

Beyond

TM Meta-MEC
Mini Contactors &
Overload Relays



LS ELECTRIC

Meta-MEC Mini Contactors & Overload Relays

**Customer satisfaction with world-class products and services:
LS Electric is committed to excellence!**

We are committed to global product development and market expansion,
driving future growth, as well as consolidating existing business.
Join us in a future where LS Electric will become a genuine global leader.



Screw clamp type



Fast-on type



Cage clamp type



Solder pin type



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Compact & Space Saving

LS Mini contactors & starters



LS Mini contactors and starters are suitable for switching and protection of small motors up to 7.5kW, lights and electric heating circuits. KEMA type tested as a global product that meets international standards such as UL, CCC, Safe Certification and CE.



LS Mini -contactors and starters

Suitable for switching and protection of motors, capacitor banks, lights and more in AC circuit.

The products provide the convenience of connection and mounting by terminal options such as Cage clamp, Fast-on, Solder pin and Screw Terminal. Dedicated thermal style overload relays can be easily attached for motor protection. Various accessories are also available, including surge unit, timer unit and auxiliary contact unit.

These products can be driven from the output of PLC. Low power consumption type contactor is available for this purpose, which requires no relay between contactor and PLC.



Contactors

Environmental conditions

- Ambient temperature: -5 ~ 40°C (standard 20°C)
- Max. temp. inside a panel: 55°C
- Relative humidity: 45 ~ 85% RH
Altitude: max. 2,000m
- Vibration: 10 ~ 55Hz, 2g
- Shock resistance: 5g
- Storage temperature: -30 ~ 65°C

Reference standards

- IEC 60947-4
- UL 508

Certification

- ISO 9001, ISO 14001
- UL, CE, safety certification, CCC



Low Consumption

The low power consumption type contactor, a product that combines the advantages of the relay and the magnetic contactor, can be driven directly by the small output of the PLC. As a result, the relay and space in the panel are not required.

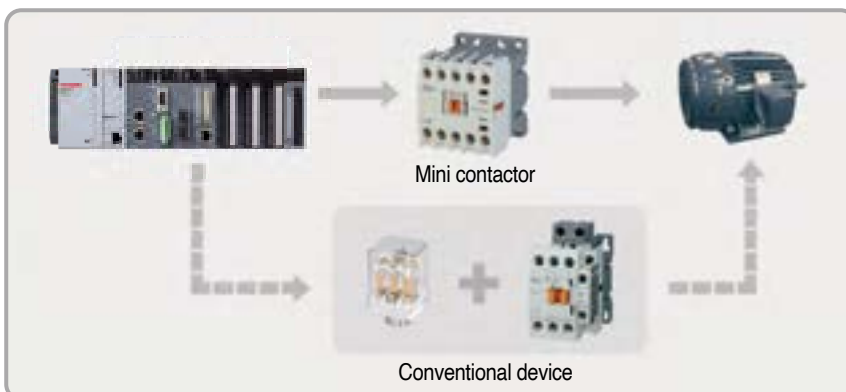
Direct driving by:

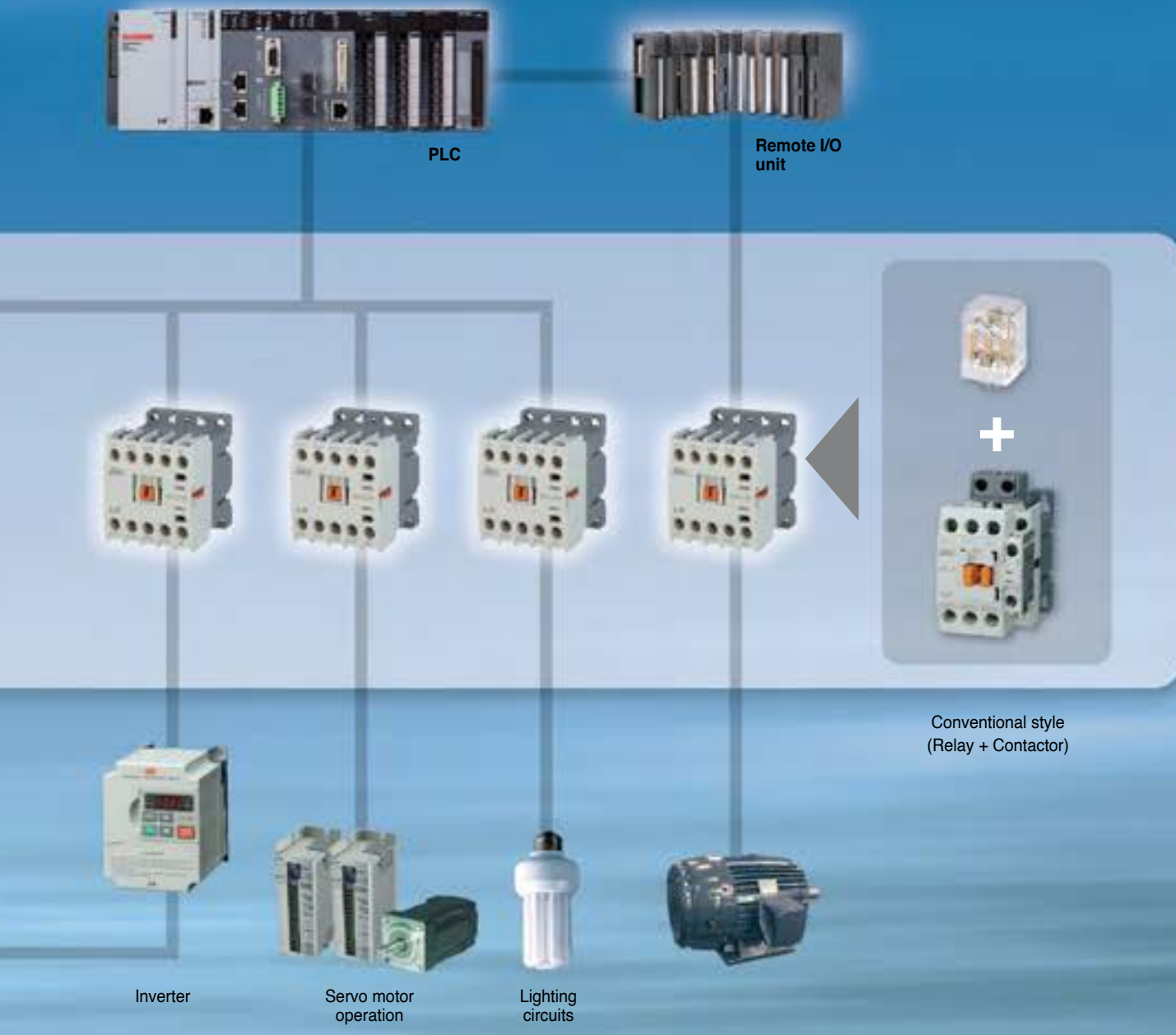
- PLC output contact
- Photoelectric switch and proximity switch
- Transistor output of various detection



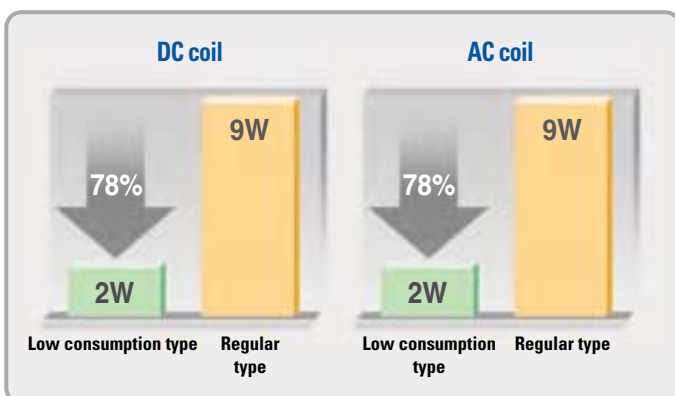
AC 380V
7.5kW
16A
or under

Direct driving by PLC output





Reduced power consumption rate

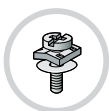
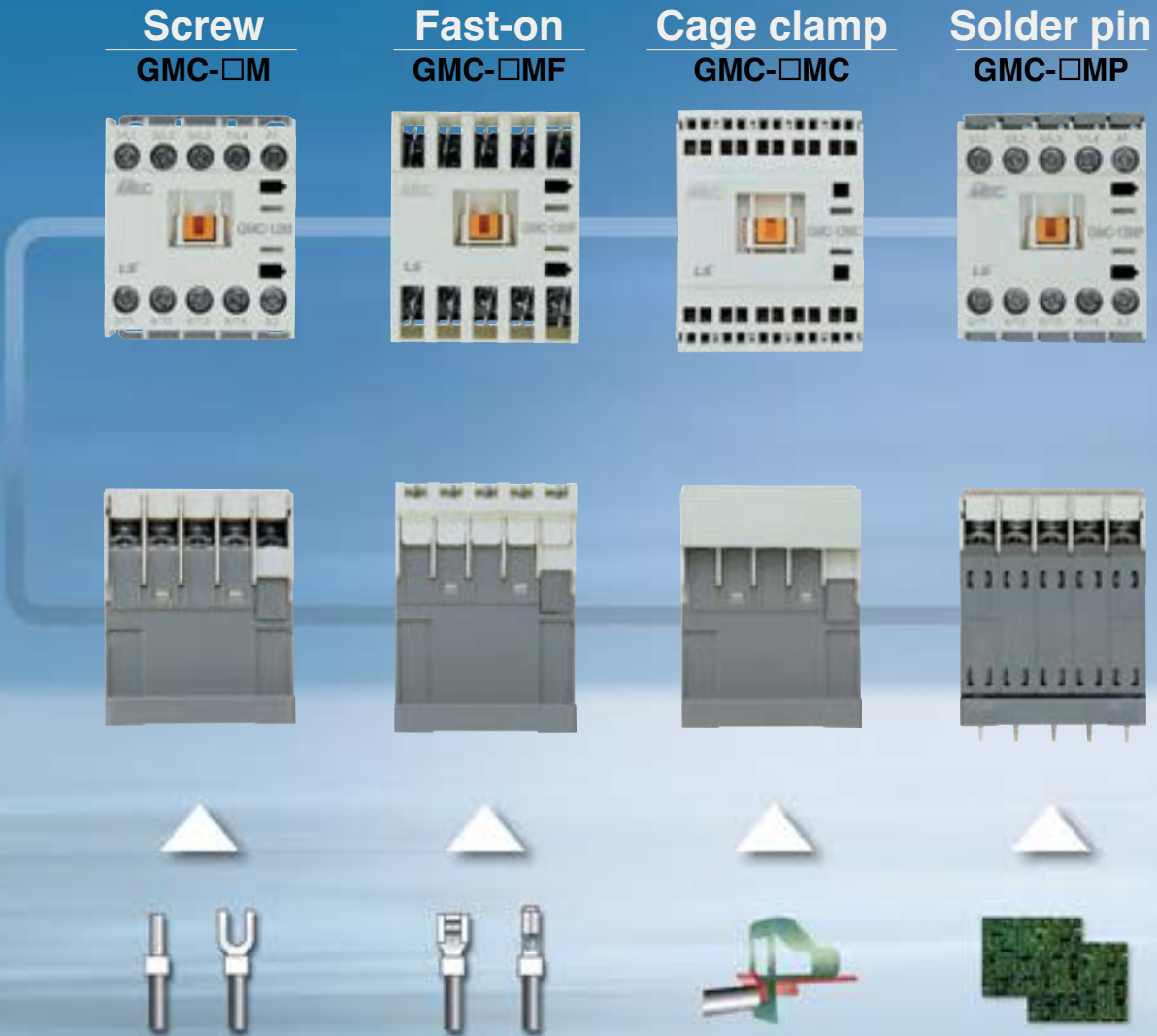


Control coil characteristics

Coil Type	AC coil (50/60Hz)	DC		
		Regular	Wide	
Power consumption (W)	2	3	2	
Control voltage (V)	24~550	12~550	12, 20, 24, 48, 72, 110, 120	
Operation voltage (%)	Pick-up	80 or under	75 or under	70 or under
	Release	20 or over	12 or over	12 or over
Operation time (ms)	Coil ON → Contact ON	20 or under	50 or under	50 or under
	Coil OFF → Contact OFF	45 or under	45 or under	45 or under

Convenience

Four terminal options for various applications



Screw terminal

Standard type with M3 screw for connection with a ring or U type terminal



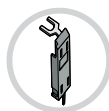
Fast-on terminal

Plug-in style for connection with a quick-connector. (2.8×0.8t/6.3×0.8t common)



