TECHNICAL DATASHEET

Micro Contactor MA Series





- Relay-sized contactor, making it the world's smallest
- >3mm contact clearance acc. to IEC 60335-1 for Safety Applications
- Reversing contactor with mechanical interlock
- 3 Pole and 1 Aux. Contact NO or NC
- 5A AC3 @ 400VAC (2.2kW) 12A AC1 @ 400VAC
- AC coil voltages TS15 DIN rail mounting
- PCB mounting
- DC coil pending





Micro Contactor Relays

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Micro Contactors

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Micro Contactors With Solder Pins Coil Voltages Page 4



Micro Reversing Contactor

Page 5



Technical Data Dimensions Page 6

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Micro Contactor Relays 4-Pole

AC Operated

Ratings Therm.			Contacts	*2		Distinc. Number	Additional Contact	Туре	24 230	Coil Voltage *1 24V 50/60Hz 220-240V 50/60Hz		
	AC15 230V A	400V A	Rated- Current I _{th} Å	\ NO	L, NC	acc. to EN50011	Blocks Type		\downarrow	Pack pcs.	Weight kg/pc.	
	4-Pole, V	With Scre	w Termina	ls								
	3	1.5	5	4	-	40E	-	MA04-S-40		10	0.07	
ı	•	4 -	-	0		045		B4404 0 04		40	0.07	
	3	1.5	5	3	1	31E	-	MA04-S-31		10	0.07	



M	\04	-2-	4 0
IVI <i>F</i>	1 04	-9-	4 U

1.5

5



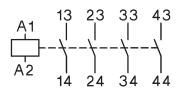
MA04-S-22

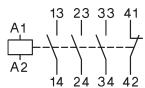
22E

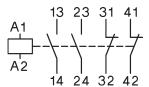
MA04-S-22

10

0.07







Other coil voltages - see page 4

^{*1} *2 Contacts suitable for electronic circuits, according to EN947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA). Positively guided contacts.





AC Operated **Micro Contactors**

Power Ratings	Rated Current	Aux. Contacts*2 Built-in	Additional	Туре	Coil Voltage *1
AC2, AC3	AC1				24V 50/60Hz 220-240V 50/60Hz

380V 400V	660V		1	<u> </u>	
415V kW	690V kW	440V A	NO	NC	Туре

Pack Weight pcs. kg/pc.

3-Pole, With Screw Terminals

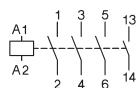


2.2	-	12	1	-	-	MA05-S-10	 10	0.07
2.2	-	12	-	1	-	MA05-S-01	 10	0.07

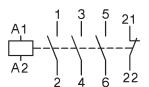
4-Pole, With Screw Terminals

2.2	-	12	-	-	-	MA05-S-0040	10	0.07

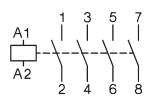
MA05-S-10



MA05-S-01



MA05-S-0040



Snap-On Adaptor



For Type	Specification	Туре	Pack pcs.	Weight kg/pc.
MA	for snap mounting of	MA-P1039	10	0.01

Snap on Adaptor for MA

accessories on 35mm DIN-Rail acc. DIN EN 50022

Other coil voltages - see page 4

^{*1} *2 Contacts suitable for electronic circuits, according to EN947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA). Positively guided contacts.





Micro Contactors AC Operated

Power Ratings Rated Current Built-in Additional

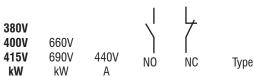
AC2, AC3 AC1

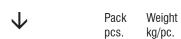
AC1

Type Coil Voltage *1

Additional

24 24V 50/60Hz
230 220-240V 50/60Hz





3-Pole, With Solder Pins Ø1.15 For Printed Circuit Applications

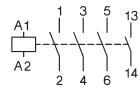


2.2	-	9	1	-	-	MA05-P-10	 10	0.07
2.2	-	9	-	1	-	MA05-P-01	 10	0.07

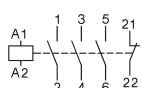
4-Pole, With Solder Pins Ø1.15 for Printed Circuit Applications

