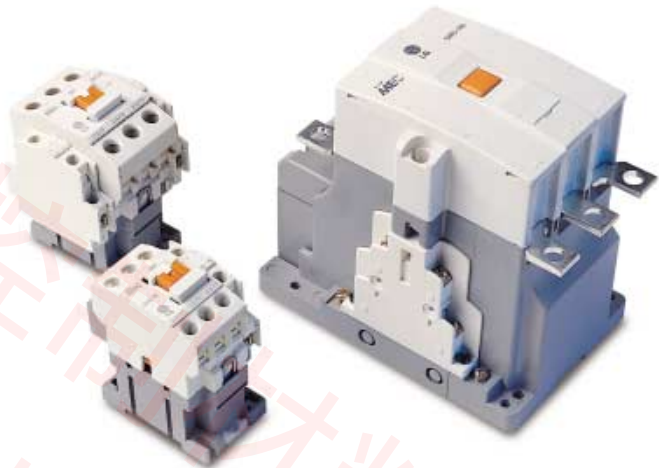
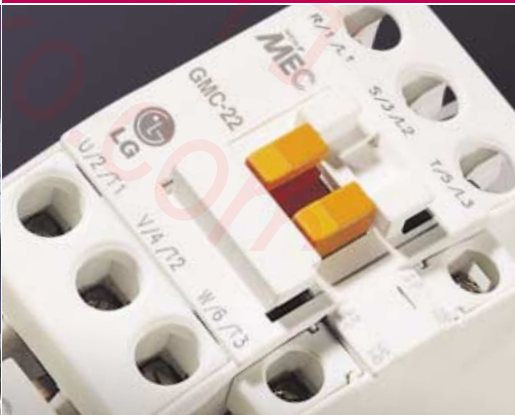


Meta-MEC  
**CONTACTORS  
AND OVERLOAD RELAYS**



益成自動控制材料行  
<http://sale.enproteko.com>

Electric Equipment



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## Mini contactors & Mini overload relays

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## Contactors & Overload relays

9A ~ 800A



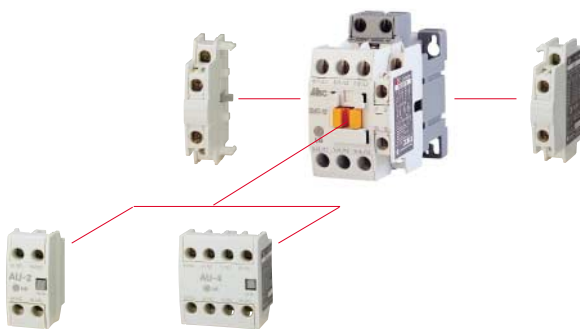
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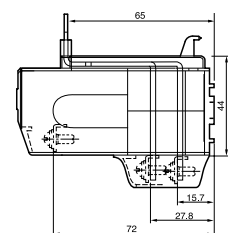
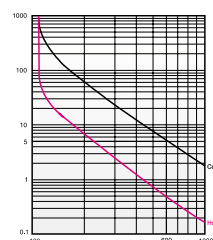


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# Contactors

**META MEC** provide complete ranges not only for 3-pole but also for 4-pole up to 800A

## 3-pole contactors

20 rating classes in 8 sizes  
AC/DC controls are available



Frame size (A)  
Power(kW, 400V)  
NEMA size

Frame size (A)	6	9	12	16	18	22	32	40	50	65	75
Power(kW, 400V)	2.2	4	5.5	7.5	7.5	11	15	18.5	22	30	37
NEMA size		00			0		1		2		



## 4-pole contactors

19 rating classes in 7 sizes  
AC/DC controls are available  
Overloads are directly mountable.  
Main accessories are common use with 3-pole

### 3 and 4 pole Contactors up to 800A

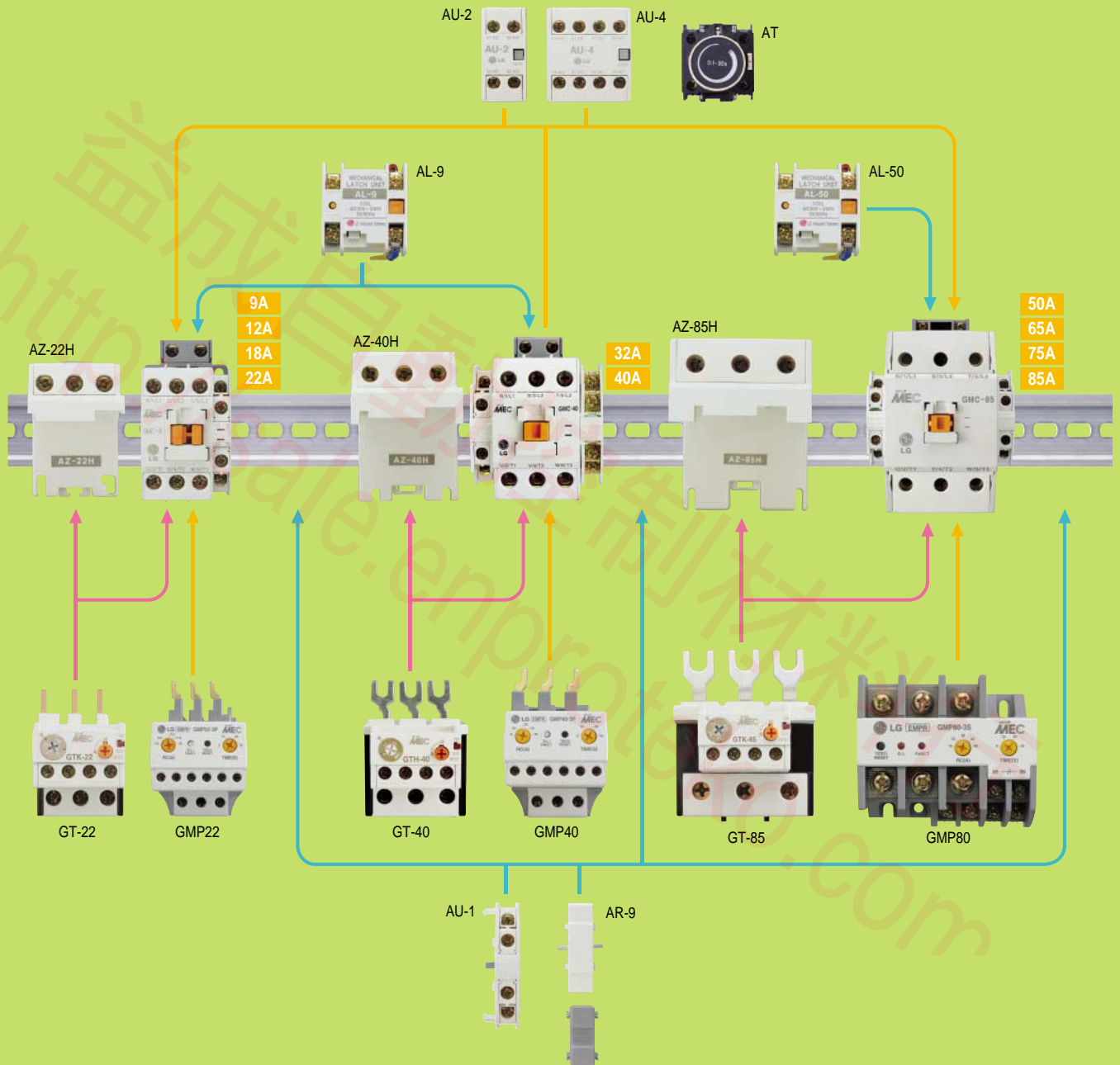


85	100	125	150	180	220	300	400	600	800
45	55	60	75	90	132	160	220	330	440
3			4			5		6	



# Contactors & Accessories

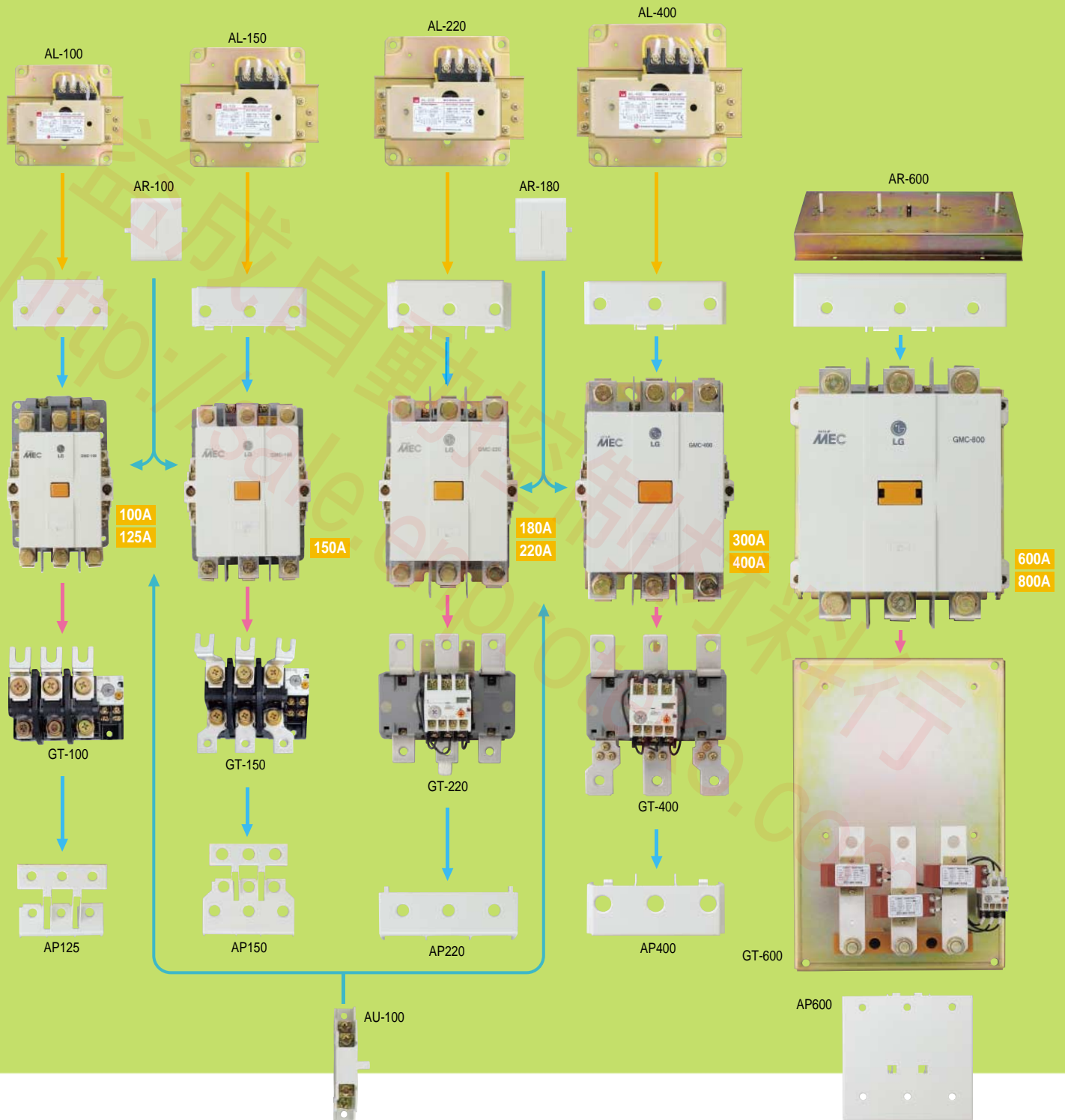
## Layout up to 85A frame size



GM	GT	GMP	AU	AL	AZ	AR	AT	AP
Contactor	Overload(Bimetallic) relay	Overload(Solid-state) relay	Aux. contact	Latch unit	Separate mount unit	Interlock	Pneumatic timer	Terminal cover



## Layout above 100A to 800A frame size



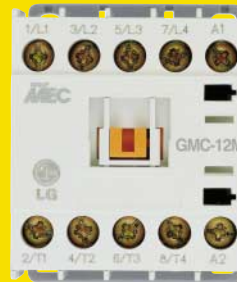
# Mini contactors

## Mini contactors providing various connections and Accessories

### Ratings

Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith
	220 ~ 240V	280 ~ 440V	500 ~ 550V	690V	
6A	1.5kW	2.2kW	3kW	3kW	20A
	7A	6A	5A	4A	
9A	2.2kW	4kW	3.7kW	4kW	20A
	9A	9A	6A	5A	
12A	3kW	5.5kW	4kW	4kW	20A
	12A	12A	7A	5A	
16A	4kW	7.5kW	5.5kW	4kW	20A
	15A	16A	9A	5A	

### Screw clamps



### Fast-on



For conventional  
screw connections

For fast-on  
connections



Mini-overload relay



Overload relay  
separately mounted



Reversing contactor



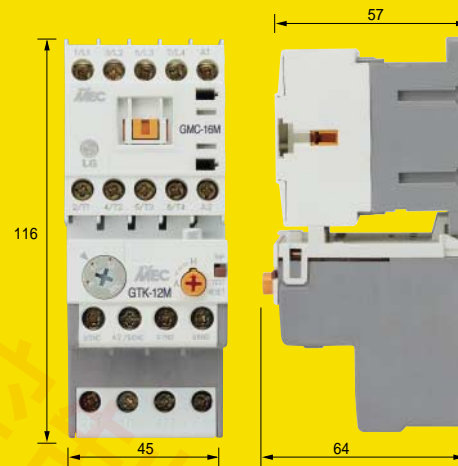
**Cage clamps**



**Solder pins**



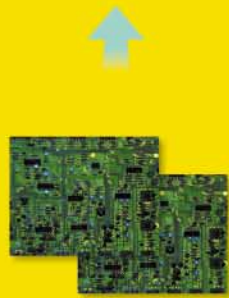
**Dimensions, mm**



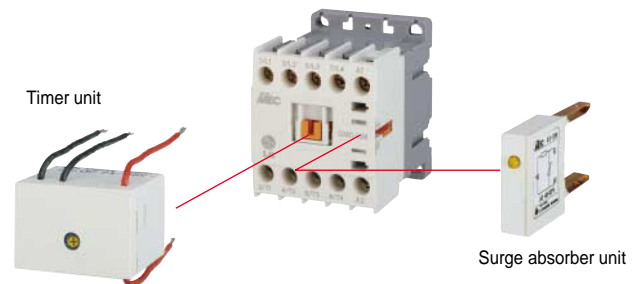
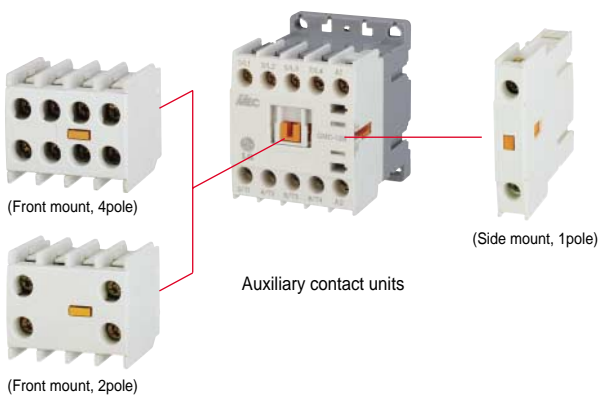
(Screw clamp type)



**For screwless connections**



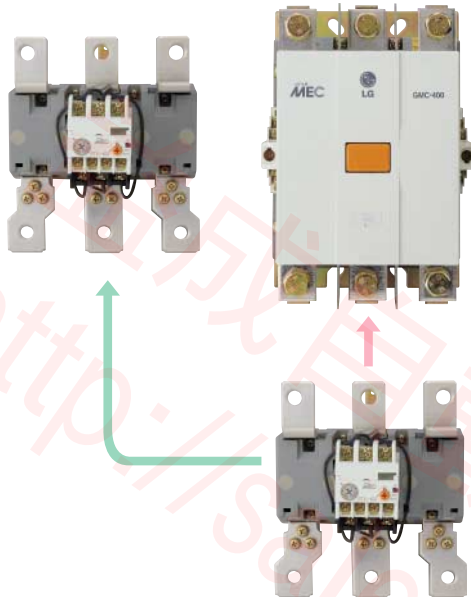
**To mount on printed circuit boards**



# Overload relays

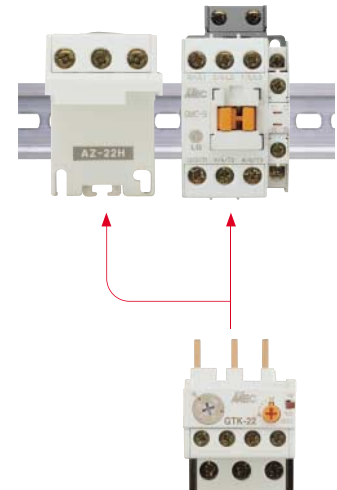
## Thermal (Bimetallic) style up to 800A

GT type overload relays are designed for the easy mounting directly to contactors or separately by using additional bases or brackets.

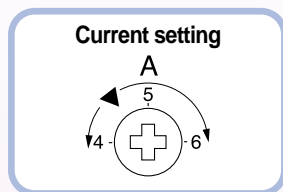


**Relays frame current over 80A**  
Separate mount on panel with screws.  
Bracket is required by type.

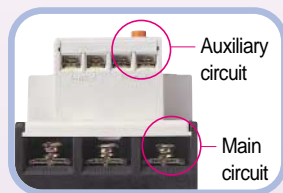
**Relays frame current up to 80A**  
Optional bases are used to mount the relays separately either on 35mm DIN rail or on panel with screws.



## Overload relay structure



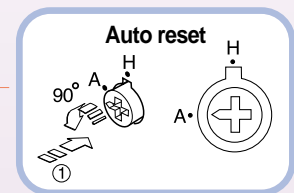
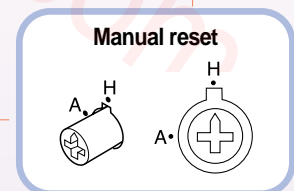
Finger proof design



Main and auxiliary terminals are arranged to keep people from wrong wiring for the low current frame relays.



The bar indicator to be protruded by 2-3mm to indicate trip status visibly. Push it to reset the relay in the case of using manual reset mode.



To set "Auto reset" mode push the orange bar and rotate it 90 degrees count clockwise.

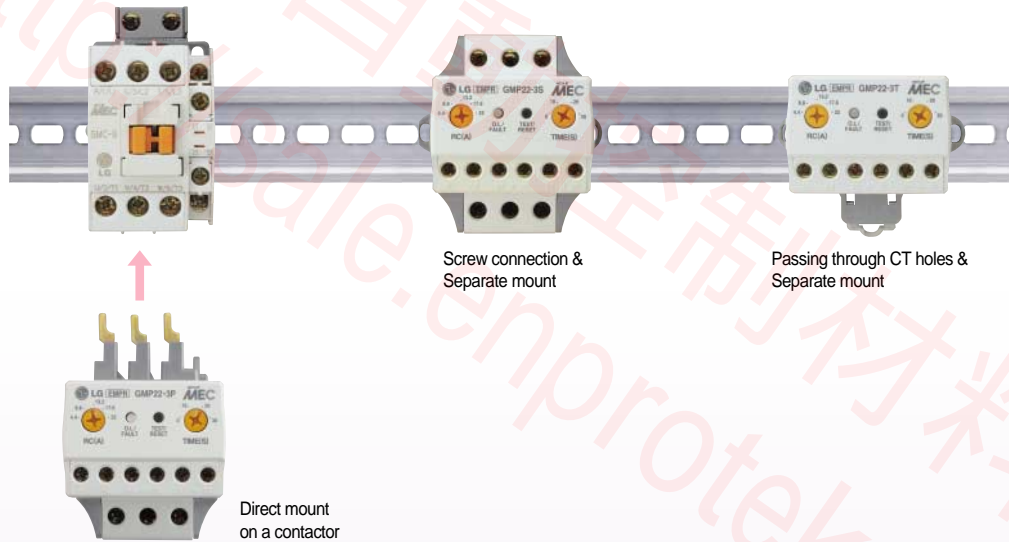


# Electronic style up to 80A

## Multi-protection

Number of sensors Types ( GMP- □ )	2CT (-2P, -2T, -2S)	3CT (-3P, -3T, -3S)	3CT (-3PR, -3TR, -3SR)
Overcurrent	○	○	○
Phase loss	○	○	○
Locked rotor	○	○	○
Phase unbalance		○	○
Phase reversed			○

## Various connection



## Broad range of current/time setting



### Current setting

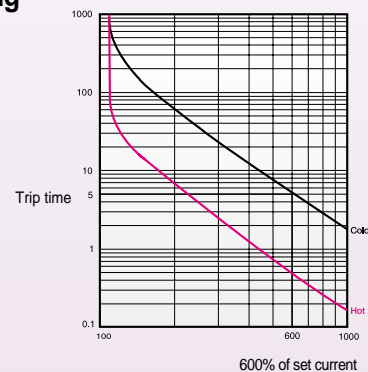
- Type GMP22
  - 0.3-1.5A
  - 1-5A
  - 4.4-22A
- Type GMP40
  - 4-20A
  - 8-40A
- Type GMP80
  - 16-80A

### LED indicator

- Operation status indication
  - Normal operating
  - Overload
  - Phase unbalance
- Trip cause indication
  - Overcurrent
  - Phase loss
  - Reverse phase







### Trip time setting

- Trip class 5 to 30 (5 to 30 sec at 6 x set current)







# Quick selection table



## Contactors ... 9 to 85A

Frame size		9A		12A		18A		22A	
<b>3-pole Contactors</b>									
		See page 40 for more details							
Types	AC coil	GMC-9		GMC-12		GMC-18		GMC-22	
	DC coil	GMD-9		GMD-12		GMD-18		GMD-22	
<b>Ratings / IEC60947-4</b>		kW	A	kW	A	kW	A	kW	A
AC1			<b>25</b>		<b>25</b>		<b>40</b>		<b>40</b>
AC3	200/240V	2.5	11	3.5	13	4.5	18	5.5	22
	<b>380/440V</b>	<b>4</b>	<b>9</b>	<b>5.5</b>	<b>12</b>	<b>7.5</b>	<b>18</b>	<b>11</b>	<b>22</b>
	500/550V	4	7	7.5	12	7.5	13	15	22
	690V	4	5	7.5	9	7.5	9	15	18
<b>Ratings / UL508</b>		hp	A	hp	A	hp	A	hp	A
continuous current			20		25		30		32
single phase	115V	0.5		0.5		1		2	
	230V	1		2		3		3	
three phase	200V	2		3		5		7	
	230V	2		3		5		7.5	
	<b>460V</b>	<b>5</b>		<b>7.5</b>		<b>10</b>		<b>10</b>	
	575V	7.5		10		15		15	
NEMA size		00		00		0		0	
<b>Additional auxiliary contacts</b>									
See page 116 for more details		 2-pole Front mount		 4-pole Front mount		 2-pole Side mount			
<b>4-pole Contactors</b>									
		See page 52 for more details				See page 52 for more details			
Types	AC coil	GMC-9/4		GMC-12/4		GMC-18/4		GMC-22/4	
	DC coil	GMD-9/4		GMD-12/4		GMD-18/4		GMD-22/4	
AC1(A)		<b>20</b>		<b>20</b>		<b>25</b>		<b>32</b>	

### Overload Relays

<b>Bimetallic style</b>				<b>Setting ranges (A)</b> 0.1 - 0.16   4 - 6 0.16 - 0.25   5 - 8 0.25 - 0.4   6 - 9 0.4 - 0.63   7 - 10 0.63 - 1   9 - 13 1 - 1.6   12 - 16 1.6 - 2.5   16 - 22 2.5 - 4			
Type GT							
See page 64-75 for more details							
Class10A	Differential	GTK-22					
	Non-differential (3-heater)	GTH-22/3					
	Non-differential (2-heater)	GTH-22					
Class 20	Differential	GTK-22/L					
<b>Electronic style</b>				<b>Setting ranges (A)</b> 0.1 - 1.5 1 - 5 4.4 - 22			
Type GMP							
Class 1~30 adjustable							
See page 76-80 for more details							



32A		40A		50A		65A		75A		85A	
 <p>See page 42 for more details</p>				 <p>See page 42 for more details</p>							
<b>GMC-32</b>		<b>GMC-40</b>		<b>GMC-50</b>		<b>GMC-65</b>		<b>GMC-75</b>		<b>GMC-85</b>	
<b>GMD-32</b>		<b>GMD-40</b>		<b>GMD-50</b>		<b>GMD-65</b>		<b>GMD-75</b>		<b>GMD-85</b>	
kW	A	kW	A	kW	A	kW	A	kW	A	kW	A
	<b>50</b>		<b>60</b>		<b>80</b>		<b>100</b>		<b>110</b>		<b>135</b>
7.5	32	11	40	15	55	18.5	65	22	75	25	85
<b>15</b>	<b>32</b>	<b>18.5</b>	<b>40</b>	<b>22</b>	<b>50</b>	<b>30</b>	<b>65</b>	<b>37</b>	<b>75</b>	<b>45</b>	<b>85</b>
18.5	28	22	32	30	43	33	60	37	64	45	75
18.5	20	22	23	30	28	33	35	37	42	45	45
hp	A	hp	A	hp	A	hp	A	hp	A	hp	A
	45		50		70		80		90		100
2		3		3		5		5		7.5	
5		5		7.5		10		15		15	
7.5		10		10		15		20		25	
10		10		15		20		25		30	
<b>20</b>		<b>25</b>		<b>30</b>		<b>40</b>		<b>50</b>		<b>50</b>	
20		25		30		40		50		50	
1		1		2		2		2		3	





2-pole Front mount








4-pole Front mount





2-pole Side mount

 <p>See page 54 for more details</p>				 <p>See page 56 for more details</p>							
<b>GMC-32/4</b>		<b>GMC-40/4</b>		<b>GMC-50/4</b>		<b>GMC-65/4</b>		<b>GMC-75/4</b>		<b>GMC-85/4</b>	
<b>GMD-32/4</b>		<b>GMD-40/4</b>		<b>GMD-50/4</b>		<b>GMD-65/4</b>		<b>GMD-75/4</b>		<b>GMD-85/4</b>	
<b>50</b>		<b>60</b>		<b>80</b>		<b>100</b>		<b>110</b>		<b>135</b>	

