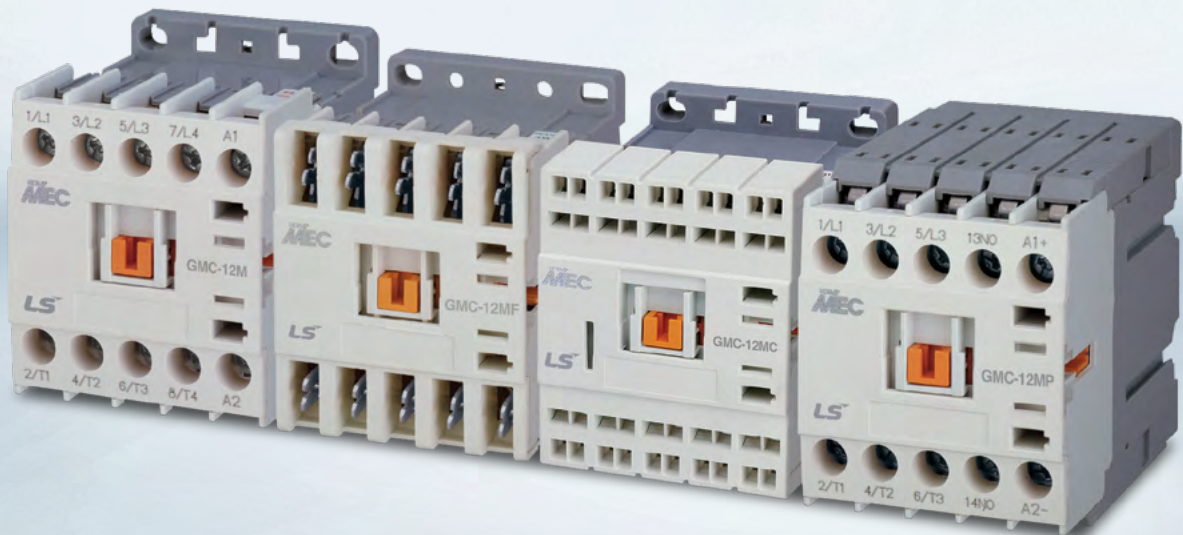


Top 100  
Global  
Innovator  
for 10 years

# Meta-MEC Mini Contactors and Overload Relays



**LS** ELECTRIC

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

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



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## Mini contactors and Overload Relays



Compact & Space Saving

## LS Mini contactors & starters



LS Mini contactors and starters are suitable for the switching and protection of small motors up to 7.5kW, lights and electric heating circuits.

KEMA type tested as the global product that meets international standards such as UL, CCC, Safe Certification and CE.



### LS Mini -contactors and starters

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

Providing the convenience of connection and mounting by terminal options such as Cage clamp, Fast-on, Solder pin as well as Screw Terminal. In addition dedicated thermal style overload relays can be easily attached for motor protection and various accessories are also available - surge unit, timer unit, auxiliary contact unit.

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. The relay and its space in the panel are not necessary any more.

### Direct driving by

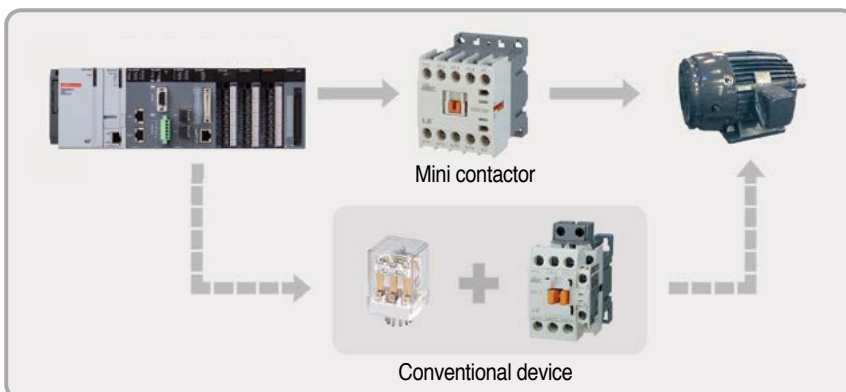
- PLC output contact
- Photoelectric switch, proximity switch . . .
- Transistor output of various detection



AC 380V  
7.5kW  
16A  
or under



### Direct driving by PLC output

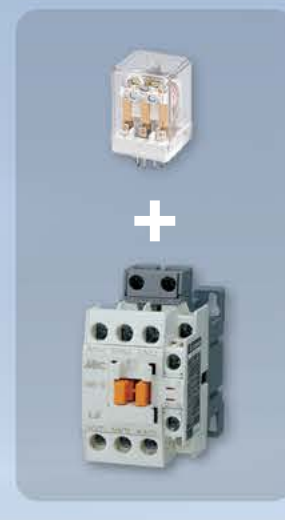




PLC



Remote I/O unit



Conventional style  
(Relay + Contactor)



Inverter



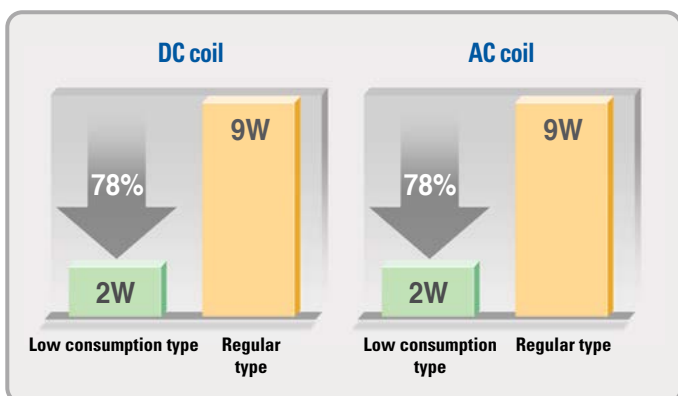
Servo motor operation



Lighting circuits



### Reduction rate of power consumption

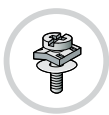
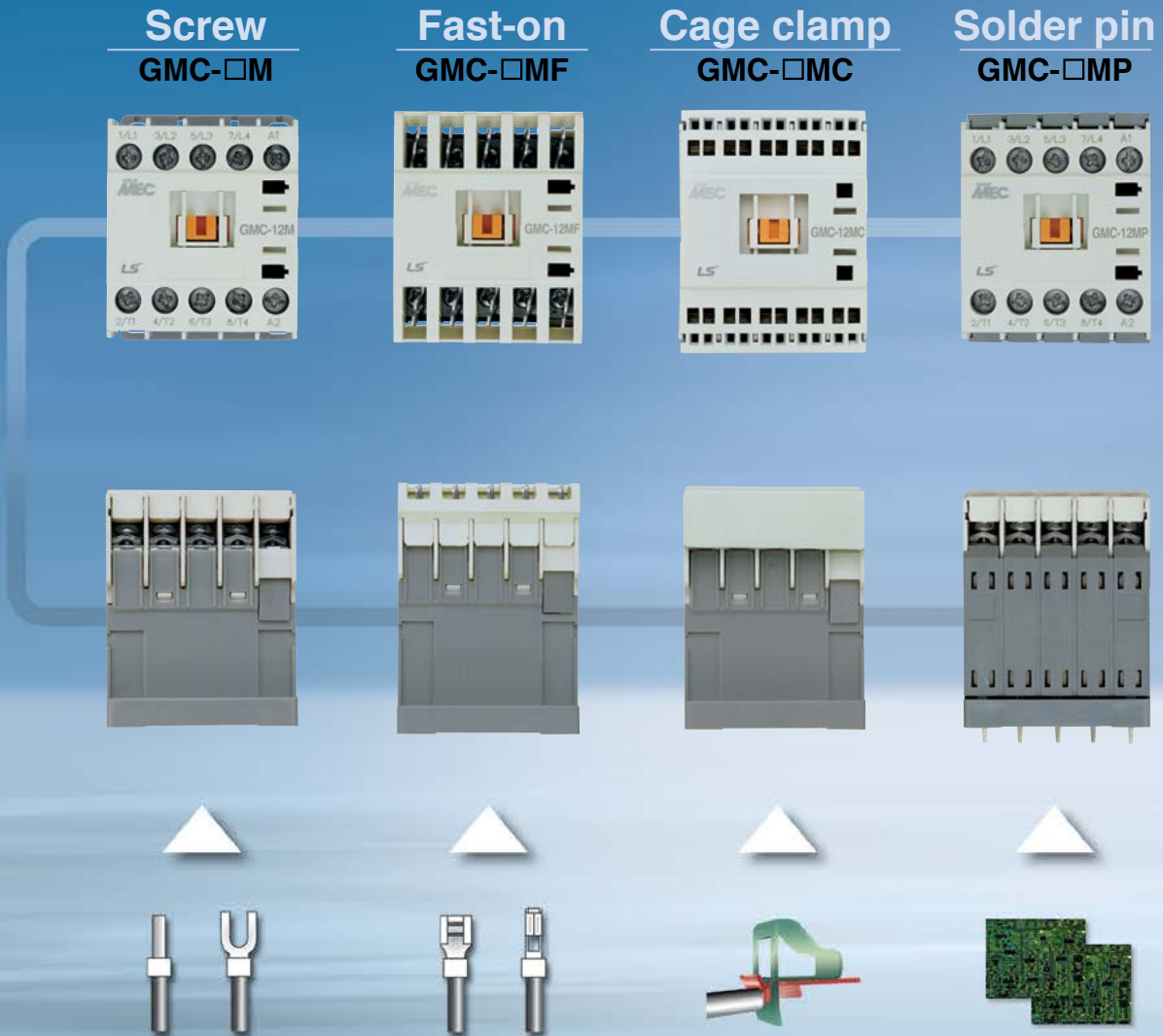


### Characteristic of control coil

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

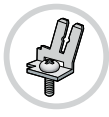
# Convenience

4 terminal options for a variety of 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 connection with wires directly



