CONTENTS

1. GENERAL PURPOSE CONTACTORS & STARTERS

Series **MS-N**

1.1 Conformity to International Standards

Mitsubishi magnetic motor starters and contactors are designed to conform to the relevant IEC recommendations and to the standards of as many countries as possible. Specifically, they conform to the following:

IEC60947-4-1	International	VDE0660	Germany
EN60947-4-1	Europe	NEMA-ICS	U.S.A

Table 1.1

Type	Model Name	Europe		North America / UL				China	Marine			
		CE Mark	TÜV	Listing		Recognition		CCC certification	U.K. Lloyd's Register of Shipping	France Bureau Veritas	Korea Korean Register of Shipping	Japan Nippon Kaiji Kyokai
				U.S.A	Canada	U.S.A	Canada					
AC Operated Contactor	S-N10(CX)	◎	◎ (*2)	◎		◎ (c UL us Mark)		◎	○	○	○	◎
	S-N11(CX)/N12(CX)											
	S-N18(CX)											
	S-N20(CX)/N21(CX)											
	S-N25(CX)											
	S-N35(CX)											
	S-N28(CX)											—
	S-N38(CX)								—	—	—	
	S-N48(CX)											
	S-N50		◎					◎	○	○	○	◎
	S-N65											
	S-N80											
	S-N95											
	S-N125											
	S-N150											
	S-N180											
	S-N220											
	S-N300											
	S-N400											
	S-N600		—	☆		◎		★			—	
	S-N800					☆						
Overload Relay	TH-N12(CX)KP	◎	○	◎		◎ (c UL us Mark)		◎	○	○	—	—
	TH-N18(CX)KP							—				
	TH-N20(TA)(CX)KP											
	TH-N60(TA)KP											
	TH-N120(TA)KP		○					◎				
	TH-N220RHKP/HZKP											
	TH-N400RHKP/HZKP											
DC Operated Contactor	SD-N11(CX)/N12(CX)	◎	◎	◎		◎ (c UL us Mark)		◎	○	○	—	◎
	SD-N21(CX)											
	SD-N35(CX)											
	SD-N50		◎									
	SD-N65											
	SD-N80											
	SD-N95											
	SD-N125											
	SD-N150											
	SD-N220											
	SD-N300											
	SD-N400											
	SD-N600		—	—	—	—	—	★				
	SD-N800											
AC Operated Contactor Relay	SR-N4(CX)	◎	◎ (*2)	◎	◎	◎ (UL Mark)	◎ (c UL Mark)	◎	○	○	—	—
DC Operated Contactor Relay	SRD-N4(CX)	◎	◎ (*2)	◎	◎	◎ (UL Mark)	◎ (c UL Mark)	◎	○	○	—	—
Auxiliary Contact Block	UN-AX2(CX)	◎	○	◎	◎	◎ (UL Mark)	◎ (c UL Mark)	★	○	○	—	—
	UN-AX4(CX)											
	UN-AX11(CX)											
	UN-AX80		○	—	—	○	—					
	UN-AX150											

Notes:1. ◎ *: CE Mark (Manufacturer's Declaration) == Standard model applicable, marking on the product.*
UL, TÜV, CCC == Standard model applicable, marking on the product.
NK == Standard model applicable, Certificate No. on the product.

○ *: Standard model applicable, no marking on the product.*

☆ *: Special model applicable, marking on the product. Order model name followed by suffix "UL".*

★ *: China export applicable, no marking on the product. Ensure to add "CN" after the model name when placing an order.*

— *: Not applicable to the Standard or not approved.*

2. *Applicable coil ratings : S-N10~N12, N18, N28, N38, N48 : up to AC440V S-N20~N35 : up to AC380V*
3. *For each certificate conditions, see next three pages.*

1.1.4 CCC Certified Products

Magnetic motor starters, etc., are designated as products targeted for China Compulsory Certification. CCC certification must be acquired before the product is exported to main land China from Domestic or marketed in China.
The certified models are shown in Tables 1.1.4 (1-1) to 1.1.4 (8-2). The option units (UN-CV, ML, RR, SA, etc.) which are mounted on the magnetic motor starter and which do not have a load switching function are excluded from the CCC certification target.