 <p>Setting ranges (A) 4 - 6   12 - 18 5 - 8   16 - 22 6 - 9   18 - 26 7 - 10   24 - 36 9 - 13   28 - 40</p> <p>Base for separate mount</p> <p>GT-40</p>	 <p>Setting ranges (A) 7 - 10   28 - 40 9 - 13   34 - 50 12 - 18   45 - 65 16 - 22   54 - 75 18 - 26   63 - 85 24 - 36</p> <p>Base for separate mount</p> <p>GT-85</p>
<p>GTK-40</p> <p>GTH-40/3</p> <p>GTH-40</p> <p>GTK-40/L</p>	<p>GTK-85</p> <p>GTH-85/3</p> <p>GTH-85</p> <p>GTK-85/L</p>
 <p>Setting ranges (A) 4 - 20 8 - 40</p> <p>separate mount</p> <p>GMP40</p>	 <p>Setting ranges(A) : 16 - 80A</p> <p>Separate mount Wiring by screw</p> <p>GMP80</p>
	 <p>Setting ranges(A) : 5 - 60A</p> <p>Separate mount Wiring by CT tunnel</p> <p>GMP60</p>


# Quick selection table

## Contactors ... 100 to 800A

Frame size		100A	125A	150A
<b>3-pole Contactors</b>				
		See page 46 for more details		See page 46 for more details



Types	AC/DC common coil	GMC-100		GMC-125		GMC-150	
Ratings / IEC60947-4		kW	A	kW	A	kW	A
AC1			<b>150</b>		<b>150</b>		<b>200</b>
AC3	200/240V	30	105	37	125	45	150
	<b>380/440V</b>	<b>55</b>	<b>105</b>	<b>60</b>	<b>120</b>	<b>75</b>	<b>150</b>
	500/550V	55	85	60	90	90	140
	690V	55	65	60	70	90	100
Ratings / UL508		hp	A	hp	A	hp	A
continuous current			160		160		210
single phase	115V	7.5		10		15	
	230V	15		20		25	
three phase	200V	30		40		40	
	230V	30		40		50	
	<b>460V</b>	<b>60</b>		<b>75</b>		<b>100</b>	
	575V	60		75		100	
NEMA size		3		3		4	

<b>Additional auxiliary contacts</b>							
See page 116 for more details		AU-100 1NO+1NC, Side mount					

<b>4-pole Contactors</b>							
		See page 58 for more details					

Types	AC/DC common coil	GMC-100/4		GMC-125/4		GMC-150/4	
AC1(A)		<b>150</b>		<b>155</b>		<b>200</b>	

### Overload Relays

<b>Bimetallic style</b>					
Type GT		Setting ranges (A)		Setting ranges (A)	
		34 - 50		34 - 50	
		39 - 57		39 - 57	
		43 - 65		43 - 65	
		54 - 80		54 - 80	
		65 - 100		65 - 100	
		85 - 125		85 - 125	
		100 - 150		100 - 150	
See page 64-75 for more details		GT-100		GT-150	
Class10A	Differential	GTK-100		GTK-150	
	Non-differential (3-heater)	GTH-100/3		GTH-150/3	
	Non-differential (2-heater)	GTH-100		GTH-150	
Class 20	Differential	GTK-100/L		GTK-150/L	




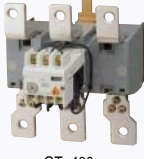

GMC-180		GMC-220		GMC-300		GMC-400		GMC-600		GMC-800	
kW	A	kW	A	kW	A	kW	A	kW	A	kW	A
	<b>230</b>		<b>260</b>		<b>350</b>		<b>420</b>		<b>660</b>		<b>900</b>
55	180	75	250	90	300	125	400	190	630	220	800
<b>90</b>	<b>180</b>	<b>132</b>	<b>250</b>	<b>160</b>	<b>300</b>	<b>220</b>	<b>400</b>	<b>330</b>	<b>630</b>	<b>440</b>	<b>800</b>
110	180	132	200	160	250	225	350	330	500	550	720
110	120	132	150	200	220	250	300	330	420	500	630
hp	A	hp	A	hp	A	hp	A	hp	A	hp	A
	230		275		350		450		660		900
15		15									
30		40									
60		60		100		125		150		250	
60		75		100		150		200		300	
<b>125</b>		<b>150</b>		<b>200</b>		<b>300</b>		<b>400</b>		<b>600</b>	
125		150		200		300		400		600	
4		4		5		5		6		7	



AU-100  
1NO+1NC, Side mount



GMC-180/4	GMC-220/4	GMC-300/4	GMC-400/4	GMC-600/4	GMC-800/4
<b>230</b>	<b>260</b>	<b>350</b>	<b>420</b>	<b>660</b>	<b>800</b>


 <p>Setting ranges (A) 65 - 100 85 - 125 100 - 150 120 - 180 160 - 240</p> <p>GT-220</p>	 <p>Setting ranges (A) 85 - 125 100 - 150 120 - 180 160 - 240 220 - 300 260 - 400</p> <p>GT-400</p>	 <p>Setting ranges (A) 220 - 300 260 - 400 400 - 600 520 - 800</p> <p>GT-800</p>
<p>GTK-220</p> <p>GTH-220/3</p> <p>GTH-220</p> <p>GTK-220/L</p>	<p>GTK-400</p> <p>GTH-400/3</p> <p>GTH-400</p> <p>GTK-400/L</p>	<p>GTK-600</p> <p>GTH-600/3</p> <p>GTH-600</p> <p>GTK-600/L</p>

# Quick selection table







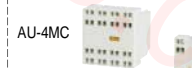
## Mini contactors & overloads

**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			<b>20</b>		<b>20</b>		<b>20</b>		<b>20</b>
AC3	200/240V	1.5	7	2.2	9	3	12	4	15
	<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			20		25		30		32
single phase	115V	0.5		0.5		1		2	
	230V	1		2		3		3	
three phase	200V	2		3		5		7	
	230V	2		3		5		7.5	
	<b>460V</b>	<b>5</b>		<b>7.5</b>		<b>10</b>		<b>10</b>	
	575V	7.5		10		15		15	
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			
	4-pole, Front mount	AU-4M		AU-4MF		AU-4MC			
	2-pole, Side mount	AU-1M		AU-1MF		AU-1MC			

See page 30 for more details

## Overload Relays

<b>Bimetallic style</b> <b>Type GT</b> <b>Class 10A</b>		<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 <a href="#">See page 27 for more details</a>
	Differential	GTK-12M			
	Non-differential (3-heater)	GTH-12M/3			
	Non-differential (2-heater)	GTH-12M			



# Catalog numbering system



## Contactors & Starters



### Contactor / Starter

Device type	
C	Contactors with AC coil
D	Contactors with DC coil
S	Starter, open
W	Starter, enclosed

### Nominal rating

6	6A
9	9A
:	:
600	630A
800	800A

### Terminal type of Mini contactor

None	Screw
P	Pin
F	Fast-on
C	Cage clamp

### Combination

None	Without additional device
R	Reversing
L	With latch unit
B	With metal enclosure & buttons
MB	With plastic enclosure & buttons
M	With plastic enclosure
D	With delayed opening device

### Contactor type

None	Normal (9~800A)
M	Mini type (6~16A)

## Thermal overload relay



### Thermal overload relay

Protection type	
K	Differential current protection
H	Non-differential

### Nominal rating

12	max 16A
22	max 22A
:	:
600	max 800A

### Number of bimetal element for Non-differential H type

None	2 elements
3	3 elements

### Mounting

None	Standard (mount to contactor)
H	Separate mount

### Relay type

None	Normal (max. 800A)
M	Mini type (max. 16A)

## Other devices

Devices	Type	Example of suffix
Electronic overload relays	GMP	22 - 2P
Contactors relays	GMR	4 - -

Devices	Type	Example of suffix
Auxiliary contact unit	AU	- 2
Interlock unit	AR	- 100
Delayed opening device	AD	- 9
Latching unit	AL	- 9

# Mini contactors

## AC coil

### Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : A.C.

#### 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 15A	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 15A	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 : 12 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 (%)	30~40
Closing time (ms)	10~20
Opening time (ms)	35~45

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## Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : A.C.

### 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	2.2kW	3kW	3kW	20A	1NO or 1NC	GMC-6MC
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMC-9MC
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMC-12MC
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMC-16MC
	15A	16A	9A	5A			

### 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	2.2kW	3kW	3kW	20A	1NO or 1NC	GMC-6MP
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMC-9MP
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMC-12MP
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMC-16MP
	15A	16A	9A	5A			

### 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 more information

- Drawings → page 34
- Reversing contactors → page 23
- Overload relays → page 27
- Optional accessories → page 29-33

**Certificate**  
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# Mini contactors

## DC coil

### Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : D.C.

#### 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	2.2kW	3kW	3kW	20A	1NO or 1NC	GMD-6M
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMD-9M
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMD-12M
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMD-16M
	15A	16A	9A	5A			

#### 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	2.2kW	3kW	3kW	20A	1NO or 1NC	GMD-6MF
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMD-9MF
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMD-12MF
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMD-16MF
	15A	16A	9A	5A			

#### 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

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## Contactors

- For motor control
- 3 main plus 1 auxiliary contacts
- Coil voltage : D.C.



### 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 15A	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 15A	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 more information

- Drawings → page 34
- Reversing contactors → page 25
- Overload relays → page 27
- Optional accessories → page 29-33

**Certificate**  
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# Starters

## Direct starters

### Starters

- Open types
- Direct ( Full voltage ) types
- Coil voltage : A.C.
- 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
Contactors (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	GMC-9M/K
GMC-12M	GTK-12M	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	1NO or 1NC	GMC-12M/K
GMC-16M	GTK-12M	4kW 15A	7.5kW 16A	5.5kW 9A	4kW 5A	1NO or 1NC	GMC-16M/K

#### AC coil contactor + Non-differential type overload relay

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contacts	Starter Type
Contactors (AC coil)	Overload (Non-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	GMC-9M
GMC-12M	GTH-12M/3	3kW 12A	5.5kW 12A	4kW 7A	4kW 5A	1NO or 1NC	GMC-12M
GMC-16M	GTH-12M/3	4kW 15A	7.5kW 16A	5.5kW 9A	4kW 5A	1NO or 1NC	GMC-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 ( → page 27)

#### For more information

- Drawings → page 37
- Mini Contactors → page 21
- Mini Overload relays → page 27
- Optional accessories → page 29-33

**Certificate**  
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# Mini contactors

## Reversing / AC coil



### Reversing contactors

- For motor control
- Mechanically interlocked
- Coil voltage : A.C.

#### Screw clamp connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMC-6MR
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMC-9MR
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMC-12MR
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMC-16MR
	15A	16A	9A	5A			

#### Fast-on connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMC-6MRF
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMC-9MRF
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMC-12MRF
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMC-16MRF
	15A	16A	9A	5A			

#### 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 more information

- Drawings → page 34
- Overload relays → page 27
- Optional accessories → page 29-33

**Certificate**  
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# Mini contactors

## Reversing / AC coil

### Reversing contactors

- For motor control
- Mechanically interlocked
- Coil voltage : A.C.



#### Cage clamp connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMC-6MRC
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMC-9MRC
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMC-12MRC
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMC-16MRC
	15A	16A	9A	5A			



#### Solder pin connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMC-6MRP
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMC-9MRP
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMC-12MRP
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMC-16MRP
	15A	16A	9A	5A			

#### 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 more information

- Drawings → page 34
- Overload relays → page 27
- Optional accessories → page 29-33

**Certificate**  
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# Reversing / DC coil

## Reversing contactors

- For motor control
- Mechanically interlocked
- Coil voltage : D.C.

### Screw clamp connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMD-6MR
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMD-9MR
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMD-12MR
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMD-16MR
	15A	16A	9A	5A			

### Fast-on connection types



Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMD-6MRF
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMD-9MRF
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMD-12MRF
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMD-16MRF
	15A	16A	9A	5A			

### 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 more information

- Drawings → page 34
- Overload relays → page 27
- Optional accessories → page 29-33

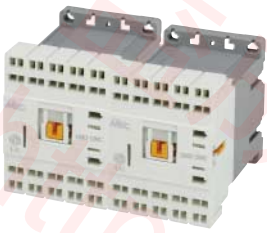
**Certificate**  
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# Mini contactors

## Reversing / DC coil

### Reversing contactors

- For motor control
- Mechanically interlocked
- Coil voltage : D.C.



#### Cage clamp connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMD-6MRC
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMD-9MRC
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMD-12MRC
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMD-16MRC
	15A	16A	9A	5A			



#### Solder pin connection types

Frame size	AC3 ratings (IEC60947-4)				AC1 rating Ith	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
6A	1.5kW	2.2kW	3kW	3kW	20A	1NO or 1NC	GMD-6MRS
	7A	6A	5A	4A			
9A	2.2kW	4kW	3.7kW	4kW	20A	1NO or 1NC	GMD-9MRS
	9A	9A	6A	5A			
12A	3kW	5.5kW	4kW	4kW	20A	1NO or 1NC	GMD-12MRS
	12A	12A	7A	5A			
16A	4kW	7.5kW	5.5kW	4kW	20A	1NO or 1NC	GMD-16MRS
	15A	16A	9A	5A			

#### 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 more information

- Drawings → page 34
- Overload relays → page 27
- Optional accessories → page 29-33

**Certificate**  
CE, ULcUL

# Mini overload relays

## Bimetallic style

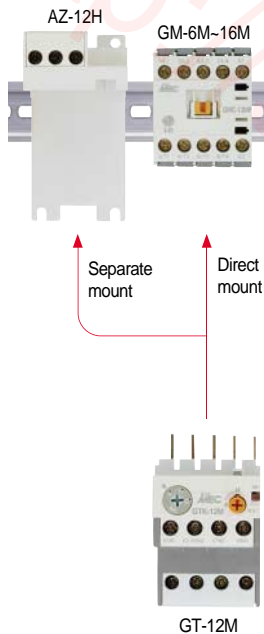


### Description

- 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



GT-12M



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 • 0.16	GTH-12M/3 • 0.16	GTH-12M • 0.16	
0.16 - 0.25	GTK-12M • 0.25	GTH-12M/3 • 0.25	GTH-12M • 0.25	
0.25 - 0.4	GTK-12M • 0.4	GTH-12M/3 • 0.4	GTH-12M • 0.4	
0.4 - 0.63	GTK-12M • 0.63	GTH-12M/3 • 0.63	GTH-12M • 0.63	
0.63 - 1	GTK-12M • 1	GTH-12M/3 • 1	GTH-12M • 1	
1 - 1.6	GTK-12M • 1.6	GTH-12M/3 • 1.6	GTH-12M • 1.6	
1.6 - 2.5	GTK-12M • 2.5	GTH-12M/3 • 2.5	GTH-12M • 2.5	
2.5 - 4	GTK-12M • 4	GTH-12M/3 • 4	GTH-12M • 4	
4 - 6	GTK-12M • 6	GTH-12M/3 • 6	GTH-12M • 6	
5 - 8	GTK-12M • 8	GTH-12M/3 • 8	GTH-12M • 8	
6 - 9	GTK-12M • 9	GTH-12M/3 • 9	GTH-12M • 9	
7 - 10	GTK-12M • 10	GTH-12M/3 • 10	GTH-12M • 10	
9 - 13	GTK-12M • 13	GTH-12M/3 • 13	GTH-12M • 13	
12 - 16	GTK-12M • 16	GTH-12M/3 • 16	GTH-12M • 16	

### 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.

### For more information

- Drawings → page 37
- Mini Contactors → page 18-26
- Starters → page 32
- Separate mounting unit → page 33
- Operating curves → page 39

**Certificate**  
CE, ULcUL

# Mini contactors

## Contactors relays

### Description

- 4-, 6-, 8-pole units
- Finger proof design
- 16A continuous current, Ith
- 44mm wide
- DIN rail or screw mountable
- AC/DC control voltage

### Selection



Poles	Composition	Types		Remarks
		AC control	DC control	
4 pole	4NO	GMR-4M	GMR-4MD	Additional 2NO or 4NO auxiliary contact block can be mounted on these relays.
	3NO+1NC			
	2NO+2NC			
	1NO+3NC			
6 pole	4NC	GMR-6M	GMR-6MD	GMR-4M + AU-2M
	6NO			
	5NO+1NC			
	4NO+2NC			
8 pole	3NO+3NC	GMR-8M	GMR-8MD	GMR-4M + AU-4M
	2NO+4NC			
	8NO			
	7NO+1NC			
	6NO+2NC			
	5NO+3NC			
	4NO+4NC			

### Contact ratings

		Rated currents		Making/Breaking currents	
		Inductive load	Resistive load	Inductive load	Resistive load
AC duty	120V	6A	10A	66A	66A
	240V	3A	8A	33A	33A
	480V	1.5A	5A	16.5A	16.5A
	600V	2A	5A	13.2A	13.2A
DC duty	125V	1.1A	5A	3.7A	
	250V	0.55A	3A	1.8A	
	440V	0.31A	2.5A	1.4A	
	600V	0.2A	1A	0.7A	
Continuous current, Ith		16A			

### Performance

Operation cycle		1800 operations/hour		
Endurance	Mechanical lifetime	20 mil. Operations		
	Electrical lifetime	AC15 duty	220V	0.5 mil. operations
			440V	0.5 mil. operations
		AC12 duty	220V	0.25 mil. operations
			440V	0.25 mil. operations
DC13, 12 duty	24-220V	0.5 mil. operations		

#### 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

#### Coil voltage, DC

See 18page

#### Ordering information

... Specify type, contact composition and coil voltage

#### For more information

- Drawings → page 35
- Coil characteristics → page 18,20



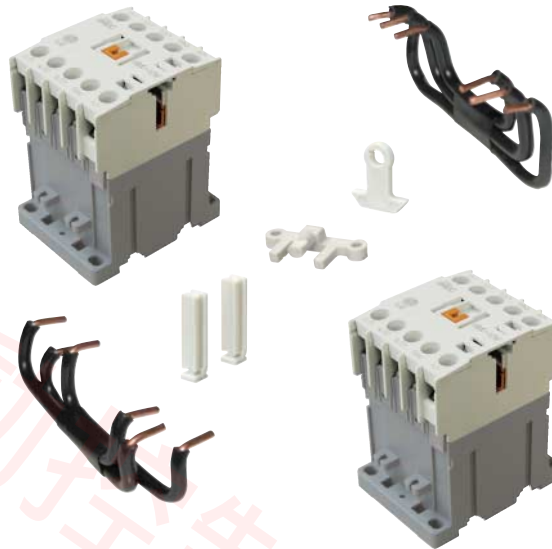
# Accessories for mini contactors



## Interlock unit, AR-12M

### consists of

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

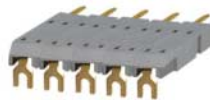


## Solder pin terminals

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



+



DC Control



AC Control



# Accessories

## Auxiliary contact

### Front mount

### Side mount blocks

#### Screw clamp connection



AU-4M, 4pole



AU-2M, 2pole

#### Fast-on connection



AU-4MF, 4pole



AU-2MF, 2pole

#### Cage clamp connection



AU-4MC, 4pole



AU-2MC, 2pole

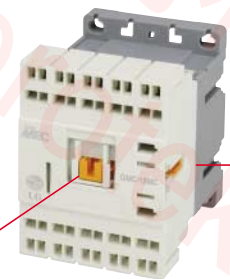
#### Solder pin connection



AU-1M, 1pole



AU-1MF, 1pole



AU-1MC, 1pole



AU-1MS, 1pole



**Catalog No.**

Connection type	Applying contactors	Mounting type	Composition	Catalog no.			
<b>Screw clamp</b>	GMC-, GMD-, GMS- 6M, 6MR 9M, 9MR 12M, 12MR 16M, 16MR	Front mount	2NO	AU-2M20			
			2NC	AU-2M02			
			1NO+1NC	AU-2M11			
			4NO	AU-4M40			
			3NO+1NC	AU-4M31			
			2NO+2NC	AU-4M22			
			1NO+3NC	AU-4M13			
		Side mount	4NC	AU-4M04			
			1NO	AU-1M10			
			1NC	AU-1M01			
			<b>Fast-on</b>	GMC-, GMD-, GMS- 6MF, 6MRF 9MF, 9MRF 12MF, 12MRF 16MF, 16MRF	Front mount	2NO	AU-2MF20
						2NC	AU-2MF02
						1NO+1NC	AU-2MF11
						4NO	AU-4MF40
3NO+1NC	AU-4MF31						
2NO+2NC	AU-4MF22						
1NO+3NC	AU-4MF13						
Side mount	4NC	AU-4MF04					
	1NO	AU-1MF10					
	1NC	AU-1MF01					
	<b>Cage clamp</b>	GMC-, GMD-, GMS- 6MC, 6MRC 9MC, 9MRC 12MC, 12MRC 16MC, 16MRC			Front mount	2NO	AU-2MC20
						2NC	AU-2MC02
						1NO+1NC	AU-2MC11
						4NO	AU-4MC40
3NO+1NC			AU-4MC31				
2NO+2NC			AU-4MC22				
1NO+3NC			AU-4MC13				
Side mount			4NC	AU-4MC04			
			1NO	AU-1MC10			
			1NC	AU-1MC01			
			<b>Solder pin</b>	GMC-, GMD-, GMS- 6MP, 6MRP 9MP, 9MRP 12MP, 12MRP 16MP, 16MRP	Side mount	1NO	AU-1MP10
						1NC	AU-1MP01

# Accessories for mini contactors

## 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	

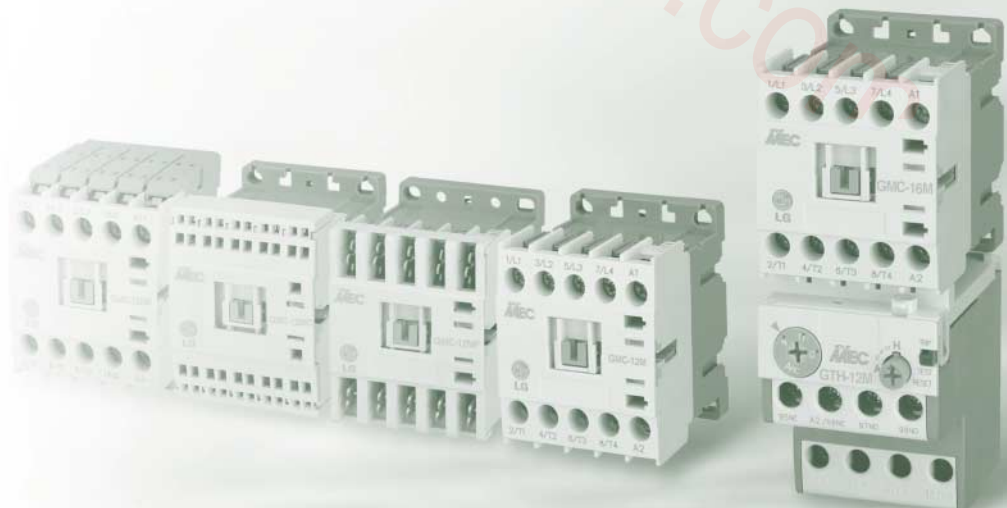
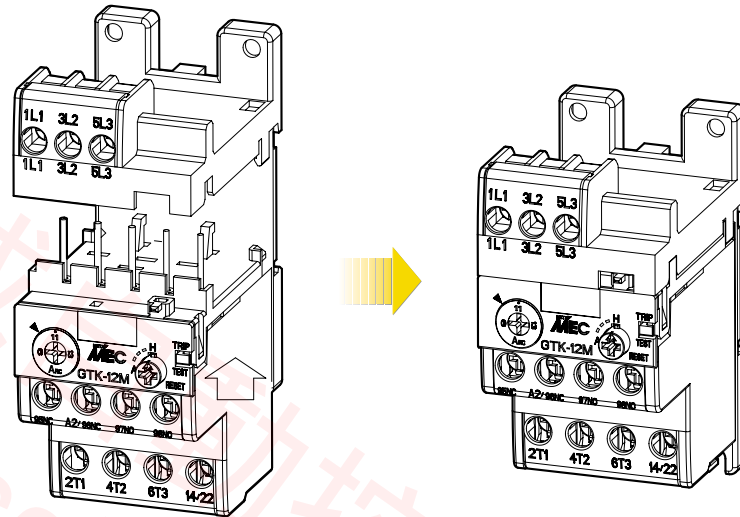


# Accessories for mini overload relays



## Separate mounting unit, AZ-12H

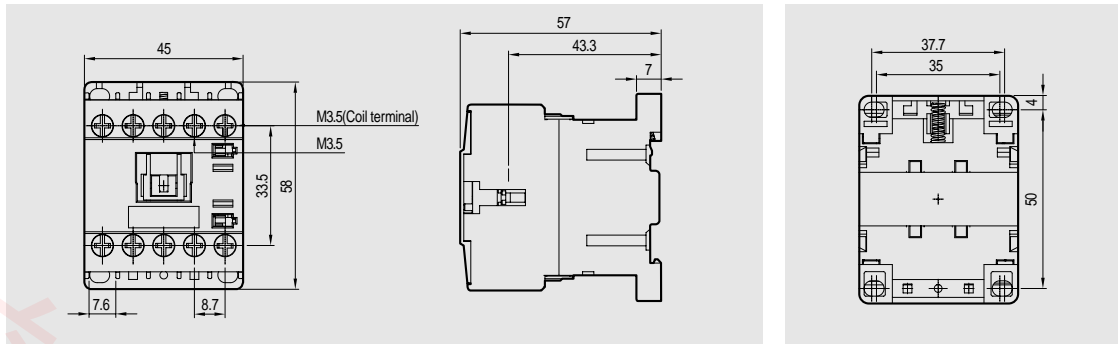
- To mount a relay separately from a contactor
- Mountable on DIN rail or by screw fixing