2.2 - 9 - - - MA05-P-0040 ... 10 0.07

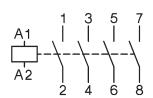
MA05-P-10



MA05-P-01



MA05-P-0040



Coil Voltages for AC operated contactors

Suffix to	Voltage Ma	rking	Rated Cont	Rated Control Voltage $U_{\rm s}$					
contactor type e.g.	at the coil for	for	range for 50Hz		for 60Hz				
MA05-S-	50Hz	60Hz	min.	max.	min.	max.			
1024AC	V	V	V	V	V	V			
12	12	12	11	12	12	12			
24	24	24	22	24	24	24			
42	42	42	38.5	42	42	42			
48	48	48	48	50	48	52			
90	100	100	90	100	100	105			
95	95-100	105-110	95	100	105	110			
100	100	110-115	100	105	110	115			
105	105-110	115-120	105	110	115	120			
110	110-115	120-125	110	115	120	125			
180	200	200	185	200	200	210			

Suffix to	Voltage Ma	rking	Rated Cont	Rated Control Voltage U _s					
contactor type e.g.	at the coil for	for	range for 50Hz		for 60Hz				
MA05-S-	50Hz	60Hz	min.	max.	min.	max.			
10230AC	V	V	V	V	V	V			
200	200	200-220	195	205	200	220			
210	205-215	220-230	205	215	220	230			
220	210-220	220-240	210	220	220	240			
230	220-230	230-250	220	230	230	250			
240	230-240		230	240	250	260			

Standard voltages in bold type letters Operating range of magnet-coils: 0.85 x U $_{\rm s}$ (min value of rated control voltage) up to 1.1 x U $_{\rm s}$ (max value of rated control voltage)

Coil not exchangeable

^{*1} Other coil voltages - see above *2 Contacts suitable for electronic

^{*2} Contacts suitable for electronic circuits, according to EN947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA). Positively guided contacts.





Micro Reversing Contactors, Mechanical Interlock

AC Operated

	Power Ratings AC2, AC3		Rated Aux. Contacts*2 Current Built-in		Additional on the left hand side contactor	t on right hand side		24 230	Coil Voltage *1 24V 50/60Hz 220-240V 50/60Hz		
	AC2, AC3	}	AC1								
	380V 400V 415V kW 3-Pole, W	660V 690V kW	440V A w Termin a	NO NO	L NC	K1 Type	K2 Type		\		Veight g/pc.
	2.2	-	12	-	1	-	-	MA05-R-S-01		1	0.14
ı	2.2	-	12	1	-	-	-	MA05-R-S-10		1	0.14



2.2	-	12	-	1	-	-	MA05-R-S-01	 1	0.14
2.2	-	12	1	-	-	-	MA05-R-S-10	 1	0.14

4-Pole, With Screw Terminals

2.2 - 12 MA05-R-S-0040 1 0.1-	2.2
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3-Pole, With Solder Pins Ø1.15 For Printed Circuit Applications



2.2	-	XXX ^{*3}	-	1	-	-	MA05-R-P-01	 1	0.14
2.2	-	XXX ^{*3}	1	-	-	-	MA05-R-P-10	 1	0.14

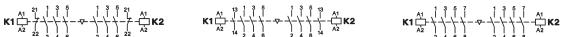
MA05-R-S-01

MA05-R-S-10

MA05-R-S-0040

$$\mathbf{K1} \stackrel{A_1}{\overset{1}{\longleftarrow}} \stackrel{1}{\overset{1}{\longrightarrow}} \mathbf{K2}$$

$$\mathbf{K1} \stackrel{A_1}{\longleftarrow} \stackrel{13}{\longleftarrow} \stackrel{1}{\longleftarrow} \stackrel{1}{\longleftarrow} \stackrel{A_1}{\longleftarrow} \stackrel{A_1}{\longleftarrow} \stackrel{A_2}{\longleftarrow} \mathbf{K2}$$



Other coil voltages - see page 4

^{*1} *2 Contacts suitable for electronic circuits, according to EN947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA). Positively guided contacts.