Magnetic motor starter

• With Enclosure

Table 1.1.4 (1-1)

Model Name MS : AC operated	Approval rating AC-3 Class (200~240V/380~440V)		Heater designation	Coil designation	Type ✻✻ application range (combination possible)	Number of aux. contacts Non-reversing Standard (special)	Certificate No.
	Rated capacity (kW)	Rated operational current (A)		AC operated			
MS-N10CN✻✻	2.5/4	11/9	0.12~9A	AC12V~AC500V	KP, SA, PM	1NO	20030103 04093078
MS-N11CN✻✻	3.5/5.5	13/12	0.12~11A			1NO	
MS-N12CN✻✻	3.5/5.5	13/12	0.12~11A			1NO1NC(2NO)	
MS-N20CN✻✻	5.5/11	22/22	0.24~19A		KP, SA, PM	1NO1NC(2NO)	20030103 04093077
MS-N21CN✻✻	5.5/11	22/22	0.24~19A			2NO2NC	
MS-N25CN✻✻	7.5/15	30/30	0.24~22A			2NO2NC	20030103 04093076
MS-N35CN✻✻	11/18.5	40/40	0.24~35A			2NO2NC	
MS-N50CNKP✻✻	15/22	55/50	15~54A	AC24V~AC500V	PM	2NO2NC	20030103 04093073
MS-N65CNKP✻✻	18.5/30	65/65	15~54A			2NO2NC	
MS-N80CNKP✻✻	22/45	85/85	15~67A			2NO2NC	20030103 04093064
MS-N95CNKP✻✻	30/55	105/105	15~95A			2NO2NC	
MS-N125CNKP	37/60	125/120	42~105A		–	2NO2NC	20030103 04093067
MS-N150CNKP	45/75	150/150	42~125A			2NO2NC	20030103 04093079
MS-N180CNKP	55/90	180/180	82~150A	AC48V~AC500V		2NO2NC	20030103 04093070
MS-N220CNKP	75/132	250/250	82~210A			2NO2NC	
MS-N300CNKP	90/160	300/300	105~250A			2NO2NC	20030103 04093066
MS-N400CNKP	125/220	400/400	105~330A			2NO2NC	

• Without Enclosure

Table 1.1.4 (1-2)

Model Name MSO : AC operated MSOD : DC operated 2X : Reversing type	Approval rating AC-3 Class (200~240V/380~440V)		Heater designation	Coil designation	Type ✻✻ application range (combination possible)	Number of aux. contacts Non-reversing Standard (special)	Certificate No.
	Rated capacity (kW)	Rated operational current (A)		AC operated (MSO type) DC operated (MSOD type)			
MSO-(2X)N10✻✻	2.5/4	11/9	0.12-9A	AC12V~AC500V DC12V~DC220V	CX, KP, SA, SR	1NO(1NC)	20020103 04093078
MSO(D)-(2X)N11✻✻	3.5/5.5	13/12	0.12-11A			1NO(1NC)	
MSO(D)-N12✻✻	3.5/5.5	13/12	0.12-11A			1NO1NC(2NO)	
MSO-(2X)N18✻✻	4.5/7.5	18/16	0.12-15A		CX, SA	–	20020103 04093077
MSO-(2X)N20✻✻	5.5/11	22/22	0.24-19A		CX, KP, SA, SR	1NO1NC(2NO)	
MSO(D)-(2X)N21✻✻	5.5/11	22/22	0.24-19A			2NO2NC	
MSO-(2X)N25✻✻	7.5/15	30/30	0.24-22A			2NO2NC	20020103 04093076
MSO(D)-(2X)N35✻✻	11/18.5	40/40	0.24-35A			2NO2NC	
MSO(D)-(2X)N50KP✻✻	15/22	55/50	15-42A	AC24V~AC500V DC12V~DC220V	CX, SR	2NO2NC	20020103 04093073
MSO(D)-(2X)N65KP✻✻	18.5/30	65/65	15-54A			2NO2NC	
MSO(D)-(2X)N80KP✻✻	22/45	85/85	15-67A			2NO2NC	20020103 04093064
MSO(D)-(2X)N95KP✻✻	30/55	105/105	15-95A			2NO2NC	
MSO(D)-(2X)N125KP✻✻	37/60	125/120	42-105A		SR	2NO2NC	20020103 04093067
MSO(D)-(2X)N150KP✻✻	45/75	150/150	42-125A			2NO2NC	20020103 04093079
MSO-(2X)N180KP✻✻	55/90	180/180	82-150A	AC48V~AC500V DC12V~DC220V		2NO2NC	20020103 04093070
MSO(D)-(2X)N220KP✻✻	75/132	250/250	82-210A			2NO2NC	
MSO(D)-(2X)N300KP✻✻	90/160	300/300	105-250A			2NO2NC	20020103 04093066
MSO(D)-(2X)N400KP✻✻	125/220	400/400	105-330A			2NO2NC	