# Mini contactors

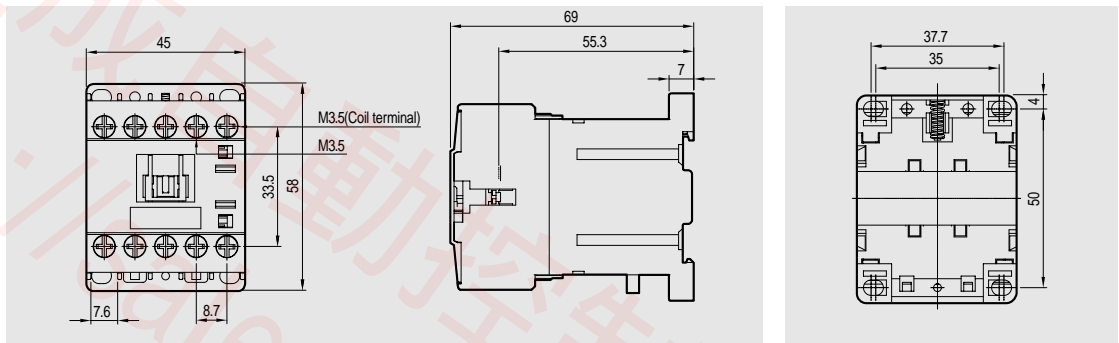
## Dimensions

GMC-12M



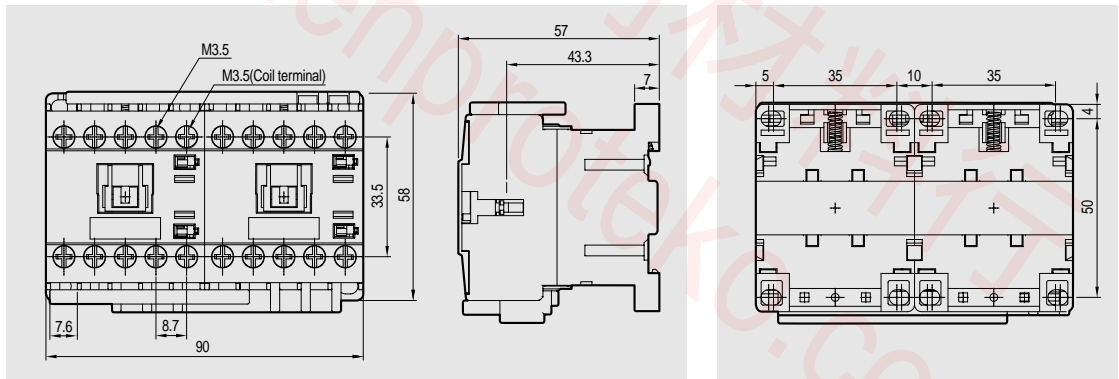
0.17kg

GMD-12M



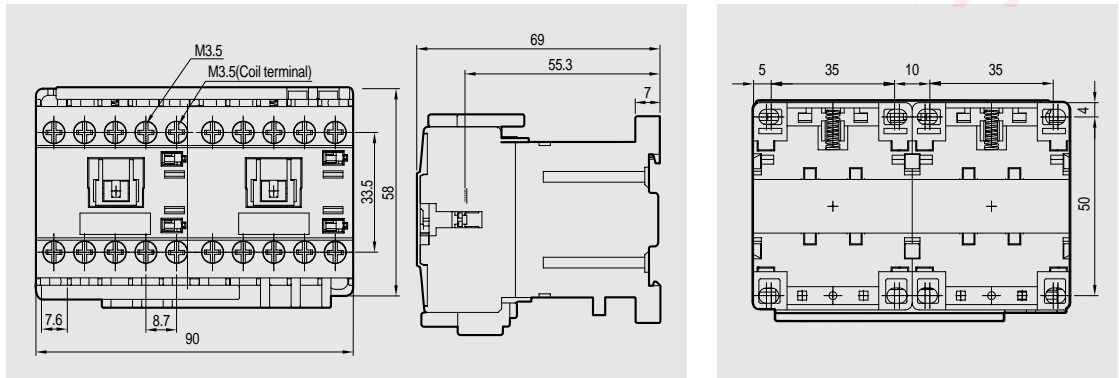
0.23kg

GMC-12MR



0.36kg

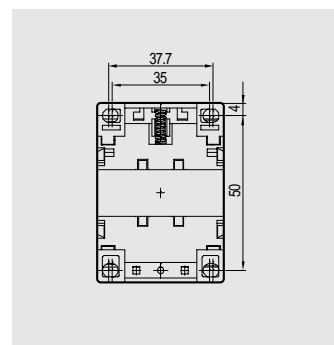
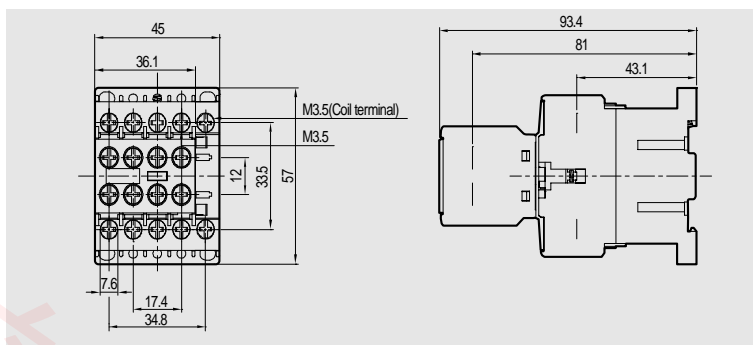
GMD-12MR



0.48kg

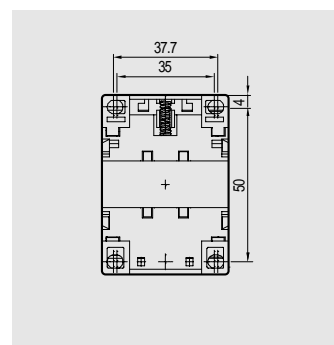
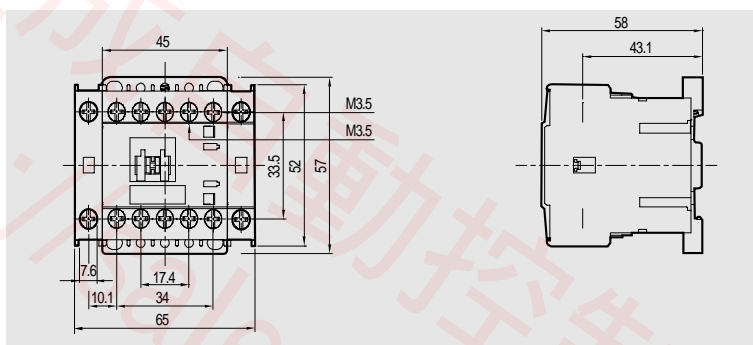


GMC-12M  
+  
AU-4M



0.21kg

GMD-12M  
+  
2 × AU-1M



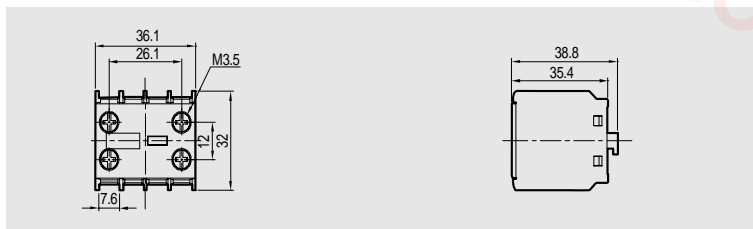
0.21kg

AU-4M



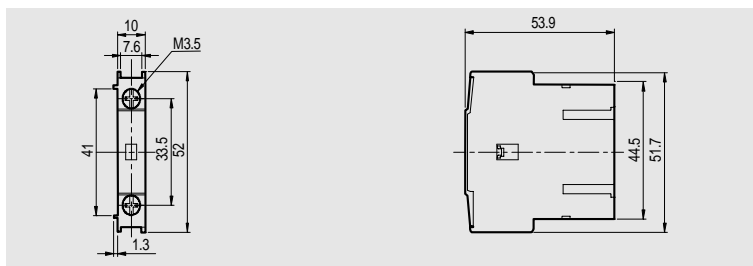
0.04kg

AU-2M



0.03kg

AU-1M



0.02kg

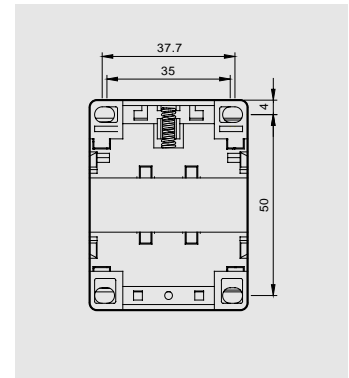
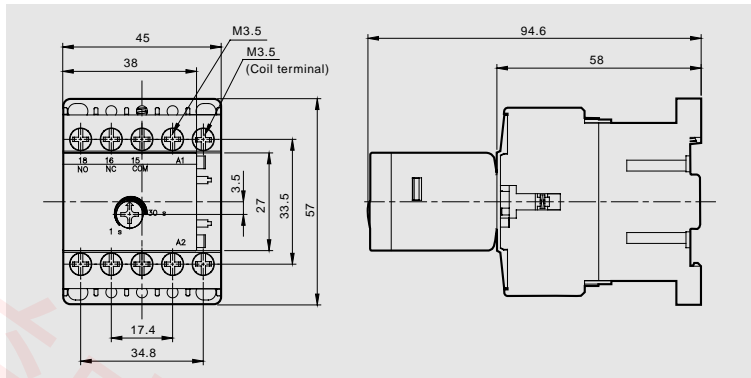
# Mini contactors

## Dimensions

GMC-12M

+

AT-12M

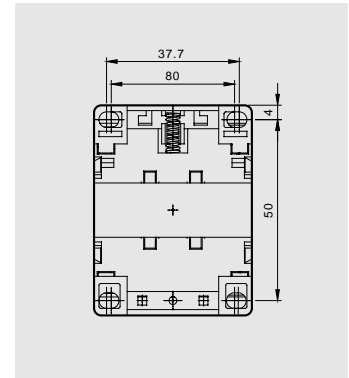
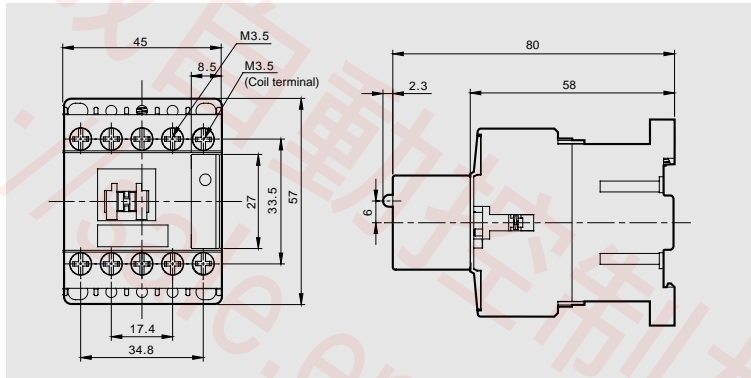


0.21kg

GMD-12M

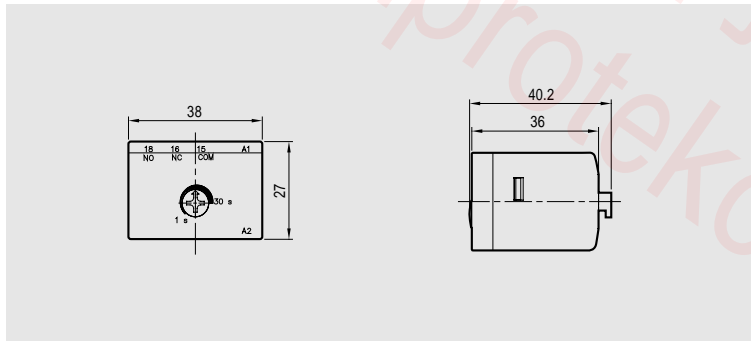
+

AS-12M



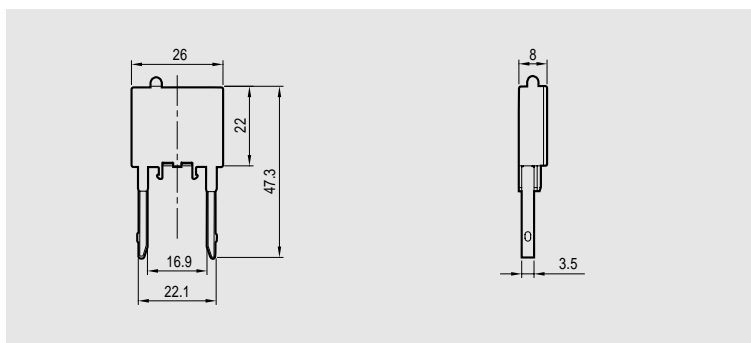
0.175kg

AT-12M



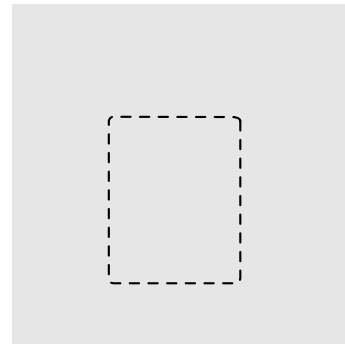
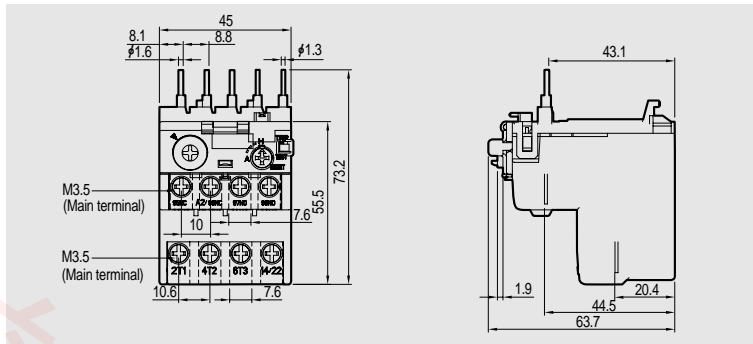
0.04kg

AS-12M



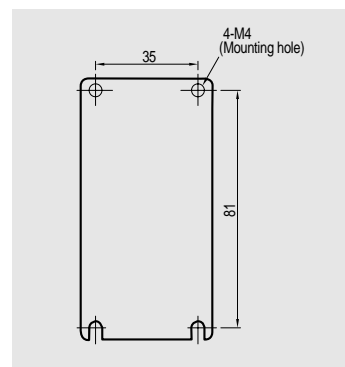
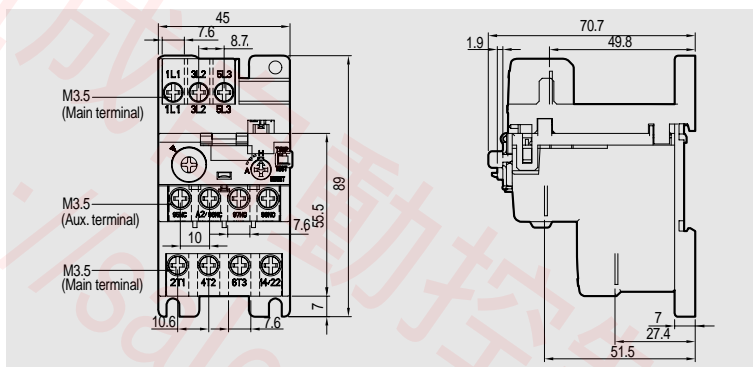
0.005kg

GTH(K)-12M



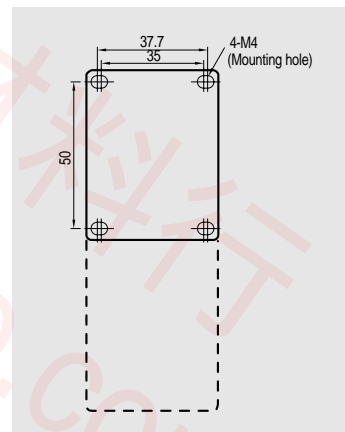
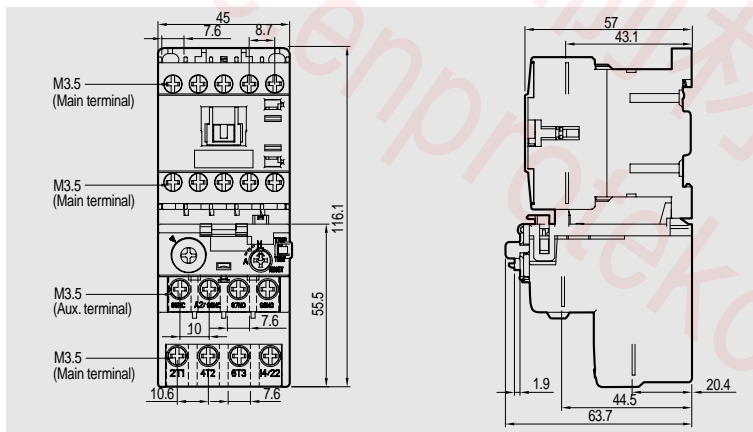
0.1kg

GTH(K)-12MH



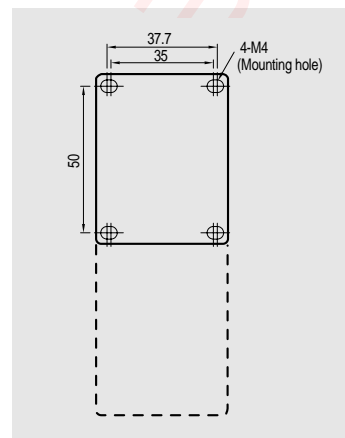
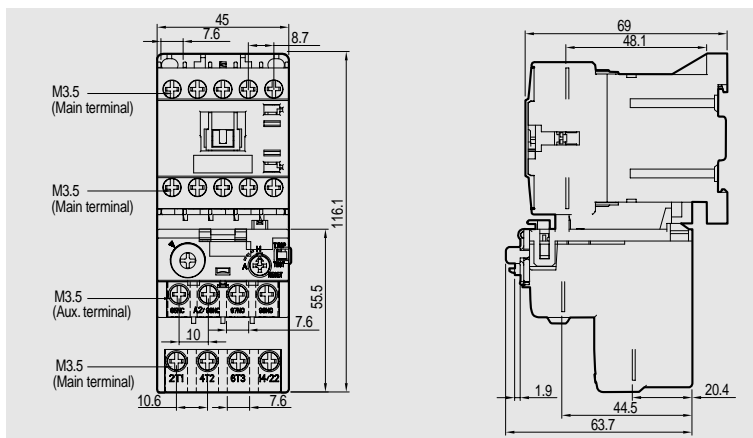
0.4kg

GMS-6,9,12, 16M



0.26kg

GMS-6,9,12, 16MD



0.39kg

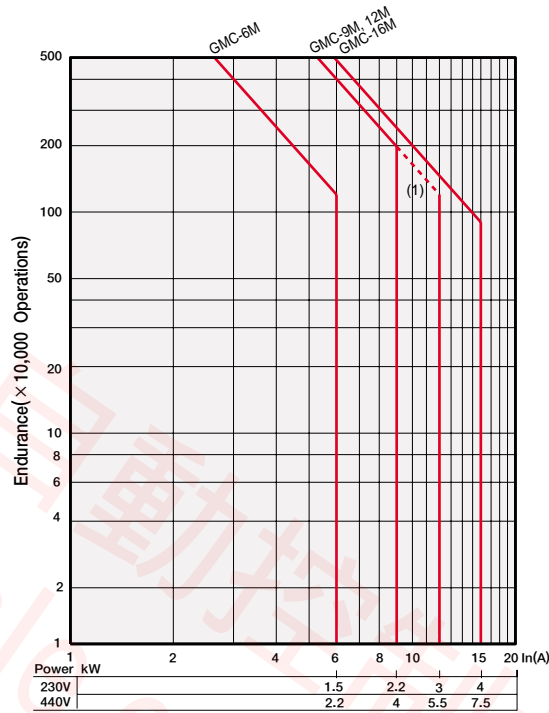
# Mini contactors

## Characteristic

### Electrical lifespan of contactors

Use in category AC-3

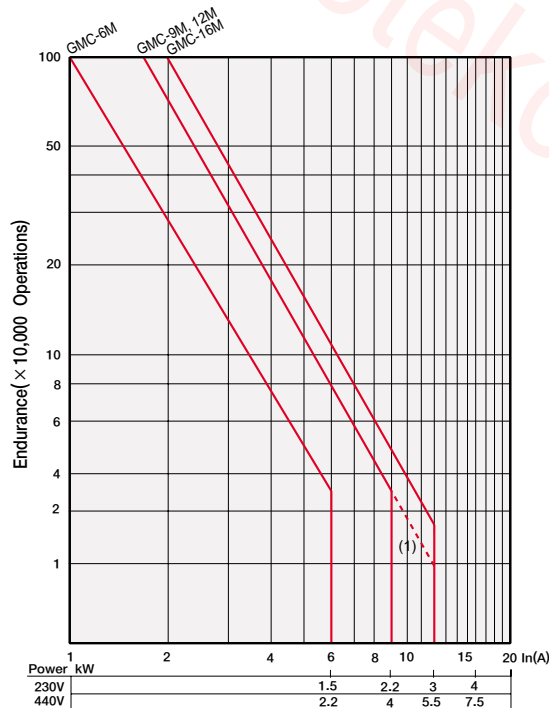
( $U_e \geq 440V$ )



(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.

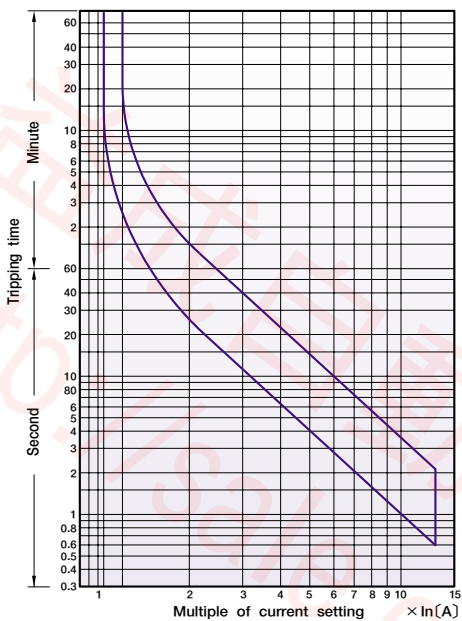


## Overload relay curves

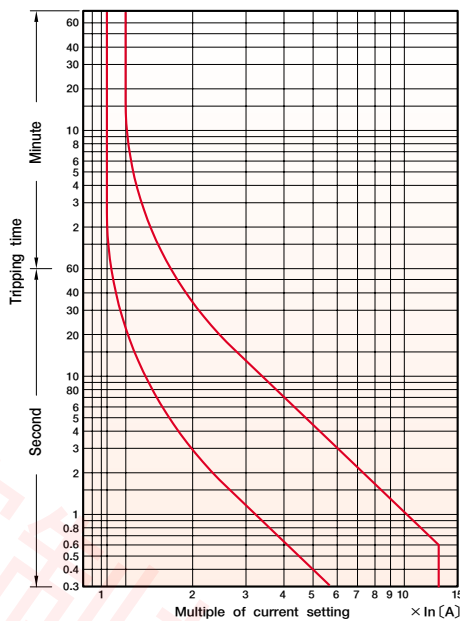
Non-Differential type

GTH-12M

Cold state



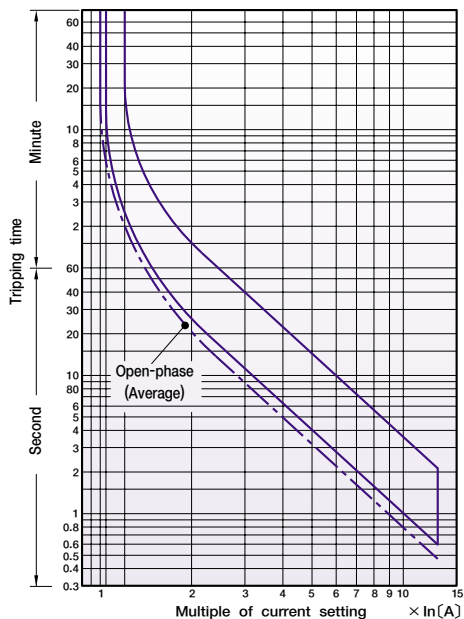
Hot state



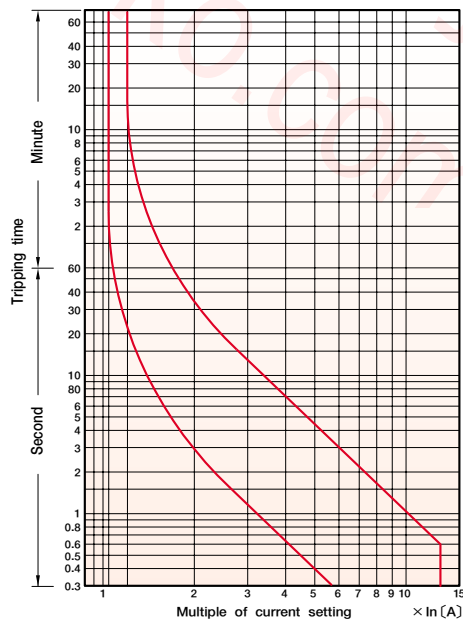
Differential type

GTK-12M

Cold state



Hot state



# 3-pole Contactors

9A

12A

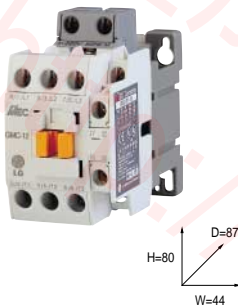
18A

22A

## Description

- Covering four rating classes in single size.
- 3-pole main contact
- Finger proof design
- DIN rail or screw mountable
- Small physical size : 44 mm wide
- 1NO+1NC Auxiliary contacts built-in as standard
- Front/side mountable accessories available
- Direct mountable overload relays available

### 3-pole Contactors with AC coil

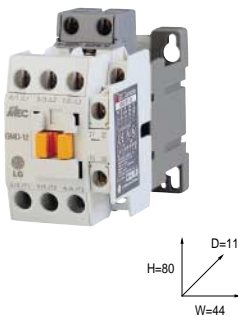


Frame size	AC3 ratings / IEC60947-4				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
9A	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	25A	1NO+1NC	GMC-9
12A	3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	25A	1NO+1NC	GMC-12
18A	4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	40A	1NO+1NC	GMC-18
22A	5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	40A	1NO+1NC	GMC-22

#### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### 3-pole Contactors with DC coil



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
9A	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	25A	1NO+1NC	GMD-9
12A	3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	25A	1NO+1NC	GMD-12
18A	4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	40A	1NO+1NC	GMD-18
22A	5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	40A	1NO+1NC	GMD-22

#### Coil voltage, DC

12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

## Mounting and Connection

<b>Mounting</b>	35mm DIN rail or holes for screw(M4) fixing	
<b>Connection</b>	<b>Main</b>	Screw(M4) clamp terminal Cable capacity : 1.25~5.5mm <sup>2</sup> / ϕ 1.6~2.6
	<b>Auxiliary / Coil</b>	Screw(M3.5) clamp terminal

### Certificate

CE, ULcUL, Lloyd, CCC(China)