Cage clamp terminal

Suitable for direct wire connection



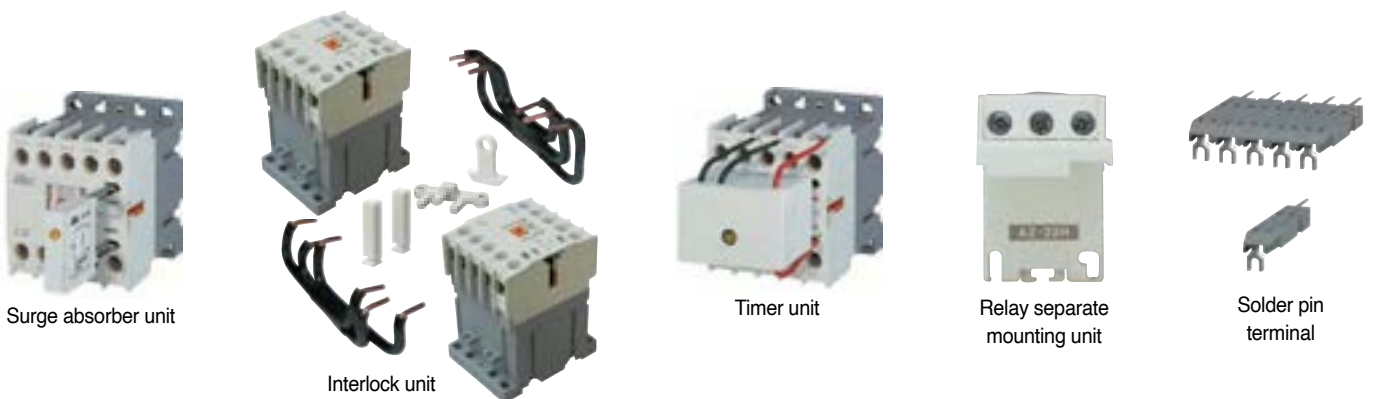
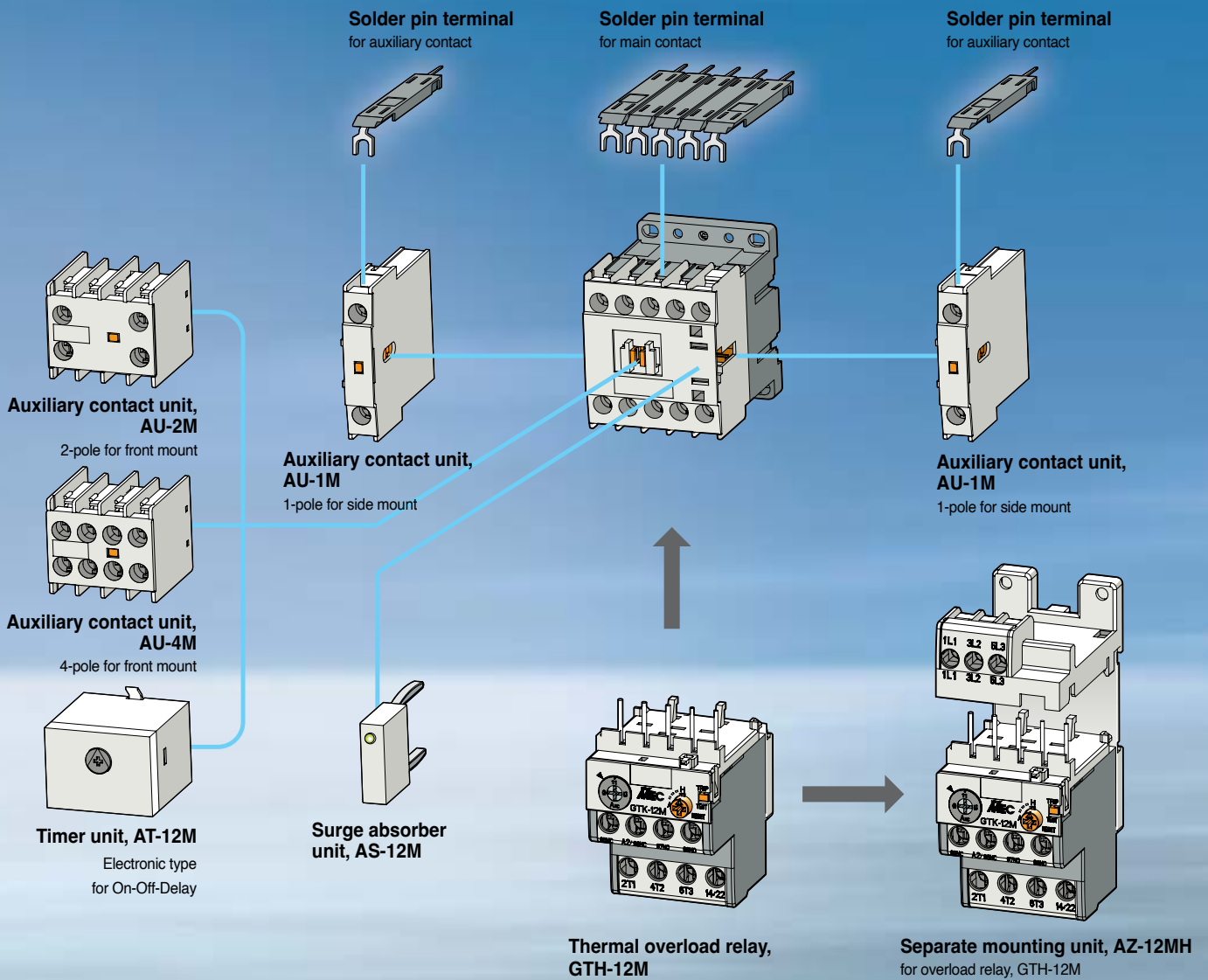
Solder pin terminal

For mounting on PCB

Auxiliary contact units

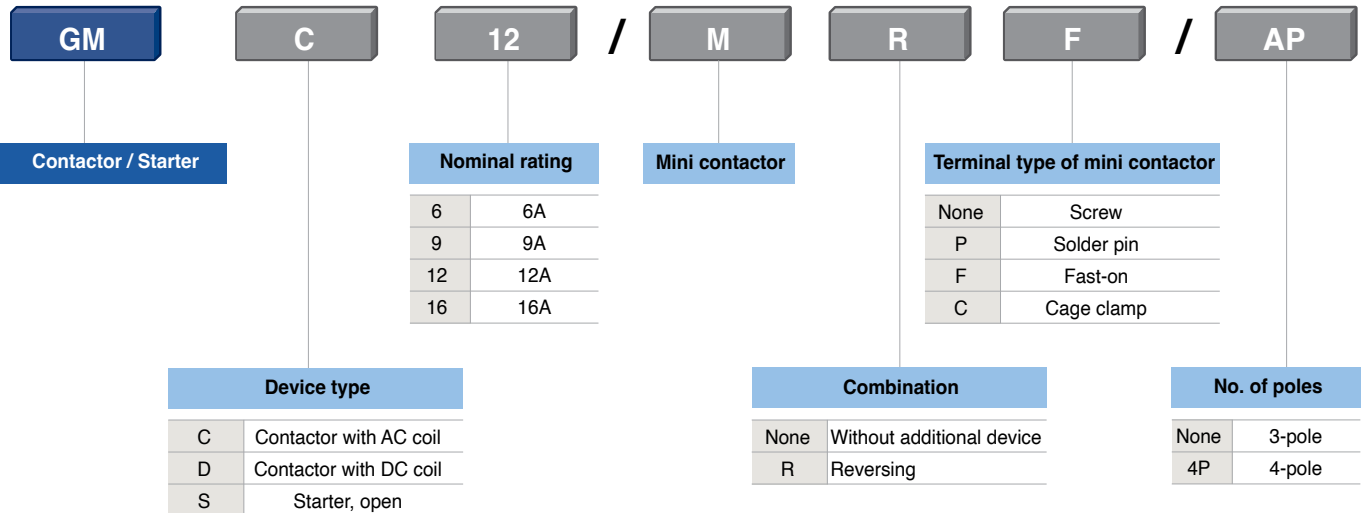
Item	Screw	Fast-on	Cage clamp	Solder pin
Side mount				
2-pole, Front mount				×
4-pole, Front mount				×

Accessories

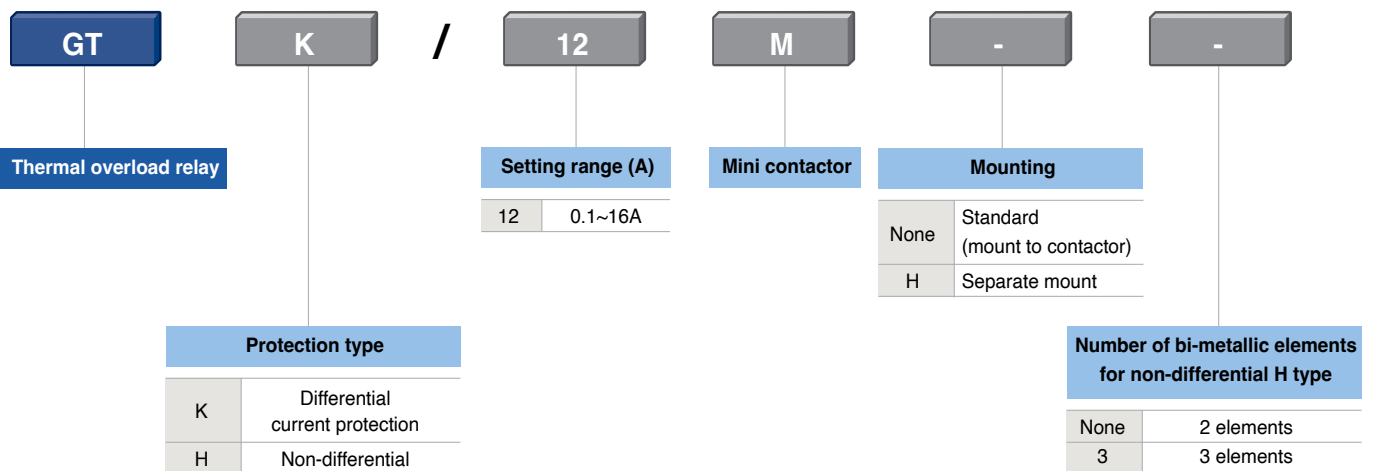


Catalog numbering system

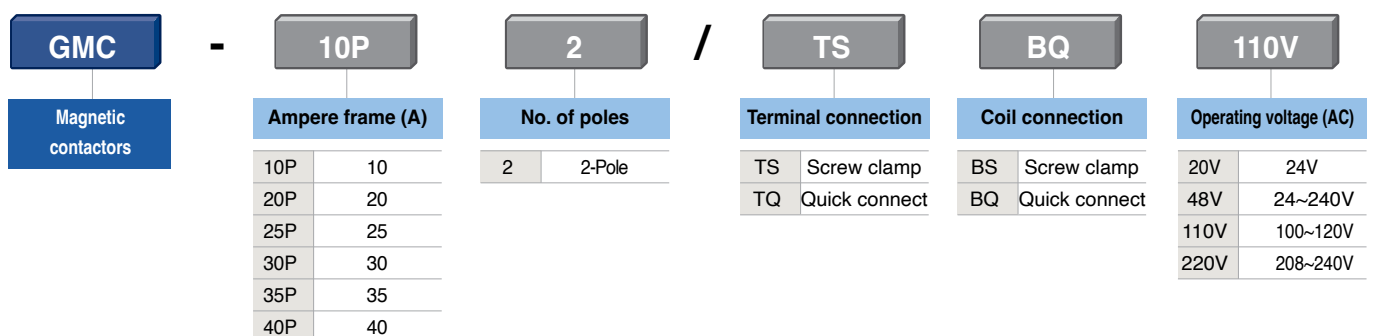
Contactors & Starters



Thermal overload relay



2-pole contactors



Auxiliary contact

AU	-	1	M	F		40																																
Auxiliary contact		No. of poles	Mini contactor	Terminal type of mini contactor		Contact configuration																																
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">1</td><td>1-pole</td></tr> <tr><td>2</td><td>2-pole</td></tr> <tr><td>3</td><td>3-pole</td></tr> </table>	1	1-pole	2	2-pole	3	3-pole		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">None</td><td>Screw</td></tr> <tr><td>F</td><td>Fast-on</td></tr> <tr><td>C</td><td>Cage clamp</td></tr> </table>		None	Screw	F	Fast-on	C	Cage clamp	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">10</td><td>1a</td><td>40</td><td>4a</td></tr> <tr><td>01</td><td>1b</td><td>31</td><td>3a1b</td></tr> <tr><td>20</td><td>2a</td><td>22</td><td>2a2b</td></tr> <tr><td>11</td><td>1a1b</td><td>13</td><td>1a3b</td></tr> <tr><td>02</td><td>2b</td><td>04</td><td>4b</td></tr> </table>	10	1a	40	4a	01	1b	31	3a1b	20	2a	22	2a2b	11	1a1b	13	1a3b	02	2b	04	4b
1	1-pole																																					
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01	1b	31	3a1b																																			
20	2a	22	2a2b																																			
11	1a1b	13	1a3b																																			
02	2b	04	4b																																			

Note) 1. Solder pin unit (AP-1M (D) must be purchased separately for the auxiliary contact for solder pin mini contactor.

Timer unit

AT	-	12	M	/	1	-	N								
Timer unit		Nominal rating	Mini contactor		Operating voltage		Delay method								
					<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">1</td><td>AC/DC 24~48V</td></tr> <tr><td>2</td><td>AC 100~200V</td></tr> </table>		1	AC/DC 24~48V	2	AC 100~200V	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">N</td><td>ON Delay</td></tr> <tr><td>F</td><td>OFF Delay</td></tr> </table>	N	ON Delay	F	OFF Delay
1	AC/DC 24~48V														
2	AC 100~200V														
N	ON Delay														
F	OFF Delay														

Serge unit

AS	-	12	M	/	1																	
Serge unit		Nominal rating	Mini contactor		Operating voltage																	
					<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">1</td><td>AC 24~48V</td><td>4</td><td>DC 12~24V</td></tr> <tr><td>2</td><td>AC 60~127V</td><td>5</td><td>DC 30~72V</td></tr> <tr><td>3</td><td>AC 200~240V</td><td>6</td><td>DC 100~127V</td></tr> <tr><td></td><td></td><td>7</td><td>DC 200~250V</td></tr> </table>		1	AC 24~48V	4	DC 12~24V	2	AC 60~127V	5	DC 30~72V	3	AC 200~240V	6	DC 100~127V			7	DC 200~250V
1	AC 24~48V	4	DC 12~24V																			
2	AC 60~127V	5	DC 30~72V																			
3	AC 200~240V	6	DC 100~127V																			
		7	DC 200~250V																			

Solder pin unit

AP	-	12	M	/	D									
Solder pin unit		Unit distribution	Mini contactor		Operating voltage type									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">1</td><td>Auxiliary</td></tr> <tr><td>12</td><td>Contactor</td></tr> </table>	1	Auxiliary	12	Contactor			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">None</td><td>AC</td></tr> <tr><td>D</td><td>DC</td></tr> </table>		None	AC	D	DC
1	Auxiliary													
12	Contactor													
None	AC													
D	DC													

Single mounting unit

AZ	-	12	MH
Thermal overload relay single mounting unit		Nominal rating	Mini contactor

Interlock unit

AR	-	12	M	/	W					
Interlock unit		Nominal rating	Mini contactor		Wiring					
					<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">None</td><td>No wiriang</td></tr> <tr><td>W</td><td>Wiring Included</td></tr> </table>		None	No wiriang	W	Wiring Included
None	No wiriang									
W	Wiring Included									

