient temperature ≤ 60 °C | A | 10 | | |
| **Frequency of the operational current** | | Hz | 25…400 | | |
| **Minimum switching capacity** | U min | V | 17 | | |
| | I min | mA | 5 | | |
| **Short-circuit protection** | Conforming to IEC 60947-5-1 and VDE 0660. gG fuse | A | 10 | | |
| **Rated making capacity** | Conforming to IEC 60947-5-1, I rms | A | ∼ 140; ⎓: 250 | | |
| **Short-time rating** | Permissible for 1 s | A | 100 | | |
| | 500 ms | A | 120 | | |
| | 100 ms | A | 140 | | |
| **Insulation resistance** | | MΩ | > 10 | | |
| **Non-overlap time** | Guaranteed between N/C and N/O contacts | ms | 1.5 (on energisation and on de-energisation) | | |
| **Time delay** (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the front face | Ambient air temperature for operation | °C | – | - 40…+ 70 | - 40…+ 70 |
| | Repeat accuracy | | – | ± 2 % | ± 2 % |
| | Drift up to 0.5 million operating cycles | | – | + 15 % | + 15 % |
| | Drift depending on ambient air temperature | | – | 0.25 % per °C | 0.25 % per °C |
| **Mechanical durability** | In millions of operating cycles | | 30 | 5 | 5 |

| **Rated operational power of contacts** Conforming to IEC 60947-5-1 | | V | 24 | 48 | 110/127 | 220/230 | 380/400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|---|
| | 1 million operating cycles | VA | 150 | 300 | 400 | 480 | 500 | 500 | 500 |
| | 3 million operating cycles | VA | 80 | 170 | 250 | 290 | 320 | 320 | 320 |
| | 10 million operating cycles | VA | 30 | 65 | 90 | 120 | 130 | 130 | 130 |
| | Occasional making capacity | VA | 1200 | 2600 | 7000 | 13 000 | 15 000 | 13 000 | 9000 |

References : page 5/175
Schemes : page 5/181



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# TeSys contactors

## Auxiliary contact blocks
## for 3-pole shockproof contactors LC1 FG

## Environment

| Module type | | | LAD T (On-delay) | LAD R (Off-delay) |
|---|---|---|---|---|
| **Conforming to standards** | | | IEC 60255-5 | |
| **Product certifications** | | | UL, CSA | |
| **Protective treatment** | Conforming to IEC 60068 | | "TH" | |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact IP2X | |
| **Ambient air temperature around the device** | Storage | °C | - 40…+ 80 | |
| | Operation | °C | - 25…+ 55 | |
| | For operation at Uc | °C | - 25…+ 70 | |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-1 | V | 250 | |
| **Cabling** | Phillips N° 2 and Ø 6 mm. Flexible or solid cable with or without cable end | mm² | Min: 1 x 1; max: 2 x 2.5 | |

## Control circuit characteristics

| Module type | | | LAD T (On-delay) | LAD R (Off-delay) |
|---|---|---|---|---|
| **Built-in protection** | Of the input | | By varistor | By varistor |
| | Contactor coil suppression | | By varistor | By bidirectional peak limiting diode |
| **Rated control circuit voltage** (Uc) | | V | ∿ or ⎓ 24…250 | ∿ 24…250 |
| **Permissible variation** | | | 0.8…1.1 Uc | 0.8…1.1 Uc |
| **Control type** | | | By mechanical contact only | By mechanical contact only connecting cable < 10 m |

## Time delay characteristics

| Module type | | | LAD T (On-delay) | LAD R (Off-delay) |
|---|---|---|---|---|
| **Timing ranges** | | s | 0.1…2 ; 1.5…30 ; 25…500 | 0.1…2 ; 1.5…30 ; 25…500 |
| **Repeat accuracy** | 0…40 °C | | ± 3 % (10 ms minimum) | ± 3 % (10 ms minimum) |
| **Reset time** | During time delay period | ms | 150 | 225 |
| | After time delay period | ms | 50 | – |
| **Immunity to microbreaks** | During time delay period | ms | 10 | 20 |
| | After time delay period | ms | 2 | – |
| **Minimum impulse duration** | | ms | – | 40 |
| **Time delay signalling** | By LED | | Illuminates during time delay period | Illuminates during time delay period |

## Switching characteristics (solid state type)

| Module type | | | LAD T (On-delay) | LAD R (Off-delay) |
|---|---|---|---|---|
| **Maximum power dissipated** | | W | 2 | 3.5 |
| **Leakage current** | | mA | < 5 | < 5 |
| **Residual voltage** | | V | 3.3 | 3.3 |
| **Overvoltage protection** | | | 3 kV; 0.5 joule | 3 kV; 0.5 joule |
| **Electrical durability** | In millions of operating cycles | | 30 | 30 |

## Operating diagrams

### Electronic On-delay timer LAD T

### Electronic Off-delay timer LAD R

References:
page 5/175

Schemes:
page 5/181

# TeSys contactors

## 3-pole shockproof contactors LC1 FG

For control of motors and distribution circuits.
Control circuit: a.c.

PF537334

LC1 FG150

PF537335

LC1 FG185

PF537336

LC1 FG265

### 3-pole shockproof contactors

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | Rated operational current in cat. AC-3, 440 V/AC-1 up to | (1) DCN ref. | Basic reference, to be completed by adding the voltage code (3) Screw fixing, cabling (2) | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | | | |
| kW | kW | kW | kW | kW | kW | kW | A | | | kg |
| 40 | 75 | 80 | 80 | 90 | 100 | 65 | 150/250 | **CR182** | **LC1 FG150●●** | 3.430 |
| 55 | 90 | 100 | 100 | 110 | 110 | 100 | 185/275 | **CR242** | **LC1 FG185●●** | 4.650 |
| 75 | 132 | 140 | 140 | 160 | 160 | 147 | 265/350 | **CR302** | **LC1 FG265●●** | 7.440 |
| 110 | 200 | 220 | 250 | 257 | 280 | 185 | 400/500 | **CR432** | **LC1 FG400●●** | 9.100 |
| 147 | 250 | 280 | 295 | 355 | 335 | 335 | 500/700 | **CR582** | **LC1 FG500●●** | 11.350 |
| 200 | 335 | 375 | 400 | 400 | 450 | 450 | 630/1000 | **CR852** | **LC1 FG630●●** | 18.600 |

***Note:*** *These contactors have instantaneous auxiliary contact blocks with 2 N/O contacts, 1 N/C contact and one coil maintaining contact.*

*(1) Devices approved by the DCN (French naval shipyard department) and authorised for on-board use.*
*(2) Power terminals can, if required, be protected against direct finger contact by the addition of shrouds, to be ordered separately (see page 5/176).*
*(3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volt ∼ | | 48 | 110 | 115 | 120 (1) | 208 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1 FG 150…FG185** | 50 Hz (coil LX1) | E5 | F5 | F5 | – | – | M5 | P5 | U5 | Q5 | V5 | N5 | – |
| | 60 Hz (coil LX1) | E6 | F6 | – | – | L6 | M6 | – | U6 | Q6 | – | – | R6 |
| | 50/60 Hz (coil LX9) | E7 | F7 | F7 | G6 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1 FG265** | 40…400 Hz (coil LX1) | E7 | F7 | F7 | G7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1 FG400…FG500** | 40…400 Hz (coil LX1) | – | F7 | F7 | G7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1 FG630** | 40…400 Hz (coil LX1) | – | F7 | F7 | F7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |



Presentation : pages 5/158 and 5/158
Selection : pages 5/160 to 5/165
Characteristics : pages 5/166 to 5/171
Dimensions, schemes : pages 5/180 and 5/181



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# TeSys contactors

## Auxiliary contact blocks for 3-pole shockproof contactors LC1 FG

*LAD N●●*

### Instantaneous auxiliary contact blocks

**For use in normal operating environments**

| Number of contacts | Max. number of blocks per contactor<br>Clip-on mounting | Composition | | | | Reference | | Weight<br>kg |
|---|---|---|---|---|---|---|---|---|
| **1** | 1 | – | – | 1 | – | **LAD N10** | *(1)* | 0.020 |
| | | – | – | – | 1 | **LAD N01** | *(1)* | 0.020 |
| **4** | 1 | – | – | 2 | 2 | **LAD N22** | *(1)* | 0.050 |
| | | – | – | 4 | – | **LAD N40** | *(1)* | 0.050 |
| | | – | – | – | 4 | **LAD N04** | *(1)* | 0.050 |
| | | – | – | 3 | 1 | **LAD N31** | *(1)* | 0.050 |

*LAD T●*

*LAD R●*

### Time delay auxiliary contact blocks

| Number of contacts | Max. number of blocks per contactor<br>Clip-on mounting | Time delay<br>Type | Range<br>s | Reference | | Weight<br>kg |
|---|---|---|---|---|---|---|
| **1 N/O + 1 N/C** | 1 | On-delay | 0.1…3 *(2)* | **LAD T0** | | 0.060 |
| | | | 0.1…30 | **LAD T2** | *(1)* | 0.060 |
| | | | 10…180 | **LAD T4** | | 0.060 |
| | | | 1…30 *(3)* | **LAD S2** | | 0.060 |
| | | Off-delay | 0.1…3 *(2)* | **LAD R0** | | 0.060 |
| | | | 0.1…30 | **LAD R2** | *(1)* | 0.060 |
| | | | 10…180 | **LAD R4** | | 0.060 |

*(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.*
*(2) With extended scale from 0.1 to 0.6 s.*
*(3) With switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.*



Characteristics:
pages 5/172 and 5/173

Schemes:
page 5/181

# TeSys contactors

## Accessories for 3-pole shockproof contactors LC1 FG

*LA9 F103*

### Insulated terminal blocks

| For use with contactors | Cabling | Tightening | Set of 2 blocks | |
|---|---|---|---|---|
| | | | Set reference | Weight kg |
| **LC1 FG150 and FG185** | 1 x 16…150 mm² or 2 x 16…95 mm² | 4 mm hexagonal socket key | **LA9 F103** | 0.560 |

### Power terminal protection shrouds

| For use with contactors | Number of shrouds per set | Set reference | | Weight kg |
|---|---|---|---|---|
| **LC1 FG150 and FG185** | 6 | **LA9 F702** | *(1)* | 0.250 |
| **LC1 FG265, FG400 and FG500** | 6 | **LA9 F703** | *(1)* | 0.250 |
| **LC1 FG630** | 6 | **LA9 F704** | *(1)* | 0.250 |

*LA9 FG●●●*

### Shockproof devices (locking electromagnet) *(2)*

| Maximum energisation time at Uc | Inrush consumption | For contactors | Kit reference, to be completed by adding the voltage code *(3)* | | Weight |
|---|---|---|---|---|---|
| ms | VA | | | | kg |
| **20** | 250 | LC1 FG150 and FG185 | **LA9 FG150603●●** | *(1)* | 0.200 |
| | | LC1 FG265 | **LA9 FG265603●●** | *(1)* | 0.200 |
| | | LC1 FG400 and FG500 | **LA9 FG400603●●** | *(1)* | 0.200 |
| | | LC1 FG630 | **LA9 FG630603●●** | *(1)* | 0.200 |

*(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.*
*(2) Replacement shockproof device, supplied in kit form, comprising:*
*- 1 locking electromagnet.*
*- fixings suitable for the contactor rating.*
*(3) Control circuit voltage:*

| Volt ∼ | | 48 | 110 | 115/120 | 208 | 220 | 230/240 | 380 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|
| **LA9 FG150 to FG265** | 50/60 Hz | E | F | F | M | M | M | Q | N | N |
| **LA9 FG400 to FG630** | 50/60 Hz | – | F | F | M | M | M | Q | N | N |

# TeSys contactors

## Accessories for 3-pole shockproof contactors LC1 FG

*LA5 FG431*

### Sets of contacts

**Per pole: 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.**

| For use on contactors | Replacement for | Reference | | Weight kg |
|---|---|---|---|---|
| **LC1 FG150** | 3 poles | **LA5 FF431** | *(1)* | 0.270 |
| **LC1 FG185** | 3 poles | **LA5 FG431** | *(1)* | 0.350 |
| **LC1 FG265** | 3 poles | **LA5 FG431** | *(1)* | 0.660 |
| **LC1 FG400** | 3 poles | **LA5 F400803** | *(1)* | 2.000 |
| **LC1 FG500** | 3 poles | **LA5 F500803** | *(1)* | 2.950 |
| **LC1 FG630** | 3 poles | **LA5 F630803** | *(1)* | 6.100 |

*LA5 F40050*

### Arc chambers

| For use on contactors | Replacement for | Reference | | Weight kg |
|---|---|---|---|---|
| **LC1 FG150** | 3 poles | **LA5 F15050** | *(1)* | 0.490 |
| **LC1 FG185** | 3 poles | **LA5 F18550** | *(1)* | 0.670 |
| **LC1 FG265** | 3 poles | **LA5 F26550** | *(1)* | 0.920 |
| **LC1 FG400** | 3 poles | **LA5 F40050** | *(1)* | 1.300 |
| **LC1 FG500** | 3 poles | **LA5 F50050** | *(1)* | 1.850 |
| **LC1 FG630** | 3 poles | **LA5 F63050** | *(1)* | 3.150 |

*(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.*

# TeSys contactors

## Coils for 3-pole shockproof contactors LC1 FG

Spare or replacement parts
a.c. supply 50/60 Hz

*LX1 FF●●●*

### References

| Control circuit voltage Uc 50 Hz | Control circuit voltage Uc 60 Hz | Voltage code | Coil reference | | Weight |
|---|---|---|---|---|---|
| V | V | | | | kg |
| **Coils for contactors LC1 FG150** | | | | | |
| – | 48 | E6 | LX1 FF040 | | 0.430 |
| 48 | – | E5 | LX1 FF048 | | 0.430 |
| – | 110 | F6 | LX1 FF092 | | 0.430 |
| – | 115/120 | G6 | LX1 FF095 | (1) | 0.430 |
| 110/115 | – | F5 | LX1 FF110 | | 0.430 |
| 120 | – | FE5 | LX1 FF120 | | 0.430 |
| – | 208 | L6 | LX1 FF170 | | 0.430 |
| – | 320 | M6 | LX1 FF184 | | 0.430 |
| – | 230/240 | U6 | LX1 FF187 | | 0.430 |
| 208 | – | LE5 | LX1 FF200 | | 0.430 |
| 220/230 | – | M5 | LX1 FF220 | | 0.430 |
| 240 | – | U5 | LX1 FF240 | | 0.430 |
| – | 380 | Q6 | LX1 FF316 | | 0.430 |
| – | 415 | N6 | LX1 FF340 | | 0.430 |
| – | 440 | R6 | LX1 FF360 | | 0.430 |
| 380 | – | Q5 | LX1 FF380 | | 0.430 |
| 415/440 | – | N5 | LX1 FF415 | | 0.430 |

**Specifications**
Average consumption at 20 °C:
- inrush 50 Hz: 550 VA; 60 Hz: 660 VA,
- sealed 50 Hz: 45 VA; 60 Hz: 55 VA, cos φ = 0.32.
Operating cycles/hour (θ = 55 °C): 2400.

*LX1 FG●●●*

| | | | | | |
|---|---|---|---|---|---|
| **Coils for contactors LC1 FG185** | | | | | |
| – | 48 | E6 | LX1 FG040 | | 0.550 |
| 48 | – | E5 | LX1 FG048 | | 0.550 |
| – | 110 | F6 | LX1 FG092 | | 0.550 |
| – | 115/120 | G6 | LX1 FG095 | (1) | 0.550 |
| 110/115 | – | F5 | LX1 FG110 | | 0.550 |
| 120 | – | FE5 | LX1 FG120 | | 0.550 |
| – | 208 | L6 | LX1 FG170 | | 0.550 |
| – | 320 | M6 | LX1 FG184 | | 0.550 |
| – | 230/240 | U6 | LX1 FG187 | | 0.550 |
| 208 | – | LE5 | LX1 FG200 | | 0.550 |
| 220/230 | – | M5 | LX1 FG220 | | 0.550 |
| 240 | – | U5 | LX1 FG240 | | 0.550 |
| – | 380 | Q6 | LX1 FG316 | | 0.550 |
| – | 415 | N6 | LX1 FG340 | | 0.550 |
| – | 440 | R6 | LX1 FG360 | | 0.550 |
| 380 | – | Q5 | LX1 FG380 | | 0.550 |
| 415/440 | – | N5 | LX1 FG415 | | 0.550 |

**Specifications**
Average consumption at 20 °C:
- inrush 50 Hz: 805 VA; 60 Hz: 970 VA,
- sealed 50 Hz: 55 VA; 60 Hz: 66 VA, cos φ = 0.34.
Operating cycles/hour (θ = 55 °C): 2400.

*(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.*



Scheme :
page 5/181

# TeSys contactors

## Coils for 3-pole shockproof contactors LC1 FG

Spare or replacement parts
a.c. supply 50/60 Hz

LX1 FH●●●

LX1 FJ●●●

LX1 FK●●●

LX1 FL●●●

### References (continued)

| Control circuit voltage Uc 50 and 60 Hz | Voltage code | Coil reference | | Weight |
|---|---|---|---|---|
| V | | | | kg |
| **Coils for contactors LC1 FG265** | | | | |
| 110/120 | F7 | LX1 FH1102 | (1) | 0.740 |
| 208 | L7 | LX1 FH2002 | | 0.740 |
| 220/230 | M7 | LX1 FH2202 | | 0.740 |
| 240 | U7 | LX1 FH2402 | | 0.740 |
| 380/415 | Q7 | LX1 FH3802 | | 0.740 |

**Specifications**
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 600 to 700 VA,
- sealed 50 or 60 Hz: 8 to 10 VA, cos φ = 0.9.
Operating cycles/hour (θ = 55 °C): 2400.

| | | | | |
|---|---|---|---|---|
| **Coils for contactors LC1 FG400** | | | | |
| 110/120 | F7 | LX1 FJ110 | (1) | 1.000 |
| 208 | L7 | LX1 FJ200 | | 1.000 |
| 220/230 | M7 | LX1 FJ220 | | 1.000 |
| 230/240 | U7 | LX1 FJ240 | | 1.000 |
| 380/400 | Q7 | LX1 FJ380 | | 1.000 |
| 415/440 | N7 | LX1 FJ415 | | 1.000 |

**Specifications**
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 1000 to 1150 VA,
- sealed 50 or 60 Hz: 12 to 18 VA, cos φ = 0.9.
Operating cycles/hour (θ = 55 °C): 2400.

| | | | | |
|---|---|---|---|---|
| **Coils for contactors LC1 FG500** | | | | |
| 110/120 | F7 | LX1 FK110 | (1) | 1.150 |
| 208 | L7 | LX1 FK200 | | 1.150 |
| 220/230 | M7 | LX1 FK220 | | 1.150 |
| 230/240 | U7 | LX1 FK240 | | 1.150 |
| 380/400 | Q7 | LX1 FK380 | | 1.150 |
| 415/440 | N7 | LX1 FK415 | | 1.150 |

**Specifications**
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 1050 to 1150 VA,
- sealed 50 or 60 Hz: 16 to 20 VA, cos φ = 0.9.
Operating cycles/hour (θ = 55 °C): 2400.

| | | | | |
|---|---|---|---|---|
| **Coils for contactors LC1 FG630** | | | | |
| 110/120 | F7 | LX1 FL110 | (1) | 1.500 |
| 208 | L7 | LX1 FL200 | | 1.500 |
| 220/230 | M7 | LX1 FL220 | | 1.500 |
| 380/400 | Q7 | LX1 FL380 | | 1.500 |
| 415/440 | N7 | LX1 FL415 | | 1.500 |

**Specifications**
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 1500 to 1730 VA,
- sealed 50 or 60 Hz: 20 to 25 VA, cos φ = 0.9.
Operating cycles/hour (θ = 55 °C): 1200.

*(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.*



Scheme :
page 5/181

## Dimensions

### LC1 FG150, FG185 and FG265

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 600…1000 V |
|---|---|---|
| FG150 | 10 | 15 |
| FG185 | 10 | 15 |
| FG265 | 10 | 15 |

*(1) Power terminal protection shroud (see page 5/176).*

| LC1 | a | b | b1 | b2 | c | f | G | G1 | J | J1 | L | M | P | Q | Q1 | S | S1 | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FG150 | 181 | 170 | 137 | 301 | 180 | 131 | 106 | 80 | 106 | 120 | 116 | 150 | 40 | 26 | 57.5 | 20 | 34 | 44 | 13.5 |
| FG185 | 183.5 | 174 | 137 | 305 | 190 | 130 | 111 | 80 | 106 | 120 | 122.5 | 154 | 40 | 29 | 59.5 | 20 | 34 | 44 | 13.5 |
| FG265 | 217.5 | 203 | 145 | 375 | 222 | 147 | 142 | 96 | 106 | 120 | 150 | 178 | 48 | 39 | 66.5 | 25 | 44.5 | 38 | 21.5 |

f = minimum distance required for coil removal.

5

### LC1 FG400 and FG500

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 600…1000 V |
|---|---|---|
| FG400 | 15 | 20 |
| FG500 | 15 | 20 |

*(1) Power terminal protection shroud (see page 5/176).*

| LC1 | a | b | b2 | c | f | G supplied | G min. | G max. | G1 supplied | G1 min. | G1 max. | J | L | M | P | Q | Q1 | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FG400 | 237 | 206 | 375 | 234 | 146 | 80 | 66 | 102 | 223 | 156 | 192 | 19.5 | 160 | 181 | 48 | 75 | 74 | 25 |
| FG500 | 257 | 238 | 400 | 247 | 150 | 80 | 66 | 120 | 223 | 156 | 210 | 39.5 | 181 | 208 | 55 | 78 | 77 | 30 |

f = minimum distance required for coil removal.

## Dimensions (continued)

### LC1 FG630

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 690…1000 V |
|---|---|---|
| FG630 | 20 | 30 |

*(1) Power terminal protection shroud (see page 5/176).*
*(2) Minimum distance required for coil removal.*

## Schemes

### Contactors LC1-FG150 to FG630

### Add-on blocks

#### Instantaneous auxiliary contacts

**1 N/O LAD N10**

**1 N/C LAD N01**

**2 N/O + 2 N/C LAD N22**

**4 N/O LAD N40**

**4 N/C LAD N04**

**3 N/O + 1 N/C LAD N31**

#### Time delay auxiliary contacts

**On-delay 1 N/O + 1 N/C LAD T●**

**Off-delay 1 N/O + 1 N/C LAD R●**

### Coils ∿

**LX1 FF, FG, FH, FJ, FK and FL**

# TeSys contactors
## TeSys LC1 B contactors

| Environment | | | | | | |
|---|---|---|---|---|---|---|
| **Contactor type** | | | **LC1 BL** | **LC1 BM** | **LC1 BP** | **LC1 BR** |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60158-1/IEC 60947-4 | **V** | 1000 | 1000 | 1000 | 1000 |
| | Conforming to VDE 0110 gr C | **V** | 1500 | 1500 | 1500 | 1500 |
| **Conforming to standards** | | | IEC 60158-1, IEC 60947-4, NF C 63-110,VDE 0660, BS 5424 | | | |
| **Product certifications** | | | CSA, BV, RINA | | | |
| **Protective treatment** | Standard version | | "TC" | | | |
| | Special version | | "TH" | | | |
| **Ambient air temperature around the device** (for operation at Uc) | Storage | **°C** | - 60…+ 80 | | | |
| | Operation | **°C** | - 5…+ 55 | | | |
| | Permissible | **°C** | - 50…+ 60 | | | |
| **Maximum operating altitude** | Without derating | **m** | 3000 | | | |
| **Operating positions** | Without derating | | ± 30° occasional, in relation to normal vertical mounting plane | | | |

| Pole characteristics | | | | | | |
|---|---|---|---|---|---|---|
| **Number of poles** | | | 1, 2, 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 |
| **Rated operational current** (Ie) (Ue ≤ 440 V) | In AC-3, θ ≤ 55 °C | **A** | 750 | 1000 | 1500 | 1800 |
| | In AC-1, θ ≤ 40 °C | **A** | 800 | 1250 | 2000 | 2750 |
| **Rated operational voltage** (Ue) | Up to | **V** | 1000 | | | |
| **Frequency limits** (sine wave) | Without derating | **Hz** | 50/60 | | | |
| | Derating coefficient | | 100 Hz: 0.9 - 150 Hz: 0.8 - 250 Hz: 0.7 - 400 Hz: 0.5 | | | |
| **Maximum thermal current** (Ith) | θ ≤ 40 °C | **A** | 800 | 1250 | 2000 | 2750 |
| **Rated making capacity** | I rms conforming to IEC 60158-1 and 60947-4 | **A** | 10 000 | 10 000 | 15 000 | 18 000 |
| **Rated breaking capacity** | I rms conforming to IEC 60158-1 and 60947-4 — up to 440 V | **A** | 10 000 | 10 000 | 15 000 | 18 000 |
| | 500 V | **A** | 9000 | 9000 | 12 000 | 15 000 |
| | 660-690 V | **A** | 8000 | 8000 | 9000 | 11 000 |
| | 1000 V | **A** | 4000 | 4000 | 5000 | 6000 |
| **Permissible short time rating** From cold state, with no current flowing for previous 60 minutes at θ ≤ 40 °C | For 1 s | **A** | 9600 | 9600 | 12 000 | 15 000 |
| | For 5 s | **A** | 9600 | 9600 | 12 000 | 15 000 |
| | For 10 s | **A** | 7000 | 8000 | 9600 | 12 000 |
| | For 30 s | **A** | 4800 | 5200 | 6400 | 8000 |
| | For 1 min. | **A** | 3500 | 3800 | 5200 | 6300 |
| | For 3 min. | **A** | 2100 | 2400 | 3600 | 4400 |
| | For 10 min. | **A** | 1200 | 1800 | 2800 | 3600 |
| **Short-circuit protection by fuses** U ≤ 440 V | Motor circuit (type aM) | **A** | 800 | 1200 | 2 x 800 *(1)* | 2 x 1000 *(1)* |
| | With thermal overload relay (type gl) | **A** | 1000 | 1500 | 2 x 1000 *(1)* | 2 x 1200 *(1)* |
| | gl fuses | **A** | 800 | 1200 | 2 x 1000 *(1)* | 2 x 1200 *(1)* |
| **Average impedance per pole** | At Ith and 50 Hz | **mΩ** | 0.18 | 0.18 | 0.13 | 0.09 |
| **Power dissipated per pole** | AC-3 | **W** | 88 | 180 | 290 | 360 |
| | AC-1 | **W** | 115 | 280 | 520 | 680 |
| **Connection** | Number of bars | | 2 | 2 | 3 | 4 |
| | Bar | **mm** | 50 x 5 | 80 x 5 | 100 x5 | 100 x 5 |
| **Bolt diameter** | | **mm** | 4 x Ø 8 | 4 x Ø 10 | 4 x Ø 10 | 4 x Ø 10 |
| **Tightening torque** | Power circuit connections | **N.m** | 21 | 35 | 35 | 35 |

*(1) Fuses must not be connected in parallel unless specified by the manufacturer.*



Selection : pages 5/194 to 5/217
References : pages 5/184 to 5/186
Dimensions and schemes : pages 5/192 and 5/193



Schneider Electric

## Control circuit characteristics

| Contactor type | | | | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|
| **Rated control voltage** | 50/60 Hz | | **V** | 110…500 | 110…500 | 110…500 | 110…500 |
| | ⎓ 1,2 or 3-pole contactors | | **V** | 48…500 | 48…500 | 48…500 | 48…500 |
| | ⎓ 4-pole contactors | | **V** | 48…500 | 48…500 | 48…500 | 60…500 |
| **Voltage limits** | Operation | | **V** | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Ucw |
| | Drop-out | | **V** | 0.30…0.50 Uc | 0.30…0.50 Uc | 0.35…0.50 Uc | 0.40…0.50 Uc |
| **Maximum consumption** (coil + economy resistor) | ∼ | Number of poles: 1 | **VA** | Inrush: 620 - sealed: 10 | | | |
| | | Number of poles: 2 | **VA** | Inrush: 1000 - sealed: 20 | | | |
| | | Number of poles: 3 | **VA** | Inrush: 1300 - sealed: 31 | | | |
| | | Number of poles: 4 | **VA** | Inrush: 1600 - sealed: 47 | | | |
| | ⎓ *(1)* | Number of poles: 1 | **W** | Inrush: 520 - sealed: 10 | | | |
| | | Number of poles: 2 | **W** | Inrush: 800 - sealed: 20 | | | |
| | | Number of poles: 3 | **W** | Inrush: 1100 - sealed: 31 | | | |
| | | Number of poles: 4 | **W** | Inrush: 1400 - sealed: 47 | | | |
| **Operating time** *(2)* average at Uc (in milliseconds) | "C" | | **ms** | 100…150 | 100…150 | 100…150 | 100…150 |
| | "O" breaking on ∼ side | | **ms** | 50…100 | 50…100 | 50…100 | 50…100 |
| | "O" breaking on ⎓ side | | **ms** | 20…40 | 20…40 | 20…40 | 20…40 |
| **Mechanical durability** (at Uc) | In millions of operating cycles | | | 1.2 | 1.2 | 1.2 | 1.2 |
| **Maximum operating rate in mechanical operating cycles** | Ambient temperature ≤ 55 °C | | **Op. cycs/h** | 120 | 120 | 120 | 120 |

## Characteristics of instantaneous auxiliary contacts ZC4 GM●

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rated thermal current** | | | **A** | 20 | | | | | | | |
| **Rated insulation voltage** | Conforming to IEC 60947-1 | | **V** | 660 | | | | | | | |
| | Conforming to VDE, group C | | **V** | 750 | | | | | | | |
| **Short-circuit protection** gl type cartridge fuses | Conforming to IEC 60947-1 and VDE 0660 | | **A** | 20 | | | | | | | |
| **Operational power** | | | | ∼ supply | | | | | ⎓ supply | | |
| | | | **V** | 110/127 | 220 | 380 | 415/440 | 500 | 110 | 220 | 440 | 500 |
| | 1 million operating cycles | | **VA/W** | 2000 | 4000 | 4000 | 4000 | 3500 | 250 | 250 | 230 | 200 |
| **Making and breaking capacity** | | | **VA/W** | 14 000 | 23 000 | 35 000 | 45 000 | 35 000 | 1600 | 800 | 400 | 360 |
| **Cabling** | With cable end | | **mm²** | 1 or 2 x 4 mm² conductors | | | | | | | |
| | Without cable end | | **mm²** | 1 or 2 x 6 mm² conductors | | | | | | | |

*(1) The inrush and sealed power values of d.c. electromagnets often require the use of an intermediate relay for control.*
*(2) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*



Selection : pages 5/194 to 5/217
References : pages 5/184 to 5/186
Dimensions and schemes : pages 5/192 and 5/193

# TeSys contactors
## TeSys LC1 B contactors

LC1 BP33

### Contactors for motor control in category AC-3, from 750 to 1800 A (∿ or ⎓)

**3-pole contactors**

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | Rated operational current in AC-3 440V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | | | | |
| kW | kW | kW | kW | kW | kW | kW | A | | | | kg |
| 220 | 400 | 425 | 450 | 500 | 560 | 530 | **750** | 2 | 2 | **LC1 BL33●22** | 58.000 |
| | | | | | | | | 3 | 1 | **LC1 BL33●31** | 58.000 |
| | | | | | | | | 1 | 3 | **LC1 BL33●13** | 58.000 |
| | | | | | | | | 4 | – | **LC1 BL33●40** | 58.000 |
| 280 | 500 | 530 | 560 | 600 | 670 | 530 | **1000** | 2 | 2 | **LC1 BM33●22** | 57.000 |
| | | | | | | | | 3 | 1 | **LC1 BM33●31** | 57.000 |
| | | | | | | | | 1 | 3 | **LC1 BM33●13** | 57.000 |
| | | | | | | | | 4 | – | **LC1 BM33●40** | 57.000 |
| 425 | 750 | 800 | 800 | 700 | 750 | 670 | **1500** | 2 | 2 | **LC1 BP33●22** | 94.000 |
| | | | | | | | | 3 | 1 | **LC1 BP33●31** | 94.000 |
| | | | | | | | | 1 | 3 | **LC1 BP33●13** | 94.000 |
| | | | | | | | | 4 | – | **LC1 BP33●40** | 94.000 |
| 500 | 900 | 900 | 900 | 900 | 900 | 750 | **1800** | 2 | 2 | **LC1 BR33●22** | 129.000 |
| | | | | | | | | 3 | 1 | **LC1 BR33●31** | 129.000 |
| | | | | | | | | 1 | 3 | **LC1 BR33●13** | 129.000 |
| | | | | | | | | 4 | – | **LC1 BR33●40** | 129.000 |

election: pages 5/194 to 5/217

### Contactors for control in category AC-1, from 800 to 2750 A (∿ or ⎓)

**Single, 2, 3 or 4-pole contactors**

| Maximum operational current in AC-1 (θ ≤ 40 °C) | Number of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) | Weight |
|---|---|---|---|---|---|
| A | | | | | kg |
| **800** | 1 | 2 | 2 | **LC1 BL31●22** | 32.000 |
| | | 3 | 1 | **LC1 BL31●31** | 32.000 |
| | | 1 | 3 | **LC1 BL31●13** | 32.000 |
| | | 4 | – | **LC1 BL31●40** | 32.000 |
| | 2 | 2 | 2 | **LC1 BL32●22** | 45.000 |
| | | 3 | 1 | **LC1 BL32●31** | 45.000 |
| | | 1 | 3 | **LC1 BL32●13** | 45.000 |
| | | 4 | – | **LC1 BL32●40** | 45.000 |
| | 3 | 2 | 2 | **LC1 BL33●22** | 58.000 |
| | | 3 | 1 | **LC1 BL33●31** | 58.000 |
| | | 1 | 3 | **LC1 BL33●13** | 58.000 |
| | | 4 | – | **LC1 BL33●40** | 58.000 |
| | 4 | 2 | 2 | **LC1 BL34●22** | 72.000 |
| | | 3 | 1 | **LC1 BL34●31** | 72.000 |
| | | 1 | 3 | **LC1 BL34●13** | 72.000 |
| | | 4 | – | **LC1 BL34●40** | 72.000 |

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 48 | 110 | 120 | 125 | 127 | 220 | 230 | 240 | 380 | 400 | 415 | 440 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ∿ 50…400 Hz | – | F | K | – | G | M | P | U | Q | V | N | R | S |
| ⎓ | ED | FD | – | GD | – | MD | – | UD | – | – | – | RD | SD |

*For voltages other than those indicated above, replace the p in the reference with the the operational voltage (3 figures) and the type of current (2 letters: **AC** for a.c. supply and **DC** for d.c. supply). Example: 82 V d.c., the reference becomes LC1 BP33**082DC**22. For coil characteristics, see pages 5/188 to 5/191.*

522612

LC1 BP33

## Contactors for control in category AC-1, from 800 to 2750 A (∿ or ⎓) *(continued)*

### Single, 2, 3 or 4-pole contactors

| Maximum operational current in AC-1 (θ ≤ 40 °C) | Number of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code *(1)* | Weight |
|---|---|---|---|---|---|
| A | | | | | kg |
| **1250** | 1 | 2 | 2 | **LC1 BM31●22** | 31.000 |
| | | 3 | 1 | **LC1 BM31●31** | 31.000 |
| | | 1 | 3 | **LC1 BM31●13** | 31.000 |
| | | 4 | – | **LC1 BM31●40** | 31.000 |
| | 2 | 2 | 2 | **LC1 BM32●22** | 44.000 |
| | | 3 | 1 | **LC1 BM32●31** | 44.000 |
| | | 1 | 3 | **LC1 BM32●13** | 44.000 |
| | | 4 | – | **LC1 BM32●40** | 44.000 |
| | 3 | 2 | 2 | **LC1 BM33●22** | 57.000 |
| | | 3 | 1 | **LC1 BM33●31** | 57.000 |
| | | 1 | 3 | **LC1 BM33●13** | 57.000 |
| | | 4 | – | **LC1 BM33●40** | 57.000 |
| | 4 | 2 | 2 | **LC1 BM34●22** | 71.000 |
| | | 3 | 1 | **LC1 BM34●31** | 71.000 |
| | | 1 | 3 | **LC1 BM34●13** | 71.000 |
| | | 4 | – | **LC1 BM34●40** | 71.000 |
| **2000** | 1 | 2 | 2 | **LC1 BP31●22** | 41.000 |
| | | 3 | 1 | **LC1 BP31●31** | 41.000 |
| | | 1 | 3 | **LC1 BP31●13** | 41.000 |
| | | 4 | – | **LC1 BP31●40** | 41.000 |
| | 2 | 2 | 2 | **LC1 BP32●22** | 65.000 |
| | | 3 | 1 | **LC1 BP32●31** | 65.000 |
| | | 1 | 3 | **LC1 BP32●13** | 65.000 |
| | | 4 | – | **LC1 BP32●40** | 65.000 |
| | 3 | 2 | 2 | **LC1 BP33●22** | 94.000 |
| | | 3 | 1 | **LC1 BP33●31** | 94.000 |
| | | 1 | 3 | **LC1 BP33●13** | 94.000 |
| | | 4 | – | **LC1 BP33●40** | 94.000 |
| | 4 | 2 | 2 | **LC1 BP34●22** | 120.000 |
| | | 3 | 1 | **LC1 BP34●31** | 120.000 |
| | | 1 | 3 | **LC1 BP34●13** | 120.000 |
| | | 4 | – | **LC1 BP34●40** | 120.000 |
| **2750** | 1 | 2 | 2 | **LC1 BR31●22** | 52.000 |
| | | 3 | 1 | **LC1 BR31●31** | 52.000 |
| | | 1 | 3 | **LC1 BR31●13** | 52.000 |
| | | 4 | – | **LC1 BR31●40** | 52.000 |
| | 2 | 2 | 2 | **LC1 BR32●22** | 85.000 |
| | | 3 | 1 | **LC1 BR32●31** | 85.000 |
| | | 1 | 3 | **LC1 BR32●13** | 85.000 |
| | | 4 | – | **LC1 BR32●40** | 85.000 |
| | 3 | 2 | 2 | **LC1 BR33●22** | 129.000 |
| | | 3 | 1 | **LC1 BR33●31** | 129.000 |
| | | 1 | 3 | **LC1 BR33●13** | 129.000 |
| | | 4 | – | **LC1 BR33●40** | 129.000 |
| | 4 | 2 | 2 | **LC1 BR34●22** | 160.000 |
| | | 3 | 1 | **LC1 BR34●31** | 160.000 |
| | | 1 | 3 | **LC1 BR34●13** | 160.000 |
| | | 4 | – | **LC1 BR34●40** | 160.000 |

*(1) See previous page.*



Selection:
pages 5/194 to 5/217

Characteristics:
pages 5/182 and 5/183

Dimensions and schemes:
pages 5/192 and 5/193

# TeSys contactors

## TeSys LC1 B contactors

### Accessories and spare parts

ZC4 GM1

PA1 LB80
(PA1 LB76 + PA1 LB75)

PA1 LB89

PA1 LB50

EZ2 LB0601

## Spare parts

| Description | For contactor | Composition | Reference | Weight kg |
|---|---|---|---|---|
| **Instantaneous auxiliary contact blocks** | LC1 B | 1 N/O | **ZC4 GM1** | 0.030 |
| | | 1 N/C | **ZC4 GM2** | 0.030 |

| Description | For contactor | Number of sets required per contactor pole | Set reference | Weight kg |
|---|---|---|---|---|
| **Set of contacts** (1 moving contact, 1 fixed contact) | LC1 BL | 1 | **PA1 LB80** | 0.420 |
| | LC1 BM | 1 | **PA1 LB80** | 0.420 |
| | LC1 BP | 2 | **PA1 LB80** | 0.420 |
| | LC1 BR | 3 | **PA1 LB80** | 0.420 |

| Description | For contactor | Reference | Weight kg |
|---|---|---|---|
| **Moving contact only** (for 1 finger) | LC1 B | **PA1 LB75** | 0.220 |
| **Fixed contact only** (for 1 finger) | LC1 B | **PA1 LB76** | 0.200 |
| **Blow-out horn only** (for 1 finger) | LC1 B | **PA1 LB89** | 0.120 |
| **Arc chamber** (for 1 contactor pole) | LC1 BL | **PA1 LB50** | 3.700 |
| | LC1 BM | **PA1 LB50** | 3.700 |
| | LC1 BP | **PA1 PB50** | 6.200 |
| | LC1 BR | **PA1 RB50** | 8.500 |