### Ordering information

Specify type and coil voltage  
Example : GMC-12 50Hz 240V



## Options



**GT-22**  
Thermal (Bimetallic) style  
➔ page 64



**GMP22**  
Solid state style  
➔ page 76

### For more information

- Technical specification ➔ page 122~133
- Drawings ➔ page 140
- Circuit diagrams ➔ page 140
- Reversing contactors ➔ page 92
- Latching contactors ➔ page 97
- Starters ➔ page 81
- Overload relays ➔ page 64
- UL rating ➔ page 12



**AU-1**  
Aux. contact unit  
2pole for side mount  
➔ page 116



**AU-2**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AU-4**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AR-9**  
Mechanical interlock unit  
➔ page 118



**AT**  
Pneumatic timer  
➔ page 121



**AL-9**  
Mechanical latch unit  
➔ page 119



**AS**  
Surge absorber unit  
➔ page 120



**AD-9**  
Delayed opening device  
➔ page 121

# 3-pole Contactors

**32A**   **40A**

## Description

- Covering two rating classes in single size.
- 3-pole main contact
- Finger proof design
- DIN rail or screw mountable
- Small physical size : 68 mm wide
- 2NO+2NC Auxiliary contacts built-in as standard
- Front/side mountable accessories available
- Direct mountable overload relays available



### 3-pole Contactors with AC coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
32A	7.5kW	15kW	18.5kW	18.5kW	50A	2NO+2NC	GMC-32
	32A	32A	28A	20A			
40A	11kW	18.5kW	22kW	22kW	60A	2NO+2NC	GMC-40
	40A	40A	32A	23A			

#### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V



### 3-pole Contactors with DC coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
32A	7.5kW	15kW	18.5kW	18.5kW	50A	2NO+2NC	GMD-32
	32A	32A	28A	20A			
40A	11kW	18.5kW	22kW	22kW	60A	2NO+2NC	GMD-40
	40A	40A	32A	23A			

#### Coil voltage, DC

12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

## Mounting and Connection

<b>Mounting</b>	35mm DIN rail or holes for screw(M4) fixing	
<b>Connection</b>	<b>Main</b>	Screw(M5) clamp terminal Cable capacity : 2~14mm <sup>2</sup> / $\phi$ 1.6~3.6
	<b>Auxiliary / Coil</b>	Screw(M3.5) clamp terminal

### Certificate

CE, ULcUL, Lloyd, CCC(China)

### Ordering information

Specify type and coil voltage

## Options



**GT-40**  
Thermal (Bimetallic) style  
➔ page 65



**GMP40**  
Solid state style  
➔ page 78

### For more information

- Technical specification ➔ page 112~133
- Drawings ➔ page 140
- Circuit diagrams ➔ page 140
- Reversing contactors ➔ page 92
- Latching contactors ➔ page 97
- Starters ➔ page 81
- Overload relays ➔ page 65
- UL rating ➔ page 13



**AU-1**  
Aux. contact unit  
2pole for side mount  
➔ page 116



**AU-2**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AU-4**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AR-9**  
Mechanical interlock unit  
➔ page 118



**AT**  
Pneumatic timer  
➔ page 121



**AL-9**  
Mechanical latch unit  
➔ page 119



**AS**  
Surge absorber unit  
➔ page 120



**AD-9**  
Delayed opening device  
➔ page 121

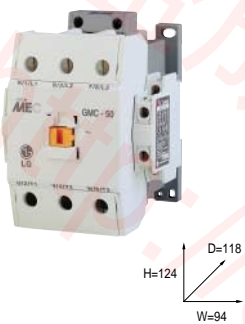
# 3-pole Contactors

**50A 65A 75A 85A**

## Description

- Covering four rating classes in single size.
- 3-pole main contact
- Finger proof design
- DIN rail or screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Front/side mountable accessories available
- Direct mountable overload relays available

### 3-pole Contactors with AC coil

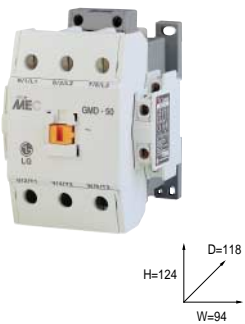


Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
50A	15kW 55A	22kW 50A	30kW 43A	30kW 28A	80A	2NO+2NC	GMC-50
65A	18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	100A	2NO+2NC	GMC-65
75A	22kW 75A	37kW 75A	37kW 64A	37kW 42A	110A	2NO+2NC	GMC-75
85A	25kW 85A	45kW 85A	45kW 75A	45kW 45A	135A	2NO+2NC	GMC-85

#### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
 60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### 3-pole Contactors with DC coil



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
50A	15kW 55A	22kW 50A	30kW 43A	30kW 28A	80A	2NO+2NC	GMD-50
65A	18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	100A	2NO+2NC	GMD-65
75A	22kW 75A	37kW 75A	37kW 64A	37kW 42A	110A	2NO+2NC	GMD-75
85A	25kW 85A	45kW 85A	45kW 75A	45kW 45A	135A	2NO+2NC	GMD-85

#### Coil voltage, DC

12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

## Mounting and Connection

<b>Mounting</b>	35mm DIN rail or holes for screw(M4) fixing		
<b>Connection</b>	<b>Main</b>	<b>50A frame</b>	Screw(M6) terminal Cable capacity : 2-22mm <sup>2</sup>
		<b>65/75/85A frame</b>	Screw(M8) terminal Cable capacity : 2-38mm <sup>2</sup>
	<b>Auxiliary / Coil</b>		Screw(M3.5) clamp terminal

### Certificate

CE, ULcUL, Lloyd, CCC(China)

### Ordering information

Specify type and coil voltage

## Options



**GT-85**  
Thermal (Bimetallic) style  
→ page 66



**GMP80**  
Electronic style  
separate mount only  
→ page 80

### For more information

- Technical specification → page 112~133
- Drawings → page 140
- Circuit diagrams → page 140
- Reversing contactors → page 92
- Latching contactors → page 97
- Starters → page 66
- Overload relays → page 65
- UL rating → page 13



**AU-1**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AU-2**  
Aux. contact unit  
2pole for front mount  
→ page 116



**AU-4**  
Aux. contact unit  
2pole for front mount  
→ page 116



**AR-9**  
Mechanical interlock unit  
→ page 118



**AT**  
Pneumatic timer  
→ page 121



**AL-50**  
Mechanical latch unit  
→ page 119



**AS**  
Surge absorber unit  
→ page 120



**AD-50**  
Delayed opening device  
→ page 121

# 3-pole Contactors

**100A 125A 150A**

## Description

- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Front/side mountable accessories available
- Direct mountable overload relays available



### 3-pole Contactors with AC/DC common coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
100A	30kW 105A	55kW 105A	55kW 85A	55kW 65A	150A	2NO+2NC	GMC-100
125A	37kW 125A	60kW 120A	60kW 90A	60kW 70A	150A	2NO+2NC	GMC-125



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
150A	45kW 150A	75kW 150A	90kW 140A	90kW 100A	200A	2NO+2NC	GMC-150

### Coil voltage, AC/DC common

Nominal(ordering) voltage	AC 50/60Hz	DC
24V	24 - 25V	24V
48V	48 - 50V	48V
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

### Mounting and Connection

Mounting	100/125A frame	Holes for screw(M4) fixing
	150A frame	Holes for screw(M5) fixing
Connection	Main	100/125A frame Screw(M8) terminal Cable capacity : 2-60mm <sup>2</sup>
		150A frame Screw(M8) terminal Cable capacity : 2-100mm <sup>2</sup>
	Auxiliary / Coil	Screw(M4) clamp terminal

#### Certificate

CE, ULcUL, Lloyd, CCC(China)

#### Ordering information

Specify type and coil voltage

## Options



**GT-100 for GMC-100, 125**  
Thermal (Bimetallic) style  
→ page 67



**GT-150 for GMC-150**  
Thermal (Bimetallic) style  
→ page 67



**AU-100**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AR-100**  
Mechanical interlock unit  
→ page 116



**AL-100, 150**  
Mechanical latch unit  
→ page 119



**AS**  
Surge absorber unit  
→ page 120



**AD-100**  
Delayed opening device  
→ page 121



**Terminal covers**  
→ page 119



**AI-100**  
Insulation barriers  
→ page 120

### For more information

- Technical specification → page 122~133
- Drawings → page 142
- Circuit diagrams → page 142
- Reversing contactors → page 94
- Latching contactors → page 98
- Starters → page 82
- Overload relays → page 67
- UL rating → page 14

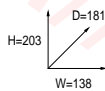
# 3-pole Contactors

**180A** **220A** **300A** **400A**

## Description

- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Front/side mountable accessories available
- Direct mountable overload relays available

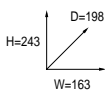
## 3-pole Contactors with AC/DC common coil



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
180A	55kW 180A	90kW 180A	110kW 180A	110kW 120A	230A	2NO+2NC	GMC-180
220A	75kW 250A	132kW 250A	132kW 200A	132kW 150A	260A	2NO+2NC	GMC-220

## Coil voltage, AC/DC common

Nominal(ordering) voltage	AC 50/60Hz	DC
24V	24 - 25V	24V
48V	48 - 50V	48V
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
300A	90kW 300A	160kW 300A	160kW 250A	200kW 220A	350A	2NO+2NC	GMC-300
400A	125kW 400A	220kW 400A	225kW 350A	250kW 300A	420A	2NO+2NC	GMC-400

## Coil voltage, AC/DC common

Nominal(ordering) voltage	AC 50/60Hz	DC
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

## Mounting and Connection

Mounting	180/220A frame	Holes for screw(M6) fixing
	300/400A frame	Holes for screw(M8) fixing
Connection	Main frame	180/220A frame Screw(M10) terminal Cable capacity : 2~150mm <sup>2</sup>
		300/400A frame Screw(M12) terminal Cable capacity : 2~200mm <sup>2</sup>
Auxiliary / Coil	Screw(M4) clamp terminal	

### Certificate

CE, ULcUL, Lloyd, CCC(China)

### Ordering information

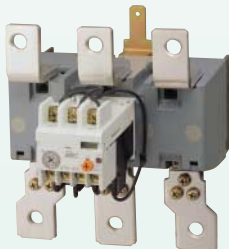
Specify type and coil voltage



## Options



**GT-220 for GMC-180, 220**  
Thermal (Bimetallic) style  
→ page 68



**GT-400 for GMC-300, 400**  
Thermal (Bimetallic) style  
→ page 68



**AU-100**  
Aux. contact unit  
2pole for side mount  
→ page 116



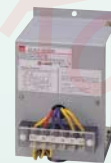
**AR-180**  
Mechanical interlock unit  
→ page 118



**AL-220, 400**  
Mechanical latch unit  
→ page 119



**AS**  
Surge absorber unit  
→ page 120



**AD-100, 300**  
Delayed opening device  
→ page 121



**Terminal covers**  
→ page 119



**AI-180**  
Insulation barriers  
→ page 120

### For more information

- Technical specification → page 122~133
- Drawings → page 142, 143
- Circuit diagrams → page 142, 143
- Reversing contactors → page 94
- Latching contactors → page 98
- Starters → page 82
- Overload relays → page 68
- UL rating → page 15

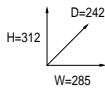
# 3-pole Contactors

**600A 800A**

## Description

- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Front/side mountable accessories available

### 3-pole Contactors with AC/DC common coil



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
600A	190kW	330kW	330kW	330kW	660A	2NO+2NC	GMC-600
	630A	630A	500A	420A			
800A	220kW	440kW	550kW	500kW	900A	2NO+2NC	GMC-800
	800A	800A	720A	630A			

### Coil voltage, AC/DC common

Nominal(ordering) voltage	AC 50/60Hz	DC
100V	100 - 127V	100 - 110V
200V	200 - 240V	200 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

### Mounting and Connection

<b>Mounting</b>	<b>600/800A frame</b>	Holes for screw(M10) fixing
<b>Connection</b>	<b>Main</b>	Screw(M16) terminal
	<b>600/800A frame</b>	Cable capacity : 80~325mm <sup>2</sup>
<b>Auxiliary / Coil</b>	Screw(M4) clamp terminal	

#### Certificate

CE, ULcUL, Lloyd, CCC(China)

#### Ordering information

Specify type and coil voltage

## Options



**GT-600**  
Thermal (Bimetallic) style  
→ page 69



**AU-100**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AD-600**  
Delayed opening device  
→ page 121



**Terminal covers**  
→ page 119



**AI-600**  
Insulation barriers  
→ page 120



**AS**  
Surge absorber unit  
→ page 120



**AR-600**  
Mechanical interlock unit  
→ page 116

### For more information

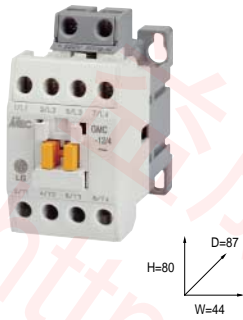
- Technical specification → page 122~133
- Drawings → page 143
- Circuit diagrams → page 143
- Reversing contactors → page 94
- Latching contactors → page 98
- Starters → page 82
- Overload relays → page 69
- UL rating → page 15

# 4-pole Contactors

9A 12A 18A 22A

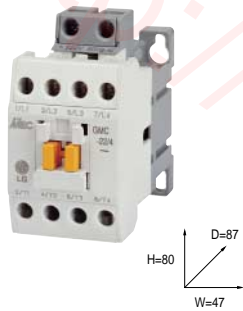
## Description

- 4-pole main contact
- Finger proof design
- DIN rail or screw mountable
- Small physical size : 44 mm wide
- Auxiliary contacts are optional
- Front/side mountable accessories
- Direct mountable overload relays available



### 4-pole Contactors with AC coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
9A	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	20A	optional	GMC-9/4
12A	3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	20A	optional	GMC-12/4

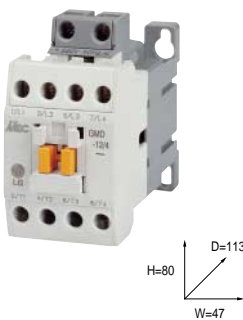


18A	4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	25A	optional	GMC-18/4
22A	5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	32A	optional	GMC-22/4

#### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V



### 4-pole Contactors with DC coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
9A	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	20A	optional	GMD-9/4
12A	3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	20A	optional	GMD-12/4
18A	4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	25A	optional	GMD-18/4
22A	5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	32A	optional	GMD-22/4

#### Coil voltage, DC

12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

## Mounting and Connection

<b>Mounting</b>	35mm DIN rail or holes for screw(M4) fixing	
<b>Connection</b>	<b>Main</b>	Screw(M4) clamp terminal Cable capacity : 1.25~5.5mm <sup>2</sup> / $\phi$ 1.6~2.6
	<b>Auxiliary / Coil</b>	Screw(M3.5) clamp terminal

### Certificate

CE, ULcUL, Lloyd,  
CCC(China)

### Ordering information

Specify type and coil voltage

## Options



**GT-22**  
Thermal (Bimetallic) style  
➔ page 64



**GMP22**  
Solid state style  
➔ page 76



**AU-1**  
Aux. contact unit  
2pole for side mount  
➔ page 116



**AU-2**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AU-4**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AR-9**  
Mechanical interlock unit  
➔ page 118



**AT**  
Pneumatic timer  
➔ page 121



**AL-9**  
Mechanical latch unit  
➔ page 119



**AS**  
Surge absorber unit  
➔ page 120



**AD-9**  
Delayed opening device  
➔ page 121

### For more information

Technical specification ➔ page 122~133

Drawings ➔ page 144

Circuit diagrams ➔ page 145

Overload relays ➔ page 64

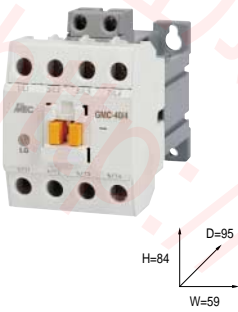
# 4-pole Contactors

**32A**   **40A**

## Description

- 4-pole main contact
- Finger proof design
- DIN rail or screw mountable
- Auxiliary contacts are optional
- Front/side mountable accessories
- Direct mountable overload relays available

### 4-pole Contactors with AC coil



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
32A	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	50A	optional	GMC-32/4
40A	11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	60A	optional	GMC-40/4

#### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
 60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### 4-pole Contactors with DC coil



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
32A	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	50A	optional	GMD-32/4
40A	11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	60A	optional	GMD-40/4

#### Coil voltage, DC

12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

## Mounting and Connection

<b>Mounting</b>	35mm DIN rail or holes for screw(M4) fixing	
<b>Connection</b>	<b>Main</b>	Screw(M4) clamp terminal Cable capacity : 1.25~5.5mm <sup>2</sup> / ϕ 1.6~2.6
	<b>Auxiliary / Coil</b>	Screw(M3.5) clamp terminal

### Certificate

CE, ULcUL, Lloyd, CCC(China)

### Ordering information

Specify type and coil voltage

## Options



**GT-40**  
Thermal (Bimetallic) style  
➔ page 65



**GMP40**  
Solid state style  
➔ page 78



**AU-1**  
Aux. contact unit  
2pole for side mount  
➔ page 116



**AU-2**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AU-4**  
Aux. contact unit  
2pole for front mount  
➔ page 116



**AR-9**  
Mechanical interlock unit  
➔ page 118



**AT**  
Pneumatic timer  
➔ page 121



**AL-9**  
Mechanical latch unit  
➔ page 119



**AS**  
Surge absorber unit  
➔ page 120



**AD-9**  
Delayed opening device  
➔ page 121

### For more information

- Technical specification ➔ page 122~133
- Drawings ➔ page 144
- Circuit diagrams ➔ page 145
- Overload relays ➔ page 65

# 4-pole Contactors

**50A**   **65A**   **75A**   **85A**

## Description

- 4-pole main contact
- Finger proof design
- DIN rail or screw mountable
- Auxiliary contacts are optional
- Front/side mountable accessories
- Direct mountable overload relays available



### 4-pole Contactors with AC coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
50A	15kW 55A	22kW 50A	30kW 43A	30kW 28A	80A	optional	GMC-50/4
65A	18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	100A	optional	GMC-65/4
75A	22kW 75A	37kW 75A	37kW 64A	37kW 42A	110A	optional	GMC-75/4
85A	25kW 85A	45kW 85A	45kW 75A	45kW 45A	135A	optional	GMC-85/4

#### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V



### 4-pole Contactors with DC coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
50A	15kW 55A	22kW 50A	30kW 43A	30kW 28A	80A	optional	GMD-50/4
65A	18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	100A	optional	GMD-65/4
75A	22kW 75A	37kW 75A	37kW 64A	37kW 42A	110A	optional	GMD-75/4
85A	25kW 85A	45kW 85A	45kW 75A	45kW 45A	135A	optional	GMD-85/4

#### Coil voltage, DC

12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

## Mounting and Connection

<b>Mounting</b>	35mm DIN rail or holes for screw(M4) fixing		
<b>Connection</b>	<b>Main</b>	<b>50A frame</b>	Screw(M6) terminal Cable capacity : 2~22mm <sup>2</sup>
		<b>65/75/85A frame</b>	Screw(M8) terminal Cable capacity : 2~38mm <sup>2</sup>
	<b>Auxiliary / Coil</b>		Screw(M3.5) clamp terminal

### Certificate

CE, ULcUL, Lloyd, CCC(China)

### Ordering information

Specify type and coil voltage



## Options



**GT-85**  
Thermal (Bimetallic) style  
→ page 66



**GMP80**  
Electronic style  
separate mount only  
→ page 80



**AU-1**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AU-2**  
Aux. contact unit  
2pole for front mount  
→ page 116



**AU-4**  
Aux. contact unit  
2pole for front mount  
→ page 116



**AR-9**  
Mechanical interlock unit  
→ page 118



**AT**  
Pneumatic timer  
→ page 121



**AL-50**  
Mechanical latch unit  
→ page 119



**AS**  
Surge absorber unit  
→ page 120



**AD-50**  
Delayed opening device  
→ page 121

### For more information

- Technical specification → page 122~133
- Drawings → page 144
- Circuit diagrams → page 145
- Overload relays → page 66

# 4-pole Contactors

**100A 125A 150A 180A 220A**

## Description

- 4-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Side mountable accessories
- Direct mountable overload relays available



## 4-pole Contactors with AC coil

Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
100A	30kW	55kW	55kW	55kW	150A	2NO+2NC	GMC-100/4
	105A	105A	85A	65A			
125A	37kW	60kW	60kW	60kW	150A	2NO+2NC	GMC-125/4
	125A	120A	90A	70A			
150A	45kW	75kW	90kW	90kW	200A	2NO+2NC	GMC-150/4
	150A	150A	140A	100A			
180A	55kW	90kW	110kW	110kW	230A	2NO+2NC	GMC-180/4
	180A	180A	180A	120A			
220A	75kW	132kW	132kW	132kW	260A	2NO+2NC	GMC-220/4
	250A	250A	200A	150A			

## Coil voltage, AC/DC common

Nominal(ordering) voltage	AC 50/60Hz	DC
24V	24 - 25V	24V
48V	48 - 50V	48V
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

## Mounting and Connection

Mounting	Holes for screw(M6) fixing		
Connection	Main	100/125/150A frame	Screw(M8) terminal Cable capacity : 2~100mm <sup>2</sup>
		180/220A frame	Screw(M10) terminal Cable capacity : 2~150mm <sup>2</sup>
	Auxiliary / Coil		Screw(M4) clamp terminal

### Certificate

CE, ULcUL, Lloyd, CCC(China)

### Ordering information

Specify type and coil voltage

## Options



**GT-220**  
Thermal (Bimetallic) style  
→ page 68



**AU-100**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AR-180**  
Mechanical interlock unit  
→ page 118



**AL-220**  
Mechanical latch unit  
→ page 119



**AS**  
Surge absorber unit  
→ page 120



**AD-100**  
Delayed opening device  
→ page 121



**Terminal covers**  
→ page 119



**AI-180**  
Insulation barriers  
→ page 120

### For more information

- Technical specification → page 122~133
- Drawings → page 146
- Circuit diagrams → page 146
- Overload relays → page 68

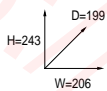
# 4-pole Contactors

**300A** **400A** **600A** **800A**

## Description

- 4-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Side mountable accessories

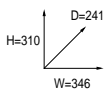
### 4-pole Contactors with AC/DC common coil



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
300A	90kW 300A	160kW 300A	160kW 250A	200kW 220A	350A	2NO+2NC	GMC-300/4
400A	125kW 400A	220kW 400A	225kW 350A	250kW 300A	420A	2NO+2NC	GMC-400/4

### Coil voltage, AC/DC common

Nominal(ordering) voltage	AC 50/60Hz	DC
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-



Frame size	AC3 ratings (IEC60947-4)				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
600A	190kW 630A	330kW 630A	330kW 500A	330kW 420A	660A	2NO+2NC	GMC-600/4
800A	220kW 800A	440kW 800A	550kW 720A	500kW 630A	900A	2NO+2NC	GMC-800/4

### Coil voltage, AC/DC common

Nominal(ordering) voltage	AC 50/60Hz	DC
100V	100 - 127V	100 - 110V
200V	200 - 240V	200 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

### Mounting and Connection

Mounting	300/400A frame	Holes for screw(M8) fixing	
	600/800A frame	Holes for screw(M10) fixing	
Connection	Main	300/400A frame	Screw(M12) terminal Cable capacity : 2~200mm <sup>2</sup>
		600/800A frame	Screw(M16) terminal Cable capacity : 80~325mm <sup>2</sup>
Auxiliary / Coil		Screw(M4) clamp terminal	

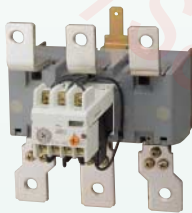
#### Certificate

CE, ULcUL, Lloyd, CCC(China)

#### Ordering information

Specify type and coil voltage

## Options



**GT-400 for GMC-300/4, 400/4**  
Thermal (Bimetallic) style  
→ page 68



**GT-600 for GMC-600/4, 800/4**  
Thermal (Bimetallic) style  
→ page 69



**AU-100**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AR-180, 800**  
Mechanical interlock unit  
→ page 118



**AS**  
Surge absorber unit  
→ page 120



**AD-300, 600**  
Delayed opening device  
→ page 121



**Terminal covers**  
→ page 119



**AI-180**  
Insulation barriers  
→ page 120

### For more information

- Technical specification → page 122~133
- Drawings → page 146
- Circuit diagrams → page 146
- Overload relays → page 68, 69

# Thermal overload relays

## Setting range selection guide



GTK-22



GTK-100



GTK-220

### Class 10A

Three phase (4 pole) motor max. power						GTH(K)-22	GTH(K)-40	GTH(K)-85	GTH(K)-100	GTH(K)-150	GTH(K)-220	GTH(K)-400	GTH(K)-600
220V KW	380V KW	415V KW	440V KW	550V KW	660V KW								
•	•	•	•	•	•	0.1~0.16							
•	•	•	•	•	•	0.16~0.2							
•	•	•	•	•	•	5							
•	•	•	•	•	0.37	0.25~0.4							
•	•	•	•	0.37	0.55	0.4~0.63							
•	0.37	•	0.55	0.75	1.1	0.63~1							
0.37	0.75	1.1	1.1	1.1	1.5	1~1.6							
0.5	1	1.5	1.5	1.5	2	1.6~2.5							
0.75	1.5	2	2	2.2	3	1.6~2.5							
1	2	3	3	3	4	2.5~4	4~6						
1.1	2.2	3	3	4	5.5	2.5~4	4~6						
1.5	3	3.7	3.7	4	5.5	4~6	5~8						
1.5	3	4	4	5	7.5	4~6	5~8						
•	•	5.5	5.5	•	•	5~8	6~9						
2.2	4	4	4	5.5	7.5	6~9	7~10	7~10					
3	5.5	5.5	5.5	7.5	10	6~9	7~10	7~10					
3	5.5	5.5	5.5	7.5	10	7~10	9~13	9~13					
4	7.5	7.5	7.5	10	13.5	7~10	9~13	9~13					
4	7.5	9	9	10	15	9~13	12~18	12~18					
5.5	10	12	12	13.5	20	9~13	12~18	12~18					
5.5	11	11	11	•	•	12~18	16~22	16~22					
7.5	15	15	15	•	•	12~18	16~22	16~22					
5.5	11	11	11	15	18.5	16~22	18~26	18~26					
7.5	15	15	15	20	25	16~22	18~26	18~26					
7.5	15	15	15	18.5	22		24~36	24~36					
10	20	20	20	25	30		24~36	24~36					
•	15	•	•	18.5	•		28~40	28~40					
•	20	•	•	25	•		28~40	28~40					
11	22	25	25	30	37			34~50	34~50	34~50			
15	30	35	35	40	50			34~50	34~50	34~50			
15	25	30	30	37	45			45~65	39~57	39~57			
20	35	40	40	50	60			45~65	39~57	39~57			
18.5	30	37	37	45	55			54~75	43~65	43~65			
25	40	50	50	60	75			54~75	43~65	43~65			
22	37	45	45	55	63			63~85	54~80	54~80			
30	50	60	60	75	85			63~85	54~80	54~80			
25	51	55	59	63	90				65~100	65~100	70~100		
35	70	75	80	85	125				65~100	65~100	70~100		
30	59	59	63	80	110				85~125	85~125	85~125	85~125	
40	80	80	85	110	150				85~125	85~125	85~125	85~125	
45	80	80	90	100	129					100~150	100~160	100~160	
60	110	110	125	135	175					100~150	100~160	100~160	
55	90	100	110	110	160						120~180	120~180	
75	125	135	150	150	220						120~180	120~180	
63	110	129	140	160	200						160~240	160~240	
85	150	175	190	220	270						160~240	160~240	
80	150	160	160	200	257								
110	205	220	220	270	350							200~300	200~300
110	185	200	220	257	335								
150	250	270	300	350	455							260~400	260~400
180	315	355	375	425	500								400~600
245	430	480	510	580	680								
220	400	425	450	500	•								520~800
300	545	580	610	680	•								
<b>Applied contactors for direct starters</b>						GMC(D)-9	GMC(D)-32	GMC(D)-50	GMC-100	GMC-150	GMC-180	GMC-300	GMC-600
						GMC(D)-12	GMC(D)-40	GMC(D)-65	GMC-125		GMC-220	GMC-400	GMC-800
						GMC(D)-18		GMC(D)-75					
						GMC(D)-22		GMC(D)-85					