Quick selection table

Mini contactors

3NO main contacts
1 auxiliary contacts



Screw clamp type



Fast-on type



Cage clamp type



Solder pin type

Frame size		6A		9A		12A		16A	
Screw clamp type	AC coil	GMC-6M		GMC-9M		GMC-12M		GMC-16M	
	DC coil	GMD-6M		GMD-9M		GMD-12M		GMD-16M	
Fast-on type	AC coil	GMC-6MF		GMC-9MF		GMC-12MF		GMC-16MF	
	DC coil	GMD-6MF		GMD-9MF		GMD-12MF		GMD-16MF	
Cage clamp type	AC coil	GMC-6MC		GMC-9MC		GMC-12MC		GMC-16MC	
	DC coil	GMD-6MC		GMD-9MC		GMD-12MC		GMD-16MC	
Solder pin type	AC coil	GMC-6MP		GMC-9MP		GMC-12MP		GMC-16MP	
	DC coil	GMD-6MP		GMD-9MP		GMD-12MP		GMD-16MP	
Ratings / IEC60947-4		kW	A	kW	A	kW	A	kW	A
AC1		20		20		20		20	
	200/240V	1.5	7	2.2	9	3	12	4	16
AC3	380/440V	2.2	6	4	9	5.5	12	7.5	16
	500/550V	3	5	3.7	6	4	7	5.5	9
	690V	3	4	4	5	4	5	4	5
Ratings / UL508		hp	A	hp	A	hp	A	hp	A
Continuous current		I _{th} = 20A (maximum for cage clamp type is 10A)							
Single phase	120V	1/2		1/2		1 *		-	
	230V/240V	1		1.5		2 **		-	
Three phase	240V	1.5		3		3		-	
	480V	3		5		7.5 ***		-	
	600V	3		5		7.5		-	
		Wire Range : Copper, 75°C, Stranded, 18-12AWG							
NEMA size		00		00		00		0	
Additional auxiliary contacts		Screw clamp type		Fast-on type		Cage clamp type		Solder pin type	
2-pole, Front mount	AU-2M			AU-2MF		AU-2MC			
	4-pole, Front mount	AU-4M			AU-4MF		AU-4MC		
2-pole, Side mount				AU-1MF		AU-1MC			

*0.5 hp for cage clamp type 16AF: Not UL approved
 **1.5 hp for cage clamp type
 ***5 hp for cage clamp type

Overload Relays

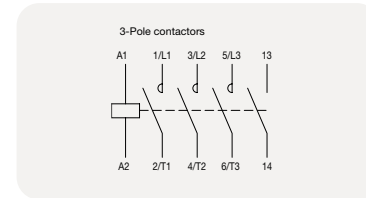
Bimetallic style Type GT Class 10A	GT-12M	Setting ranges (A) 0.1 - 0.16 0.16 - 0.25 0.25 - 0.4 0.4 - 0.63 0.63 - 1 1 - 1.6 1.6 - 2.5 2.5 - 4	4 - 6 5 - 8 6 - 9 7 - 10 9 - 13 12 - 16	Base for separate mount
	Differential	GTK-12M		
	Non-differential (3-heater)	GTH-12M/3		
	Non-differential (2-heater)	GTH-12M		

AC coil

Contactors

- Motor control applications
- 3 main + 1 auxiliary contacts
- AC coil voltage

Circuit diagram



Screw clamp connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6M
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9M
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12M
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16M



Fast-on connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MF
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MF
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MF
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16MF

Coil voltage, AC 50/60Hz

24, 36, 42, 48, 110, 115, 120, 127, 200 / 208, 220, 220 / 230, 230 / 240, 256, 277, 380 / 400
400, 440, 480, 500, 550V AC

Performance (at 440VAC)

Frame size	6A	9A	12A	16A
Operation current	6A	9A	12A	16A
Making current	72A	108A	144A	180A
Breaking current	60A	90A	120A	150A
Operation cycle	1800 operations/hour			
Endurance	• Electrical : 1 mil. operations • Mechanical : 10 mil. operations			

Note: 16A frame is not UL listed item.

Coil characteristics

Coil voltage	AC
Coil consumption (W)	2
Inrush	32VA
Sealed	6VA
Closing voltage (%)	80~110
Opening voltage (%)	20~40
Closing time (ms)	10~20
Opening time (ms)	35~45

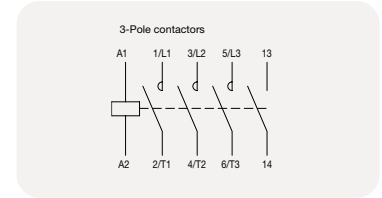
Certificate
CE, ULcUL

AC coil

Contactors

- Motor control applications
- 3 main + 1 auxiliary contacts
- AC coil voltage

Circuit diagram



Cage clamp connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MC
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MC
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MC
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16MC

Solder pin connection types



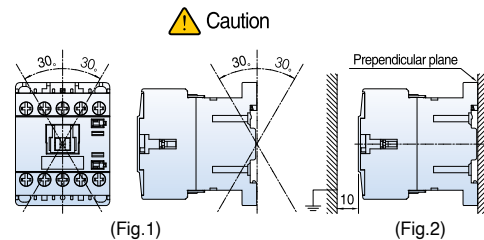
Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MP
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MP
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MP
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16MP

Coil voltage, AC 50/60Hz

24, 36, 42, 48, 110, 115, 120, 127, 200 / 208, 220, 220 / 230, 230 / 240, 256, 277, 380 / 400, 400, 440, 480, 500, 550V AC

Ordering information

Type, Auxiliary contact and Coil voltage



* For even installation direction refer to Fig.1

Keep the distance more than 0.39 in.(10mm) with arc space, as shown in Fig.2

Certificate

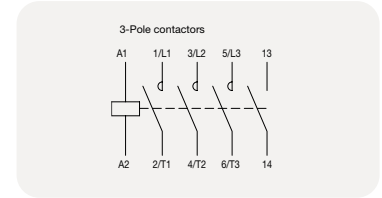
CE, ULcUL

DC coil

Contactors

- Motor control applications
- 3 main + 1 auxiliary contacts
- DC coil voltage

Circuit diagram



Screw clamp connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6M
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9M
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12M
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16M

Fast-on connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MF
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MF
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MF
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16MF

Coil voltage, DC

- ① Standard type : 12, 20, 24, 36, 42, 48, 60, 72, 110, 120, 125, 220, 240, 250V DC
- ② Low consumption type : 12, 20, 24, 48, 72, 110, 120V DC(Low)
- ③ Wide Voltage : 12, 20, 24, 48, 72, 110, 12V DC(Wide)

Ordering information

Type, Auxiliary contact and Coil voltage

Coil characteristics

Coil voltage	DC		
	Standard	Low consumption	Wide voltage
Coil consumption (W)	3	1.2	2
Inrush	3W	1.2W	2W
Sealed	3W	1.2W	2W
Closing voltage (%)	80~110	80~125	70~125
Opening voltage (%)	10~30	10~30	10~30
Closing time (ms)	40~50	40~50	40~50
Opening time (ms)	35~45	35~45	35~45

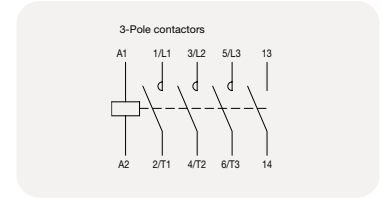
Certificate
CE, ULcUL

DC coil

Contactors

- Motor control applications
- 3 main + 1 auxiliary contacts
- DC coil voltage

Circuit diagram



Cage clamp connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MC
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MC
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MC
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16MC

Solder pin connection types



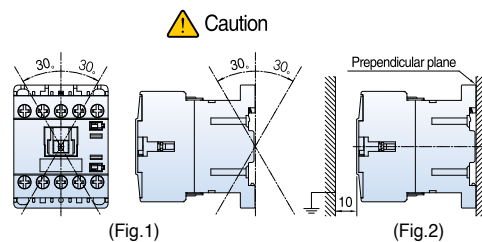
Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MP
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MP
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MP
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16MP

Coil voltage, DC

- ① Standard type : 12, 20, 24, 36, 42, 48, 60, 72, 110, 120, 125, 220, 240, 250V DC
- ② Low consumption type : 12, 20, 24, 48, 72, 110, 120V DC(Low)
- ③ Wide Voltage : 12, 20, 24, 48, 72, 110, 12V DC(Wide)

Ordering information

Type, Auxiliary contact and Coil voltage



*For even installation direction refer to Fig.1
Keep the distance more than 0.39 in.(10mm) with arc space, as shown in Fig.2

Certificate
CE, ULcUL

Starters

- Open types
- Direct (Full voltage) types
- AC coil voltage
- Contactors : screw clamp connection types
- Overload relays : differential or non-differential types



AC coil contactor + Differential type overload relay

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contacts	Starter Type
Contactor (AC coil)	Overload (differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-6M	GTK-12M	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	1NO or 1NC	GMS-6M/K
GMC-9M	GTK-12M	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	1NO or 1NC	GMS-9M/K
GMC-12M	GTK-12M	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	1NO or 1NC	GMS-12M/K
GMC-16M	GTK-12M	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	1NO or 1NC	GMS-16M/K

AC coil contactor + Non-differential type overload relay

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contacts	Starter Type
Contactor (AC coil)	Overload (differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-6M	GTH-12M/3	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	1NO or 1NC	GMS-6M
GMC-9M	GTH-12M/3	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	1NO or 1NC	GMS-9M
GMC-12M	GTH-12M/3	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	1NO or 1NC	GMS-12M
GMC-16M	GTH-12M/3	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	1NO or 1NC	GMS-16M

Coil voltage, AC 50/60Hz

24, 36, 42, 48, 110, 115, 120, 127, 200 / 208, 220, 220 / 230, 230 / 240, 256, 277, 380 / 400
400, 440, 480, 500, 550V AC

Ordering information

Type, Auxiliary contact and Coil voltage
Overload relay setting range

Certificate
CE, ULcUL

Reversing contactors

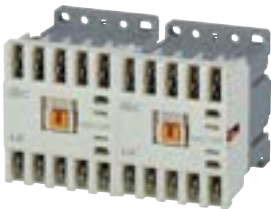
- Motor control applications
- Mechanically interlocked
- AC coil voltage

Screw clamp connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MFR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MFR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MFR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16MFR

Fast-on connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MFR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MFR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MFR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16MFR

Coil voltage, AC 50/60Hz

24, 36, 42, 48, 110, 115, 120, 127, 200 / 208, 220, 220 / 230, 230 / 240, 256, 277, 380 / 400, 400, 440, 480, 500, 550V AC

Certificate
CE, ULcUL

Ordering information

Type, Auxiliary contact and Coil voltage

Reversing contactors

- Motor control applications
- Mechanically interlocked
- AC coil voltage

Cage clamp connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MCR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MCR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MCR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16MCR

Solder pin connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MPR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MPR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MPR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-16MPR

Coil voltage, AC 50/60Hz

24, 36, 42, 48, 110, 115, 120, 127, 200 / 208, 220, 220 / 230, 230 / 240, 256, 277, 380 / 400, 400, 440, 480, 500, 550V AC

Ordering information

Type, Auxiliary contact and Coil voltage

Certificate
CE, ULcUL

Reversing contactors

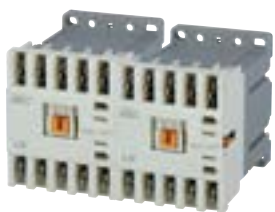
- Motor control applications
- Mechanically interlocked
- DC coil voltage

Screw clamp connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16MR

Fast-on connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MFR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MFR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MFR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16MFR

Coil voltage, DC

- ① Standard type : 12, 20, 24, 36, 42, 48, 60, 72, 110, 120, 125, 220, 240, 250V DC
- ② Low consumption type : 12, 20, 24, 48, 72, 110, 120V DC(Low)
- ③ Wide Voltage : 12, 20, 24, 48, 72, 110, 12V DC(Wide)

Certificate
CE, ULcUL

Ordering information

Type, Auxiliary contact and Coil voltage

Reversing contactors

- Motor control applications
- Mechanically interlocked
- DC coil voltage



Cage clamp connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MCR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MCR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MCR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16MCR



Solder pin connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MSR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MSR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MSR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMD-16MSR

Coil voltage, DC

- ① Standard type : 12, 20, 24, 36, 42, 48, 60, 72, 110, 120, 125, 220, 240, 250V DC
- ② Low consumption type : 12, 20, 24, 48, 72, 110, 120V DC(Low)
- ③ Wide Voltage : 12, 20, 24, 48, 72, 110, 12V DC(Wide)

Ordering information

Type, Auxiliary contact and Coil voltage

Certificate
CE, ULcUL

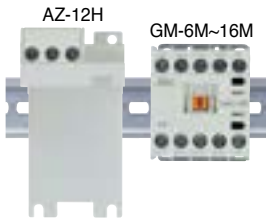
Bimetallic style

Description



GT-12M

- Direct mount on mini contactors with screw clamp connection
Contactortypes: GMC(D)-6M,GMC(D)-9M,
GMC(D)-12M,GMC(D)-16M
- DIN rail or screw mountable with AZ-22H optional base
- Small physical size: 1.73 in. (44mm) wide
- 1NO+1NC trip contacts
- Trip class: 10A (IEC60947-4-1)
- Differential current/Phase failure protection: GTK types
- Non-differential GTH types are available for economical solution
- Ambient compensated: -5 to 40 °C
- Manual/Automatic reset convertible
- Remote reset is optional
- Trip-free design



Separate mount
Direct mount



GT-12M

Catalog No.