## Mounting accessories

| Description | For contactor | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|
| **Bar support bracket** for mounting on 120 or 150 mm centres | LC1 BL to BR | 2 | **LA9 B103** | 1.620 |

## Assembly of two vertically mounted contactors by the customer

| Description | For contactor | Reference | Weight kg |
|---|---|---|---|
| **Mechanical interlock and locking device components** | LC1 B | **EZ2 LB0601** | 1.280 |

### Specifications

- Positive mechanical interlock between two vertically mounted contactors of the same or different ratings.
- Connecting rod with cranks mounted on the right-hand, pole side.
- Vertical fixing centres of the two contactors: 600 mm.

| Description | Specification | Height mm | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|
| **Notched mounting rails** used as uprights and as equipment support | 2 mm steel, with zinc chromate treatment | 1650 | 4 | **AM1 EC165** | 2.460 |
| | | 1850 | 4 | **AM1 EC185** | 2.760 |
| | | 2000 | 4 | **AM1 EC200** | 2.980 |
| **1/4 turn sliding clip nut and corresponding screw for assembly of rails AM1 EC** | M8 | – | 10 | **AF1 CD081** | 0.020 |
| | M8 x 18 | – | 10 | **AF1 VC820** | 0.024 |

Selection :
pages 5/194 to 5/217

Characteristics :
pages 5/182 and 5/183

Dimensions and schemes :
pages 5/192 and 5/193

## Electromagnet

### Electromagnet EB5 KB50

### Adjustment of pick-up travel and pull-in travel

## Poles

### Complete pole

### N/O pole

## ⎓ or ∿ supply adjustment characteristics with economy resistor (and rectifier on ∿)

| Contactor type | | | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|
| **Electromagnet** | | | EB5 KB50 | EB5 KB50 | EB5 KB50 | EB5 KB50 |
| | Pick-up travel (**E**) | **mm** | 30 | 30 | 30 | 30 |
| | Pull-in travel (**e**) | **mm** | 10 | 10 | 10 | 10 |
| **Coil** | | | WB1 KB●●● | WB1 KB●●● | WB1 KB●●● | WB1 KB●●● |
| | Pull-in voltage | **V** | 0.75 Uc | 0.75 Uc | 0.75 Uc | 0.75 Uc |
| | Drop-out voltage | **V** | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc |
| **N/O pole** Adjustment of application force (**F**) on the contact per pole according to contactor composition | 1-pole | **daN** | 30 | 30 | 30 *(1)* | 30 *(2)* |
| | 2-pole | **daN** | 30 | 30 | 30 *(1)* | 30 *(2)* |
| | 3-pole | **daN** | 30 | 30 | 30 *(1)* | 30 *(2)* |
| | 4-pole | **daN** | 30 | 30 | 30 *(1)* | 30 *(2)* |

*(1) Each pole has 2 contacts; the force must be applied evenly to each of these contacts.*
*(2) Each pole has 3 contacts; the force must be applied evenly to each of these contacts.*

Selection : pages 5/194 to 5/217
References : pages 5/184 to 5/186
Dimensions and schemes : pages 5/192 and 5/193

# TeSys contactors

## TeSys LC1 B contactors

### Replacement coils and accessories for single-pole contactors

## References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
- 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
- 1 individual rectifier (to be wired),
- 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

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*WB1 KB●●●*

| Operating range min-max *(1)* | | Coil | | Economy resistor | | | | Rectifier (for ∿ only) | Coil | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| d.c. | a.c. | Resistance at 20 °C ± 10 % | I inrush ± 10 % at Un max | Resistor: Unit reference | Resistor: Total resistance | Contact: Qty | Contact: Reference | Reference | Reference | |
| V | V | Ω | A | | Ω | | | | | kg |
| 47-51 | – | 5.1 | 10.3 | **DR2 SC0270** | 270 | 1 | **ZC4 GM2** | – | **WB1 KB155** | 1.120 |
| 52-56 | – | 5.9 | 9.5 | **DR2 SC0330** | 330 | 1 | **ZC4 GM2** | – | **WB1 KB132** | 1.120 |
| 57-64 | – | 7.3 | 8.9 | **DR2 SC0390** | 390 | 1 | **ZC4 GM2** | – | **WB1 KB123** | 1.120 |
| 65-68 | – | 9.5 | 7.1 | **DR2 SC0560** | 560 | 1 | **ZC4 GM2** | – | **WB1 KB133** | 1.120 |
| 69-79 | – | 11.6 | 6.9 | **DR2 SC0680** | 680 | 1 | **ZC4 GM2** | – | **WB1 KB121** | 1.120 |
| 80-87 | – | 16.2 | 5.3 | **DR2 SC0820** | 820 | 1 | **ZC4 GM2** | – | **WB1 KB130** | 1.120 |
| 88-94 | – | 19.9 | 4.7 | **DR2 SC1000** | 1000 | 1 | **ZC4 GM2** | – | **WB1 KB140** | 1.120 |
| 95-108 | 110-125 | 25.5 | 4.3 | **DR2 SC1200** | 1200 | 1 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB134** | 1.120 |
| 109-136 | 126-155 | 33.1 | 4.2 | **DR2 SC1800** | 1800 | 1 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB124** | 1.120 |
| 137-151 | 156-173 | 50.9 | 3 | **DR2 SC2700** | 2700 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB122** | 1.120 |
| 152-166 | 174-191 | 61.36 | 2.7 | **DR2 SC3300** | 3300 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB135** | 1.120 |
| 167-189 | 192-216 | 78.4 | 2.4 | **DR2 SC3900** | 3900 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB136** | 1.120 |
| 190-221 | 217-256 | 94.8 | 2.3 | **DR2 SC4700** | 4700 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB139** | 1.120 |
| 222-243 | 257-280 | 123.9 | 1.9 | **DR2 SC6800** | 6800 | 1 | **LC1 DT20 LDS135** | **DR5 TE1U** | **WB1 KB125** | 1.120 |
| 244-267 | 281-307 | 159.9 | 1.7 | **DR2 SC8200** | 4700 + 3300 | 1 | **LC1 DT20 LDS135** | **DR5 TE1S** | **WB1 KB137** | 1.120 |
| 268-318 | 308-365 | 199.6 | 1.6 | **DR2 SC1001** | 5600 + 4700 | 1 | **LC1 DT20 UDS135** | **DR5 TE1S** | **WB1 KB126** | 1.120 |
| 319-405 | 366-463 | 247.4 | 1.6 | **DR2 SC1201** | 6800 + 5600 | 1 | **LC1 DT20 TDS135** | **DR5 TE1S** | **WB1 KB138** | 1.120 |
| 406-446 | 464-500 | 382 | 1.1 *(2)* | **DR2 SC1001** | 20 000 | 1 | **LC1 DT20 VDS135** | **DR5 TE1S** | **WB1 KB127** | 1.120 |
| 447-500 | – | 506.7 | 1 *(3)* | **DR2 SC1201** | 24 000 | 1 | **LC1 DT20 RDS135** | – | **WB1 KB128** | 1.120 |

### Specifications

■ Average coil consumption (low sealed consumption):
- d.c.: inrush 380…520 W, sealed 0.15…0.20 W
- a.c. (with rectifier): inrush 450…620 VA, sealed 0.15…0.20 VA

■ Time constant when sealed 25 ms
■ Economy resistor consumption: 7…10 W
■ Operating cycles/hour at θ ≤ 55 °C: ≤ 120
■ Mechanical durability at Uc: 1.2 million operating cycles
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ≤ 7.

*(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.*
*(2) 2 resistors in series: 2 x 10 000 Ω.*
*(3) 2 resistors in series: 2 x 12,000 Ω.*

# TeSys contactors

## TeSys LC1 B contactors

### Replacement coils and accessories for 2-pole contactors

## References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
- 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
- 1 individual rectifier (to be wired),
- 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

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*WB1 KB●●●*

| Operating range min-max *(1)* | | Coil | | Economy resistor | | | | Rectifier (for ∿ only) | Coil | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| d.c. | a.c. | Resistance at 20 °C ± 10 % | I inrush ± 10 % at Un max | Resistors (2 in series) Unit reference | Total resistance | Contact Qty | Reference | Reference | Reference | |
| V | V | Ω | A | | Ω | | | | | kg |
| 48-51 | – | 3.22 | 15.8 | **DR2 SC0068** | 2x68 | 1 | **ZC4 GM2** | – | **WB1 KB141** | 1.120 |
| 52-56 | – | 4.04 | 13.8 | **DR2 SC0082**<br>**DR2 SC0100** | 82<br>+ 100 | 1 | **ZC4 GM2** | – | **WB1 KB142** | 1.120 |
| 57-62 | – | 4.96 | 12.5 | **DR2 SC0100**<br>**DR2 SC0120** | 100<br>+ 120 | 1 | **ZC4 GM2** | – | **WB1 KB155** | 1.120 |
| 63-68 | – | 5.86 | 11.6 | **DR2 SC0120** | 2x120 | 1 | **ZC4 GM2** | – | **WB1 KB132** | 1.120 |
| 69-79 | – | 7.2 | 11 | **DR2 SC0150** | 2 x 150 | 1 | **ZC4 GM2** | – | **WB1 KB123** | 1.120 |
| 80-85 | – | 9.6 | 8.8 | **DR2 SC0180**<br>**DR2 SC0220** | 180<br>+ 220 | 1 | **ZC4 GM2** | – | **WB1 KB133** | 1.120 |
| 86-98 | 99-113 | 11.4 | 8.6 | **DR2 SC0220**<br>**DR2 SC0270** | 220<br>+ 270 | 1 | **ZC4 GM2** | – | **WB1 KB121** | 1.120 |
| 99-108 | 114-125 | 16.3 | 6.6 | **DR2 SC0330** | 2x330 | 1 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB130** | 1.120 |
| 109-119 | 126-136 | 19.7 | 6 | **DR2 SC0390** | 2x390 | 1 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB140** | 1.120 |
| 120-136 | 137-156 | 25.2 | 5.4 | **DR2 SC0470** | 2x470 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB134** | 1.120 |
| 137-173 | 157-196 | 32.5 | 5.3 | **DR2 SC0680** | 2x680 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB124** | 1.120 |
| 174-191 | 197-216 | 49.7 | 3.8 | **DR2 SC1000** | 2x1000 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB122** | 1.120 |
| 192-210 | 217-238 | 61 | 3.4 | **DR2 SC1200** | 2x1200 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB135** | 1.120 |
| 211-238 | 239-272 | 77.2 | 3 | **DR2 SC1500**<br>**DR2 SC1800** | 1500<br>+ 1800 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB136** | 1.120 |
| 239-279 | 273-318 | 94 | 3 | **DR2 SC1800**<br>**DR2 SC2200** | 1800<br>+ 2200 | 1 | **LP1 DT20 LDS135** | **DR5 TE1S** | **WB1 KB139** | 1.120 |
| 280-310 | 319-359 | 128 | 2.4 | **DR2 SC2700** | 2x2700 | 1 | **LP1 DT20 UDS135** | **DR5 TE1S** | **WB1 KB125** | 1.120 |
| 311-341 | 360-387 | 160 | 2.1 | **DR2 SC3300** | 2x3300 | 1 | **LP1 DT20 TDS135** | **DR5 TE1S** | **WB1 KB137** | 1.120 |
| 342-399 | 388-452 | 197 | 2 | **DR2 SC3900** | 2x3900 | 1 | **LP1 DT20 TDS135** | **DR5 TE1S** | **WB1 KB126** | 1.120 |
| 400-500 | 453-500 | 257 | 1.9 | **DR2 SC4700**<br>**DR2 SC5600** | 4700<br>+ 5600 | 1 | **LP1 DT20 VDS135** | **DR5 TE1S** | **WB1 KB138** | 1.120 |

## Specifications

■ Average coil consumption (low sealed consumption):
- d.c.: inrush 600…800 W, sealed 0.35…0.5 W
- a.c. (with rectifier): inrush 720…1000 VA, sealed 0.35…0.5 VA

■ Time constant when sealed 25 ms
■ Economy resistor consumption: 15…20 W
■ Operating cycles/hour at θ ⩽ 55 °C: ⩽ 120
■ Mechanical durability at Uc: 1.2 million operating cycles
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ⩽ 7.

*(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.*

# TeSys contactors

## TeSys LC1 B contactors

### Replacement coils and accessories for 3-pole contactors

## References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
- 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
- 1 individual rectifier (to be wired),
- 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

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*WB1 KB●●●*

| Operating range min-max *(1)* | | Coil | | Economy resistor | | | | Rectifier (for ∿ only) | Coil | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| d.c. | a.c. | Resistance at 20 °C ± 10 % | I inrush ± 10 % at Un max | Resistors (2 in parallel or in series) Unit reference | Total resistance | Contact Qty | Contact Reference | Reference | Reference | |
| V | V | Ω | A | | Ω | | | | | kg |
| 47-50 | – | 1.85 | 27 | **DR2 SC0150** | 2x150// | 1 | **ZC4 GM2** | – | **WB1 KB154** | 1.120 |
| 51-55 | – | 2.35 | 23.5 | **DR2 SC0180** | 2x180// | 1 | **ZC4 GM2** | – | **WB1 KB153** | 1.120 |
| 56-60 | – | 3.22 | 18.5 | **DR2 SC0220** | 2x220// | 1 | **ZC4 GM2** | – | **WB1 KB141** | 1.120 |
| 61-66 | – | 4.04 | 16 | **DR2 SC0270** | 2X270// | 1 | **ZC4 GM2** | – | **WB1 KB142** | 1.120 |
| 67-72 | – | 4.96 | 14.5 | **DR2 SC0330** | 2x330// | 1 | **ZC4 GM2** | – | **WB1 KB155** | 1.120 |
| 73-79 | – | 5.86 | 13.5 | **DR2 SC0100** | 2x100 | 1 | **ZC4 GM2** | – | **WB1 KB132** | 1.120 |
| 80-92 | – | 7.2 | 12.8 | **DR2 SC0120** | 2x120 | 1 | **ZC4 GM2** | – | **WB1 KB123** | 1.120 |
| 93-98 | 108-113 | 9.6 | 10.2 | **DR2 SC0150**<br>**DR2 SC0180** | 150<br>+ 180 | 1 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB133** | 1.120 |
| 99-114 | 114-132 | 11.4 | 10 | **DR2 SC0180**<br>**DR2 SC0220** | 180<br>+ 220 | 1 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB121** | 1.120 |
| 115-126 | 133-145 | 16.3 | 7.7 | **DR2 SC0270** | 2x270 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB130** | 1.120 |
| 127-139 | 146-160 | 11.7 | 7 | **DR2 SC0330** | 2x330 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB140** | 1.120 |
| 140-159 | 161-181 | 25.2 | 6.3 | **DR2 SC0390**<br>**DR2 SC0470** | 390<br>+ 470 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB134** | 1.120 |
| 160-201 | 182-228 | 32.2 | 6.2 | **DR2 SC0560** | 2x560 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB124** | 1.120 |
| 202-222 | 229-255 | 49.7 | 4.5 | **DR2 SC0820** | 2x820 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB122** | 1.120 |
| 223-246 | 256-282 | 61 | 4 | **DR2 SC1000** | 2x1000 | 1 | **LC1 DT20 LDS135** | **DR5 TE1S** | **WB1 KB135** | 1.120 |
| 247-277 | 283-316 | 77.2 | 3.6 | **DR2 SC1200** | 2x1200 | 1 | **LC1 DT20 LDS135** | **DR5 TE1S** | **WB1 KB136** | 1.120 |
| 278-327 | 317-372 | 94 | 3.5 | **DR2 SC1500** | 2x1500 | 1 | **LC1 DT20 UDS135** | **DR5 TE1S** | **WB1 KB139** | 1.120 |
| 328-360 | 373-408 | 128 | 2.8 | **DR2 SC1500** | 3x1500 | 1 | **LC1 DT20 TDS135** | **DR5 TE1S** | **WB1 KB125** | 1.120 |
| 361-399 | 409-452 | 160 | 2.5 | **DR2 SC1800** | 3x1800 | 1 | **LC1 DT20 VDS135** | **DR5 TE1S** | **WB1 KB137** | 1.120 |
| 400-469 | 453-500 | 197 | 2.4 | **DR2 SC2200** | 3x2200 | 1 | **LC1 DT20 VDS135** | **DR5 TE1S** | **WB1 KB126** | 1.120 |
| 470-500 | – | 257 | 1.9 | **DR2 SC2700** | 3x2700 | 1 | **LC1 DT20 RDS135** | – | **WB1 KB138** | 1.120 |

## Specifications

■ Average coil consumption (low sealed consumption):
- d.c.: inrush 900…1100 W, sealed 0.7…1 W
- a.c. (with rectifier): inrush 1100…1300 VA, sealed 0.7…1 VA

■ Time constant when sealed 25 ms
■ Economy resistor consumption: 24…30 W
■ Operating cycles/hour at θ ≤ 55 °C: ≤ 120
■ Mechanical durability at Uc: 1.2 million operating cycles
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ≤ 7.

*(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.*

# TeSys contactors

## TeSys LC1 B contactors

### Replacement coils and accessories for 4-pole contactors

## References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
- 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
- 1 individual rectifier (to be wired),
- 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

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*WB1 KB●●●*

| Operating range min-max *(1)* | | Coil | | Economy resistor | | | | Rectifier (for ∿ only) | Coil | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| d.c. | a.c. | Resistance at 20 °C ± 10 % | I inrush ± 10 % at Un max | Resistors (3 in series) Reference unit | Total resistance | Contact Qty | Contact Reference | Reference | Reference | |
| V | V | Ω | A | | Ω | | | | | kg |
| 57-61 | – | 2.35 | 26 | **DR2 SC0027** | 3x27 | 1 | **ZC4 GM2** | – | **WB1 KB153** | 1.120 |
| 62-67 | – | 3.22 | 21 | **DR2 SC0033** | 3x33 | 1 | **ZC4 GM2** | – | **WB1 KB141** | 1.120 |
| 68-73 | – | 4.04 | 18 | **DR2 SC0039** | 3x39 | 1 | **ZC4 GM2** | – | **WB1 KB142** | 1.120 |
| 74-81 | – | 4.96 | 16.3 | **DR2 SC0047** | 3x47 | 1 | **ZC4 GM2** | – | **WB1 KB155** | 1.120 |
| 82-89 | – | 5.86 | 15 | **DR2 SC0056** | 3x56 | 1 | **ZC4 GM2** | – | **WB1 KB132** | 1.120 |
| 90-102 | 105-119 | 7.2 | 14 | **DR2 SC0068** | 3x68 | 1 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB123** | 1.120 |
| 103-111 | 120-128 | 9.6 | 11.5 | **DR2 SC0100** | 3x100 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB133** | 1.120 |
| 112-129 | 129-148 | 11.4 | 11.3 | **DR2 SC0100** | 3x100 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB121** | 1.120 |
| 130-143 | 149-163 | 16.3 | 8.7 | **DR2 SC0150** | 3x150 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB130** | 1.120 |
| 144-157 | 164-179 | 19.7 | 8 | **DR2 SC0180** | 3x180 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB140** | 1.120 |
| 158-180 | 180-204 | 25.2 | 7.1 | **DR2 SC0220** | 3x220 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB134** | 1.120 |
| 181-226 | 205-259 | 32.5 | 6.9 | **DR2 SC0330** | 3x330 | 2 | **ZC4 GM2** | **DR5 TE1U** | **WB1 KB124** | 1.120 |
| 227-251 | 260-288 | 49.7 | 5 | **DR2 SC0470** | 3x470 | 1 | **LC1 DT20 LDS135** | **DR5 TE1S** | **WB1 KB122** | 1.120 |
| 252-278 | 289-317 | 61 | 4.5 | **DR2 SC0560** | 3x560 | 1 | **LC1 DT20 UDS135** | **DR5 TE1S** | **WB1 KB135** | 1.120 |
| 279-313 | 318-356 | 77.2 | 4 | **DR2 SC0680** | 3x680 | 1 | **LC1 DT20 UDS135** | **DR5 TE1S** | **WB1 KB136** | 1.120 |
| 314-368 | 357-418 | 94 | 3.9 | **DR2 SC0820** | 3x820 | 1 | **LC1 DT20 TDS135** | **DR5 TE1S** | **WB1 KB139** | 1.120 |
| 369-408 | 419-462 | 128 | 3.2 | **DR2 SC1200** | 3x1200 | 1 | **LC1 DT20 VDS135** | **DR5 TE1S** | **WB1 KB125** | 1.120 |
| 409-448 | 463-500 | 160 | 2.8 | **DR2 SC1500** | 3x1500 | 1 | **LC1 DT20 VDS135** | **DR5 TE1S** | **WB1 KB137** | 1.120 |
| 449-500 | – | 197 | 2.5 | **DR2 SC1800** | 3x1800 | 1 | **LC1 DT20 RDS135** | – | **WB1 KB126** | 1.120 |

## Specifications

■ Average coil consumption (low sealed consumption):
- d.c.: inrush 1100…1400 W, sealed 1.2…1.6 W
- a.c. (with rectifier): inrush 1300…1600 VA, sealed 1.2…1.6 VA

■ Time constant when sealed 25 ms
■ Economy resistor consumption: 35…45 W
■ Operating cycles/hour at θ ≤ 55 °C: ≤ 120
■ Mechanical durability at Uc: 1.2 million operating cycles
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ≤ 7.

*(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.*

**Single, 2, 3 or 4-pole contactors LC1 B**
Common side view

**Single, 2 or 3-pole contactors LC1 B•31, B•32 or B•33**

**4-pole contactors LC1 B•34**

| | LC1 BL | | | | LC1 BM | | | | LC1 BP | | | | LC1 BR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number of poles** | **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** |
| a | 50 | 50 | 50 | 50 | 63 | 63 | 63 | 63 | 100 | 100 | 100 | 100 | 125 | 125 | 125 | 125 |
| b | 59 | 59 | 59 | 59 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 50 | 50 | 50 | 50 |
| c | 16 | 16 | 16 | 16 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 25 | 25 | 25 | 25 |
| L | 345 | 445 | 540 | 760 | 345 | 445 | 540 | 760 | 385 | 540 | 760 | 1065 | 445 | 635 | 885 | 1065 |
| M | 285 | 385 | 480 | – | 285 | 385 | 480 | – | 325 | 480 | 700 | – | 385 | 575 | 825 | – |
| M1 | – | – | – | 308 | – | – | – | 308 | – | – | – | 455 | – | – | – | 455 |
| M2 | – | – | – | 392 | – | – | – | 392 | – | – | – | 550 | – | – | – | 550 |
| N | 121 | 121 | 121 | 121 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 130 | 130 | 130 | 130 |
| P | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 150 | 150 | 150 | 150 | 195 | 195 | 195 | 195 |
| Q1 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 110 | 110 | 110 | 110 | 130 | 130 | 130 | 130 |
| R | 122 | 122 | 122 | 122 | 157 | 157 | 157 | 157 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 173 |
| S | 10 | 10 | 10 | 10 | 17 | 17 | 17 | 17 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| T | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Ø | 9 | 9 | 9 | 9 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |

**Electrical safety clearance**
Values X1 and X2 are given for a breaking capacity of 10 In (∼ 3-phase supply).

| ∼ 3-phase voltage | | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|
| 380/440 V | X1 | 100 | 100 | 150 | 200 |
| | X2 | 150 | 150 | 200 | 250 |
| 500 V | X1 | 100 | 100 | 150 | 200 |
| | X2 | 150 | 150 | 220 | 250 |
| 660/690 V | X1 | 150 | 150 | 200 | 200 |
| | X2 | 200 | 200 | 250 | 250 |
| 1000 V | X1 | 200 | 200 | 200 | 250 |
| | X2 | 250 | 250 | 250 | 300 |

**Mechanical interlock for assembling vertically mounted reversing contactors**
**EZ2 LB0601**

Selection :
pages 5/194 to 5/217

References :
pages 5/184 to 5/186

Schemes :
page 5/193

## TeSys LC1 B contactors

### LC1 B•31•22

### LC1 B•31•31

### LC1 B•31•13

### LC1 B•31•40

### LC1 B•32•22

### LC1 B•32•31

### LC1 B•32•13

### LC1 B•32•40

### LC1 B•33•22

### LC1 B•33•31

### LC1 B•33•13

### LC1 B•33•40

### LC1 B•34•22

### LC1 B•34•31

### LC1 B•34•13

### LC1 B•34•40

## a.c. control circuit

Dotted lines show optional wiring and external items required.

## d.c. control circuit

***Nota :*** *It is essential to check that the control circuit contacts have ratings compatible with the voltage and power consumption of the operating coil of the contactor. If not, an intermediate "KA" relay must be fitted and wired as shown.*

Dotted lines show optional wiring and external items required.

Selection :
pages 5/194 to 5/217

References :
pages 5/184 to 5/186

Dimensions :
page 5/192

# TeSys contactors
For utilisation category AC-3

## Operational current and power conforming to IEC (θ ≤ 60 °C)

| Contactor size | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1 K12 | LC1 K16 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum operational current in AC-3 | ≤ 440 V | **A** | 6 | 9 | 12 | 16 | 9 | 12 | 18 | 25 | 32 | 38 | 40 |
| Rated operational power P (standard motor power ratings) | 220/240 V | **kW** | 1.5 | 2.2 | 3 | 3 | 2.2 | 3 | 4 | 5.5 | 7.5 | 9 | 11 |
| | 380/400 V | **kW** | 2.2 | 4 | 5.5 | 7.5 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 18.5 |
| | 415 V | **kW** | 2.2 | 4 | 5.5 | 7.5 | 4 | 5.5 | 9 | 11 | 15 | 18.5 | 22 |
| | 440 V | **kW** | 3 | 4 | 5.5 | 7.5 | 4 | 5.5 | 9 | 11 | 15 | 18.5 | 22 |
| | 500 V | **kW** | 3 | 4 | 4 | 5.5 | 5.5 | 7.5 | 10 | 15 | 18.5 | 18.5 | 22 |
| | 660/690 V | **kW** | 3 | 4 | 4 | 4 | 5.5 | 7.5 | 10 | 15 | 18.5 | 18.5 | 30 |
| | 1000 V | **kW** | – | – | – | – | – | – | – | – | – | – | – |

### Maximum operating rate in operating cycles/hour *(1)*

| On-load factor | Operational power | | | | | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 85 % | P | – | – | – | – | 1200 | 1200 | 1200 | 1200 | 1000 | 1000 | 1000 |
| | 0.5 P | – | – | – | – | 3000 | 3000 | 2500 | 2500 | 2500 | 2500 | 2500 |
| ≤ 25 % | P | – | – | – | – | 1800 | 1800 | 1800 | 1800 | 1200 | 1200 | 1200 |

5

## Operational current and power conforming to UL, CSA (θ ≤ 60 °C)

| Contactor size | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1/ LP1 K12 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum operational current in AC-3 | ≤ 440 V | **A** | 6 | 9 | 12 | 9 | 12 | 18 | 25 | 32 | – | 40 |
| Rated operational power P (standard motor power ratings 60 Hz) | 200/208 V | **HP** | 1.5 | 2 | 3 | 2 | 3 | 5 | 7.5 | 10 | – | 10 |
| | 230/240 V | **HP** | 1.5 | 3 | 3 | 2 | 3 | 5 | 7.5 | 10 | – | 10 |
| | 460/480 V | **HP** | 3 | 5 | 7.5 | 5 | 7.5 | 10 | 15 | 20 | – | 30 |
| | 575/600 V | **HP** | 3 | 5 | 10 | 7.5 | 10 | 15 | 20 | 25 | – | 30 |

*(1) Depending on the operational power and the on-load factor (θ ≤ 60 °C).*

| LC1 D50A | LC1 D65A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 65 | 80 | 95 | 115 | 150 | 185 | 225 | 265 | 330 | 400 | 500 | 630 | 780 | 800 | 750 | 1000 | 1500 | 1800 |
| 15 | 18,5 | 22 | 25 | 30 | 40 | 55 | 63 | 75 | 100 | 110 | 147 | 200 | 220 | 250 | 220 | 280 | 425 | 500 |
| 22 | 30 | 37 | 45 | 55 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 335 | 400 | 450 | 400 | 500 | 750 | 900 |
| 25 | 37 | 45 | 45 | 59 | 80 | 100 | 110 | 140 | 180 | 220 | 280 | 375 | 425 | 450 | 425 | 530 | 800 | 900 |
| 30 | 37 | 45 | 45 | 59 | 80 | 100 | 110 | 140 | 200 | 250 | 295 | 400 | 425 | 450 | 450 | 560 | 800 | 900 |
| 30 | 37 | 55 | 55 | 75 | 90 | 110 | 129 | 160 | 200 | 257 | 355 | 400 | 450 | 450 | 500 | 600 | 750 | 900 |
| 33 | 37 | 45 | 45 | 80 | 100 | 110 | 129 | 160 | 220 | 280 | 335 | 450 | 475 | 475 | 560 | 670 | 750 | 900 |
| – | – | 45 | 45 | 65 | 75 | 100 | 100 | 147 | 160 | 185 | 335 | 450 | 450 | 450 | 530 | 530 | 670 | 750 |

| LC1 D50A | LC1 D65A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 1000 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 500 | 500 | 500 | 500 | 500 | 120 | 120 | 120 | 120 |
| 2500 | 2500 | 2000 | 2000 | 2000 | 1200 | 2000 | 2000 | 2000 | 2000 | 1200 | 1200 | 1200 | 1200 | 600 | 120 | 120 | 120 | 120 |
| 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 600 | 600 | 120 | 120 | 120 | 120 |

| LC1 D50A | LC1 D65A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 65 | 80 | 95 | 115 | 150 | 185 | 225 | 265 | 330 | 400 | 500 | 630 | 780 | 800 |
| 15 | 20 | 30 | 30 | 30 | 40 | 50 | 60 | 60 | 75 | 100 | 150 | 250 | – | 350 |
| 15 | 20 | 30 | 30 | 40 | 50 | 60 | 75 | 75 | 100 | 125 | 200 | 300 | 450 | 400 |
| 40 | 40 | 60 | 60 | 75 | 100 | 125 | 150 | 150 | 200 | 250 | 400 | 600 | 900 | 900 |
| 40 | 50 | 60 | 60 | 100 | 125 | 150 | 150 | 200 | 250 | 300 | 500 | 800 | – | 900 |

## Selection according to required electrical durability, in category AC-3 (Ue ≤ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

Operational power in kW-50 Hz.

**Example:**

Asynchronous motor with P = 5.5 kW - Ue = 400 V - Ie = 11 A - Ic = Ie = 11 A
or asynchronous motor with P = 5.5 kW - Ue = 415 V - Ie = 11 A - Ic = Ie = 11 A
3 million operating cycles required.
The above selection curves show the contactor rating needed: LC1 D18.

## Selection according to required electrical durability, in category AC-3 (Ue = 660/690 V) *(1)*

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

***(1) For Ue = 1000 V, use the 660/690 V curves, but do not exceed the operational current at the operational power indicated for 1000 V.***

## Selection according to required electrical durability, in category AC-3 (Ue ≤ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

Operational power in kW-50 Hz.

**Example:**
Asynchronous motor with P = 132 kW - Ue = 380 V - Ie = 245 A - Ic = Ie = 245 A
or asynchronous motor with P = 132 kW - Ue = 415 V - Ie = 240 A - Ic = Ie = 240 A
1.5 million operating cycles required.
The above selection curves show the contactor rating needed: LC1 F330.

*(1) The dotted lines are only applicable to LC1 BL contactors.*

## Selection according to required electrical durability, in category AC-3 (Ue = 660/690 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

**Example:**
Asynchronous motor with P = 132 kW - Ue = 660 V - Ie = 140 A - Ic = Ie = 140 A
1.5 million operating cycles required.
The above selection curves show the contactor rating needed: LC1 F330.

*(1) The dotted lines are only applicable to LC1 BL contactors.*

# TeSys contactors
For utilisation category AC-1

## Maximum operational current (open-mounted device)

| Contactor size | | | LC1/ LP1 K09 | LC1/ LP1 K12 | LC1 D09 | LC1 DT20 | LC1 D12 DT25 | LC1 D18 DT32 | LC1 D25 DT40 | LC1 D32 | LC1 D38 | LC1 D40A DT60A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum operating rate in operating cycles/hour | | | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| Connection conforming to IEC 60947-1 | Cable c.s.a. | mm² | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 10 | 10 | 35 |
| | Bar c.s.a. | mm | – | – | – | – | – | – | – | – | – | – |
| Operational current in AC-1 in A, according to the ambient temperature conforming to IEC 60947-1 | ≤ 40 °C | A | 20 | 20 | 25 | 20 | 25 | 32 | 40 | 50 | 50 | 60 |
| | ≤ 60 °C | A | 20 | 20 | 25 | 20 | 25 | 32 | 40 | 50 | 50 | 60 |
| | ≤ 70 °C | A (at UC) | *(1)* | *(1)* | 17 | *(1)* | 17 | 22 | 28 | 35 | 35 | 42 |
| Maximum operational power ≤ 60 °C | 220/230 V | kW | 8 | 8 | 9 | 8 | 9 | 11 | 14 | 18 | 18 | 21 |
| | 240 V | kW | 8 | 8 | 9 | 8 | 9 | 12 | 15 | 19 | 19 | 23 |
| | 380/400 V | kW | 14 | 14 | 15 | 14 | 15 | 20 | 25 | 31 | 31 | 37 |
| | 415 V | kW | 14 | 14 | 17 | 14 | 17 | 21 | 27 | 34 | 34 | 41 |
| | 440 V | kW | 15 | 15 | 18 | 15 | 18 | 23 | 29 | 36 | 36 | 43 |
| | 500 V | kW | 17 | 17 | 20 | 17 | 20 | 23 | 33 | 41 | 41 | 49 |
| | 660/690 V | kW | 22 | 22 | 27 | 22 | 27 | 34 | 43 | 54 | 54 | 65 |
| | 1000 V | kW | – | – | – | – | – | – | – | – | – | – |

*(1) Please consult your Regional Sales Office.*

### Increase in operational current by parallel connection of poles

Apply the following coefficients to the currents or power values given above; these coefficients take into account an often unbalanced current distribution between the poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8

5

## Selection according to required electrical durability, in category AC-1 (Ue ≤ 440 V)

Control of resistive circuits (cos φ ≥ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

**Example:**

- Ue = 220 V - Ie = 50 A θ ≤ 40 °C - Ic = Ie = 50 A.
- 2 million operating cycles required.
- The above selection curves show the contactor rating needed: either LC1 or LP1 D50.



Schneider Electric

| LC1 D50A | LC1 D65A DT80A | LC1/ LP1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 F1700 | LC1 F2100 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 200 | 200 | 120 | 120 | 120 | 120 |
| 35 | 35 | 50 | 50 | 120 | 120 | 150 | 185 | 185 | 240 | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | 2<br>30 x 5 | 2<br>40 x 5 | 2<br>60 x 5 | 2<br>100 x 5 | 2<br>60 x 5 | 3<br>100 x 5 | 4<br>100 5 | 2<br>50 x 5 | 2<br>80 x 5 | 2<br>100 x 5 | 2<br>100 x 10 |
| 80 | 80 | 125 | 125 | 250 | 250 | 275 | 315 | 350 | 400 | 500 | 700 | 1000 | 1600 | 1000 | 1700 | 2100<br>*(2)* | 800 | 1250 | 2000 | 2750 |
| 80 | 80 | 125 | 125 | 200 | 200 | 275 | 280 | 300 | 360 | 430 | 580 | 850 | 1350 | 850 | 1450 | 1750 | 700 | 1100 | 1750 | 2400 |
| 56 | 56 | 80 | 80 | 160 | 160 | 180 | 200 | 250 | 290 | 340 | 500 | 700 | 1100 | 700 | – | – | 600 | 900 | 1500 | 2000 |
| 29 | 29 | 45 | 45 | 80 | 80 | 90 | 100 | 120 | 145 | 170 | 240 | 350 | 550 | 350 | 570 | 700 | 300 | 425 | 700 | 1000 |
| 31 | 31 | 49 | 49 | 83 | 83 | 100 | 110 | 125 | 160 | 180 | 255 | 370 | 570 | 370 | 600 | 780 | 330 | 450 | 800 | 1100 |
| 50 | 50 | 78 | 78 | 135 | 135 | 165 | 175 | 210 | 250 | 300 | 430 | 600 | 950 | 600 | 1000 | 1200 | 500 | 800 | 1200 | 1600 |
| 54 | 54 | 85 | 85 | 140 | 140 | 170 | 185 | 220 | 260 | 310 | 445 | 630 | 1000 | 630 | 1050 | 1300 | 525 | 825 | 1250 | 1700 |
| 58 | 58 | 90 | 90 | 150 | 150 | 180 | 200 | 230 | 290 | 330 | 470 | 670 | 1050 | 670 | 1100 | 1350 | 550 | 850 | 1400 | 2000 |
| 65 | 65 | 102 | 102 | 170 | 170 | 200 | 220 | 270 | 320 | 380 | 660 | 750 | 1200 | 750 | 1250 | 1550 | 600 | 900 | 1500 | 2100 |
| 80 | 80 | 135 | 135 | 235 | 235 | 280 | 300 | 370 | 400 | 530 | 740 | 1000 | 1650 | 1000 | 1700 | 2100 | 800 | 1100 | 1900 | 2700 |
| – | – | 120 | 120 | 345 | 345 | 410 | 450 | 540 | 640 | 760 | 950 | 1500 | 2400 | 1500 | 2500 | 3100 | 1100 | 1700 | 3000 | 4200 |

*(2) With set of right-angled connectors **LA9 F2100**.*

**Example:**

- Ue = 220 V - Ie = 500 A - θ ⩽ 40 °C - Ic = Ie = 500 A.
- 2 million operating cycles required.
- The above selection curves show the contactor rating needed: LC1 F780.

*(3) The dotted lines are only applicable to **LC1 F225**.*

## Maximum breaking current

Category AC-2: slip ring motors - breaking the starting current.
Category AC-4: squirrel cage motors - breaking the starting current.

| Contactor size | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1/ LP1 K12 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **In category AC-4** (Ie max) | Ue ≤ 440 V Ie max broken = 6 x I motor | **A** | 36 | 54 | 54 | 54 | 72 | 108 | 150 | 192 | 192 | 240 |
| | 440 V < Ue ≤ 690 V Ie max broken = 6 x I motor | **A** | 26 | 40 | 40 | 40 | 50 | 70 | 90 | 105 | 105 | 150 |
| **Depending on the maximum operating rate** *(1)* **and the on-load factor,** θ ≤ 60 °C *(2)* | | | | | | | | | | | | |
| From 150 and 15 % to 300 and 10 % | | **A** | 20 | 30 | 30 | 30 | 40 | 45 | 75 | 80 | 80 | 110 |
| From 150 and 20 % to 600 and 10 % | | **A** | 18 | 27 | 27 | 27 | 36 | 40 | 67 | 70 | 70 | 96 |
| From 150 and 30 % to 1200 and 10 % | | **A** | 16 | 24 | 24 | 24 | 30 | 35 | 56 | 60 | 60 | 80 |
| From 150 and 55 % to 2400 and 10 % | | **A** | 13 | 19 | 19 | 19 | 24 | 30 | 45 | 50 | 50 | 62 |
| From 150 and 85 % to 3600 and 10 % | | **A** | 10 | 16 | 16 | 16 | 21 | 25 | 40 | 45 | 45 | 53 |

*(1) Do not exceed the maximum number of operating cycles..*
*(2) For temperatures higher than 60 °C, use a maximum operating rate value equal to 80% of the actual value when selecting from the tables.*

### Counter current braking (plugging)

The current varies from the maximum plug-braking current to the rated motor current.
The making current must be compatible with the rated making and breaking capacities of the contactor.