Notes: 1. The MSO-(2×) N10KP, MSO(D)-(2×)N11KP or MSO(D)-N12KP type with heater designation 0.12A and 0.17A are not certified.
2. MSO-(2×)N18KP type is not certified.

Magnetic Contactors

• General Type Contactors

Table 1.1.4 (2-1)

Model Name S : AC operated SD : DC operated 2× : Reversing type	Approval rating AC-3 Class (200~240V/380~440V)		Conventional free air thermal current Ith (A)	Coil designation AC operated (S type) DC operated (SD type)	Type ✻✻ application range (combination possible)	Number of aux. contacts Non-reversing Standard (special)	Certificate No.
	Rated capacity (kW)	Rated operational current (A)					
S-(2×)N10✻✻	2.5/4	11/9	20	AC12V~AC500V DC12V~DC220V	CX, SA	1NO (1NC)	20020103 04023375
S(D)-(2×)N11✻✻	3.5/5.5	13/12	20			1NO (1NC)	
S(D)-N12✻✻	3.5/5.5	13/12	20			1NO1NC(2NO)	
S-(2×)N18✻✻	4.5/7.5	18/16	25			–	20020103 04023377
S-(2×)N20✻✻	5.5/11	22/22	32			1NO1NC (2NO)	
S(D)-(2×)N21✻✻	5.5/11	22/22	32			2NO2NC	
S-(2×)N25✻✻	7.5/15	30/30	50			2NO2NC	20020103 04024684
S(D)-(2×)N35✻✻	11/18.5	40/40	60			2NO2NC	
S(D)-(2×)N50✻✻	15/22	55/50	80	AC24V~AC500V DC12V~DC220V	CX	2NO2NC	20020103 04024704
S(D)-(2×)N65✻✻	18.5/30	65/65	100			2NO2NC	
S(D)-(2×)N80	22/45	85/85	135		–	2NO2NC	20020103 04024705
S(D)-(2×)N95	30/55	105/105	150			2NO2NC	
S(D)-(2×)N125	37/60	125/120	150			2NO2NC	20020103 04024706
S(D)-(2×)N150	45/75	150/150	200			2NO2NC	20020103 04024707
S-(2×)N180	55/90	180/180	260	AC48V~AC500V DC12V~DC220V		2NO2NC	20020103 04024708
S(D)-(2×)N220	75/132	250/250	260			2NO2NC	
S(D)-(2×)N300	90/160	300/300	350			2NO2NC	20020103 04024709
S(D)-(2×)N400	125/220	400/400	450			2NO2NC	
S(D)-(2×)N600CN	190/330	630/630	660	AC100V~AC500V DC24V~DC220V	–	2NO2NC	20030103 04095569
S(D)-(2×)N800CN	220/440	800/800	800			2NO2NC	

• Mechanically Latched Contactors

Table 1.1.4 (2-2)