## Class 20

Three phase (4 pole) motor max. power						GTK-22/L	GTK-40/L	GTK-85/L	GTK-100/L	GTK-150/L	GTK-220/L	GTK-400/L	GTK-600/L
220V KW	380V KW	415V KW	440V KW	550V KW	660V KW								
0.37	0.75	1.1	1.1	1.1	1.5	1~1.6							
0.5	1	1.5	1.5	1.5	2								
0.75	1.5	1.5	1.5	2.2	3	1.6~2.5							
1	2	2	2	3	4								
1.1	2.2	2.2	2.2	3	4	2.5~4	4~6						
1.5	3	3	3	4	5.5								
1.5	3	3.7	3.7	4	5.5	4~6	5~8						
2	4	5	5	5.5	7.5								
•	•	5.5	5.5	•	•	5~8	6~9						
2.2	4	4	4	5.5	7.5	6~9	7~10	7~10					
3	5.5	5.5	5.5	7.5	10								
3	5.5	5.5	5.5	7.5	10	7~10	9~13	9~13					
4	7.5	7.5	7.5	10	13.5								
4	7.5	9	9	10	15	9~13	12~18	12~18					
5.5	10	12	12	13.5	20								
5.5	11	11	11	•	•	12~18	16~22	16~22					
7.5	15	15	15	•	•								
5.5	11	11	11	15	18.5	16~22	18~26	18~26					
7.5	15	15	15	20	25								
7.5	15	15	15	18.5	22		24~36	24~36					
10	20	20	20	25	30								
•	15	•	•	18.5	•		28~40	28~40					
	20			25									
11	22	25	25	30	37			34~50	34~50	34~50			
15	30	35	35	40	50								
15	25	30	30	37	45			45~65	39~57	39~57			
20	35	40	40	50	60								
18.5	30	37	37	45	55			54~75	43~65	43~65			
25	40	50	50	60	75								
22	37	45	45	55	63								
30	50	60	60	75	85			63~85	54~80	54~80			
25	51	55	59	63	90								
35	70	75	80	85	125				65~100	65~100	65~100		
30	59	59	63	80	110								
40	80	80	85	110	150				85~125	85~125	85~125	85~125	
45	80	80	90	100	129								
60	110	110	125	135	175				100~150	100~160	100~160		
55	90	100	110	110	160								
75	125	135	150	150	220						120~180	120~180	
63	110	129	140	160	200								
85	150	175	190	220	270						160~240	160~240	
80	150	160	160	200	257								200~300
110	205	220	220	270	350								200~300
110	185	200	220	257	335							260~400	260~400
150	250	270	300	350	455								260~400
180	315	355	375	425	500								400~600
245	430	480	510	580	680								400~600
220	400	425	450	500	•								520~800
300	545	580	610	680									520~800
<b>Applied contactors for direct starters</b>						GMC(D)-9 GMC(D)-12 GMC(D)-18 GMC(D)-22	GMC(D)-32 GMC(D)-40	GMC(D)-50 GMC(D)-65 GMC(D)-75 GMC(D)-85	GMC-100 GMC-125	GMC-150	GMC-180 GMC-220	GMC-300 GMC-400	GMC-600 GMC-800

## Ratings of auxiliary contacts

Type	Rated current(A)				
	AC15			DC13	
	110V	220V	550V	110V	220V
<b>GTH(K)-22, 40, 85</b>	2.5(0.3)	2(0.3)	1(0.3)	0.28(0.28)	0.14(0.14)
<b>GTH(K)-125, 150, 220, 400, 600</b>	2.5(0.3)	2(0.3)	1(0.3)	0.28(0.28)	0.14(0.14)

(Note) Values of ( ) are the ratings of NO contact under auto reset mode.

# Thermal overload relays, Class 10A

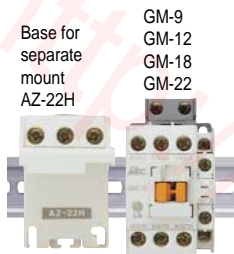
22A

## Description

- Direct mount on the GM-9, 12, 18, 22 contactors (9, 12, 18, 22A frames)
- DIN rail or screw mountable with the optional base AZ-22H
- Small physical size : 44 mm wide
- 1NO+1NC trip contacts
- Trip class 10A
- 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
- Trip free design
- Bimetallic style



GT-22



Separate mount

Direct mount



GT-22

## Catalog No.

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
0.1 - 0.16	GTK-22 · 0.16	GTH-22/3 · 0.16	GTH-22 · 0.16
0.16 - 0.25	GTK-22 · 0.25	GTH-22/3 · 0.25	GTH-22 · 0.25
0.25 - 0.4	GTK-22 · 0.4	GTH-22/3 · 0.4	GTH-22 · 0.4
0.4 - 0.63	GTK-22 · 0.63	GTH-22/3 · 0.63	GTH-22 · 0.63
0.63 - 1	GTK-22 · 1	GTH-22/3 · 1	GTH-22 · 1
1 - 1.6	GTK-22 · 1.6	GTH-22/3 · 1.6	GTH-22 · 1.6
1.6 - 2.5	GTK-22 · 2.5	GTH-22/3 · 2.5	GTH-22 · 2.5
2.5 - 4	GTK-22 · 4	GTH-22/3 · 4	GTH-22 · 4
4 - 6	GTK-22 · 6	GTH-22/3 · 6	GTH-22 · 6
5 - 8	GTK-22 · 8	GTH-22/3 · 8	GTH-22 · 8
6 - 9	GTK-22 · 9	GTH-22/3 · 9	GTH-22 · 9
7 - 10	GTK-22 · 10	GTH-22/3 · 10	GTH-22 · 10
9 - 13	GTK-22 · 13	GTH-22/3 · 13	GTH-22 · 13
12 - 18	GTK-22 · 18	GTH-22/3 · 18	GTH-22 · 18
16 - 22	GTK-22 · 22	GTH-22/3 · 22	GTH-22 · 22

## Connection

<b>Main</b>	Screw(M4) clamp terminal
<b>(Load)</b>	Cable capacity : 1.25~5.5mm <sup>2</sup> / ϕ 1.6~2.6
<b>Auxiliary</b>	Screw(M3.5) clamp terminal

## Ordering information

Specify catalog number

## For more information

- Technical specification → page 122~133
- Drawings → page 147
- Contactors → page 40
- Starters → page 81
- Separate mounting unit → page 147
- Electronic overload relay → page 76
- Operating curves → page 134

### Certificate

CE, ULcUL, Lloyd, CCC(China)



40A



## Description

- Direct mount on the GM-32, 40 contactors (32, 40A frames)
- DIN rail or screw mountable with the optional base AZ-40H
- Small physical size : 53 mm wide
- 1NO+1NC trip contacts
- Trip class 10A
- 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
- Trip free design
- Bimetallic style



GT-40

Base for  
separate  
mount  
AZ-40H

GM-32  
GM-40



Separate  
mount

Direct  
mount



GT-40

## Catalog No.

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
4 - 6	GTK-40 · 6	GTH-40/3 · 6	GTH-40 · 6
5 - 8	GTK-40 · 8	GTH-40/3 · 8	GTH-40 · 8
6 - 9	GTK-40 · 9	GTH-40/3 · 9	GTH-40 · 9
7 - 10	GTK-40 · 10	GTH-40/3 · 10	GTH-40 · 10
9 - 13	GTK-40 · 13	GTH-40/3 · 13	GTH-40 · 13
12 - 18	GTK-40 · 18	GTH-40/3 · 18	GTH-40 · 18
16 - 22	GTK-40 · 22	GTH-40/3 · 22	GTH-40 · 22
18 - 26	GTK-40 · 26	GTH-40/3 · 26	GTH-40 · 26
24 - 36	GTK-40 · 36	GTH-40/3 · 36	GTH-40 · 36
28 - 40	GTK-40 · 40	GTH-40/3 · 40	GTH-40 · 40

## Connection

<b>Main</b>	Screw(M5) clamp terminal
<b>(Load)</b>	Cable capacity : 2~14mm <sup>2</sup> / ϕ 1.6~3.6
<b>Auxiliary</b>	Screw(M3.5) clamp terminal

## Ordering information

Specify catalog number

## For more information

- Technical specification ➔ page 122~133
- Drawings ➔ page 147
- Contactors ➔ page 42
- Starters ➔ page 81
- Separate mounting unit ➔ page 148
- Electronic overload relay ➔ page 78
- Operating curves ➔ page 134

## Certificate

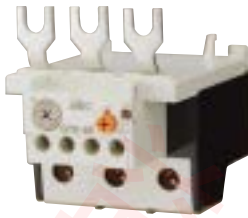
CE, ULcUL, Lloyd,  
CCC(China)

# Thermal overload relays, Class 10A

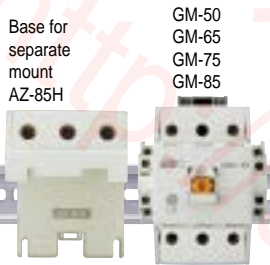
85A

## Description

- Direct mount on the GM-50, 65, 75, 85 contactors (50, 65, 75, 85A frames)
- DIN rail or screw mountable with the optional base AZ-85H
- Small physical size : 70 mm wide
- 1NO+1NC trip contacts
- Trip class 10A
- 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
- Trip free design
- Bimetallic style



GT-85



Base for separate mount AZ-85H

GM-50  
GM-65  
GM-75  
GM-85

Separate mount

Direct mount



GT-85

## Catalog No.

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
7 - 10	GTK-85 · 10	GTH-85/3 · 10	GTH-85 · 10
9 - 13	GTK-85 · 13	GTH-85/3 · 13	GTH-85 · 13
12 - 18	GTK-85 · 18	GTH-85/3 · 18	GTH-85 · 18
16 - 22	GTK-85 · 22	GTH-85/3 · 22	GTH-85 · 22
18 - 26	GTK-85 · 26	GTH-85/3 · 26	GTH-85 · 26
24 - 36	GTK-85 · 36	GTH-85/3 · 36	GTH-85 · 36
28 - 40	GTK-85 · 40	GTH-85/3 · 40	GTH-85 · 40
34 - 50	GTK-85 · 50	GTH-85/3 · 50	GTH-85 · 50
45 - 65	GTK-85 · 65	GTH-85/3 · 65	GTH-85 · 65
54 - 75	GTK-85 · 75	GTH-85/3 · 75	GTH-85 · 75
63 - 85	GTK-85 · 85	GTH-85/3 · 85	GTH-85 · 85

## Connection

Main (Load)	up to 50A	Screw(M6) clamp terminal
		Cable capacity : 2~22mm <sup>2</sup>
Main (Load)	above 50A	Screw(M8) clamp terminal
		Cable capacity : 2~38mm <sup>2</sup>
Auxiliary		Screw(M3.5) clamp terminal

## Ordering information

Specify catalog number

## For more information

- Technical specification → page 122~133
- Drawings → page 147
- Contactors → page 44
- Starters → page 81
- Separate mounting unit → page 148
- Electronic overload relay → page 80
- Operating curves → page 134

## Certificate

CE, ULcUL, Lloyd, CCC(China)

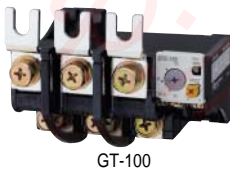
100A 150A



## Description

- Directly mountable to the contactors with brackets and connectors.  
GT-100 for GMC-100, 125 contactors (100, 125A frames)  
GT-150 for GMC-150 contactor (150A frame)
- 1NO+1NC trip contacts
- Trip class 10A
- 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
- Trip free design
- Bimetallic style

### Catalog No. for 100A frame



GT-100

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
34 - 50	GTK-100 · 50	GTH-100/3 · 50	GTH-100 · 50
39 - 57	GTK-100 · 57	GTH-100/3 · 57	GTH-100 · 57
43 - 65	GTK-100 · 65	GTH-100/3 · 65	GTH-100 · 65
54 - 80	GTK-100 · 80	GTH-100/3 · 80	GTH-100 · 80
65 - 100	GTK-100 · 100	GTH-100/3 · 100	GTH-100 · 100
85 - 125	GTK-100 · 125	GTH-100/3 · 125	GTH-100 · 125

### Catalog No. for 150A frame



GT-150

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
34 - 50	GTK-150 · 50	GTH-150/3 · 50	GTH-150 · 50
39 - 57	GTK-150 · 57	GTH-150/3 · 57	GTH-150 · 57
43 - 65	GTK-150 · 65	GTH-150/3 · 65	GTH-150 · 65
54 - 80	GTK-150 · 80	GTH-150/3 · 80	GTH-150 · 80
65 - 100	GTK-150 · 100	GTH-150/3 · 100	GTH-150 · 100
85 - 125	GTK-150 · 125	GTH-150/3 · 125	GTH-150 · 125
100 - 150	GTK-150 · 150	GTH-150/3 · 150	GTH-150 · 150

### Connection

<b>Main</b>	Screw(M8) clamp terminal
<b>(Load)</b>	Cable capacity : 2~100mm <sup>2</sup>
<b>Auxiliary</b>	Screw(M4) clamp terminal

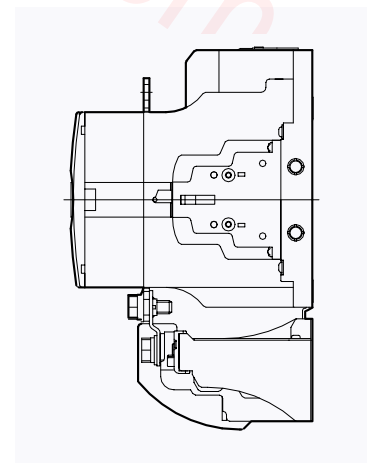
### Ordering information

Specify catalog number

### For more information

- Technical specification → page 122~133
- Drawings → page 148
- Contactors → page 46
- Starters → page 82
- Operating curves → page 135
- Terminal covers → page 119

### Direct mount to a contactor



### Certificate

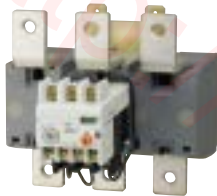
CE, ULcUL, Lloyd,  
CCC(China)

# Thermal overload relays, Class 10A

**220A** **400A**

## Description

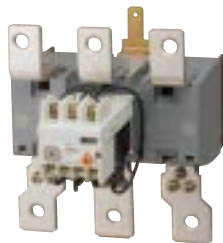
- Directly mountable to the contactors.
  - GT-220 for GMC-180, 220 contactors (180, 220A frames)
  - GT-400 for GMC-300, 400 contactors (300, 400A frames)
- 1NO+1NC trip contacts
- Trip class 10A
- Differential current/Phase failure protection : GTK types
- Non-differential GTH types are available for the economic solution
- Ambient compensated -5 to 40°C
- Manual/Automatic reset
- Trip free design
- Bimetallic style
- CT operated type



GT-220

### Catalog No. for 220A frame

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
65 - 100	GTK-220 · 100	GTH-220/3 · 100	GTH-220 · 100
85 - 125	GTK-220 · 125	GTH-220/3 · 125	GTH-220 · 125
100 - 160	GTK-220 · 160	GTH-220/3 · 160	GTH-220 · 160
120 - 180	GTK-220 · 180	GTH-220/3 · 180	GTH-220 · 180
160 - 240	GTK-220 · 240	GTH-220/3 · 240	GTH-220 · 240



GT-400

### Catalog No. for 400A frame

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
85 - 125	GTK-400 · 125	GTH-400/3 · 125	GTH-400 · 125
100 - 160	GTK-400 · 160	GTH-400/3 · 160	GTH-400 · 160
120 - 180	GTK-400 · 180	GTH-400/3 · 180	GTH-400 · 180
160 - 240	GTK-400 · 240	GTH-400/3 · 240	GTH-400 · 240
200 - 300	GTK-400 · 300	GTH-400/3 · 300	GTH-400 · 300
260 - 400	GTK-400 · 400	GTH-400/3 · 400	GTH-400 · 400

## Connection

Main (Load)	GT-220	Screw(M10) clamp terminal Cable capacity : 2~150mm <sup>2</sup>
	GT-400	Screw(M12) clamp terminal Cable capacity : 2~200mm <sup>2</sup>
Auxiliary		Screw(M3.5) clamp terminal

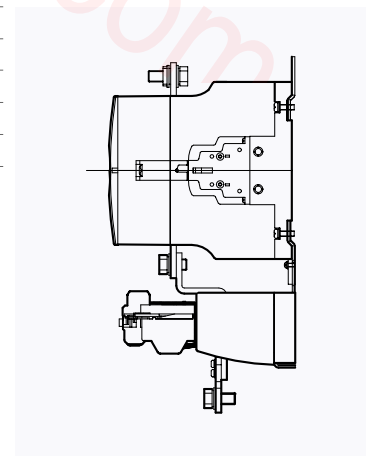
### Ordering information

Specify catalog number

### For more information

- Technical specification → page 122~133
- Drawings → page 149
- Contactors → page 48
- Starters → page 82
- Operating curves → page 135
- Terminal covers → page 119

## Direct mount to a contactor



### Certificate

CE, ULcUL, Lloyd,  
CCC(China)

600A 800A



## Description

- Directly mountable to the contactors.
- 1NO+1NC trip contacts
- Trip class 10A
- 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
- Trip free design
- Bimetallic style
- CT operated type

## Catalog No.



GT-600

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
200 - 300	GTK-600 · 300	GTH-600/3 · 300	GTH-600 · 300
260 - 400	GTK-600 · 400	GTH-600/3 · 400	GTH-600 · 400
400 - 600	GTK-600 · 600	GTH-600/3 · 600	GTH-600 · 600
520 - 800	GTK-600 · 800	GTH-600/3 · 800	GTH-600 · 800

## Connection

<b>Main (Load)</b>	Screw(M16) clamp terminal
	Cable capacity : 80~325mm <sup>2</sup>
<b>Auxiliary</b>	Screw(M3.5) clamp terminal

## Ordering information

Specify catalog number

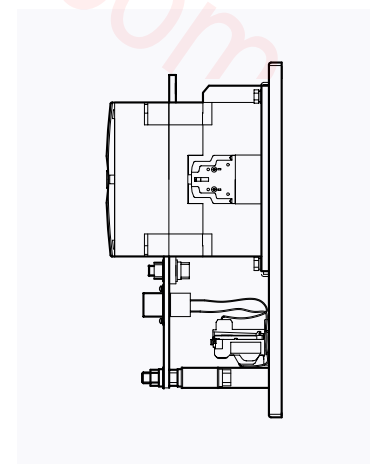
## For more information

- Technical specification → page 122~133
- Drawings → page 149
- Contactors → page 50
- Starters → page 82
- Operating curves → page 135
- Terminal covers → page 119

## Certificate

CE, ULcUL, Lloyd, CCC(China)

## Direct mount to a contactor



# Thermal overload relays, Class 20

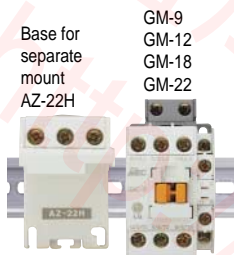
22A



GTK-22/L

## Description

- Direct mount on the GM-9, 12, 18, 22 contactors (9, 12, 18, 22A frames)
- DIN rail or screw mountable with the optional base AZ-22H
- Small physical size : 44 mm wide
- 1NO+1NC trip contacts
- Trip class 20
- Differential current/Phase failure protection
- Ambient compensated -5 to 40°C
- Manual/Automatic reset
- Trip free design
- Bimetallic style



Base for separate mount  
AZ-22H

GM-9  
GM-12  
GM-18  
GM-22

Separate mount

Direct mount



GTK-22/L

## Catalog No.

Setting ranges(A)	Class 20
	<b>3-heater</b>
1 - 1.6	GTK-22/L · 1.6
1.6 - 2.5	GTK-22/L · 2.5
2.5 - 4	GTK-22/L · 4
4 - 6	GTK-22/L · 6
5 - 8	GTK-22/L · 8
6 - 9	GTK-22/L · 9
7 - 10	GTK-22/L · 10
9 - 13	GTK-22/L · 13
12 - 18	GTK-22/L · 18
16 - 22	GTK-22/L · 2

## Connection

<b>Main</b>	Screw(M4) clamp terminal
<b>(Load)</b>	Cable capacity : 1.25~5.5mm <sup>2</sup> / ϕ 1.6~2.6
<b>Auxiliary</b>	Screw(M3.5) clamp terminal

## Ordering information

Specify catalog number

## For more information

- Technical specification → page 122~133
- Drawings → page 150
- Contactors → page 40
- Starters → page 81
- Separate mounting unit → page 147
- Electronic overload relay → page 76
- Operating curves → page 136

## Certificate

CE, ULcUL, Lloyd,  
CCC(China)

40A



GTK-40/L

### Description

- Direct mount on the GM-32, 40 contactors (32, 40A frames)
- DIN rail or screw mountable with the optional base AZ-40H
- Small physical size : 53 mm wide
- 1NO+1NC trip contacts
- Trip class 20
- Differential current/Phase failure protection
- Ambient compensated -5 to 40°C
- Manual/Automatic reset
- Trip free design
- Bimetallic style



Base for separate mount AZ-40H

GM-32 GM-40

Separate mount

Direct mount



GTK-40/L

### Catalog No.

Setting ranges(A)	Class 20
	<b>3-heater</b>
4 - 6	GTK-40/L · 6
5 - 8	GTK-40/L · 8
6 - 9	GTK-40/L · 9
7 - 10	GTK-40/L · 10
9 - 13	GTK-40/L · 13
12 - 18	GTK-40/L · 18
16 - 22	GTK-40/L · 22
18 - 26	GTK-40/L · 26
24 - 36	GTK-40/L · 36
28 - 40	GTK-40/L · 40

### Connection

<b>Main (Load)</b>	Screw(M5) clamp terminal
	Cable capacity : 2~14mm <sup>2</sup> / φ 1.6~3.6
<b>Auxiliary</b>	Screw(M3.5) clamp terminal

### Ordering information

Specify catalog number

### For more information

- Technical specification → page 122~133
- Drawings → page 150
- Contactors → page 42
- Starters → page 81
- Separate mounting unit → page 148
- Electronic overload relay → page 78
- Operating curves → page 136

### Certificate

CE, ULcUL, Lloyd, CCC(China)

# Thermal overload relays, Class 20

85A



GTK-85/L

## Description

- Direct mount on the GM-50, 65, 75, 85 contactors (50, 65, 75, 85A frames)
- DIN rail or screw mountable with the optional base AZ-85H
- Small physical size : 70 mm wide
- 1NO+1NC trip contacts
- Trip class 20
- Differential current/Phase failure protection
- Ambient compensated -5 to 40°C
- Manual/Automatic reset
- Trip free design
- Bimetallic style



Base for separate mount AZ-85H

GM-50  
GM-65  
GM-75  
GM-85

Separate mount

Direct mount



GTK-85/L

## Catalog No.

Setting ranges(A)	Class 20
	<b>3-heater</b>
7 - 10	GTK-85/L · 10
9 - 13	GTK-85/L · 13
12 - 18	GTK-85/L · 18
16 - 22	GTK-85/L · 22
18 - 26	GTK-85/L · 26
24 - 36	GTK-85/L · 36
28 - 40	GTK-85/L · 40
34 - 50	GTK-85/L · 50
45 - 65	GTK-85/L · 65
54 - 75	GTK-85/L · 75
63 - 85	GTK-85/L · 85

## Connection

<b>Main (Load)</b>	<b>up to 50A</b>	Screw(M6) clamp terminal
		Cable capacity : 2~22mm <sup>2</sup>
	<b>above 50A</b>	Screw(M8) clamp terminal
		Cable capacity : 2~38mm <sup>2</sup>
<b>Auxiliary</b>		Screw(M3.5) clamp terminal

## Ordering information

Specify catalog number

## For more information

- Technical specification → page 122~133
- Drawings → page 150
- Contactors → page 44
- Starters → page 81
- Separate mounting unit → page 148
- Electronic overload relay → page 80
- Operating curves → page 136

## Certificate

CE, ULcUL, Lloyd, CCC(China)



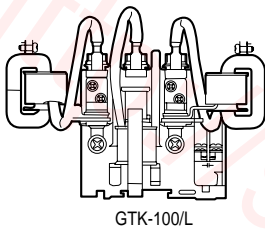
100A 150A



## Description

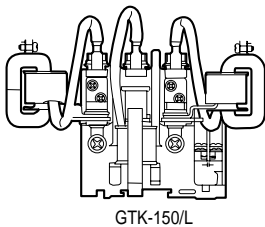
- Directly mountable to the contactors with brackets and connectors.  
GT-100 for GMC-100, 125 contactors (100, 125A frames)  
GT-150 for GMC-150 contactor (150A frame)
- 1NO+1NC trip contacts
- Trip class 20
- Differential current/Phase failure protection
- Ambient compensated -5 to 40°C
- Manual/Automatic reset
- Trip free design
- Bimetallic style