### Solder pin terminal

for mounting on PCB

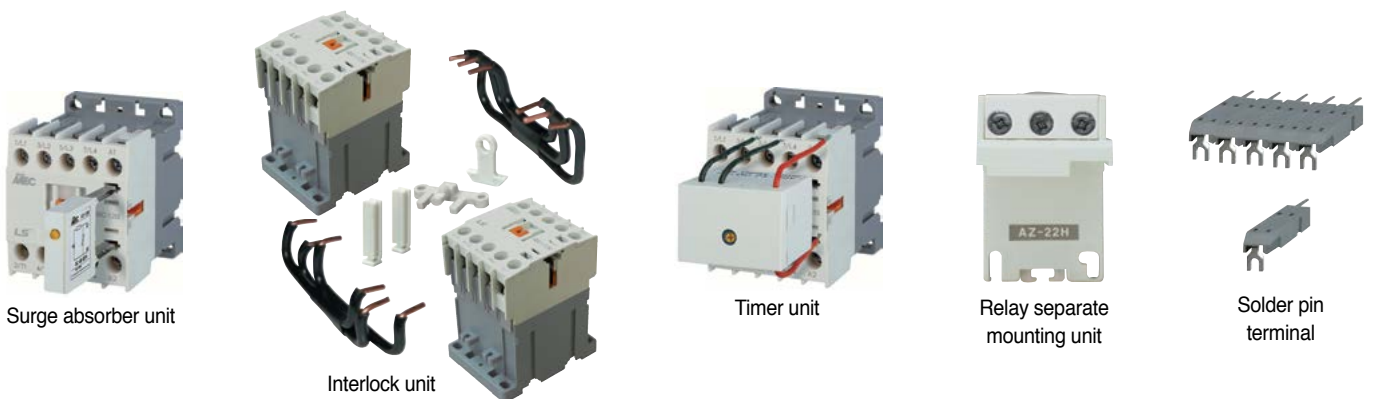
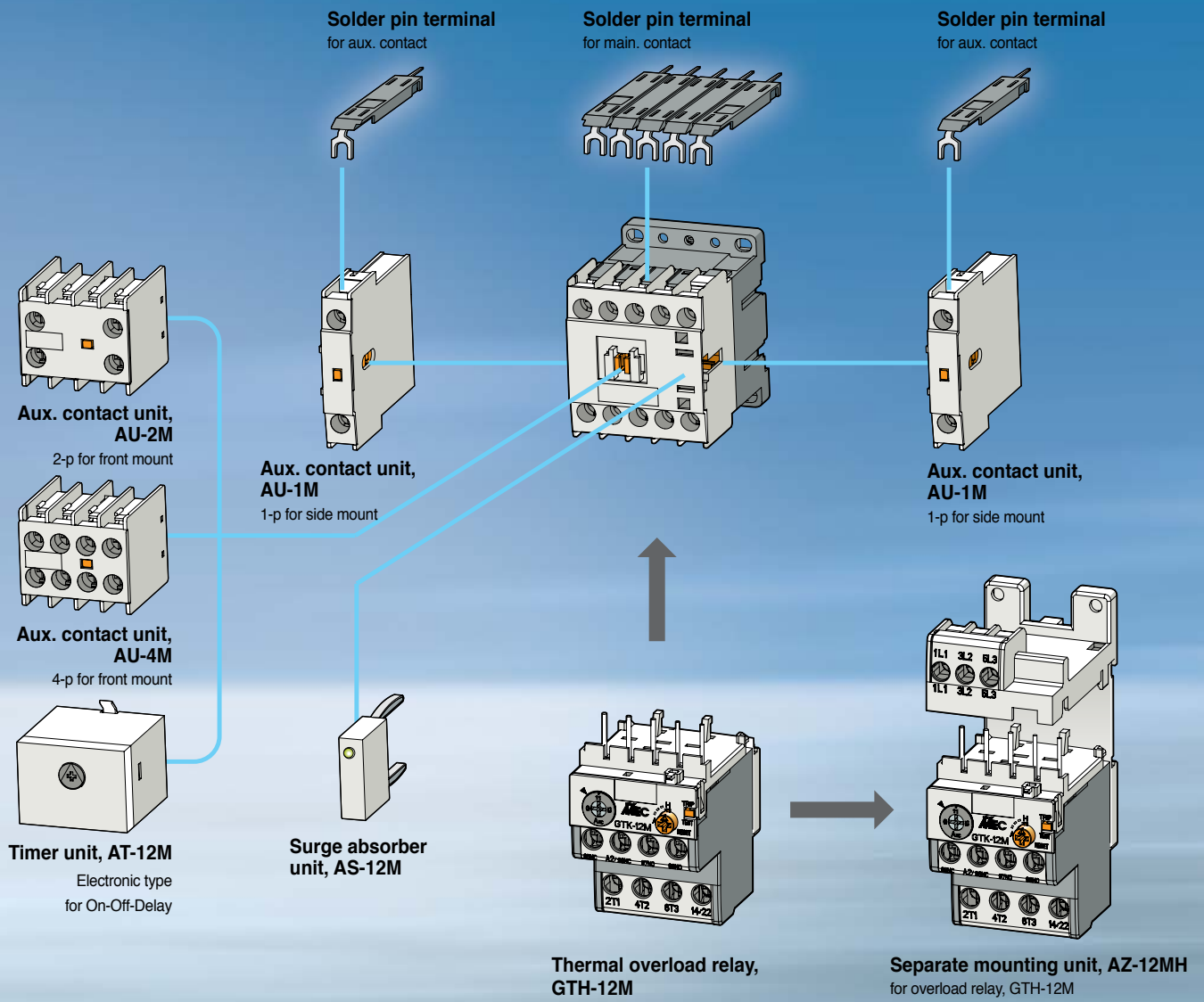
### Auxiliary contact units

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



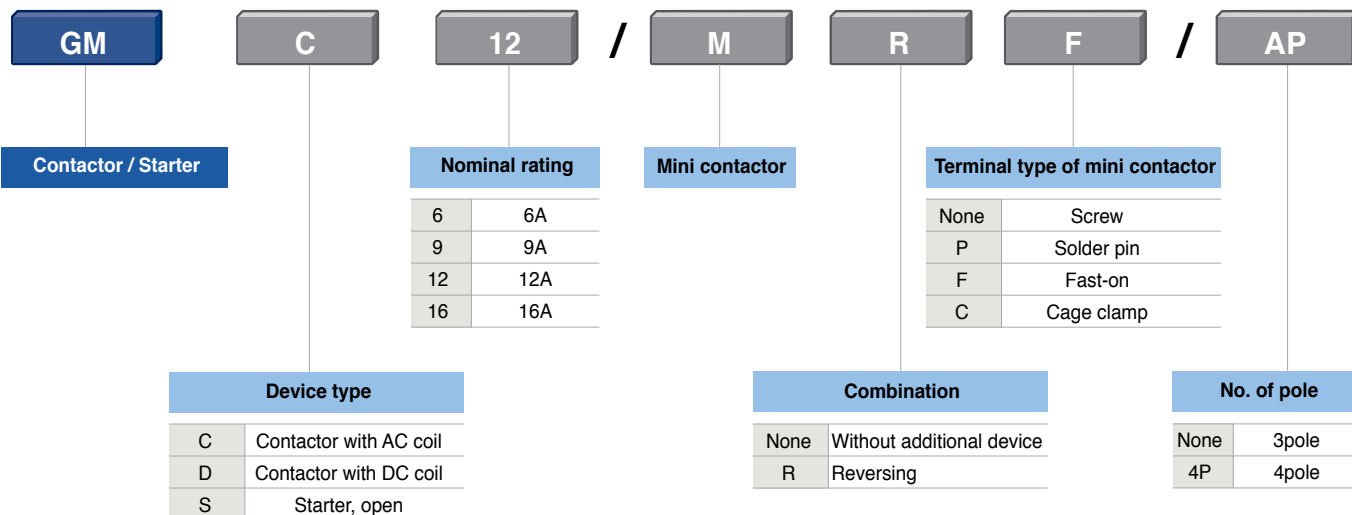
# Variety

## Accessories ...

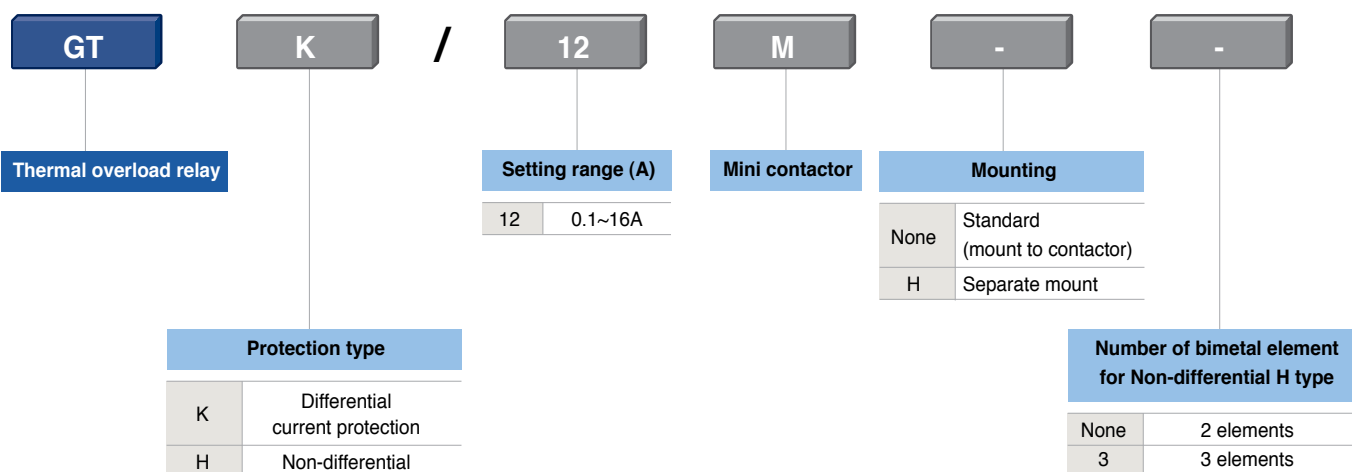


# Catalog numbering system

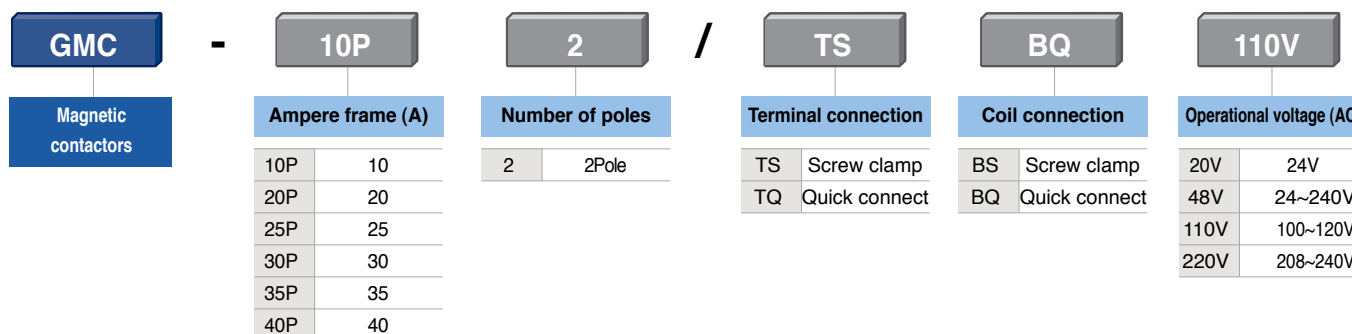
## Contactors & Starters



## Thermal overload relay



## 2-pole contactors



### Auxiliary contact

**AU** - **1** **M** **F** **40**

Auxiliary contact	No. of pole	Mini contactor	Terminal type of mini contactor	Contact configuration
	1 1pole		None Screw	10 1a 40 4a
	2 2pole		F Fast-on	01 1b 31 3a1b
	3 3pole		C Cage clamp	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
			1 AC/DC 24~48	N ON Delay
			2 AC 100~200V	F OFF Delay

### Serge unit

**AS** - **12** **M** / **1**

Serge unit	Nominal rating	Mini contactor	Operating voltage
			1 AC 24~48 4 DC 12~24
			2 AC 60~127 5 DC 30~72
			3 AC 200~240 6 DC 100~127
			7 DC 200~250

### Solder pin unit

**AP** - **12** **M** / **D**

Solder pin unit	Unit distribution	Mini contactor	Operating voltage
	1 Auxiliary		None AC Operated type
	12 Contactor		D DC Operated type

### 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 presence or absence
			None Absence
			W Presence

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

Note) \* = 1/2 for cage clamp type, \*\* = 1.5hp for cage clamp type, \*\*\* = 5hp for cage clamp type  
16AF : not approved from UL

## Overload Relays

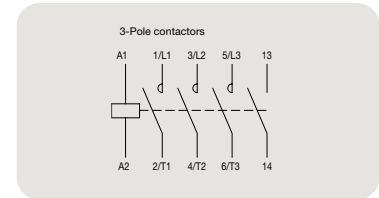
<b>Bimetallic style</b> Type GT Class 10A	GT-12M	<b>Setting ranges (A)</b> 0.1 - 0.16 0.16 - 0.25 0.25 - 0.4 0.4 - 0.63 0.63 - 1 1 - 1.6 1.6 - 2.5 2.5 - 4	4 - 6 5 - 8 6 - 9 7 - 10 9 - 13 12 - 16	Base for separate mount
	Differential	GTK-12M		
	Non-differential (3-heater)	GTH-12M/3		
	Non-differential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

# AC coil

## Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : AC

## 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 characteristic

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

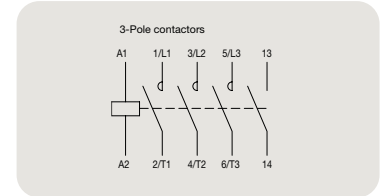
Certificate  
CE, ULcUL

# AC coil

## Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : AC

## 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

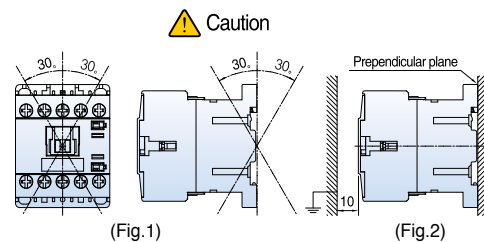
Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMC-6MP
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MP
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MP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



**Caution**

(Fig.1)

(Fig.2)

Certificate  
CE, ULcUL

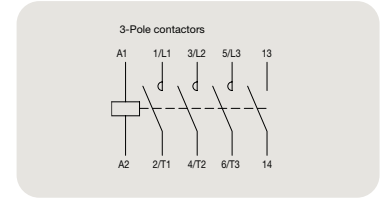
\*Even installing direction takes the direction of Fig.1 to perpendicular, ip to the direction of the 30° .  
Keep the distance more than 10mm with arc space shown Fig.2