As breaking normally takes place at a current value at or near the locked rotor current, the contactor can be selected using the criteria for categories AC-2 and AC-4.

## Permissible AC-4 power rating for 200 000 operating cycles

| Operational voltage | | LC●/ LP● K06 | LC●/ LP● K09 | LC● LP● K12 | LC● D09 | LC● D12 | LC● D18 | LC● D25 | LC● D32 | LC● D38 | LC● D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220/230 V | **kW** | 0.75 | 1.1 | 1.1 | 1.5 | 1.5 | 2.2 | 3 | 4 | 4 | 4 |
| 380/400 V | **kW** | 1.5 | 2.2 | 2.2 | 2.2 | 3.7 | 4 | 5.5 | 7.5 | 7.5 | 9 |
| 415 V | **kW** | 1.5 | 2.2 | 2.2 | 2.2 | 3 | 3.7 | 5.5 | 7.5 | 7.5 | 9 |
| 440 V | **kW** | 1.5 | 2.2 | 2.2 | 2.2 | 3 | 3.7 | 5.5 | 7.5 | 7.5 | 11 |
| 500 V | **kW** | 2.2 | 3 | 3 | 3 | 4 | 5.5 | 7.5 | 9 | 9 | 11 |
| 660/690 V | **kW** | 3 | 4 | 4 | 4 | 5.5 | 7.5 | 10 | 11 | 11 | 15 |

| LC1 D50A | LC1 D65A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F26 | LC1 F330 | LC1 F40 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 300 | 390 | 480 | 570 | 630 | 830 | 1020 | 1230 | 1470 | 1800 | 2220 | 2760 | 3360 | 4260 | 3690 | 4320 | 5000 | 7500 | 9000 |
| 170 | 210 | 250 | 250 | 540 | 640 | 708 | 810 | 1020 | 1410 | 1830 | 2130 | 2760 | 2910 | 2910 | 4000 | 4800 | 5400 | 6600 |
| 140 | 160 | 200 | 200 | 280 | 310 | 380 | 420 | 560 | 670 | 780 | 1100 | 1400 | 1600 | 1600 | 2250 | 3000 | 4500 | 5400 |
| 120 | 148 | 170 | 170 | 250 | 280 | 350 | 400 | 500 | 600 | 700 | 950 | 1250 | 1400 | 1400 | 2000 | 2400 | 3750 | 5000 |
| 100 | 132 | 145 | 145 | 215 | 240 | 300 | 330 | 400 | 500 | 600 | 750 | 950 | 1100 | 1100 | 1500 | 2000 | 3000 | 3600 |
| 80 | 110 | 120 | 120 | 150 | 170 | 240 | 270 | 320 | 390 | 450 | 600 | 720 | 820 | 820 | 1000 | 1500 | 2000 | 2500 |
| 70 | 90 | 100 | 100 | 125 | 145 | 170 | 190 | 230 | 290 | 350 | 500 | 660 | 710 | 710 | 750 | 1000 | 1500 | 1800 |

| LC● D50A | LC● D65A | LC● D80 | LC● D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.5 | 7.5 | 7.5 | 9 | 9 | 11 | 18.5 | 22 | 28 | 33 | 40 | 45 | 55 | 63 | 63 | 90 | 110 | 150 | 200 |
| 11 | 11 | 15 | 15 | 18.5 | 22 | 33 | 40 | 51 | 59 | 75 | 80 | 100 | 110 | 110 | 160 | 160 | 220 | 250 |
| 11 | 11 | 15 | 15 | 18.5 | 22 | 37 | 45 | 55 | 63 | 80 | 90 | 100 | 110 | 110 | 160 | 160 | 250 | 280 |
| 11 | 15 | 15 | 15 | 18.5 | 22 | 37 | 45 | 59 | 63 | 80 | 100 | 110 | 132 | 132 | 160 | 200 | 250 | 315 |
| 15 | 15 | 22 | 22 | 30 | 37 | 45 | 55 | 63 | 75 | 90 | 110 | 132 | 150 | 150 | 180 | 200 | 250 | 355 |
| 15 | 18.5 | 25 | 25 | 30 | 45 | 63 | 75 | 90 | 110 | 129 | 140 | 160 | 185 | 185 | 200 | 250 | 315 | 450 |

## Selection according to required electrical durability, in categories AC-2 or AC-4 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.
The current broken (Ic) in AC-2 is equal to 2.5 x Ie.
The current broken (Ic) in AC-4 is equal to 6 x Ie. (Ie = rated operational current of the motor).

**Example:**

- Asynchronous motor with P = 5.5 kW - Ue = 400 V - Ie = 11 A. Ic = 6 x Ie = 66 A
- or asynchronous motor with P = 5.5 kW - Ue = 415 V - Ie = 11 A. Ic = 6 x Ie = 66 A.
- 200 000 operating cycles required.
- The above selection curves show the contactor rating needed: LC1 D25.

*(1) The dotted lines are only applicable to LC1, LP1 K12 contactors.*

## Selection according to required electrical durability, use in category AC-4 (440 V < Ue ⩽ 690 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled
The current broken (Ic) in AC-2 is equal to 2.5 x Ie.
The current broken (Ic) in AC-4 is equal to 6 x Ie. (Ie = rated operational current of the motor).

## Selection according to required electrical durability, in categories AC-2 or AC-4 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.
The current broken (Ic) in AC-4 is equal to 6 x Ie.
(Ie = rated operational current of the motor).

**Example:**

- Asynchronous motor with P = 90 kW - Ue = 380 V - Ie = 170 A. Ic = 6 x Ie = 1020 A
or asynchronous motor with P = 90 kW - Ue = 415 V - Ie = 165 A. Ic = 6 x Ie = 990 A.
- 60 000 operating cycles required.
- The above selection curves show the contactor rating needed: LC1 F265.

## Selection according to required electrical durability, use in category AC-4 (440 V < Ue ⩽ 690 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled.
The current broken (Ic) in AC-4 is equal to 6 x Ie.
(Ie = rated operational current of the motor).

5

# TeSys contactors
## For utilisation categories DC-1 to DC-5

1 pole

2 poles

3 poles

4 poles

**Rated operational current (Ie) in Amperes,** in utilisation category DC-1, resistive loads: time constant $\frac{L}{R}$ ≤ 1 ms, ambient temperature ≤ 60 °C

| Rated operational voltage Ue | No. of poles connected in series | Contactor rating (1) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC1 D09 | LC1 DT20 | LC1 D12 DT25 | LC1 D18 DT32 | LC1 D25 DT40 | LC1 D32 | LC1 D38 | LC1 D40A | LC1 DT60A |
| V | | | | | | | | | | |
| 24 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 48/75 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 125 | 1 | 4 | 4 | 4 | 4 | 7 | 7 | 7 | 7 | 7 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 250 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2 | 4 | 4 | 4 | 4 | 7 | 7 | 7 | 7 | 7 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 300 | 3 | 4 | 4 | 4 | 4 | 7 | 7 | 7 | 7 | – |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 460 | 1 | – | – | – | – | – | – | – | – | – |
| | 4 | – | – | – | – | – | – | – | – | – |
| 900 | 2 | – | – | – | – | – | – | – | – | – |
| 1200 | 3 | – | – | – | – | – | – | – | – | – |
| 1500 | 4 | – | – | – | – | – | – | – | – | – |

**Rated operational current (Ie) in Amperes,** in utilisation category DC-2 to DC-5, inductive loads: time constant $\frac{L}{R}$ ≤ 15 ms, ambient temperature ≤ 60 °C

| Rated operational voltage Ue | No. of poles connected in series | Contactor rating (1) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC1 D09 | LC1 DT20 | LC1 D12 DT25 | LC1 D18 DT32 | LC1 D25 DT40 | LC1 D32 | LC1 D38 | LC1 D40A | LC1 DT60A |
| V | | | | | | | | | | |
| 24 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 48/75 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 125 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 250 | 1 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 1 | 1 |
| | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| | 3 | 8 | 8 | 8 | 8 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 300 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| | 4 | – | 8 | 8 | 8 | 32 | – | – | – | 50 |
| 460 | 1 | – | – | – | – | – | – | – | – | – |
| | 4 | – | – | – | – | – | – | – | – | – |
| 900 | 2 | – | – | – | – | – | – | – | – | – |
| 1200 | 3 | – | – | – | – | – | – | – | – | – |
| 1500 | 4 | – | – | – | – | – | – | – | – | – |

*(1) For rated operational currents of contactors LC1 and LP1 K: please consult your Regional Sales Office.*

| LC1 D50A | LC1 D65A | LC1 DT80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 7 | 7 | 7 | 12 | 12 | 12 | 12 | 210 | 230 | 270 | 320 | 380 | 520 | 760 | 1180 | 760 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 210 | 230 | 270 | 320 | 380 | 520 | 760 | 1180 | 760 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 1 | 1,5 | 1,5 | 2 | 2 | 10 | 10 | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| 7 | 7 | 7 | 12 | 12 | 200 | 200 | 190 | 200 | 250 | 280 | 350 | 450 | 700 | 1000 | 700 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 7 | 7 | 7 | 12 | 12 | 200 | 200 | 190 | 200 | 250 | 280 | 350 | 450 | 700 | 1000 | 700 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1000 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | 200 | – | 190 | 200 | 250 | 280 | 350 | 450 | 700 | 1000 | 700 | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |

| LC1 D50A | LC1 D65A | LC1 DT80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | – | – | – | – |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 4 | 4 | 4 | 5 | 5 | 10 | 10 | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 160 | 180 | 250 | 300 | 350 | 500 | 700 | 1000 | 700 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 240 | 240 | 280 | 310 | 350 | 550 | 850 | 1000 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 240 | 280 | 310 | 350 | 550 | 850 | 1000 | 850 | 700 | 1100 | 1750 | 2400 |
| 1 | 1.5 | 1.5 | 1 | 1 | 3 | 3 | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| 4 | 4 | 4 | 5 | 5 | 200 | 200 | 140 | 160 | 220 | 280 | 310 | 480 | 680 | 900 | 680 | 700 | 1100 | 1750 | 2400 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 160 | 180 | 250 | 300 | 350 | 500 | 700 | 1000 | 700 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| 3 | 3 | 3 | 5 | 5 | 200 | 200 | 140 | 160 | 220 | 280 | 310 | 480 | 680 | 900 | 680 | 700 | 1100 | 1750 | 2400 |
| – | – | 65 | 100 | – | 200 | – | 240 | 260 | 300 | 360 | 430 | 580 | 850 | 1300 | 850 | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | 200 | – | 140 | 160 | 220 | 280 | 310 | 480 | 680 | 800 | 680 | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 700 | 1100 | 1750 | 2400 |

5

## Selection according to required electrical durability, use in categories DC-1 to DC-5

The criteria for contactor selection are:
- the rated operational current Ie,
- the rated operational voltage Ue,
- the utilisation category and the time constant L/R,
- the required electrical durability.

### Maximum operating rate (operating cycles)

The following limits must not be exceeded: 120 operating cycles/hour at rated operational current Ie.

### Electrical durability

**Example**

Series wound motor - P = 1.5 kW - Ue = 200 V - Ie = 7.5 A. Utilisation: reversing, inching.
- Utilisation category = DC-5.
- Select contactor LC1 D09 with 3 poles in series.
- The power broken is: Pc total = 2.5 x 200 x 7.5 = 3.75 kW.
- The power broken per pole is: 1.25 kW.
- The electrical durability read from the curve is ⩾ 3 millions of operating cycles.

### Use of poles in parallel

Electrical durability can be increased by using poles connected in parallel.

With N poles connected in parallel, the electrical durability becomes: electrical durability read from the curves x N x 0.7.

***Note: 1***

When the poles are connected in parallel, the maximum operational currents indicated on pages 5/204 and 5/205 must not be exceeded.

***Note: 2***

Ensure that the connections are made in such a way as to equalise the currents in each pole.

## Selection according to required electrical durability, use in categories DC-1 to DC-5

### Determining the electrical durability

The electrical durability can be read directly from the curves below, having previously calculated the power broken as follows:
P broken = U broken x I broken.
The tables below give the values of Uc and Ic for the various utilisation categories.

**Power broken**

| Utilisation categories | U broken | I broken | P broken |
|---|---|---|---|
| DC-1 Non inductive or slightly inductive loads | Ue | Ie | Ue x Ie |
| DC-2 Shunt wound motors, breaking whilst motor running | 0.1 Ue | Ie | 0.1 Ue x Ie |
| DC-3 Shunt wound motors, reversing, inching | Ue | 2.5 Ie | Ue x 2.5 Ie |
| DC-4 Series wound motors, breaking whilst motor running | 0.3 Ue | Ie | 0.3 Ue x Ie |
| DC-5 Series wound motors, reversing, inching | Ue | 2.5 Ie | Ue x 2.5 Ie |

**Example**
Series wound motor: P = 40 kW - Ue = 200 V - Ie = 200 A. Utilisation: reversing, inching.
Utilisation category = DC-5.

- Select contactor LC1 F265 with 2 poles in series.
- The power broken is: Pc total = 2.5 x 200 x 200 = 100 kW.
- The power broken per pole is 50 kW.
- The electrical durability read from the curve is 500 000 operating cycles.

# TeSys contactors
## For lighting circuits

### General

The operating conditions of lighting circuits have the following characteristics:
- continuous duty: the switching device can remain closed for several days or even months,
- a dispersion factor of 1: all luminaires in the same group are switched on or off simultaneously,
- a relatively high temperature around the device due to the enclosure, the presence of fuses, or an unventilated control panel location.

This is why the operational current for lighting is lower than the value given for AC-1 duty.

### Protection

The continuous duty current drawn by a lighting circuit is constant.
In fact:
- it is unlikely that the number of luminaires of an existing circuit will be modified,
- this type of circuit cannot create an overload of long duration.

It is therefore only necessary to provide short-circuit protection.
This can be provided by:
- gG type fuses, or
- modular circuit-breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type fuses.

### Distribution system

#### Single-phase circuit, 220/240 V

The tables on pages 5/209 to 5/213 are based on a single-phase 220/240 V circuit and can therefore be applied directly in this case.

#### 3-phase circuit, 380/415 V (with neutral)

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between one phase and neutral. The contactor can then be selected from the 220/240 V single-phase tables for a number of lamps equal to $\frac{N}{3}$ lamps.

#### 3-phase circuit, 220/240 V

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between 2 phases (L1-L2), (L2-L3), (L3-L1). The contactor can then be selected from the 220/240 V single-phase table for a number of lamps equal to $\frac{N}{\sqrt{3}}$ lamps.

### Contactor selection tables

For the different types of lamps, the tables on pages 5/209 to 5/213 give the maximum number of lamps of unit power P (in Watts), which can be switched simultaneously for each size of contactor.
They are based on:
- a 220/240 V single-phase circuit,
- an ambient temperature of 55 °C *(1)*, taking into account the operating conditions (see General paragraph).
- an electrical life of more than 10 years (200 days' operation per year).

They take into account:
- the total current drawn (including ballast),
- transient phenomena which occur at switch-on,
- the starting currents and their duration,
- the circulation of any harmonics which may be present.

#### Lamps with compensating capacitor C (µF) connected in parallel

Parallel connected compensating capacitors **C** cause a current peak at the moment of switch-on. To ensure that the value of this current peak remains compatible with the making characteristics of the contactors, the unit value of the capacitance must not exceed the following:

| Switching contactor rating | LC1 K09 | LP1 K09 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A | LC1 D50A | LC1 D65A | LC1 D80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum unit value C (µF) of parallel connected compensating capacitor | 7 | 3 | 18 | 18 | 25 | 60 | 96 | 96 | 120 | 120 | 240 | 240 |

| Switching contactor rating | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F800 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum unit value C (µF) of parallel connected compensating capacitor | 240 | 300 | 360 | 800 | 1200 | 1700 | 2500 | 4000 | 6000 | 9000 | 10 800 |

This value is independent of the number of lamps switched by the contactor.

*(1) For an ambient temperature of 40 °C, multiply the number by 1.2.*

# TeSys contactors
## For lighting circuits

### Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage,
- C: unit capacitance for each lamp,

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Incandescent and halogen lamps

| P (W) | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 | |
|---|---|---|---|---|---|---|---|---|---|---|
| IB (A) | 0.27 | 0.34 | 0.45 | 0.68 | 0.91 | 1.40 | 2.30 | 3.40 | 4.60 | LC1 |
| Max. no. of lamps according to P (W) | 35 | 28 | 21 | 14 | 10 | 6 | 4 | 2 | 2 | K09 |
| | 59 | 47 | 35 | 23 | 17 | 11 | 7 | 4 | 3 | D09, D12 |
| | 77 | 61 | 46 | 30 | 23 | 15 | 9 | 6 | 4 | D18 |
| | 92 | 73 | 55 | 36 | 27 | 18 | 11 | 7 | 5 | D25 |
| | 129 | 103 | 77 | 51 | 38 | 25 | 15 | 10 | 7 | D32, D38 |
| | 163 | 129 | 97 | 64 | 48 | 31 | 19 | 13 | 9 | D40A |
| | 207 | 164 | 124 | 82 | 62 | 40 | 24 | 16 | 12 | D50A, D65A |
| | 296 | 235 | 177 | 117 | 88 | 57 | 34 | 23 | 17 | D80, D95 |
| | 430 | 340 | 256 | 170 | 126 | 82 | 50 | 34 | 24 | D115 |
| | 466 | 370 | 280 | 184 | 138 | 90 | 54 | 36 | 26 | D150 |
| | 710 | 564 | 426 | 282 | 210 | 136 | 82 | 56 | 40 | F185 |
| | 770 | 610 | 462 | 304 | 228 | 148 | 90 | 60 | 44 | F225 |
| | 888 | 704 | 532 | 352 | 262 | 170 | 104 | 70 | 52 | F265 |
| | 1006 | 800 | 604 | 400 | 298 | 194 | 118 | 80 | 58 | F330 |
| | 1274 | 1010 | 764 | 504 | 378 | 244 | 148 | 100 | 74 | F400 |
| | 1718 | 1364 | 1030 | 682 | 508 | 330 | 200 | 136 | 100 | F500 |
| | 2328 | 1850 | 1396 | 924 | 690 | 448 | 272 | 184 | 136 | F630 |
| | 2776 | 2204 | 1666 | 1102 | 824 | 534 | 326 | 220 | 162 | F800 |

### Mixed lighting lamps

| P (W) | 100 | 160 | 250 | 500 | 1000 | |
|---|---|---|---|---|---|---|
| IB (A) | 0.45 | 0.72 | 1.10 | 2.30 | 4.50 | LC1 |
| Max. no. of lamps according to P (W) | 21 | 13 | 8 | 4 | 2 | K09 |
| | 35 | 22 | 14 | 7 | 3 | D09, D12 |
| | 46 | 29 | 18 | 9 | 4 | D18 |
| | 55 | 36 | 23 | 11 | 5 | D25 |
| | 77 | 48 | 30 | 15 | 7 | D32, D38 |
| | 97 | 61 | 38 | 19 | 9 | D40A |
| | 124 | 77 | 49 | 24 | 12 | D50A, D65A |
| | 177 | 111 | 70 | 34 | 17 | D80, D95 |
| | 256 | 160 | 104 | 50 | 26 | D115 |
| | 280 | 174 | 114 | 54 | 28 | D150 |
| | 426 | 266 | 174 | 82 | 42 | F185 |
| | 462 | 288 | 188 | 90 | 46 | F225 |
| | 532 | 332 | 218 | 104 | 52 | F265 |
| | 604 | 378 | 246 | 118 | 60 | F330 |
| | 764 | 478 | 312 | 150 | 76 | F400 |
| | 1030 | 644 | 422 | 202 | 102 | F500 |
| | 1398 | 874 | 572 | 272 | 140 | F630 |
| | 1666 | 1040 | 680 | 326 | 166 | F800 |

# TeSys contactors
## For lighting circuits

### Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage,
- C: unit capacitance for each lamp,

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Fluorescent lamps with starter. Single fitting

| | Non corrected | | | | With parallel correction | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **20** | **40** | **65** | **80** | **110** | **20** | **40** | **65** | **80** | **110** | |
| **IB (A)** | **0.39** | **0.45** | **0.70** | **0.80** | **1.2** | **0.17** | **0.26** | **0.42** | **0.52** | **0.72** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **5** | **5** | **7** | **7** | **16** | **LC1** |
| **Max. no. of lamps according to P (W)** | 24 | 21 | 13 | 12 | 8 | 56 | 36 | 22 | 18 | – | **K09** |
| | 41 | 35 | 22 | 20 | 13 | 94 | 61 | 38 | 30 | 22 | **D09, D12** |
| | 53 | 46 | 30 | 26 | 17 | 123 | 80 | 50 | 40 | 29 | **D18** |
| | 66 | 57 | 37 | 32 | 21 | 152 | 100 | 61 | 50 | 36 | **D25** |
| | 89 | 77 | 50 | 43 | 29 | 205 | 134 | 83 | 67 | 48 | **D32, D38** |
| | 112 | 97 | 62 | 55 | 36 | 258 | 169 | 104 | 84 | 61 | **D40A** |
| | 143 | 124 | 80 | 70 | 46 | 329 | 215 | 133 | 107 | 77 | **D50A, D65A** |
| | 205 | 177 | 114 | 100 | 66 | 470 | 367 | 190 | 153 | 111 | **D80, D95** |
| | 410 | 354 | 228 | 200 | 132 | 940 | 614 | 380 | 306 | 222 | **D115, D150** |
| | 492 | 426 | 274 | 240 | 160 | 1128 | 738 | 456 | 368 | 266 | **F185** |
| | 532 | 462 | 296 | 260 | 172 | 1224 | 800 | 490 | 400 | 288 | **F225** |
| | 614 | 532 | 342 | 300 | 200 | 1412 | 922 | 570 | 462 | 332 | **F265** |
| | 696 | 604 | 388 | 340 | 226 | 1600 | 1046 | 648 | 522 | 378 | **F330** |
| | 882 | 764 | 490 | 430 | 286 | 2024 | 1322 | 818 | 662 | 478 | **F400** |
| | 1190 | 1030 | 662 | 580 | 386 | 2728 | 1724 | 1104 | 892 | 644 | **F500** |
| | 1612 | 1398 | 698 | 786 | 524 | 3700 | 2418 | 1498 | 1210 | 874 | **F630, F800** |

### Fluorescent lamps with starter. Twin fitting

| | Non corrected | | | | | With series correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | |
| **IB (A)** | **2x0.22** | **2x0.41** | **2x0.67** | **2x0.82** | **2x1.1** | **2x0.13** | **2x0.24** | **2x0.39** | **2x0.48** | **2x0.65** | **LC1** |
| **Max. no. of lamps according to P (W)** | 2x21 | 2x11 | 2x7 | 2x5 | 2x4 | 2x36 | 2x20 | 2x12 | 2x10 | 2x7 | **K09** |
| | 2x36 | 2x18 | 2x10 | 2x8 | 2x6 | 2x60 | 2x32 | 2x20 | 2x16 | 2x12 | **D09, D12** |
| | 2x46 | 2x24 | 2x14 | 2x12 | 2x8 | 2x80 | 2x42 | 2x26 | 2x20 | 2x16 | **D18** |
| | 2x58 | 2x30 | 2x18 | 2x14 | 2x10 | 2x100 | 2x54 | 2x32 | 2x26 | 2x20 | **D25** |
| | 2x78 | 2x42 | 2x26 | 2x20 | 2x14 | 2x134 | 2x72 | 2x44 | 2x36 | 2x26 | **D32, D38** |
| | 2x100 | 2x52 | 2x32 | 2x26 | 2x18 | 2x168 | 2x90 | 2x56 | 2x44 | 2x32 | **D40A** |
| | 2x126 | 2x68 | 2x40 | 2x34 | 2x24 | 2x214 | 2x116 | 2x70 | 2x58 | 2x42 | **D50A, D65A** |
| | 2x180 | 2x96 | 2x58 | 2x48 | 2x36 | 2x306 | 2x166 | 2x102 | 2x82 | 2x60 | **D80, D95** |
| | 2x360 | 2x194 | 2x118 | 2x96 | 2x72 | 2x614 | 2x332 | 2x204 | 2x166 | 2x122 | **D115, D150** |
| | 2x436 | 2x234 | 2x142 | 2x116 | 2x86 | 2x738 | 2x400 | 2x246 | 2x200 | 2x148 | **F185** |
| | 2x472 | 2x254 | 2x154 | 2x126 | 2x94 | 2x800 | 2x432 | 2x266 | 2x216 | 2x160 | **F225** |
| | 2x544 | 2x292 | 2x178 | 2x146 | 2x108 | 2x922 | 2x500 | 2x308 | 2x250 | 2x184 | **F265** |
| | 2x618 | 2x332 | 2x202 | 2x166 | 2x124 | 2x1046 | 2x566 | 2x348 | 2x282 | 2x208 | **F330** |
| | 2x782 | 2x420 | 2x256 | 2x210 | 2x156 | 2x1322 | 2x716 | 2x440 | 2x358 | 2x264 | **F400** |
| | 2x1054 | 2x566 | 2x346 | 2x282 | 2x210 | 2x1784 | 2x966 | 2x594 | 2x482 | 2x356 | **F500** |
| | 2x1430 | 2x766 | 2x468 | 2x384 | 2x286 | 2x2418 | 2x1310 | 2x806 | 2x654 | 2x484 | **F630, F800** |

# TeSys contactors
## For lighting circuits

### Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage,
- C: unit capacitance for each lamp,

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Fluorescent lamps without starter. Single fitting

| | Non corrected | | | | | With parallel correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **20** | **40** | **65** | **80** | **110** | **20** | **40** | **65** | **80** | **110** | |
| **IB (A)** | **0.43** | **0.55** | **0.80** | **0.95** | **1.4** | **0.19** | **0.29** | **0.46** | **0.57** | **0.79** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **5** | **5** | **7** | **7** | **16** | **LC1** |
| **Max. no. of lamps according to P (W)** | 22 | 17 | 12 | 10 | 6 | 50 | 33 | 20 | 16 | – | **K09** |
| | 37 | 29 | 20 | 16 | 11 | 84 | 55 | 34 | 28 | 20 | **D09, D12** |
| | 48 | 38 | 26 | 22 | 15 | 110 | 72 | 45 | 36 | 26 | **D18** |
| | 60 | 47 | 32 | 27 | 18 | 136 | 89 | 56 | 45 | 32 | **D25** |
| | 97 | 63 | 43 | 36 | 25 | 184 | 101 | 76 | 61 | 44 | **D32, D38** |
| | 102 | 80 | 55 | 46 | 31 | 231 | 151 | 95 | 77 | 55 | **D40A** |
| | 130 | 101 | 70 | 58 | 40 | 294 | 193 | 121 | 98 | 70 | **D50A, D65A** |
| | 186 | 145 | 100 | 84 | 57 | 421 | 275 | 173 | 140 | 101 | **D80, D95** |
| | 372 | 290 | 200 | 168 | 114 | 842 | 550 | 346 | 280 | 202 | **D115, D150** |
| | 446 | 348 | 240 | 202 | 136 | 1010 | 662 | 416 | 336 | 242 | **F185** |
| | 484 | 378 | 260 | 218 | 148 | 1094 | 716 | 452 | 364 | 262 | **F225** |
| | 558 | 436 | 300 | 252 | 170 | 1262 | 828 | 522 | 420 | 304 | **F265** |
| | 632 | 494 | 340 | 286 | 194 | 1432 | 938 | 590 | 476 | 344 | **F330** |
| | 800 | 624 | 430 | 362 | 246 | 1810 | 1186 | 748 | 604 | 434 | **F400** |
| | 1078 | 844 | 580 | 488 | 330 | 2442 | 1600 | 1008 | 814 | 586 | **F500** |
| | 1462 | 1144 | 786 | 662 | 448 | 3310 | 2168 | 1366 | 1104 | 796 | **F630, F800** |

### Fluorescent lamps without starter. Twin fitting

| | Non corrected | | | | | With series correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | |
| **IB (A)** | **2x0.25** | **2x0.47** | **2x0.76** | **2x0.93** | **2x1.3** | **2x0.14** | **2x0.26** | **2x0.43** | **2x0.53** | **2x0.72** | **LC1** |
| **Max. no. of lamps according to P (W)** | 2x19 | 2x10 | 2x6 | 2x5 | 2x3 | 2x34 | 2x18 | 2x11 | 2x9 | 2x6 | **K09** |
| | 2x32 | 2x16 | 2x10 | 2x8 | 2x6 | 2x56 | 2x30 | 2x18 | 2x14 | 2x10 | **D09, D12** |
| | 2x42 | 2x22 | 2x12 | 2x10 | 2x8 | 2x74 | 2x40 | 2x24 | 2x18 | 2x14 | **D18** |
| | 2x52 | 2x26 | 2x16 | 2x12 | 2x10 | 2x92 | 2x50 | 2x30 | 2x24 | 2x18 | **D25** |
| | 2x70 | 2x36 | 2x22 | 2x18 | 2x12 | 2x124 | 2x66 | 2x40 | 2x32 | 2x24 | **D32, D38** |
| | 2x88 | 2x46 | 2x28 | 2x22 | 2x16 | 2x156 | 2x84 | 2x50 | 2x40 | 2x30 | **D40A** |
| | 2x112 | 2x58 | 2x36 | 2x30 | 2x20 | 2x200 | 2x106 | 2x64 | 2x52 | 2x38 | **D50A, D65A** |
| | 2x160 | 2x84 | 2x52 | 2x42 | 2x30 | 2x234 | 2x152 | 2x92 | 2x74 | 2x54 | **D80, D95** |
| | 2x320 | 2x170 | 2x104 | 2x86 | 2x60 | 2x570 | 2x306 | 2x186 | 2x150 | 2x110 | **D115, D150** |
| | 2x384 | 2x204 | 2x126 | 2x102 | 2x74 | 2x686 | 2x368 | 2x222 | 2x180 | 2x132 | **F185** |
| | 2x416 | 2x220 | 2x136 | 2x112 | 2x80 | 2x742 | 2x400 | 2x242 | 2x196 | 2x144 | **F225** |
| | 2x480 | 2x254 | 2x158 | 2x128 | 2x92 | 2x856 | 2x462 | 2x278 | 2x226 | 2x166 | **F265** |
| | 2x544 | 2x288 | 2x178 | 2x146 | 2x104 | 2x970 | 2x522 | 2x316 | 2x256 | 2x188 | **F330** |
| | 2x688 | 2x366 | 2x226 | 2x184 | 2x132 | 2x1228 | 2x662 | 2x400 | 2x324 | 2x238 | **F400** |
| | 2x928 | 2x494 | 2x304 | 2x248 | 2x178 | 2x1656 | 2x892 | 2x540 | 2x438 | 2x322 | **F500** |
| | 2x1258 | 2x668 | 2x414 | 2x338 | 2x242 | 2x2246 | 2x1210 | 2x730 | 2x592 | 2x436 | **F630, F800** |

# TeSys contactors
## For lighting circuits

### Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage,
- C: unit capacitance for each lamp,

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Low pressure sodium vapour lamps

| | Non corrected | | | | | | | With parallel correction | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **35** | **55** | **90** | **135** | **150** | **180** | **200** | **35** | **55** | **90** | **135** | **150** | **180** | **200** | |
| **IB (A)** | **1.2** | **1.6** | **2.4** | **3.1** | **3.2** | **3.3** | **3.4** | **0.3** | **0.4** | **0.6** | **0.9** | **1** | **1.2** | **1.3** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **–** | **–** | **17** | **17** | **25** | **36** | **36** | **36** | **36** | **LC1** |
| **Max. no. of lamps according to P (W)** | 6 | 5 | 3 | 2 | 2 | 2 | 2 | – | – | – | – | – | – | – | **K09** |
| | 10 | 7 | 5 | 3 | 3 | 3 | 3 | 40 | 30 | – | – | – | – | – | **D09, D12** |
| | 12 | 9 | 6 | 4 | 4 | 4 | 4 | 50 | 37 | 25 | – | – | – | – | **D18** |
| | 15 | 11 | 7 | 6 | 5 | 5 | 5 | 63 | 47 | 31 | 21 | 19 | 15 | 14 | **D25** |
| | 21 | 16 | 10 | 8 | 8 | 7 | 7 | 86 | 65 | 43 | 28 | 26 | 21 | 20 | **D32, D38** |
| | 27 | 20 | 13 | 10 | 10 | 10 | 9 | 110 | 82 | 55 | 36 | 33 | 27 | 25 | **D40A** |
| | 35 | 26 | 17 | 13 | 13 | 12 | 12 | 140 | 105 | 70 | 46 | 42 | 35 | 32 | **D50A, D65A** |
| | 50 | 37 | 25 | 19 | 18 | 18 | 17 | 200 | 150 | 100 | 66 | 60 | 50 | 46 | **D80, D95** |
| | 100 | 75 | 50 | 38 | 36 | 36 | 34 | 400 | 300 | 200 | 132 | 120 | 100 | 92 | **D115, D150** |
| | 140 | 104 | 70 | 54 | 52 | 50 | 48 | 560 | 420 | 280 | 186 | 168 | 140 | 128 | **F185** |
| | 152 | 114 | 76 | 58 | 56 | 54 | 54 | 606 | 454 | 302 | 202 | 182 | 152 | 140 | **F225** |
| | 174 | 130 | 88 | 68 | 66 | 64 | 62 | 700 | 524 | 350 | 232 | 210 | 174 | 162 | **F265** |
| | 198 | 148 | 98 | 76 | 74 | 72 | 70 | 792 | 594 | 396 | 264 | 238 | 198 | 182 | **F330** |
| | 250 | 188 | 124 | 96 | 94 | 90 | 88 | 1002 | 752 | 502 | 334 | 300 | 250 | 252 | **F400** |
| | 338 | 254 | 168 | 130 | 126 | 122 | 118 | 1352 | 1014 | 676 | 450 | 406 | 338 | 312 | **F500** |
| | 496 | 372 | 248 | 192 | 186 | 180 | 174 | 1982 | 1488 | 992 | 660 | 594 | 496 | 458 | **F630, F800** |

### High pressure sodium vapour lamps

| | Non corrected | | | | | With parallel correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **150** | **250** | **400** | **700** | **1000** | **150** | **250** | **400** | **700** | **1000** | |
| **IB (A)** | **1.9** | **3.2** | **5** | **8.8** | **12.4** | **0.84** | **1.4** | **2.2** | **3.9** | **5.5** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **20** | **32** | **48** | **96** | **120** | **LC1** |
| **Max. no. of lamps according to P (W)** | 4 | 2 | 1 | – | – | – | – | – | – | – | **K09** |
| | 6 | 3 | 2 | 1 | – | – | – | – | – | – | **D09, D12** |
| | 7 | 4 | 3 | 1 | 1 | 17 | – | – | – | – | **D18** |
| | 10 | 5 | 3 | 2 | 1 | 22 | 13 | 8 | – | – | **D25** |
| | 13 | 8 | 5 | 2 | 2 | 30 | 18 | 11 | 6 | – | **D32, D38** |
| | 17 | 10 | 6 | 3 | 2 | 39 | 23 | 15 | 8 | 6 | **D40A** |
| | 22 | 13 | 8 | 4 | 3 | 50 | 30 | 19 | 10 | 7 | **D50A, D65A** |
| | 31 | 18 | 12 | 6 | 4 | 71 | 42 | 27 | 15 | 10 | **D80, D95** |
| | 62 | 36 | 24 | 12 | 8 | 142 | 84 | 54 | 30 | 20 | **D115, D150** |
| | 88 | 52 | 34 | 18 | 14 | 200 | 120 | 76 | 42 | 30 | **F185** |
| | 96 | 56 | 36 | 20 | 16 | 216 | 130 | 82 | 46 | 32 | **F225** |
| | 110 | 66 | 42 | 24 | 18 | 250 | 150 | 94 | 54 | 38 | **F265** |
| | 124 | 74 | 48 | 26 | 20 | 282 | 170 | 108 | 60 | 42 | **F330** |
| | 158 | 94 | 60 | 34 | 24 | 358 | 214 | 136 | 76 | 54 | **F400** |
| | 214 | 126 | 80 | 46 | 32 | 482 | 290 | 184 | 104 | 74 | **F500** |
| | 312 | 186 | 118 | 68 | 48 | 708 | 424 | 270 | 152 | 108 | **F630, F800** |

# TeSys contactors
## For lighting circuits

### Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage,
- C: unit capacitance for each lamp,

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### High pressure mercury vapour lamps

| | Non corrected | | | | | | | With parallel correction | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **50** | **80** | **125** | **250** | **400** | **700** | **1000** | **50** | **80** | **125** | **250** | **400** | **700** | **1000** | |
| **IB (A)** | **0.54** | **0.81** | **1.20** | **2.30** | **4.10** | **6.80** | **9.90** | **0.3** | **0.45** | **0.67** | **1.3** | **2.3** | **3.8** | **5.5** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **–** | **–** | **10** | **10** | **10** | **18** | **25** | **40** | **60** | **LC1** |
| **Max. no. of lamps according to P (W)** | 14 | 9 | 6 | 3 | 1 | – | – | – | – | – | – | – | – | – | **K09** |
| | 22 | 14 | 9 | 5 | 2 | 1 | 1 | 40 | 26 | 17 | 9 | – | – | – | **D09, D12** |
| | 27 | 18 | 12 | 6 | 3 | 2 | 1 | 50 | 33 | 22 | 11 | 6 | – | – | **D18** |
| | 35 | 23 | 15 | 8 | 4 | 2 | 1 | 63 | 42 | 28 | 14 | 8 | 5 | 3 | **D25** |
| | 48 | 32 | 21 | 11 | 6 | 3 | 2 | 86 | 57 | 38 | 20 | 11 | 6 | 4 | **D32, D38** |
| | 61 | 40 | 27 | 14 | 8 | 4 | 3 | 110 | 73 | 49 | 25 | 14 | 8 | 6 | **D40A** |
| | 77 | 51 | 34 | 17 | 10 | 6 | 4 | 140 | 93 | 62 | 32 | 18 | 11 | 7 | **D50A, D65A** |
| | 111 | 74 | 49 | 26 | 14 | 8 | 6 | 200 | 133 | 89 | 46 | 26 | 15 | 10 | **D80, D95** |
| | 222 | 148 | 100 | 52 | 28 | 16 | 12 | 400 | 266 | 178 | 92 | 52 | 30 | 20 | **D115, D150** |
| | 310 | 206 | 140 | 72 | 40 | 24 | 17 | 560 | 372 | 250 | 128 | 72 | 44 | 30 | **F185** |
| | 336 | 224 | 152 | 78 | 44 | 26 | 18 | 606 | 404 | 272 | 140 | 78 | 48 | 32 | **F225** |
| | 388 | 258 | 174 | 90 | 50 | 30 | 20 | 700 | 466 | 312 | 162 | 90 | 54 | 38 | **F265** |
| | 440 | 294 | 198 | 102 | 58 | 34 | 24 | 792 | 528 | 354 | 182 | 102 | 62 | 42 | **F330** |
| | 556 | 372 | 250 | 130 | 72 | 44 | 30 | 1002 | 668 | 448 | 232 | 130 | 78 | 54 | **F400** |
| | 752 | 500 | 338 | 176 | 98 | 60 | 40 | 1352 | 902 | 606 | 312 | 176 | 106 | 74 | **F500** |
| | 1102 | 734 | 496 | 258 | 144 | 88 | 60 | 1982 | 1322 | 888 | 458 | 258 | 156 | 108 | **F630, F800** |

### Metal iodine vapour lamps

| | Non corrected | | | | With parallel correction | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **250** | **400** | **1000** | **2000** | **250** | **400** | **1000** | **2000** | |
| **IB (A)** | **2.5** | **3.6** | **9.5** | **20** | **1.4** | **2** | **5.3** | **11.2** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **32** | **32** | **64** | **140** | **LC1** |
| **Max. no. of lamps according to P (W)** | 3 | 2 | – | – | – | – | – | – | **K09** |
| | 4 | 3 | 1 | – | – | – | – | – | **D09, D12** |
| | 6 | 4 | 1 | – | – | – | – | – | **D18** |
| | 7 | 5 | 2 | – | 13 | 9 | – | – | **D25** |
| | 10 | 7 | 2 | 1 | 18 | 13 | 4 | – | **D32, D38** |
| | 13 | 9 | 3 | 1 | 23 | 16 | 6 | – | **D40A** |
| | 16 | 11 | 4 | 2 | 30 | 21 | 7 | – | **D50A, D65A** |
| | 24 | 16 | 6 | 3 | 42 | 30 | 11 | 5 | **D80, D95** |
| | 48 | 32 | 12 | 6 | 84 | 60 | 22 | 10 | **D115, D150** |
| | 66 | 46 | 18 | 8 | 120 | 84 | 32 | 14 | **F185** |
| | 72 | 50 | 20 | 10 | 130 | 90 | 34 | 16 | **F225** |
| | 84 | 58 | 22 | 12 | 150 | 104 | 40 | 18 | **F265** |
| | 94 | 66 | 24 | 14 | 170 | 118 | 44 | 20 | **F330** |
| | 120 | 84 | 32 | 16 | 214 | 150 | 56 | 26 | **F400** |
| | 162 | 112 | 42 | 20 | 290 | 202 | 76 | 36 | **F500** |
| | 238 | 164 | 62 | 30 | 424 | 298 | 112 | 52 | **F630, F800** |

# TeSys contactors
For heating circuits

## Selection

### General

A heating circuit is a power switching circuit supplying one or more resistive heating elements switched by a contactor.
The same general rules apply as for motor circuits, except that heating circuits are not normally subjected to overload currents. It is therefore only necessary to provide short-circuit protection.

