TRIO-PS/1AC/24DC/ 5 - Power supply unit

2866310

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Primary-switched TRIO POWER power supply for DIN rail mounting, input: 1-phase, output: 24 V DC/5 A

Product description

TRIO POWER power supplies with standard functionality
TRIO POWER is particularly suited to standard machine production, thanks to 1- and 3-phase versions up to 960 W. The wide-range input and the international approval package enable worldwide use.
The robust metal housing, the high electric strength, and the wide temperature range ensure a high level of power supply reliability.

Your advantages

- Use the third negative terminal block as a grounding terminal block and minimize installation costs
- Rugged design with metal housing and wide temperature range from -25 to +70°C
- Maximum operational reliability thanks to high MTBF (mean time between failures) of more than 500,000 hours and high dielectric strength of up to 300 V AC
- Compensation of voltage drops by means of output voltage that can be adjusted on the front

Technical data

Input data

AC operation

Nominal input voltage range	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC (Derating < 90 V AC: 2,5 %/V)
Derating	< 90 V AC (2.5 %/V)
Input voltage range AC	85 V AC ... 264 V AC (Derating < 90 V AC: 2,5 %/V)
Electric strength, max.	300 V AC
Voltage type of supply voltage	AC
Inrush current	< 15 A
Inrush current integral (I^2t)	1.1 A^2s
AC frequency range	45 Hz ... 65 Hz
Mains buffering time	> 20 ms (120 V AC)
	> 110 ms (230 V AC)
Current consumption	1.65 A (120 V AC)
	0.9 A (230 V AC)
Nominal power consumption	189 VA
Protective circuit	Transient surge protection; Varistor
Power factor (cos phi)	0.72
Typical response time	< 1 s
Input fuse	3.15 A (slow-blow, internal)
Permissible backup fuse	B6 B10 B16
Recommended breaker for input protection	6 A ... 16 A (Characteristics B, C, D, K)
Discharge current to PE	< 3.5 mA

Output data

Efficiency	89 % (for 230 V AC and nominal values)
Output characteristic	U/I
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage (U_{Set})	22.5 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Nominal output current (I_N)	5 A (U_{OUT} = 24 V DC)
Derating	55 °C ... 70 °C (2.5 %/K)
Feedback voltage resistance	35 V DC
Protection against overvoltage at the output (OVP)	< 35 V DC
Max. capacitive load	unlimited
Active current limitation	approx. 10 A (for short-circuit)
Control deviation	< 1 % (change in load, static 10 % ... 90 %)
	< 2 % (change in load, dynamic 10 % ... 90 %)
	< 0.1 % (change in input voltage ±10 %)
Residual ripple	< 20 mV_{PP}
Output power	120 W
Peak switching voltages nominal load	< 30 mV_{PP}

Maximum no-load power dissipation	1.1 W
Power loss nominal load max.	18 W
Rise time	< 2 ms (U_{OUT} (10 % ... 90 %))
Connection in parallel	yes, for redundancy and increased capacity
Connection in series	yes

Connection data

Input

Connection method	Screw connection
Conductor cross section, rigid min.	0.2 mm²
Conductor cross section, rigid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Stripping length	9 mm
Screw thread	M2,5
Tightening torque, min	0.4 Nm
Tightening torque max	0.5 Nm

Output

Connection method	Screw connection
Conductor cross section, rigid min.	0.2 mm²
Conductor cross section, rigid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Stripping length	9 mm
Screw thread	M2,5
Tightening torque, min	0.4 Nm
Tightening torque max	0.5 Nm

Signaling

Types of signaling	LED
Operating voltage display	Green LED

Signal output

Status display	"DC OK" LED green
Note on status display	U_{OUT} > 21.5 V: LED lights up

Electrical properties

Insulation voltage input/output	4 kV AC (type test)
	2 kV AC (routine test)
Insulation voltage output / PE	500 V DC (type test)

Insulation voltage input / PE	2 kV AC (type test)
	2 kV AC (routine test)

Product properties

Product type	Power supply
Product family	TRIO POWER
MTBF (IEC 61709, SN 29500)	> 2031000 h