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
	0.1 - 0.16	GTK-12M • 0.14	GTH-12M/3 • 0.14
0.16 - 0.25	GTK-12M • 0.21	GTH-12M/3 • 0.21	GTH-12M • 0.21
0.25 - 0.4	GTK-12M • 0.33	GTH-12M/3 • 0.33	GTH-12M • 0.33
0.4 - 0.63	GTK-12M • 0.52	GTH-12M/3 • 0.52	GTH-12M • 0.52
0.63 - 1	GTK-12M • 0.82	GTH-12M/3 • 0.82	GTH-12M • 0.82
1 - 1.6	GTK-12M • 1.3	GTH-12M/3 • 1.3	GTH-12M • 1.3
1.6 - 2.5	GTK-12M • 2.1	GTH-12M/3 • 2.1	GTH-12M • 2.1
2.5 - 4	GTK-12M • 3.3	GTH-12M/3 • 3.3	GTH-12M • 3.3
4 - 6	GTK-12M • 5	GTH-12M/3 • 5	GTH-12M • 5
5 - 8	GTK-12M • 6.5	GTH-12M/3 • 6.5	GTH-12M • 6.5
6 - 9	GTK-12M • 7.5	GTH-12M/3 • 7.5	GTH-12M • 7.5
7 - 10	GTK-12M • 8.5	GTH-12M/3 • 8.5	GTH-12M • 8.5
9 - 13	GTK-12M • 12	GTH-12M/3 • 12	GTH-12M • 12
12 - 16	GTK-12M • 14	GTH-12M/3 • 14	GTH-12M • 14

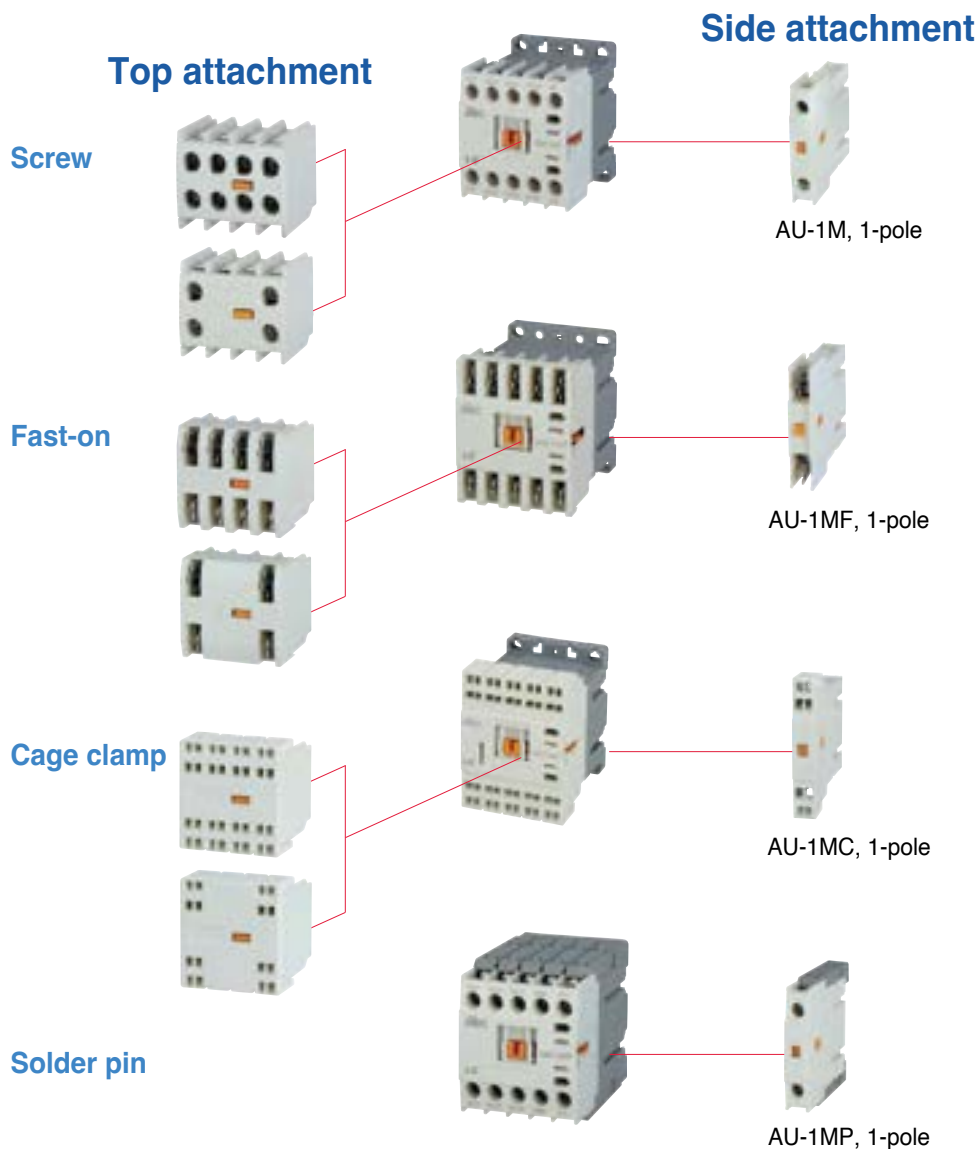
Auxiliary (Trip) contact rating

AC15(11) duty			DC13(11) duty	
110V	220V	550V	110V	220V
2.5(0.3)A	2(0.3)A	1(0.3)A	0.28A	0.14A

Note: Values in parentheses are NO contact rating sunder auto reset mode

Certificate
CE, ULcUL

Auxiliary contacts



Note:
 1. Auxiliary contacts for side attachment can be extended up to 2 contacts
 2. DC 3W operation coil can be extended up to 6 contacts
 3. DC 2W operation coil can be extended up to 2 contacts

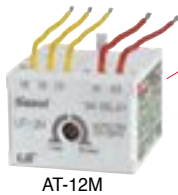
Auxiliary contact specifications

Type	Rated operating current(A)													Lifetime (10,000 times)		Notes
	AC-15							DC-13						Mechanical	Electrical	
	120V	240V	380V	480V	500V	600V	lthe	125V	250V	400V	500V	600V	lthe			
AU-1M	6	3	1.9	1.5	1.4	1.2	10	0.55	0.27	0.15	0.13	0.1	2.5	1000	50	A600 Q600
AU-2M	6	3	1.9	1.5	1.4	1.2	10	0.55	0.27	-	-	-	2.5	1000	50	A600 Q300
AU-4M	6	3	1.9	1.5	1.4	1.2	10	0.55	0.27	-	-	-	2.5	1000	50	A600 Q300
GMR-4M	6	3	1.9	1.5	1.4	1.2	10	0.55	0.27	0.15	0.13	0.1	2.5	1000	50	A600 Q600
GMC-□M Inside contact	6	3	1.9	1.5	1.4	1.2	10	0.55	0.27	0.15	0.13	0.1	2.5	1000	50	A600 Q600

Timer unit, AT-12M

- Electronic type
- ON/OFF time delay
- Front mount

Timer unit



Surge absorber unit



Electronic timer

Type	Control voltage	Delay	Time	Applied contactors
AT-12M / IN	AC/DC 24~48V	ON	0.1~30s	GMC-6M~16M GMD-6M~16M
AT-12M / IF	AC/DC 24~48V	OFF	0.1~30s	GMC-6M~16M GMD-6M~16M
AT-12M / 2N	AC 100~220V	ON	0.1~30s	GMC-6M~16M GMD-6M~16M
AT-12M / 2F	AC 100~220V	OFF	0.1~30s	GMC-6M~16M GMD-6M~16M

Surge absorber unit, AS-12M

- Coil surge suppressor

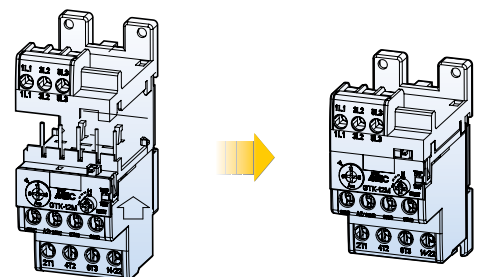
Surge absorber unit



Type	Internal element	Operating voltage	Applied contactors
AS-12M / 1	Varistor	AC24~48V	GMC-6M~16M
AS-12M / 2		AC60~127V	
AS-12M / 3		AC200~240V	
AS-12M / 4		DC12~24V	GMD-6M~16M
AS-12M / 5		DC30~72V	
AS-12M / 6		DC100~127V	
AS-12M / 7		DC200~250V	

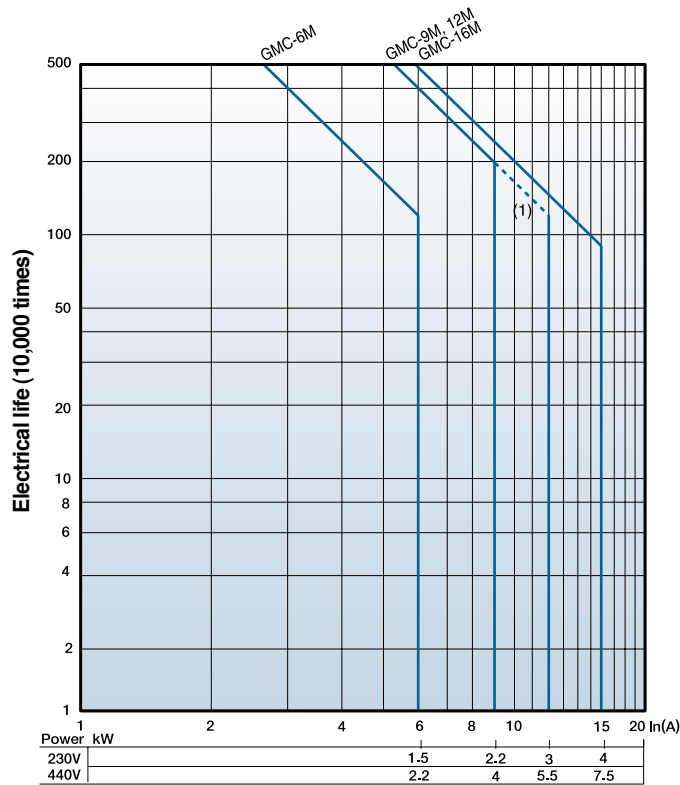
Separate mounting unit, AZ-12MH

- Mount a relay separately from a contactor
- Mountable on DIN rail or by screws



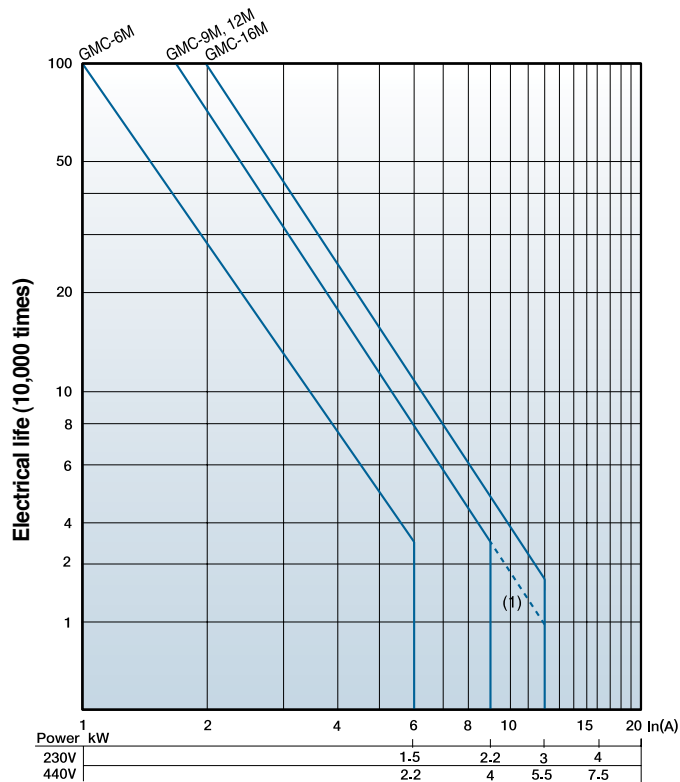
Electrical life of mini contactors

Use in category AC-3
($U_e \geq 440V$)



(1)The dotted lines are only applicable to GMC-12M contactors.

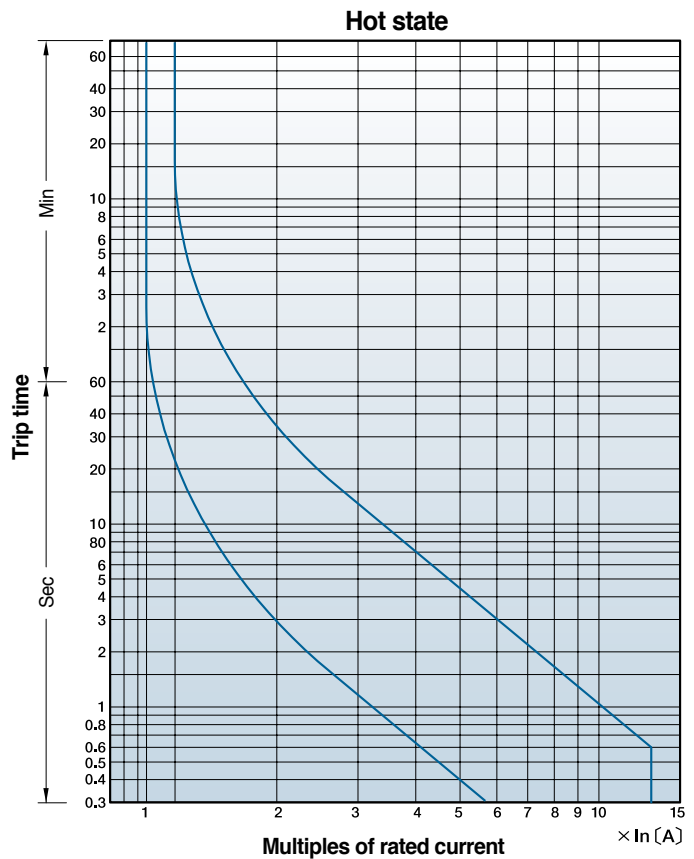
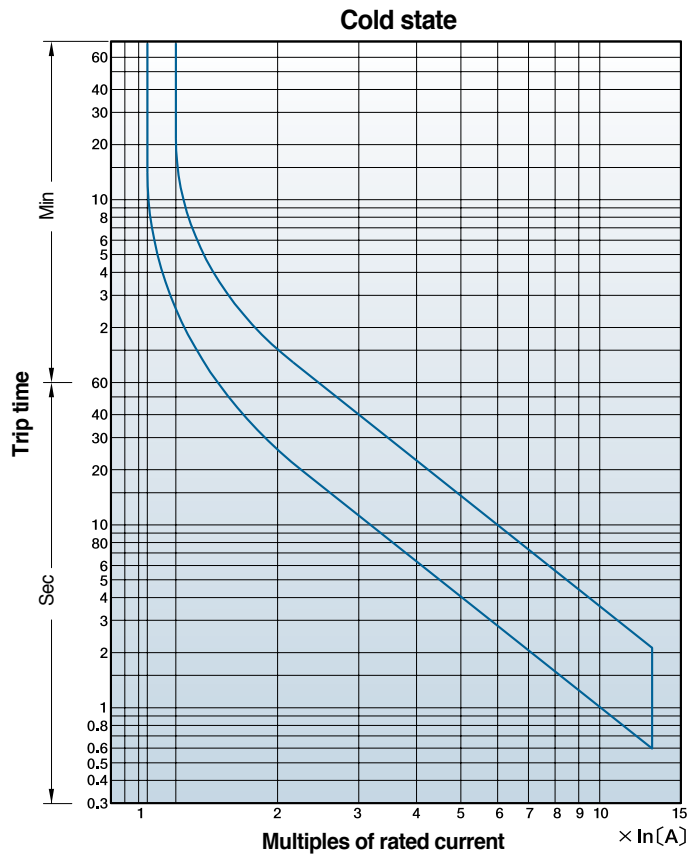
Use in category AC-4
($U_e \geq 440V$)