# DC coil

## Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : DC

## 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 characteristic

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

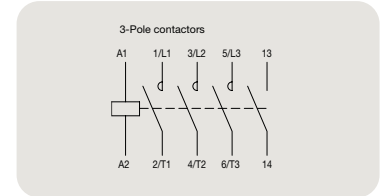
Certificate  
CE, ULcUL

# DC coil

## Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : DC

## 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

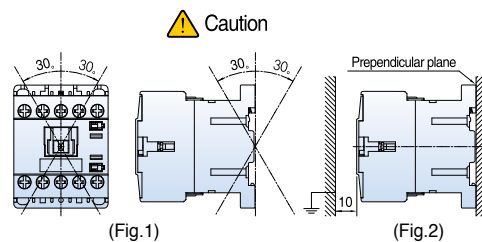
Frame size	AC3 ratings (IEC60947-4)				AC1 rating lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW 7A	2.2kW 6A	3kW 5A	3kW 4A	20A	1NO or 1NC	GMD-6MP
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMD-9MP
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMD-12MP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



\*Even installing direction takes the direction of Fig.1 to perpendicular, ip to the direction of the 30°.  
Keep the distance more than 10mm with arc space shown Fig.2

Certificate  
CE, ULcUL



## Starters

- Open types
- Direct (Full voltage) types
- Coil voltage : AC
- 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

Certificate  
CE, ULcUL

#### Ordering information

Type, Auxiliary contact and Coil voltage  
Overload relay setting range

## Reversing contactors

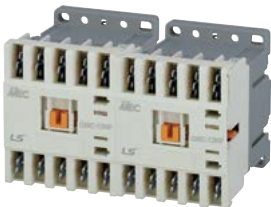
- For motor control
- Mechanically interlocked
- Coil voltage : AC

### 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-6MR
9A	2.2kW 9A	4kW 9A	3.7kW 6A	4kW 5A	20A	1NO or 1NC	GMC-9MR
12A	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	20A	1NO or 1NC	GMC-12MR
16A	4kW 16A	7.5kW 16A	5.5kW 9A	4kW 5A	20A	1NO or 1NC	GMC-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	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

- For motor control
- Mechanically interlocked
- Coil voltage : AC

### 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

Certificate  
CE, ULcUL

#### Ordering information

Type, Auxiliary contact and Coil voltage

## Reversing contactors

- For motor control
- Mechanically interlocked
- Coil voltage : DC

### 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

- For motor control
- Mechanically interlocked
- Coil voltage : DC



### 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)

Certificate  
CE, ULcUL

#### Ordering information

Type, Auxiliary contact and Coil voltage

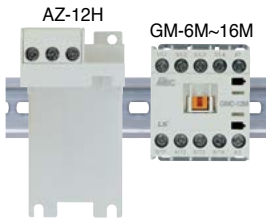
# Bimetallic style

## Description



GT-12M

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



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

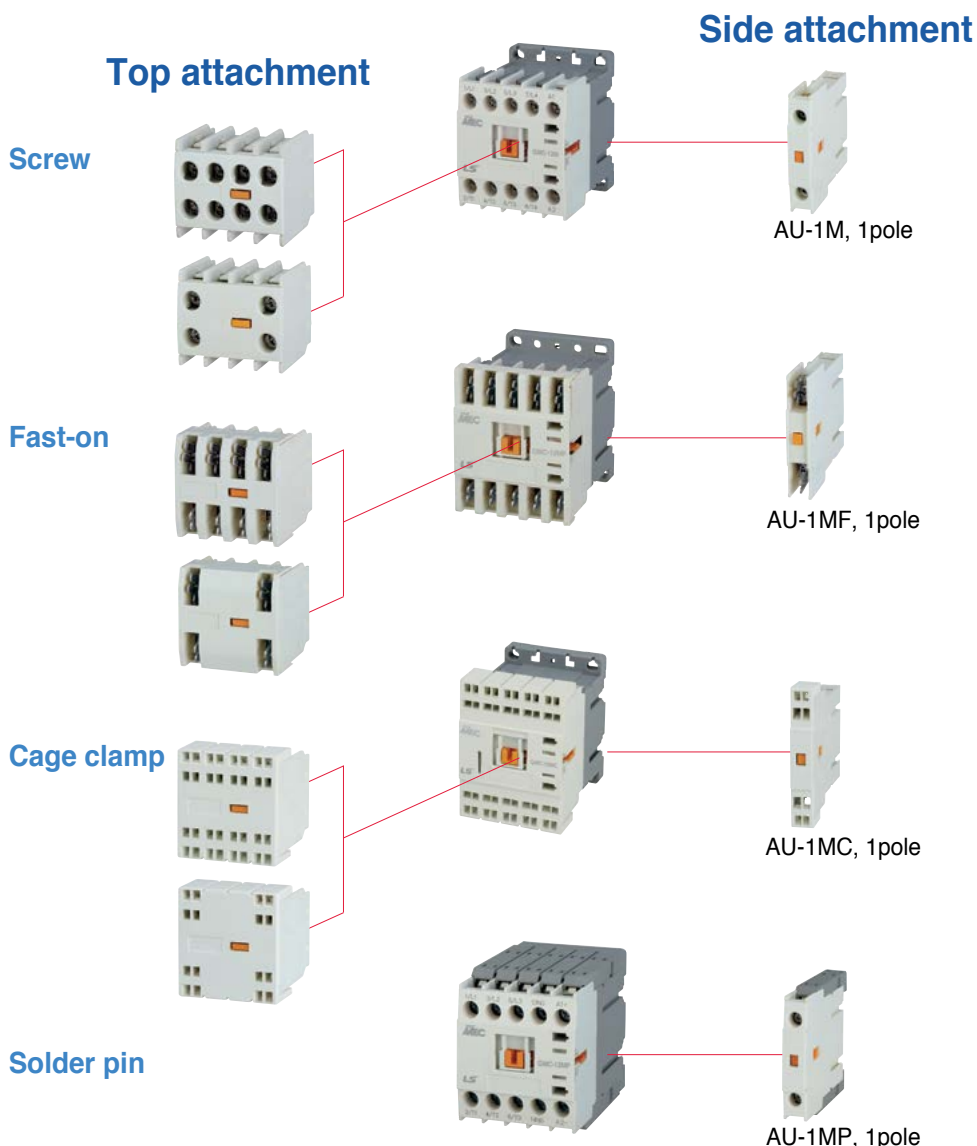
## Auxiliary (Trip) contact rating

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 of ( ) are the ratings of NO contact under 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 to 6 contacts,  
 DC 2W operation coil can extend to 2 contacts.

## Performance of auxiliary contact

Type	Rated operating current(A)												Lifetime (10,000 times)		Remark	
	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



AT-12M



### Surge absorber unit



AS-12M

## 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

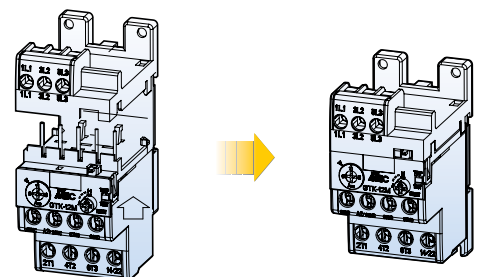
### Surge absorber unit



Type	Internal element	Operational 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

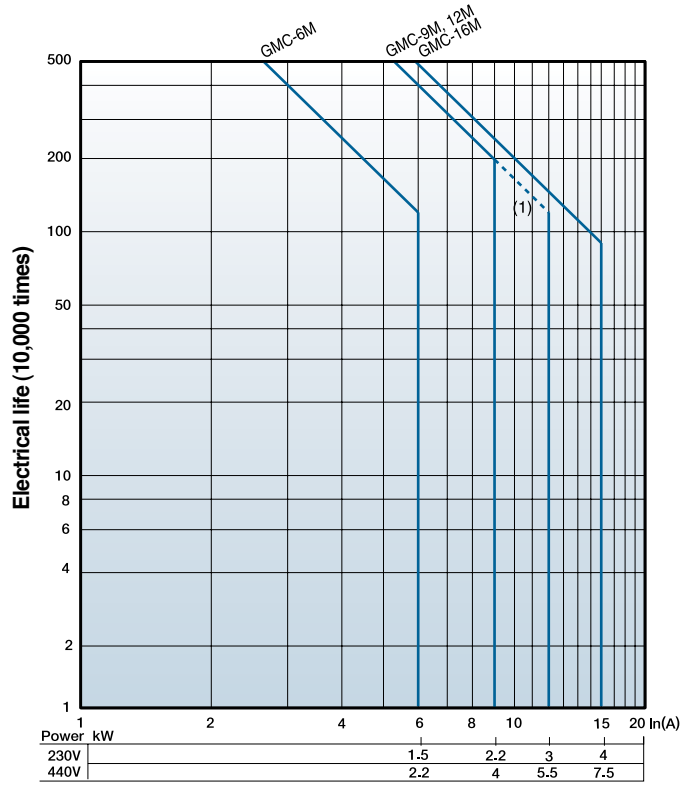
- To mount a relay separately from a contactor
- Mountable on DIN rail or by screw fixing