Model Name SL : AC operated SLD : DC operated 2× : Reversing type	Approval rating AC-3 Class (200~240V/380~440V)		Conventional free air thermal current Ith (A)	Coil designation AC operated (SL type) DC operated (SLD type)	Type ✻✻ application range (combination possible)	Number of aux. contacts Non-reversing Standard	Certificate No.
	Rated capacity (kW)	Rated operational current (A)					
SL(D)-(2×)N21✻✻	5.5/11	22/22	32	AC100V~AC500V DC12V~DC200V	CX, SA	2NO2NC	20020103 04023377
SL(D)-(2×)N35✻✻	11/18.5	40/40	60			2NO2NC	20020103 04024684
SL(D)-(2×)N50✻✻	15/22	55/50	80		CX	2NO2NC	20020103 04024704
SL(D)-(2×)N65✻✻	18.5/30	65/65	100			2NO2NC	
SL(D)-(2×)N80	22/45	85/85	135		–	2NO2NC	20020103 04024705
SL(D)-(2×)N95	30/55	105/105	150			2NO2NC	
SL(D)-(2×)N125	37/60	125/120	150			2NO2NC	20020103 04024706
SL(D)-(2×)N150	45/75	150/150	200			2NO2NC	20020103 04024707
SL(D)-(2×)N220	75/132	250/250	260			2NO2NC	20020103 04024708
SL(D)-(2×)N300	90/160	300/300	350			2NO2NC	20020103 04024709
SL(D)-(2×)N400	125/220	400/400	450			2NO2NC	
SL(D)-(2×)N600CN	190/330	630/630	660	AC100V~AC500V DC24V~DC200V	–	1NO2NC	20030103 04095569
SL(D)-(2×)N800CN	220/440	800/800	800				

• 3-Pole Contactors

Table 1.1.4 (2-3)

Model Name S : AC operated 2× : Reversing type	Approval rating AC-3 Class (200~240V/380~440V)		Conventional free air thermal current Ith (A)	Coil designation AC operated (S type)	Type ✻✻ application range (combination possible)	Number of aux. contacts Non-reversing Standard	Certificate No.
	Rated capacity (kW)	Rated operational current (A)					
S-(2×)N18✻✻	4.5/7.5	18/16	25	AC12V~AC500V	CX, SA	–	20020103 04023377
S-(2×)N28✻✻	7.5/7.5	26/17	30			–	
S-(2×)N38✻✻	11/15	39/32	60			–	20020103 04024684
S-(2×)N48✻✻	15/18.5	50/40	80			–	

• NC Main Contact Type Contactors

Table 1.1.4 (2-4)

Model Name B : AC operated BD : DC operated	Main contact Arrangement	Certification ratings (A)			Conventional free air thermal current Ith (A)	Coil designation AC operated (B type) DC operated (BD type)	Type ✻✻ application range (combination possible)	Number of aux. contacts Non-reversing	Certificate No.
		Number of series	DC-3,5 NC	DC-1 NC					
B(D)-N20CN✻✻	B: 1NO2NC, 3NC BD: 1NO2NC	DC110V 2P	8	15	25	AC24V~AC500V DC12V~DC220V	SA	2NO	20020103 04023377
		3P	15	20					
		DC220V 2P	1	5					
		3P	5	10					
B(D)-N65CN		DC110V 2P	20	30	80		–	2NO2NC	20020103 04024705
		3P	50	65					
		DC220V 2P	3	10					
		3P	20	30					
B(D)-N100CN	B:1NO2NC BD:1NO2NC	DC110V 2P	30	40	120			2NO2NC	20020103 04024706
		DC220V 2P	3	20					

1.6.3 Non-Reversing Mechanically Latched Contactors Type **SL-N□, SLD-N□**

Ordering Designation

Model name SL-N35
Closing coil designation[1] AC200V
Tripping coil designation[1] DC100V

Complete type designation SL-N35∗MC·AC200V∗MT·DC100V

Note: Mark∗indicates a blank space.
1. See Table1.6.3 (2).

Table 1.6.3 (1)

Rated operational current AC-3		Rated motor capacity 3-phase AC-2 & AC-3				Model name		Standard free aux. contacts		Additional auxiliary contact block			
220 –240V (A)	380 –440V (A)	220 –240V (kW)	380 –440V (kW)	500V (kW)	690V (kW)	AC operated (closing coil)	DC operated (closing coil)			UN-AX11	UN-AX80	UN-AX150	UN-AX600
22	22	5.5	11	11	7.5	**SL-N21**	**SLD-N21**	2	2	Max.2	—	—	—
40	40	11	18.5	18.5	15	**SL-N35**	**SLD-N35**	2	2				
55	50	15	22	25	22	**SL-N50**	**SLD-N50**	2	2				
65	65	18.5	30	37	30	**SL-N65**	**SLD-N65**	2	2				
85	85	22	45	45	45	**SL-N80**	**SLD-N80**	1	2	—	Max.2	—	—
105	105	30	55	55	55	**SL-N95**	**SLD-N95**	1	2				
125	120	37	60	60	60	**SL-N125**	**SLD-N125**	1	2				
150	150	45	75	90	90	**SL-N150**	**SLD-N150**	1	2	—	—	Max.2	—
250	250	75	132	132	132	**SL-N220**	**SLD-N220**	1	2				
300	300	90	160	160	200	**SL-N300**	**SLD-N300**	1	2				
400	400	125	220	225	250	**SL-N400**	**SLD-N400**	1	2				
630	630	190	330	330	330	**SL-N600**	**SLD-N600**	1	2	—	—	—	1
800	800	220	440	500	500	**SL-N800**	**SLD-N800**	1	2				