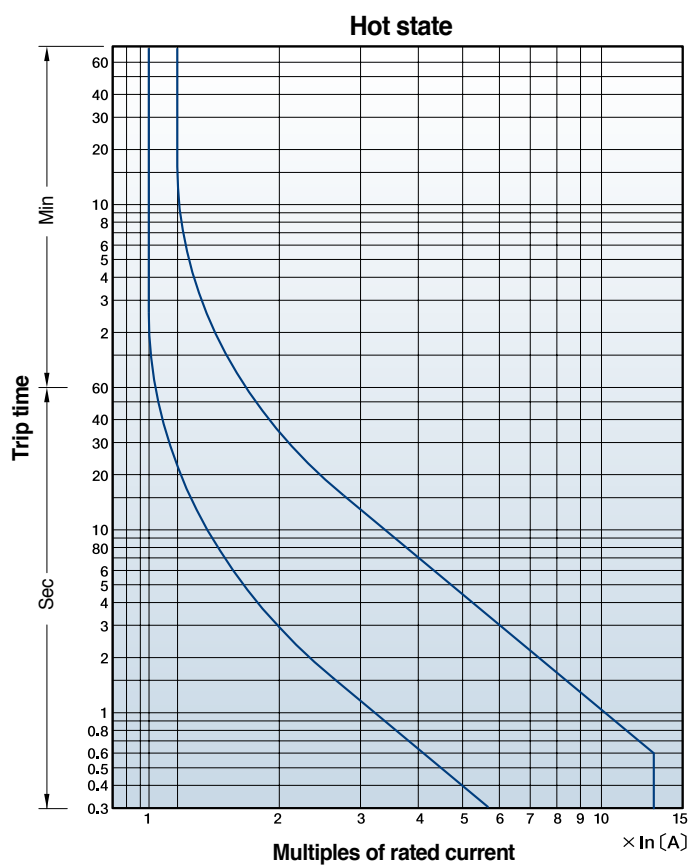
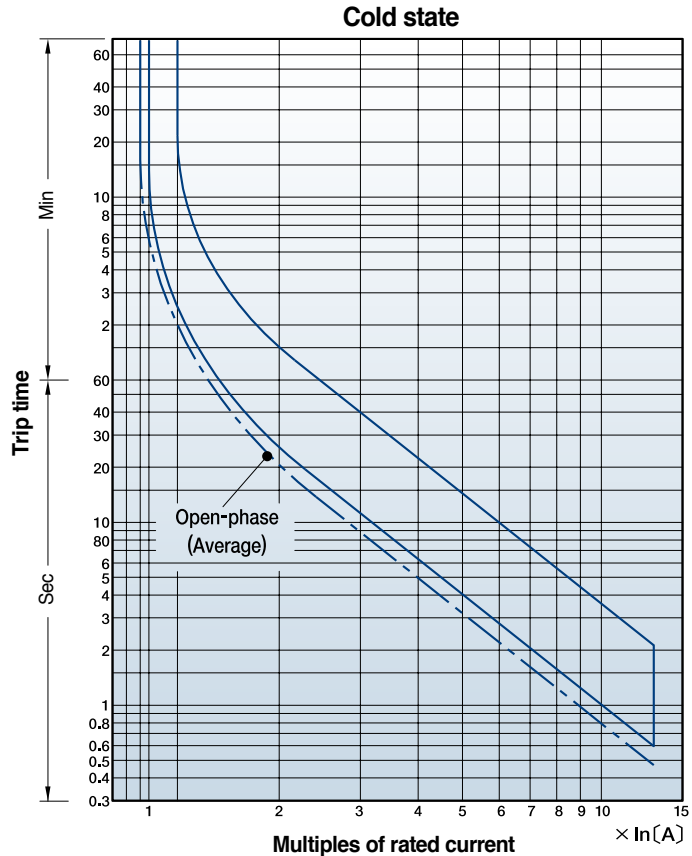
(1)The dotted lines are only applicable to GMC-12M contactors.

Characteristic curve of thermal overload relay

Non-differential type
GTH-12M



Differential type GTK-12M



Interlock unit, AR-12M

Components

- Mechanical interlock components
- Cable kits for line and load sides



* Wire kit Included in AR-D MW
Wire kit not included in AR-DM

Solder pin terminals

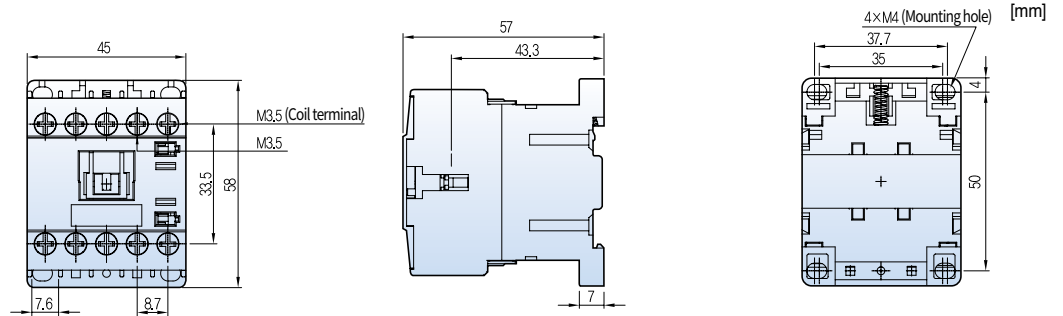
Designed to modify the connection from Screw clamp type to Solder pin type (available for contactors and auxiliary contact blocks)



Dimensions

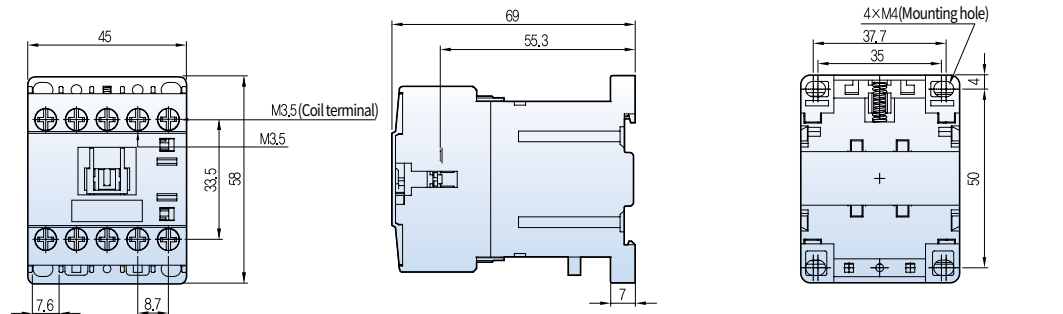
Mini contactors with Screw clamp type

- GMC-6M
- GMC-9M
- GMC-12M
- GMC-16M
- GMC-6M/4
- GMC-9M/4
- GMC-12M/4
- GMC-16M/4



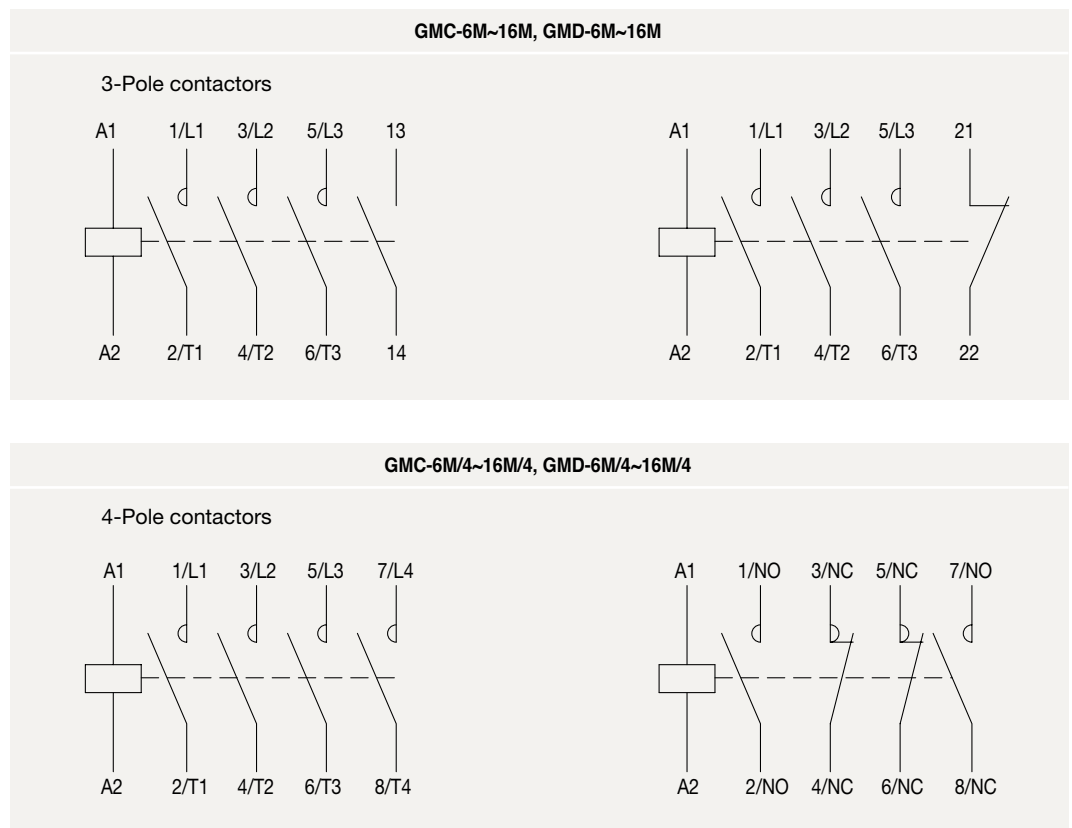
0.17kg

- GMD-6M
- GMD-9M
- GMD-12M
- GMD-16M
- GMD-6M/4
- GMD-9M/4
- GMD-12M/4
- GMD-16M/4



0.23kg

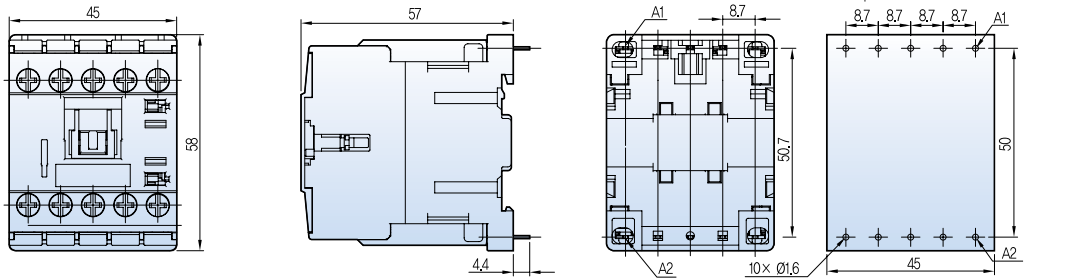
Circuit diagram



Dimensions

Mini contactors with Solder pin type

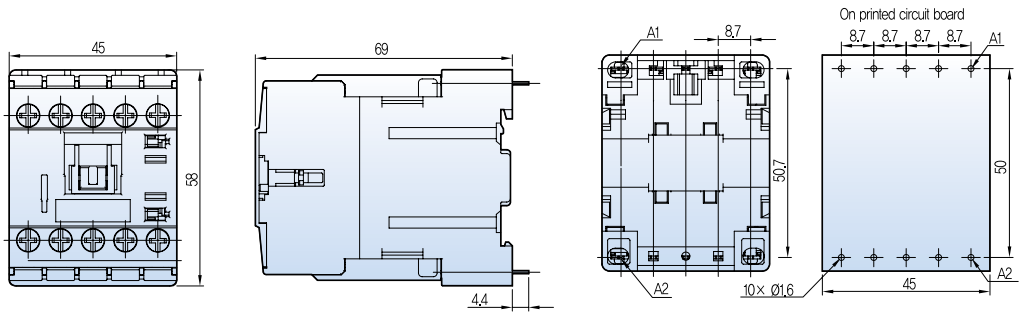
- GMC-6MP
- GMC-9MP
- GMC-12MP
- GMC-16MP
- GMC-6MP/4
- GMC-9MP/4
- GMC-12MP/4
- GMC-16MP/4



[mm]