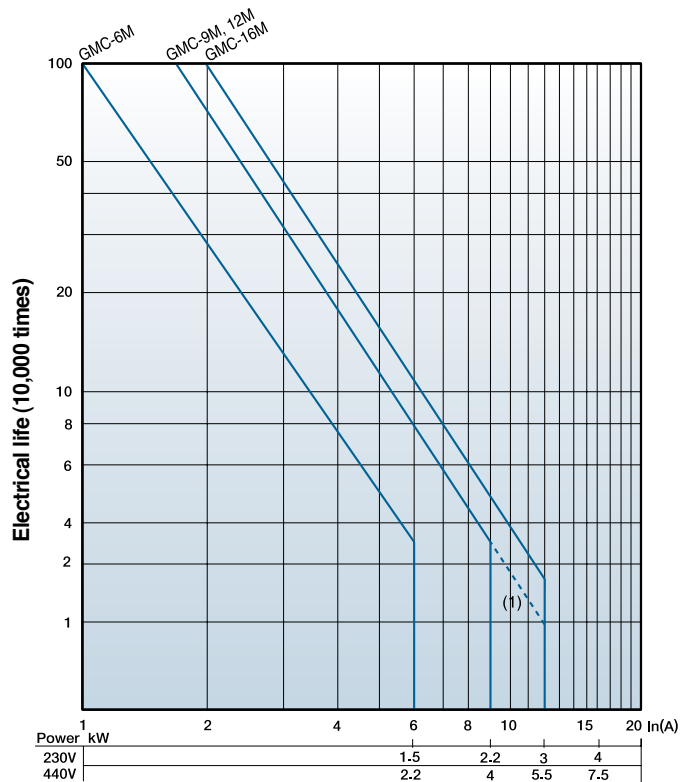
# Electrical life of mini contactors

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



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

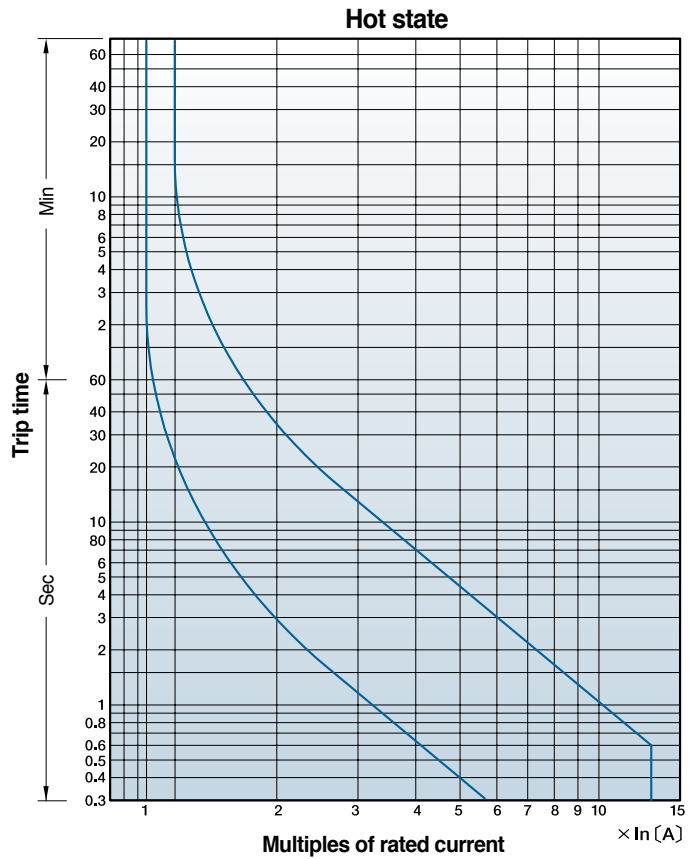
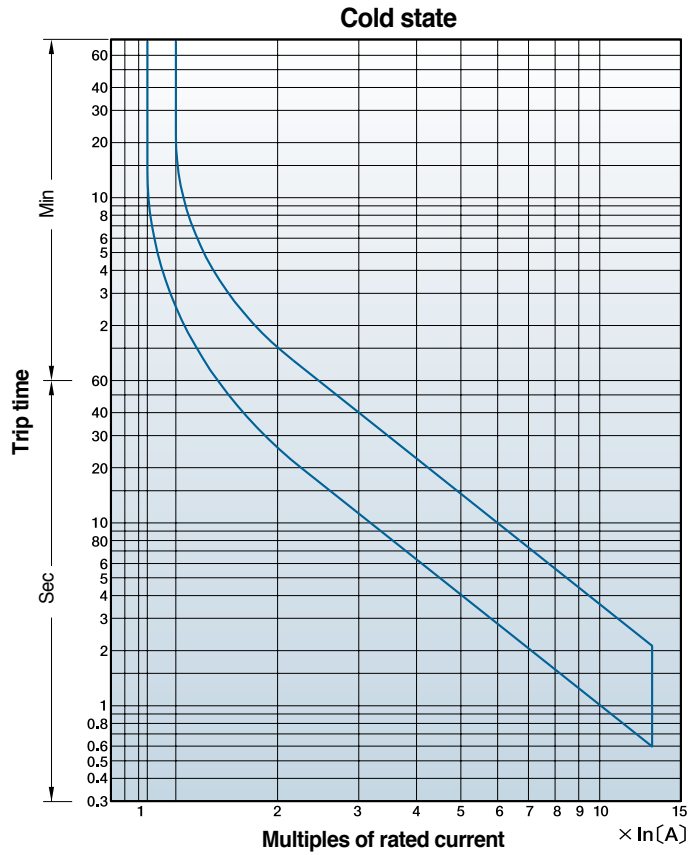
Use in category AC-4  
( $U_e \geq 440V$ )



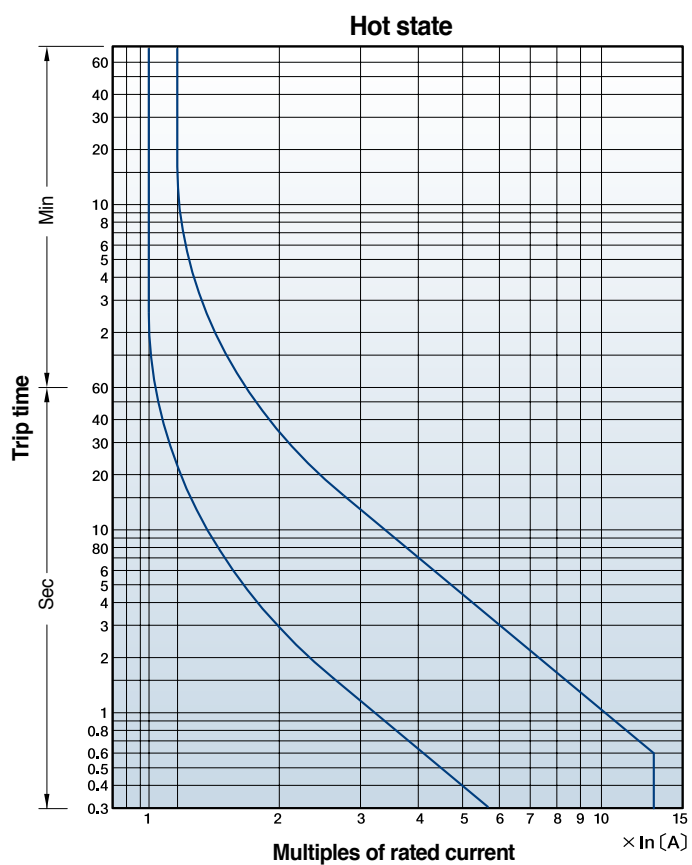
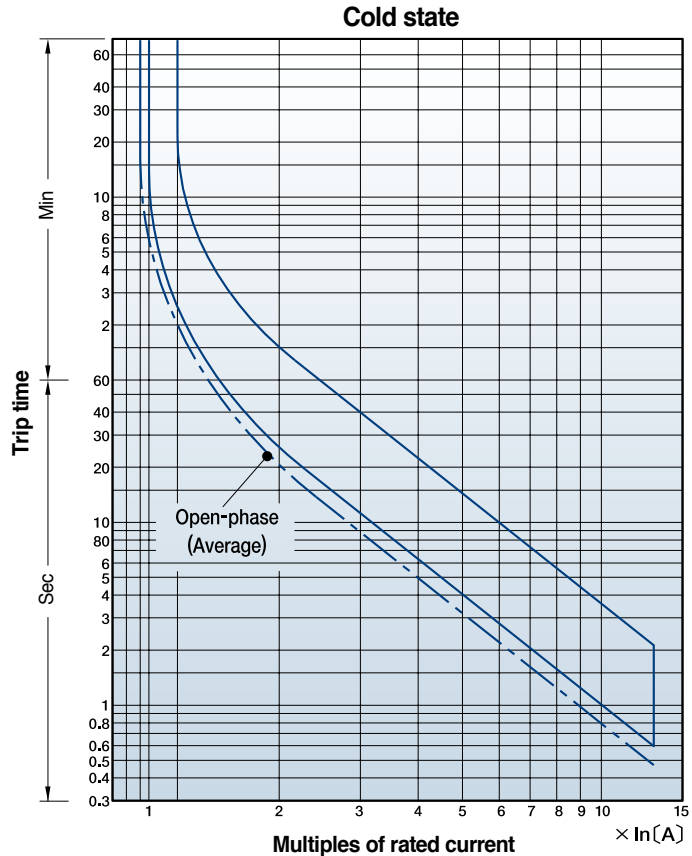
(1)The dotted lines are only applicable to GMC-12M contactors.

# Characteristic curve of thermal overload relay

Non-differential type  
GTH-12M



### Differential type GTK-12M



## Interlock unit, AR-12M

### Consists of

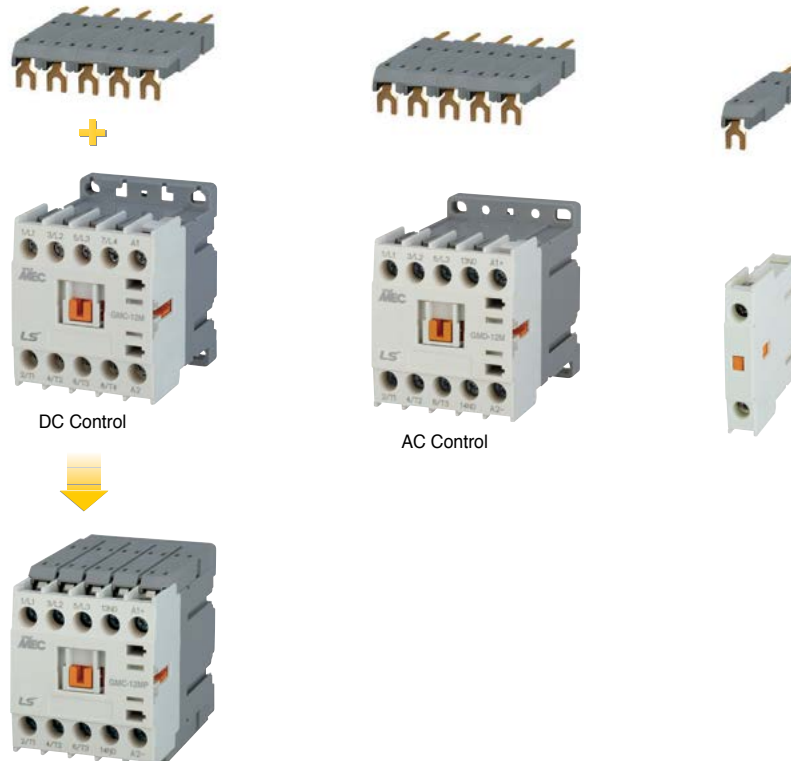
- Mechanical interlock components
- Cable kits for line and load sides



\* Wire kit Included model name is AR-DMW,  
not included model name is AR-DM.

## Solder pin terminals

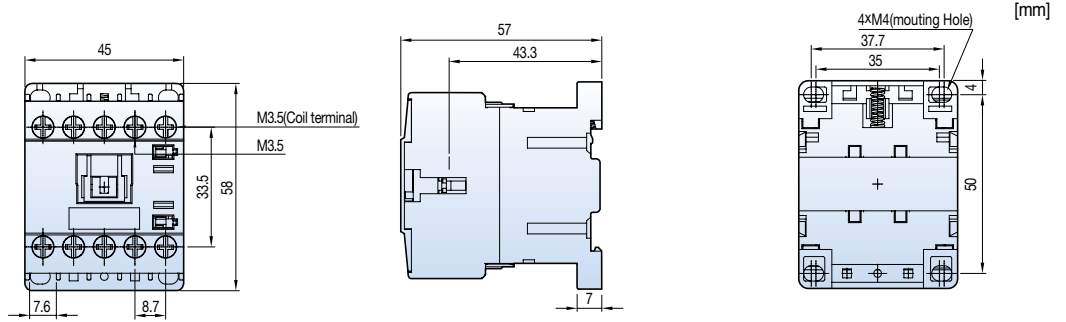
To modify the connection to Solder pin type from Screw clamp type  
Available for contactors and auxiliary contact blocks



# Dimensions

## Mini contactors with Screw clamp type

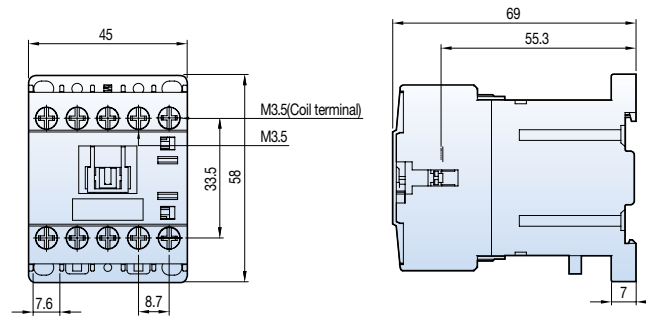
- GMC-6M
- GMC-9M
- GMC-12M
- GMC-16M
- GMC-6M/4
- GMC-9M/4
- GMC-12M/4
- GMC-16M/4



[mm]

0.17kg

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

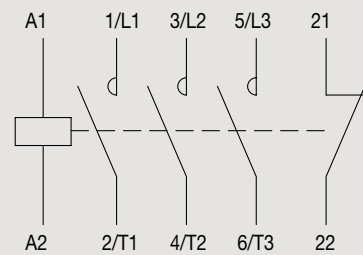
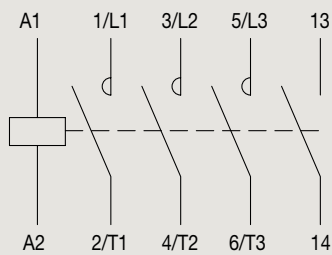


0.23kg

## Circuit diagram

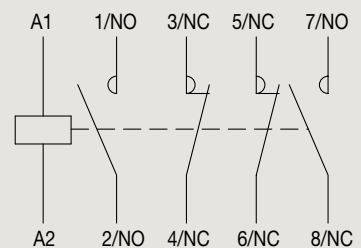
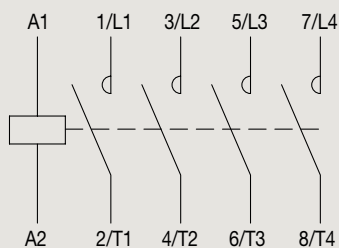
### GMC-6M~16M, GMD-6M~16M