### Characteristics of heating elements

The examples below are based on resistive heating elements used for industrial furnaces or for the heating of buildings (infra-red or resistive radiant type, convector heaters, closed loop heating circuits, etc.).
The variation in resistance values between hot and cold states causes a current peak at switch-on which never exceeds 2 to 3 times the rated operational current (In). This initial peak does not recur during normal operation where subsequent switching is thermostatically controlled.
The rated power and current of a heater are given for the normal operating temperature.

### Protection

The steady state current drawn by a heating circuit is constant when the voltage is stable.
In fact:
- It is unlikely that the number of loads in an existing circuit will be modified;
- This type of circuit cannot create overloads. It is therefore only necessary to provide short-circuit protection.

This can be provided by:
- gG type fuses, or
- modular circuit-breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type fuses.

### Switching, control, protection

A heating element or group of heating elements of a given power may be either single-phase or 3-phase and may be supplied from a 220/127 V or a 400/230 V distribution system.
Excluding a single-phase 127 V system (which is no longer commonly used), the following 3 types of circuit arrangement are possible:
- Single-phase, 2-pole switching
- Single-phase, 4-pole switching
- 3-phase switching

Circuit controlled by 2 poles of the contactor.

## Component selection according to the power switched

The combinations suggested below are based on an ambient temperature of 55 °C and for powers at the nominal voltage, but they also ensure switching in the event of prolonged overloads up to 1.05 Ue.

### Single-phase, 2-pole switching

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 220/240 V | 380/415 V | 660/690 V | 1000 V | |
| 3.5 | 6.5 | 11 | – | **LC1, LP1 K09** |
| 4.5 | 8 | 14 | – | **LC1 D12** |
| 6 | 10.5 | 18.5 | – | **LC1 D18** |
| 7 | 13 | 22.5 | – | **LC1 D25** |
| 10 | 18 | 30.5 | – | **LC1 D32, LC1 D38** |
| 13 | 22.5 | 39.5 | 48 | **LC1 D40A** |
| 16.5 | 28.5 | 43.5 | 68 | **LC1 D65A** |
| 24 | 42 | 73 | 82.5 | **LC1, LP1 D80** |
| 44 | 76 | 118 | 157 | **LC1 D115, LC1 D150** |
| 48 | 83 | 130 | 170 | **LC1 F185** |
| 52 | 90 | 145 | 185 | **LC1 F225** |
| 60 | 104 | 160 | 210 | **LC1 F265** |
| 75 | 130 | 200 | 250 | **LC1 F330** |
| 86 | 145 | 230 | 300 | **LC1 F4002** |
| 116 | 200 | 310 | 400 | **LC1 F5002** |
| 170 | 290 | 450 | 695 | **LC1 F6302, LC1 F800** |
| 270 | 460 | 715 | 945 | **LC1 F780** |
| 140 | 242 | 370 | 490 | **LC1 BL32** |
| 220 | 380 | 580 | 770 | **LC1 BM32** |
| 350 | 605 | 925 | 1225 | **LC1 BP32** |
| 480 | 830 | 1270 | 1680 | **LC1 BR32** |

# TeSys contactors
## For heating circuits

Circuit controlled by a 4-pole contactor with the poles parallel connected in pairs using appropriate connecting links. This solution enables the control of power values approximately equivalent to those controlled by the same contactor on 3-phase.

Circuit controlled by 3 poles of the contactor.

### Component selection according to the power switched *(continued)*

**Single-phase, 4-pole switching**

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 220/240 V | 380/415 V | 660/690 V | 1000 V | |
| 4.5 | 8 | 13.5 | – | **LC1, LP1 K09004** |
| 7 | 13 | 22.5 | – | **LC1 DT25** |
| 12 | 21 | 36.5 | – | **LC1 DT40** |
| 26 | 45.5 | 79.5 | 109 | **LC1 DT80A** |
| 38 | 66 | 117.5 | 132 | **LC1, LP1 D80004** |
| 70 | 121 | 190 | 251 | **LC1 D115004** |
| 76 | 132 | 202 | 270 | **LC1 F1854** |
| 80 | 142 | 230 | 295 | **LC1 F2254** |
| 96 | 166 | 253 | 335 | **LC1 F2654** |
| 120 | 205 | 320 | 400 | **LC1 F3304** |
| 137 | 236 | 363 | 480 | **LC1 F4004** |
| 185 | 320 | 490 | 650 | **LC1 F5004** |
| 272 | 470 | 718 | 950 | **LC1 F6304** |
| 425 | 735 | 1140 | 1520 | **LC1 F7804** |
| 224 | 387 | 590 | 785 | **LC1 BL34** |
| 352 | 608 | 930 | 1230 | **LC1 BM34** |
| 560 | 968 | 1478 | 1960 | **LC1 BP34** |
| 768 | 1328 | 2025 | 2685 | **LC1 BR34** |

**3-phase switching**

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 220/240 V | 380/415 V | 660/690 V | 1000 V | |
| 4.5 | 8 | 13.5 | – | **LC1, LP1 K09** |
| 7 | 13 | 22.5 | – | **LC1 D12** |
| 10 | 18 | 30.5 | – | **LC1 D18** |
| 13 | 22.5 | 39.5 | – | **LC1 D25** |
| 18 | 31 | 52.5 | – | **LC1 D32, LC1 D38** |
| 22.5 | 38 | 68 | 78 | **LC1 D40A** |
| 28.5 | 49 | 86 | 112.5 | **LC1 D65A** |
| 40.5 | 70.5 | 126 | 135.5 | **LC1, LP1 D80** |
| 76 | 131 | 206 | 275 | **LC1 D115, LC1 D150** |
| 82 | 143 | 220 | 295 | **LC1 F185** |
| 90 | 155 | 250 | 320 | **LC1 F225** |
| 103 | 179 | 275 | 370 | **LC1 F265** |
| 130 | 225 | 345 | 432 | **LC1 F330** |
| 149 | 256 | 395 | 525 | **LC1 F400** |
| 200 | 346 | 530 | 710 | **LC1 F500** |
| 294 | 509 | 780 | 1030 | **LC1 F630, LC1 F800** |
| 463 | 800 | 1235 | 1650 | **LC1 F780** |
| 242 | 419 | 640 | 850 | **LC1 BL33** |
| 380 | 658 | 1005 | 1350 | **LC1 BM33** |
| 606 | 1047 | 1600 | 2150 | **LC1 BP33** |
| 830 | 1437 | 2200 | 2950 | **LC1 BR33** |

| | |
|---|---|
| **Application example** | For a 220 V, 50 Hz, single-phase circuit supplying a total heating load of 12.5 kW.<br>Select a 3-pole contactor **LC1 D65A**. |

# TeSys contactors
## For switching the primaries of 3-phase LV/LV transformers

## Operating conditions

Maximum ambient temperature: 55 °C.

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:
- the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, layout and size of the windings, ...)
- the performance of the magnetic laminations used,
- the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The inrush current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer.

## Contactor selection

The peak magnetising current of the transformer must be lower than the values given in the tables below.
Maximum operating rate: 120 operating cycles/hour.

| Contactor rating | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A | LC1 D50A | LC1 D65A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum permissible current peak at switch-on | | **A** | 160 | 225 | 350 | 350 | 420 | 630 | 770 | 770 | 1100 | 1250 | 1400 | 1550 | 1650 | 1800 | 2000 |
| Maximum operational power *(1)* | 220 V 240 V | **kVA** | 2 | 2.5 | 4 | 4 | 5 | 7 | 8.5 | 8.5 | 14 | 16 | 18 | 19.5 | 19.5 | 25 | 25 |
| | 380 V 400 V | **kVA** | 3.5 | 5 | 7 | 7 | 8 | 12.5 | 15 | 15 | 24 | 27 | 31 | 34 | 34 | 50 | 50 |
| | 415 V 440 V | **kVA** | 4 | 5.5 | 8 | 8 | 9 | 14 | 17 | 17 | 28 | 32 | 36 | 39 | 39 | 55 | 55 |
| | 500 V | **kVA** | 5 | 7 | 9 | 9 | 11 | 16.5 | 20 | 20 | 32 | 36 | 40 | 45 | 45 | 65 | 65 |
| | 660 V 690 V | **kVA** | 6 | 8.5 | 12 | 12 | 14 | 21.5 | 26.5 | 26.5 | 42 | 48 | 53 | 59 | 59 | 80 | 80 |
| | 1000 V | **kVA** | – | – | – | – | – | – | – | – | 60 | 70 | 80 | 85 | 95 | 100 | 100 |

| Contactor rating | | | LC1 F185 | LC1 F225 | LC1 F265 | LC1 F330 | LP1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 F800 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum permissible current peak at switch-on | | **A** | 2900 | 3300 | 3800 | 5000 | 6300 | 7700 | 9000 | 12 000 | 11 000 | 18 000 | 18 000 | 24 000 | 30 000 |
| Maximum operational power *(1)* | 220 V 240 V | **kVA** | 40 | 45 | 50 | 65 | 75 | 100 | 120 | 175 | 145 | 230 | 230 | 300 | 380 |
| | 380 V 400 V | **kVA** | 75 | 80 | 90 | 120 | 130 | 170 | 200 | 280 | 245 | 400 | 400 | 530 | 660 |
| | 415 V 440 V | **kVA** | 80 | 90 | 100 | 130 | 140 | 190 | 220 | 310 | 270 | 450 | 450 | 560 | 700 |
| | 500 V | **kVA** | 95 | 100 | 110 | 140 | 170 | 225 | 260 | 350 | 315 | 480 | 480 | 600 | 750 |
| | 660 V 690 V | **kVA** | 120 | 130 | 140 | 170 | 200 | 270 | 350 | 400 | 425 | 600 | 600 | 800 | 950 |
| | 1000 V | **kVA** | 150 | 170 | 200 | 225 | 250 | 375 | 470 | 650 | 550 | 700 | 700 | 1000 | 1200 |

*(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.*



Characteristics : pages 5/50 to 5/55
References : pages 5/62 to 5/67
Dimensions, schemes : pages 5/92 to 5/97

# TeSys contactors

For switching 3-phase capacitor banks used for power factor correction

## Standard contactors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz).
As a general rule, the peak current on energisation is lower when:

- the mains inductances are high,
- the line transformer ratings are low,
- the transformer short-circuit voltage is high,
- the ratio between the sum of the ratings of the capacitors already switched into the circuit and that of the capacitor to be switched in is small (for multiple step capacitor banks).

In accordance with standards IEC 60070, NF C 54-100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched.
The rated operational powers given in the tables below take this overload into account.
Short-circuit protection is normally provided by gI type HPC fuses rated at 1.7 to 2 In.

## Contactor applications

### Operating conditions

Capacitors are directly switched. **The values of peak current at switch-on must not exceed the values indicated opposite.**
An inductor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary.
Inductance values are determined according to the selected operating temperature.

### Power factor correction by a single-step capacitor bank

The use of a choke inductor is unnecessary: the inductance of the mains supply is adequate to limit the peak to a value compatible with the contactor characteristics.

### Power factor correction by a multiple-step capacitor bank

Select a special contactor as defined on page 5/102.
**If a standard contactor is used, it is essential to insert a choke inductor in each of the three phases of each step.**

## Maximum operational power of contactors

### Standard contactors

Maximum operating rate: 120 operating cycles/hour.
Electrical durability at maxiumum load: 100 000 operating cycles.
With choke inductors connected, where necessary.

| Operational power at 50/60 Hz | | | | | | Max. peak current | Contactor rating |
|---|---|---|---|---|---|---|---|
| θ ≤ 40 °C *(1)* | | | θ ≤ 55 °C *(1)* | | | | |
| 220/240 V | 400/440 V | 600/690 V | 220/240 V | 400/440 V | 600/690 V | | |
| kvAR | kvAR | kvAR | kvAR | kvAR | kvAR | A | |
| 6 | 11 | 15 | 6 | 11 | 15 | 560 | **LC1 D09, D12** |
| 9 | 15 | 20 | 9 | 15 | 20 | 850 | **LC1 D18** |
| 11 | 20 | 25 | 11 | 20 | 25 | 1600 | **LC1 D25** |
| 14 | 25 | 30 | 14 | 25 | 30 | 1900 | **LC1 D32, D38** |
| 17 | 30 | 37 | 17 | 30 | 37 | 2160 | **LC1 D40** |
| 22 | 40 | 50 | 22 | 40 | 50 | 2160 | **LC1 D50** |
| 22 | 40 | 50 | 22 | 40 | 50 | 3040 | **LC1 D65** |
| 35 | 60 | 75 | 35 | 60 | 75 | 3040 | **LC1 D80, D95** |
| 50 | 90 | 125 | 38 | 75 | 80 | 3100 | **LC1 D115** |
| 60 | 110 | 135 | 40 | 85 | 90 | 3300 | **LC1 D150** |
| 70 | 125 | 160 | 50 | 100 | 100 | 3500 | **LC1 F185** |
| 80 | 140 | 190 | 60 | 110 | 110 | 4000 | **LC1 F225** |
| 90 | 160 | 225 | 75 | 125 | 125 | 5000 | **LC1 F265** |
| 100 | 190 | 275 | 85 | 140 | 165 | 6500 | **LC1 F330** |
| 125 | 220 | 300 | 100 | 160 | 200 | 8000 | **LC1 F400** |
| 180 | 300 | 400 | 125 | 220 | 300 | 10 000 | **LC1 F500** |
| 250 | 400 | 600 | 190 | 350 | 500 | 12 000 | **LC1 F630** |
| 250 | 400 | 600 | 190 | 350 | 500 | 14 200 | **LC1 F800** |
| 200 | 350 | 500 | 180 | 350 | 500 | 25 000 | **LC1 BL** |
| 300 | 550 | 650 | 250 | 500 | 600 | 25 000 | **LC1 BM** |
| 500 | 850 | 950 | 400 | 750 | 750 | 25 000 | **LC1 BP** |
| 600 | 1100 | 1300 | 500 | 1000 | 1000 | 25 000 | **LC1 BR** |

*(1) Upper limit of temperature category conforming to IEC 60070.*



Characteristics : pages 5/50 to 5/55
References : pages 5/62 to 5/67
Dimensions, schemes : pages 5/92 to 5/97

# TeSys contactors
For auto-transformer starting

## Applications

Auto-transformer starting is suitable for starting all types of squirrel cage motors: with 3, 6 or even 9 terminals according to North American technology.

Starting is performed at reduced voltage and produces maximum torque at minimum line current.
It allows the starting torque ($C = f(U)^2$) to be adapted to the resistive torque of the driven machine by means of the 2 or 3 intermediate voltage take-off connections on the auto-transformer (0.65 and 0.8 Un or 0.5, 0.65 and 0.8 Un). In general, only one take-off connection is used.

This type of starting is used for high power and/or high inertia machines.
The motor is never disconnected from its power supply during starting (closed transition) and transient phenomena are eliminated.

## Recommended wiring scheme

## Operation

Starting is performed in 3 stages:
- star connection of the auto-transformer is made by KM1, then contactor KM2 closes and the motor starts under reduced voltage;
- the neutral point is opened by KM1; part of the auto-transformer winding is switched into each phase for a short moment, constituting a stator starting inductance;
- KM3 switches the motor to full mains voltage and causes the auto-transformer to be shunted out of circuit by KM2.

The auto-transformer used generally has an air gap (adjusted or not) in order to obtain, during the second phase of starting, a series inductance whose value is compatible with correct starting.

## Operating curves

1 Direct switching current
2 Current with auto-transformer

1 Direct motor torque
2 Torque with auto-transformer
3 Resistive torque of the machine

## Auto-transformer starters from 59 to 900 kW up to 440 V (type 1 coordination)

The components recommended in the table below have been determined according to the following characteristics:
- auto-transformer: on 0.65 Un connection with non adjusted air gap,
- 3 starts per hour, of which 2 consecutive,
- Motor starting current: Id/In = 6,
- Iq = 70 kA,
- Transient current on closing of KM3 ⩽ 7 $\sqrt{2}$ In,
- Maximum starting time: 30 seconds,
- Ambient temperature θ ⩽ 40 °C.

Switch-disconnector-fuses: operators and accessories, please consult your Regional Sales Office.
Contactors: 3-pole.
LC1 D: see pages 5/62 and 5/65,
LC1 F: please consult your Regional Sales Office,
LC1 B: please consult your Regional Sales Office.

Auxiliary contact blocks:
- for contactors LC1 D: one LAD N11 (1 N/O + 1 N/C) on KM1,
- for contactors LC1 F: one LAD N22 (2 N/O + 2 N/C) on KM1, KM2 and KM3.

Thermal overload relays:
- LRD: see pages 6/20 to 6/25,
- LR9 D: see page 6/23,
- LR9 F: please consult your Regional Sales Office.

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | Switch-disconnector-fuse Reference | aM fuses | | Contactors | | | Overload relays | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Size | Rating | KM3 LC1 | KM2 LC1 | KM1 LC1 | Reference (1) | Setting range |
| 220/ 230 V | 380/ 400 V | 415 V | 440 V | In max | | | | | | | | |
| kW | kW | kW | kW | A | | | A | | | | | A |
| 30 | 55 | 59 | 59 | 105 | **GS● K** | 22 x 58 | 125 | **D115** | **D115** | **D3210** | **LR9 D5369** | 90…150 |
| | | | | | | | | | | | **LRD 4367** | 95…120 |
| 40 | 75 | 80 | 80 | 138 | **GS● L** | T0 | 160 | **D150** | **D115** | **D5011** | **LR9 D5369** | 90…150 |
| | | | | | | | | | | | **LRD 4369** | 110…140 |
| 51 | 90 | 90 | 100 | 170 | **GS● N** | T1 | 200 | **F185** | **D115** | **D5011** | **LR9 F5371** | 132…220 |
| 63 | 110 | 110 | 110 | 205 | **GS● N** | T1 | 250 | **F225** | **D150** | **D8011** | **LR9 F5371** | 132…220 |
| 75 | 132 | 132 | 150 | 245 | **GS● N** | T1 | 250 | **F265** | **F185** | **D115** | **LR9 F5375** | 200…330 |
| 90 | 160 | 160 | 185 | 300 | **GS● QQ** | T2 | 315 | **F330** | **F265** | **D115** | **LR9 F5375** | 200…330 |
| 110 | 200 | 200 | 220 | 370 | **GS● QQ** | T2 | 400 | **F400** | **F330** | **D115** | **LR9 F5379** | 300…500 |
| 140 | 250 | 257 | 280 | 460 | **GS2 S** | T3 | 500 | **F500** | **F400** | **D115** | **LR9 F5379** | 300…500 |
| 180 | 315 | 355 | 375 | 584 | **GS2 S** | T3 | 630 | **F630** | **F400** | **D185** | **LR9 F5381** | 380…630 |
| 200 | 355 | 375 | 400 | 635 | **GS2 V** | T4 | 800 | **F800** | **F500** | **F185** | **TC800/1 + LRD 05** | 505…800 |
| 220 | 400 | 425 | 450 | 710 | **GS2 V** | T4 | 800 | **F800** | **F500** | **F265** | **TC800/1 + LRD 05** | 505…800 |
| 250 | 450 | 475 | 500 | 800 | **GS2 V** | T4 | 800 | **F800** | **F500** | **F265** | **TC1000/1 + LRD 05** | 630…1000 |
| 280 | 500 | 530 | 560 | 900 | **GS2 V** | T4 | 1000 | **BM33●22** | **F630** | **F330** | **TC1000/1 LRD 05** | 630…1000 |
| 315 | 560 | 600 | 630 | 1000 | **GS2 V** | T4 | 1000 | **BM33●22** | **F630** | **F400** | **TC1250/1 LRD 05** | 790…1250 |
| 335 | 630 | 670 | 710 | 1100 | **GS2 V** | T4 | 1250 | **BP33●22** | **F630** | **F400** | **TC1250/1 LRD 05** | 790…1250 |
| 400 | 710 | 750 | 800 | 1260 | **On base** | T4 | 2 x 800 (2) | **BP33●22** | **F780** | **F400** | **TC1500/1 LRD 05** | 945…1500 |
| 450 | 800 | 800 | 800 | 1450 | **On base** | T4 | 2 x 800 (2) | **BP33●22** | **F780** | **F400** | **TC1750/1 LRD 05** | 100…1750 |
| 500 | 900 | 900 | 900 | 1600 | **On base** | T4 | 2 x 800 (2) | **BR33●22** | **F780** | **F500** | **TC2000/1 LRD 05** | 260…2000 |

*(1) For power ratings greater than or equal to 400 kW at 415 V, use one LRD-05 on the current transformer.*
*(2) Check with the motor manufacturer whether the fuses should be fitted in parallel.*

# TeSys contactors
For rotor circuits of slip-ring motors

## Applications
These contactors are used to eliminate starting resistance in the rotor circuit of slip-ring motors.

The most common application is for starters without inching and without rotor speed adjustment: pumps, fans, conveyors, compressors, ...

In the case of control by means of a manually operated master controller, the use of contactors with magnetic blow-out is recommended. Please consult your Regional Sales Office.

For hoisting applications, contactor selection must take into account the type of motor duty, the operating rate, the rotor voltage and current, the type of connection, the ambient temperature, etc.
Please consult your Regional Sales Office.

## Operation
The rotor circuit contactors are interlocked with the stator contactor and therefore do not open until after the stator contactor has opened, when the rotor voltage has disappeared, or virtually disappeared.

They make the current corresponding to the normal starting peak (1.5 to 2.5 times the rated rotor current) and open the circuit under no-load. Making and breaking are easy.

**Different types of rotor connection**

Star connection

Delta connection

'V' connection

'W' connection

# TeSys contactors
For rotor circuits of slip-ring motors

## Contactor selection according to the type of connection

### Rotor current and voltage coefficients

Coefficients to be applied to the operational current values shown in the table below.

| Type of connection | Rotor I coefficient | 3-phase rotor Ue *(1)* | | | |
|---|---|---|---|---|---|
| | | Maximum | | With counter-current | |
| | Operational I | LC1 F | LC1 B | LC1 F | LC1 B |
| **Star** | 1 | 2000 V | 2000 V | 1000 V | 1000 V |
| **Delta** | 1.4 | 1700 V | 1700 V | 850 V | 850 V |
| **In V** | 1 | 1700 V | 1700 V | 850 V | 850 V |
| **In W** | 1.6 | 1700 V | 1700 V | 850 V | 850 V |

## Selection according to the operational current

The selection examples below take into account:
- a ratio of 2 between the maximum operational rotor voltage (Uer) and the rated stator operational voltage (Ues). This ratio is given in standard IEC 60947-4,
- a guarantee of occasional duty (making and breaking capacities) specified in the above standards.

| Time current flowing | Contactor rating | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | LC1 D150 | LC1 F185 | LC1 F265 | LC1 F400 | LC1 F500 | LC1 F630 | LC1 F780 | LC1 BL | LC1 BM | LC1 BP | LC1 BR |
| **Intermediate contactor: with number of operating cycles ⩽ 30/h** | | | | | | | | | | | |
| 10 s | 450 A | 550 A | 800 A | 1100 A | 1500 A | 2000 A | 2500 A | 2000 A | 2400 A | 3750 A | 5000 A |
| 30 s | 280 A | 400 A | 550 A | 730 A | 1000 A | 1500 A | 2000 A | 1200 A | 1800 A | 2600 A | 3600 A |
| 60 s | 220 A | 300 A | 400 A | 550 A | 750 A | 1200 A | 1500 A | 1000 A | 1500 A | 2200 A | 3000 A |
| **Intermediate contactor: with number of operating cycles ⩽ 60/h** | | | | | | | | | | | |
| 5 s | 450 A | 550 A | 800 A | 1100 A | 1500 A | 2000 A | 2500 A | 2000 A | 2400 A | 3750 A | 5000 A |
| 10 s | 330 A | 450 A | 620 A | 860 A | 1250 A | 1800 A | 2300 A | 1600 A | 2200 A | 3400 A | 4500 A |
| 30 s | 220 A | 300 A | 400 A | 550 A | 750 A | 1200 A | 1500 A | 1000 A | 1500 A | 2200 A | 3000 A |
| **Intermediate contactor: with number of operating cycles ⩽ 150/h for LC1 F and 120/h for LC1 B** | | | | | | | | | | | |
| 5 s | 300 A | 420 A | 580 A | 820 A | 1150 A | 1650 A | 2200 A | 1500 A | 2100 A | 3200 A | 4200 A |
| 10 s | 250 A | 350 A | 430 A | 600 A | 850 A | 1300 A | 1600 A | 1100 A | 1600 A | 2300 A | 3200 A |
| **Rotor short-circuit contactor and intermediate contactor: with number of operating cycles > 150/h for LC1 F and 120/h for LC1 B** | | | | | | | | | | | |
| – | 200 A | 270 A | 350 A | 500 A | 700 A | 1000 A | 1600 A | 800 A | 1250 A | 2000 A | 2750 A |

### Electrical durability

For automatic starting, the electrical durability is in the region of 1 million operating cycles.

*(1) For use up to 3000 V, please consult your Regional Sales Office.*

# TeSys contactors
## Long distance remote control

### Voltage drop caused by the inrush current

When the operating coil of a contactor is energised, the inrush current produces a voltage drop in the control circuit cable caused by the resistance of the conductors, which can adversely affect closing of the contactor.
An excessive voltage drop in the control supply cables (both a.c. and d.c.) can lead to non closure of the contactor poles or even destruction of the coil due to overheating.
This phenomenon is aggravated by:
- a long line,
- a low control circuit voltage,
- a cable with a small c.s.a.,
- a high inrush power drawn by the coil.

The maximum length of cable, depending on the control voltage, the inrush power and the conductor c.s.a., is indicated in the graphs below.

#### Remedial action

To reduce the voltage drop at switch-on:
- increase the conductor c.s.a.,
- use a higher control circuit voltage,
- use an intermediate control relay.

#### Selection of conductor c.s.a.

These graphs are for a maximum line voltage drop of 5%. They give a direct indication of the copper conductor c.s.a. to be used for the control cable, depending on its length, the inrush power drawn by the contactor coil and the control circuit voltage (see example page 5/223).

| | | | | | |
|---|---|---|---|---|---|
| 1 ∼ 24 V | 3 ∼ 115 V | 5 ∼ 400 V | **C.s.a. of copper cables** | | |
| 2 ∼ 48 V | 4 ∼ 230 V | 6 ∼ 690 V | A 0.75 mm² | C 1.5 mm² | E 4 mm² |
| | | | B 1 mm² | D 2.5 mm² | F 6 mm² |

| | | | | | |
|---|---|---|---|---|---|
| 7 ⎓ 24 V | 9 ⎓ 125 V | | **C.s.a. of copper cables** | | |
| 8 ⎓ 48 V | 10 ⎓ 250 V | | A 0.75 mm² | C 1.5 mm² | E 4 mm² |
| | | | B 1 mm² | D 2.5 mm² | F 6 mm² |

*(1) For 3-wire control, the current only flows in 2 of the conductors.*
*(2) This is the length of the cable comprising 2 or 3 conductors. (Distance between the contactor and the control device).*

## Voltage drop caused by the inrush current (continued)

What cable c.s.a. is required for the control circuit of an LC1 D40A, 115 V contactor, operated from a distance of 150 metres?

■ Contactor LC1 D40A, voltage 115 V, 50 Hz: inrush power: 200 VA

On the left-hand graph on the page opposite, point X is at the intersection of the vertical line corresponding to 200 VA and the ∿ 115 V voltage curve.

On the right-hand graph on the page opposite, point Y is at the intersection of the vertical line corresponding to 150 m and the horizontal line passing through point X.

Use the conductor c.s.a. indicated by the curve which passes through point Y, i.e.: 1.5 $mm^2$.

If point Y lies between two c.s.a. curves, choose the larger of the c.s.a. values.

### Calculating the maximum cable length

The maximum permissible length for acceptable line voltage drop is calculated by the formula:

$$L = \frac{U^2}{SA}.s.K$$

where:

L : distance between the contactor and the control device in m (length of the cable),
U : supply voltage in V,
SA : apparent inrush power drawn by the coil in VA,
s : conductor c.s.a. in $mm^2$,
K : factor given in the table below.

| a.c. supply | SA in VA | 20 | 40 | 100 | 150 | 200 |
|---|---|---|---|---|---|---|
| | K | 1.38 | 1.5 | 1.8 | 2 | 2.15 |

| d.c. supply | Irrespective of the apparent inrush power SA, expressed in W |
|---|---|
| | K = 1.38 |

5

## Residual current in the coil due to cable capacitance

When the control contact of a contactor is opened, the control cable capacitance is effectively in series with the coil of the electromagnet. This capacitance can cause a residual current to be maintained in the coil, with the risk that the contactor will remain closed.

**This only applies to contactors operating on an a.c. supply.**

This phenomenon is aggravated by:
- a long line length between the coil control contact and the contactor, or between the coil control contact and the power supply,
- a high control circuit voltage,
- a low coil consumption, sealed,
- a low value of contactor drop-out voltage.

The maximum control cable length, according to the contactor coil supply voltage, is indicated in the graph on the page opposite
.

### Remedial action

Various solutions can be adopted to avoid the risk of the contactor remaining closed due to cable capacitance:
- use a d.c. control voltage, or,
- add a rectifier, connected as shown in the scheme below, but retaining an a.c. operating coil: in this way, rectified a.c. current flows in the control cable.

When calculating the maximum cable length, take the resistance of the conductors into account.
.

- Connect a resistor in parallel with the contactor coil *(1)*.

Value of the resistance :

$$R\,\Omega = \frac{1}{10^{-3}\,C\,(\mu F)}$$ (C capacitance of the control cable)

Power to be dissipated :

$$PW = \frac{U^2}{R}$$

*(1) To avoid increasing the voltage drop due to inrush current, this resistor must be brought into operation after the contactor has closed by using an N/O contact.*

## Residual current in the coil due to cable capacitance (continued)

These graphs are for a capacitance, between 2 conductors, of 0.2 µF/km. They make it possible to determine whether there is a risk of the contactor remaining closed due to the power drawn by the coil when sealed, as well as the control circuit voltage, according to the length of the control cable.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | ∼ 24 V | 3 | ∼ 115 V | 5 | ∼ 400 V | 7 | 3-wire control |
| 2 | ∼ 48 V | 4 | ∼ 230 V | 6 | ∼ 690 V | 8 | 2-wire control |

In the zones below the straight lines for 3-wire and 2-wire control respectively, there is a risk of the contactor remaining closed.

### Examples

What is the maximum length for the control cable of an LC1 D12 contactor, operating on 230 V, with 2-wire control?

■ Contactor LC1 D12, voltage 230 V, 50 Hz: power sealed 7 VA.

On the left-hand graph, point A is at the intersection of the vertical line for 7 VA with the ∼ 230 V voltage curve.

On the right-hand graph, point B is at the intersection of the horizontal line with the 2-wire control curve.

The maximum cable length is therefore 300 m.

In the same example, with a 600 m cable, the point lies in the risk zone. A resistor must therefore be connected in parallel with the contactor coil.

Value of this resistance :

$$R = \frac{1}{10^{-3} \cdot C} = \frac{1}{10^{-3} \cdot 0.12} = 8.3\ \Omega$$

Power to be dissipated :

$$P = \frac{U^2}{R} = \frac{(220)^2}{8300} = 6\ W$$

Alternative solution: use a d.c. control supply.

### Calculating the cable length

The maximum permitted length of control cable to avoid the effects of capacitance is calculated using the formula:

$$L = 455 \cdot \frac{S}{U^2 \cdot Co}$$

L : distance between the contactor and the control device in km (length of the cable),
S : apparent power, sealed, in VA,
U : control voltage in V,
Co : line capacitance of the cable in µF/km.

# TeSys contactors

## Variable composition standard and high performance contactors

| | |
|---|---|
| **Applications** | ■ Motor switching in categories AC-3<br>■ Resistive load switching : heating, etc.<br>■ Distribution circuit switching : line contactor<br>■ Supply changeover switching : circuit coupling etc<br>■ Transformer, capacitor, lighting switching |

| **Type** | | **Standard contactors** | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated operational current** | AC-3 | 80 A | 170 A | 250 A | 350 A | 460 A | 700 A |
| | AC-4/DC-5 | 72 A/– | 145 A/– | 205 A/– | 290/470 A *(1)* | 380/630 A *(1)* | 584/1000 A *(1)* |
| | AC-1 | 80 A | 200 A | 300 A | 470 A | 630 A | 1000 A |
| **Rated operational voltage** | | 690 V ∼ | 690 V ∼ | 690 V ∼ | 690 V ∼ | 690 V ∼ | 690 V ∼ |
| **Control circuit** | | Standard applications | | | | | |
| | | a.c. supply ∼ | | | d.c. supply ⎓ | | |
| **Contactors** | Type | **CV1** | | | | | |
| | Rating | **F** | **G** | **H** | **J** | **K** | **L** |
| **Pages** | | Please consult our catalogue “TeSys variable composition contactors”. | | | | | |

*(1) With PN3 poles.*

- Motor switching in categories AC-4, DC-5
- Inductive circuit switching
- High voltage d.c. switching : crane electromagnets, railway locomotives
- Load switching at high operating rates

**High performance contactors**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 80 A | 200 A | 250 A | 320 A | 460 A | 800 A | 1000 A | 1500 A | 1800 A |
| 80/80 A | 170/200 A | 208/300 A | 250/320 A | 380/500 A | 720/800 A | 830/1000 A | 1200/1800 A | 1500/2500 A |
| 80A | 200 A | 300 A | 320 A | 500 A | 800 A | 1250 A | 2000 A | 2750 A |
| 1000 V ∼ | 1000 V ∼ | 1000 V ∼ | 1000 V ∼ | 1000 V ∼ | 1000 V ∼ | 1000 V ∼ | 1000 V ∼ | 1000 V ∼ |

Low consumption applications

a.c. supply via economy resistor

d.c. supply via economy resistor

| CV3 | | | | | CV3 and LC1 B | | | |
|---|---|---|---|---|---|---|---|---|
| F | G | H | J | K | L | M | P | R |

5

# TeSys contactors

## Variable composition contactors
## CV1 B (80 to 1000 A) and CV3 B (80 to 500 A)

## Selection

### To define a contactor

The criteria required to define the composition of a contactor are:
- the number of N/O and N/C power poles,
- the current and power supply voltage,

(note: on a d.c. supply, the time constant $\frac{L}{R}$ of the load must be known in order to define the number of poles to be wired in series to break the arc),
- the control circuit voltage,
- the number of auxiliary contacts.

### To order a contactor

#### Contactor selectable by code combinations

- Use the symbol combination table on page 5/229.
- Check the maximum number of poles in the selection table on page 5/230.
- Check the operational currents possible below (selection restrictions).

#### Contactor not selectable by code combinations

- For a composition that cannot be selected using these tables, use order form CF 452, page 5/231.