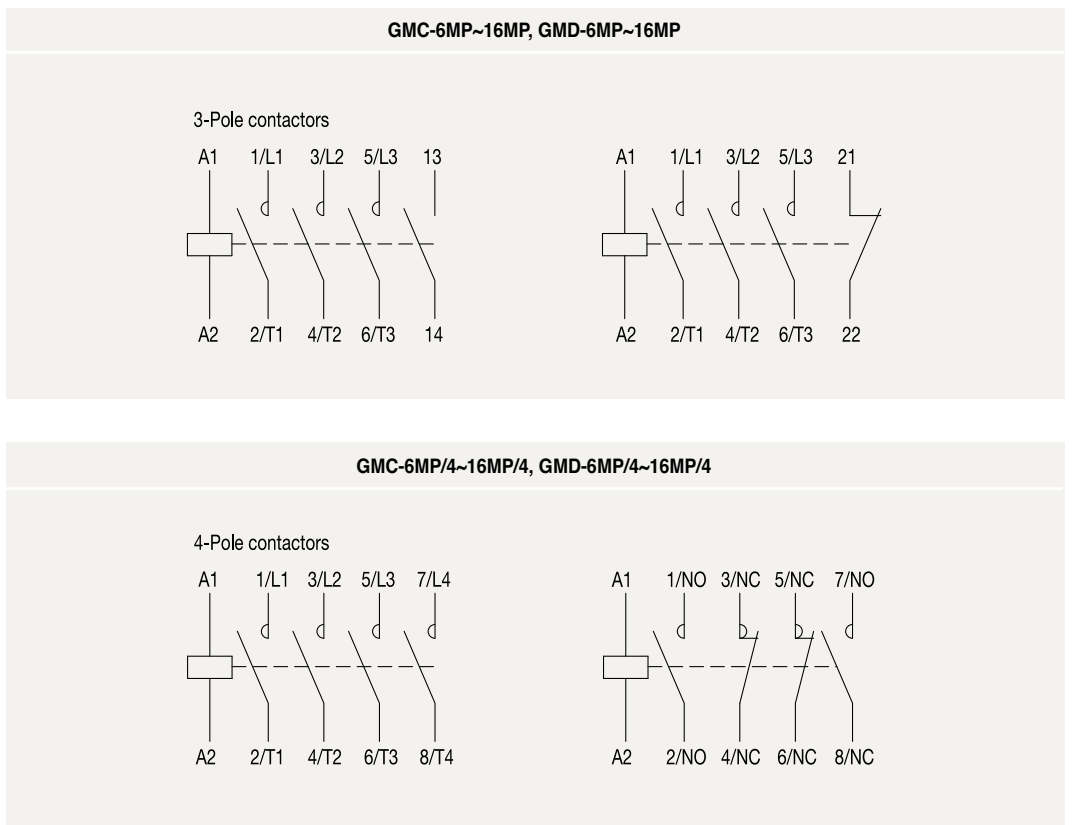
0.17kg

- GMD-6MP
- GMD-9MP
- GMD-12MP
- GMD-16MP
- GMD-6MP/4
- GMD-9MP/4
- GMD-12MP/4
- GMD-16MP/4



0.23kg

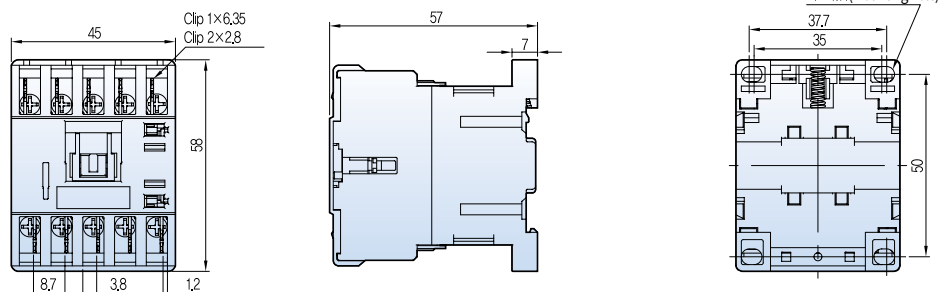
Circuit diagram



Mini contactors with Fast-on type

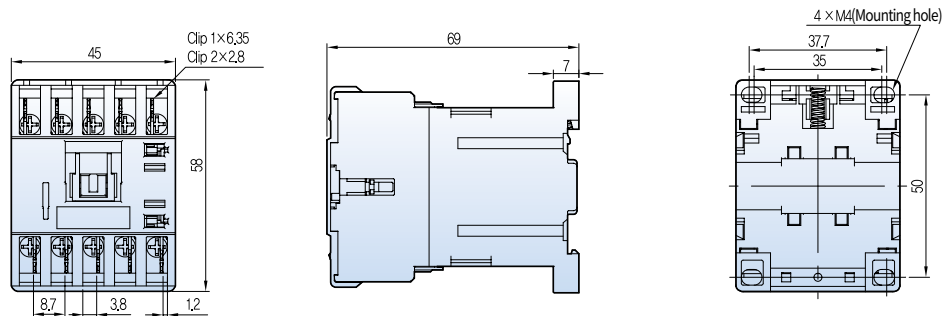
[mm]

- GMC-6MF
- GMC-9MF
- GMC-12MF
- GMC-16MF
- GMC-6MF/4
- GMC-9MF/4
- GMC-12MF/4
- GMC-16MF/4



0.18kg

- GMD-6MF
- GMD-9MF
- GMD-12MF
- GMD-16MF
- GMD-6MF/4
- GMD-9MF/4
- GMD-12MF/4
- GMD-16MF/4

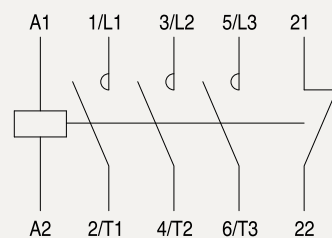
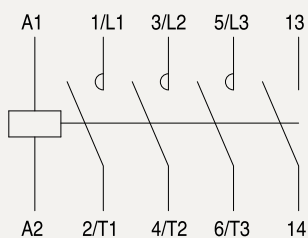


0.27kg

Circuit diagram

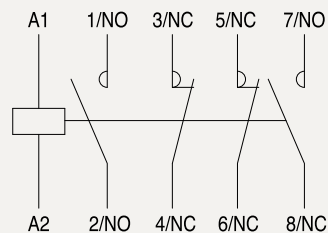
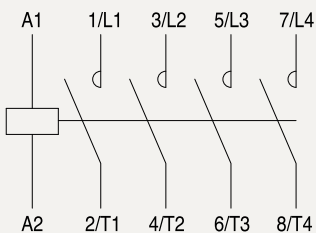
GMC-6MF~16MF, GMD-6MF~16MF

3-Pole contactors



GMC-6MF/4~16MF/4, GMD-6MF/4~16MF/4

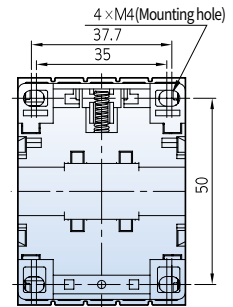
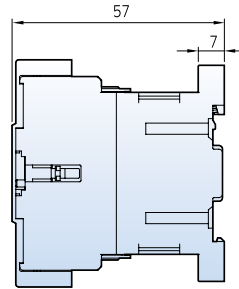
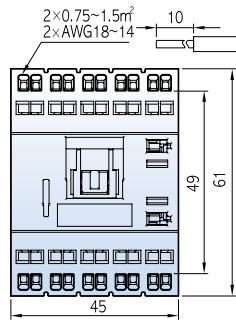
4-Pole contactors



Dimensions

Mini contactors with Cage clamp type

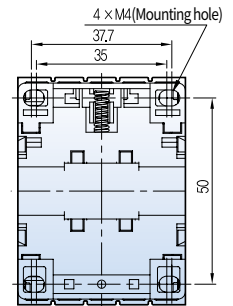
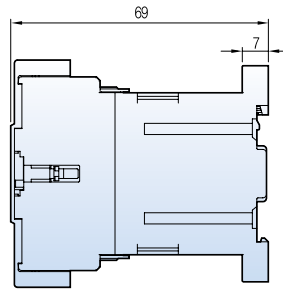
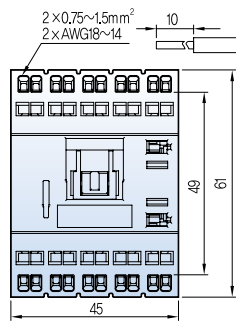
- GMC-6MC
- GMC-9MC
- GMC-12MC
- GMC-16MC
- GMC-6MC/4
- GMC-9MC/4
- GMC-12MC/4
- GMC-16MC/4



[mm]

0.19kg

- GMD-6MC
- GMD-9MC
- GMD-12MC
- GMD-16MC
- GMD-6MC/4
- GMD-9MC/4
- GMD-12MC/4
- GMD-16MC/4

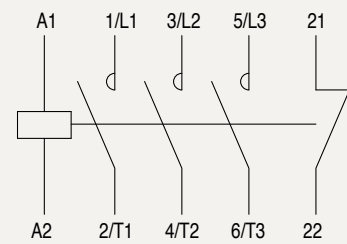
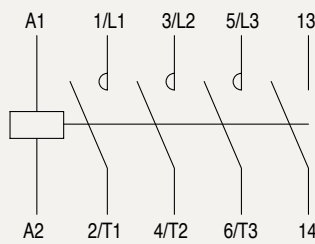


0.28kg

Circuit diagram

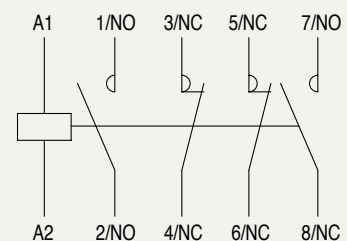
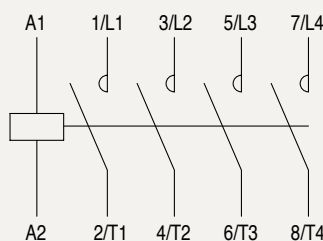
GMC-6MC~16MC, GMD-6MC~16MC

3-Pole contactors



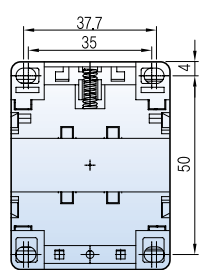
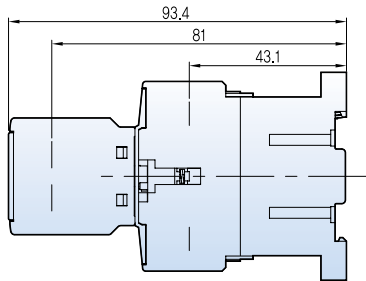
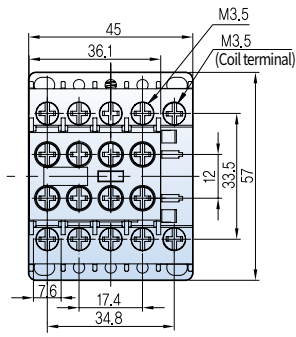
GMC-6MC/4~16MC/4, GMD-6MC/4~16MC/4

4-Pole contactors



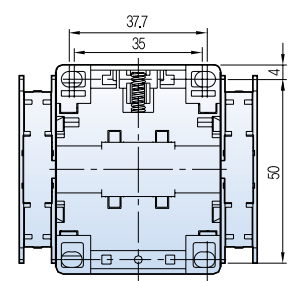
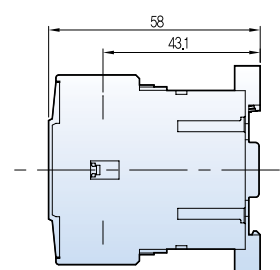
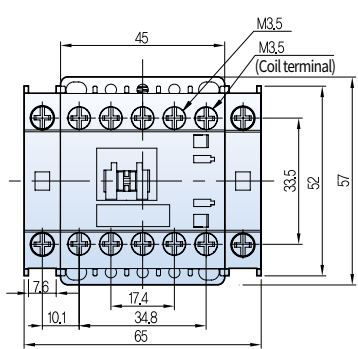
Mini contactors with Auxiliary contacts

- GMC-6M
- GMC-9M
- GMC-12M
- GMC-16M
- +
- AU-4M



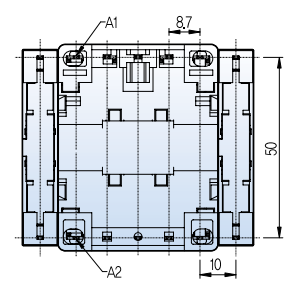
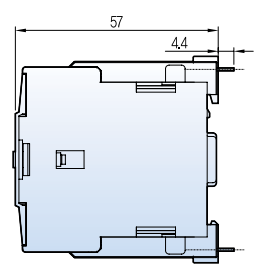
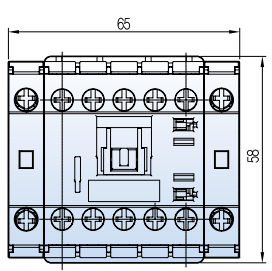
[mm]

- GMC-6M
- GMC-9M
- GMC-12M
- GMC-16M
- +
- 2x AU-1M



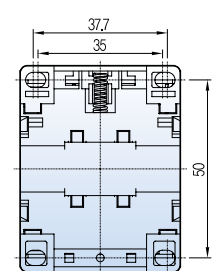
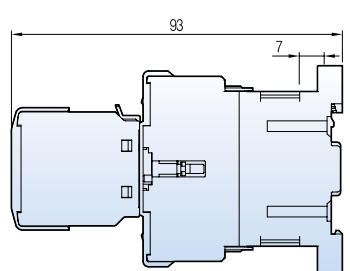
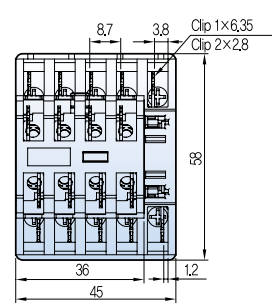
0.21kg

- GMC-6MP
- GMC-9MP
- GMC-12MP
- GMC-16MP
- +
- 2x AU-1MP



0.21kg

- GMC-6MF
- GMC-9MF
- GMC-12MF
- GMC-16MF
- +
- AU-4MF

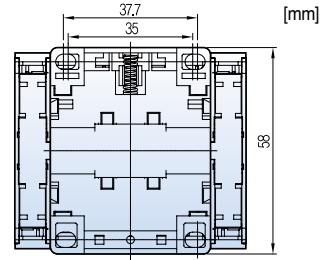
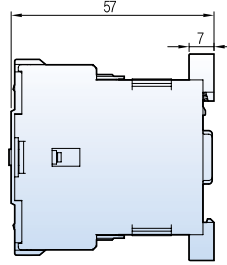
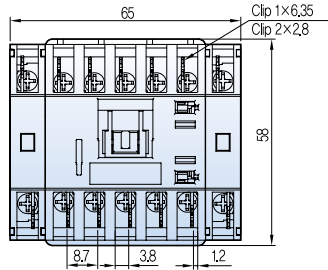


0.23kg

Dimensions

Mini contactors with Auxiliary contacts

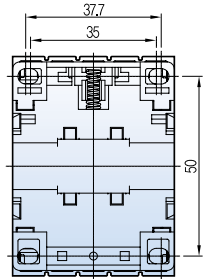
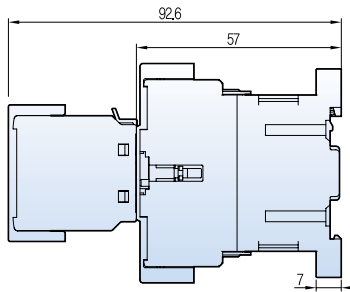
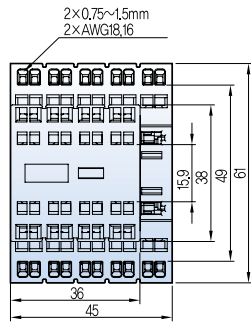
- GMC-6MF
- GMC-9MF
- 2×GMC-12MF
- GMC-16MF
- +
- 2× AU-1MF