#### 3-Pole contactors



### GMC-6M/4~16M/4, GMD-6M/4~16M/4

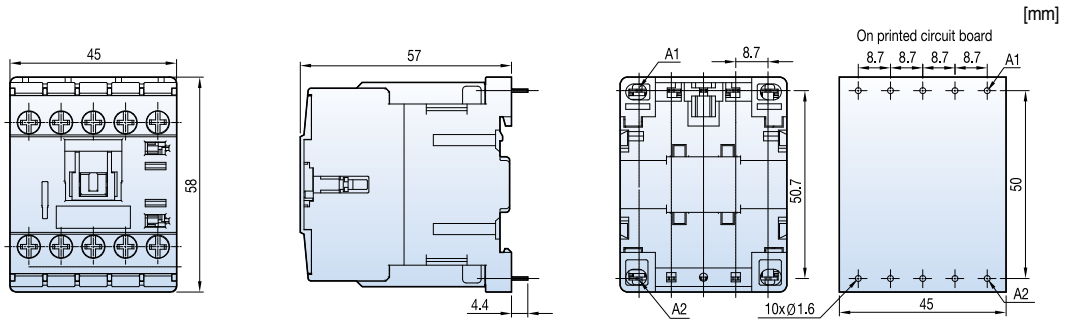
#### 4-Pole contactors



# Dimensions

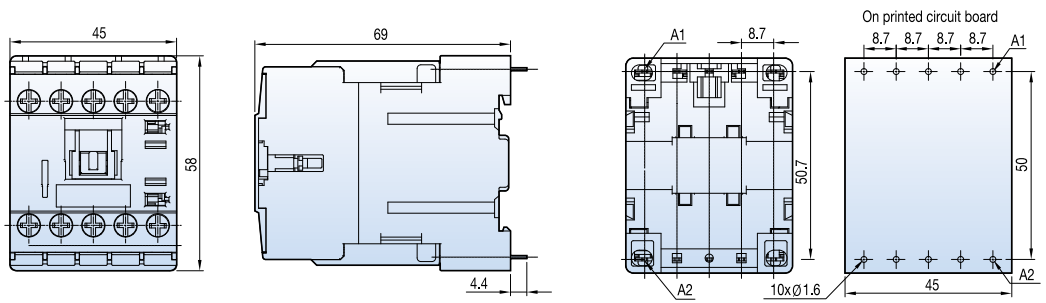
## Mini contactors with Solder pin type

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



0.17kg

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

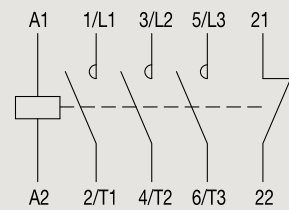
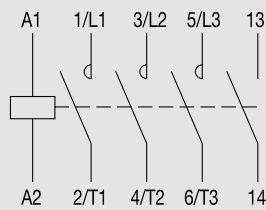


0.23kg

## Circuit diagram

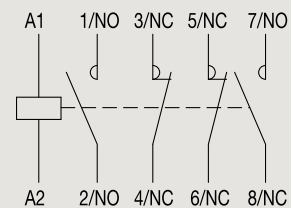
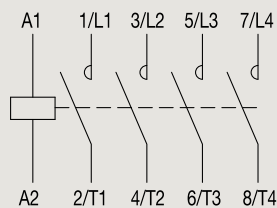
### GMC-6MP~16MP, GMD-6MP~16MP

3-Pole contactors



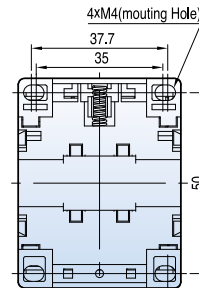
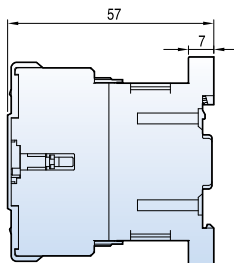
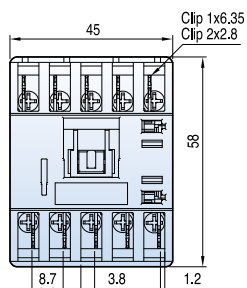
### GMC-6MP/4~16MP/4, GMD-6MP/4~16MP/4

4-Pole contactors



## Mini contactors with Fast-on type

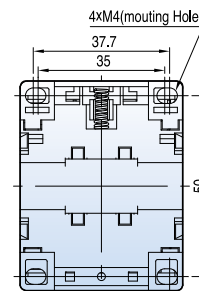
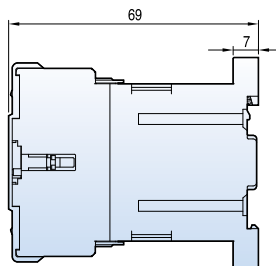
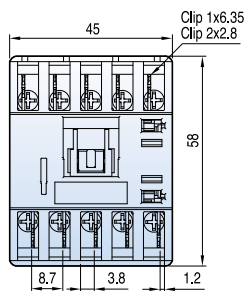
- GMC-6MF
- GMC-9MF
- GMC-12MF
- GMC-16MF
- GMC-6MF/4
- GMC-9MF/4
- GMC-12MF/4
- GMC-16MF/4



[mm]

0.18kg

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

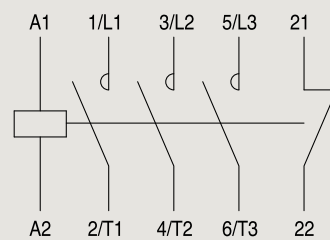
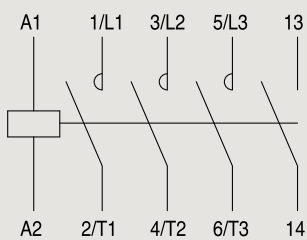


0.27kg

## Circuit diagram

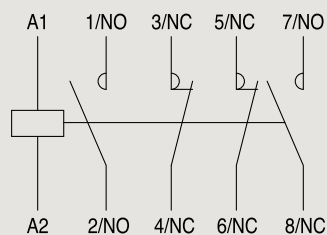
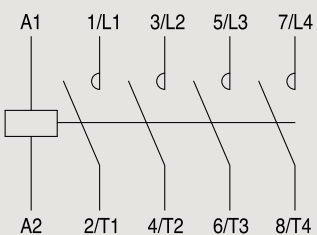
### GMC-6MF~16MF, GMD-6MF~16MF

#### 3-Pole contactors



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

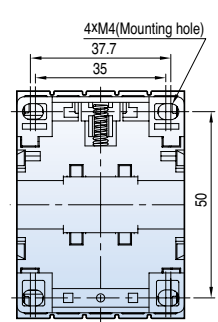
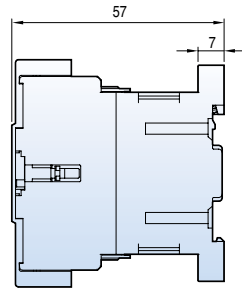
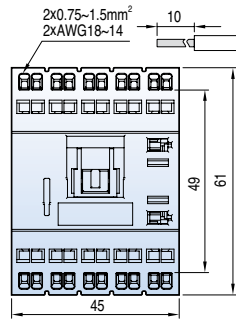
#### 4-Pole contactors



# Dimensions

## Mini contactors with Cage clamp type

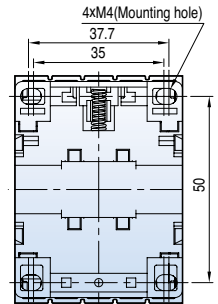
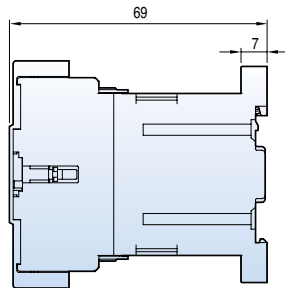
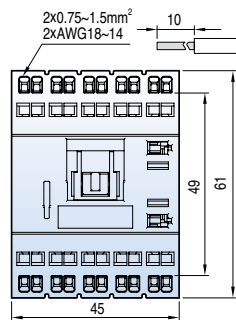
- GMC-6MC
- GMC-9MC
- GMC-12MC
- GMC-16MC
- GMC-6MC/4
- GMC-9MC/4
- GMC-12MC/4
- GMC-16MC/4



[mm]

0.19kg

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

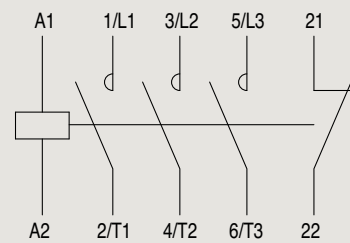
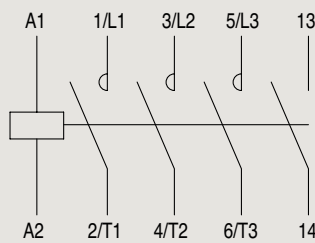


0.28kg

## Circuit diagram

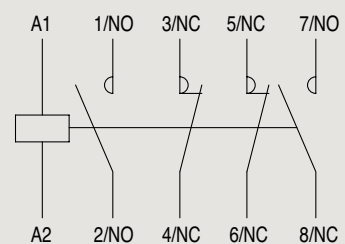
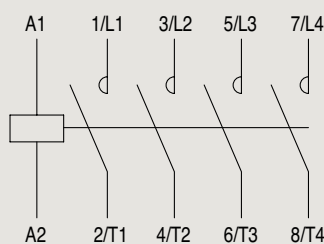
### GMC-6MC~16MC, GMD-6MC~16MC

#### 3-Pole contactors



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

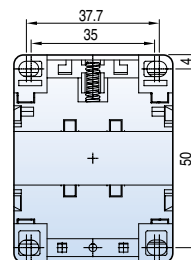
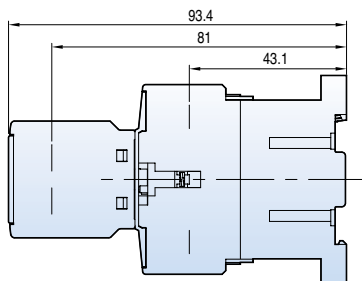
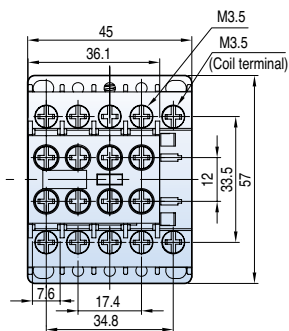
#### 4-Pole contactors





## Mini contactors with Auxiliary contacts

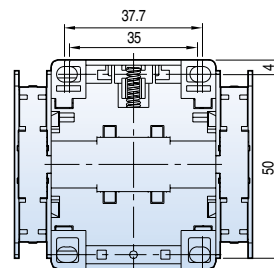
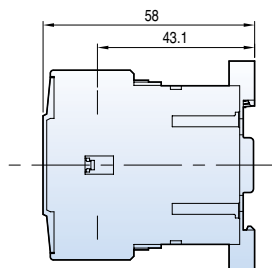
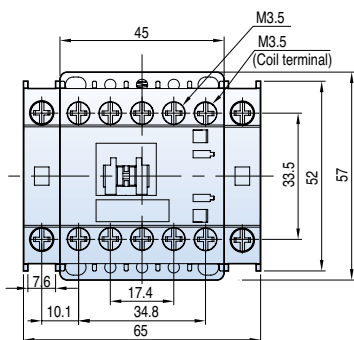
- GMC-6M
- GMC-9M
- GMC-12M
- GMC-16M
- +
- AU-4M



[mm]

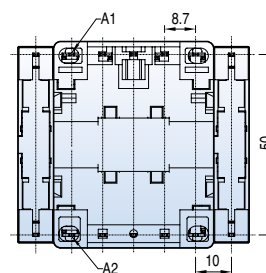
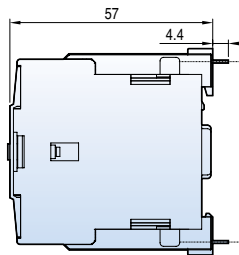
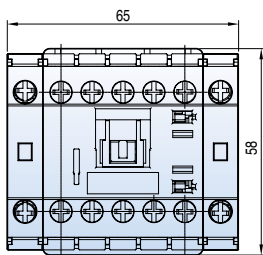
0.21kg