^{*3} Data available upon request



Data according to IEC 60947-4-1, VDE 0660, EN 60947-4-1

Main Contacts		Туре	MA05-S	MA05-P
Rated insulation voltage U _i		V AC	440*1	440*1
Making capacity I _{eff}	at $U_e = 440 \text{V AC}$	Α	65	65
Breaking capacity $I_{\text{eff}} \cos \varphi = 0.65$	400V AC	Α	50	50
Utilization category AC1 Switching of resistive load				
Rated operational current I_e (= I_{th}) at 40°C, open		Α	12	9
Rated operational power of three-phase resistive loads	230V	kW	4.7	3.5
50-60Hz, $\cos \phi = 1$	240V	kW	4.8	3.7
	400V	kW	8.3	3.3
	415V	kW	8.6	6.4
	440V	kW	9	6.8
Rated operational current I_e (= I_{th}) at 60°C, enclosed		Α	8	6
Rated operational power of three-phase resistive loads	230V	kW	3.1	2.3
50-60Hz, $\cos \varphi = 1$	240V	kW	3.3	2.4
	400V	kW	5.5	4.1
	415V	kW	5.7	4.3
	440V	kW	6	4.5
Minimum cross-section of conductor at load with I_e (= I_{th})		mm²	1.5	-
Utilization category AC2 and AC3 Switching is three phase motors				
Rated operational current I _p	220V	Α	6.2	6.2
open and enclosed	230V	Α	6.2	6.2
	240V	Α	5.6	5.6
	380-400V	Α	5	5
	415-440V	Α	5	5
	480V	Α	5	5
Rated operational power of three-phase motors	220-240V	kW	1.5	1.5
50-60Hz	380-440V	kW	2.2	2.2
Utilization category AC4 Switching of squirrel cage motors, inching				
Rated operational current $I_{\rm e}$	220V	Α	4.9	4.9
open and enclosed	230V	Α	4.9	4.9
	240V	Α	4.1	4.1
	380-400V	Α	3.5	3.5
	415-440V	Α	3.5	3.5
	480V	Α	3.5	3.5
Rated operational power of three-phase motors	220-240V	kW	1.1	1.1
50-60Hz	380-440V	kW	1.5	1.5
Utilization category AC5a Switching of gas discharge lamps				
Rated operational current I _e per pole at 220/230V				
Flourescent lamps			_	•
uncompensated and serial compensated		Α	6	6
parallel compensated		Α	0.5	0.5
dual-connection		А	9	9
Metal halide lamps*2		_	_	_
uncompensated		Α	6	6
parallel compensated		Α	0.5	0.5
Mercury vapour lamps*3			_	
uncompensated		Α	9	9
parallel compensated		A	0.5	0.5
Mixed light lamps*4		А	9	9
LED-lamps				
	s per pole $(I_{nLED} \le I_{th}) =$			t of connector
and cosφ of the lamp				t of lamp/EVG
max. inrush current of contactor		Α	91	91
Utilization category AC5b Switching of incandescent lamps*5				
Rated operational current I _e per pole at 220/230V		Α	3	3

^{*1)} Suitable at 690V for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): Uimp = 4kV. Data for other conditions on request.

^{*2)} Metal halide lamps and sodium-vapour lamps (high- and low-pressure lamps)
*3) High-pressure lamps
*4) Blended lamps, containing a mercury high-pressure unit and a tungsten helix in a flourescent glass bulb (daylight lamps)
*5) Current inrush approx. 16 x le