[mm]

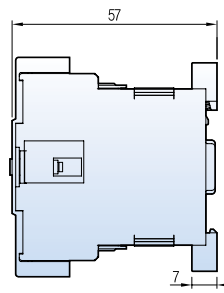
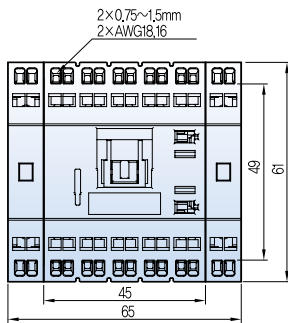
0.32kg

- GMC-6MC
- GMC-9MC
- GMC-12MC
- GMC-16MC
- +
- AU-4MC



0.24kg

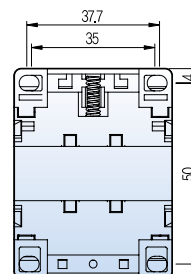
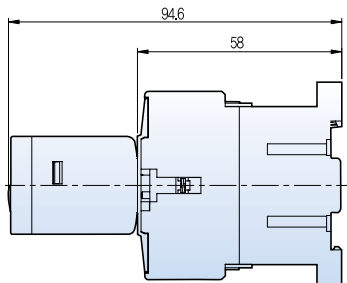
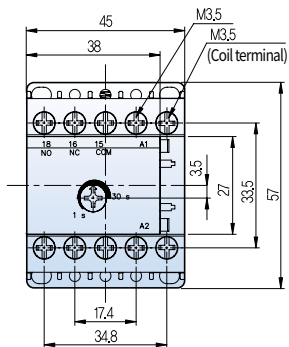
- GMC-6MC
- GMC-9MC
- 2×GMC-12MC
- GMC-16MC
- +
- 2× AU-1MC



0.23kg

Mini contactors with external accessories

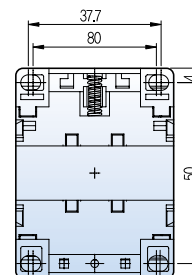
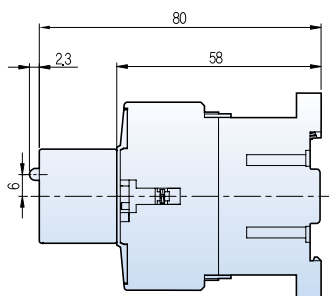
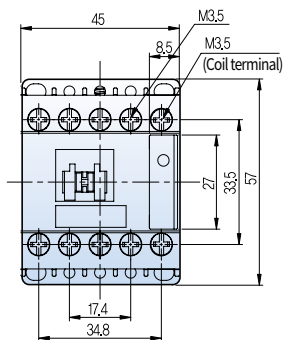
- GMC-6M
- GMC-9M
- GMC-12M
- GMC-16M
- +
- AT-12M



[mm]

0.21kg

- GMD-6M
- GMD-9M
- GMD-12M
- GMD-16M
- +
- AS-12M

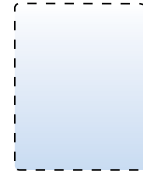
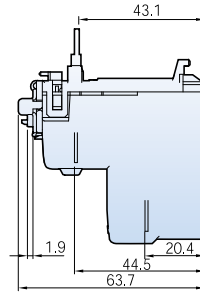
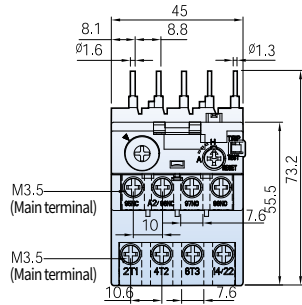


0.175kg

Dimensions

Thermal overload relays for Mini contactors

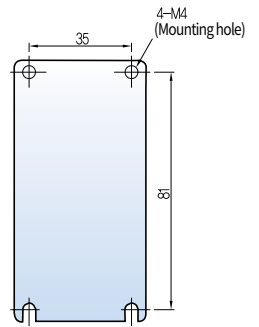
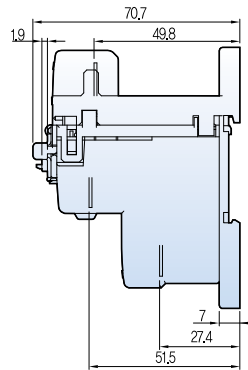
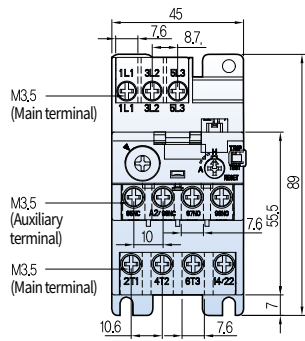
GTH(K)-12M



[mm]

0.1kg

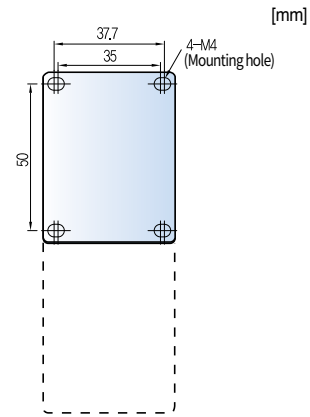
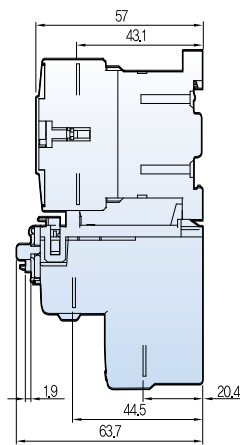
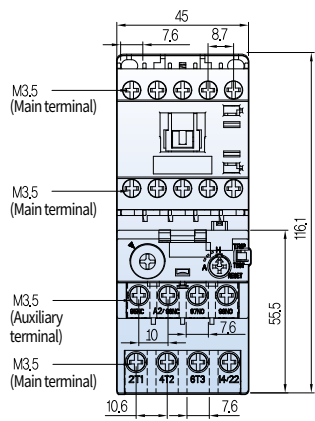
GTH(K)-12MH



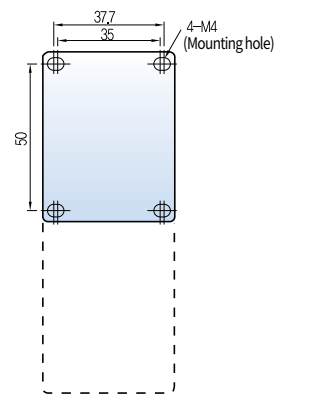
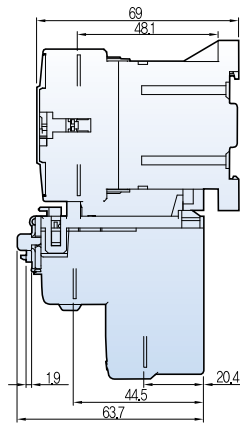
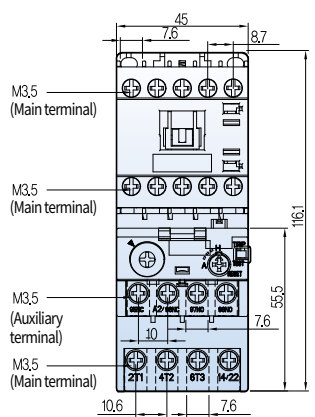
0.4kg

Mini motor starters, open

- GMS-6M
- GMS-9M
- GMS-12M
- GMS-16M



- GMS-6MD
- GMS-9MD
- GMS-12MD
- GMS-16MD

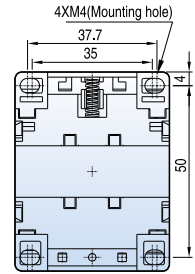
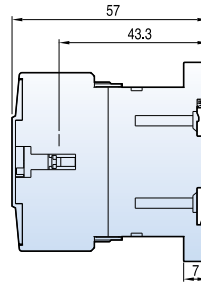
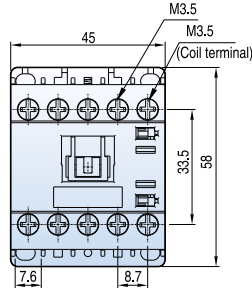


Dimensions

Mini contactor relays

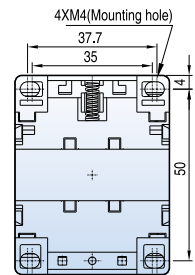
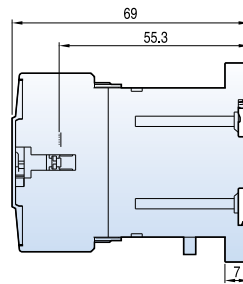
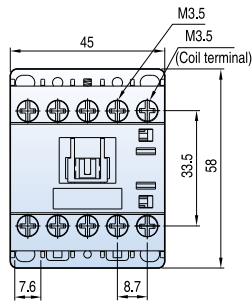
[mm]

GMR-4M



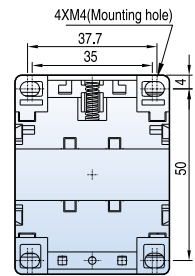
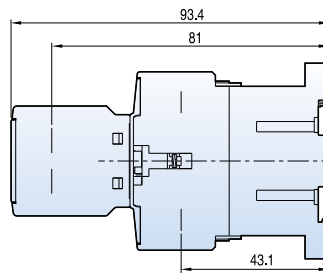
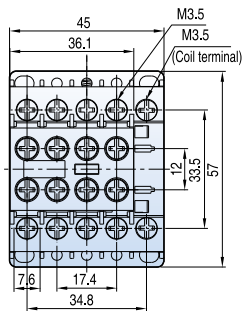
0.17kg

GMR-4MD



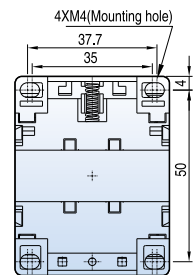
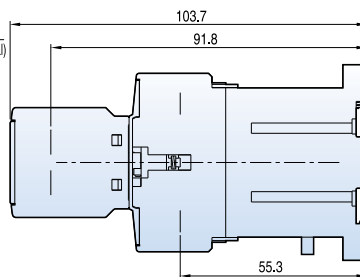
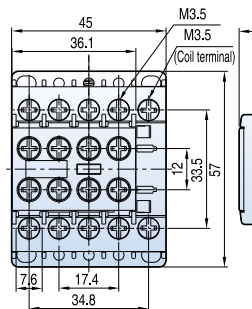
0.23kg

GMR-4M
GMR-8M



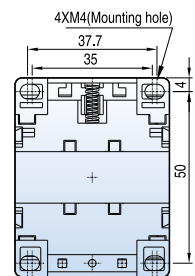
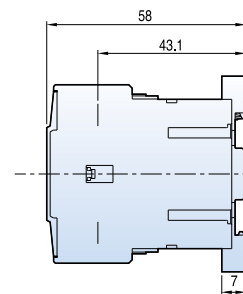
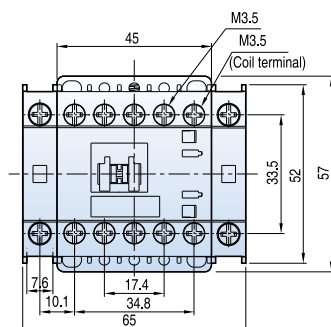
0.21kg

GMR-4M
GMR-8M



0.21kg

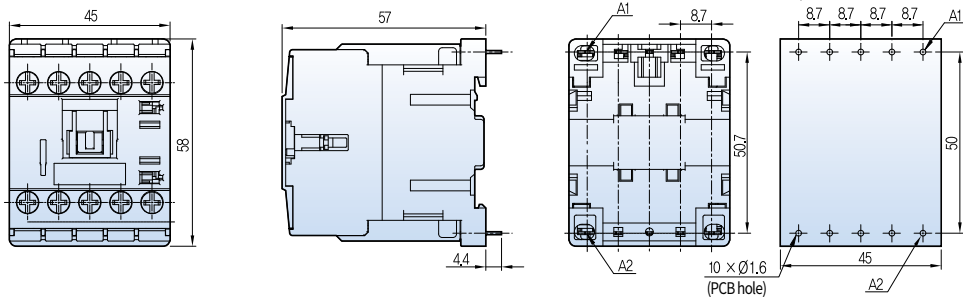
GMR-4M
+
2x AU-1M



0.21kg

Mini contactor relays

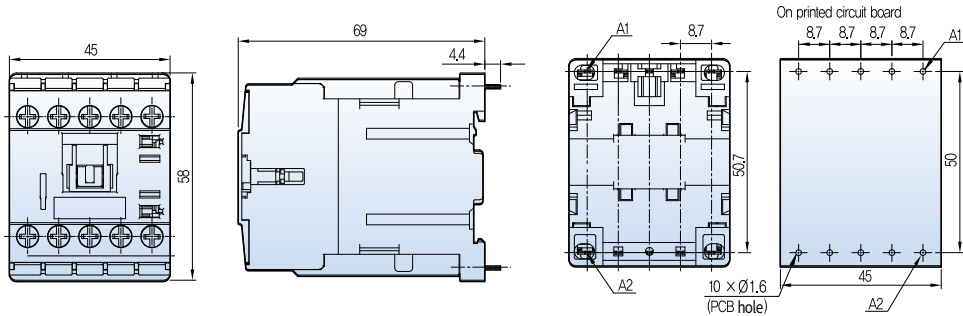
GMR-4MP



[mm]

0.19kg

GMR-4MPD

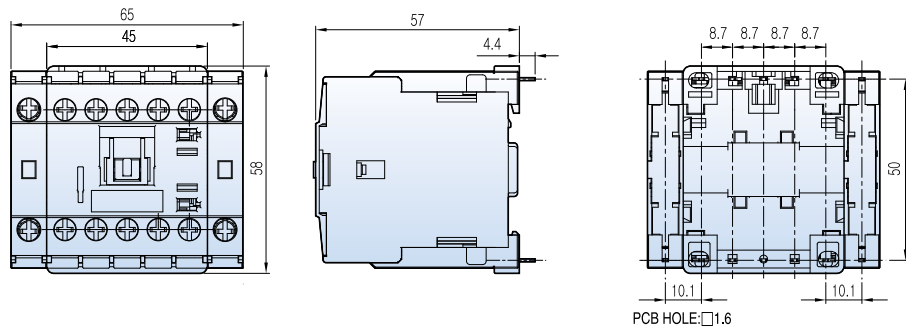


0.28kg

GMR-4MP

+

2x AU-1M

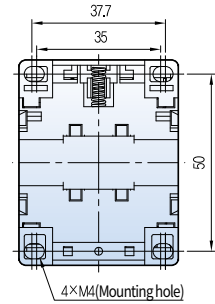
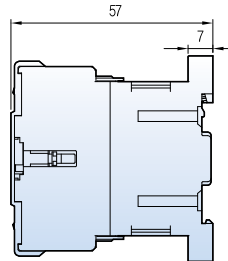
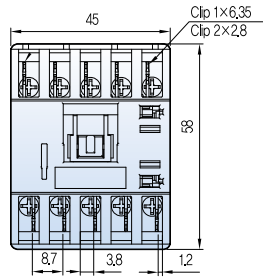