### Catalog No. for 100A frame



Setting ranges(A)	Class 20
	<b>3-heater</b>
34 - 50	GTK-100/L · 50
39 - 57	GTK-100/L · 57
43 - 65	GTK-100/L · 65
54 - 80	GTK-100/L · 80
65 - 100	GTK-100/L · 100
85 - 125	GTK-100/L · 125

### Catalog No. for 150A frame



Setting ranges(A)	Class 20
	<b>3-heater</b>
34 - 50	GTK-150/L · 50
39 - 57	GTK-150/L · 57
43 - 65	GTK-150/L · 65
54 - 80	GTK-150/L · 80
65 - 150	GTK-150/L · 150
85 - 125	GTK-150/L · 125
100 - 150	GTK-150/L · 150

## Connection

<b>Main (Load)</b>	Screw(M8) clamp terminal
	Cable capacity : 2~100mm <sup>2</sup>
<b>Auxiliary</b>	Screw(M4) clamp terminal

## Ordering information

Specify catalog number

## For more information

- Technical specification ➔ page 122~133
- Drawings ➔ page 151
- Contactors ➔ page 46
- Starters ➔ page 82
- Operating curves ➔ page 136

### Certificate

CE, ULcUL, Lloyd,  
CCC(China)

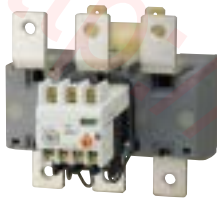
# Thermal overload relays, Class 20

**220A** **400A**

## Description

- Directly mountable to the contactors  
GT-220 for GMC-180, 220 contactors (180, 220A frames)  
GT-400 for GMC-300, 400 contactors (300, 400A frames)
- 1NO+1NC trip contacts
- Trip class 20
- Differential current/Phase failure protection
- Ambient compensated -5 to 40°C
- Manual/Automatic reset
- Trip free design
- Bimetallic style
- CT operated type

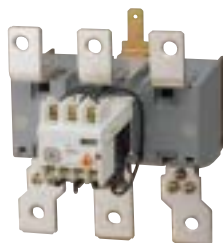
### Catalog No. for 220A frame



GTK-220/L

Setting ranges(A)	Class 20
	<b>3-heater</b>
65 - 100	GTK-220/L · 100
85 - 125	GTK-220/L · 125
100 - 160	GTK-220/L · 160
120 - 180	GTK-220/L · 180
160 - 240	GTK-220/L · 240

### Catalog No. for 400A frame



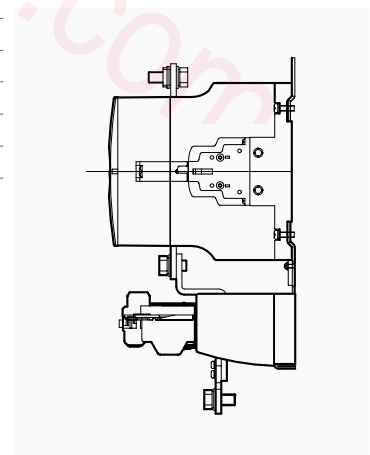
GTK-400/L

Setting ranges(A)	Class 20
	<b>3-heater</b>
85 - 125	GTK-400/L · 125
100 - 160	GTK-400/L · 160
120 - 180	GTK-400/L · 180
160 - 240	GTK-400/L · 240
200 - 300	GTK-400/L · 300
260 - 400	GTK-400/L · 400

## Connection

<b>Main (Load)</b>	<b>GT-220</b>	Screw(M10) clamp terminal Cable capacity : 2~150mm <sup>2</sup>
	<b>GT-400</b>	Screw(M12) clamp terminal Cable capacity : 2~200mm <sup>2</sup>
<b>Auxiliary</b>		Screw(M3.5) clamp terminal

## Direct mount to a contactor



### Ordering information

Specify catalog number

### For more information

- Technical specification → page 122~133
- Drawings → page 151
- Contactors → page 48
- Starters → page 82
- Operating curves → page 136
- Terminal covers → page 119

### Certificate

CE, ULcUL, Lloyd,  
CCC(China)

600A 800A



## Description

- Directly mountable to the contactors.
- 1NO+1NC trip contacts
- Trip class 20
- Differential current/Phase failure protection
- Ambient compensated -5 to 40°C
- Manual/Automatic reset
- Trip free design
- Bimetallic style
- CT operated type

## Catalog No.



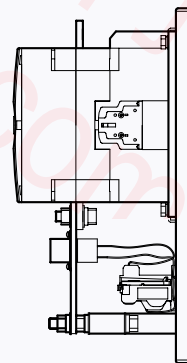
GTK-600/L

Setting ranges(A)	Class 20
	<b>3-heater</b>
200 - 300	GTK-600/L · 300
260 - 400	GTK-600/L · 400
400 - 600	GTK-600/L · 600
520 - 800	GTK-600/L · 800

## Connection

<b>Main (Load)</b>	Screw(M16) clamp terminal
	Cable capacity : 80~325mm <sup>2</sup>
<b>Auxiliary</b>	Screw(M3.5) clamp terminal

## Direct mount to a contactor



## Ordering information

Specify catalog number

## For more information

- Technical specification → page 122~133
- Drawings → page 151
- Contactors → page 50
- Starters → page 82
- Operating curves → page 136
- Terminal covers → page 119

## Certificate

CE, ULcUL, Lloyd,  
CCC(China)

# Electronic overload relays

22A

## Description

- Wide and adjustable current range
- Adjustable trip time (trip class 5-10-15-20-30)
- Designed suitable for use with contactors
  - Directly mountable on the GM-9, 12, 18, 22 contactors
  - Separate mount versions are also available
  - Mounting on 35mm DIN rail is possible by optional base.
- 1NO+1NC trip contacts
- Manual reset as standard (Automatic reset optional)



## Extended protective functions

Number of sensors		2CT	3CT	3CT
Types (GMP22-□)		(-2P, -2T, -2S)	(-3P, -3T, -3S)	(-3PR, -3TR, -3SR)
Functions	Overcurrent	✓	✓	✓
	Phase loss	✓	✓	✓
	Locked rotor	✓	✓	✓
	Phase unbalance		✓	✓
	Phase reversed			✓

## Selection

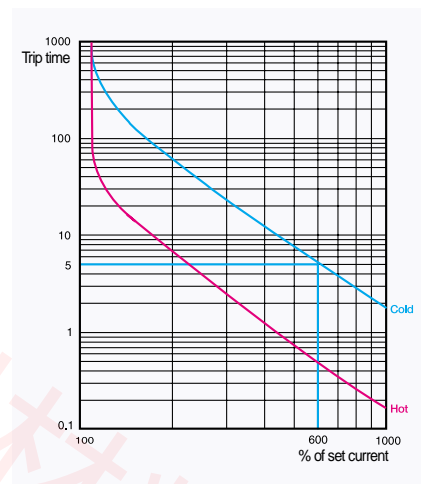
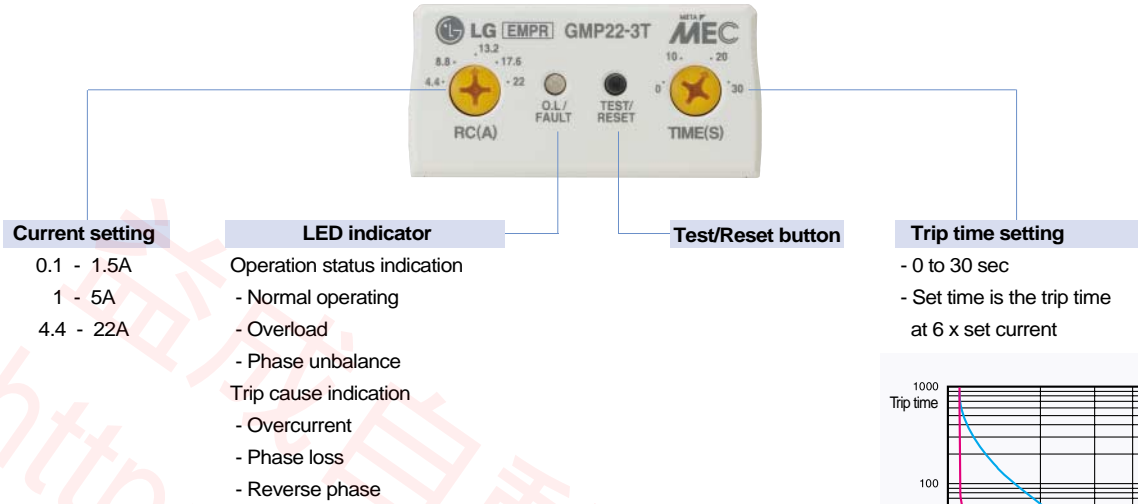
Mount/Connection	Sensor	Setting range	Catalog No.	
Directly on a contactor	2-sensor (2 CT)	0.3 - 1.5A	GMP22 - 2P · 1.5	
		1 - 5A	GMP22 - 2P · 5	
		4.4 - 22A	GMP22 - 2P · 22	
	3-sensor (3 CT)	0.3 - 1.5A	GMP22 - 3P · 1.5	
		1 - 5A	GMP22 - 3P · 5	
		4.4 - 22A	GMP22 - 3P · 22	
	3-sensor Reverse phase detection	0.3 - 1.5A	GMP22 - 3PR · 1.5	
		1 - 5A	GMP22 - 3PR · 5	
		4.4 - 22A	GMP22 - 3PR · 22	
Separate mount ①	2-sensor (2 CT)	0.3 - 1.5A	GMP22 - 2S · 1.5	
		1 - 5A	GMP22 - 2S · 5	
		4.4 - 22A	GMP22 - 2S · 22	
Cable connection with a screw ②	3-sensor (3 CT)	0.3 - 1.5A	GMP22 - 3S · 1.5	
		1 - 5A	GMP22 - 3S · 5	
		4.4 - 22A	GMP22 - 3S · 22	
	3-sensor Reverse phase detection	0.3 - 1.5A	GMP22 - 3SR · 1.5	
		1 - 5A	GMP22 - 3SR · 5	
		4.4 - 22A	GMP22 - 3SR · 22	
	Separate mount ①	2-sensor (2 CT)	0.3 - 1.5A	GMP22 - 2T · 1.5
			1 - 5A	GMP22 - 2T · 5
			4.4 - 22A	GMP22 - 2T · 22
Connection without a screw ② - cables pass through CT holes	3-sensor (3 CT)	0.3 - 1.5A	GMP22 - 3T · 1.5	
		1 - 5A	GMP22 - 3T · 5	
		4.4 - 22A	GMP22 - 3T · 22	
	3-sensor Reverse phase detection	0.3 - 1.5A	GMP22 - 3TR · 1.5	
		1 - 5A	GMP22 - 3TR · 5	
		4.4 - 22A	GMP22 - 3TR · 22	



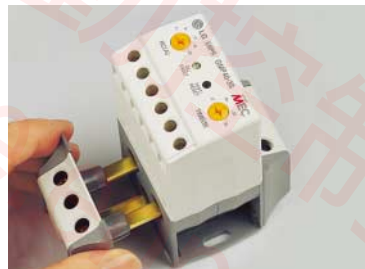
**Certificate**  
CE, ULcUL

**Ordering information**  
Specify catalog number

### Front face configuration



① To mount on 35mm DIN rail use the optional base



② Cable connection part can be modified between screw connection and passing CT hole

### Technical information

<b>Relay control voltage</b>	100 to 260V AC 50/60Hz
<b>Auxiliary contact</b>	3A/250VAC at resistive load 1NO(97-98) + 1NC(95-96)
<b>Setting tolerance</b>	Current $\pm 5\%$ Time $\pm 5\%$ (or $\pm 0.5\text{sec}$ )
<b>Insulation resistance</b>	Min 100M $\Omega$ at 500V DC
<b>Impulse withstand voltage</b>	1.2x50 $\mu\text{s}$ 5kV (IEC1000-4-5)
<b>Fast transient burst</b>	2kV/5min ( IEC1000-4-4)
<b>Ambient temperature</b>	-25 to 70°C for operation -30 to 80°C for storage
<b>Humidity</b>	30 to 90% RH

### For more information

- Drawings  $\rightarrow$  page 169
- Connections  $\rightarrow$  page 170
- Contactors  $\rightarrow$  page 40
- Starters  $\rightarrow$  page 81
- Bimetallic overload relay  $\rightarrow$  page 64
- Operating curves  $\rightarrow$  page 137

# Electronic overload relays

40A



## Description

- Wide and adjustable current range
- Adjustable trip time (trip class 5-10-15-20-30)
- Designed suitable for use with contactors
  - Directly mountable on the GM-32, 40 contactors
  - Separate mount versions are also available
  - Mounting on 35mm DIN rail is possible by optional base.
- 1NO+1NC trip contacts
- Manual reset as standard (Automatic reset optional)

## Extended protective functions

Number of sensors		2CT	3CT	3CT
Types (GMP40-□)		(-2P, -2T, -2S)	(-3P, -3T, -3S)	(-3PR, -3TR, -3SR)
Functions	Overcurrent	✓	✓	✓
	Phase loss	✓	✓	✓
	Locked rotor	✓	✓	✓
	Phase unbalance		✓	✓
	Phase reversed			✓

## Selection



Mount/Connection	Sensor	Setting range	Catalog No.	
Directly on a contactor	2-sensor ( 2 CT )	4 - 20A 8 - 40A	GMP40-2P · 20 GMP40-2P · 40	
	3-sensor ( 3 CT )	4 - 20A 8 - 40A	GMP40-3P · 20 GMP40-3P · 40	
	3-sensor Reverse phase detection	4 - 20A 8 - 40A	GMP40-3PR · 20 GMP40-3PR · 40	
	Separate mount ①	2-sensor ( 2 CT )	4 - 20A 8 - 40A	GMP40-2S · 20 GMP40-2S · 40
		Cable connection with a screw ②	3-sensor ( 3 CT )	4 - 20A 8 - 40A
	3-sensor Reverse phase detection		4 - 20A 8 - 40A	GMP40-3SR · 20 GMP40-3SR · 40
Separate mount ①	2-sensor ( 2 CT )		4 - 20A 8 - 40A	GMP40-2T · 20 GMP40-2T · 40
	Connection without a screw ②	3-sensor ( 3 CT )	4 - 20A 8 - 40A	GMP40-3T · 20 GMP40-3T · 40
		- cables pass through CT holes	3-sensor Reverse phase detection	4 - 20A 8 - 40A

**Certificate**  
CE, ULcUL

**Ordering information**  
Specify catalog number



### Front face configuration



#### Current setting

- 0.1 - 1.5A
- 1 - 5A
- 4.4 - 22A

#### LED indicator

- Operation status indication
- Normal operating
  - Overload
  - Phase unbalance
- Trip cause indication
- Overcurrent
  - Phase loss
  - Reverse phase

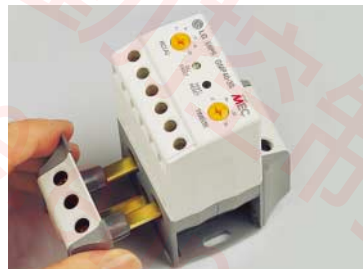
#### Test/Reset button

#### Trip time setting

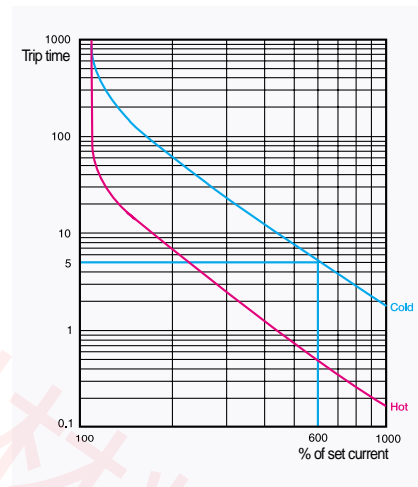
- 0 to 30 sec
- Set time is the trip time at 6 x set current



① To mount on 35mm DIN rail use the optional base



② Cable connection part can be modified between screw connection and passing CT hole



### Technical information

<b>Relay control voltage</b>	100 to 260V AC 50/60Hz
<b>Auxiliary contact</b>	3A/250VAC at resistive load 1NO(97-98) + 1NC(95-96)
<b>Setting tolerance</b>	Current $\pm 5\%$ Time $\pm 5\%$ (or $\pm 0.5\text{sec}$ )
<b>Insulation resistance</b>	Min 100M $\Omega$ at 500V DC
<b>Impulse withstand voltage</b>	1.2x50 $\mu\text{s}$ 5kV (IEC1000-4-5)
<b>Fast transient burst</b>	2kV/5min (IEC1000-4-4)
<b>Ambient temperature</b>	-25 to 70°C for operation -30 to 80°C for storage
<b>Humidity</b>	30 to 90% RH

### For more information

- Drawings → page 169
- Connections → page 170
- Contactors → page 40
- Starters → page 81
- Bimetallic overload relay → page 65
- Operating curves → page 137

# Electronic overload relays

**80A**


## Description

- Wide and adjustable current range
- Adjustable trip time (trip class 5-10-15-20-30)
- Designed suitable for use with contactors GM-50, 65, 75, 85
- Separately mountable on 35mm DIN rail or with screws
- 1NO+1NC trip contacts
- Manual reset as standard (Automatic reset optional)
- Extended protective functions

## Extended protective functions

Number of sensors		2CT	3CT	3CT
Types (GMP80-□)		(-2S)	(-3S)	(-3SR)
Functions	Overcurrent	✓	✓	✓
	Phase loss	✓	✓	✓
	Locked rotor	✓	✓	✓
	Phase unbalance		✓	✓
	Phase reversed			✓

## Selection



Mount/Connection	Sensor	Setting range	Catalog No.
Separate mount	2-sensor ( 2 CT )	16 - 80A	GMP80-2S · 80
Cable connection with a screw	3-sensor ( 3 CT )	16 - 80A	GMP80-3S · 80
	3-sensor Reverse phase detection	16 - 80A	GMP80-3SR · 80

## Technical information

Relay control voltage	100 to 260V AC 50/60Hz
Auxiliary contact	3A/250VAC at resistive load 1NO( 97-98 ) + 1NC( 95-96 )
Setting tolerance	Current $\pm$ 5% Time $\pm$ 5% ( or $\pm$ 0.5sec )
Insulation resistance	Min 100M $\Omega$ at 500V DC
Impulse withstand voltage	1.2x50 $\mu$ s 5kV ( IEC1000-4-5 )
Fast transient burst	2kV/5min ( IEC1000-4-4 )
Ambient temperature	-25 to 70°C for operation -30 to 80°C for storage
Humidity	30 to 90% RH

## For more information

- Drawings → page 170
- Connections → page 170
- Contactors → page 44
- Starters → page 81
- Bimetallic overload relay → page 66
- Operating curves → page 137

## Ordering information

Specify catalog number

**Certificate**  
CE, ULcUL



# Motor starters, open

4kW ~ 45kW



## Description

- Open & full voltage type
- With differential type thermal overload relay
- Contactors : 3 pole with AC coil
- DIN rail or screw mountable
- Top/side mountable accessories available



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTK-22 ①	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMS-9/K
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMS-12/K
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMS-18/K
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMS-22/K
GMC-32	GTK-40 ②	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMS-32/K
GMC-40		11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMS-40/K
GMC-50	GTK-85 ③	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMS-50/K
GMC-65		18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMS-65/K
GMC-75		22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMS-75/K
GMC-85		25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMS-85/K

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

① GTK - 22		② GTK - 40		③ GTK - 85	
0.1 - 0.16	4 - 6	4 - 6	12 - 18	7 - 10	28 - 40
0.16 - 0.25	5 - 8	5 - 8	16 - 22	9 - 13	34 - 50
0.25 - 0.4	6 - 9	6 - 9	18 - 26	12 - 18	45 - 65
0.4 - 0.63	7 - 10	7 - 10	24 - 36	16 - 22	54 - 75
0.63 - 1	9 - 13	9 - 13	28 - 40A	18 - 26	63 - 85A
1 - 1.6	12 - 18			24 - 36	
1.6 - 2.5	16 - 22A				
2.5 - 4					

### For more information

- Technical specification → page 122~133
- Drawings → page 152
- Contactors → page 40~45
- Overload relays → page 62~80
- Accessories → page 116~121

### Ordering information

Type, Coil voltage and Overload relay setting range  
Example : GMS-9/K 50Hz 220V 4-6A

# Motor starters, open

55kW ~ 440kW

## Description

- Open & full voltage type
- With differential type thermal overload relay
- Contactors : 3 pole with AC/DC common coil
- Screw mountable
- Side mountable accessories available

## Types and ratings



Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-100	GTK-100	30kW 105A	55kW 105A	55kW 85A	55kW 65A	2NO+2NC	GMS-100/K
GMC-125	①	37kW 125A	60kW 120A	60kW 90A	60kW 70A	2NO+2NC	GMS-125/K
GMC-150	GTK-150 ②	45kW 150A	75kW 150A	90kW 140A	90kW 100A	2NO+2NC	GMS-150/K
GMC-180	GTK-220	55kW 180A	90kW 180A	110kW 180A	110kW 120A	2NO+2NC	GMS-180/K
GMC-220	③	75kW 250A	132kW 250A	132kW 200A	132kW 150A	2NO+2NC	GMS-220/K
GMC-300	GTK-400	90kW 300A	160kW 300A	160kW 250A	200kW 220A	2NO+2NC	GMS-300/K
GMC-400	④	125kW 400A	220kW 400A	225kW 350A	250kW 300A	2NO+2NC	GMS-400/K
GMC-600	GTK-600	190kW 630A	330kW 630A	330kW 500A	330kW 420A	2NO+2NC	GMS-600/K
GMC-800	⑤	220kW 800A	440kW 800A	550kW 720A	500kW 630A	2NO+2NC	GMS-800/K

### Coil voltage, AC/DC common

24, 48, 100/200, 300, 400, 500V for types GM-100,125,150,180,220  
 100/200, 300, 400, 500V for types GM-300, 400  
 100, 200, 300, 400, 500V for types GM-600, 800

Nominal(ordering) voltage	AC 50/60Hz	DC
24V	24 - 25V	24V
48V	48 - 50V	48V
100V	100 - 127V	100 - 110V
200V	200 - 240V	200 - 220V
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

### Overload relay setting range, Amp.

① GTK-100	② GTK-150	③ GTK-220	④ GTK-400	⑤ GTK-600
34 - 50	34 - 50	65 - 100	85 - 125	200 - 300
39 - 57	39 - 57	85 - 125	100 - 160	260 - 400
43 - 65	43 - 65	100 - 160	120 - 180	520 - 800A
54 - 80	54 - 80	120 - 180	160 - 240	
65 - 100	65 - 100	160 - 240A	220 - 300	
85 - 125A	85 - 125		260 - 400A	
	100 - 150A			

### For more information

- Technical specification → page 122-133
- Drawings → page 152-153
- Contactors → page 46-51
- Overload relays → page 62-80
- Accessories → page 116-121

### Ordering information

Type, Coil voltage and Overload relay setting range  
 Example : GMS-150/K 100/200V 100-150A

# Motor starters, enclosed

4kW ~ 45kW



## Description

- Enclosed & full voltage type  
Steel enclosure without buttons
- With differential type thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

With differential type overload relay



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTK-22 ①	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9/K
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12/K
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18/K
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22/K
GMC-32	GTK-40 ②	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMW-32/K
GMC-40		11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMW-40/K
GMC-50	GTK-85 ③	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMW-50/K
GMC-65		18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMW-65/K
GMC-75		22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMW-75/K
GMC-85		25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMW-85/K

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

① GTK - 22		② GTK - 40		③ GTK - 85	
0.1 - 0.16	4 - 6	4 - 6	12 - 18	7 - 10	28 - 40
0.16 - 0.25	5 - 8	5 - 8	16 - 22	9 - 13	34 - 50
0.25 - 0.4	6 - 9	6 - 9	18 - 26	12 - 18	45 - 65
0.4 - 0.63	7 - 10	7 - 10	24 - 36	16 - 22	54 - 75
0.63 - 1	9 - 13	9 - 13	28 - 40A	18 - 26	63 - 85A
1 - 1.6	12 - 18			24 - 36	
1.6 - 2.5	16 - 22A				
2.5 - 4					

### For more information

- Technical specification → page 122~133
- Drawings → page 154
- Contactors → page 154
- Overload relays → page 40~45
- Accessories → page 62~80

### Ordering information

Type, Coil voltage and Overload relay setting range

Example : GMW-9/K 50Hz 220V 4-6A

# Motor starters, enclosed

4kW ~ 45kW

## Description

- Enclosed & full voltage type  
Steel enclosure without buttons
- With non-differential type 3-heater thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

With non-differential type  
overload relay



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (non-differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTH-22/3 ①	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9/3
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12/3
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18/3
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22/3
GMC-32	GTH-40/3 ②	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMW-32/3
GMC-40		11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMW-40/3
GMC-50	GTH-85/3 ③	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMW-50/3
GMC-65		18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMW-65/3
GMC-75		22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMW-75/3
GMC-85		25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMW-85/3

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

① GTH - 22/3		② GTH - 40/3		③ GTH - 85/3	
0.1 - 0.16	4 - 6	4 - 6	12 - 18	7 - 10	28 - 40
0.16 - 0.25	5 - 8	5 - 8	16 - 22	9 - 13	34 - 50
0.25 - 0.4	6 - 9	6 - 9	18 - 26	12 - 18	45 - 65
0.4 - 0.63	7 - 10	7 - 10	24 - 36	16 - 22	54 - 75
0.63 - 1	9 - 13	9 - 13	28 - 40A	18 - 26	63 - 85A
1 - 1.6	12 - 18			24 - 36	
1.6 - 2.5	16 - 22A				
2.5 - 4					

### For more information

- Technical specification → page 122~133
- Drawings → page 154
- Contactors → page 154
- Overload relays → page 40~45
- Accessories → page 62~80

### Ordering information

Type, Coil voltage and Overload relay setting range

Example : GMW-9/3 50Hz 220V 4-6A



## Description

- Enclosed & full voltage type  
Steel enclosure without buttons
- With non-differential type 2-heater thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