Data according to IEC 60947-4-1, VDE 0660, EN 60947-4-1

Switching of resistive load 1 pole 24V A 12	Main Contacts			Туре	MA05-S
Switching of resistive load 1 pole 24V A 12	Utilization category DC1				
Rated operational current I, 110V			·		
2200	•			Α	12
3 poles in series 244	Rated operational current	I _e		Α	-
Militization category DC3 and DC5 1100				Α	
110V A 12 220V A -			3 poles in series 24V	Α	
220V A				Α	
### Description of Shunt motors and Series motors 1 pole 24V				Α	12
Switching of shunt motors and series motors			220V	Α	-
Fire constant L/R ≤ 15ms				_	
Time constant L/R ≤15ms Rated operational current 1,	Switching of shunt motor	rs and series motors	•		12
Rated operational current I					-
Spoles in series 24V	•				-
A	Rated operational current	I _e			1
110V			·	Α	
Maximum ambient temperature Operation Operatio				Α	
Maximum ambient temperature Operation Open OC -40 to +60 (+90)					
Operation open "C 40 to +60 (+90) enclosed "C 40 to +60 (+90) enclosed "C 40 to +40 (+90) enclosed "C 45 to +60 (+90) enclosed "C 45 to +90 (+			220V	A	-
with thermal overload relay with thermal overload relay corollated relay corollated relay coordination-type "1" according to IEC 947-4-1 Contract welding without hazard of persons max. fuse size coordination-type "2" according to IEC 947-4-1 Contact welding accepted max. fuse size contact welding not accepted for contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size contactor or thermal overload relay the flexible with multicore cable end filexible with multicore cable end mm² 0.5-1.5 flexible with multicore cable end mm² 0.5-1.5 flexible with multicore cable end mm² 0.5-1.5 contactors without thermal overload relay ACG I, 1/h 10000 Mechanical life AC operated Sx 10° 3 Coperated Sx 10° Coperated Sx 10° Coperated Coperate		erature			40.1
with thermal overload relay open enclosed "C" -25 to +60 enclosed "C" -25 to +60 enclosed "C" -25 to +40 enclosed "C" -25 to +40 enclosed "C" -50 to +90 enclosed "C" -50 to +90 enclosed "C" -50 to +90 enclosed without thermal overload relay encording to IEC 947-4-1 encording without hazard of persons grax. fuse size gL (gG) A = 20 encordination-type "2" according to IEC 947-4-1 encording encording to IEC 947-4-1 encording encording encording to IEC 947-4-1 encording encor	Operation		·		
Storage enclosed °C -25 to +40 Storage °C -50 to +90 Storage °C -50 to +90 Short circuit protection for contactors without thermal overload relay Coordination-type "1" according to IEC 947-4-1 Contact welding without hazard of persons gax, fuse size Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted gL (gG) A - max, fuse size Contact welding not accepted gL (gG) A - max, fuse size Contact welding not accepted gL (gG) A - For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector glaving flexible with multicore cable end mm² 0.5-1.5 Cables per clamp solid or stranded flexible without load 1/h 10000 contactors without thermal overload relay without load 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC4 I, 1/h 120 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 contactors without thermal overload relay AC3 I, 1/h 600 cont			enclosed		
Short circuit protection for contactors without thermal overload relay Coordination-type "1" according to IEC 947-4-1 Contact welding without hazard of persons axx. fuse size Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted maxx. fuse size Contact welding not accepted max. fuse size Contact or or thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector flexible with multicore cable end mm² 0.5-1.5 Cables per clamp 2 Solid or stranded mm² 0.5-1.5 Cables per clamp 2 Solid or stranded MWG 20-14 Frequency of operation z without load 1/h 10000 Contactors without thermal overload relay AC3 I, 1/h 600 Mechanical life AC operated Sx 10° 3 DC operated Sx 10	with thermal overload rela	ny	open		
Short circuit protection for contactors without thermal overload relay Coordination-type "1" according to IEC 947-4-1 Contact welding without hazard of persons gL (gG) A 20 Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted gL (gG) A - Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size Contact welding not accepted max. fuse size Gror contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector flexible with multicore cable end mm² 0.5-1.5 Cables per clamp Solid or stranded MG 20-14 Frequency of operation z contactors without thermal overload relay AC3 I, 1/h 600 AC4 I, 1/h 120 Contactors without thermal overload relay Mechanical life AC operated S x 10° 3 DC operated S x 10° 3 Short time current 10s-current A 50 Power loss per pole at I _v /AC3 400V W 0.2 Resistance to shock according to IEC 68-2-27 Shick time 20ms sine-wave AC operated NO g 2.5			enclosed		-25 to +40
Coordination-type "1" according to IEC 947-4-1 Contact welding without hazard of persons max. fuse size Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size Contact welding not accepted max. fuse size Contact welding not accepted max. fuse size Contact welding not accepted max. fuse size Contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector flexible with multicore cable end flexible with multicore cable end mm²	Storage			°C	-50 to +90