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



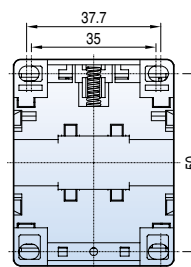
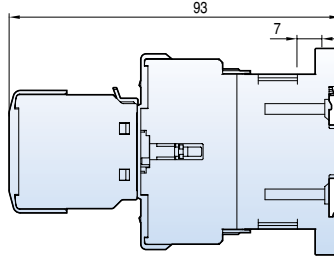
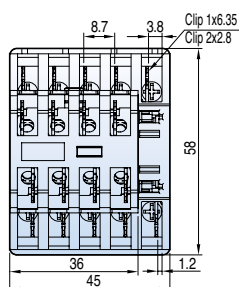
0.21kg

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



0.23kg

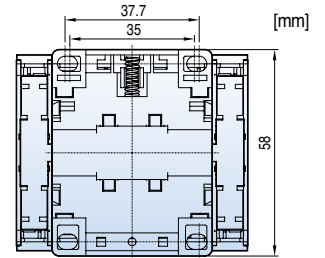
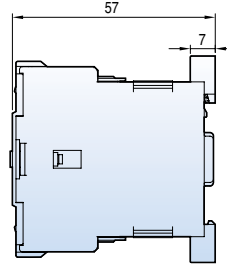
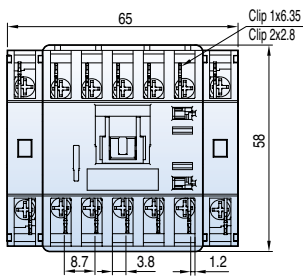
- GMC-6MF
- GMC-9MF
- GMC-12MF
- GMC-16MF
- +
- AU-4MF



# Dimensions

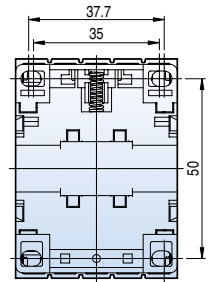
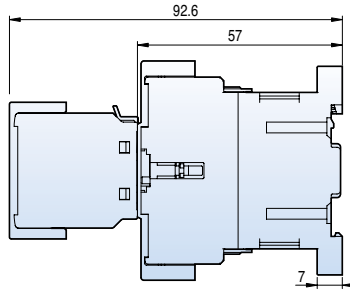
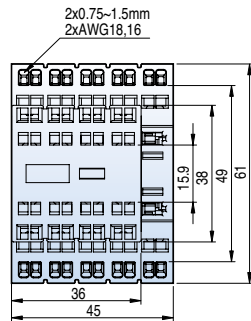
## Mini contactors with Auxiliary contacts

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



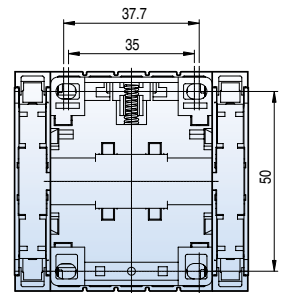
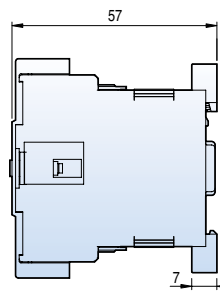
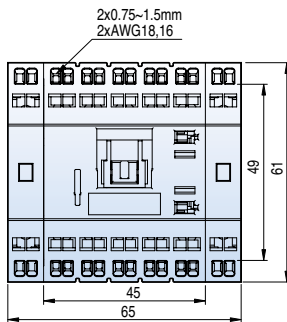
0.32kg

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



0.24kg

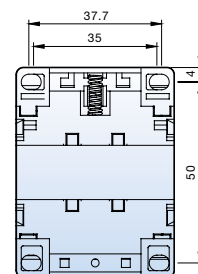
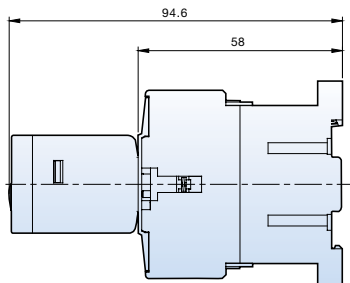
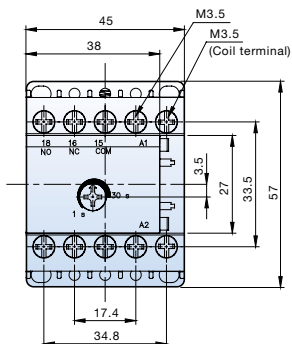
- GMC-6MC
- GMC-9MC
- 2× GMC-12MC
- GMC-16MC
- +
- 2× AU-1MC



0.23kg

## Mini contactors with external accessories

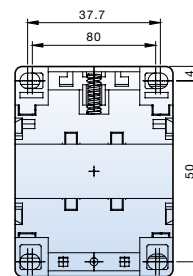
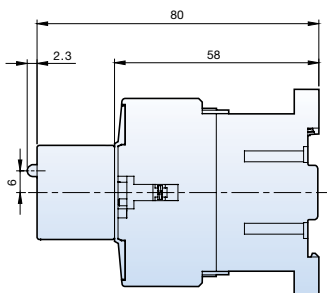
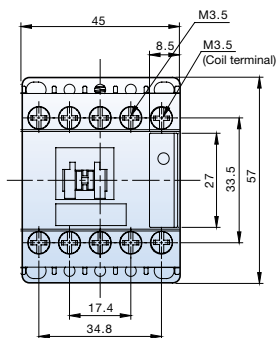
- GMC-6M
- GMC-9M
- GMC-12M
- GMC-16M
- +
- AT-12M



[mm]

0.21kg

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

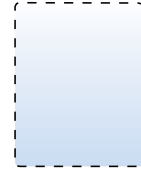
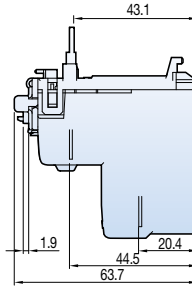
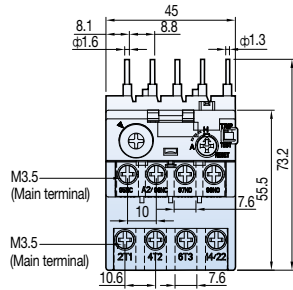


0.175kg

# Dimensions

## Thermal overload relays for Mini contactors

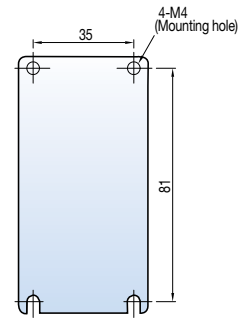
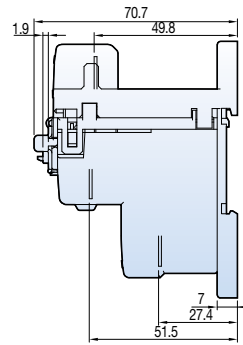
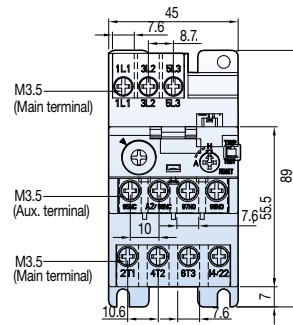
GTH(K)-12M



[mm]

0.1kg

GTH(K)-12MH

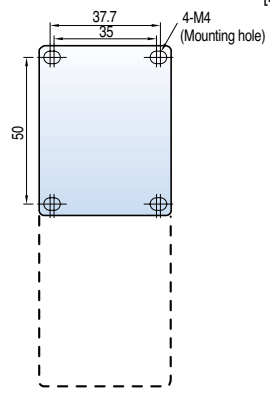
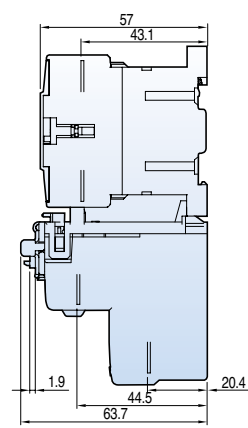
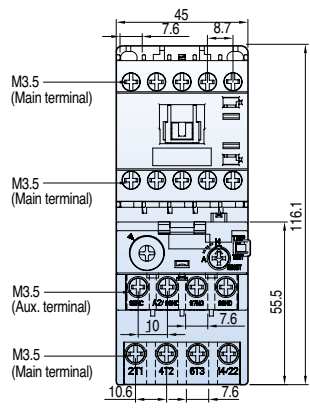


0.4kg

## Mini motor starters, open

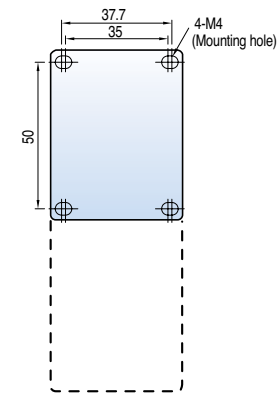
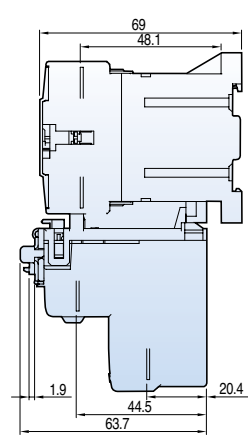
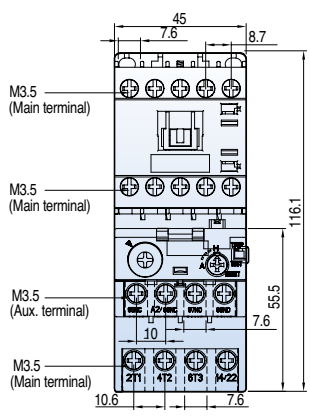
[mm]

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



0.26kg

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



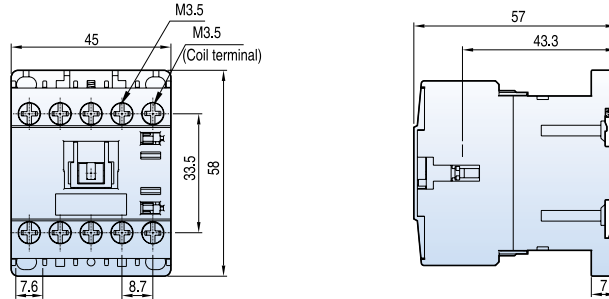
0.39kg

# Dimensions

## Mini contactor relays

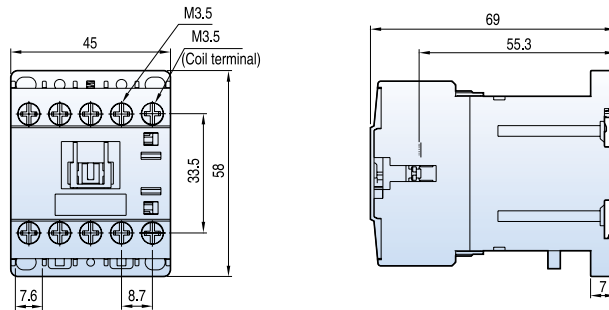
[mm]