## Selection restrictions

| Contactor type | | CV1 BF CV3 BF | CV1 BG CV3 BG | CV1 BH CV3 BH | CV1 BJ CV3 BJ | CV1 BK CV3 BK | CV1 BL |
|---|---|---|---|---|---|---|---|
| Rated operational current | 11 A | E | – | – | – | – | – |
| | 13 A | M | – | – | – | – | – |
| | 20 A | N | – | – | – | – | – |
| | 40 A | P | – | – | – | – | – |
| | 50 A | Q | Q | – | – | – | – |
| | 80 A | F | – | – | – | – | – |
| | 125 A | – | R | R | – | – | – |
| | 200 A | – | G | G | – | – | – |
| | 250 A | – | – | – | S | – | – |
| | 300 A | – | – | H | – | – | – |
| | 320 A | – | – | – | T | – | – |
| | 400 A | – | – | – | – | U | – |
| | 470 A | – | – | – | J | – | – |
| | 500 A | – | – | – | – | V | – |
| | 630 A | – | – | – | – | K | K |
| | 1000 A | – | – | – | – | – | L |
| | 0 Without arc chamber | Z | Z | Z | Z | Z | Z |

# TeSys contactors

## Variable composition contactors
## CV1 B (80 to 1000 A) and CV3 B (80 to 500 A)

| **Reference to be constituted** (see examples on page 5/230) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Type of contactor related to application** | | | | | | | | | | | | |
| ∼ 690 V, ⎓ 220 V/pole | | **CV1 B** | | | | | | | | | | |
| ∼ 1000 V, ⎓ 440 V/pole | | **CV3 B** | | | | | | | | | | |
| **Contactor size AC-1/AC-3** | | | | | | | | | | | | |
| CV1 : 80/80 A | CV3 : 80/80 A | | **F** | | | | | | | | | |
| CV1 : 200/170 A | CV3 : 200/200 A | | **G** | | | | | | | | | |
| CV1 : 300/250 A | CV3 : 300/285 A | | **H** | | | | | | | | | |
| CV1 : 470/350 A | CV3 : 320/320 A | | **J** | | | | | | | | | |
| CV1 : 630/460 A | CV3 : 500/460 A | | **K** | | | | | | | | | |
| CV1 : 1000/700 A | | | **L** | | | | | | | | | |
| **Number of poles** | | | | | | | | | | | | |
| N/O poles | 1 N/O | | | **1** | | | | | | | | |
| | 2 N/O | | | **2** | | | | | | | | |
| | 3 N/O | | | **3** | | | | | | | | |
| | 4 N/O | | | **4** | | | | | | | | |
| | 5 N/O | | | **5** | | | | | | | | |
| N/C poles | 1 N/C | | | | | **1** | | | | | | |
| | 2 N/C | | | | | **2** | | | | | | |
| | 3 N/C | | | | | **3** | | | | | | |
| No main poles | | | | **0** | **Z** | **0** | **Z** | | | | | |
| **Operational current** (determines the blow-out coil size) | | | | | | | | | | | | |
| 11 A | | | | | **E** | | **E** | | | | | |
| 13 A | | | | | **M** | | **M** | | | | | |
| 20 A | | | | | **N** | | **N** | | | | | |
| 40 A | | | | | **P** | | **P** | | | | | |
| 50 A | | | | | **Q** | | **Q** | | | | | |
| 80 A | | | | | **F** | | **F** | | | | | |
| 125 A | | | | | **R** | | **R** | | | | | |
| 200 A | | | | | **G** | | **G** | | | | | |
| 250 A | | | | | **S** | | **S** | | | | | |
| 300 A | | | | | **H** | | **H** | | | | | |
| 320 A | | | | | **T** | | **T** | | | | | |
| 400 A | | | | | **U** | | **U** | | | | | |
| 470 A | | | | | **J** | | **J** | | | | | |
| 500 A | | | | | **V** | | **V** | | | | | |
| 630 A | | | | | **K** | | **K** | | | | | |
| 1000 A | | | | | **L** | | **L** | | | | | |
| Without breaking | | | | | **Z** | | **Z** | | | | | |
| **Control circuit voltage** | | | | | | | | | | | | |
| 24 V | | | | | | | | **B** | | | | |
| 48 V | | | | | | | | **E** | | | | |
| 110 V | | | | | | | | **F** | | | | |
| 120 V | | | | | | | | **K** | | | | |
| 127 V | | | | | | | | **G** | | | | |
| 208 V | | | | | | | | **L** | | | | |
| 220 V | | | | | | | | **M** | | | | |
| 230 V | | | | | | | | **P** | | | | |
| 240 V | | | | | | | | **U** | | | | |
| 380 V | | | | | | | | **Q** | | | | |
| 400 V | | | | | | | | **V** | | | | |
| 415 V | | | | | | | | **N** | | | | |
| 440 V | | | | | | | | **R** | | | | |
| 480 V | | | | | | | | **T** | | | | |
| 500 V | | | | | | | | **S** | | | | |
| 600 V | | | | | | | | **X** | | | | |
| **Operating frequency** | | | | | | | | | | | | |
| 50 Hz | | | | | | | | | **5** | | | |
| 60 Hz | | | | | | | | | **6** | | | |
| 50/60 Hz (rectifier + economy resistor) | | | | | | | | | **7** | | | |
| ⎓ | | | | | | | | | **D** | | | |
| ⎓ + economy resistor | | | | | | | | | **R** | | | |
| **Auxiliary contacts** (type ZC4 GM) | | | | | | | | | | | | |
| N/O instantaneous | 1 N/O | | | | | | | | | **1** | | |
| | 2 N/O | | | | | | | | | **2** | | |
| | 3 N/O | | | | | | | | | **3** | | |
| | 4 N/O | | | | | | | | | **4** | | |
| N/C instantaneous | 1 N/C | | | | | | | | | | **1** | |
| | 2 N/C | | | | | | | | | | **2** | |
| | 3 N/C | | | | | | | | | | **3** | |
| | 4 N/C | | | | | | | | | | **4** | |
| No instantaneous auxiliary contacts | | | | | | | | | | **0** | **0** | |
| On-delay | 1 C/O | | | | | | | | | | | **J** |
| Off-delay | 1 C/O | | | | | | | | | | | **N** |

*To check whether the symbol combinations are possible, refer to the selection information and guide on pages 5/228 and 5/230.*
*If in doubt, fill out order form CF 452.*

# TeSys contactors

## Variable composition contactors
## CV1 B (80 to 1000 A) and CV3 B (80 to 500 A)

### Guide to selection of code combinations

**CV1 contactors: maximum number of power poles**

| Contactor type | CV1 BF | | CV1 BG | | CV1 BH | | CV1 BJ | | CV1 BK | | CV1 BL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pole type | N/O | N/C | N/O | N/C | N/O | N/C | N/O | N/C | N/O | N/C | N/O | N/C |
| Number of poles | 5 | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 2 *(1)* | 0 |
| | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 1 (2) |
| | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | – | – |

**CV3 contactors: maximum number of power poles**

| Contactor type | CV3 BF | | CV3 BG | | CV3 BH | | CV3 BJ | | CV3 BK | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pole type | N/O | N/C | N/O | N/C | N/O | N/C | N/O | N/C | N/O | N/C |
| Number of poles | 5 | 0 | 4 | 0 | 4 | 0 | 2 | 0 | 2 | 0 |
| | 0 | 2 | 0 | 2 | 0 | 2 | – | – | – | – |
| | 1 | 2 | 1 | 2 | – | – | – | – | – | – |
| | 3 | 1 | 2 | 1 | 2 | 1 | – | – | – | – |

**CV1 or CV3 contactors:**
**Maximum number of auxiliary contacts: 4 + 1 time delay if necessary**

Selection restrictions, according to coil type:

*(1) 4-pole with economy resistor.*
*(2) 2-pole with economy resistor.*

### Examples

- Switching of single-phase capacitor: 400 V - 80 A - 1 N/O main pole. 220 V / 50 Hz control circuit voltage, 1 N/O and 1 N/C auxiliary contacts.
  Reference: **CV1 BF1F0ZM511**.
- Switching of d.c. heating circuits: 800 V - 150 A - 2 N/O main poles - 48 V ⎓ control circuit, instantaneous auxiliary contact 1 N/O + 1 on-delay.
  Reference: **CV3 BG2W0ZED10J**.

### Other versions

To obtain a composition with more main poles or with more than 4 auxiliary contacts, please use **order form CF 452** (see page 5/231).

# TeSys contactors

## Variable composition contactors CV1 and CV3

Date of order | Editor | Geog. area | Order n° | Required delivery *(1)* / / | Job n°

Company: ..... Customer Order N°: .....

Activity sector: ..... Application: .....

Number of contactors: ..... Type - size or symbol combination: .....

For devices with symbol combination: Do not fill out the form below

For use by Schneider Electric

### POWER CIRCUIT

**Voltage: ..... V** **AC** ☐ **DC** ☐ **..... Hz**

**Number of N/O main poles:** Rated current: ..... Amp

**Number of N/C main poles:** Rated current: ..... Amp

Any special details: .....

.....

**Poles**

Ref:

Ref:

### CONTROL CIRCUIT

**Voltage: ..... V** **AC** ☐ **DC** ☐ **..... Hz**

Economy resistor: ☐ Yes ☐ No

(unless specified, an economy resistor will only be included if necessary)

Customer marking: .....

Electromag:

Coil:

Coil maint. cont:

Rectifier:

Econ. resist. contact:

Econ. Resist.:

### AUXILIARY CONTACTS AVAILABLE

**Instantaneous contacts:** **Number of N/O** **Number of N/C**

**If** a specific type or block of contacts is required, please indicate below.

| Number | GM1: | GM2: | GP4: | GP5: | GP6: | LA1: |
|---|---|---|---|---|---|---|

Note : For mechanical interlocking, a N/C contact must be specified for the interlocking function.

**Time delay contacts N/C + N/O :** **On delay** ☐ **or** **Off delay** ☐

Note: If LA1 is used, a build specification is required.

No. ZC4GM1 : **(N/O)**
No. ZC4GM2 : **(N/C)**
No. ZC1GP4 : **(N/C)**
No. ZC1GP5 : **(N/C+N/O)**
No. ZC1GP6 : **(N/O+N/O)**
No. ZC2GG1 : **(ON-Del)**
No. ZC2GG5 : **(OFF-Del)**

No. LA1BN●31 :
No. LA1DN●● :
No. LA●DT● :
If CV1, specif. n°:

### MOUNTING

Fixing centres L: Standard ☐ Specified ☐ With L = .....

**Mechanical interlock "MI":**

Yes ☐ No ☐

Vertically mounted reversers fixing centres "E" =..... mm

Upper position contactor: ..... Lower position contactor:

**If** mechanical interlock specified : Ref: .....

Supply linking components for the 2 contactors (Rod, clevis, cranks, lock, etc...) : Yes ☐ No ☐

Note : "MI" components that are part of the contactor such as the bearing, clevis or lock support are factory fitted.

**Dimensions in catalogue**

Shaft: C or E =

Code.:

Bar: L = :

Code.:

Build see drwg.
N° :

"MI" bearing

W1

"MI" ref

### ANY SPECIAL DETAILS

(Comments / Specific requirements / Special "MI" / Accessories / Etc...)

Launch date

Delivery date

Contactor reference*

.....

* 3 possibilities

1) Device with symbol combination (see drwg 1492177)

2) Device n° defined on the basis of this form

Type/size/order n°/year. E.g.: CV1GB000599

3) Reference defined to "specification"

*(1) Standard delivery time: 3 weeks, from receipt of order. For faster delivery, please consult your Regional Sales Office.*

# TeSys contactors

## 3-pole vacuum contactors and reversing contactors

## Selection

| Contactor size | | | LC1 V160 | LC1 V320 | LC1 V610 |
|---|---|---|---|---|---|
| **For utilisation category AC-3** | | | | | |
| **Maximum operational current in AC-3** | | **A** | 160 | 320 | 610 |
| **Rated operational power P** (standard power ratings of motors) | 230 V | **kW** | 45 | 90 | 160 |
| | 400 V | **kW** | 75 | 160 | 300 |
| | 525 V | **kW** | 110 | 220 | 400 |
| | 690 V | **kW** | 150 | 280 | 560 |
| | 1000 V | **kW** | 200 | 400 | 800 |
| | 1500 V | **kW** | 280 | 600 | 930 |
| **For 3-phase motors conforming to CSA standards** | | | | | |
| **Rated operational power P** (standard power ratings of 3-phase CSA motors) | 200 V | **hp** | 50 | 100 | 150 |
| | 240 V | **hp** | 60 | 125 | 200 |
| | 380 V | **hp** | 100 | 200 | 300 |
| | 480 V | **hp** | 125 | 250 | 400 |
| | 600 V | **hp** | 150 | 300 | 500 |
| | 800 V | **hp** | 200 | 400 | 700 |
| | 1000 V | **hp** | 250 | 500 | 1000 |
| | 1500 V | **hp** | 400 | 800 | 1300 |
| **For switching 3-phase capacitors** | | | | | |
| **Rated operational power P** | 240 V | **kVAR** | 47 | 94 | 176 |
| | 480 V | **kVAR** | 95 | 190 | 356 |
| | 600 V | **kVAR** | 100 | 200 | 400 |
| | 1500 V | **kVAR** | 250 | 500 | 1000 |
| **For switching the primaries of 3-phase transformers (LV/LV)** | | | | | |
| **Rated operational power P** | 208 V | **kVA** | 20 | 41 | 81 |
| | 240 V | **kVA** | 23 | 47 | 94 |
| | 480 V | **kVA** | 47 | 94 | 188 |
| | 600 V | **kVA** | 59 | 117 | 234 |

5

## Environment characteristics

| Contactor type | | | | LC1 V160 | LC1 V320 | LC1 V610 |
|---|---|---|---|---|---|---|
| **Shock resistance** (1/2 sine wave = 11 ms) | | Contacts closed | | 10 gn | 10 gn | 10 gn |
| | | Contacts open | | 10 gn | 10 gn | 10 gn |
| **Vibration resistance** | | 10…500 Hz | | 2 gn | 2 gn | 2 gn |
| **Operating altitude** | Above sea level | Maximum | **m** | 3600 | 3600 | 3600 |
| | Below sea level | Minimum | **m** | 2500 | 4500 | 4500 |
| **Ambient air temperature around the device** | | Storage | **°C** | - 40…+ 80 | - 40…+ 80 | - 40…+ 80 |
| | | Operation 0.8… 1.1 Uc | **°C** | - 5…+ 55 | - 5…+ 55 | - 5…+ 55 |
| | | Permissible for operation at Uc | **°C** | - 10…+ 75 | - 10…+ 75 | - 10…+ 75 |
| **Degree of protection** | | Conforming to IEC 60529 | | IP 00 | IP 00 | IP 00 |
| **Operating position** | | | | Any | Any | Any |
| **Cabling** | | Cable c.s.a. | **mm²** | 70 | 185 | 2 x 185 |
| | | Key for hex. screws | **mm** | Allen 4 | 20 | 20 |
| | | Tightening torque | **N.m** | 14 | 39 | 39 |

## Control circuit characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Rated insulation voltage** (Ui) | To earth | **V** | 2000 | 2000 | 2000 |
| **Consumption** | Inrush | **VA** | 300 | 600 | 1700 |
| | Sealed | **VA** | 30 | 20 | 28 |
| **Permissible control circuit voltage** | | | 0.8…1.1 Uc | 0.8…1.1 Uc | 0.8…1.1 Uc |
| **Closing time** *(1)* | | **ms** | 18...22 | 24...32 | 24...32 |
| **Opening time** *(1)* | | **ms** | 95...115 | 95...115 | 95...115 |

*(1) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

References : page 5/234
Dimensions : page 5/236
Schemes : page 5/236



Schneider Electric

# TeSys contactors

## 3-pole vacuum contactors and reversing contactors

| Contactor type | | | LC1 V160 | LC1 V320 | LC1 V610 |
|---|---|---|---|---|---|
| **Main pole characteristics** | | | | | |
| **Rated insulation voltage** (Ui) | | V | 1500 | 1500 | 1500 |
| **Rated impulse withstand voltage** (Uimp) | | kV | 8 | 8 | 8 |
| **Conforming to standards** | | | EN 60947-4-1 - IEC 60947-4-1 | | |
| **Approvals** | | | CSA | | |
| **Conventional rated thermal current** (Ith) | | A | 160 | 320 | 630 |
| **Rated operational current** (Ie) | θ ≤ 40 °C AC-1 | A | 160 | 320 | 630 |
| | θ ≤ 55 °C AC-3 | A | 160 | 320 | 610 |
| | θ ≤ 55 °C AC-4 | A | 130 | 270 | 540 |
| **Electrical durability** in millions of operating cycles (400 V at I max) | AC-1 | | 1.2 | 1 | 1 |
| | AC-3 | | 1.6 | 1.5 | 1.5 |
| | AC-4 | | 0.18 | 0.15 | 0.12 |
| **Mechanical durability** | In millions of operating cycles | | 5 | 2.5 | 2 |
| **Maximum operating rate** in operating cycles per hour | Mechanical | | 1200 | 1200 | 1200 |
| | AC-1 | | 900 | 900 | 900 |
| | AC-3 | | 900 | 900 | 900 |
| | AC-4 | | 450 | 450 | 450 |
| **Maximum making capacity** (Irms) | Ue = 1500 V To IEC 60947 | A | 1900 | 3800 | 7300 |
| **Maximum breaking capacity** (Irms) | Ue = 1500 V To IEC 60947 | A | 1600 | 3200 | 6100 |
| **Maximum permissible current** | For 1 s | A | 2400 | 4500 | 9000 |
| | For 2 s | A | 2000 | 3750 | 7580 |
| | For 10 s | A | 1600 | 3200 | 6100 |
| | For 30 s | A | 960 | 1920 | 3600 |
| **Short-circuit protection** at Ie in cat. AC-3 max. | aM fuse | A | 160 | 400 | 630 |
| **Auxiliary contact characteristics** | | | | | |
| **Rated insulation voltage** (Ui) | | V | 690 | | |
| **Conventional rated thermal current** (Ith) | | A | 10 | | |
| **Rated operational current** (Ie) | AC-15, 230 V | A | 0.78 | | |
| | AC-15, 400 V | A | 0.45 | | |
| | AC-15, 500 V | A | 0.35 | | |
| | DC-13, 24 V | A | 1.1 | | |
| | DC-13, 110 V | A | 0.24 | | |
| | DC-13, 220 V | A | 0.12 | | |
| **Cabling** | Cable c.s.a. | mm² | 2.5 | | |
| **Short-circuit protection** | gG fuse | A | 10 | | |
| **Operating time** *(1)* (at 100 % of Uc) | "C" | ms | ± 5 | | |
| | "O" | ms | ± 5 | | |

*(1) Operating time in relation to the main contacts.*

5

# TeSys contactors

## 3-pole vacuum contactors and reversing contactors

### Power and control circuits a.c. supply

105194

LC1 V320

LC2 V610

LA9 V974

## Vacuum contactors

| Standard power ratings 50/60 Hz in category AC-3 | | | | | Rated operational current Ie | | Instantaneous auxiliary contacts | | Control circuit voltage (50/60 Hz) | Basic reference *(1)* | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 230 V | 400 V | 525 V | 690 V | 1000 V | AC-3 | AC-1 | | | | | |
| kW | kW | kW | kW | kW | A | A | | | | | kg |
| 45 | 75 | 110 | 150 | 200 | **160** | **160** | 2 | 1 | *(1)* | **LC1 V160●●** | 3.800 |
| 90 | 160 | 220 | 280 | 400 | **320** | **320** | 1 | 1 | *(1)* | **LC1 V320●●** | 10.500 |
| 160 | 300 | 400 | 560 | 800 | **610** | **630** | 1 | 1 | *(1)* | **LC1 V610●●** | 13.000 |

## Reversing vacuum contactors

The reversing contactor range comprises :
- for 160 A rating, a kit with set of power connections allowing assembly of the starter,
- for 320 and 610 A ratings, a complete starter, ready for use.

| Standard power ratings 50/60 Hz in category AC-3 | | | | | Rated operational current Ie | | Instantaneous auxiliary contacts | | Control circuit voltage (50/60 Hz) | Basic reference *(1)* | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 230 V | 400 V | 525 V | 690 V | 1000 V | AC-3 | AC-1 | | | | | |
| kW | kW | kW | kW | kW | A | A | | | | | kg |
| 45 | 75 | 110 | 150 | 200 | **160** | **160** | 2 | 1 | – | **LA9 V974** *(2)* | 1.200 |
| 90 | 160 | 220 | 280 | 400 | **320** | **320** | 1 | 1 | 110-120 V | **LC2 V320FE7** | 30 |
| | | | | | | | | | 220-240 V | **LC2 V320P7** | 30 |
| | | | | | | | | | 380-415 V | **LC2 V320V7** | 30 |
| 160 | 300 | 400 | 560 | 800 | **610** | **630** | 1 | 1 | 110-120 V | **LC2 V610FE7** | 36 |
| | | | | | | | | | 220-240 V | **LC2 V610P7** | 36 |

*(1) Basic reference; add code indicating control circuit voltage.*
*Standard control circuit voltages :*

| *Volts 50/60 Hz* | *110…120* | *220…240* | *380…415* | *440…480* | *550…600* |
|---|---|---|---|---|---|
| *Item* | *FE7* | *P7* | *V7* | *R7* | *X7* |

*(2) Kit containing a mechanical interlock, a set of power connections and a fixing plate. To build a complete reversing contactor, order contactors LC1 V160●● separately.*

Selection : page 5/232
Characteristics : pages 5/232 and 5/233
Dimensions : page 5/236
Schemes : page 5/236

# TeSys contactors

## 3-pole vacuum contactors and reversing contactors

### Power and control circuits a.c. supply

500308

*LA1 VN11*

### Instantaneous auxiliary contact blocks *(1)*

| Number of contacts | Maximum number of blocks per contactor | Auxiliary contacts | | Reference | Weight kg |
|---|---|---|---|---|---|
| 2 | 4 | 1 | 1 | **LA1 VN11** | 0.030 |
| | | – | 2 | **LA1 VN02** | 0.030 |
| | | 2 | – | **LA1 VN20** | 0.030 |
| | | 1 | 1 | **LA1 VN11X** *(2)* | 0.030 |

500310

*LX1 V320●●*

### 50/60 Hz coils

| Rated voltage V | Voltage code | Reference | Weight kg |
|---|---|---|---|
| **For contactors LC1 V160** | | | |
| **110…120** | **FE7** | **LX1 V160FE7** | 0.400 |
| **220…240** | **P7** | **LX1 V160P7** | 0.400 |
| **380…415** | **V7** | **LX1 V160V7** | 0.400 |
| **440…480** | **R7** | **LX1 V160R7** | 0.400 |
| **550…600** | **X7** | **LX1 V160X7** | 0.400 |
| **For contactors LC1 V320** | | | |
| **110…120** | **FE7** | **LX1 V320FE7** | 0.800 |
| **220…240** | **P7** | **LX1 V320P7** | 0.800 |
| **380…415** | **V7** | **LX1 V320V7** | 0.800 |
| **440…480** | **R7** | **LX1 V320R7** | 0.800 |
| **550…600** | **X7** | **LX1 V320X7** | 0.800 |
| **For contactors LC1 V610** | | | |
| **110…120** | **FE7** | **LX1 V610FE7** | 0.800 |
| **220…240** | **P7** | **LX1 V610P7** | 0.800 |
| **380…415** | **V7** | **LX1 V610V7** | 0.800 |
| **440…480** | **R7** | **LX1 V610R7** | 0.800 |
| **550…600** | **X7** | **LX1 V610X7** | 0.800 |

*(1) LC1 V160 : auxiliary contact blocks mounted at the top of the contactor, with no change to the overall dimensions.*
*LC1 V320 or LC1 V610 : 2 auxiliary contact blocks mounted on the RH and LH side of the contactor, with no change to the overall dimensions.*
*(2) For LC1 V160 : 1 N/C contact for the coil + 1 N/O contact.*



Selection : page 5/232
Characteristics : pages 5/232 and 5/233

## Dimensions, mounting

### LC1 V160

### LC1 V320

### LC1 V610

## Schemes

### LC1 V160

### LC1 V320, V610

### Auxiliary contact blocks

| LA1 VN11 1 N/O & 1 N/C | LA1 VN02 2 N/C | LA1 VN20 2 N/O | LA1 VN11X 1 N/O |
|---|---|---|---|

## Dimensions, mounting

### LA9 V974 + 2 x LC1V160

### LC2 V320

### LC2 V610

## Schemes

### LA9 V974 + 2 x LC1V160

### LC2 V320

*(1) Dotted line indicates wiring to be installed by the customer.*

## Schemes *(continued)*

**LC2 V610**

*(1) Dotted line indicates wiring to be installed by the customer.*

# TeSys contactors
Magnetic latching contactors

## Magnetic latching contactors

Magnetic latching contactors of both block and bar mounted types are fitted with a special electromagnet which enables them to remain in the “On” position when the coil is no longer energised.

### Applications

The special properties of magnetic latching contactors make them suitable for a large number of applications.

| Properties | Applications |
|---|---|
| ■ Retention of the sequence memory in automatic control equipment in the event of loss of control voltage. | ■ Refineries, power stations, excitation circuits. |
| ■ Energy saving, since the source of supply to the coil does not need to supply current when the contactor is latched in the closed state. | ■ Contactors remaining in the closed state for long periods. Examples: refineries, power supplies, low voltage distribution |
| ■ Change of state from “Closed” to “Open” by current signal through the coil. | ■ Selective opening control. |
| ■ Unaffected by mains interference. | ■ No unwanted opening and closing of the main power poles. |
| ■ Utilisation of contactors beyond their breaking capacity, as operations are performed off-load. | ■ Current carrying at voltages up to 1000 Volts. |
| ■ Contactors are silent in the latched position. | |

### Operation of the electromagnet

**CR1 F block contactors**

CR1 F magnetic latching contactors are fitted with a double coil with 3 terminals comprising a latching winding and an unlatching winding. The 2 windings have a common point which can necessitate special wiring precautions when the latching supply is separate from the unlatching supply.

The power supplies may be a.c. or d.c. For d.c. operation, the polarities indicated must be complied with.

Operating precautions:
- ◻ the 2 windings must not be supplied simultaneously,
- ◻ a winding must not be supplied continuously,
- ◻ supply to the coils must be via pulsed contacts.

Manual opening:
if the control voltage is not present, the contactor can be unlatched manually.

**CR1 B bar mounted contactors**

CR1 B magnetic latching contactors are fitted with a single coil, supplied with d.c. or with a.c. through a rectifier.

Latching is obtained by direct supply of the coil in one direction of current flow.

Unlatching is obtained by a reverse current, adjusted by resistors.

## Mechanical latching contactors

**LC1 D block contactors**

For applications using smaller contactor sizes than those described on page 5/241 , it is possible to obtain the same function by the addition of a mechanical latch block type LA6 DK, which can be mounted on LC1 D contactors (see page 5/80).

# TeSys contactors

## Magnetic latching contactors

### Selection guide for direct on-line starting of squirrel cage motors

**Continuous or intermittent duty up to 30 operating cycles/hour**

| Motor (1) 220 V 230 V | | | 380 V 400 V | | | 415 V | | | 440 V | | | 3-pole contactor | 3-pole differential thermal overload relay | | 3 fuses Type | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | (2) | Reference | Setting range | aM | BS-88 |
| P | | In | P | | In | P | | In | P | | In | Reference | | | Rating | |
| kW | HP | A | kW | HP | A | kW | HP | A | kW | HP | A | | | A | A | A |
| 25 | 35 | 85 | – | – | – | – | – | – | – | – | – | CR1 F150 | LR9 F5367 | 60…100 | 100 | 125 |
| 30 | 40 | 103 | 51 | 70 | 98 | 55 | 75 | 100 | 59 | 80 | 97 | CR1 F150 | LR9 F5369 | 90…150 | 100 | 160 |
| 33 | 45 | 113 | 55 | 75 | 105 | – | – | – | | | | | | | | |
| – | – | – | 59 | 80 | 112 | 59 | 80 | 105 | 63 | 85 | 109 | CR1 F150 | LR9 F5369 | 90…150 | 125 | 160 |
| – | – | – | 63 | 85 | 117 | 63 | 85 | 115 | – | – | – | | | | | |
| 37 | 50 | 126 | 75 | 100 | 138 | 75 | 100 | 135 | 75 | 100 | 125 | CR1 F150 | LR9 F5369 | 90…150 | 160 | 200 |
| 40 | 54 | 134 | – | – | – | – | – | – | 80 | 110 | 131 | | | | | |
| 45 | 60 | 150 | 80 | 110 | 147 | 80 | 110 | 138 | 90 | 125 | 146 | CR1 F185 | LR9 F5369 | 90…150 | 160 | 200 |
| 51 | 70 | 170 | 90 | 125 | 170 | 90 | 125 | 165 | 100 | 136 | 162 | CR1 F185 | LR9 F5371 | 132…220 | 200 | 250 |
| 55 | 75 | 182 | – | – | – | 100 | 136 | 182 | – | – | – | | | | | |
| 59 | 80 | 195 | 100 | 138 | 188 | 110 | 150 | 200 | 110 | 150 | 178 | CR1 F265 | LR9 F5371 | 132…220 | 250 | 315 |
| 63 | 85 | 203 | 110 | 150 | 205 | – | – | – | 129 | 175 | 209 | | | | | |
| 75 | 100 | 240 | 129 | 175 | 242 | 129 | 175 | 230 | 132 | 180 | 215 | CR1 F265 | LR9 F7375 | 200…330 | 250 | 315 |
| – | – | – | 132 | 180 | 245 | 132 | 180 | 240 | – | – | – | | | | | |
| – | – | – | – | – | – | 140 | 190 | 250 | 140 | 190 | 227 | CR1 F265 | LR9 F7375 | 200…330 | 315 | 400 |
| 80 | 110 | 260 | 140 | 190 | 260 | 147 | 200 | 260 | 147 | 200 | 236 | CR1 F400 | LR9 F7375 | 200…330 | 315 | 400 |
| – | – | – | 147 | 200 | 273 | 150 | 205 | 270 | 150 | 205 | 246 | | | | | |
| – | – | – | 150 | 205 | 280 | 160 | 220 | 280 | 160 | 220 | 256 | | | | | |
| 90 | 125 | 295 | 160 | 220 | 300 | – | – | – | 180 | 245 | 289 | CR1 F400 | LR9 F7375 | 200…330 | 315 | 400 |
| – | – | – | – | – | – | | | | 185 | 250 | 295 | | | | | |
| 100 | 136 | 325 | 180 | 245 | 333 | 180 | 245 | 320 | 200 | 270 | 321 | CR1 F400 | LR9 F7379 | 300…500 | 400 | 500 |
| 110 | 150 | 356 | 185 | 250 | 342 | 185 | 250 | 325 | 220 | 300 | 353 | | | | | |
| – | – | – | 200 | 270 | 370 | 200 | 270 | 340 | 250 | 340 | 401 | CR1 F400 | LR9 F7379 | 300…500 | 400 | 500 |
| | | | | | | 220 | 300 | 385 | – | – | – | | | | | |
| 129 | 175 | 420 | 220 | 300 | 408 | – | – | – | 257 | 350 | 412 | CR1 F500 | LR9 F7379 | 300…500 | 500 | 630 |
| 132 | 180 | 425 | 250 | 340 | 460 | 250 | 340 | 425 | 280 | 380 | 450 | CR1 F500 | LR9 F7381 | 380…630 | 500 | 630 |
| 140 | 190 | 450 | – | – | – | 257 | 350 | 450 | – | – | – | | | | | |
| 147 | 200 | 472 | – | – | – | – | – | – | 295 | 400 | 473 | CR1 F500 | LR9 F7381 | 380…630 | 500 | 630 |
| – | – | – | 257 | 350 | 475 | 280 | 380 | 475 | 300 | 410 | 481 | CR1 F630 | LR9 F7381 | 380…630 | 500 | 630 |
| | | | – | – | – | 295 | 400 | 500 | – | – | – | | | | | |
| 150 | 205 | 483 | 280 | 380 | 510 | 300 | 410 | 510 | 315 | 430 | 505 | CR1 F630 | LR9 F7381 | 380…630 | 630 | 800 |
| 160 | 220 | 520 | 295 | 400 | 546 | 315 | 430 | 535 | 335 | 450 | 518 | | | | | |
| 180 | 245 | 578 | 300 | 410 | 565 | 335 | 450 | 550 | 355 | 480 | 549 | CR1 F630 | LR9 F7381 | 380…630 | 630 | 800 |
| 185 | 250 | 595 | 315 | 430 | 584 | 355 | 480 | 580 | 375 | 500 | 575 | | | | | |
| 200 | 270 | 626 | 335 | 450 | 620 | 375 | 500 | 610 | 400 | 454 | 611 | CR1 F630 | LR9 F7381 | 380…630 | 800 | 1000 |
| 220 | ★ | 700 | 355 | ★ | 635 | 400 | ★ | 650 | 425 | ★ | 650 | CR1 BL33 | LR2 F8383 | 500…800 | 800 | 1000 |
| | | | 375 | ★ | 670 | 425 | ★ | 690 | 445 | ★ | 680 | | | | | |
| | | | 400 | ★ | 710 | 445 | ★ | 730 | 450 | ★ | 690 | | | | | |
| | | | – | | – | 450 | ★ | 740 | 475 | ★ | 730 | | | | | |
| 250 | ★ | 800 | 425 | ★ | 760 | 475 | ★ | 780 | 500 | ★ | 780 | CR1 BM33 | LR2 F8383 | 500…800 | 800 | 1000 |
| 257 | ★ | 826 | 445 | ★ | 790 | 500 | ★ | 820 | 530 | ★ | 825 | CR1 BM33 | LR2 F8383 | 630…1000 | 1000 | 1250 |
| 280 | ★ | 900 | 450 | ★ | 800 | 530 | ★ | 870 | 560 | ★ | 870 | | | | | |
| 295 | ★ | 948 | 475 | ★ | 850 | 560 | ★ | 920 | 600 | ★ | 920 | | | | | |
| 300 | ★ | 980 | 500 | ★ | 900 | 600 | ★ | 978 | 630 | ★ | 965 | | | | | |
| 315 | ★ | 990 | 530 | ★ | 950 | | | | | | | | | | | |

*(1) The ratings are for standard 220/230 V, 380/400 V, 415 or 440 V motors. The overload relays should preferably be set to the motor full-load current shown on the motor rating plate. For other power ratings, select the overload relay with the appropriate range; the associated contactor and fuses must have ratings equal to or immediately greater than In.*

*(2) Reference to be completed, see page 5/250.*

★ There are no standard power ratings for these motors.

# TeSys contactors

## Magnetic latching contactors

### Selection guide for utilisation category AC-3

| Contactor size | | CR1 F150 | CR1 F185 | CR1 F265 | CR1 F400 | CR1 F500 | CR1 F630 | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rated operational current in AC-3** (θ ≤ 55 °C) | | | | | | | | | | | |
| **440 V** | **A** | 150 | 185 | 265 | 400 | 500 | 630 | 750 | 1000 | 1500 | 1800 |
| **500 V** | **A** | 135 | 175 | 245 | 385 | 500 | 540 | 750 | 900 | 1200 | 1500 |
| **660/690 V** | **A** | 130 | 140 | 230 | 365 | 435 | 470 | 700 | 800 | 900 | 1100 |
| **1000 V** | **A** | 47 | 73 | 95 | 135 | 270 | 330 | 400 | 400 | 500 | 600 |
| **Rated operational power** (standard motor power ratings) | | | | | | | | | | | |
| **220…240 V** | **kW** | 40 | 55 | 75 | 110 | 147 | 200 | 220 | 280 | 425 | 500 |
| | ***HP*** | *54* | *75* | *100* | *150* | *200* | *270* | *300* | *380* | *580* | *680* |
| **380…400 V** | **kW** | 75 | 90 | 132 | 200 | 250 | 335 | 400 | 500 | 750 | 900 |
| | ***HP*** | *100* | *185* | *180* | *270* | *340* | *450* | *545* | *680* | *1000* | *1220* |
| **415 V** | **kW** | 80 | 100 | 140 | 220 | 280 | 375 | 425 | 530 | 800 | 900 |
| | ***HP*** | *110* | *136* | *180* | *300* | *380* | *500* | *580* | *720* | *1100* | *1220* |
| **440 V** | **kW** | 80 | 100 | 140 | 250 | 295 | 400 | 450 | 560 | 800 | 900 |
| | ***HP*** | *110* | *136* | *190* | *340* | *400* | *545* | *610* | *760* | *1100* | *1220* |
| **500 V** | **kW** | 90 | 110 | 160 | 257 | 355 | 400 | 500 | 600 | 750 | 900 |
| | ***HP*** | *125* | *150* | *220* | *350* | *480* | *545* | *680* | *810* | *1000* | *1220* |
| **660/690 V** | **kW** | 100 | 110 | 160 | 280 | 335 | 450 | 560 | 670 | 750 | 900 |
| | ***HP*** | – | – | – | – | – | *610* | *760* | *910* | *1000* | *1220* |
| **1000 V** | **kW** | 65 | 100 | 147 | 185 | 335 | 450 | 530 | 530 | 670 | 750 |
| | ***HP*** | – | *136* | *200* | *250* | – | *610* | *720* | *720* | *910* | *1000* |

Maximum operating rate in operating cycles/hour, at rated operational power with an on-load factor = 85%: 750 for CR1 F150 to F265, 500 for CR1 F400 to F630 and 120 for CR1 B.

5

Characteristics : pages 5/246 to 5/249
References : pages 5/250 to 5/259
Dimensions : pages 5/260 to 5/264
Schemes : pages 5/266 and 5/267



Schneider Electric

# TeSys contactors

## Magnetic latching contactors

### Selection according to required electrical durability

## Use in category AC-3 (Ue ≤ 440 V) *(1)* (θ ≤ 55 °C)

The current (Ic) in AC-3 is equal to the rated operational current (Ie) drawn by the motor.

**Example:**

Asynchronous motor with P = 50 kW, Ue = 380 V, Ie = 100 A, Ic = Ie = 100 A, or asynchronous motor with P = 55 kW, Ue = 415 V, Ie = 100 A, Ic = Ie = 100 A

600 000 operating cycles required.

The above selection curves show the contactor rating needed, CR1 F185.

*(1) For 660 V, multiply the number of operating cycles by 0.8.*



Characteristics : pages 5/246 to 5/249
References : pages 5/250 to 5/259
Dimensions : pages 5/260 to 5/264
Schemes : pages 5/266 and 5/267

# TeSys contactors

## Magnetic latching contactors

Selection guide for utilisation category AC-1
and according to required electrical durability

## Maximum operational current (on-load factor ≥ 0.95)

**Maximum operating rate: 120 operating cycles/hour**

| Contactor size | | | CR1 F150 | CR1 F185 | CR1 F265 | CR1 F400 | CR1 F500 | CR1 F630 | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable c.s.a. | | mm² | 120 | 150 | 185 | – | – | – | – | – | – | – |
| Number of bars | | | – | – | – | 2 | 2 | 2 | 2 | 2 | 3 | 4 |
| Bar c.s.a. | | mm | – | – | – | 30 x 5 | 40 x 5 | 60 x 5 | 50 x 5 | 80 x 5 | 100 x 5 | 100 x 5 |
| Operational current in category AC-1 at ambient temperature | ≤ 40 °C | A | 250 | 275 | 350 | 500 | 700 | 1000 | 800 | 1250 | 2000 | 2750 |
| | ≤ 55 °C | A | 250 | 275 | 300 | 430 | 580 | 850 | 700 | 1100 | 1750 | 2400 |
| | ≤ 70 °C | A | 170 | 180 | 250 | 340 | 500 | 700 | 600 | 900 | 1500 | 2000 |

**Increase in operational current by parallel connection of poles**

Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8

## Electrical durability (Ue ≤ 440 V) *(1)*

**Example:**
Ue = 220 V - Ie = 200 A - q = 40 °C - Ic = Ie = 200 A
600 000 operating cycles required.
The above selection curves show the contactor rating needed, CR1 F400.

*(1) For 660 V, multiply the number of operating cycles by 0.8.*

# TeSys contactors

## Magnetic latching contactors

### Selection guide for switching the primaries of 3-phase transformers

**Operating conditions**

Maximum ambient temperature: 55 °C
Maximum operational voltage: 1000 V, 50…60 Hz

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:
□ the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, size of the windings, ...)
□ the performance of the magnetic laminations used (residual induction and saturation inductance),
□ the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The peak current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer.

The peak magnetising current of the transformer must be lower than the values given in the tables below.