• **Coil Ratings** (Closing & Tripping)

Table 1.6.3 (2)

Ordering designation	Applicable voltage
AC100V	100-127VAC 50/60Hz
AC200V	200-240VAC 50/60Hz
AC300V	260-350VAC 50/60Hz
AC400V	380-440VAC 50/60Hz
AC500V	460-550VAC 50/60Hz
DC24V	24VDC
DC48V	48VDC
DC100V	100-110VDC
DC125V	120-125VDC
DC200V	200-220VDC

• **Precautions**

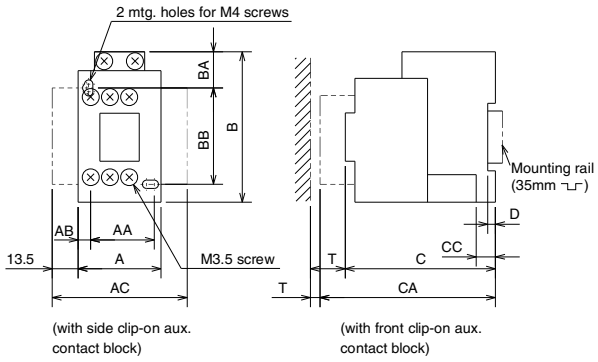
- Minimum energising time, both for closing and tripping must be set longer than the followings.
  SL(D)-N21 to N220 : 0.3 sec.
  SL(D)-N300 to N800 : 0.5 sec.
- Make sure never to over lap the energising time for closing and tripping.

SL-N35

SL-N150

1.10 Outline Dimensions

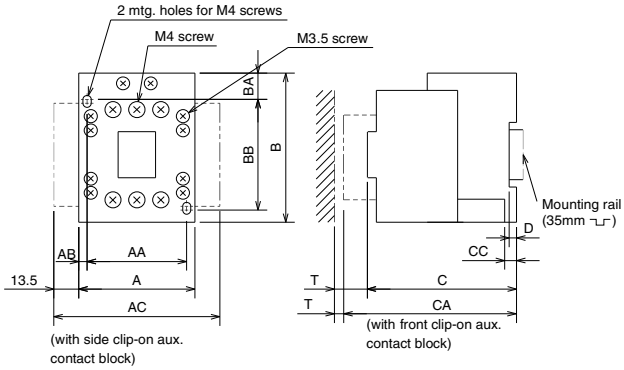
1.10.1 Outline Dimensions of Non-Reversing Contactors



• Dimensions

Type	A	B	C	AA	AB	AC	BB	BA	CC	CA	D	Mass(kg)	T
S-N10(CX),-N11(CX)	43	78	78	35	4.5	70	50	19	10	106	4	0.3	5
S-N12(CX)	53	78	78	40	4.5	—	50	19	10	106	4	0.32	5
S-N18(CX)	43	79	81	30	6	—	60	13	10	109	4	0.33	5
SD-N11(CX)	43	78	110	35	4.5	70	50	19	10	138	4	0.62	5
SD-N12(CX)	53	78	110	40	4.5	—	50	19	10	138	4	0.64	5

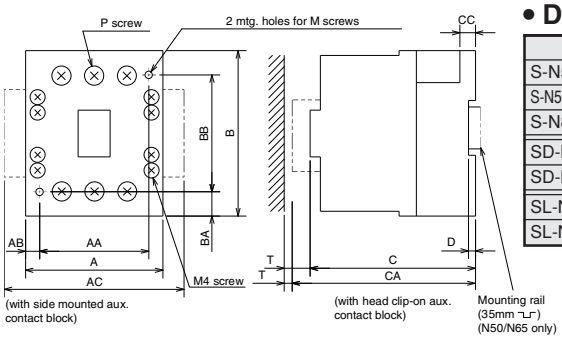
Note: Front clip-on and side clip-on aux. contact blocks should not be mounted both.