Contact welding without hazard of persons max. fuse size gL (gG) A - Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted gL (gG) A - Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size gL (gG) A - Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size gL (gG) A - Coordination-type size gL (gG) A - Coordination with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector flexible mm² 0.5-1.5 mm² 0.5-1.5 mm² 0.5-1.5 mm² 0.5-1.5 cables per clamp	Short circuit protection for contactors without the	ermal overload relay			
Contact welding without hazard of persons max. fuse size gL (gG) A - Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted gL (gG) A - Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size gL (gG) A - Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size gL (gG) A - Coordination-type size gL (gG) A - Coordination with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector flexible mm² 0.5-1.5 mm² 0.5-1.5 mm² 0.5-1.5 mm² 0.5-1.5 cables per clamp	Coordination-type "1" acc	cording to IEC 947-4-1			
Coordination-type "2" according to IEC 947-4-1 Light contact welding accepted max. fuse size gL (gG) A -			al (aG)	Α	20
Light contact welding accepted max. fuse size Contact welding not accepted max. fuse size Contact welding not accepted max. fuse size gL (gG) A - For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector Flexible with multicore cable end mm² 0.5-1.5 mm² 0.5-1.5 Cables per clamp Frequency of operation z without thermal overload relay Contactors without thermal overload relay Mechanical life AC operated Sx 106 Sx 106 Sx 106 Mechanical life AC operated Sx 106 Sx	max. fuse size	.a.a.a. 6. pe. 66.16	9= (9=/)		
Light contact welding accepted max. fuse size Contact welding not accepted max. fuse size Contact welding not accepted max. fuse size gL (gG) A - For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector Flexible with multicore cable end mm² 0.5-1.5 mm² 0.5-1.5 Cables per clamp Frequency of operation z without thermal overload relay Contactors without thermal overload relay Mechanical life AC operated Sx 106 Sx 106 Sx 106 Mechanical life AC operated Sx 106 Sx	Coordination tuna "0" and	pording to IEC 047 4 1			
Contact welding not accepted max, fuse size gL (gG) A - For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector solid or stranded flexible mm² 0.5-1.5 flexible with multicore cable end mm² 0.5-1.5 flexibles per clamp 2 0.5-1.5 cables per clamp 2 2 solid or stranded AWG 20-14 Frequency of operation z without load 1/h 10000 AC3 l 1/h 600 AC4 l 1/h 120 Contactors without thermal overload relay AC3 l 1/h 600 AC4 l 1/h 120 DC3 l 1/h 600 AC4 l 1/h 120 DC3 l 1/h 600 AC4 l 1/h 120 DC3 l 1/h 600 AC4 l 1/h 120 AC5 l 1/h 600			al (aG)	Δ	_
max, fuse size gL (gG) A	max, fuse size	optou	gr (ga)	А	
max, fuse size gL (gG) A	Contact wolding not acce	ntod			
For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector solid or stranded flexible mm² (0.5-1.5) flexible with multicore cable end mm² (0.5-1.5) flexible per clamp 2 Cables per clamp 2 Solid or stranded AWG (20-14) Frequency of operation z without load 1/h 10000 AC3 I, 1/h 600 AC4 I, 1/h 120 DC3 I,	•	pied	al (aC)	٨	
device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size Cable cross-sections for contactors main connector solid or stranded flexible mm² 0.5-1.5 flexible with multicore cable end mm² 0.5-1.5 flexible per clamp 2 0.5-1.5 flexible with multicore cable end mm² 0.5-1.5 flexible per clamp 2 2 solid or stranded AWG 20-14 Frequency of operation z without load 1/h 10000 AC3 I 1/h 600 AC4 I 1/h 120 DC3 I 1/h 120			gr (gd)	٨	
Solid or stranded flexible mm² (0.5-1.5)	device with the smaller ac	lmissible backup fuse			
Solid or stranded flexible mm² (0.5-1.5)	Cable erece continue				+
Solid or stranded flexible mm² 0.5-1.5 0.5-1.5 mm²	for contactors				
Solid or stranded Soli	main connector				
Cables per clamp Solid or stranded AWG 20-14					
Solid or stranded AWG 20-14	Oablas assal		ilexible with multicore cable end	rnm⁴	
Trequency of operation z	Caples per clamp		2200	AVACO	
AC3 1/h 600 AC4 1/e 1/h 120 DC3 1/h 600 Mechanical life					
AC4 1/h 120 DC3 1/h 600 Mechanical life	Frequency of operation z	l al overload relay			
DC3 1/h 600	CONTROLORS WILLIOUT THERMS	ai uvenuau reiay	· ·		
Mechanical life AC operated DC operated S x 106 S x 1			· ·		
DC operated S x 106 xxxx*2	Machanical IIIa	AC or existed	· ·		
Short time current 10s-current A 50 Power loss per pole at I _g /AC3 400V W 0.2 Resistance to shock according to IEC 68-2-27 Shick time 20ms sine-wave NO g 2.5 AC operated NO g 2.5	IVIECNANICAI IITE				
Power loss per pole at I _g /AC3 400V W 0.2 Resistance to shock according to IEC 68-2-27 Shick time 20ms sine-wave AC operated NO g 2.5		DO obelated			
Resistance to shock according to IEC 68-2-27 Shick time 20ms sine-wave AC operated NO g 2.5		,			
Shick time 20ms sine-wave AC operated NO g 2.5			at I ₂ /AC3 400V	W	0.2
AC operated NO g 2.5					
		••	NO	O	2.5
	oporatou				