## Contactor selection

**Maximum operating rate: 120 operating cycles/hour**

| Contactor size | | | CR1 F150 | CR1 F185 | CR1 F265 | CR1 F400 | CR1 F500 | CR1 F630 | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Maximum permissible current peak at switch-on** | | **A** | 1700 | 2800 | 3500 | 5500 | 6800 | 9000 | 18 000 | 18 000 | 24 000 | 30 000 |
| **Maximum operational power** *(1)* | 220…230 V | **kVA** | 25 | 40 | 50 | 75 | 100 | 140 | 230 | 230 | 300 | 380 |
| | 380…400 V | **kVA** | 50 | 75 | 90 | 130 | 170 | 225 | 400 | 400 | 530 | 660 |
| | 415…440 V | **kVA** | 55 | 80 | 100 | 140 | 190 | 250 | 450 | 450 | 560 | 700 |
| | 500 V | **kVA** | 65 | 95 | 110 | 170 | 225 | 280 | 480 | 480 | 600 | 750 |
| | 660 V | **kVA** | 80 | 120 | 140 | 200 | 270 | 315 | 600 | 600 | 800 | 950 |
| | 1000 V | **kVA** | 100 | 150 | 200 | 250 | 375 | 470 | 700 | 700 | 1000 | 1200 |

*(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.*



Characteristics : pages 5/246 to 5/249
References : pages 5/250 to 5/259
Dimensions : pages 5/260 to 5/264
Schemes : pages 5/266 and 5/267

| Contactor type | | | CR1 F150 | CR1 F185 | CR1 F265 |
|---|---|---|---|---|---|
| **Environment** | | | | | |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60158-1, BS 775, 60947-4 | V | 1000 | 1000 | 1000 |
| | Conforming to VDE 0110 grC | V | 1500 | 1500 | 1500 |
| **Protective treatment** | Standard version | | "TH" | | |
| | Special version | | – | | |
| **Ambient air temperature around the device** | Storage | °C | - 60…+ 80 | | |
| | For operation at Uc | °C | - 15…+ 70 | | |
| **Maximum operating altitude** | Without derating | m | 3000 | | |
| **Operating positions** | Without derating | | ± 5 ° | | |
| **Pole characteristics** | | | | | |
| **Number of poles** | | | 3 or 4 | 3 or 4 | 3 or 4 |
| **Rated operational current** (Ie) (Ue ≤ 440 V) | In AC-3, θ ≤ 40 °C | A | 150 | 185 | 265 |
| | In AC-1, θ ≤ 40 °C | A | 250 | 275 | 350 |
| | In AC-4, θ ≤ 40 °C | A | 138 | 170 | 245 |
| **Rated operational voltage** (Ue) | Up to | V | 1000 | 1000 | 1000 |
| **Frequency limits** (sine wave) | Of the opeational current | Hz | 25…200 | 25…200 | 25…200 |
| **Rated making capacity** | I rms | A | 1700 | 2100 | 2940 |
| **Rated breaking capacity** | I rms 220…440 V | A | 1500 | 1800 | 2450 |
| | 500 V | A | 1200 | 1600 | 2200 |
| | 660/690 V | A | 1100 | 1200 | 1700 |
| | 1000 V | A | 450 | 600 | 800 |
| **Permissible short time rating** from cold state, with no current flowing for previous 60 minutes at θ ≤ 40 °C | For 1 s | A | 1200 | 1500 | 2200 |
| | For 5 s | A | 1200 | 1500 | 2200 |
| | For 10 s | A | 1200 | 1500 | 2200 |
| | For 30 s | A | 700 | 920 | 1230 |
| | For 1 min | A | 600 | 740 | 950 |
| | For 3 min | A | 450 | 500 | 620 |
| | For 10 min | A | 350 | 400 | 480 |
| **Short-circuit protection by fuses** θ ≤ 440 V | Motor circuit AC-3 (type aM) | A | 160 | 200 | 315 |
| | AC-1 circuit (type gG, BS 88) | A | 250 | 315 | 400 |
| **Average impedance per pole** | At Ith and 50 Hz | mΩ | 0.45 | 0.36 | 0.32 |
| **Power dissipated per pole** for the above operational currents | AC-3 | W | 6 | 12 | 22 |
| | AC-1 | W | 18 | 26 | 39 |
| **Connection** | Number of conductors | | 1 | 1 | 1 |
| | Cable with lugs | mm² | 120 | 150 | 240 |
| | Cable with connector | mm² | 120 | 150 | 240 |
| | Number of bars | | 2 | 2 | 2 |
| | Bar c.s.a. | mm | 25 x 3 | 25 x 3 | 32 x 4 |
| | Bolt diameter | | Ø 8 | Ø 8 | Ø 10 |
| | Tightening torque | N.m | 18 | 18 | 35 |



Selection : pages 5/241 to 5/245
References : pages 5/250 to 5/259
Dimensions : pages 5/260 to 5/264
Schemes : pages 5/266 and 5/267

| CR1 F400 | CR1 F500 | CR1 F630 | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 |
| "TH" | | | "TC" | | | |
| – | | | "TH" | | | |
| - 60…+ 80 | | | - 60…+ 80 | | | |
| - 15…+ 70 | | | - 15…+ 60 | | | |
| 3000 | | | 3000 | | | |
| ± 5 ° in relation to normal vertical mounting plane | | | ± 5 ° in relation to normal vertical mounting plane | | | |
| | | | | | | |
| 3 or 4 | 3 or 4 | 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 |
| 400 | 500 | 630 | 750 | 1000 | 1500 | 1800 |
| 500 | 700 | 1000 | 800 | 1250 | 2000 | 2750 |
| 370 | 460 | 560 | 700 | 800 | 1250 | 1500 |
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 25…200 | 25…200 | 25…200 | 50…60 | 50…60 | 50…60 | 50…60 |
| 4500 | 5000 | 6740 | 10 000 | 10 000 | 15 000 | 18 000 |
| 4000 | 5000 | 6300 | 10 000 | 10 000 | 15 000 | 18 000 |
| 3500 | 4500 | 5400 | 9000 | 9000 | 12 000 | 15 000 |
| 3000 | 3560 | 4600 | 8000 | 8000 | 9000 | 11 000 |
| 1200 | 2500 | 3200 | 4000 | 4000 | 5000 | 6000 |
| 3600 | 4200 | 5050 | 9600 | 9600 | 12 000 | 15 000 |
| 3600 | 4200 | 5050 | 9600 | 9600 | 12 000 | 15 000 |
| 3600 | 4200 | 5050 | 7000 | 8000 | 9600 | 12 000 |
| 2400 | 3200 | 4400 | 4800 | 5200 | 6400 | 8000 |
| 1700 | 2400 | 3400 | 3500 | 3800 | 5200 | 6300 |
| 1200 | 1500 | 2200 | 2100 | 2400 | 3600 | 4400 |
| 1000 | 1200 | 1600 | 1200 | 1800 | 2800 | 3600 |
| 400 | 500 | 630 | 800 | 1200 | 800 x 2 *(1)* | 1000 x 2 *(1)* |
| 500 | 800 | 1000 | 800 | 1200 | 1000 x 2 *(1)* | 1200 x 2 *(1)* |
| 0.28 | 0.18 | 0.12 | 0.18 | 0.18 | 0.13 | 0.09 |
| 45 | 45 | 48 | 88 | 180 | 290 | 360 |
| 70 | 88 | 120 | 115 | 280 | 520 | 680 |
| 2 | 2 | – | – | – | – | – |
| 150 | 240 | – | – | – | – | – |
| – | – | – | – | – | – | – |
| 2 | 2 | 2 | 2 | 2 | 3 | 4 |
| 30 x 5 | 40 x 5 | 60 x 5 | 50 x 5 | 80 x 5 | 100 x 5 | 100 x 10 |
| Ø 10 | Ø 10 | Ø 12 | 4 x Ø 8 | 4 x Ø 10 | 4 x Ø 10 | 4 x Ø 10 |
| 35 | 35 | 58 | 21 | 35 | 35 | 35 |

*(1) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.*

| Contactor type | | | | | CR1 F150 | CR1 F185 | CR1 F265 |
|---|---|---|---|---|---|---|---|
| **Control circuit characteristics** | | | | | | | |
| **Rated control circuit voltage** (Uc) | ∼ 50 or 60 Hz | | | V | 48…415 | | |
| | ∼ 400 Hz | | | V | 48…220 | | |
| | ⎓ | | | V | 48…220 | | |
| | ⎓ low consumption | | | V | 48…220 | | |
| **Control voltage limits** ∼ and ⎓ | Latching | | | | 0.85…1.1 Uc | | |
| | Unlatching | | | | 0.85…1.1 Uc | | |
| **Maximum operating rate at ambient temperature ≤ 40 °C** | In operating cycles per hour | | | | 120 | | |
| **Mechanical durability** | In millions of operating cycles | | | | 1 | | |
| **Average consumption** 50/60 Hz | Latching | 1-pole | | VA | – | – | – |
| | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 1100 | 1600 | 1650 |
| | | 4-pole | | VA | 100 | 1600 | 1650 |
| | Unlatching | 1-pole | | VA | – | – | – |
| | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 7.3 | 8 | 9 |
| | | 4-pole | | VA | 7.3 | 8 | 9 |
| 400 Hz and ⎓ | Latching | 1-pole | | VA | – | – | – |
| | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 1260 | 1750 | 1800 |
| | | 4-pole | | VA | 1260 | 1750 | 1800 |
| | Unlatching | 1-pole | | VA | – | – | – |
| | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 10 | 11 | 12 |
| | | 4-pole | | VA | 10 | 11 | 12 |
| ⎓ low consumption | Latching | 3/4-pole | | W | 500 | 500 | 500 |
| | Unlatching | 3/4-pole | | W | 15 | 20 | 40 |
| **Average operating time at Uc** *(1)* | Latching | | | ms | 35…40 | 35…40 | 45…50 |
| | Unlatching | | | ms | 50…100 | 50…100 | 50…100 |

*(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.*

***Nota :*** *the arcing time depends on the circuit switched by the main poles. For 3-phase applications the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.*

## Auxiliary contact characteristics

| | | | |
|---|---|---|---|
| **Type of contacts** | | | **LAD N for contactors CR1 F** |
| **Conventional thermal current** | | A | 10 |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-5-1 | V | 690 |
| **Connection** | Flexible or solid conductor with or without cable end | mm² | 1 x 1 min; 2 x 2.5 max |

**Operational power of contacts LAD N for contactors CR1 F**

**a.c. supply**

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | V | 48 | 115 | 230 | 400 | 600 |
|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 120 | 280 | 560 | 960 | 1440 |
| Occasional making capacity | VA | 2600 | 7000 | 13 000 | 15 000 | 9000 |

**d.c. supply**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | V | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|
| 1 million operating cycles | W | 90 | 75 | 68 | 61 |
| Occasional making capacity | W | 700 | 400 | 260 | 220 |

| CR1 F400 | CR1 F500 | CR1 F630 | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|
| | | | | | | |
| 48…415 | | | 110…500 | | | |
| 48…220 | | | 110…500 | | | |
| 48…220 | | | 110…500 | | | |
| 48…220 | | | – | | | |
| 0.85…1.1 Uc | | | 0.85…1.1 Uc | | | |
| 0.85…1.1 Uc | | | 0.85…1.1 Uc | | | |
| 120 | | | 120 | | | |
| 1 | | | 1 | | | |
| – | – | – | 650 | 650 | 650 | 650 |
| – | – | – | 1100 | 1100 | 1100 | 1100 |
| 1450 | 1650 | 2100 | 1650 | 1650 | 1650 | 1650 |
| 1450 | 1650 | 2100 | 1850 | 1850 | 1850 | 1850 |
| – | – | – | 110 | 110 | 110 | 110 |
| – | – | – | 125 | 125 | 125 | 125 |
| 12 | 9.5 | 8 | 165 | 165 | 165 | 165 |
| 12 | 9.5 | 8 | 175 | 175 | 175 | 175 |
| – | – | – | 600 | 600 | 600 | 600 |
| – | – | – | 1000 | 1000 | 1000 | 1000 |
| 1600 | 1800 | 2300 | 1500 | 1500 | 1500 | 1500 |
| 1600 | 1800 | 2300 | 1700 | 1700 | 1700 | 1700 |
| – | – | – | 100 | 100 | 100 | 100 |
| – | – | – | 115 | 115 | 115 | 115 |
| 16 | 13 | 11 | 150 | 150 | 150 | 150 |
| 16 | 13 | 11 | 160 | 160 | 160 | 160 |
| 500 | 550 | 620 | – | – | – | – |
| 70 | 60 | 45 | – | – | – | – |
| 40…75 | 40…80 | 40…80 | 100…150 | 100…150 | 100…150 | 100…150 |
| 50…100 | 50…100 | 50…100 | 20…40 | 20…40 | 20…40 | 20…40 |

*(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.*

***Nota :*** *the arcing time depends on the circuit switched by the main poles. For 3-phase applications the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.*

| LAD N for contactors CR1 F | ZC4 GM for contactors CR1 B |
|---|---|
| 10 | 20 |
| 690 | 660 |
| 1 x 1 min; 2 x 2.5 max | 2 min; 4 max |

**Operational power of contacts ZC4 GM for contactors CR1 B**

**a.c. supply**

Electrical durability (valid for up to 2400 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | V | 110 127 | 220 | 380 | 415 440 | 500 |
|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 2000 | 4000 | 4000 | 4000 | 3500 |
| Occasional making capacity | VA | 14 000 | 23 000 | 35 000 | 45 000 | 35 000 |

**d.c. supply**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | V | 110 | 120 | 440 | 500 |
|---|---|---|---|---|---|
| 1 million operating cycles | W | 250 | 250 | 230 | 200 |
| Occasional making capacity | W | 1600 | 800 | 400 | 360 |

# TeSys contactors

## Magnetic latching contactors

### Control circuit: a.c. or d.c. supply

501612_1

CR1 F1854

501613_1

CR1 F500

501614_1

CR1 BP33

| Maximum thermal current in category AC-1 40 °C | Rated operational current in category AC-3 (440 V max) | Number of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) | Weight |
|---|---|---|---|---|---|---|
| A | A | | | | | kg |
| **250** | 150 | 3 | – | – | **CR1 F150●●** | 3.500 |
| | | 4 | – | – | **CR1 F1504●●** | 3.800 |
| **275** | 185 | 3 | – | – | **CR1 F185●●** | 4.600 |
| | | 4 | – | – | **CR1 F1854●●** | 5.400 |
| **350** | 265 | 3 | – | – | **CR1 F265●●** | 7.400 |
| | | 4 | – | – | **CR1 F2654●●** | 8.500 |
| **500** | 400 | 3 | – | – | **CR1 F400●●** | 9.100 |
| | | 4 | – | – | **CR1 F4004●●** | 10.200 |
| **700** | 500 | 3 | – | – | **CR1 F500●●** | 11.300 |
| | | 4 | – | – | **CR1 F5004●●** | 12.900 |
| **1000** | 630 | 3 | – | – | **CR1 F630●●** | 18.600 |
| | | 4 | – | – | **CR1 F6304●●** | 21.500 |
| **800** | 750 | 1 | 1 | 2 | **CR1 BL31●12** | 32.000 |
| | | | 2 | 1 | **CR1 BL31●21** | 32.000 |
| | | | 3 | – | **CR1 BL31●30** | 32.000 |
| | | 2 | 1 | 2 | **CR1 BL32●12** | 45.000 |
| | | | 2 | 1 | **CR1 BL32●21** | 45.000 |
| | | | 3 | – | **CR1 BL32●30** | 45.000 |
| | | 3 | 1 | 2 | **CR1 BL33●12** | 58.000 |
| | | | 2 | 1 | **CR1 BL33●21** | 58.000 |
| | | | 3 | – | **CR1 BL33●30** | 58.000 |
| | | 4 | 1 | 2 | **CR1 BL34●12** | 72.000 |
| | | | 2 | 1 | **CR1 BL34●21** | 72.000 |
| | | | 3 | – | **CR1 BL34●30** | 72.000 |
| **1250** | 1000 | 1 | 1 | 2 | **CR1 BM31●12** | 31.000 |
| | | | 2 | 1 | **CR1 BM31●21** | 31.000 |
| | | | 3 | – | **CR1 BM31●30** | 31.000 |
| | | 2 | 1 | 2 | **CR1 BM32●12** | 44.000 |
| | | | 2 | 1 | **CR1 BM32●21** | 44.000 |
| | | | 3 | – | **CR1 BM32●30** | 44.000 |
| | | 3 | 1 | 2 | **CR1 BM33●12** | 57.000 |
| | | | 2 | 1 | **CR1 BM33●21** | 57.000 |
| | | | 3 | – | **CR1 BM33●30** | 57.000 |
| | | 4 | 1 | 2 | **CR1 BM34●12** | 71.000 |
| | | | 2 | 1 | **CR1 BM34●21** | 71.000 |
| | | | 3 | – | **CR1 BM34●30** | 71.000 |
| **2000** | 1500 | 1 | 1 | 2 | **CR1 BP31●12** | 41.000 |
| | | | 2 | 1 | **CR1 BP31●21** | 41.000 |
| | | | 3 | – | **CR1 BP31●30** | 41.000 |
| | | 2 | 1 | 2 | **CR1 BP32●12** | 65.000 |
| | | | 2 | 1 | **CR1 BP32●21** | 65.000 |
| | | | 3 | – | **CR1 BP32●30** | 65.000 |
| | | 3 | 1 | 2 | **CR1 BP33●12** | 94.000 |
| | | | 2 | 1 | **CR1 BP33●21** | 94.000 |
| | | | 3 | – | **CR1 BP33●30** | 94.000 |
| | | 4 | 1 | 2 | **CR1 BP34●12** | 120.000 |
| | | | 2 | 1 | **CR1 BP34●21** | 120.000 |
| | | | 3 | – | **CR1 BP34●30** | 120.000 |
| **2750** | 1800 | 1 | 1 | 2 | **CR1 BR31●12** | 52.000 |
| | | | 2 | 1 | **CR1 BR31●21** | 52.000 |
| | | | 3 | – | **CR1 BR31●30** | 52.000 |
| | | 2 | 1 | 2 | **CR1 BR32●12** | 85.000 |
| | | | 2 | 1 | **CR1 BR32●21** | 85.000 |
| | | | 3 | – | **CR1 BR32●30** | 85.000 |
| | | 3 | 1 | 2 | **CR1 BR33●12** | 129.000 |
| | | | 2 | 1 | **CR1 BR33●21** | 129.000 |
| | | | 3 | – | **CR1 BR33●30** | 129.000 |
| | | 4 | 1 | 2 | **CR1 BR34●12** | 160.000 |
| | | | 2 | 1 | **CR1 BR34●21** | 160.000 |
| | | | 3 | – | **CR1 BR34●30** | 160.000 |

*(1) Standard control circuit voltages: see page opposite.*

Selection : pages 5/241 to 5/245
Characteristics : pages 5/254 to 5/249
Dimensions : pages 5/260 to 5/264
Schemes : pages 5/266 and 5/267

# TeSys contactors

## Magnetic latching contactors

### Accessories

501377_1

*LAD N*

501616_1

*LA9 F103*

501617_1

*LA9 F70●*

501618_1

*EZ2 LB0601*

## Accessories for contactors CR1 F

| Description | Number of contacts or shrouds | For use on | Reference | Weight kg |
|---|---|---|---|---|
| **Instantaneous auxiliary contacts** | *(1)* | CR1 F | **LAD N** *(1)* | 0.050 |
| **Time delay auxiliary contacts** | *(1)* | CR1 F | **LAD ●** *(1)* | 0.060 |
| **Contact blocks with protected terminals for 3-pole contactors** (for mounting on contactors with closed arc chamber) | Set of 2 blocks | CR1 F150 and CR1 F185 | **LA9 F103** | 0.300 |
| **Power terminal protection shrouds** | Set of 6 shrouds for 3-pole contactors | CR1 F150 and CR1 F185 | **LA9 F702** | 0.250 |
| | | CR1 F265 to CR1 F500 | **LA9 F703** | 0.250 |
| | | CR1 F630 | **LA9 F704** | 0.250 |
| | Set of 8 shrouds for 4-pole contactors | CR1 F1504 and CR1 F1854 | **LA9 F707** | 0.300 |
| | | CR1 F2654 to CR1 F5004 | **LA9 F708** | 0.300 |
| | | CR1 F6304 | **LA9 F709** | 0.300 |

| Description | Application | Reference |
|---|---|---|
| **Mechanical interlock and power connections** | For assembly of reversing contactors and changeover contactor pairs | See pages 5/252 and 5/253 |

## Accessories for contactors CR1 B

| Description | Application | Reference | Weight kg |
|---|---|---|---|
| **Mechanical interlock** with mounting accessories *(3)* | For vertical assembly of reversing contactors and changeover contactor pairs | **EZ2 LB0601** | 1.560 |
| **Kit containing 2 bar mounting brackets** | For mounting on 120 or 150 mm centres | **LA9 B103** | 1.620 |

*(1) For maximum number per contactor and complete reference, see page 5/123.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 48 | 110 | 125 | 127 | 220 | 230 | 240 | 250 | 380 | 400 | 415 | 440 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **For contactors CR1 F** | | | | | | | | | | | | | |
| **∼ 50/60 Hz** | E7 | F7 | – | G7 | M7 | M7 | U7 | – | Q7 | Q7 | N7 | – | – |
| **∼ 400 Hz** | E7 | F7 | – | G7 | M7 | M7 | – | – | – | – | – | – | – |
| **⎓** | E7 | F7 | – | G7 | M7 | M7 | – | – | – | – | – | – | – |
| **⎓ low consumption** | EZ7 | FZ7 | – | GZ7 | MZ7 | – | – | – | – | – | – | – | – |
| **For contactors CR1 B** | | | | | | | | | | | | | |
| **∼ 50…400 Hz** | – | F | – | G | M | M | U | – | Q | V | N | R | S |
| **⎓** | – | FD | GD | – | MD | – | UD | UCD | – | – | – | RD | SD |

*(3) Positive mechanical interlocking between 2 vertically mounted contactors of identical or different ratings. Connecting rods and cranks assembled on right-hand sides, crank pins on the pole side.*
*Vertical fixing centre distance between the two contactors: 600 mm.*

5

# TeSys contactors

## Magnetic latching contactors

Components for assembling reversing contactors and changeover contactor pairs CR1 F
Horizontally or vertically mounted

## Horizontally mounted

### Mechanical interlocks

Reversers assembled using 2 contactors of identical rating, type:
**CR1 F150**
**CR1 F185**
**CR1 F265**
**CR1 F400**
**CR1 F500**
**CR1 F630**

LA9 F●970

### Sets of power connections

Reversing contactors
LA9 F●976

3 or 4-pole changeover contactor pairs
LA9 F●977 or LA9 F●982

## Vertically mounted

### Mechanical interlocks

Reversers assembled using 2 contactors of identical rating, type:
**CR1 F150**
**CR1 F185**
**CR1 F265**
**CR1 F400**
**CR1 F500**
**CR1 F630**

LA9 FF4F Assembly A
LA9 FG4G

LA9 FH4H Assembly C
LA9 FJ4J
LA9 FK4K
LA9 FL4L

Reversers assembled using 2 contactors of different ratings, type:
**CR1 F150**
**CR1 F185**
**CR1 F265**
**CR1 F400**
**CR1 F500**
**CR1 F630**

LA9 FG4F Assembly A

LA9 FH4F Assembly B
LA9 FJ4F
LA9 FK4F
LA9 FL4F
LA9 FH4G
LA9 FJ4G
LA9 FK4G
LA9 FL4G

LA9 FJ4H Assembly C
LA9 FK4H
LA9 FL4H
LA9 FK4J
LA9 FL4J
LA9 FK4K

Reversers assembled using 3 contactors of identical or different ratings

LA9 F●4●4●

**Warning**: the contactor ratings must be in decreasing size from top to bottom.

# TeSys contactors

## Magnetic latching contactors

### Components for assembling reversing contactors and changeover contactor pairs CR1 F

**For assembly of 3-pole reversing contactors for motor control** *(1)*

**For assembly of 4-pole changeover contactor pairs**

| Reversers assembled using 2 contactors of identical rating | | | | | |
|---|---|---|---|---|---|
| Contactor type | Set of power connections | | | Mechanical interlock | |
| | 3-pole Reference | 4-pole Reference | Weight kg | Kit reference | Weight kg |
| **Horizontally mounted** | | | | | |
| CR1 F150 | **LA9 FF976** | – | 0.600 | **LA9 FF970** | 0.060 |
| CR1 F185 | **LA9 FG976** | – | 0.780 | **LA9 FG970** | 0.060 |
| CR1 F265 | **LA9 FH976** | – | 1.500 | **LA9 FJ970** | 0.140 |
| CR1 F400 | **LA9 FJ976** | – | 2.100 | **LA9 FJ970** | 0.140 |
| CR1 F500 | **LA9 FK976** | – | 2.350 | **LA9 FJ970** | 0.140 |
| CR1 F630 | **LA9 FL976** | – | 3.800 | **LA9 FL970** | 0.150 |
| **Vertically mounted** | | | | | |
| CR1 F150 | *(2)* | – | – | **LA9 FF4F** | 0.345 |
| CR1 F185 | *(2)* | – | – | **LA9 FG4G** | 0.350 |
| CR1 F265 | *(2)* | – | – | **LA9 FH4H** | 1.060 |
| CR1 F400 | *(2)* | – | – | **LA9 FJ4J** | 1.200 |
| CR1 F500 | *(2)* | – | – | **LA9 FK4K** | 1.200 |
| CR1 F630 | *(2)* | – | – | **LA9 FL4L** | 1.220 |
| **Horizontally mounted** | | | | | |
| CR1 F1504 | **LA9 FF982** | **LA9 FF977** | 0.460 | **LA9 FF970** | 0.060 |
| CR1 F1854 | **LA9 FG982** | **LA9 FG977** | 0.610 | **LA9 FG970** | 0.060 |
| CR1 F2654 | **LA9 FH982** | **LA9 FH977** | 1.200 | **LA9 FJ970** | 0.140 |
| CR1 F4004 | **LA9 FJ982** | **LA9 FJ977** | 1.800 | **LA9 FJ970** | 0.140 |
| CR1 F5004 | **LA9 FK982** | **LA9 FK977** | 2.300 | **LA9 FJ970** | 0.140 |
| CR1 F6304 | **LA9 FL982** | **LA9 FL977** | 3.400 | **LA9 FL970** | 0.150 |
| **Vertically mounted** | | | | | |
| CR1 F1504 | *(2)* | – | – | **LA9 FF4F** | 0.345 |
| CR1 F1854 | *(2)* | – | – | **LA9 FG4G** | 0.350 |
| CR1 F2654 | *(2)* | – | – | **LA9 FH4H** | 1.060 |
| CR1 F4004 | *(2)* | – | – | **LA9 FJ4J** | 1.200 |
| CR1 F5004 | *(2)* | – | – | **LA9 FK4K** | 1.200 |
| CR1 F6304 | *(2)* | – | – | **LA9 FL4L** | 1.220 |

**For assembly of 3 or 4-pole changeover contactor pairs**

| Reversers assembled using 2 contactors of different ratings | | | |
|---|---|---|---|
| Contactor type | | Mechanical interlock | |
| At bottom | At top | Kit reference | Weight kg |
| **Vertically mounted** *(3)* | | | |
| CR1 F150 or F1504 | CR1 F185 or F1854 | **LA9 FG4F** | 0.350 |
| | CR1 F265 or F2654 | **LA9 FH4F** | 0.870 |
| | CR1 F400 or F4004 | **LA9 FJ4F** | 0.930 |
| | CR1 F500 or F5004 | **LA9 FK4F** | 0.940 |
| | CR1 F630 or F6304 | **LA9 FL4F** | 0.940 |
| CR1 F185 or F1854 | CR1 F265 or F2654 | **LA9 FH4G** | 0.860 |
| | CR1 F400 or F4004 | **LA9 FJ4G** | 0.940 |
| | CR1 F500 or F5004 | **LA9 FK4G** | 0.940 |
| | CR1 F630 or F6304 | **LA9 FL4G** | 0.950 |
| CR1 F265 or F2654 | CR1 F400 or F4004 | **LA9 FJ4H** | 1.130 |
| | CR1 F500 or F5004 | **LA9 FK4H** | 1.130 |
| | CR1 F630 or F6304 | **LA9 FL4H** | 1.140 |
| CR1 F400 or F4004 | CR1 F500 or F5004 | **LA9 FK4J** | 1.200 |
| | CR1 F630 or F6304 | **LA9 FL4J** | 1.210 |
| CR1 F500 or F5004 | CR1 F630 or F6304 | **LA9 FL4K** | 1.210 |

**For assembly of 3 or 4-pole reversing contactors**

| Using 3 contactors (vertically mounted) of identical or different ratings | Mechanical interlock Kit reference *(4)* |
|---|---|
| The contactor ratings must be in decreasing size from top to bottom. | **LA9 F●4●4●** |

*(1) A 3-pole reversing contactor for motor control can be converted into a 3-pole changeover contactor pair by removing the upper connecting links.*
*(2) All power connections are to be made by the customer.*
*(3) With identical or different number of poles. Power connections to be made by the customer.*
*(4) Complete the reference by replacing the first dot with the code for the upper contactor, the second dot with the code for the middle contactor and the third dot with the code for the bottom contactor.*

| Contactors | CR1 F150 | CR1 F185 | CR1 F265 | CR1 F400 | CR1 F500 | CR1 F630 |
|---|---|---|---|---|---|---|
| Code | F | G | H | J | K | L |

**Example**: mechanical interlock for reversing contactor made up of 3 different contactors: CR1 F500 top, CR1 F26 middle and CR1 F185 bottom: **LA9 FK4H4G**.

Illustrations : page 5/252
Dimensions : page 5/260
Schemes : pages 5/266 and 5/267

# TeSys contactors

## Magnetic latching contactors

### Coils for contactors CR1 F

*LX0 FF009*

*LX0 FH009*

**Standard coils**

| Usual voltages | | Resistance of winding at θ = 20 °C | | Reference | Voltage code | Weight |
|---|---|---|---|---|---|---|
| 50…400 Hz or ⎓ | 50 Hz, 60 Hz | Latching | Unlatching | | | |
| V | V | Ω | Ω | | | kg |
| **For contactors CR1 F150** | | | | | | |
| 48 | – | 1.98 | 230.8 | **LX0 FF005** | E7 | 0.440 |
| 110 | – | 9.35 | 1453 | **LX0 FF006** | F7 | 0.440 |
| 127 | – | 11.61 | 1788 | **LX0 FF007** | G7 | 0.440 |
| 208 | – | 23.50 | 4098 | **LX0 FF020** | L7 | 0.440 |
| 220/230 | – | 37.55 | 5139 | **LX0 FF008** | M7 | 0.440 |
| – | 240 | 45.16 | 6544 | **LX0 FF009** | U7 | 0.440 |
| – | 380/400 | 114.10 | 12 447 | **LX0 FF010** | Q7 | 0.440 |
| – | 415 | 139.50 | 16 717 | **LX0 FF011** | N7 | 0.440 |
| **For contactors CR1 F185** | | | | | | |
| 48 | – | 1,42 | 220 | **LX0 FG005** | E7 | 0,560 |
| 110 | – | 6.92 | 1339 | **LX0 FG006** | F7 | 0.560 |
| 127 | – | 8.45 | 1676 | **LX0 FG007** | G7 | 0.560 |
| 208 | – | 21.30 | 3169 | **LX0 FG020** | L7 | 0.560 |
| 220/230 | – | 26.27 | 4729 | **LX0 FG008** | M7 | 0.560 |
| – | 240 | 32.95 | 4729 | **LX0 FG009** | U7 | 0.560 |
| – | 380/400 | 82.29 | 11 885 | **LX0 FG010** | Q7 | 0.560 |
| – | 415 | 102.30 | 14 305 | **LX0 FG011** | N7 | 0.560 |
| **For contactors CR1 F265** | | | | | | |
| 48 | – | 1.34 | 183.4 | **LX0 FH005** | E7 | 0.780 |
| 110 | – | 6.90 | 1031 | **LX0 FH006** | F7 | 0.780 |
| 127 | – | 8.56 | 1325 | **LX0 FH007** | G7 | 0.780 |
| 208 | – | 20.20 | 2654 | **LX0 FH020** | L7 | 0.780 |
| 220/230 | – | 25.77 | 4090 | **LX0 FH008** | M7 | 0.780 |
| – | 240 | 33.03 | 5002 | **LX0 FH009** | U7 | 0.780 |
| – | 380/400 | 78.39 | 11 803 | **LX0 FH010** | Q7 | 0.780 |
| – | 415 | 102.9 | 15 006 | **LX0 FH011** | N7 | 0.780 |
| **For contactors CR1 F400** | | | | | | |
| 48 | – | 1.32 | 90.5 | **LX0 FJ005** | E7 | 1.120 |
| 110 | – | 8.09 | 813 | **LX0 FJ006** | F7 | 1.120 |
| 127 | – | 9.79 | 1027 | **LX0-FJ007** | G7 | 1.120 |
| 208 | – | 24.40 | 2643 | **LX0 FJ020** | L7 | 1.120 |
| 220/230 | – | 30.14 | 3309 | **LX0 FJ008** | M7 | 1.120 |
| – | 240 | 37.02 | 4074 | **LX0 FJ009** | U7 | 1.120 |
| – | 380/400 | 94.80 | 9380 | **LX0 FJ010** | Q7 | 1.120 |
| – | 415 | 121.10 | 11 763 | **LX0 FJ011** | N7 | 1.120 |
| **For contactors CR1 F500** | | | | | | |
| 48 | – | 1.57 | 166 | **LX0 FK005** | E7 | 1.220 |
| 110 | – | 7.53 | 916 | **LX0 FK006** | F7 | 1.220 |
| 127 | – | 9.56 | 1159 | **LX0 FK007** | G7 | 1.220 |
| 208 | – | 23.60 | 2981 | **LX0 FK020** | L7 | 1.220 |
| 220/230 | – | 28.81 | 3733 | **LX0 FK008** | M7 | 1.220 |
| – | 240 | 35.67 | 4595 | **LX0 FK009** | U7 | 1.220 |
| – | 380/400 | 89.56 | 10 570 | **LX0 FK010** | Q7 | 1.220 |
| – | 415 | 112.06 | 13 256 | **LX0 FK011** | N7 | 1.220 |
| **For contactors CR1 F630** | | | | | | |
| 48 | – | 0.87 | 204 | **LX0 FL005** | E7 | 1.460 |
| 110 | – | 5.20 | 1423 | **LX0 FL006** | F7 | 1.460 |
| 127 | – | 6.45 | 1830 | **LX0 FL007** | G7 | 1.460 |
| 208 | – | 20.20 | 2961 | **LX0 FL020** | L7 | 1.460 |
| 220/230 | – | 25.36 | 4603 | **LX0 FL008** | M7 | 1.460 |
| – | 240 | 25.36 | 5658 | **LX0 FL009** | U7 | 1.460 |
| – | 380/400 | 60.95 | 10 676 | **LX0 FL010** | Q7 | 1.460 |
| – | 415 | 77.97 | 13 003 | **LX0 FL011** | N7 | 1.460 |

# TeSys contactors

## Magnetic latching contactors

### Coils for contactors CR1 F

501472_1

*LX0 FF030*

## Special coils

Coils with two windings with common point, allowing the use of two separate power sources for latching and unlatching.

| Coil voltages at 50 Hz, 60 Hz, 400 Hz or ⎓ | | Resistance of winding at θ = 20 °C | | Reference | Voltage code | Weight |
|---|---|---|---|---|---|---|
| Latching | Unlatching | Latching | Unlatching | | | |
| V | V | Ω | Ω | | | kg |
| **For contactors CR1 F150** | | | | | | |
| 220 | 24 | 29.5 | 39.5 | **LX0 FF224** | MB7 | 0.440 |
| **For contactors CR1 F185** | | | | | | |
| 220 | 24 | 26.5 | 19 | **LX0 FG224** | MB7 | 0.560 |
| **For contactors CR1 F265** | | | | | | |
| 220 | 24 | 26 | 29.5 | **LX0 FH224** | MB7 | 0.780 |
| **For contactors CR1 F400** | | | | | | |
| 220 | 24 | 30 | 23 | **LX0 FJ224** | MB7 | 1.120 |
| **For contactors CR1 F500** | | | | | | |
| 220 | 24 | 29 | 26 | **LX0 FK224** | MB7 | 1.220 |
| For contactors CR1 F630 | | | | | | |
| 220 | 24 | 26 | 41 | **LX0 FL224** | MB7 | 1.460 |

## Coils with low inrush consumption

| Usual voltages ⎓ | Resistance of winding at θ = 20 °C | | Reference | Voltage code | Weight |
|---|---|---|---|---|---|
| | Latching | Unlatching | | | |
| V | Ω | Ω | | | kg |
| **For contactors CR1 F150** | | | | | |
| 48 | 4.56 | 140.56 | **LX0 FF055** | EZ7 | 0.440 |
| 110 | 22.37 | 706.44 | **LX0 FF056** | FZ7 | 0.440 |
| 127 | 35.54 | 1086.36 | **LX0 FF057** | GZ7 | 0.440 |
| 220 | 89.85 | 3342.51 | **LX0 FF058** | MZ7 | 0.440 |
| **For contactors CR1 F185** | | | | | |
| 48 | 5.19 | 106.54 | **LX0 FG055** | EZ7 | 0.570 |
| 110 | 25.50 | 536.26 | **LX0 FG056** | FZ7 | 0.570 |
| 127 | 32.75 | 732.64 | **LX0 FG057** | GZ7 | 0.570 |
| 220 | 102.44 | 2378.62 | **LX0 FG058** | MZ7 | 0.570 |
| **For contactors CR1 F265** | | | | | |
| 48 | 5.19 | 74.26 | **LX0 FH055** | EZ7 | 0.800 |
| 110 | 25 | 364.61 | **LX0 FH056** | FZ7 | 0.800 |
| 127 | 30.98 | 458.45 | **LX0 FH057** | GZ7 | 0.800 |
| 220 | 97.89 | 1344.46 | **LX0 FH058** | MZ7 | 0.800 |
| **For contactors CR1 F400** | | | | | |
| 48 | 5.05 | 36.36 | **LX0 FJ055** | EZ7 | 1.150 |
| 110 | 25.39 | 171.49 | **LX0 FJ056** | FZ7 | 1.150 |
| 127 | 31.86 | 221.20 | **LX0 FJ057** | GZ7 | 1.150 |
| 220 | 98.19 | 648.79 | **LX0 FJ058** | MZ7 | 1.150 |
| **For contactors CR1 F500** | | | | | |
| 48 | 4.42 | 41 | **LX0 FK055** | EZ7 | 1.270 |
| 110 | 22.74 | 193.36 | **LX0 FK056** | FZ7 | 1.270 |
| 127 | 28.25 | 313.60 | **LX0 FK057** | GZ7 | 1.270 |
| 220 | 85.12 | 918.68 | **LX0 FK058** | MZ7 | 1.270 |
| **For contactors CR1 F630** | | | | | |
| 48 | 3.94 | 59.17 | **LX0 FL055** | EZ7 | 1.500 |
| 110 | 19.36 | 365.33 | **LX0 FL056** | FZ7 | 1.500 |
| 127 | 25.39 | 452.27 | **LX0 FL057** | GZ7 | 1.500 |
| 220 | 74.44 | 1071.43 | **LX0 FL058** | MZ7 | 1.500 |

# TeSys contactors

## Magnetic latching contactors

### Coils for contactors CR1 B

501473_1

*WB1 KB●●●*

**Coils with "TC" treatment** (associated accessories, see page opposite)

| Usual voltages ⎓ V | Usual voltages ∼ 50…400 Hz V | Resistance at θ = 20 °C Ω | Reference | Weight kg |
|---|---|---|---|---|
| **For contactors CR1 B●31** | | | | |
| – | 110…120 | 19.7 | **WB1 KB140** | 1.120 |
| 110…125 | – | 25.2 | **WB1 KB134** | 1.120 |
| – | 220…240 | 77.2 | **WB1 KB136** | 1.120 |
| 220 | – | 94 | **WB1 KB139** | 1.120 |
| 250 | – | 128 | **WB1 KB125** | 1.120 |
| – | 380…400 | 197 | **WB1 KB126** | 1.120 |
| – | 415…440 | 257 | **WB1 KB138** | 1.120 |
| **For contactors CR1 B●32** | | | | |
| – | 110 | 9.6 | **WB1 KB133** | 1.120 |
| 110 | 120…127 | 11.4 | **WB1 KB121** | 1.120 |
| 125 | – | 19.7 | **WB1 KB140** | 1.120 |
| – | 220/230 | 32.5 | **WB1 KB124** | 1.120 |
| 220 | 240 | 49.7 | **WB1 KB122** | 1.120 |
| 250 | – | 77.2 | **WB1 KB136** | 1.120 |
| – | 380…400 | 128 | **WB1 KB125** | 1.120 |
| – | 415…440 | 160 | **WB1 KB137** | 1.120 |
| **For contactors CR1 B●33** | | | | |
| – | 110 | 7.2 | **WB1 KB123** | 1.120 |
| 110 | 120…127 | 9.6 | **WB1 KB133** | 1.120 |
| 125 | – | 11.4 | **WB1 KB121** | 1.120 |
| 220 | 240 | 32.5 | **WB1 KB124** | 1.120 |
| 250 | – | 61 | **WB1 KB135** | 1.120 |
| – | 380…415 | 94 | **WB1 KB139** | 1.120 |
| – | 440 | 128 | **WB1 KB125** | 1.120 |
| **For contactors CR1 B●34** | | | | |
| – | 110 | 5.8 | **WB1 KB132** | 1.120 |
| 110 | 120…127 | 7.2 | **WB1 KB123** | 1.120 |
| 125 | – | 11.4 | **WB1 KB121** | 1.120 |
| – | 220/230 | 25.2 | **WB1 KB134** | 1.120 |
| – | 240 | 32.5 | **WB1 KB124** | 1.120 |
| 250 | – | 49.7 | **WB1 KB122** | 1.120 |
| – | 380 | 77.2 | **WB1 KB136** | 1.120 |
| – | 400…440 | 94 | **WB1 KB139** | 1.120 |

**Coils with "TH" treatment** (associated accessories, see page opposite)

Add suffix **TH** to the references selected above. Example: **WB1 KB140TH**.