GMR-4M



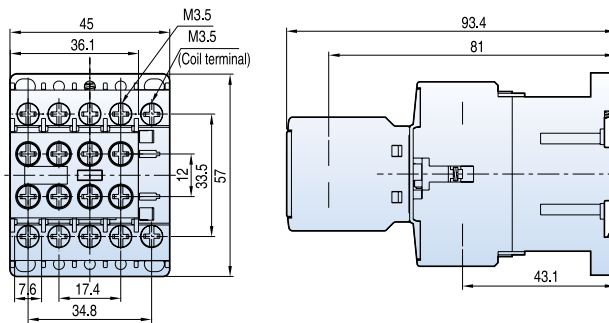
0.17kg

GMR-4MD



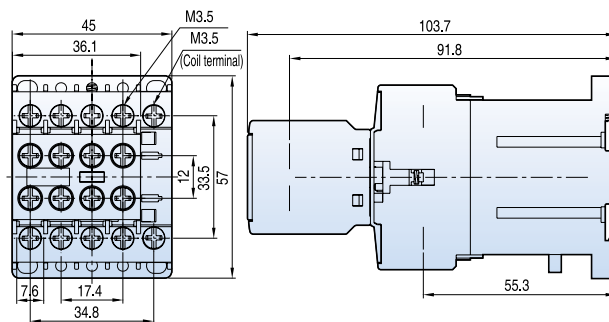
0.23kg

GMR-4M  
GMR-8M



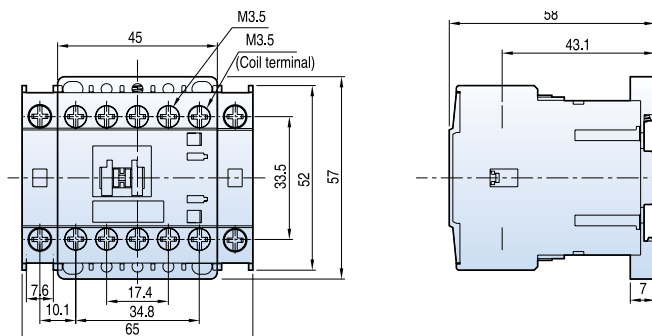
0.21kg

GMR-4M  
GMR-8M



0.21kg

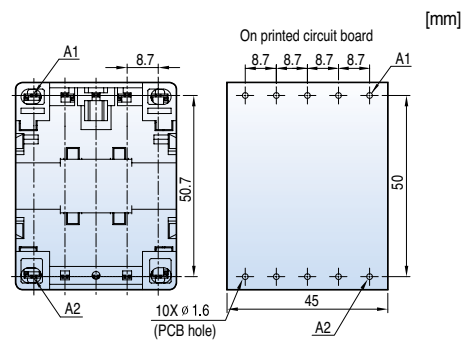
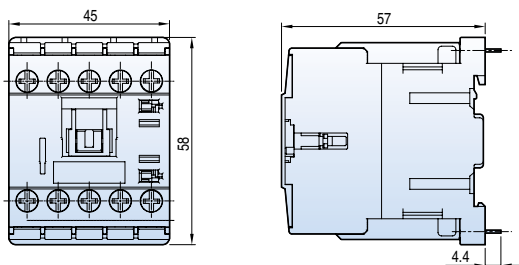
GMR-4M  
+  
2 × AU-1M



0.21kg

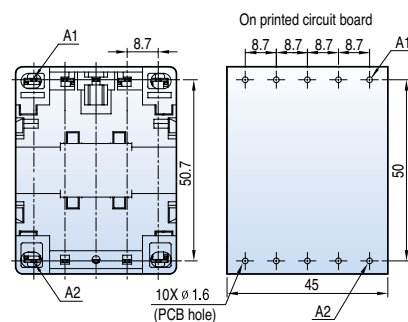
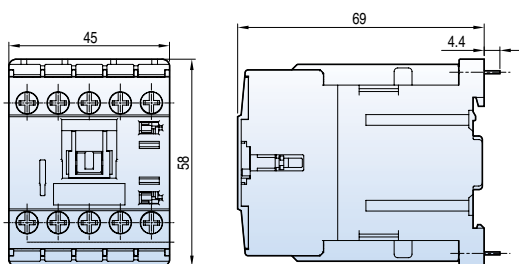
## Mini contactor relays

GMR-4MP



0.19kg

GMR-4MPD

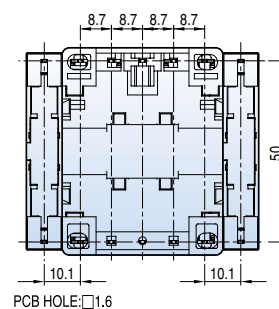
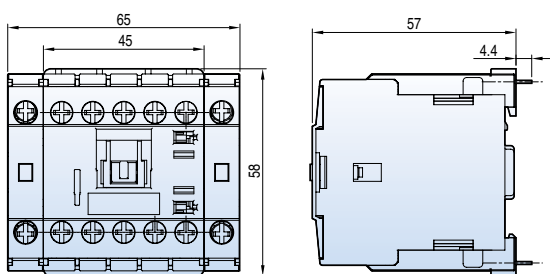


0.28kg

GMR-4MP

+

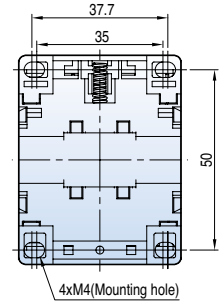
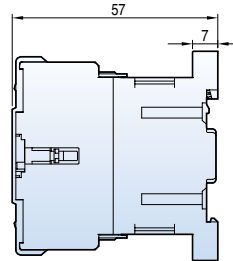
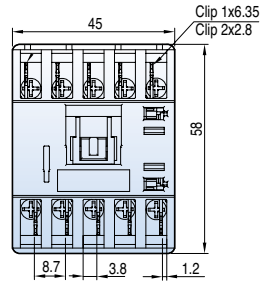
2× AU-1M



# Dimensions

## Mini contactor relays

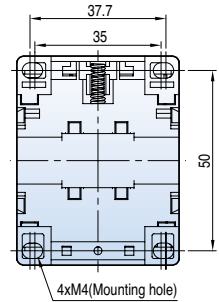
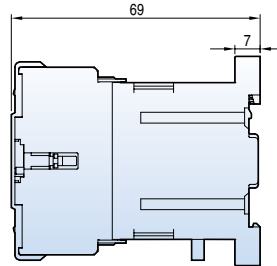
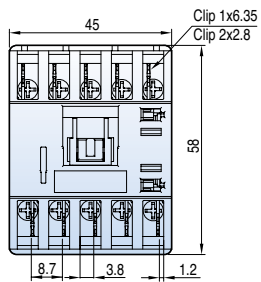
GMR-4MF



[mm]

0.18kg

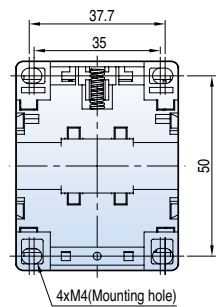
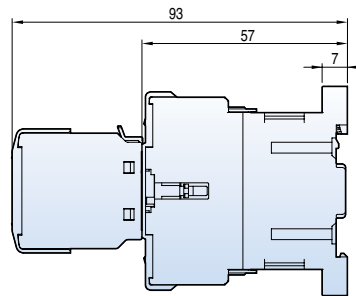
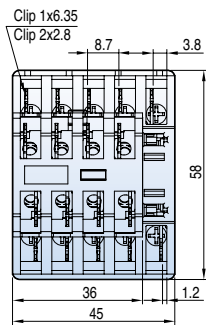
GMR-4MFD



0.27kg

GMR-6MF

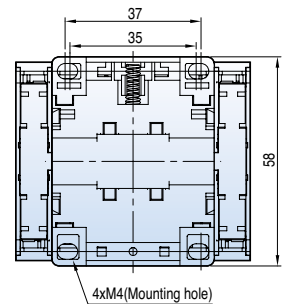
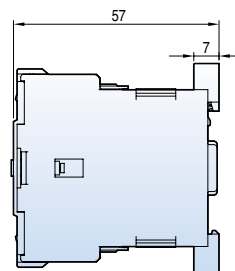
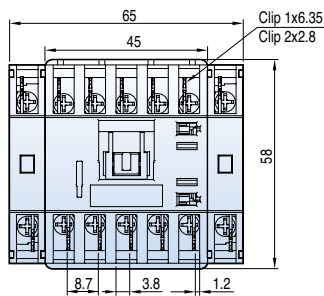
GMR-8MF



0.23kg

GMR-4MF

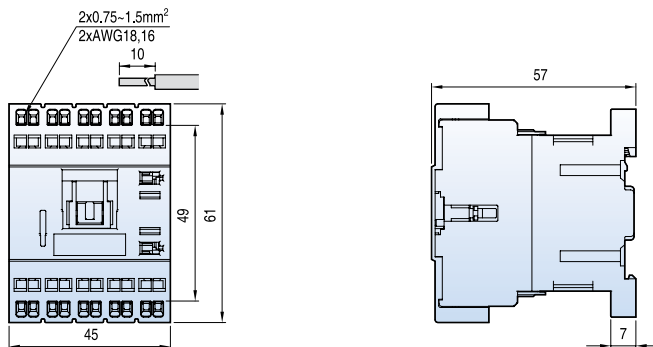
2x + AU-1MF



0.32kg



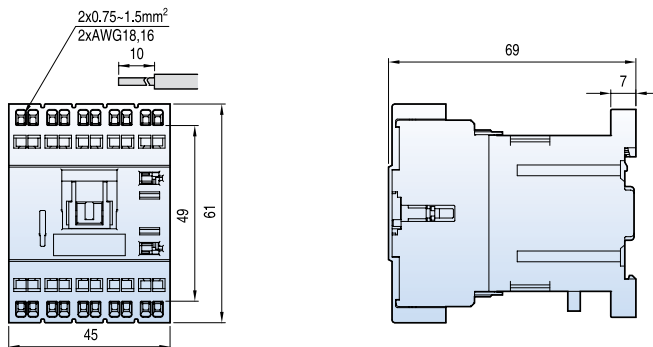
GMR-4MC



[mm]

0.18kg

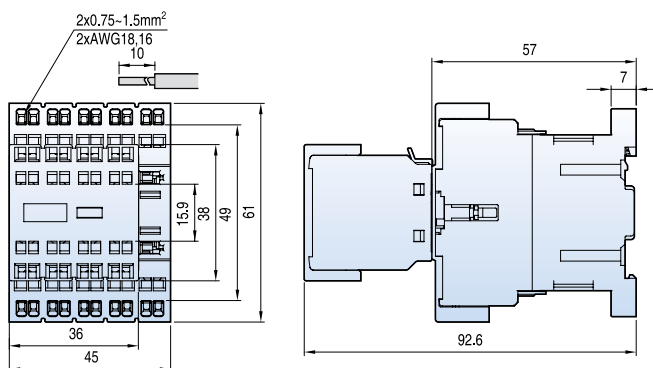
GMR-4MCD



0.27kg

GMR-6MC

GMR-3MC

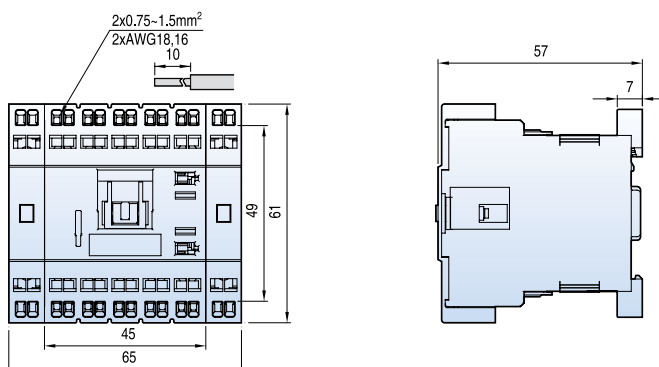


0.23kg

GMR-4MC

+

2x AU-1MC



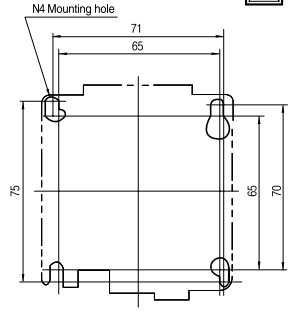
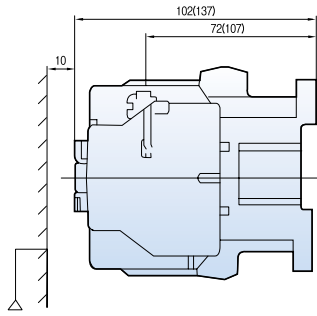
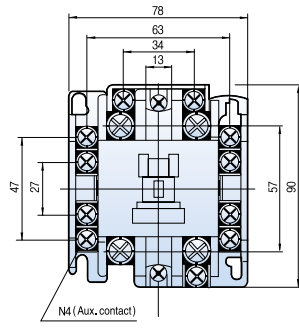
0.32kg

# Dimensions

## 2-pole DC Contactors

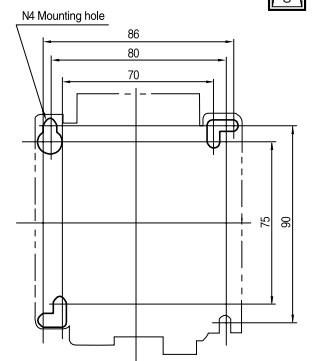
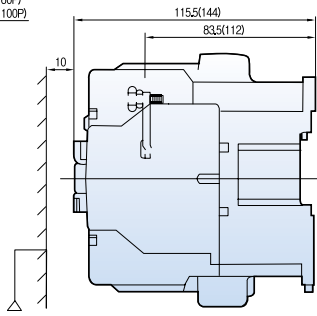
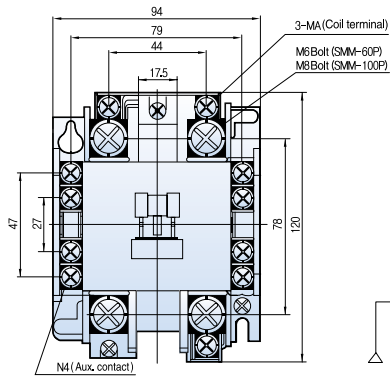
[mm]