^{*1} With reduced control voltage range 0.9 up to 1.0 x U_s and with reduced rated current I_s/AC1 according to I_s/AC3

^{*2} Data on request



Data according to IEC 60947-5-1, VDE 0660, EN 60947-5-1

Auxilliary Contacts		Туре	MA04-S MA05-S
Rated insulation voltage	U _i	VAC	440*1
Thermal rated current I _{th} bis 440V	4000		_
Ambient temperature	40°C 60°C	A	5
Device less ner rele		A W	-
Power loss per pole	I _th	VV	0.25
Utilization category AC15	000 0407	Δ	
Rated operational current I _e	220-240V	A	3
	380-415V 440V	A A	1.5
Utilization category DC13	4407	A	'
Rated operational current I	60V	Α	0.5
е			-
Maximum ambient temperature			-
Operation	open	°C	$-40 \text{ bis to } +60 \ (+90)^{*2}$
01	enclosed	°C	-40 bis to +40
Storage		°C	-40 bis to +90
Short circuit protection			
short circuit current 1kA,			
contact welding not accepted	gL (gG)	Α	10
max fuse size			
For contactors with thermal overload relay the			
device with the smaller admissible control fuse			
(contactor or thermal overload relay) determines the fuse size			
Power consumption of coils			
AC operated	inrush	VA	9 4
	sealed	VA	
		W	1.8
Operation range of coils in multiples of control voltage $\rm U_{_{\rm S}}$			0.85 - 1.1
Switching time at control voltage $U_s \pm 10\%^{*3*4}$			0.00
AC operated	make time	ms	13 - 18
·	release time	ms	5 - 10
	arc duration	ms	10 - 15
DC operated	make time	ms	-
	release time	ms	-
	arc duration	ms	-
Cable cross-section all connectors	colid	mm²	05 15
all collificators	solid flavible	mm²	05 - 1.5
	flexible flexible flexible with multicore cable end	mm² mm²	0.5 - 1.5 0.5 - 1.5
Clamps per pole	HOAIDIG WILLI HILLILICUTE CADIC CHIL	111111	2
οιαπρο ρει ρυισ	solid or stranded	AWG	20 - 14
	Solid of Strailded	AVVU	20-14