# TeSys contactors

## Magnetic latching contactors

### Coils for contactors CR1 B

501474_1

DR2 SC0220

501475_1

ZC4 GM2

501476_1

PR4 FB0014

501477_1

DR5 TE1U

**Accessories for use with coils** *(1)*

| Coils ("TC" or "TH") | Additional resistors *(2)* | | | | Automatic coil cut-out contact *(3)* | | Rectifier *(4)* |
|---|---|---|---|---|---|---|---|
| | R1 | Reference | R2 | Reference | Nb | Reference | Reference |
| | Ω | | Ω | | | | |
| **For contactors CR1 B●31** | | | | | | | |
| **WB1 KB140** | 68 | **DR2 SC0068** | 47 | **DR2 SC0047** | 2 | **ZC4 GM2** or **ZC4 GM8** | **DR5 TE1U** |
| **WB1 KB134** | 68 | **DR2 SC0068** | 68 | **DR2 SC0068** | 2 | **ZC4 GM2** or **ZC4 GM8** | – |
| **WB1 KB136** | 220 | **DR2 SC0220** | 180 | **DR2 SC0180** | 2 | **ZC4 GM2** or **ZC4 GM8** | **DR5 TE1U** |
| **WB1 KB139** | 270 | **DR2 SC0270** | 220 | **DR2 SC0220** | 2 | **ZC4 GM2** or **ZC4 GM8** | – |
| **WB1 KB125** | 330 | **DR2 SC0330** | 270 | **DR2 SC0270** | 3 | **ZC4 GM2** or **ZC4 GM8** | – |
| **WB1 KB126** | 470 | **DR2 SC0470** | 470 | **DR2 SC0470** | 3 | **ZC4 GM2** or **ZC4 GM8** | **DR5 TE1S** |
| **WB1 KB138** | 1000 | **DR2 SC1000** | 470 | **DR2 SC0470** | 3 | **ZC4 GM2** or **ZC4 GM8** | **DR5 TE1S** |
| **For contactors CR1 B●32** | | | | | | | |
| **WB1 KB133** | 10 | **DR2 SC0010** | 33 | **DR2 SC0033** | 1 | **PR4 FB0011** | **DR5 TE1U** |
| **WB1 KB121** | 47 | **DR2 SC0047** | 39 | **DR2 SC0039** | 1 | **PR4 FB0010** | **DR5 TE1U** |
| **WB1 KB140** | 100 | **DR2 SC0100** | 47 | **DR2 SC0047** | 1 | **PR4 FB0009** | – |
| **WB1 KB124** | 120 | **DR2 SC0120** | 120 | **DR2 SC0120** | 1 | **PR4 FB0007** | **DR5 TE1U** |
| **WB1 KB122** | 220 | **DR2 SC0220** | 150 | **DR2 SC0150** | 1 | **PR4 FB0007** | **DR5 TE1U** |
| **WB1 KB136** | 330 | **DR2 SC0330** | 220 | **DR2 SC0220** | 1 | **PR4 FB0006** | – |
| **WB1 KB125** | 470 | **DR2 SC0470** | 470 | **DR2 SC0470** | 1 | **PR4 FB0005** | **DR5 TE1S** |
| **WB1 KB137** | 680 | **DR2 SC0680** | 560 | **DR2 SC0560** | 1 | **PR4 FB0004** | **DR5 TE1S** |
| **For contactors CR1 B●33** | | | | | | | |
| **WB1 KB123** | 39 | **DR2 SC0039** | 27 | **DR2 SC0027** | 1 | **PR4 FB0012** | **DR5 TE1U** |
| **WB1 KB133** | 47 | **DR2 SC0047** | 39 | **DR2 SC0039** | 1 | **PR4 FB0011** | **DR5 TE1U** |
| **WB1 KB121** | 56 | **DR2 SC0056** | 47 | **DR2 SC0047** | 1 | **PR4 FB0010** | – |
| **WB1 KB124** | 180 | **DR2-SC0180** | 120 | **DR2 SC0120** | 1 | **PR4 FB0008** | **DR5 TE1U** |
| **WB1 KB135** | 270 | **DR2 SC0270** | 270 | **DR2 SC0270** | 1 | **PR4 FB0006** | – |
| **WB1 KB139** | 470 | **DR2 SC0470** | 390 | **DR2 SC0390** | 1 | **PR4 FB0005** | **DR5 TE1S** |
| **WB1 KB125** | 680 | **DR2-SC0680** | 470 | **DR2 SC0470** | 1 | **PR4 FB0004** | **DR5 TE1S** |
| **For contactors CR1 B●34** | | | | | | | |
| **WB1 KB132** | 33 | **DR2 SC0033** | 27 | **DR2 SC0027** | 1 | **PR4 FB0014** | **DR5 TE1U** |
| **WB1 KB123** | 47 | **DR2 SC0047** | 33 | **DR2 SC0033** | 1 | **PR4 FB0012** | **DR5 TE1U** |
| **WB1 KB121** | 56 | **DR2 SC0056** | 56 | **DR2 SC0056** | 1 | **PR4 FB0010** | – |
| **WB1 KB134** | 150 | **DR2 SC0150** | 120 | **DR2 SC0120** | 1 | **PR4 FB0008** | **DR5 TE1U** |
| **WB1 KB124** | 180 | **DR2-SC0180** | 150 | **DR2 SC0150** | 1 | **PR4 FB0007** | **DR5 TE1U** |
| **WB1 KB122** | 270 | **DR2 SC0270** | 220 | **DR2 SC0220** | 1 | **PR4 FB0007** | – |
| **WB1 KB136** | 390 | **DR2 SC0390** | 390 | **DR2 SC0390** | 1 | **PR4 FB0006** | **DR5 TE1S** |
| **WB1 KB139** | 560 | **DR2 SC0560** | 470 | **DR2 SC0470** | 1 | **PR4 FB0005** | **DR5 TE1S** |

*(1) For connections, see page 5/267.*
*(2) Weight of resistors DR2 SC●●●● : 0.030 kg.*
*(3) Weight of automatic coil cut-out contacts: ZC4 GM● : 0.030 kg and PR4 FB00●● : 0.600 kg.*
*(4) Weight of rectifier DR5 TE1● : 0.100 kg. The rectifier is for use on a.c. only.*

# TeSys contactors

## Magnetic latching contactors

### Accessories and replacement parts for contactors CR1 F

501478_1

*LA5 FG431*

501479_1

*LA5 F40050*

## References

| Description | For contactor | | Reference | Weight kg |
|---|---|---|---|---|
| **Complete sets of contacts for 3 or 4 poles** *(1)* | 3-pole | CR1 F150 | **LA5 FF431** | 0.270 |
| | | CR1 F185 | **LA5 FG431** | 0.350 |
| | | CR1 F265 | **LA5 FH431** | 0.660 |
| | | CR1 F400 | **LA5 F400803** | 0.660 |
| | | CR1 F500 | **LA5 F500803** | 0.660 |
| | | CR1 F630 | **LA5 F630803** | 0.660 |
| | 4-pole | CR1 F1504 | **LA5 FF441** | 0.360 |
| | | CR1 F1854 | **LA5 FG441** | 0.465 |
| | | CR1 F2654 | **LA5 FH441** | 0.880 |
| | | CR1 F4004 | **LA5 F400804** | 0.465 |
| | | CR1 F5004 | **LA5 F500804** | 0.465 |
| | | CR1 F6304 | **LA5 F630804** | 0.465 |
| **Arc chambers** | 3-pole | CR1 F150 | **LA5 F15050** | 0.490 |
| | | CR1 F185 | **LA5 F18550** | 0.670 |
| | | CR1 F265 | **LA5 F26550** | 0.920 |
| | | CR1 F400 | **LA5 F40050** | 1.300 |
| | | CR1 F500 | **LA5 F50050** | 1.850 |
| | | CR1 F630 | **LA5 F63050** | 3.150 |
| | 4-pole | CR1 F1504 | **LA5 F150450** | 0.660 |
| | | CR1 F1854 | **LA5 F185450** | 0.910 |
| | | CR1 F2654 | **LA5 F265450** | 1.220 |
| | | CR1 F4004 | **LA5 F400450** | 1.740 |
| | | CR1 F5004 | **LA5 F500450** | 2.500 |
| | | CR1 F6304 | **LA5 F630450** | 4.200 |

*(1) Set containing the following (per pole): 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.*

# TeSys contactors

## Magnetic latching contactors

### Accessories and replacement parts for contactors CR1 B

501480_1

*PA1 LB80*
*(PA1 LB76 + PA1 LB75)*

501481_1

*ZC4 GM1*

501482_1

*PA1 LB89*

501483_1

*PA1 LB50*

501484_1

*PR4 FB004●●*

## References (continued)

| Description | For contactors | Number of sets required per pole | Unit reference of set | Weight kg |
|---|---|---|---|---|
| **Sets of contacts** (1 moving contact, 1 fixed contact) | CR1 BL | 1 | **PA1 LB80** | 0.420 |
| | CR1 BM | 1 | **PA1 LB80** | 0.420 |
| | CR1 BP | 2 | **PA1 LB80** | 0.420 |
| | CR1 BR | 3 | **PA1 LB80** | 0.420 |

| Description | For contactors | Composition | Reference | Weight kg |
|---|---|---|---|---|
| **Moving contact only** (for one finger) | All ratings | – | **PA1 LB75** | 0.220 |
| **Fixed contact only** (for one finger) | All ratings | – | **PA1 LB76** | 0.200 |
| **Blow-out horn only** (for 1 finger) | All ratings | – | **PA1 LB89** | 0.120 |
| **Arc chambers** (for a single pole) | CR1 BL | – | **PA1 LB50** | 3.700 |
| | CR1 BM | – | **PA1 LB50** | 3.700 |
| | CR1 BP | – | **PA1 PB50** | 6.200 |
| | CR1 BR | – | **PA1 RB50** | 8.500 |
| **Auxiliary contact blocks** | All ratings | 1 N/O contact - normal | **ZC4 GM1** | 0.030 |
| | All ratings | 1 N/C contact - normal | **ZC4 GM2** | 0.030 |
| | All ratings | 1 N/O contact - gold flashed | **ZC4 GM9** | 0.030 |
| | All ratings | 1 N/C contact - gold flashed | **ZC4 GM8** | 0.030 |
| **N/C pole** for automatic cut-out coil | All ratings | – | **PR4 FB00●●** *(1)* | 0.600 |
| **Set of moving and fixed** contacts for N/C pole | All ratings | – | **PV1 FA80** | 0.035 |
| **Arc chamber for N/C pole** | All ratings | – | **PN1 FB50** | 0.220 |
| **Electromagnet** | All ratings | – | **ET1 KB50** | 10.600 |

| Description | For contactors | No. of parts required | Reference | Weight kg |
|---|---|---|---|---|
| **Return springs** for moving part of electromagnet | CR1 B (1 pole) | 1 | **DV1 RT292** | 0.050 |
| | CR1 B (2, 3 or 4 poles) | 2 | **DV1 RT292** | 0.050 |
| **N/O pole springs** | CR1 BL, BM or BP | 1 per pole | **DV1 RC201** | 0.020 |
| | CR1 BR | 1 per pole | **DV1 RC155** | 0.020 |

*(1) Reference to be completed, see page 5/257.*

# TeSys contactors
## Magnetic latching contactors CR1 F

### CR1 F150 to F500

Common side view

CR1 F150, F185, F265

CR1 F400, F500

| CR1 | F150 | | F185 | | F265 | |
|---|---|---|---|---|---|---|
| | 3P | 4P | 3P | 4P | 3P | 4P |
| a | 163.5 | 201.5 | 168.5 | 208.5 | 201.5 | 244.5 |
| b | 170 | 170 | 174 | 174 | 203 | 203 |
| b1 | 137 | 137 | 137 | 137 | 145 | 145 |
| b2 | 301 | 301 | 305 | 305 | 370 | 370 |
| c | 171 | 171 | 181 | 181 | 213 | 213 |
| f | 131 | 131 | 130 | 130 | 147 | 147 |
| G | 106 | 143 | 111 | 151 | 142 | 190 |
| G1 | 80 | 80 | 80 | 80 | 96 | 96 |
| J | 106 | 106 | 106 | 106 | 106 | 106 |
| J1 | 120 | 120 | 120 | 120 | 120 | 120 |
| L | 107 | 107 | 113.5 | 113.5 | 141 | 141 |
| M | 150 | 150 | 154 | 154 | 178 | 178 |
| P | 40 | 40 | 40 | 40 | 48 | 48 |
| Q | 26 | 26 | 29 | 29 | 39 | 34 |
| Q1 | 57.5 | 55.5 | 59.5 | 59.5 | 66.5 | 66.5 |
| S | 20 | 20 | 20 | 20 | 25 | 25 |
| S1 | 27 | 27 | 34 | 34 | 38 | 38 |
| Y | 44 | 44 | 38.5 | 30.5 | 30.5 | 21.5 |
| Z | 13.5 | 13.5 | 13.5 | 13.5 | 15.5 | 15.5 |

f = minimum distance required for coil removal.

X1: Minimum electrical clearance according to operational voltage and breaking capacity.

| Voltage in V | 200…500 | 660…1000 |
|---|---|---|
| **CR1 F150** | 10 | 15 |
| **CR1 F185** | 10 | 15 |
| **CR1 F265** | 10 | 15 |

*(1) Power terminal protection shroud.*

| CR1 | F400 | | F500 | |
|---|---|---|---|---|
| | 3P | 4P | 3P | 4P |
| a | 213 | 261 | 233 | 288 |
| G min. | 66 | 66 | 66 | 66 |
| b | 206 | 206 | 238 | 238 |
| b2 | 375 | 375 | 400 | 400 |
| c | 219 | 219 | 232 | 232 |
| f | 146 | 146 | 150 | 150 |
| G supplied | 80 | 80 | 80 | 140 |
| G max. | 102 | 150 | 120 | 175 |
| G1 supplied | 170 | 170 | 170 | 230 |
| G1 min. | 156 | 156 | 156 | 156 |
| G1 max. | 192 | 240 | 210 | 265 |
| J | 12 | 60 | 32 | 27 |
| L | 145 | 145 | 146 | 146 |
| M | 181 | 181 | 208 | 208 |
| P | 48 | 48 | 55 | 55 |
| Q | 43 | 43 | 47 | 47 |
| Q1 | 74 | 74 | 77 | 77 |
| S | 25 | 25 | 30 | 30 |

f = minimum distance required for coil removal.

X1: Minimum electrical clearance according to operational voltage and breaking capacity.

| Voltage in V | 200…500 | 660…1000 |
|---|---|---|
| **CR1 F400** | 15 | 20 |
| **CR1 F500** | 15 | 20 |

### CR1 F630

| CR1 F630 | 3P | 4P |
|---|---|---|
| a | 309 | 389 |
| G supplied | 180 | 240 |
| G min. | 100 | 150 |
| G max. | 195 | 275 |
| J1 | 61 | 81 |
| Q | 60 | 60 |
| Q1 | 89 | 89 |

X1: Min. electrical clearance according to operational voltage and breaking capacity.

| Voltage in V | X1 |
|---|---|
| 200…500 | 20 |
| 690…1000 | 30 |

*(1) Power terminal protection shroud.*
*(2) Minimum distance required for coil removal.*

Selection : pages 5/241 to 5/245
Characteristics : pages 5/246 to 5/249
References : pages 5/250 to 5/259
Schemes : pages 5/266 and 5/267

## CR1 F150…F265

Panel mounted

| CR1 | | F150 | F185 | F265 |
|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 |
| | 4P | 171 | 181 | 213 |
| G | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |
| J | 3P | 26.5 | 29 | 44.5 |
| | 4P | 45 | 49 | 68.5 |
| J1 | 3P | 57 | 59.5 | 61.5 |
| | 4P | 75.5 | 79.5 | 85.5 |

*(1) Power terminal protection shroud.*

On pre-slotted mounting plate AM1 PA, PB, PC

| CR1 | | F150 | F185 | F265 |
|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 |
| | 4P | 171 | 181 | 213 |
| G | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |

On rails DZ5 MB on 120 mm centres

| CR1 | | F150 | F185 | F265 |
|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 |
| | 4P | 171 | 181 | 213 |
| G | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |

## CR1 F150…F650

On 2 notched uprights AM1 EC●●●

| CR1 | | F150 | F185 | F265 | F400 | F500 | F630 |
|---|---|---|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 | 213 | 226 | 250 |
| | 4P | 171 | 181 | 213 | 213 | 226 | 250 |
| G (M6) | 3P | 80 | 80 | 96 | – | – | – |
| | 4P | 80 | 80 | 96 | – | – | – |
| G1 (Ø 8.5) | 3P | – | – | – | 80 | 80 | – |
| | 4P | – | – | – | 80 | 140 | – |
| G2 (Ø 10.5) | 3P | – | – | – | – | – | 180 |
| | 4P | – | – | – | – | – | 240 |

*(1) AF1 CD●●● or AF1 VA●●●.*
*(2) This AM1 EC200 upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).*

### Reversing contactors 2 x CR1 F150…F265

Horizontally mounted

| 2 x **CR1** | | **F150** | **F185** | **F265** |
|---|---|---|---|---|
| a | 3P | 345 | 357 | 425 |
| | 4P | 422 | 437 | 521 |
| b | 3P | 170 | 174 | 203 |
| | 4P | 170 | 174 | 203 |
| G1 | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |
| J | 3P | 71 | 78 | 109 |
| | 4P | 111 | 118 | 157 |
| J1 | 3P | 57 | 59.5 | 61.5 |
| | 4P | 75.5 | 79.5 | 85.5 |
| P1 | 3P | 71 | 78 | 100 |
| | 4P | 71 | 78 | 100 |

### Reversing contactors 2 x CR1 F400…F630

| 2 x **CR1** | | **F400** | **F500** | **F630** |
|---|---|---|---|---|
| a | 3P | 446 | 485 | 636 |
| | 4P | 542 | 595 | 796 |
| b | 3P | 206 | 238 | 304 |
| | 4P | 206 | 238 | 304 |
| G | 3P | 80 | 80 | 180 |
| | 4P | 80 | 140 | 240 |
| G1 | 3P | 170 | 170 | – |
| | 4P | 170 | 230 | – |
| J | 3P | 157 | 156 | 139 |
| | 4P | 157 | 156 | 139 |
| J1 | 3P | 64.5 | 84.5 | 68.5 |
| | 4P | 112.5 | 79.5 | 68.5 |
| J2 | 3P | 67 | 66 | – |
| | 4P | 67 | 66 | – |
| J3 | 3P | 19.5 | 39.5 | – |
| | 4P | 67.5 | 34.5 | – |
| P1 | 3P | 107 | 112 | 137 |
| | 4P | 107 | 112 | 137 |

*(1) Except F630: 4 x Ø 10.5.*
*(2) Except F630: 180.*

## Reversing contactors

Vertically mounted with mechanical interlock **LA9 F●●●**.
2 contactors **CR1 F** of identical or different ratings (CR1 F150…F630), see pages 5/252 and 5/253.

Assembly A

Assembly B

Assembly C

*(1) Mechanical interlock shaft.*
*(2) For assembly of contactors of different ratings only.*
*(3) 3 x Ø 6.5 mm for CR1 F150…F265.*
*(4) 3 x Ø 6.5 mm for CR1 F265.*
*(5) Mechanical interlock guide bracket.*
*(6) 4 x Ø 8.5 mm for CR1 F400, F500 or 4 x Ø 10.5 mm.*

| Assembly type LA9 F | | A F4F | A G4F | A G4G | B H4F | B J4F | B K4F | B L4F | B H4G | B J4G | B K4G | B L4G | C H4H | C J4H | C K4H | C L4H | C J4J | C K4J | C L4J | C K4K | C L4K | C L4L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G1 | 3P | – | – | – | 96 | 80 | 80 | 180 | 96 | 80 | 80 | 180 | 96 | 80 | 80 | 180 | 80 | 80 | 180 | 80 | 180 | 180 |
| | 4P | – | – | – | 96 | 80 | 140 | 240 | 96 | 80 | 140 | 240 | 96 | 80 | 140 | 240 | 80 | 140 | 240 | 140 | 240 | 240 |
| G2 | 3P | – | – | – | – | – | – | – | – | – | – | – | 96 | 96 | 96 | 96 | 80 | 80 | 80 | 80 | 80 | 180 |
| | 4P | – | – | – | – | – | – | – | – | – | – | – | 96 | 96 | 96 | 96 | 80 | 80 | 80 | 140 | 140 | 240 |
| G3 | 3P | 0 | 3 | 0 | 21 | 45 | 45 | 35 | 19 | 42 | 42 | 33 | 0 | 23 | 23 | 14 | 0 | 0 | 9 *(7)* | 0 | 9 *(7)* | 0 |
| | 4P | 0 | 4 | 0 | 27 | 26 | 26 | 17 | 23 | 22 | 22 | 13 | 0 | 0 | 0 | 9 (7) | 0 | 0 | 9 *(7)* | 0 | 9 *(7)* | 0 |
| G4 | 3P | – | – | – | – | – | – | – | – | – | – | – | 60 | 60 | 60 | 60 | 83 | 83 | 83 | 83 | 83 | 74 |
| | 4P | – | – | – | – | – | – | – | – | – | – | – | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 74 |
| G5 | 3P | – | – | – | 60 | 83 | 83 | 74 | 60 | 83 | 83 | 74 | 60 | 83 | 83 | 74 | 83 | 83 | 74 | 83 | 74 | 74 |
| | 4P | – | – | – | 83 | 83 | 83 | 74 | 83 | 83 | 83 | 74 | 83 | 83 | 83 | 74 | 83 | 83 | 74 | 83 | 74 | 74 |
| H | min. | 200 | 210 | 220 | 240 | 250 | 270 | 310 | 250 | 250 | 270 | 310 | 250 | 260 | 280 | 330 | 260 | 280 | 325 | 300 | 345 | 380 |
| | max. | 310 | 300 | 310 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 |
| H1 | min. | 80 | 90 | 100 | 110 | 80 | 100 | 140 | 120 | 90 | 110 | 150 | 130 | 110 | 130 | 170 | 60 | 100 | 140 | 120 | 160 | 200 |
| | max. | 190 | 180 | 190 | 250 | 210 | 210 | 210 | 250 | 220 | 220 | 220 | 260 | 230 | 230 | 220 | 200 | 200 | 195 | 200 | 195 | 200 |
| J1 | 3P | 133 | 134 | 134 | 149.5 | 137 | 157 | 241 | 149.5 | 137 | 157 | 241 | 149.5 | 137 | 157 | 24 | 137 | 157 | 241 | 157 | 244 | 241 |
| | 4P | 145 | 146 | 146 | 164.5 | 185 | 212 | 321 | 164.5 | 185 | 212 | 321 | 164.5 | 185 | 212 | 321 | 185 | 212 | 321 | 212 | 321 | 321 |
| J2 | 3P | 133 | 133 | 134 | 183 | 133 | 183 | 133 | 134 | 134 | 134 | 134 | 142.5 | 149.5 | 149.5 | 149.5 | 137 | 137 | 137 | 157 | 157 | 241 |
| | 4P | 145 | 145 | 146 | 145 | 145 | 145 | 145 | 146 | 146 | 146 | 146 | 164.5 | 164.5 | 164.5 | 164.5 | 185 | 185 | 185 | 212 | 212 | 312 |
| J3 | 3P | 48.5 | 53 | 53 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 4P | 67 | 73 | 73 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| J4 | 3P | 48.5 | 54 | 53 | 48.5 | 48.5 | 48.5 | 48.5 | 53 | 53 | 53 | 53 | – | – | – | – | – | – | – | – | – | – |
| | 4P | 67 | 69 | 73 | 67 | 67 | 67 | 67 | 73 | 73 | 73 | 73 | – | – | – | – | – | – | – | – | – | – |

*(7) In this case, G4 is greater than G5.*

## Contactors CR1 B

Common side view

## Single-pole, 2-pole or 3-pole

## 4-pole

| | CR1 BL | | | | CR1 BM | | | | CR1 BP | | | | CR1 BR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1P | 2P | 3P | 4P | 1P | 2P | 3P | 4P | 1P | 2P | 3P | 4P | 1P | 2P | 3P | 4P |
| a | 50 | 50 | 50 | 50 | 63 | 63 | 63 | 63 | 100 | 100 | 100 | 100 | 125 | 125 | 125 | 125 |
| b | 59 | 59 | 59 | 59 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 50 | 50 | 50 | 50 |
| c | 16 | 16 | 16 | 16 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 25 | 25 | 25 | 25 |
| L | 345 | 445 | 540 | 760 | 345 | 445 | 540 | 760 | 385 | 540 | 760 | 1065 | 445 | 635 | 885 | 1065 |
| M | 285 | 385 | 480 | – | 285 | 385 | 480 | – | 325 | 480 | 700 | – | 385 | 575 | 825 | – |
| M1 | – | – | – | 308 | – | – | – | 308 | – | – | – | 455 | – | – | – | 455 |
| M2 | – | – | – | 392 | – | – | – | 392 | – | – | – | 550 | – | – | – | 550 |
| N | 121 | 121 | 121 | 121 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 130 | 130 | 130 | 130 |
| P | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 150 | 150 | 150 | 150 | 195 | 195 | 195 | 195 |
| Q1 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 110 | 110 | 110 | 110 | 123 | 123 | 123 | 123 |
| R | 122 | 122 | 122 | 122 | 157 | 157 | 157 | 157 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 173 |
| S | 10 | 10 | 10 | 10 | 17 | 17 | 17 | 17 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| T | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Ø | 9 | 9 | 9 | 9 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |

## Minimum electrical clearance

Values X1 and X2 are given for a breaking capacity of 10 In (3-phase ∿ current).

| 3-phase ∿ voltage | | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|
| 380-415-440 V | X1 | 100 | 100 | 150 | 200 |
| | X2 | 150 | 150 | 200 | 250 |
| 500 V | X1 | 100 | 100 | 150 | 200 |
| | X2 | 150 | 150 | 220 | 250 |
| 600 V | X1 | 150 | 150 | 200 | 200 |
| | X2 | 200 | 200 | 250 | 250 |
| 1000 V | X1 | 200 | 200 | 200 | 250 |
| | X2 | 250 | 250 | 250 | 300 |

## Mechanical interlock for assembly of vertically mounted reversing contactors EZ2 LB0601

501391_1

## Complete pole

### Adjustment of pick-up travel and pull-in travel

1 Moving circuit
2 Coil
3 Moving circuit
4 Return spring

### N/O pole adjustment

1 Fixed contact
2 Moving contact
3 Pull-in gap adjustment
4 Adjustment of application force
5 Pole spring

### N/C automatic coil cut-out pole adjustment

1 Fixed contact
2 Moving contact
3 Opening gap adjustment
4 Adjustment of application force
5 Pole spring

## a.c. or d.c. supply with economy resistor (and rectifier on ∿)

| Contactor type | | | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|
| **Electromagnet** (EB5 KB50) | Pick-up travel (**E**) | **mm** | 30 | 30 | 30 | 30 |
| | Pull-in travel (**e**) | **mm** | 10 | 10 | 10 | 10 |
| **Coil** (WB1 KB) | Pull-in voltage | **V** | 0.75 Uc | 0.75 Uc | 0.75 Uc | – |
| | Drop-out voltage | **V** | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc |
| **N/O power pole** (PA1) | Application force (**F**) to contact per pole | **daN** | 30 | 30 | 30 *(1)* | 30 *(2)* |
| **N/C automatic coil cut-out pole** (PR4) | Application force (**F**) | **daN** | 0.9 | 0.9 | 0.9 | 0.9 |
| | Opening gap (**b**) with electromagnet closed | **mm** | 3.5 ± 0.5 | 3.5 ± 0.5 | 3.5 ± 0.5 | 3.5 ± 0.5 |

*(1) Each pole has 2 contacts: the force must be applied evenly to each of these contacts.*
*(2) Each pole has 3 contacts: the force must be applied evenly to each of these contacts.*

Selection : pages 5/241 to 5/245
Characteristics : pages 5/246 to 5/249
References : pages 5/250 to 5/259
Schemes : pages 5/266 and 5/267

# TeSys contactors
## Magnetic latching contactors CR1 F

### Contactors CR1 F

**3-pole**

**4-pole**

### Instantaneous auxiliary contacts (References : page 5/123)

**1 N/O LAD N10** *(1)*

**1 N/C LAD N01** *(1)*

**1 N/O + 1 N/C LAD N11**

**2 N/O LAD N20**

**2 N/C LAD N02**

**2 N/O + 2 N/C LAD N22**

**1 N/O + 3 N/C LAD N13**

**4 N/O LAD N40**

**4 N/C LAD N04**

**2 N/O + 2 N/C of which 1 N/O + 1 N/C make before break LAD C22**

**3 N/O + 1 N/C LAD N31**

*(1) Items in brackets refer to blocks mounted on right-hand side of contactor.*

### Instantaneous auxiliary contacts conforming to standard EN 50012 (References: page 5/123)

**1 N/O +1 N/C LAD N11P**

**1 N/O +1 N/C LAD N11G**

**2 N/O + 2 N/C LAD N22P**

**2 N/O + 2 N/C LAD N22G**

### Front mounting add-on contact blocks - Dust and damp protected instantaneous auxiliary contacts (References : page 5/123)

**2 N/O (24-50 V) LA1 DX20**

**2 N/O (5-24 V) LA1 DY20**

**2 N/O protected (24-50 V) 2 N/O standard LA1 DZ40**

**2 N/O protected (24-50 V) + 1 N/O + 1 N/C standard LA1 DZ31**

### Time delay auxiliary contacts (References : page 5/123)

**On-delay 1 N/O + 1 N/C LAD T●**

**Off-delay 1 N/O + 1 N/C LAD R●**

**On-delay 1 N/C + 1 N/O break before make**

### 3-pole reversing contactors 2 x CR1 F150…F630

Horizontally mounted

### 4-pole reversing contactors 2 x CR1 F1504…F6304

### Vertically mounted contactors using 2 contactors of identical or different ratings

Selection : pages 5/241 to 5/245
Characteristics : pages 5/246 to 5/249
References : pages 5/250 to 5/259
Dimensions : pages 5/260 and 5/263

## Contactors CR1 B

**CR1 B●31●12**

**CR1 B●31●21**

**CR1 B●31●30**

**CR1 B●32●12**

**CR1 B●32●21**

**CR1 B●32●30**

**CR1 B●33●12**

**CR1 B●33●21**

**CR1 B●33●30**

**CR1 B●34●12**

**CR1 B●34●21**

**CR1 B●34●30**

## Wiring schemes

**Contactors CR1 F and CR1 B with thermal overload relay**

**Contactors CR1 F**

**Connectors CR1 B**

*(1) automatic coil cut-out contact ZC4 GM or PR4 FB00●●*
S1: latching pushbutton
S2: unlatching pushbutton

## Coils for contactors CR1 F

**Pushbutton control**

Switch control

**Scheme of internal circuit**

**Warning**: terminal A2 is common to both windings in all cases.

# TeSys modular equipment

| Applications | Control of lighting, heating, hot water systems, ventilation systems and small motors | |
|---|---|---|
| | | |
| **Functions** | GC contactors for standard applications | GY “Dual tariff” contactors |
| **Rating** | 16…63 A | 16…63 A |
| **Number of 17.5 mm modules** (variable, depending on size and number of poles) | 1…3 | 1…4 |
| **Device type** | **GC** | **GY** |
| **Pages** | 5/278 | 5/292 |

| Control of lighting heating, hot water systems, ventilation systems and small motors | Direct control of motors | Fuse protection | Motor control and protection |
|---|---|---|---|
| | | | |
| Impulse relays | Rotary switch disconnectors | Single, 2, 3 or 4-pole fuse carriers, with or without neutral | Thermal-magnetic motor circuit-breakers |
| 16 A | 25…80 A | Up to 125 A | 0.1…32 A |
| 1 | 2.5 | 1…8 | 2.5 |
| **GF 16** | **VVD, VVE** | **DF8, DF10, DF14, DF22** | **GV2 M** |
| 5/286 | Please consult your Regional Sales Office | 4/26 | 3/46 |

# TeSys modular equipment
## Standard contactors TeSys GC

538862

*GC 25*

## Presentation

TeSys GC contactors are designed for use in modular panels and enclosures.
These contactors feature:

■ **Easy installation**
□ quick clip-on fixing and locking onto 35 mm omega rail,
□ easy connection by means of ready-to-tighten, captive, pozidrive screw terminals.

■ **Compact size**
All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

■ **User safety**
□ use of materials conforming to strictest fire safety standards,
□ live parts protected against direct finger contact,
□ completely safe operation,
□ state indication on front panel.

## Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.
This standard is specific to “Electromagnetic contactors for domestic and similar use”.
It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in “premises and areas accessible to the public”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

### Applications

TeSys GC modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 100 A.

### Power switching

These contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:
■ lighting,
■ heating,
■ ventilation,
■ motorised shutters or gates.



Selection : pages 5/272 to 5/275
Characteristics : pages 5/276 and 5/277
References : pages 5/278 and 5/279
Dimensions, schemes : pages 5/280 and 5/281

## Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block **1** (GAP 21, 22 or 23) across the coil terminals ≤ 250 V.
When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module **2** must be fitted every 2 contactors.

It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space **3** equal to one module, or by 2 ventilation 1/2 modules (GAC 5).

Derating of contactors mounted in a modular enclosure if the temperature within the enclosure is > 40 °C

| Contactor rating | 40 °C | 50 °C | 60 °C *(1)* |
|---|---|---|---|
| **16 A** | 16 A | 14 A | 13 A |
| **25 A** | 25 A | 22 A | 20 A |
| **40 A** | 40 A | 36 A | 32 A |
| **63 A** | 63 A | 57 A | 50 A |
| **100 A** | 100 A | 87 A | 80 A |

*(1) Ventilation 1/2 module must be fitted*

## Lighting (Maximum number of lamps depending on the power of each unit)

### Presentation of installations according to type of supply

#### Single-phase circuit, 230 V

#### 3-phase circuit, 230 V

The maximum number of lamps which can be operated per phase is equal to the number of lamps in the "single phase 230 V" table divided by $\sqrt{3}$.

#### 3-phase circuit, 400 V (with neutral)

The maximum number of lamps which can be operated per phase is equal to the total number of lamps in the "single-phase 230 V" table.

### Contactor rating for a single-phase 230 V circuit (single-pole)

#### Fluorescent lamps with starter

| Single fitting | Non corrected | | | | | With parallel correction | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | 20 | 40 | 50 | 80 | 110 | 20 | 40 | 58 | 80 | 110 | – |
| **$I_B$ (A)** | 0.39 | 0.43 | 0.70 | 0.80 | 1.2 | 0.19 | 0.29 | 0.46 | 0.57 | 0.79 | – |
| **C (µF)** | – | – | – | – | – | 5 | 5 | 7 | 7 | 16 | – |
| **Maximum number of lamps** | 22 | 20 | 13 | 10 | 7 | 15 | 15 | 10 | 10 | 5 | **16 A** |
| | 30 | 28 | 17 | 15 | 10 | 20 | 20 | 15 | 15 | 7 | **25 A** |
| | 70 | 60 | 35 | 30 | 20 | 40 | 40 | 30 | 30 | 14 | **40 A** |
| | 100 | 90 | 56 | 48 | 32 | 60 | 60 | 43 | 43 | 20 | **63 A** |

| Twin fitting | Non corrected | | | | | With series correction | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | 2 x 18 | 2 x 36 | 2 x 58 | 2 x 80 | 2 x 140 | 2 x 18 | 2 x 36 | 2 x 58 | 2 x 80 | 2 x 140 | – |
| **$I_B$ (A)** | 0.44 | 0.82 | 1.34 | 1.64 | 2.2 | 0.26 | 0.48 | 0.78 | 0.96 | 1.3 | – |
| **C (µF)** | – | – | – | – | – | 3.5 | 4.5 | 7 | 9 | 18 | – |
| **Maximum number of lamps** | 20 | 11 | 7 | 5 | 4 | 30 | 17 | 10 | 9 | 6 | **16 A** |
| | 30 | 16 | 10 | 8 | 6 | 46 | 25 | 16 | 13 | 10 | **25 A** |
| | 50 | 26 | 16 | 13 | 10 | 80 | 43 | 27 | 22 | 16 | **40 A** |
| | 75 | 42 | 25 | 21 | 16 | 123 | 67 | 42 | 34 | 25 | **63 A** |

#### High pressure mercury vapour lamps

| | Non corrected | | | | | | With parallel correction | | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | 50 | 80 | 125 | 250 | 400 | 700 | 50 | 80 | 125 | 250 | 400 | 700 | 1000 | – |
| **$I_B$ (A)** | 0.6 | 0.8 | 1.15 | 2.15 | 3.25 | 5.4 | 0.35 | 0.50 | 0.7 | 1.5 | 2.4 | 4 | 5.7 | – |
| **C (µF)** | – | – | – | – | – | – | 7 | 8 | 10 | 18 | 25 | 40 | 60 | – |
| **Maximum number of lamps** | 15 | 10 | 8 | 4 | 2 | 1 | 10 | 9 | 9 | 4 | 3 | 2 | – | **16 A** |
| | 20 | 15 | 10 | 6 | 4 | 2 | 15 | 13 | 10 | 6 | 4 | 2 | 1 | **25 A** |
| | 34 | 27 | 20 | 10 | 6 | 4 | 28 | 25 | 20 | 11 | 8 | 5 | 3 | **40 A** |
| | 53 | 40 | 28 | 15 | 10 | 6 | 43 | 38 | 30 | 17 | 12 | 7 | 5 | **63 A** |

*$I_B$ : value of current drawn by each lamp at its rated voltage.*
***C** : unit capacitance for each lamp.*
*$I_B$ and **C** correspond to values normally quoted by lamp manufacturers*

Characteristics : pages 5/276 and 5/277
References : pages 5/278 and 5/279
Dimensions, schemes : pages 5/280 and 5/281

## Contactor rating for a single-phase 230 V circuit (single-pole) (continued)

### Low pressure sodium vapour lamps

| | Non corrected | | | | | | With parallel correction | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | 18 | 35 | 55 | 90 | 135 | 180 | 18 | 35 | 55 | 90 | 135 | 180 | – |
| **$I_B$ (A)** | 0.35 | 1.4 | 1.4 | 2.1 | 3.1 | 3.1 | 0.35 | 0.6 | 0.6 | 0.9 | 0.9 | 0.9 | – |
| **C (µF)** | – | – | – | – | – | – | 5 | 20 | 20 | 26 | 45 | 40 | – |
| **Maximum number of lamps** | 18 | 4 | 5 | 3 | 2 | 2 | 14 | 3 | 3 | 2 | 1 | 1 | **16 A** |
| | 34 | 9 | 9 | 6 | 4 | 4 | 21 | 5 | 5 | 4 | 2 | 2 | **25 A** |
| | 57 | 14 | 14 | 9 | 6 | 6 | 40 | 10 | 10 | 8 | 4 | 5 | **40 A** |
| | 91 | 24 | 24 | 19 | 10 | 10 | 60 | 15 | 15 | 11 | 6 | 7 | **63 A** |

### High pressure sodium vapour lamps

| | Non corrected | | | | | With parallel correction | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | 70 | 150 | 250 | 400 | 1000 | 70 | 150 | 250 | 400 | 1000 | – |
| **$I_B$ (A)** | 1 | 1.8 | 3 | 4.4 | 10.3 | 0.6 | 0.7 | 1.5 | 2.5 | 6 | – |
| **C (µF)** | – | – | – | – | – | 12 | 20 | 32 | 45 | 100 | – |
| **Maximum number of lamps** | 8 | 4 | 2 | 1 | – | 6 | 6 | 2 | 2 | 1 | **16 A** |
| | 12 | 7 | 4 | 3 | 1 | 9 | 9 | 3 | 4 | 2 | **25 A** |
| | 20 | 13 | 8 | 5 | 2 | 18 | 18 | 6 | 8 | 4 | **40 A** |
| | 32 | 18 | 11 | 8 | 3 | 25 | 25 | 9 | 12 | 6 | **63 A** |

### Metal iodine or halogen vapour lamps

| | Non corrected | | | | | | With parallel correction | | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | 35 | 70 | 150 | 250 | 400 | 1000 | 39 | 70 | 150 | 250 | 400 | 1000 | 2000 | – |
| **$I_B$ (A)** | 0.3 | 0.5 | 1 | 1.5 | 2.5 | 6 | 0.3 | 0.5 | 1 | 1.5 | 2.5 | 6 | 5.5 | – |
| **C (µF)** | – | – | – | – | – | – | 6 | 12 | 20 | 32 | 45 | 85 | 60 | – |
| **Maximum number of lamps** | 27 | 16 | 8 | 5 | 3 | 1 | 12 | 6 | 4 | 3 | 2 | – | 1 | **16 A** |
| | 40 | 24 | 12 | 8 | 5 | 2 | 18 | 9 | 6 | 4 | 3 | 1 | 2 | **25 A** |
| | 68 | 42 | 20 | 14 | 8 | 4 | 31 | 16 | 10 | 7 | 5 | 3 | 3 | **40 A** |
| | 106 | 64 | 32 | 21 | 13 | 5 | 50 | 25 | 15 | 10 | 7 | 4 | 5 | **63 A** |

### Incandescent and halogen lamps

| | | | | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 1000 | – |
| **$I_B$ (A)** | 0.26 | 0.32 | 0.44 | 0.65 | 0.87 | 1.3 | 2.17 | 4.4 | – |
| **Maximum number of lamps** | 30 | 25 | 19 | 12 | 10 | 7 | 4 | 2 | **16 A** |
| | 45 | 38 | 28 | 18 | 14 | 10 | 6 | 3 | **25 A** |
| | 85 | 70 | 50 | 35 | 26 | 18 | 10 | 6 | **40 A** |
| | 125 | 100 | 73 | 50 | 37 | 25 | 15 | 8 | **63 A** |

### Halogen lamps used with transformer

| | | | | | Contactor rating |
|---|---|---|---|---|---|
| **P (W)** | 60 | 80 | 105 | 150 | – |
| **$I_B$ (A)** | 0.26 | 0.35 | 0.45 | 0.65 | – |
| **Maximum of lamps** | 9 | 8 | 6 | 4 | **16 A** |
| | 14 | 12 | 9 | 6 | **25 A** |
| | 27 | 23 | 18 | 13 | **40 A** |
| | 40 | 35 | 27 | 19 | **63 A** |

*$I_B$ : value of current drawn by each lamp at its rated voltage.*
***C*** *: unit capacitance for each lamp.*
*$I_B$ and **C** correspond to values normally quoted by lamp manufacturers*

Characteristics : pages 5/276 and 5/277
References : pages 5/278 and 5/279
Dimensions, schemes : pages 5/280 and 5/281

## Heating (AC-7a)

### Single-phase, 2-pole switching

### 3-phase switching

Heating by resistive elements or by infra-red radiators, convectors or radiators, heating ducts, industrial furnaces. The current peak between the hot and cold states must not exceed 2 to 3 In at the moment of switch-on.