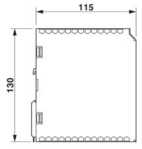
Data management status

Article revision	04

Insulation characteristics

Protection class	I (with PE connection)
Overvoltage category	III
Degree of pollution	2

Dimensions

Dimensional drawing	
Width	40 mm
Height	130 mm
Depth	115 mm

Installation dimensions

Installation distance right/left	0 mm / 0 mm
Installation distance top/bottom	50 mm / 50 mm

Mounting

Mounting type	DIN rail mounting
Assembly note	alignable: horizontally 0 mm, vertically 50 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
With protective coating	no

Material specifications

Housing material	Metal
Type of housing	Steel sheet, zinc-plated
Side element version	Aluminum

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating : 2.5%/K)

Ambient temperature (storage/transport)	-40 °C ... 85 °C
Climatic class	3K3 (in acc. with EN 60721)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Shock	15g in all directions in acc. with IEC 60068-2-27
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6)
	15 Hz ... 150 Hz, 2.3g, 90 min.

Standards and regulations

Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations	EN 50178/VDE 0160 (PELV)
Standard – Limitation of mains harmonic currents	EN 61000-3-2
Standard - Electrical safety	EN 60950-1/VDE 0805 (SELV)
Standard – Protection against shock currents, basic requirements for protective separation in electrical equipment	EN 50178
Standard – Safety extra-low voltage	EN 60950-1 (SELV)
	EN 60204 (PELV)
Standard - Safe isolation	DIN VDE 0100-410

Approvals

Shipbuilding approval	DNV GL (EMC A)
UL approvals	UL/C-UL listed UL 508
	UL/C-UL Recognized UL 60950-1

Conformity/Approvals

SIL in accordance with IEC 61508	0

EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
EMC requirements for noise emission	EN 61000-6-3
	EN 61000-6-4
EMC requirements for noise immunity	EN 61000-6-1
	EN 61000-6-2

Electrostatic discharge

Standards/regulations	EN 61000-4-2

Electrostatic discharge

Contact discharge	8 kV (Test Level 4)
Discharge in air	8 kV (Test Level 3)
Comments	Criterion A

Electromagnetic HF field

Standards/regulations	EN 61000-4-3

Electromagnetic HF field

Frequency range	80 MHz ... 1 GHz

Test field strength	10 V/m
Frequency range	1 GHz ... 2 GHz
Test field strength	10 V/m
Frequency range	2 GHz ... 3 GHz
Test field strength	10 V/m
Comments	Criterion A

Fast transients (burst)

Standards/regulations	EN 61000-4-4

Fast transients (burst)

Input	4 kV (Test Level 4 - asymmetrical)
Output	4 kV (Test Level 4 - asymmetrical)
Signal	2 kV (Test Level 3 - asymmetrical)
Comments	Criterion A

Surge voltage load (surge)

Standards/regulations	EN 61000-4-5

Surge voltage load (surge)

Input	1 kV (Test Level 2 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Output	0.5 kV (Test Level 1 - symmetrical)
	0.5 kV (Test Level 1 - asymmetrical)
Comments	Criterion B

Conducted interference

Standards/regulations	EN 61000-4-6

Conducted interference

Frequency range	10 kHz ... 15 kHz
	10 kHz ... 15 kHz
Comments	Criterion A
	Criterion A
Voltage	3 V (Test Level 2)
	3 V (Test Level 2)

Conducted interference

Frequency range	10 kHz ... 15 kHz
	10 kHz ... 15 kHz
Comments	Criterion A
	Criterion A
Voltage	3 V (Test Level 2)
	3 V (Test Level 2)

Voltage dips

Standards/regulations	EN 61000-4-11

Emitted interference

Standards/regulations	EN 61000-6-3
Radio interference voltage in acc. with EN 55011	EN 55011 (EN 55022) Class B, area of application: Industry and residential
Emitted radio interference in acc. with EN 55011	EN 55011 (EN 55022) Class B, area of application: Industry and residential

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