Dimensions

Mini contactor relays

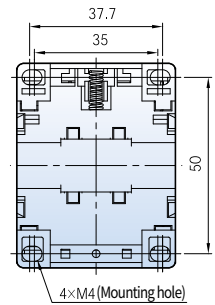
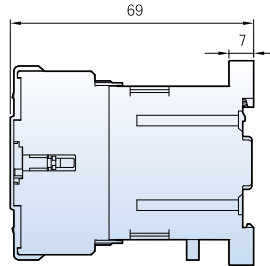
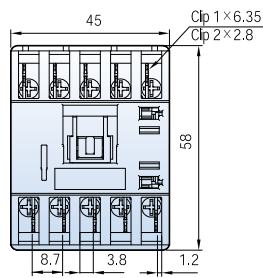
[mm]

GMR-4MF



0.18kg

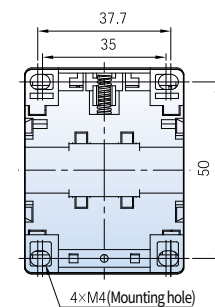
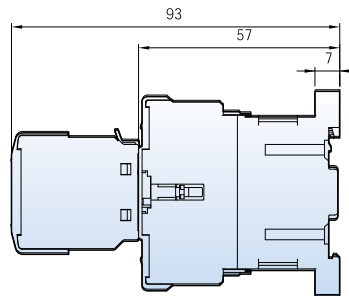
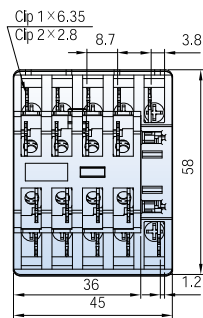
GMR-4MFD



0.27kg

GMR-6MF

GMR-8MF

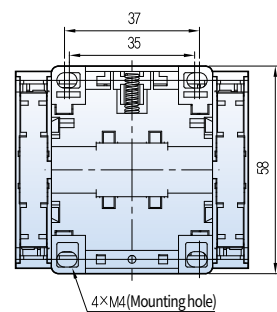
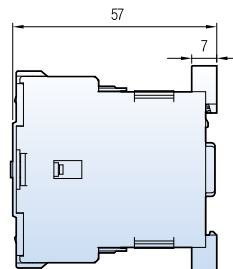
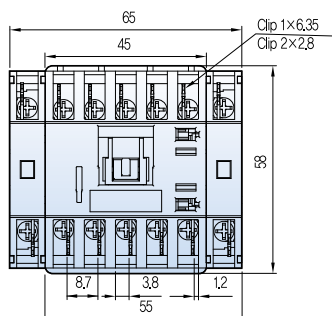


0.23kg

GMR-4MF

+

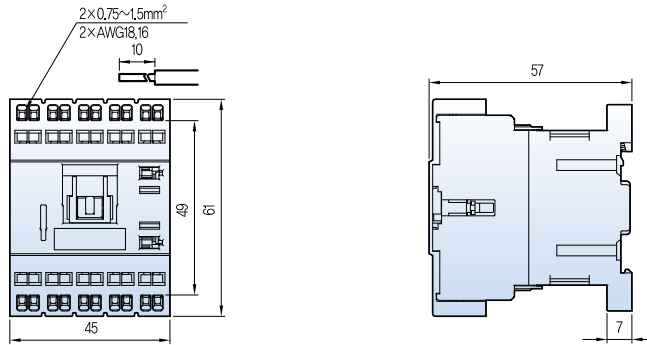
2x AU-1MF



0.32kg

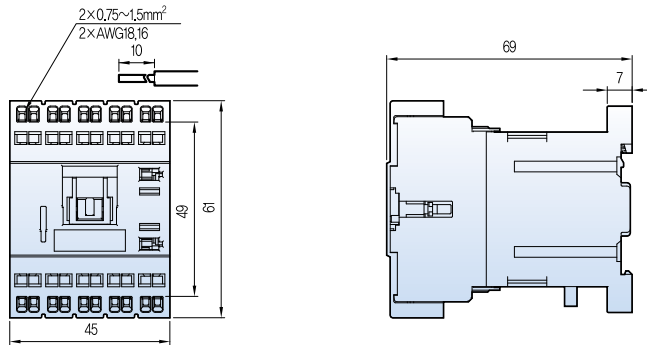
[mm]

GMR-4MC



0.18kg

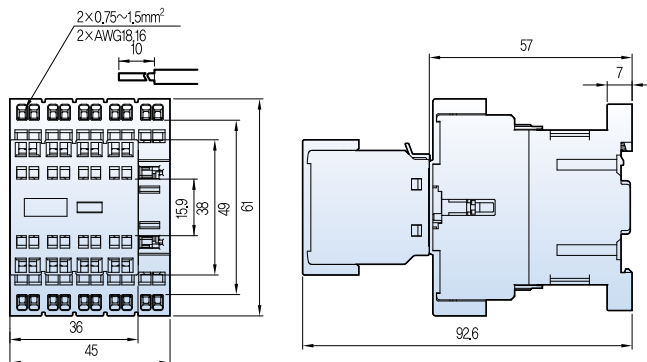
GMR-4MCD



0.27kg

GMR-6MC

GMR-8MC

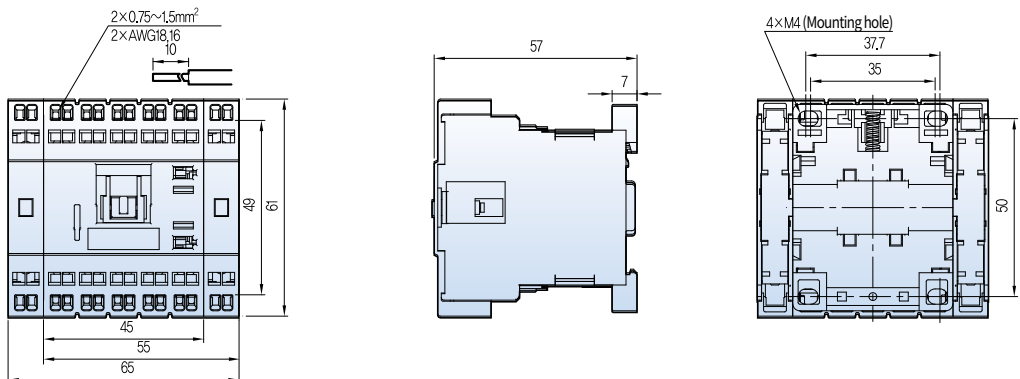


0.23kg

GMR-4MC

+

2 × AU-1MC

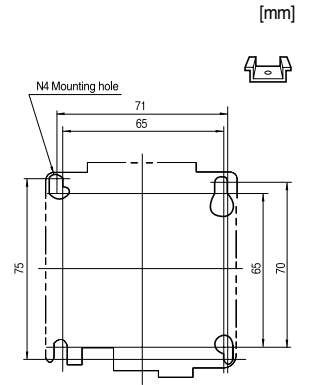
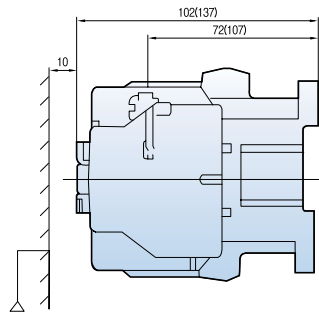
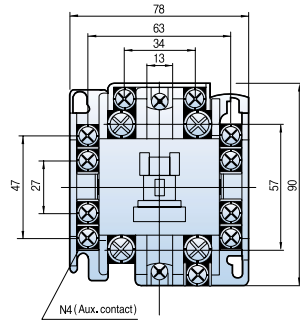


0.32kg

Dimensions

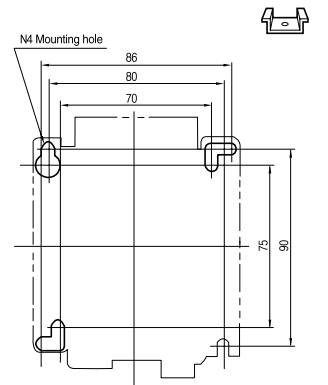
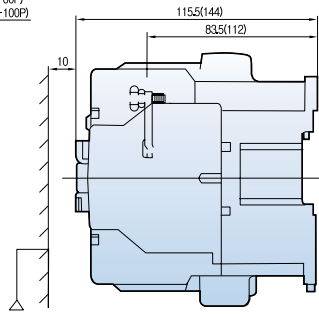
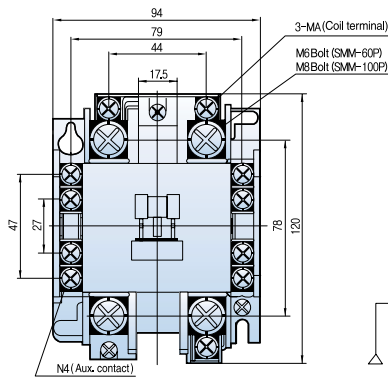
2-pole DC Contactors

- SMM-30P
- SMM-30DP



0.61(0.93)kg

- SMM-60P
- SMM-100P
- SMM-60DP
- SMM-100DP



1.15(2.17)kg

2-pole AC Contactors

GMC-10P2

GMC-20P2

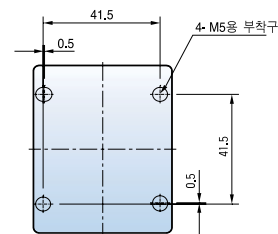
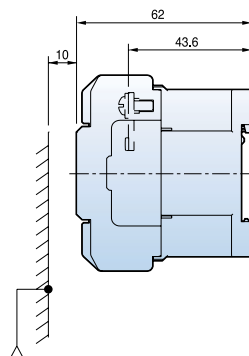
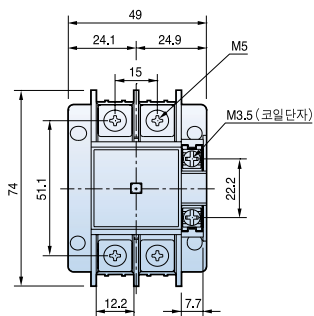
GMC-25P2

GMC-30P2

GMC-35P2

GMC-40P2

(TSBS Type)



[mm]

1.29kg

GMC-10P2

GMC-20P2

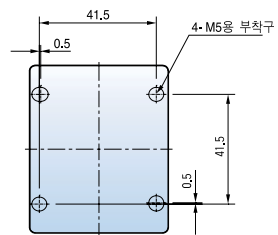
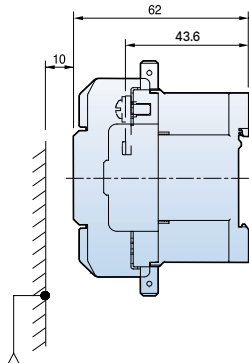
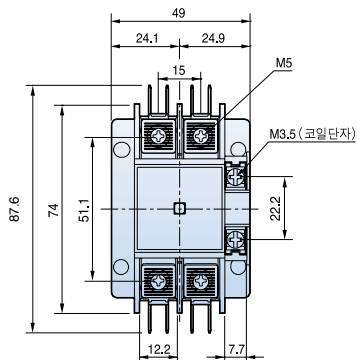
GMC-25P2

GMC-30P2

GMC-35P2

GMC-40P2

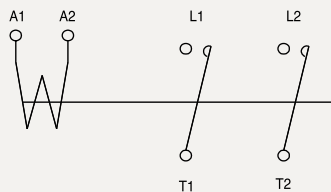
(TQBS Type)



1.29kg

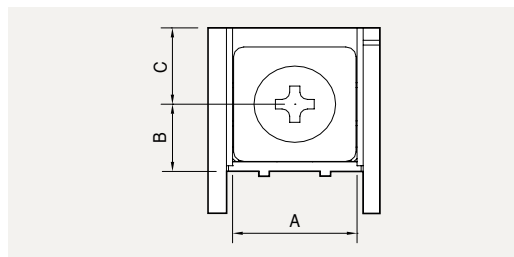
Circuit diagram

GMC-10P2~40P2



Terminal

Type	Terminal	Screw (mm ²)	Wire (kgf·cm)	Torque (mm)	A×B×C
GMC-10P2~40P2	Main	M5	1-16	26	12.2×7×8
	Coil	M3.5	1-2.5	12	7.7×7.5×4.5

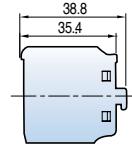
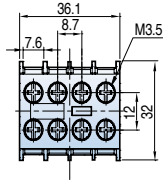


Dimensions

Accessories for Mini contactors

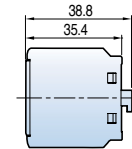
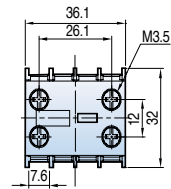
[mm]

AU-4M



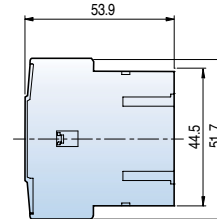
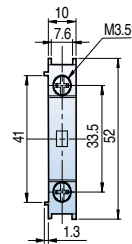
0.04kg

AU-2M



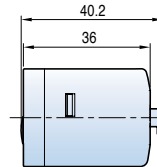
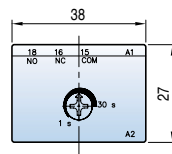
0.03kg

AU-1M



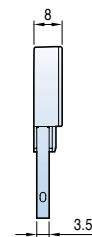
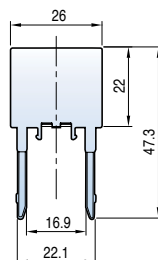
0.02kg

AT-12M



0.04kg

AS-12M



0.005kg

Memo

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