**Contactor selection according to power and required electrical life**

| Electrical durability (in operating cycles) | Maximum power (kW) | | | | | Contactor rating |
|---|---|---|---|---|---|---|
| | 100 x $10^3$ | 150 x $10^3$ | 200 x $10^3$ | 500 x $10^3$ | $10^6$ | |
| **Single-phase switching 230 V** (2-pole) | 3.5 | 3 | 2.2 | 1 | 0.8 | **16 A** |
| | 5.4 | 4.6 | 3.5 | 1.6 | 1.2 | **25 A** |
| | 8.6 | 7.4 | 5.6 | 2.6 | 1.9 | **40 A** |
| | 13.6 | 11.6 | 8.8 | 4 | 3 | **63 A** |
| | 21.6 | 18.4 | 14 | 6.4 | 4.8 | **100 A** |
| **3-phase switching 400 V** (3-pole) | 10 | 9 | 6.5 | 3.2 | 2.2 | **16 A** |
| | 16 | 14 | 10 | 5 | 3.5 | **25 A** |
| | 26 | 22 | 17 | 7.5 | 6 | **40 A** |
| | 41 | 35 | 26.5 | 12 | 9 | **63 A** |
| | 64.8 | 55.2 | 42 | 19.2 | 14.4 | **100 A** |



Characteristics : pages 5/276 and 5/277
References : pages 5/278 and 5/279
Dimensions, schemes : pages 5/280 and 5/281



Schneider Electric

## Motor control (AC-7b)

### Single-phase circuit, 230 V

### 3-phase circuit, 400 V

**Contactor selection according to maximum power in kW**

| 230 V single-phase capacitor motor (2-pole) | 400 V 3-phase motor | Contactor rating (Ith) |
|---|---|---|
| 0.55 | 2.2 | **16 A** |
| 1.1 | 4 | **25 A** |
| 2.2 | 7.5 | **40 A** |
| 4 | 11 | **63 A** |

5

Characteristics : pages 5/276 and 5/277
References : pages 5/278 and 5/279
Dimensions, schemes : pages 5/280 and 5/281

| Contactor type | | | GC16 | GC25 | GC40 | GC63 | GC100 |
|---|---|---|---|---|---|---|---|
| **Environment** | | | | | | | |
| **Rated insulation voltage** (Ui) | Conforming to IEC 61095 | V | 500 | | | | |
| | Conforming to VDE 0110 | V | 500 | | | | |
| **Rated impulse withstand voltage** (Uimp) | | kV | 4 in enclosure | | | | |
| **Conforming to standards** | | | IEC 61095, VDE 0637-3 and IEC 60947-5 for auxiliary contacts | | | | |
| **Product certifications** | | | NF- USE, VDE, CEBEC, ÖVE | | | | |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact (IP 20 open, IP 40 in enclosure) | | | | |
| **Protective treatment** | Standard version | | "TC" | | | | |
| **Ambient air temperature around the device** | Storage | °C | - 40…+ 70 | | | | |
| | Operation | °C | - 5…+ 50 (0.85…1.1 Uc) | | | | |
| **Maximum operating altitude** | Without derating | m | 3000 | | | | |
| **Operating positions** | Without derating | | ± 30° in relation to normal vertical mounting plane | | | | |
| **Shock resistance** 1/2 sine wave = 10 ms | Contactor open | | 10 gn | | | | |
| | Contactor closed | | 15 gn | | | | |
| **Vibration resistance** 5…300 Hz | Contactor open | | 2 gn | | | | |
| | Contactor closed | | 3 gn | | | | |
| **Flame resistance** | | | Conforming to IEC 61095 | | | | |
| **Pole characteristics** | | | | | | | |
| **Number of poles** | | | 2, 3 or 4 | | | | |
| **Rated operational current** (Ie) (Ue ≤ 440 V) | In AC-7a (heating) | A | 16 | 25 | 40 | 63 | 100 |
| | In AC-7b (motor control) | A | 5 | 8.5 | 15 | 25 | – |
| **Rated operational voltage** (Ue) | Up to | V | 250 two-pole contactors, 415 three and four-pole contactors | | | | |
| **Frequency limits** | Of the operating current | Hz | 400 | | | | |
| **Conventional thermal current** (Ith) | θ ≤ 50 °C | A | 16 | 25 | 40 | 63 | 100 |
| **Rated breaking and making capacity** | Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase | A | 40 | 68 | 120 | 200 | – |
| **Permissible short time rating** no current flowing for preceding 15 minutes with θ ≤ 40 °C | For 10 s | A | 128 | 200 | 320 | 504 | 800 |
| | For 30 s | A | 40 | 62 | 100 | 157 | 250 |
| **Short-circuit protection by fuse or circuit breaker** U ≤ 440 V | gl fuse | A | 16 | 25 | 40 | 63 | 100 |
| | Circuit-breaker $I^2t$ (at 3 kA rms prospective) 230 V | $A^2s$ | 5000 | 10 000 | 16 000 | 18 000 | – |
| | 400 V | $A^2s$ | 9000 | 14 000 | 17 500 | 20 000 | – |
| **Average impedance per pole** | At Ith and 50 Hz | mΩ | 2.5 | 2.5 | 2 | 2 | 1 |
| **Power dissipated per pole** | For the above operational currents | W | 0.65 | 1.6 | 3.2 | 8 | 10 |
| **Maximum cabling c.s.a.** Flexible cable without cable end | 1 conductor | $mm^2$ | 6 | 6 | 25 | 25 | 35 |
| | 2 conductors | $mm^2$ | 4 | 4 | 16 | 16 | – |
| Flexible cable with cable end | 1 conductor | $mm^2$ | 6 | 6 | 16 | 16 | 35 |
| | 2 conductors | $mm^2$ | 1.5 | 1.5 | 4 | 4 | – |
| Solid cable without cable end | 1 conductor | $mm^2$ | 6 | 6 | 25 | 25 | 35 |
| | 2 conductors | $mm^2$ | 4 | 4 | 6 | 6 | 10 |
| **Tightening torque** | Power circuit connections | N.m | 0.8 | 0.8 | 3.5 | 3.5 | 3.5 |



Selection : pages 5/272 to 5/275
References : pages 5/278 and 5/279
Dimensions, schemes : pages 5/280 and 5/281



Schneider Electric

| Contactor type | | | | GC16, GC25 single or 2-pole | GC16, GC25 3 or 4-pole GC40, GC63 2-pole | GC40, GC63 3 or 4-pole GC100 2-pole | GC100 4-pole |
|---|---|---|---|---|---|---|---|
| **Control circuit characteristics** | | | | | | | |
| **Rated control circuit voltage** (Uc) | | 50 or 60 Hz | V | 12…240 V, for other voltages, please consult your Regional Sales Office | | | |
| **Control voltage limits** (θ ≤ 50 °C) | 50 Hz coils | Operational | | 0.85…1.1 Uc | | | |
| | | Drop-out | | 0.2…0.75 Uc | | | |
| **Average coil consumption** at 20 °C and at Uc | ∼ 50 Hz | Inrush | VA | 15 | 34 | 53 | 106 |
| | | Sealed | VA | 3.8 | 4.6 | 6.5 | 13 |
| **Maximum heat dissipation** | | 50/60 Hz | W | 1.3 | 1.6 | 2.1 | 4.2 |
| **Operating time** | | Closing "C" | ms | 10…30 | | | |
| | | Opening "O" | ms | 10…25 | | | |
| **Mechanical durability** | | In operating cycles | | $10^6$ | | | |
| **Maximum operating rate** at ambient temperature ≤ 50 °C | | In operating cycles per hour | | 300 | | | |
| **Maximum cabling c.s.a.** | Flexible cable without cable end | 1 or 2 conductors | mm² | 2.5 | | | |
| | Flexible cable with cable end | 1 conductor | mm² | 2.5 | | | |
| | | 2 conductors | mm² | 1.5 | | | |
| | Solid cable without cable end | 1 or 2 conductors | mm² | 1.5 | | | |
| **Tightening torque** | | | N.m | 0.8 | | | |
| **Instantaneous auxiliary contact characteristics** | | | | | | | |
| **Rated operational voltage** (Ue) | | Up to | V | 250 | | | |
| **Rated insulation voltage** (Ui) | | Conforming to IEC 60947-5 | V | 500 | | | |
| | | Conforming to VDE 0110 | V | 500 | | | |
| **Conventional thermal current** (Ith) | | For ambient θ ≤ 50 °C | A | 5 | | | |
| **Mechanical durability** | | Operating cycles | | $10^6$ | | | |
| **Maximum cabling c.s.a.** | | Flexible or solid conductor | mm² | 2.5 | | | |
| **Tightening torque** | | | N.m | 0.8 | | | |



Selection : pages 5/272 to 5/275
References : pages 5/278 and 5/279
Dimensions, schemes : pages 5/280 and 5/281

# TeSys modular equipment
## Standard contactors TeSys GC

526285

GC 2520

526286

GC 4040

GC 10020

### Standard contactors, TeSys GC

| Maximum current rating category AC-7a | No. of poles | | Number of 17.5 mm modules | Sold in lots of | Basic reference, to be completed by adding the voltage code *(1)* | Weight |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **16** | 1 | – | 1 | 12 | **GC 1610●●** | 0.110 |
| | 2 | – | 1 | 12 | **GC 1620●●** | 0.110 |
| | 3 | – | 2 | 6 | **GC 1630●●** | 0.230 |
| | 4 | – | 2 | 6 | **GC 1640●●** | 0.230 |
| | 1 | 1 | 1 | 12 | **GC 1611●●** | 0.110 |
| | 2 | 2 | 2 | 6 | **GC 1622●●** | 0.230 |
| **25** | 1 | – | 1 | 12 | **GC 2510●●** | 0.110 |
| | 2 | – | 1 | 12 | **GC 2520●●** | 0.110 |
| | 3 | – | 2 | 6 | **GC 2530●●** | 0.230 |
| | 4 | – | 2 | 6 | **GC 2540●●** | 0.230 |
| | 1 | 1 | 1 | 12 | **GC 2511●●** | 0.110 |
| | 2 | 2 | 2 | 6 | **GC 2522●●** | 0.230 |
| | – | 2 | 1 | 12 | **GC 2502●●** | 0.110 |
| | – | 4 | 2 | 6 | **GC 2504●●** | 0.230 |
| **40** | 2 | – | 2 | 6 | **GC 4020●●** | 0.230 |
| | 3 | – | 3 | 4 | **GC 4030●●** | 0.350 |
| | 4 | – | 3 | 4 | **GC 4040●●** | 0.390 |
| | 1 | 1 | 2 | 6 | **GC 4011●●** | 0.230 |
| | 2 | 2 | 3 | 4 | **GC 4022●●** | 0.390 |
| | – | 2 | 2 | 6 | **GC 4002●●** | 0.230 |
| | – | 4 | 3 | 4 | **GC 4004●●** | 0.390 |
| **63** | 2 | – | 2 | 6 | **GC 6320●●** | 0.340 |
| | 3 | – | 3 | 4 | **GC 6330●●** | 0.390 |
| | 4 | – | 3 | 4 | **GC 6340●●** | 0.390 |
| | 1 | 1 | 2 | 6 | **GC 6311●●** | 0.340 |
| | 2 | 2 | 3 | 4 | **GC 6322●●** | 0.390 |
| | – | 2 | 2 | 6 | **GC 6302●●** | 0.340 |
| | – | 4 | 3 | 4 | **GC 6304●●** | 0.390 |
| **100** | 2 | – | 3 | 4 | **GC 10020●●** | 0.680 |
| | 4 | – | 6 | 2 | **GC 10040●●** | 0.780 |

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 12 | 24 | 48 | 110 | 220/240 |
|---|---|---|---|---|---|
| **50 Hz** | J5 | B5 | E5 | F5 | M5 |
| **60 Hz** | J6 | B6 | E6 | F6 | M6 |

Selection : pages 5/272 to 5/275
Characteristics : pages 5/276 and 5/277
Dimensions, schemes : pages 5/280 and 5/281

# TeSys modular equipment

## Standard contactors TeSys GC

533715

*GAC 05●●*

526287

*GAP 2●*

*GAC 5*

*GA1 C●*

*GW 254*

*GW 63●*

### Instantaneous auxiliary contact blocks

| Number of contacts | No. of poles | | | Reference | Weight |
|---|---|---|---|---|---|
| | | | | | kg |
| **2** | 1 | 1 | – | **GAC 0521** | 0.016 |
| | – | 2 | – | **GAC 0531** | 0.016 |
| | – | – | 1 | **GAC 0511** | 0.016 |

### Accessories

| Description | For use on contactor | Number of modules | Operational voltage | Sold in lots of | Unit reference | Weight |
|---|---|---|---|---|---|---|
| | | | V | | | kg |
| **Coil suppression blocks** comprising 2 RC circuits | – | 1 | 12…48 | 1 | **GAP 21** | 0.090 |
| | | | 110…240 | 1 | **GAP 23** | 0.090 |
| **Ventilation 1/2 module Clips onto ⊔ rail** | – | 1/2 | – | 10 | **GAC 5** | 0.015 |
| **Cover plates** | – | 1/2 | – | 10 | **GA1 C7** | 0.001 |
| | | 1 | – | 10 | **GA1 C6** | 0.001 |
| **Set of sealable terminal covers** (10 top parts + 10 bottom parts) | 16 or 25 A 3 or 4 contacts | 2 | – | 1 | **GW 254** | 0.040 |
| | 40 or 63 A 2 contacts | 2 | – | 1 | **GW 632** | 0.040 |
| | 40 or 63 A 3 or 4 contacts | 3 | – | 1 | **GW 634** | 0.050 |

5

Selection : pages 5/272 to 5/275
Characteristics : pages 5/276 and 5/277
Dimensions, schemes : pages 5/280 and 5/281

## Dimensions

### Contactors

**Common side view**

**GC 1610, 1611, 1620**
**GC 2502, 2510, 2511, 2520**
**1 module**

**GC 1622, 1640**
**GC 2504, 2522, 2530, 2540**
**2 modules**

**Common side view**

**GC 4002, 4011, 4020**
**GC 6302, 6311, 6320**
**2 modules**

**GC 4004, 4022, 4030, 4040**
**GC 6304, 6322, 6330, 6340**
**3 modules**

**Common side view**

**GC 10020**
**3 modules**

**GC 10040**
**6 modules**

## Dimensions

### Auxiliary contacts
**GAC 0511, 0531 and 0521**

### Coil suppression blocks
**GAP 21, 22 and 23**

### Clip-on ventilation 1/2 module
**GAC 5**

### Cover plates
**GA1 C6**

**GA1 C7**

## Schemes

### Contactors

**GC ••10**

**GC ••20**

**GC ••30**

**GC ••40**

**GC ••11**

**GC ••22**

**GC ••02**

**GC ••04**

### Auxiliary contacts

**GAC 0521**

**GAC 0531**

**GAC 0511**

# TeSys modular equipment
## TeSys GF impulse relays

PF526284

*GF 1611M7*

## Presentation

TeSys GF impulse relays are designed for use in modular enclosures.
They feature:

■ **Easy installation**
- quick clip-on fixing and locking onto 35 mm omega rail,
- easy connection by means of ready-to-tighten captive, pozidrive screw terminals.

■ **Compact size**
Units have a common depth of 60 mm and width of 18 mm.

■ **User safety**
- live parts protected against direct finger contact,
- completely safe operation,
- state indication on front panel.

## Standards

This range of modular impulse relays has been designed taking into account the requirements of international standard IEC 60669-2.
This standard is specific to “Impulse relays”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

### Functions

Modular impulse relays are designed for opening and closing of circuits which are remotely controlled by impulses. The position is mechanically maintained.
These impulse relays are used in lighting circuits when there are more than two switching points.

### Power switching

TeSys GF impulse relays have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific lighting supply is required:



Characteristics :
pages 5/284 and 5/285

References :
page 5/286

Dimensions, schemes :
page 5/287



Schneider Electric

## Lighting circuits

### Fluorescent lamps with starter

| Single fitting | Non corrected | | | With parallel correction | | |
|---|---|---|---|---|---|---|
| Power in W | 18 | 36 | 58 | 18 | 36 | 58 |
| Number of lamps | 70 | 35 | 21 | 50 | 25 | 16 |

| Twin fitting | With series correction | | |
|---|---|---|---|
| Power in W | 2 x 18 | 2 x 36 | 2 x 58 |
| Number of lamps | 56 | 28 | 17 |

### Incandescent lamps: filament lamps

| | | | | | |
|---|---|---|---|---|---|
| Power in W | 40 | 60 | 75 | 100 | 200 |
| Number of lamps | 40 | 25 | 20 | 16 | 8 |

### Incandescent lamps: halogen lamps

| | | | | |
|---|---|---|---|---|
| Power in W | 300 | 500 | 1000 | 1500 |
| Number of lamps | 5 | 3 | 1 | 1 |

### Incandescent lamps: very low voltage halogen lamps

| | | | | |
|---|---|---|---|---|
| Power in W | 20 | 50 | 75 | 100 |
| Number of lamps | 70 | 28 | 19 | 4 |

### Low pressure sodium vapour lamps

| | Non corrected | | | |
|---|---|---|---|---|
| Power in W | 55 | 90 | 135 | 180 |
| Number of lamps | 24 | 15 | 10 | 7 |

### High pressure sodium vapour lamps

| | Non corrected | | |
|---|---|---|---|
| Power in W | 250 | 400 | 1000 |
| Number of lamps | 5 | 3 | 1 |

## Heating circuits

### Single-phase 230 V, 2-pole

| | |
|---|---|
| Power in kW | 3.6 |



Characteristics : pages 5/284 and 5/285
References : page 5/286
Dimensions, schemes : page 5/287

## Environment

| | | | |
|---|---|---|---|
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-1-5 | **V** | 400 |
| | Conforming to VDE 0110 | **V** | 400 |
| **Rated impulse withstand voltage** (Uimp) | | **kV** | 4 in enclosure |
| **Conforming to standards** | | | IEC 60669-1 and 60669-2, NF C 61-112 |
| **Product certifications** | | | NF-USE, CEBEC, ASE, KEMA, N, S, D, FI, VDE |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact IP 20 open, IP 40 in enclosure |
| **Protective treatment** | Standard version | | "TC" |
| **Ambient air temperature around the device** | Storage | **°C** | - 40…+ 80 |
| | Operation | **°C** | - 20…+ 50 |
| **Maximum operating altitude** | Without derating | **m** | 2000 |
| **Operating positions** | Without derating | | ± 90° in relation to normal vertical mounting plane |
| **Shock resistance** 1/2 sine wave = 10 ms | Impulse relay open | | Please consult your Regional Sales Office |
| | Impulse relay closed | | Please consult your Regional Sales Office |
| **Vibration resistance** 5…300 Hz | Impulse relay open | | 4 gn |
| | Impulse relay closed | | 4 gn |

5

## Pole characteristics

| | | | | |
|---|---|---|---|---|
| **Number of poles** | | | 1 or 2 | |
| **Rated operational current** (Ie) (Ue ≤ 250 V) | In AC-7a (heating) | **A** | 16 | |
| **Rated operational voltage** | | **V** | 250 | |
| **Conventional thermal current** (Ith) | θ ≤ 50 °C | **A** | 16 | |
| **Permissible short time rating** no current flowing for preceding 15 minutes with θ ≤ 40 °C | For 1 s | **A** | 320 | |
| | For 10 s | **A** | 96 | |
| | For 30 s | **A** | 48 | |
| **Short-circuit protection by fuse or circuit-breaker** | gl fuse | **A** | 16 | |
| | Circuit-breaker $I^2t$ (at 3 kA rms prospective) | **$A^2s$** | 5000 | |
| **Average impedance per pole** | At Ith and 50 Hz | **mΩ** | 4 | |
| **Power dissipated per pole** | | **W** | 1 | |
| **Maximum cabling c.s.a.** | | | **Min.** | **Max.** |
| Flexible cable without cable end | 1 conductor | **$mm^2$** | 0.5 | 6 |
| | 2 conductors | **$mm^2$** | 0.5 | 4 |
| Flexible cable with cable end | 1 conductor | **$mm^2$** | 0.5 | 6 |
| | 2 conductors | **$mm^2$** | 0.5 | 4 |
| Solid cable without cable end | 1 conductor | **$mm^2$** | 0.5 | 6 |
| | 2 conductors | **$mm^2$** | 0.5 | 4 |
| **Tightening torque** | Power circuit connections | **N.m** | 0.8 | |

## Control circuit characteristics

| | | | | |
|---|---|---|---|---|
| **Rated control circuit voltage** (Uc) | | | **V** | 12…240 V, for other voltages, please consult your Regional Sales Office |
| **Control voltage limits** (θ < 50 °C) | | Operating threshold, dual frequency 50/60 Hz | **V** | 0.85…1.1 Uc |
| **Average consumption** at 20 °C and at Uc | | Inrush at 50 Hz | **VA** | 19 |
| **Operating time** | | Closing "C" | **ms** | 70 |
| | | Opening "O" | **ms** | 70 |
| **Minimum impulse time** | | | **ms** | 70 |
| **Mechanical durability** | | | | $10^6$ operating cycles |
| **Electrical durability** | | | | |
| | | AC-21 | | 200 000 operating cycles |
| | | AC-22 | | 100 000 operating cycles |
| **Maximum operating rate** | | Operating cycles per hour | | 900 |
| **Maximum cabling c.s.a.** | | | | |
| | Flexible cable without cable end | 1 or 2 conductors | **mm²** | 2.5 |
| | Flexible cable with cable end | 1 conductor | **mm²** | 2.5 |
| | | 2 conductors | **mm²** | 1.5 |
| | Solid cable without cable end | 1 or 2 conductors | **mm²** | 1.5 |
| **Tightening torque** | | | **N.m** | 0.8 |

# TeSys modular equipment

## TeSys GF impulse relays

PF526284

*GF 1611M7*

### TeSys GF impulse relays

| Maximum current rating category AC-1 | Composition | | Coil voltages ∼ 50/60 Hz | Coil voltages ⎓ | Sold in lots of | Unit reference | Weight |
|---|---|---|---|---|---|---|---|
| A | | | V | V | | | kg |
| 16 | 1 | – | 12 | 6 | 12 | **GF 1610J7** | 0.110 |
| | | | 24 | 12 | 12 | **GF 1610B7** | 0.110 |
| | | | 48 | 24 | 12 | **GF 1610E7** | 0.110 |
| | | | 110 | 48 | 12 | **GF 1610F7** | 0.110 |
| | | | 220 | – | 12 | **GF 1610M7** | 0.110 |
| | | | 230/240 | 110 | 12 | **GF 1610U7** | 0.110 |
| | 2 | – | 12 | 6 | 12 | **GF 1620J7** | 0.110 |
| | | | 24 | 12 | 12 | **GF 1620B7** | 0.110 |
| | | | 48 | 24 | 12 | **GF 1620E7** | 0.110 |
| | | | 110 | 48 | 12 | **GF 1620F7** | 0.110 |
| | | | 220 | – | 12 | **GF 1620M7** | 0.110 |
| | | | 230/240 | 110 | 12 | **GF 1620U7** | 0.110 |
| | 1 | 1 | 12 | 6 | 12 | **GF 1611J7** | 0.110 |
| | | | 24 | 12 | 12 | **GF 1611B7** | 0.110 |
| | | | 48 | 24 | 12 | **GF 1611E7** | 0.110 |
| | | | 110 | 48 | 12 | **GF 1611F7** | 0.110 |
| | | | 220 | – | 12 | **GF 1611M7** | 0.110 |
| | | | 230/240 | 110 | 12 | **GF 1611U7** | 0.110 |

## Dimensions

### GF 1610, GF 1611, GF 1620

## Schemes

### GF 1610

### GF 1611

### GF 1620

5

# TeSys modular equipment
## TeSys GY “dual tariff” contactors

526295

*GY 25*

## Presentation

TeSys GY “dual tariff” contactors are designed for use in modular panels and enclosures.
These contactors feature:

■ Easy installation
□ quick clip-on fixing and locking onto 35 mm omega rail,
□ easy connection by means of ready-to-tighten captive, pozidrive screw terminals.

■ **Compact size**
All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

■ **User safety**
□ use of materials conforming to strictest fire safety standards,
□ live parts protected against direct finger contact,
□ completely safe operation,
□ state indication on front panel.

“Dual tariff” contactors are designed for use with Electricity Supply Authority dual tariffs.
They have a 4-position selector switch on the front panel:

| | |
|---|---|
| **“Stop” (O)** | For switching off the load, e.g. for prolonged periods of absence. |
| **“Off peak” Automatic start (A)** | The contactor switches automatically during “off peak” hours as set by the Supply Authority remote control and thus supplies the load, (washing machine, dishwasher, convector heater, water heater) during this period, at an economy rate to the user. |
| **“Peak time” Manual start (I)** | In this position, the contactor supplies the load to cater for additional requirements for hot water, heating, etc., but at the standard rate. The contactor returns automatically to the “off-peak” position at the start of the “off-peak” period. |
| **“Peak time” Manual override with lock** | Facility for setting the contactor to continuous manual operation, ignoring the automation system and the Supply Authority control; setting and locking is achieved by means of a tool, with manual return to the “AUTO” position. |

## Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.
This standard is specific to “Electromagnetic contactors for domestic and similar use”.
It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in “premises and areas accessible to the public”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

### Applications

“Dual tariff” modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 63 A.

### Power switching

TeSys GY contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:
□ lighting,
□ heating, ventilation,
□ motorised shutters or gates.

## Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block 1 (GAP 21, 22 or 23) across the coil terminals ≤ 250 V.
When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module 2 must be fitted every 2 contactors.

It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space equal to one module 3 or by 2 ventilation 1/2 modules GAC 5

Derating of contactors mounted in a modular enclosure if the temperature within the enclosure is > 40 °C

| Contactor rating | 40°C | 50°C | 60 °C *(1)* |
|---|---|---|---|
| **16 A** | 16 A | 14 A | 13 A |
| **25 A** | 25 A | 22 A | 20 A |
| **40 A** | 40 A | 36 A | 32 A |
| **63 A** | 63 A | 57 A | 50 A |

*(1) Ventilation 1/2 module must be fitted*

## Environment

| Type | | | GY 16 | GY 25 | GY 40 | GY 63 |
|---|---|---|---|---|---|---|
| **Rated insulation voltage** (Ui) | Conforming to IEC 61095 | **V** | 500 | | | |
| | Conforming to VDE 0110 | **V** | 500 | | | |
| **Rated impulse withstand voltage** (Uimp) | | **kV** | 4 in enclosure | | | |
| **Conforming to standards** | | | IEC 61095, VDE 0637-3 and IEC 60947-5 for auxiliary contacts | | | |
| **Product certifications** | | | NF-USE, VDE, CEBEC, ÖVE | | | |
| **Degree of protection** | Conforming to VDE 0106 | | Protection against direct finger contact IP 20 open, IP 40 in enclosure | | | |
| **Protective treatment** | Standard version | | "TC" | | | |
| **Ambient air temperature around the device** | Storage | **°C** | - 40…+ 70 | | | |
| | Operation | **°C** | - 5…+ 50 (0.85…1.1 Uc) | | | |
| **Maximum operating altitude** | Without derating | **m** | 3000 | | | |
| **Operating positions** | Without derating | | ± 30° in relation to normal vertical mounting plane | | | |
| **Shock resistance** 1/2 sine wave = 11 ms | Contactor open | | 10 gn | | | |
| | Contactor closed | | 15 gn | | | |
| **Vibration resistance** 5…300 Hz | Contactor open | | 2 gn | | | |
| | Contactor closed | | 3 gn | | | |
| **Flame resistance** | | | Conforming to IEC 61095 | | | |

## Pole characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| **Number of poles** | | | 2, 3 or 4 | | | |
| **Rated operational current** (Ie) (Ue ≤ 440 V) | In AC-7a (heating) | **A** | 16 | 25 | 40 | 63 |
| | In AC-7b (motor control) | **A** | 5 | 8.5 | 15 | 25 |
| **Rated operational voltage** (Ue) | Up to | **V** | 250 - 2-pole contactors, 415 - 3 and 4-pole contactors | | | |
| **Frequency limits** | Of the operating current | **Hz** | 400 | | | |
| **Conventional thermal current** (Ith) | θ ≤ 50 °C | **A** | 16 | 25 | 40 | 63 |
| **Rated breaking and making capacity** | Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase | **A** | 40 | 68 | 120 | 200 |
| **Short time rating** with no current flow for the previous previous 15 minutes with θ ≤ 40 °C | For 10 s | **A** | 128 | 200 | 320 | 504 |
| | For 30 s | **A** | 40 | 62 | 100 | 157 |
| **Short-circuit protection by fuse or circuit breaker** U ≤ 440 V | | | | | | |
| gl fuse | | **A** | 16 | 25 | 40 | 63 |
| Circuit breaker $I^2t$ (at 3 kA rms prospective) | 230V | **$A^2s$** | 5000 | 10 000 | 16 000 | 18 000 |
| | 400V | **$A^2s$** | 9000 | 14 000 | 17 500 | 20 000 |
| **Average impedance per pole** | At Ith and 50 Hz | **mΩ** | 2.5 | 2.5 | 2 | 2 |
| **Power dissipated per pole** | For the above operational currents | **W** | 0.65 | 1.6 | 3.2 | 8 |
| **Maximum cabling c.s.a.** | | | | | | |
| Flexible cable without cable end | 1 conductor | **$mm^2$** | 6 | 6 | 25 | 25 |
| | 2 conductors | **$mm^2$** | 4 | 4 | 16 | 16 |
| Flexible cable with cable end | 1 conductor | **$mm^2$** | 6 | 6 | 16 | 16 |
| | 2 conductors | **$mm^2$** | 1.5 | 1.5 | 4 | 4 |
| Solid cable without cable end | 1 conductor | **$mm^2$** | 6 | 6 | 25 | 25 |
| | 2 conductors | **$mm^2$** | 4 | 4 | 6 | 6 |
| **Tightening torque** | Power circuit connections | **N.m** | 0.8 | 0.8 | 3.5 | 3.5 |

Selection : pages 5/272 to 5/275
References : pages 5/292 and 5/293
Dimensions and schemes : pages 5/294 and 5/295

## Control circuit characteristics

| Type | | | GY 16, GY 25 single or 2-pole | GY 16, GY 25 3 or 4-pole / GY 40, GY 63 2-pole | GY 40, GY 63 3 or 4-pole |
|---|---|---|---|---|---|
| **Rated control circuit voltage** (Uc) | 50 or 60 Hz | V | 12…240 V, for other voltages, please consult your Regional Sales Office | | |
| **Control voltage limits** (θ ≤ 50 °C) | | | | | |
| 50 Hz coils | Operational | | 0.85…1.1 Uc | | |
| | Drop-out | | 0.2…0.75 Uc | | |
| **Average consumption** at 20 °C and at Uc | | | | | |
| ∼ 50 Hz | Inrush | VA | 15 | 34 | 53 |
| | Sealed | VA | 3.8 | 4.6 | 6,5 |
| **Heat dissipation** | 50/60 Hz | W | 1.3 | 1.6 | 2.1 |
| **Operating time** | Closing “C” | ms | 10 ... 30 | | |
| | Opening “O” | ms | 10 ... 25 | | |
| **Mechanical durability** | In operating cycles | | $10^6$ | | |
| **Maximum operating rate** at ambient temperature ≤ 50 °C | In operating cycles per hour | | 300 | | |
| **Maximum cabling c.s.a.** | | | | | |
| Flexible cable without cable end | 1 or 2 conductors | $mm^2$ | 2.5 | | |
| Flexible cable with cable end | 1 conductor | $mm^2$ | 2.5 | | |
| | 2 conductors | $mm^2$ | 1.5 | | |
| Solid cable without cable end | 1 or 2 conductors | $mm^2$ | 1.5 | | |
| **Tightening torque** | | N.m | 0.8 | | |

## Instantaneous auxiliary contact characteristics

| | | | |
|---|---|---|---|
| **Rated operational voltage** (Ue) | Up to | V | 250 |
| **Rated insulation voltage** (Ui) | Conforming to IEC 60947-5 | V | 500 |
| | Conforming to VDE 0110 | V | 500 |
| **Conventional thermal current** (Ith) | For ambient θ ≤ 50 °C | A | 5 |
| **Mechanical durability** | In operating cycles | | $10^6$ |
| **Maximum cabling c.s.a.** | Flexible or solid conductor | $mm^2$ | 2.5 |
| **Tightening torque** | | N.m | 0.8 |

5

# TeSys modular equipment

## TeSys GY “dual tariff” contactors

526295

GY 2520M5

526296

GY 6340M5

### TeSys GY “dual tariff” contactors

| Maximum current rating category AC-7a | No. of poles | | Number of 17.5 mm modules | Sold in lots of | Basic reference, to be completed by adding the voltage code *(1)* | Weight |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **16** | 2 | – | 1 | 12 | **GY 1620●●** | 0.110 |
| | 4 | – | 2 | 6 | **GY 1640●●** | 0.230 |
| | 1 | 1 | 1 | 12 | **GY 1611●●** | 0.110 |
| **25** | 2 | – | 1 | 12 | **GY 2520●●** | 0.110 |
| | 3 | – | 2 | 6 | **GY 2530●●** | 0.230 |
| | 4 | – | 2 | 6 | **GY 2540●●** | 0.230 |
| | 1 | 1 | 1 | 12 | **GY 2511●●** | 0.110 |
| **40** | 2 | – | 2 | 6 | **GY 4020●●** | 0.230 |
| | 3 | – | 3 | 4 | **GY 4030●●** | 0.350 |
| | 4 | – | 3 | 4 | **GY 4040●●** | 0.390 |
| **63** | 2 | – | 2 | 6 | **GY 6320●●** | 0.340 |
| | 3 | – | 3 | 4 | **GY 6330●●** | 0.390 |
| | 4 | – | 3 | 4 | **GY 6340●●** | 0.390 |

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 12 | 24 | 48 | 110 | 220/240 |
|---|---|---|---|---|---|
| 50 Hz | J5 | B5 | E5 | F5 | M5 |
| 60 Hz | J6 | B6 | E6 | F6 | M6 |



Selection : pages 5/272 to 5/275
Characteristics : pages 5/290 and 5/291
Dimensions and schemes : pages 5/294 and 5/295



Schneider Electric

# TeSys modular equipment

## TeSys GY “dual tariff” contactors

526287

GAP 23

### Instantaneous auxiliary contact blocks

| Number of contacts | Number of poles | | | Reference | Weight kg |
|---|---|---|---|---|---|
| 2 | 1 | 1 | – | GAC 0521 | 0.016 |
| | – | 2 | – | GAC 0531 | 0.016 |
| | – | – | 1 | GAC 0511 | 0.016 |

812029

GAC 5

812029

GA1 C●

522643

GW 254

522644

GW 63●

### Accessories

| Description | For use on contactor | Number of modules | Operational voltage in V | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|---|
| **Coil suppression blocks** comprising 2 RC circuits | – | 1 | 12…48 | 1 | GAP 21 | 0.090 |
| | | | 110…240 | 1 | GAP 23 | 0.090 |
| **Ventilation 1/2 module** clips onto ⊔ rail | – | 1/2 | – | 10 | GAC 5 | 0.015 |
| **Cover plates** | – | 1/2 | – | 10 | GA1 C7 | 0.001 |
| | | 1 | – | 10 | GA1 C6 | 0.001 |
| **Set of sealable terminal covers** (10 top parts + 10 bottom parts) | 16 or 25 A 3 or 4 contacts | 2 | – | 1 | GW 254 | 0.040 |
| | 40 or 63 A 2 contacts | 2 | – | 1 | GW 632 | 0.040 |
| | 40 or 63 A 3 or 4 contacts | 3 | – | 1 | GW 634 | 0.050 |

5

Selection : pages 5/272 to 5/275
Characteristics : pages 5/290 and 5/291
Dimensions and schemes : pages 5/294 and 5/295

## “Dual tariff” contactors

| | GY 1611, 1620<br>GY 2511, 2520 | GY 1640<br>GY 2530, 2540 |
|---|---|---|
| Common side view | 1 module | 2 modules |

| | GY 4020<br>GY 6320 | GY 4030, 4040<br>GY 6330, 6340 |
|---|---|---|
| Common side view | 2 modules | 3 modules |

5

## Dimensions

### Auxiliary contacts

**GAC 0511, 0531 and 0521**

### Coil suppression block

**GAP 21, 22 and 23**

### Clip-on ventilation 1/2 module

**GAC 5**

### Cover plates

**GA1 C6**

**GA1 C7**

## Schemes

### Contactors

**GY ••20**

**GY ••30**

**GY ••40**

**GY ••11**

### Auxiliary contacts

**GAC 0521**

**GAC 0531**

**GAC 0511**

5