• Dimensions

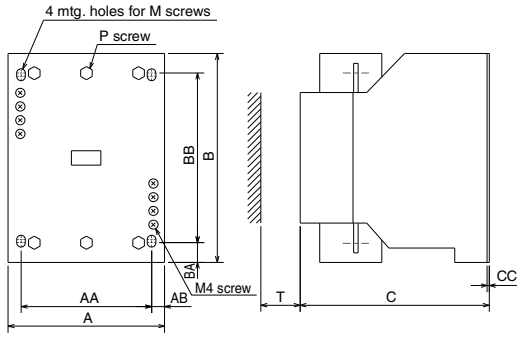
Type	A	B	C	AA	AB	AC	BB	BA	CC	CA	D	Mass(kg)	T
S-N20(CX),-21(CX)	63	81	81	54	4.5	90	60	14	6.5	109	4	0.4	5
S-N25(CX),-N35(CX)	75	89	91	65	5	102	70	13	6.5	119	4	0.52	5
SD-N21(CX)	63	81	113	54	4.5	90	60	14	6.5	141	4	0.72	5
SD-N35(CX)	75	89	123	65	5	102	70	13	6.5	151	4	0.85	5
SLD-N21	63	81	137	54	45	90	60	14	6.5	—	4	0.55	5
SLD-N35	75	89	147	65	5	102	70	13	6.5	—	4	0.67	5

Note: Front clip-on and side clip-on aux. contact blocks should not be mounted both.



• Dimensions

Type	A	B	C	AA	AB	AC	BB	BA	CC	CA	D	M	P	Mass(kg)	T
S-N50,-N65	88	106	106	70	9	—	75	15.5	10	135	4.5	M4	M6	0.75	10
S-N50CX, -N65CX	88	108	106	70	9	—	75	15.5	10	135	4.5	M4	M6	0.77	10
S-N80,-N95	100	124	127	80	10	128	110	7	12	—	—	M5	M6	1.8	10
SD-N50,-N65	88	107.5	133	70	9	—	75	15.5	10	—	—	M4	M6	2.1	10
SD-N80,-N95	100	134	157	80	10	128	110	7	12	—	—	M5	M6	3.3	10
SL-N50,-N65	88	106	135.5	70	9	—	75	15.5	10	—	—	M4	M6	1.3	10
SL-N80,-N95	100	172	127	80	10	128	110	7	12	—	—	M5	M6	2.1	10



• Dimensions

Type	A	B	C	AA	AB	BB	BA	CC	CA	D	M	P	Mass(kg)	T
S-N125	100	150	137	90	5	125	12.5	1.6	—	—	M4	M8	2.5	10
S-N150	120	160	145	100	10	125	17.5	1.6	—	—	M5	M8	3.2	10
S-N180,-N220	138	204	175	120	9	190	7	1.6	—	—	M6	M10	5.5	10
S-N300,-N400	163	243	195	145	9	225	9	2.3	—	—	M8	M12	9.5	10
S-N600,-N800	290	310	235	250	20	250	30	10.5	—	—	M10	M16	27	10
SD-N125	102	150	162	90	5	125	12.5	1.6	—	—	M4	M8	4.3	30
SD-N150	120	160	169.5	100	10	125	17.5	1.6	—	—	M5	M8	4.3	30
SD-N220	138	204	200.5	120	9	190	7	2.0	—	—	M6	M10	7.5	30
SD-N300,-N400	163	243	221	145	9	225	9	2.3	—	—	M8	M12	13.5	50
SD-N600,-N800	375	310	235	250	20	250	30	10.5	—	—	M10	M16	28	10
SL(D)-N125	100	191	137	90	5	125	12.5	1.6	—	—	M4	M8	3.0	30
SL(D)-N150	120	201	145	100	10	125	17.5	1.6	—	—	M5	M8	3.6	30
SL(D)-N220	138	224	175	120	9	190	7	1.6	—	—	M6	M10	6.0	30
SL(D)-N300,-N400	163	259	195	145	9	225	9	2.3	—	—	M8	M12	10	50
SL(D)-N600,-N800	290	390	235	250	20	250	30	10.5	—	—	M10	M16	27	10