- 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

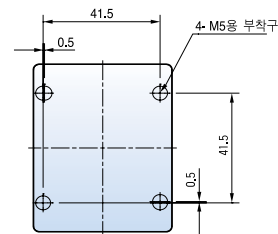
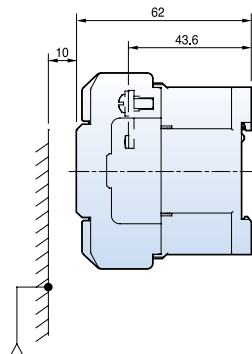
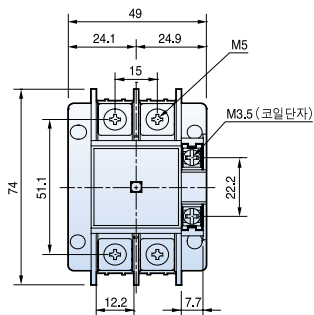
GMC-25P2

GMC-30P2

GMC-35P2

GMC-40P2

(TSBS Type)



[mm]

1.29kg

GMC-10P2

GMC-20P2

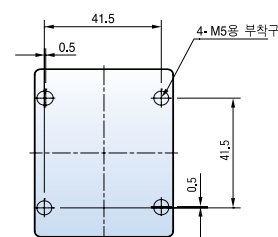
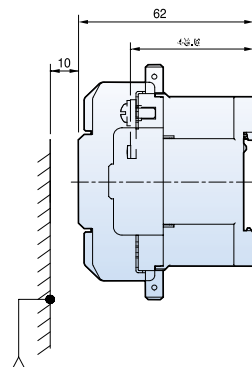
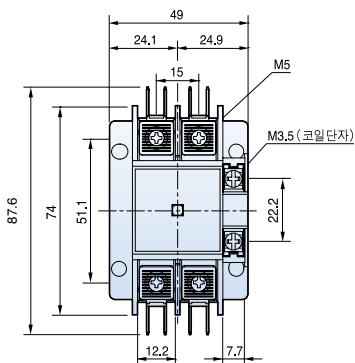
GMC-25P2

GMC-30P2

GMC-35P2

GMC-40P2

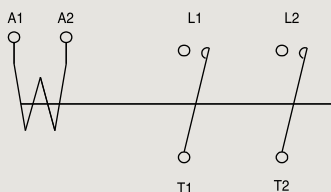
(TQBS Type)



1.29kg

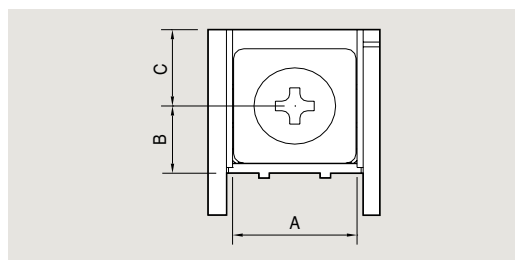
### Circuit diagram

GMC-10P2~40P2



### Terminal

Type	Terminal	Screw (mm <sup>2</sup> )	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

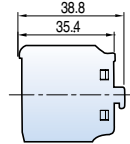
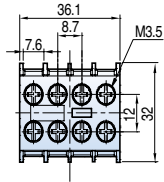


# Dimensions

## Accessories for Mini contactors

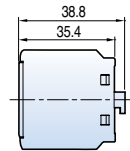
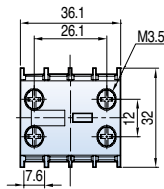
[mm]

AU-4M



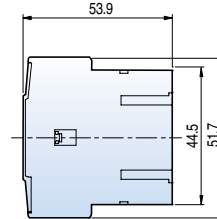
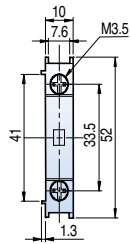
0.04kg

AU-2M



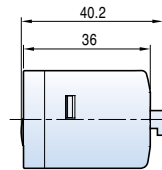
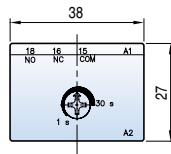
0.03kg

AU-1M



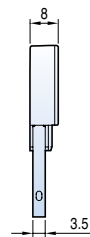
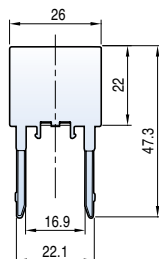
0.02kg

AT-12M



0.04kg

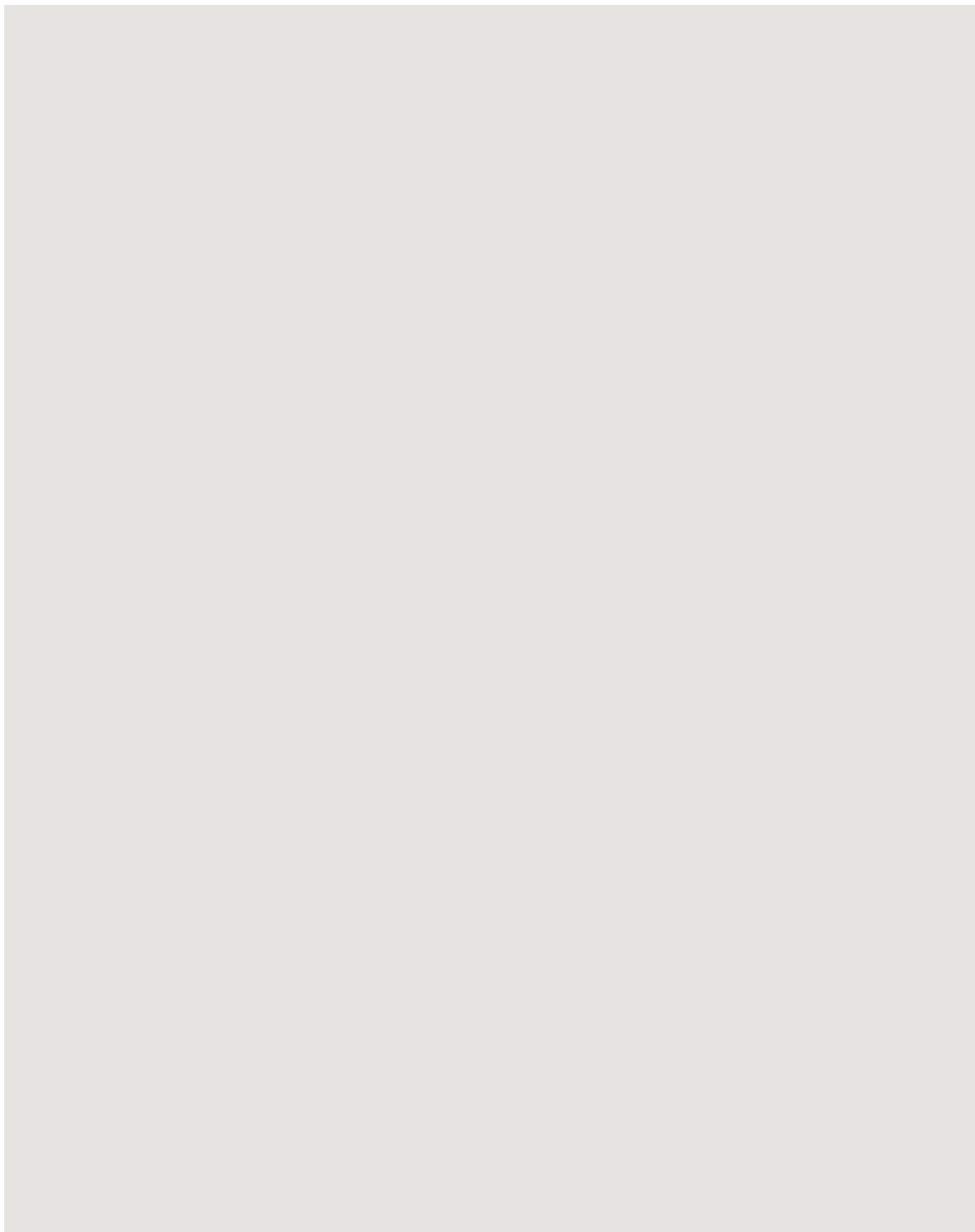
AS-12M

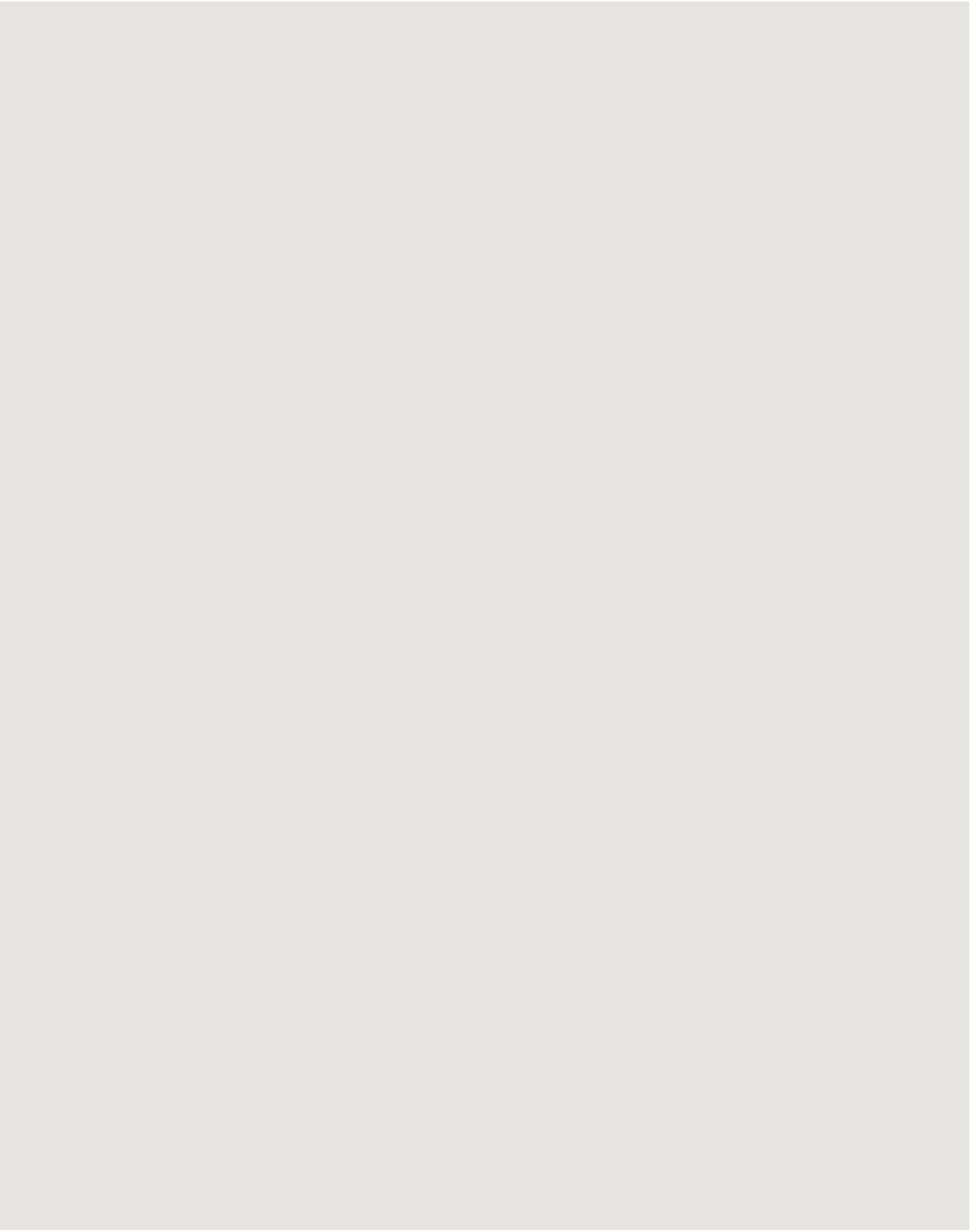


0.005kg

# Memo

# Memo







### Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance. Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.



- According to The WEEE Directive, please do not discard the device with your household waste.



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