Suitable at 690V for: earthed-neutral systems, overvoltage category I to III, polution degree 3 (standard-industry): Uimp = 4kV Data for other conditions on request

With reduced control voltage range 0.9 up to 1.0 x U_s and with reduced thermal rated current I_t to I_t /AC15 Summary switching time = release time + arc duration

^{*2} *3 *4

Release time of NC make time of NO increase when suppressor units for voltage peak protection are used (Varistor, RC-units, Diode units)

Data on request





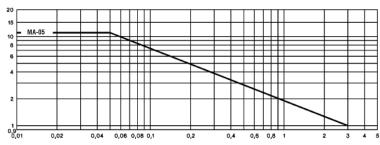
For North America - Data according UL508

Main Contacts (cULus)		Туре	MA05-S MA05-R-S	MA04-S
Rated operational current "General Use"		А	12	5
Rated operational power of three motors	110-120V	hp	1/2	-
at 60Hz (3ph)	200-208V	hp	1	-
	220-240V	hp	1	-
	277V	hp	1½	
Rated operational power of AC motors	110-120V	hp	1/6	-
at 60Hz (1ph)	200-208V	hp	1/2	-
	220-240V	hp	3/4	
Fuse / Short circuit current		A/kA	30/5	-
Rated voltage		VAC	300	300
Auxilliary contacts (cULus)	heavy pilot duty Standard pilot duty	AC DC	B300 R300	B300 R300

Motor Rating P _n =AC4	Motor Rating P _n =AC3
380/ 220/ 400V 230V kW kW	380/ 220/ 400V 230V kW kW
- 6,5 - 3 - 4 - 2,2 - 3 - 1,5 - 2,2 - 1,1 - 1,5 - 0,75 - 1,1 - 0,55 - 0,37 - 0,25 - 0,25	37



Α



Millions of Operations

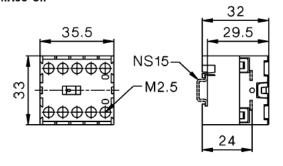


Dimensions

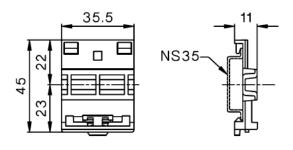
AC Operated

with screw terminals

MA04-S.. MA05-S..



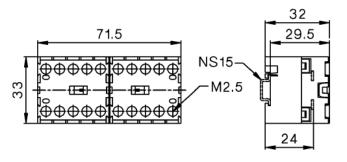
Snap-On Adaptor MA-P1039



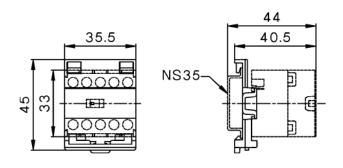
Reversing Contactors

with screw terminals

MA05-R-S..



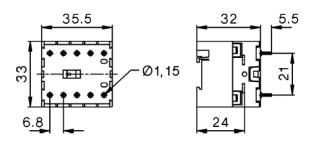
MA..-S.. with Snap-On Adaptor MA-P1039



AC Operated

with solder connections

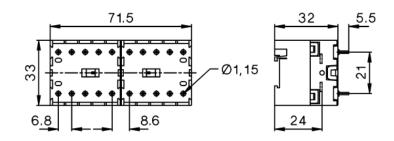
MA04-P.. MA05-P..



Reversing Contactors

with solder connections

MA05-R-S..



Mounting positions of contactors