## With 2-heater overload relay



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (2-heater)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
<b>GMC-9</b>	GTH-22 ①	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9
<b>GMC-12</b>		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12
<b>GMC-18</b>		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18
<b>GMC-22</b>		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22
<b>GMC-32</b>	GTH-40 ②	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMW-32
<b>GMC-40</b>		11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMW-40
<b>GMC-50</b>	GTH-85 ③	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMW-50
<b>GMC-65</b>		18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMW-65
<b>GMC-75</b>		22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMW-75
<b>GMC-85</b>		25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMW-85

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

① GTH - 22		② GTH - 40		③ GTH - 85	
0.1 - 0.16	4 - 6	4 - 6	12 - 18	7 - 10	28 - 40
0.16 - 0.25	5 - 8	5 - 8	16 - 22	9 - 13	34 - 50
0.25 - 0.4	6 - 9	6 - 9	18 - 26	12 - 18	45 - 65
0.4 - 0.63	7 - 10	7 - 10	24 - 36	16 - 22	54 - 75
0.63 - 1	9 - 13	9 - 13	28 - 40A	18 - 26	63 - 85A
1 - 1.6	12 - 18			24 - 36	
1.6 - 2.5	16 - 22A				
2.5 - 4					

### For more information

- Technical specification → page 122~133
- Drawings → page 154
- Contactors → page 154
- Overload relays → page 40~45
- Accessories → page 62~80

### Ordering information

Type, Coil voltage and Overload relay setting range  
Example : GMW-9 50Hz 220V 4-6A

# Enclosed motor starters

4kW ~ 15kW

## Description

- Enclosed & full voltage type  
Plastic enclosure without buttons
- With differential or non-differential type thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

## Mould enclosure

## Types and ratings



Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTK-22 differential type	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9M/K
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12M/K
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18M/K
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22M/K
GMC-9	GTH-22/3 non-differential type with 3 heaters	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9M/3
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12M/3
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18M/3
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22M/3
GMC-9	GTH-22 non-differential type with 2 heaters	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9M
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12M
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18M
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22M

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.3

0.1 - 0.16	0.63 - 1	4 - 6	9 - 13
0.16 - 0.25	1 - 1.6	5 - 8	12 - 18
0.25 - 0.4	1.6 - 2.5	6 - 9	16 - 22A
0.4 - 0.63	2.5 - 4	7 - 10	

### For more information

- Technical specification ➔ page 122-133
- Drawings ➔ page 156
- Contactors ➔ page 156
- Overload relays ➔ page 40
- Accessories ➔ page 64

### Ordering information

Type, Coil voltage and Overload relay setting range  
Example : GMW-9M/K 50Hz 220V 4-6A



## Description

- Enclosed & full voltage type  
Plastic enclosure with ON/OFF buttons
- With differential or non-differential type thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

## Mould enclosure



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTK-22 differential type	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9MB/K
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12MB/K
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18MB/K
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22MB/K
GMC-9	GTH-22/3 non-differential type with 3 heaters	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9MB/3
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12MB/3
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18MB/3
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22MB/3
GMC-9	GTH-22 non-differential type with 2 heaters	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9MB
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12MB
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18MB
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22MB

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

0.1 - 0.16	0.63 - 1	4 - 6	9 - 13
0.16 - 0.25	1 - 1.6	5 - 8	12 - 18
0.25 - 0.4	1.6 - 2.5	6 - 9	16 - 22A
0.4 - 0.63	2.5 - 4	7 - 10	

### For more information

- Technical specification ➔ page 122~133
- Drawings ➔ page 156
- Contactors ➔ page 156
- Overload relays ➔ page 40
- Accessories ➔ page 64

### Ordering information

Type, Coil voltage and Overload relay setting range

Example : GMW-9MB/K 50Hz 220V 4-6A

# Enclosed motor starters with push buttons

4kW ~ 45kW

## Description

- Enclosed & full voltage type  
Steel enclosure with ON/OFF buttons
- With differential type thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

With differential type overload relay  
Steel enclosure



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTK-22 ①	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9B/K
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12B/K
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18B/K
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22B/K
GMC-32	GTK-40 ②	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMW-32B/K
GMC-40		11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMW-40B/K
GMC-50	GTK-85 ③	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMW-50B/K
GMC-65		18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMW-65B/K
GMC-75		22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMW-75B/K
GMC-85		25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMW-85B/K

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

① GTK - 22		② GTK - 40		③ GTK - 85	
0.1 - 0.16	4 - 6	4 - 6	12 - 18	7 - 10	28 - 40
0.16 - 0.25	5 - 8	5 - 8	16 - 22	9 - 13	34 - 50
0.25 - 0.4	6 - 9	6 - 9	18 - 26	12 - 18	45 - 65
0.4 - 0.63	7 - 10	7 - 10	24 - 36	16 - 22	54 - 75
0.63 - 1	9 - 13	9 - 13	28 - 40A	18 - 26	63 - 85A
1 - 1.6	12 - 18			24 - 36	
1.6 - 2.5	16 - 22A				
2.5 - 4					

### For more information

- Technical specification → page 122~133
- Drawings → page 155
- Contactors → page 155
- Overload relays → page 40~45
- Accessories → page 62~80

### Ordering information

Type, Coil voltage and Overload relay setting range

Example : GMW-9B/K 50Hz 220V 4-6A





## Description

- Enclosed & full voltage type  
Steel enclosure with ON/OFF buttons
- With non-differential type 3-heater thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

## With non-differential type overload relay Steel enclosure



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (non-differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTH-22/3 ①	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9B/3
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12B/3
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18B/3
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22B/3
GMC-32	GTH-40/3 ②	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMW-32B/3
GMC-40		11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMW-40B/3
GMC-50	GTH-85/3 ③	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMW-50B/3
GMC-65		18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMW-65B/3
GMC-75		22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMW-75B/3
GMC-85		25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMW-85B/3

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

① GTH - 22/3		② GTH - 40/3		③ GTH - 85/3	
0.1 - 0.16	4 - 6	4 - 6	12 - 18	7 - 10	28 - 40
0.16 - 0.25	5 - 8	5 - 8	16 - 22	9 - 13	34 - 50
0.25 - 0.4	6 - 9	6 - 9	18 - 26	12 - 18	45 - 65
0.4 - 0.63	7 - 10	7 - 10	24 - 36	16 - 22	54 - 75
0.63 - 1	9 - 13	9 - 13	28 - 40A	18 - 26	63 - 85A
1 - 1.6	12 - 18			24 - 36	
1.6 - 2.5	16 - 22A				
2.5 - 4					

### For more information

- Technical specification → page 122~133
- Drawings → page 155
- Contactors → page 155
- Overload relays → page 40~45
- Accessories → page 62~80

### Ordering information

Type, Coil voltage and Overload relay setting range  
Example : GMW-9B/3 50Hz 220V 4-6A

# Enclosed motor starters with push buttons

4kW ~ 45kW

## Description

- Enclosed & full voltage type  
Steel enclosure with ON/OFF buttons
- With non-differential type 2-heater thermal overload relay
- Contactors : 3 pole with AC coil
- Screw mountable

With 2-heater overload relay  
Steel enclosure



## Types and ratings

Devices combined		AC3 ratings (IEC60947-4)				Auxiliary contact (standard)	Type
Contactor	Overload (non-differential)	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
GMC-9	GTH-22 ①	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMW-9B
GMC-12		3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMW-12B
GMC-18		4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMW-18B
GMC-22		5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMW-22B
GMC-32	GTH-40 ②	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMW-32B
GMC-40		11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMW-40B
GMC-50	GTH-85 ③	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMW-50B
GMC-65		18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMW-65B
GMC-75		22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMW-75B
GMC-85		25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMW-85B

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Overload relay setting range, Amp.

① GTH - 22		② GTH - 40		③ GTH - 85	
0.1 - 0.16	4 - 6	4 - 6	12 - 18	7 - 10	28 - 40
0.16 - 0.25	5 - 8	5 - 8	16 - 22	9 - 13	34 - 50
0.25 - 0.4	6 - 9	6 - 9	18 - 26	12 - 18	45 - 65
0.4 - 0.63	7 - 10	7 - 10	24 - 36	16 - 22	54 - 75
0.63 - 1	9 - 13	9 - 13	28 - 40A	18 - 26	63 - 85A
1 - 1.6	12 - 18			24 - 36	
1.6 - 2.5	16 - 22A				
2.5 - 4					

### For more information

- Technical specification ➔ page 122-133
- Drawings ➔ page 155
- Contactors ➔ page 155
- Overload relays ➔ page 40-45
- Accessories ➔ page 62-80

### Ordering information

Type, Coil voltage and Overload relay setting range  
Example : GMW-9B 50Hz 220V 4-6A

# 3-pole Contactors, Reversing type

9A ~ 85A

## Description

- 3-pole main contact
- Mechanically interlocked
- Finger proof design
- DIN rail or screw mountable
- Top/side mountable accessories available
- Direct mountable overload relays available

## 3 pole reversing contactors with AC coil



Frame size	AC3 ratings / IEC60947-4				Auxiliary contact (per contactor)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
9A	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	1NO+1NC	GMC-9R
12A	3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	1NO+1NC	GMC-12R
18A	4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	1NO+1NC	GMC-18R
22A	5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	1NO+1NC	GMC-22R
32A	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	2NO+2NC	GMC-32R
40A	11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	2NO+2NC	GMC-40R
50A	15kW 55A	22kW 50A	30kW 43A	30kW 28A	2NO+2NC	GMC-50R
65A	18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	2NO+2NC	GMC-65R
75A	22kW 75A	37kW 75A	37kW 64A	37kW 42A	2NO+2NC	GMC-75R
85A	25kW 85A	45kW 85A	45kW 75A	45kW 45A	2NO+2NC	GMC-85R

### Coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Ordering information

Specify type and coil voltage

Example : GMC-12R 50Hz 240V

## Options



Thermal (Bimetallic) style  
→ page 64-66



Solid state style  
→ page 76-80



**AU-1**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AU-2**  
Aux. contact unit  
2pole for front mount  
→ page 116



**AU-4**  
Aux. contact unit  
4pole for front mount  
→ page 116



**AL**  
Mechanical latch unit  
→ page 119



**AS**  
Surge absorber unit  
→ page 120

### For more information

- Technical specification → page 122-133
- Drawings → page 157
- Connections → page 157
- Contactors → page 40-45
- Overload relays → page 62-80

# 3-pole Contactors, Reversing type

100A ~ 800A

## Description

- 3-pole main contact
- Mechanically interlocked
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Top/side mountable accessories available



## 3 pole reversing contactors with AC coil

Frame size	AC3 ratings / IEC60947-4				Auxiliary contact (per contactor)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V		
100A	30kW 105A	55kW 105A	55kW 85A	55kW 65A	2NO+2NC	GMC-100R
125A	37kW 125A	60kW 120A	60kW 90A	60kW 70A	2NO+2NC	GMC-125R
150A	45kW 150A	75kW 150A	90kW 140A	90kW 100A	2NO+2NC	GMC-150R
180A	55kW 180A	90kW 180A	110kW 180A	110kW 120A	2NO+2NC	GMC-180R
220A	75kW 250A	132kW 250A	132kW 200A	132kW 150A	2NO+2NC	GMC-220R
300A	90kW 300A	160kW 300A	160kW 250A	200kW 220A	2NO+2NC	GMC-300R
400A	125kW 400A	220kW 400A	225kW 350A	250kW 300A	2NO+2NC	GMC-400R
600A	190kW 630A	330kW 630A	330kW 500A	330kW 420A	2NO+2NC	GMC-600R
800A	220kW 800A	440kW 800A	550kW 720A	500kW 630A	2NO+2NC	GMC-800R

### Coil voltage, AC/DC common

524, 48, 100/200, 300, 400, 500V for types GM-100,125,150,180,220

100/200, 300, 400, 500V for types GM-300, 400

100, 200, 300, 400, 500V for types GM-600, 800

Nominal(ordering) voltage	AC 50/60Hz	DC
24V	24 - 25V	24V
48V	48 - 50V	48V
100V	100 - 127V	100 - 110V
200V	200 - 240V	200 - 220V
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

### Ordering information

Specify type and coil voltage

Example : GMC-100R 100/200V

## Options



Thermal (Bimetallic) style  
→ page 67-69



**AU-100,**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AS**  
Surge absorber unit  
→ page 120



**Terminal covers**  
→ page 119



**AI**  
Insulation barriers  
→ page 120

### For more information

- Technical specification → page 122-133
- Drawings → page 158
- Connections → page 158
- Contactors → page 46-51
- Overload relays → page 62-80

# 3-pole Contactors, Latching type

9A ~ 85A

## Description

- 3-pole main contact
- Mechanically latched
- Finger proof design
- DIN rail or screw mountable
- Side mountable accessories available
- Direct mountable overload relays available



GMC-22L

## 3 pole reversing contactors with AC coil

Frame size	AC3 ratings / IEC60947-4				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
9A	2.5kW 11A	4kW 9A	4kW 7A	4kW 5A	25A	1NO+1NC	GMC-9L
12A	3.5kW 13A	5.5kW 12A	7.5kW 12A	7.5kW 9A	25A	1NO+1NC	GMC-12L
18A	4.5kW 18A	7.5kW 18A	7.5kW 13A	7.5kW 9A	40A	1NO+1NC	GMC-18L
22A	5.5kW 22A	11kW 22A	15kW 22A	15kW 18A	40A	1NO+1NC	GMC-22L
32A	7.5kW 32A	15kW 32A	18.5kW 28A	18.5kW 20A	50A	2NO+2NC	GMC-32L
40A	11kW 40A	18.5kW 40A	22kW 32A	22kW 23A	60A	2NO+2NC	GMC-40L
50A	15kW 55A	22kW 50A	30kW 43A	30kW 28A	80A	1NO+2NC	GMC-50L
65A	18.5kW 65A	30kW 65A	33kW 60A	33kW 35A	100A	1NO+2NC	GMC-65L
75A	22kW 75A	37kW 75A	37kW 64A	37kW 42A	110A	1NO+2NC	GMC-75L
85A	25kW 85A	45kW 85A	45kW 75A	45kW 45A	135A	1NO+2NC	GMC-85L

### Contactors coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V  
60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Rebound coil voltage

AC 50/60Hz : 100(100~127V), 200(200~240V), 300(260~350V), 400(380~440V), 500(460~550V)  
DC : 12, 24, 48, 100(100~110V), 125(120~125V), 200(200~220V)

### Ordering information

Specify type, contactor coil voltage and rebound coil voltage  
Example : GMC-12L 50Hz 240V DC48V



**AU-1**  
Aux. contact unit  
2pole for side mount  
➔ page 116



Thermal (Bimetallic) style  
➔ page 64-66



**AS**  
Surge absorber unit  
➔ page 120



Solid state style  
➔ page 76-80

**For more information**

- Technical specification ➔ page 122-133
- Drawings ➔ page 161
- Connections ➔ page 161
- Contactors ➔ page 40-45
- Overload relays ➔ page 62-80

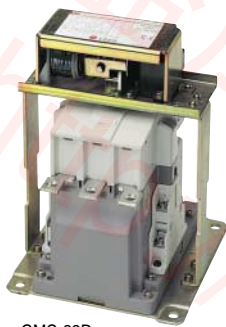


# 3-pole Contactors, Latching type

100A ~ 400A

## Description

- 3-pole main contact
- Mechanically interlocked
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 1NO+2NC Auxiliary contacts built-in as standard
- Top/side mountable accessories available



GMC-22R

## 3 pole reversing contactors with AC coil

Frame size	AC3 ratings / IEC60947-4				AC1 lth	Auxiliary contact (standard)	Type
	220 ~ 240V	380 ~ 440V	500 ~ 550V	690V			
100A	30kW	55kW	55kW	55kW	150A	1NO+2NC	GMC-100L
	105A	105A	85A	65A			
125A	37kW	60kW	60kW	60kW	150A	1NO+2NC	GMC-125L
	125A	120A	90A	70A			
150A	45kW	75kW	90kW	90kW	200A	1NO+2NC	GMC-150L
	150A	150A	140A	100A			
180A	55kW	90kW	110kW	110kW	230A	1NO+2NC	GMC-180L
	180A	180A	180A	120A			
220A	75kW	132kW	132kW	132kW	260A	1NO+2NC	GMC-220L
	250A	250A	200A	150A			
300A	90kW	160kW	160kW	200kW	350A	1NO+2NC	GMC-300L
	300A	300A	250A	220A			
400A	125kW	220kW	225kW	250kW	420A	1NO+2NC	GMC-400L
	400A	400A	350A	300A			

### Contactor coil voltage, AC/DC common

24, 48, 100/200, 300, 400, 500V for types GM-100,125,150,180,220  
100/200, 300, 400, 500V for types GM-300, 400

Nominal(ordering) voltage	AC 50/60Hz	DC
24V	24 - 25V	24V
48V	48 - 50V	48V
100/200V	100 - 240V	100 - 220V
300V	265 - 347V	-
400V	380 - 450V	-
500V	440 - 575V	-

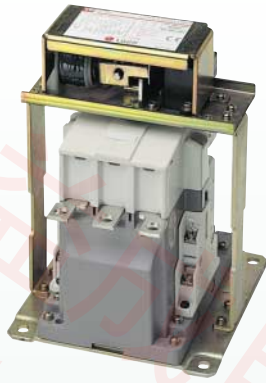
### Rebound coil voltage

AC 50/60Hz : 100(100~127V), 200( 200~ 240V)

### Ordering information

Specify type, contactor coil voltage and rebound coil voltage  
Example : GMC-100L 100/200V AC100V

## Options



Thermal (Bimetallic) style  
→ page 67-69



**AU-100,**  
Aux. contact unit  
2pole for side mount  
→ page 116



**AS**  
Surge absorber unit  
→ page 120



**Terminal covers**  
→ page 119



**AI**  
Insulation barriers  
→ page 120

### For more information

- Technical specification → page 122-133
- Drawings → page 162
- Connections → page 162
- Contactors → page 46-51
- Overload relays → page 62-80

# Contactor relays

## Description

- 4-, 6-, 8-pole units
- 44mm wide
- Finger proof design
- DIN rail or screw mountable
- 16A continuous current, I<sub>th</sub>
- AC/DC control voltage



GMR-4



GMR-6



GMR-8

## Selection

Poles	Composition	Types		Remarks
		AC control	DC control	
4 pole	4NO	GMR-4	GMR-4D	Additional 2NO or 4NO auxiliary contact block can be mounted on these relays
	3NO+1NC			
	2NO+2NC			
	1NO+3NC			
6 pole	4NC	GMR-6	GMR-6D	
	6NO			
	5NO+1NC			
	4NO+2NC			
8 pole	3NO+3NC	GMR-8	GMR-8D	
	2NO+4NC			
	8NO			
	7NO+1NC			
	6NO+2NC			
	5NO+3NC			
	4NO+4NC			

## Contact ratings

		Rated currents		Making/Breaking currents	
		Inductive load	Resistive load	Inductive load	Resistive load
AC duty	120V	6A	10A	66A	66A
	240V	3A	8A	33A	33A
	480V	1.5A	5A	16.5A	16.5A
	600V	2A	5A	13.2A	13.2A
DC duty	125V	1.1A	5A	3.7A	
	250V	0.55A	3A	1.8A	
	440V	0.31A	2.5A	1.4A	
	600V	0.2A	1A	0.7A	
Continuous current, I <sub>th</sub>		16A			

## Performance

Operation cycle			1800 operations/hour	
Endurance	Mechanical lifetime		20 mil. Operations	
	Electrical lifetime	AC15 duty	220V	0.5 mil. operations
			440V	0.5 mil. operations
		AC12 duty	220V	0.25 mil. operations
			440V	0.25 mil. operations
	DC13, 12 duty	24~220V	0.5 mil. operations	

### Contactor coil voltage, AC 50/60Hz

50Hz : 24, 42, 48, 100, 110, 220, 240, 380, 400, 415, 440, 500, 550V

60Hz : 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V

### Coil voltage, DC

12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

### Ordering information

Specify type, contact composition and coil voltage

Example : GMR-4D, 3NO+1NC, DC48V

### For more information

Drawings

➔ page 163

Diagrams

➔ page 163

# 2-pole DC Contactors



## Description

- Two normally open main contacts for DC circuit
- Positive and negative poles indicated on the front plate
- Eternal magnet installed for the effective arc extinguishing
- DIN rail or screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- AC/DC control voltage

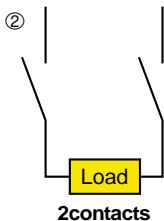
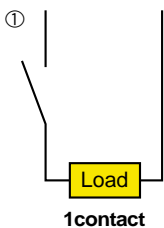
## Selection



Type		Number of contacts in series	DC2, 4 ratings			Continuous current, Ith	Auxiliary contacts
AC coil	DC coil		110V	220V	440V		
SMM-30P	SMM-30DP	1 ①	2.2kW 30A	3.7kW 20A	2.2kW 7.5A	50A	2NO+2NC
		2 ②	3.7kW 40A	5.5kW 30A	7.5kW 20A		
SMM-60P	SMM-60DP	1	5.5kW 60A	7.5kW 40A	5.5kW 15A	90A	2NO+2NC
		2	7.5kW 80A	11kW 60A	15kW 40A		
SMM-100P	SMM-100DP	1	7.5kW 100A	11kW 60A	15kW 20A	120A	2NO+2NC
		2	11kW 120A	18.5kW 100A	22kW 60A		

## Ratings of auxiliary contacts

		AC duty			DC duty		
		110V	220V	550V	48V	110V	220V
Rated currents	Inductive load	6A	5A	3A	3A	1.2A	0.2A
	Resistive load	10A	10A	5A	2.5A	1A	
Continuous current, Ith		16A					



## Performance

Contactor types	Breaking current			Making current	Endurance
	contacts in series	DC110V	DC220V		
SMM-30P	1	120A	80A	30A	160A Mechanical lifetime : 2.5 mil. operations
SMM-30DP	2	160A	120A	80A	
SMM-60P	1	240A	160A	60A	320A Electrical lifetime : 0.5 mil. operations
SMM-60DP	2	320A	240A	160A	
SMM-100P	1	400A	240A	80A	480A Operation cycle : 1200 operations/hour
SMM-100DP	2	480A	400A	240A	

### Contactor coil voltage, AC 50/60Hz

48, 100/100~110, 110~120/115~120, 200/200~220, 220~240/230~240, 380~415/400~440V

### Coil voltage, DC

24, 48, 100, 110, 200, 220V

### Ordering information

Specify type and coil voltage  
Example : SMM-30P, AC100V 50Hz

### For more information

Drawings

➔ page 166

# 2-pole AC Contactors, Definite purpose

## Description

- Two normally open main contacts
- Screw clamp or fast-on connections
- Small and light design suitable for use in air conditioners, heaters, refrigerators, etc.
- Screw mountable
- No auxiliary contact
- AC control voltage

## Selection



Type	AC3 ratings			AC4 ratings			AC1 lth	Making current	Breaking current
	220~ 240V	380~ 440V	500~ 550V	220~ 240V	380~ 440V	500~ 550V			
SMC-20P2	20A	17A	14A	18A	13A	10A	30A	120A	20A
SMC-25P2	25A	21A	17A	20A	14A	12A	35A	150A	25A
SMC-30P2	30A	23A	21A	22A	20A	14A	40A	180A	30A

## Connection style

Terminal code	Main terminal	Coil terminal	Remarks
TSBS	Screw clamp	Screw clamp	
TSBQ		Fast-on	
TQBS	Fast-on(Quick connect)	Screw clamp	not available for SMC-30P2
TQBQ		Fast-on(Quick connect)	

## Endurance

<b>Mechanical lifetime</b>		2 mil. Operations
<b>Electrical lifetime at AC4</b>	<b>at AC3</b>	0.2 mil. Operations (1200 operations/h)
		0.015 mil. Operations (600 operations/h)

### Contactors coil voltage, AC 50/60Hz

24, 48-50, 110/110-120, 208-220/208-240V

### Ordering information

Specify type, terminal code and coil voltage

Example : SMC-25P2, TSBQ, AC110V 50Hz

**Certificate**

ULcUL

### For more information

Drawings

➔ page 165

# Capacitor contactors



## Description

-GMC(D)-□C, a contactor or special use, is adjusted for switching single-step or multiple-step condenser bank.  
-It is standardized by IEC-60947-4941, UL and CSA.

## Operation Condition

<b>Operating Times</b>	GMC(D)-9C, 12C, 18C, 22C, 32C, 40C	240 times/h
	GMC-50C, 65C, 75C, 85C	100 times/h
<b>Electrical Endurance</b>	GMC(D)-9C, 12C, 18C, 22C, 32C, 40C	200,000 times/h
	GMC-50C, 65C, 75C, 85C	100,000 times/h

1. When the switch is closed condenser must be discharged before recharged. (Maximum residual voltage at terminals  $\leq 50V$ )
2. In working voltage 500V ( $U_e=500V$ ), 100,000 times for GMC(D)-9C~40C and 80,000 times for GMC(D)-50C~85C
3. To prevent short current, gG type Fuse must be 1.5~2 times than rated current.
4. It must be separated from resistant wire

## Rating

Type	Maximum Operating Power (kVar)			Rated current (A)	Applied unit
	220~240V	400~440V	600~550V		
GMC(D)-9C	5	9.7	14	14	AC-9
GMC(D)-12C	6.7	12.5	18	18	AC-9
GMC(D)-18C	8.5	16.7	24	24	AC-9
GMC(D)-22C	10	18	26	26	AC-9
GMC(D)-32C	15	25	36	36	AC-9
GMC(D)-40C	20	33.3	48	48	AC-9
GMC(D)-50C	22	40	58	58	AC-50
GMC(D)-65C	25	45.7	66	66	AC-50
GMC(D)-75C	29.7	54	78	78	AC-50
GMC(D)-85C	35	60	92	92	AC-50

Circumstance Temp.  $\theta \leq 55^\circ C$  (Note)

(Note) The average temperature over a 24-hour period, in accordance with standards IEC 70 and 831 is  $45^\circ C$



# Digital motor protection relays, DMPR

## General digital type motor protection relays using MCU(Micro Controller Unit)

- Real time processing and high precision

### Multiple protection

Protection	DMP□-S	DMP□-SZ	DMP□-SI	DMP□-T	DMP□-TZ	DMP□-T
Wiring	Screw type			Tunnel type		
Over current	■	■	■	■	■	■
Under current	■	■	■	■	■	■
Stall	■	■	■	■	■	■
Lock	■	■	■	■	■	■
Phase failure	■	■	■	■	■	■
Revers phase	■	■	■	■	■	■
Asymmetry	■	■	■	■	■	■
Ground fault		■			■	
Short circuit			■			■

### Install the Unit /Extension type in one body

The display part may be separated from the body

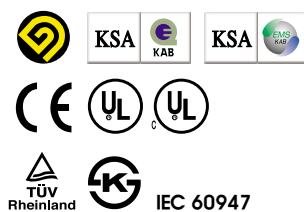
You can check the values and the causes of the fault without opening the distribution panel door



\* Fig. (D-EMPR in the MCC unit)

### Both screw type and tunnel type wrings are available in a DMP-E Type D-EMPR

Simply detach the screw terminal, you can use it by the tunnel type relay



### Standard :

IEC60947-1, IEC60947-4-1, IEC60947-5-1, UL508, KSC4504

### Certification & approval :

CE, UL, cUL, Lloyd register, Korea register, KS, ISO 14001, ISO 9001(Including proceedings)



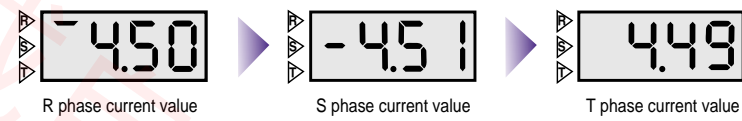
### Display the causes of the fault and the values

Prompt A/S by looking the LED panel which displays the causes of the fault and the values



### 3phase digital ampere-meter function (Digital ampere-meter)

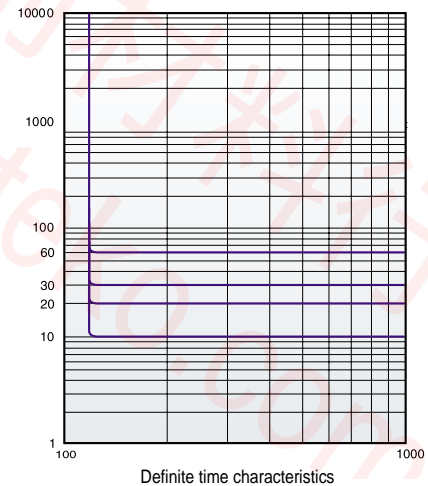
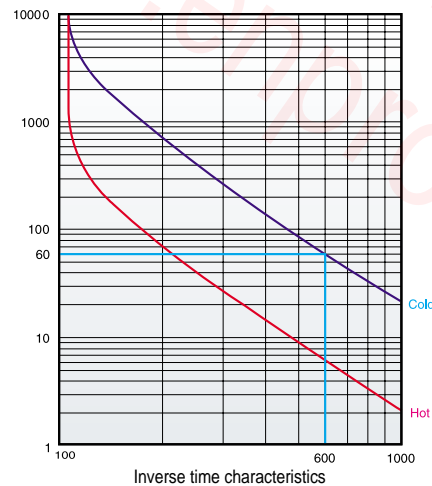
Additional ampere-meter is not needed



### Motor load rate(%)

Easy to check the motor load condition

### Selectable either the inverse time or definite time characteristics



### Applicable to inverter control circuit

LG DMPR has high performance under the harmonic noise and can be used in the Inverter control circuit (20~200Hz)

### Elegant design

High class product image by the elegant design



# Digital motor protection relays, DMPR

## Specifications of D-EMPR



DMP□-S

DMP□-T

Model No.		DMP06-S	DMP60-S	DMP06-T	DMP60-T
Wiring		Screw type		Tunnel type	
Panel mount		Unit or Extension <i>Note1)</i>			
Operation time		Select either reverse time characteristics or definite time characteristics			
Protection	Over current	According to the setting time			
	Phase failure	3 sec.			
	Reverse phase	Within 0.1 sec.			
	Asymmetry	5 sec.			
	Stall	5 sec.			
	Lock	Within 0.5 sec.			
	Under current	3 sec.			
	Ground fault	Within 0.05~1 sec. Selectable (0.05~1.0sec)			
	Short circuit <i>Note2)</i>	Within 50ms			
Alarm		Variable (60~110% of the setting current)			
Current setting range (A)		0.5~6	5~60	0.5~6	5~60
Motor capacity (kW)	220~240V	0.09~0.75	1.1~11	0.09~0.75	1.1~11
	380~440V	0.12~1.5	2.2~22	0.09~1.5	2.2~22
Time setting range (sec)	Definite time	Delay in starting	0~60sec		
		Delay in operating	0~30sec		
	Inverse time		0~60sec		
	Reset		Manual reset		
Tolerance	Current	± 5%			
	Time	± 5% (or ± 0.5sec)			
Operating power <i>Note3)</i>	Voltage	AC 190~250V			
	Frequency	60Hz (50Hz)			
Aux. contact	OL	2-SPST	3A/250Vac Resistive load		
	AL	SPST	3A/250Vac Resistive load		
Insulation resistance		Over DC500V 100MΩ			
Surge impulse voltage(IEC1000-4-5)		1.2 × 50μs 6kV (Apply standard wave form)			
Fast transient burst(IEC1000-4-4)		2.5kV/5min			
Environment	Temperature	Operation	-25~70°C		
		Storage	-30~80°C		
	Humidity	30~90% RH (No freezing)			
Display	7-Segment	3 phase current, cause of a fault			
	Bar-Graph	60~110% of real load current			
Mounting type		35mm Din-rail/Panel			

*Note1)* In extension type, the digital EMPR is calibrated with combining the display past and main body so, please cautious not to combine the display part and main body with different part No.

*Note2)* Instantaneous short circuit protection is optional

*Note3)* Operational voltage of AC 110V and 50Hz is optional

# Setting

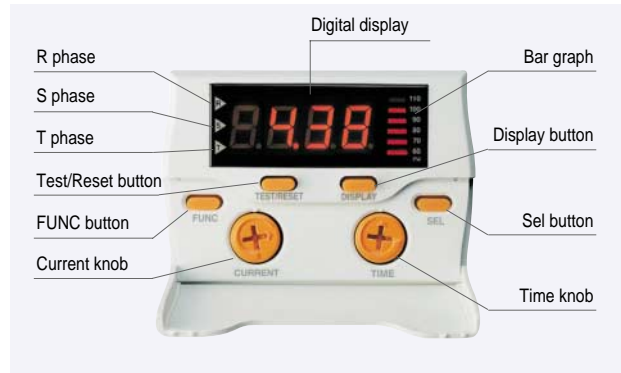


## Before operating a motor, set the D-EMPR as follows

### 1. Check the operation of the Test/Reset button

- ❖ Check the operation when it is tripped
  - 1) Check the wiring method (Refer to P13~14)
  - 2) Press the Test/Reset button and then test is displayed on the LED and the DMPR is tripped
  - 3) Press the Test/Reset button again and then it is reset

**Note)** In order to avoid the trip fault, the push operation of Test/Reset is not available when a motor is rotating.



### 2. Shift the mode by pressing the FUNC key and then select the values by press the Sel key

- ❖ You can finish the setting by pressing the Sel key in the Sto mode
- ❖ To protect the operation under the motor rotating, setting is allowed only in the test mode

FUNC	Sel	Functions	Note
1.CHA	1 nu/dEF	Inverse or definite time characteristics	Default is inverse time characteristics
2.dEF	0~30	Set the O-time (Definite time only)	For D-time setting, use the time knob
3. r.P	oFF/on	Reverse phases protection	Default is "Off"
4.Und	oFF/30~70 (%)	Under current protection	Default is "Off" <b>Note1)</b>
5.ALt	oFF/60~110 (%)	Alarm function (With pre-alarm function)	Default is "Off"
5.9-F	oFF/0.05~1(SEC)	Ground fault and Setting the operating time	Default is "Off" (Z type)
6.5tL	oFF/on	Stall function	Default is "Off"
7.Loc	oFF/200~900 (%)	Lock function	Default is "Off"
8. Ct	1~120	CT ratio	Default is 1:1 <b>Note2)</b>
9.P-F	on/oFF	Phase failure	Default is "On" to store
Sto	Sto	Store	Push the SEL button to store

**Note1)** Set the under current value from above 350mA

**Note2)** Do not change the CT ratio in 60 type (Default is 10:1)

- 1) First shift to the test mode by press the "Test/Reset" button and then set the functions by press the "FUNC" button
- 2) Each time you press the "FUNC" button, the function mode switches from 1.CHA mode to Sto mode.  
When the mode that you want to change is displayed, push the "Sel" button to select the value you want.  
After you select the value, press the "FUNC" button to finish the settings and it displays the next mode
- 3) If no button is pressed in the selection mode, it remains in that mode
- 4) If you select the inverse time characteristics it skips the mode 2 (Definite O-time) and go to the mode 3 (Reverse phase)

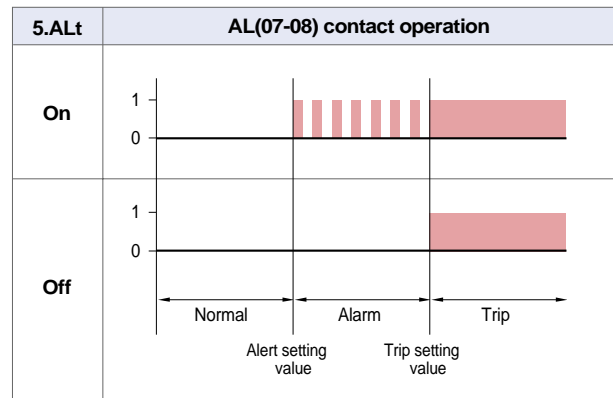
# Digital motor protection relays, DMPR

## Setting

- 5) Alt is the alert setting mode. It displays the load rate of the current setting value by the bar LED (60~110%)
- If the current is higher than the setting value, the bar LED is switched on and off and the AL relay(07-08) make close and open in 1sec interval unit the EMPR is tripped (Pre-alarm function)
  - If the 5. Alt mode is set to off, the AL relay make close after the EMPR is tripped (Normal open contact)

- 6) To finish the settings you have to press the "Sel" button in the Sto mode

Alarm signal (Alert function)



### 3. Adjust the operating time by the time knob



#### ► Inverse time characteristics

- 1) Select the inverse time in the 1. CHA mode, the default operating time is 600% of the rated current
- 2) The setting range of the operating time is 0~60sec. Set the time by considering the motor start time
- 3) When it is over the setting time, the EMPR operate in accord with the hot curve

#### ► Definite time characteristics

- 1) Select the definite in the 1. CHA mode, it is operated by the definite time characteristics
- 2) D-time means the time that delays the operating time when the motor is starting
- 3) The setting range of the operating time is 0~60sec. Set the time by considering the motor start time
- 4) Set the O-time at the setting mode 2. dEF and the range is 0~30sec

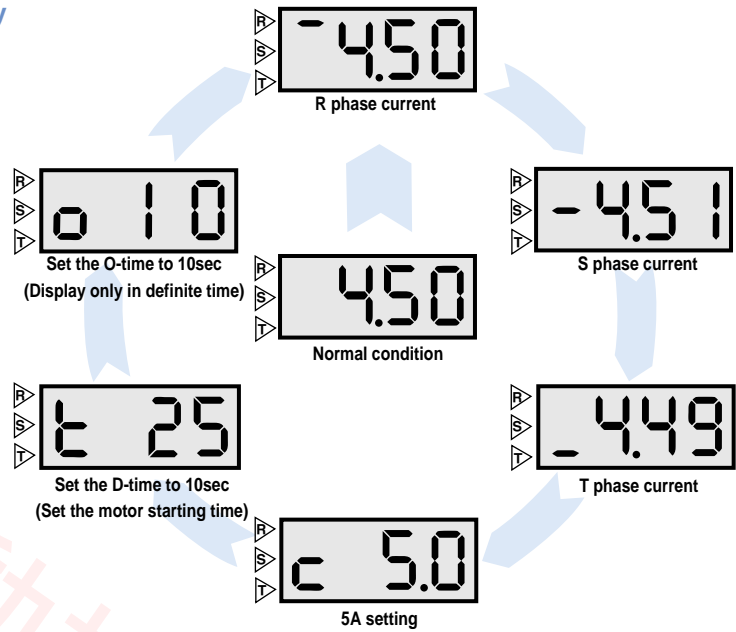
### 4. Adjust the operating current by the current knob

- 1) Set the operating current based on the rated current that is described in the name plate.  
Generally set the 110~115% of the real load current in the normal load condition
- 2) There are 2 CT types according to the current range (0.6 / 60). When you use the external CT you can see the real current by set the CT ratio (In 60CT type the default CT ration is 10:1)
- 3) You can easily set the current value by refer to the load rate which is displayed on the bar-graph (Approx. 90% load rate)



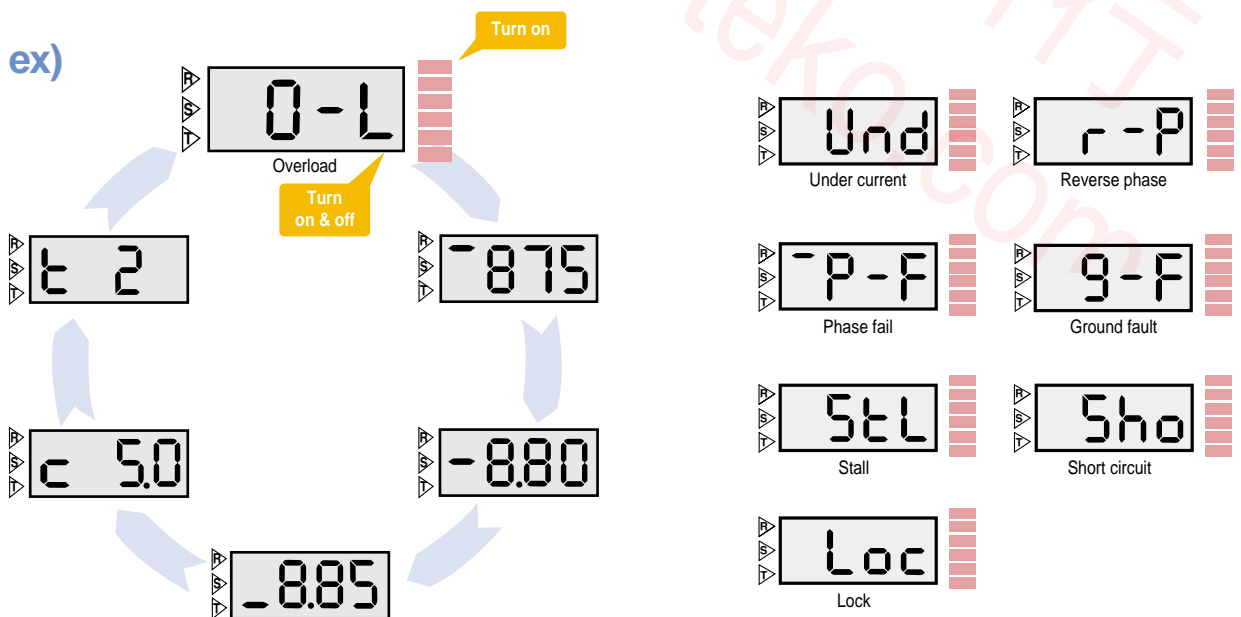
### 5. Check the setting state by the display key

- 1) In normal condition it display the maximum current among the three phase current
- 2) Each time you press the "Display" button you can see the current and values as PIG X
- 3) If no button is pressed for 3~4 seconds. It returned to the normal condition



### 6. Check the causes of the fault by look at the display unit (7-segment)

- ❖ The causes of the fault is switched on and off for 0.5sec interval. If you press the "Display" button at this time, display you can see the values and the causes of the fault



# Digital motor protection relays, DMPR

## DMP-S/T

### Over-current/Under current/Phase failure/Asymmetry Stall/Lock/Instantaneous short circuit protection

- Unit type or extension type is available
  - Extension type : Remotely mounts the display unit on the panel surface
- 3 phase ampere meter function : Check the 3 phase current and setting value by press the display button
- Select the inverse time or definite time
- Easy to operate : Set the most function by the operation button and knob
- Display the causes of the fault and the values
- Alarm setting : Load ratio is displayed up to setting current

### Protect function

<b>Over current</b>	Depend on setting time	Selectable the inverse/definite
<b>Phase loss</b>	Within 3seconds	Over 70% of the rate of unbalance
<b>Phase unbalance</b>	Within 5seconds	Over 50% of the rate of unbalance
<b>Phase reverse</b>	Within 0.1seconds	Function enable
<b>Stall</b>	Within 5seconds	Over 180% of the setting current
<b>Lock</b>	Within 0.5seconds	Setting 200~900% of rated current
<b>Under current</b>	Within 3seconds	Setting 30~70% of rated current

(Note) Lock protection is operated after setting D-time in case of definite time type

### Function selection

FUNC	Sel	Description
1. CHA	Inv/dEF	Operating characteristics setting(Inverse/definite time type)
2. dEF	0~30(S)	Setting the operating time(In definite type)
3. r.P	oFF/on	Phase reverse enable
4. Und	oFF/30~70(%)	Under current enable and setting
5. Alt	oFF/60~110(%)	Alerting enable and setting
6. Stl	oFF/on	Stall enable
7. Loc	oFF/200~900(%)	Lock enable and setting
8. Ct	1~120	CT ratio setting
9. P.F	on/oFF	Phase fault enable
Sto	Sto	Store

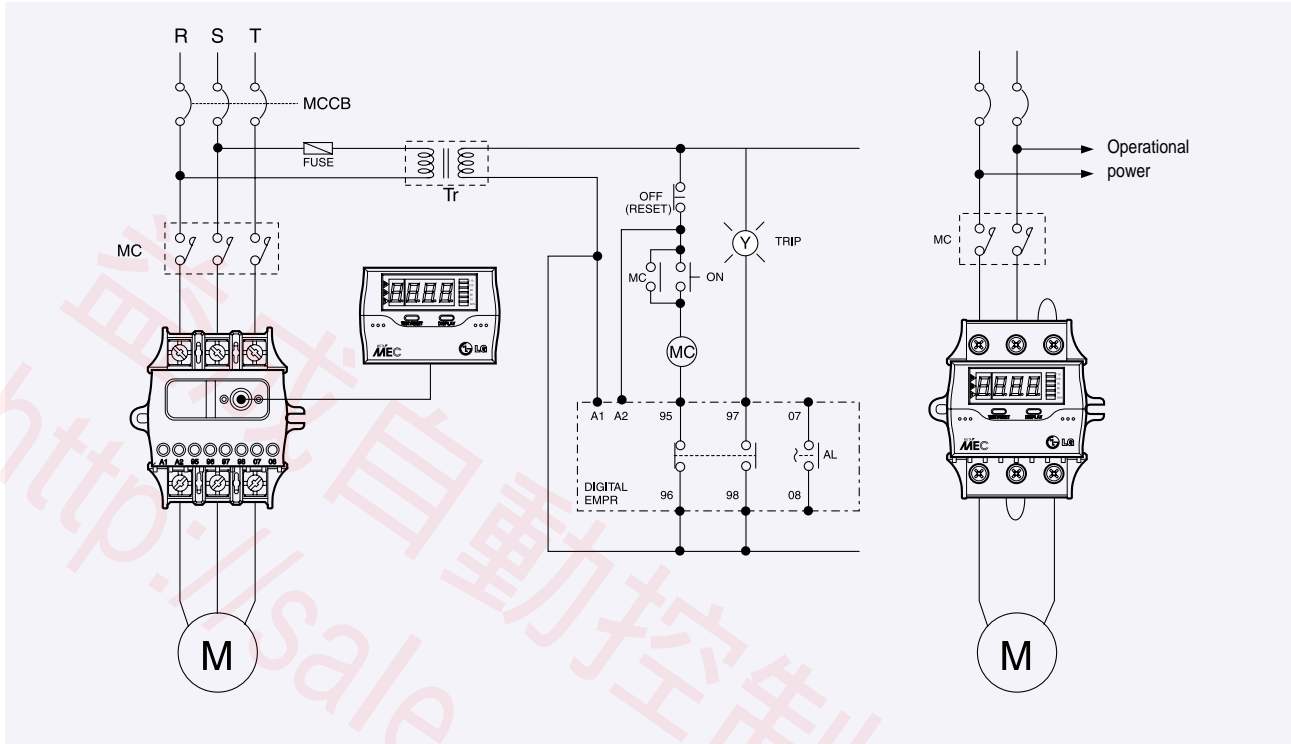
(Note) 2.dEF is only displayed when dEF is selected in a 1.CHA mode

### Ratings

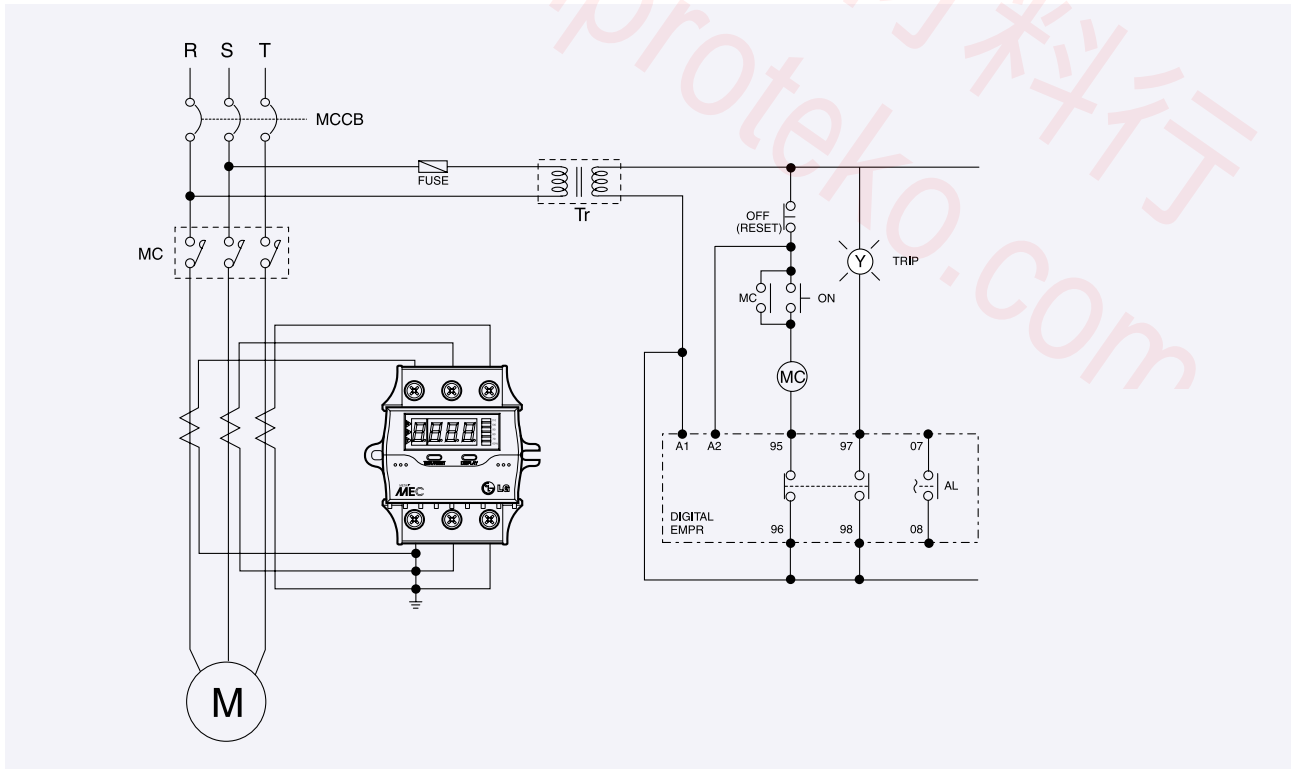
Model		DMP□-S	DMP□-T
Type	Wiring method	Screw	Tunnel
	Panel mount	Unit or Extension	
Operating characteristics		Inverse/definite type	
Alerting function		Variable between 60 and 110%	
Current range(A)	DMP06-□	0.5~6	
	DMP60-□	5~60	
Setting time	Definite Delay(D-T)	0~60seconds	
		Operating(O-T)	
	Inverse	0~60seconds	
	Reset type	Manual reset	
Operating voltage	Voltage	AC 190~250V	
	Frequency	60Hz (50Hz)	
Aux. contacts	OL 2-SPST(95~98)	3A/250Vac resistive load	
	AL SPST(07-08)	3A/250Vac resistive load	
Indicate	7-segment	3-phase current value, fault cause	
	Bar-LED arrays	Load ratio (60~110%)	
Mounting		35mm Din-rail/Panel	

### Wiring method

### 1 Phase motor Note1)



### External CT combination



**Note1)** Please turn off the reverse phase function when it is used for 1 phase motor

# Digital motor protection relays, DMPR

## DMP-SZ/TZ

### Over-current/Under current/Phase failure/Asymmetry Stall/Lock/Ground-fault

- Unit type or extension type is available
  - Extension type: Remotely mounts the display unit on the panel surface
- 3 phase ampere meter function: Check the 3 phase current and setting value by press the display button
- Select the inverse time or definite time
- Easy to operate: Set the most function by the operation button and knob
- Display the causes of the fault and the values
- Ground fault protect function is added

### Protect function

<b>Over current</b>	Depend on setting time	Selectable the inverse/definite
<b>Phase loss</b>	Within 3seconds	Over 70% of the rate of unbalance
<b>Phase unbalance</b>	Within 5seconds	Over 50% of the rate of unbalance
<b>Phase reverse</b>	Within 0.1seconds	Function enable
<b>Stall</b>	Within 5seconds	Over 180% of the setting current
<b>Lock</b>	Within 0.5seconds	Setting 200~900% of rated current
<b>Under current</b>	Within 3seconds	Setting 30~70% of rated current
<b>Ground fault (Note1)</b>	Selectable 0.05~1.0seconds	Grounded current setting by dip s/w (100~2500mA)

Note) Lock protection is operated after setting D-time in case of definite time type

### Function selection

FUNC	Sel	Description
1. CHA	Inv/dEF	Operating characteristics setting(Inverse/definite time type)
2. dEF	0~30(S)	Setting the operating time(In definite type)
3. r.P	oFF/on	Phase reverse enable
4. Und	oFF/30~70(%)	Under current enable and setting
5. g-F	oFF/0.05~1.0(S)	Ground fault enable and setting
6. StI	oFF/on	Stall enable
7. Loc	oFF/200~900(%)	Lock enable and setting
8. Ct	1~120	CT ratio setting
9. P.F	on/oFF	Phase fault enable
Sto	Sto	Store

Note1)  $\overline{2.dEF}$  is only displayed when  $dEF$  is selected in a 1.QHA mode ※ 2.dEF : Refer to page 10

Note2) Ground fault sensitive current selection : Refer to page 114

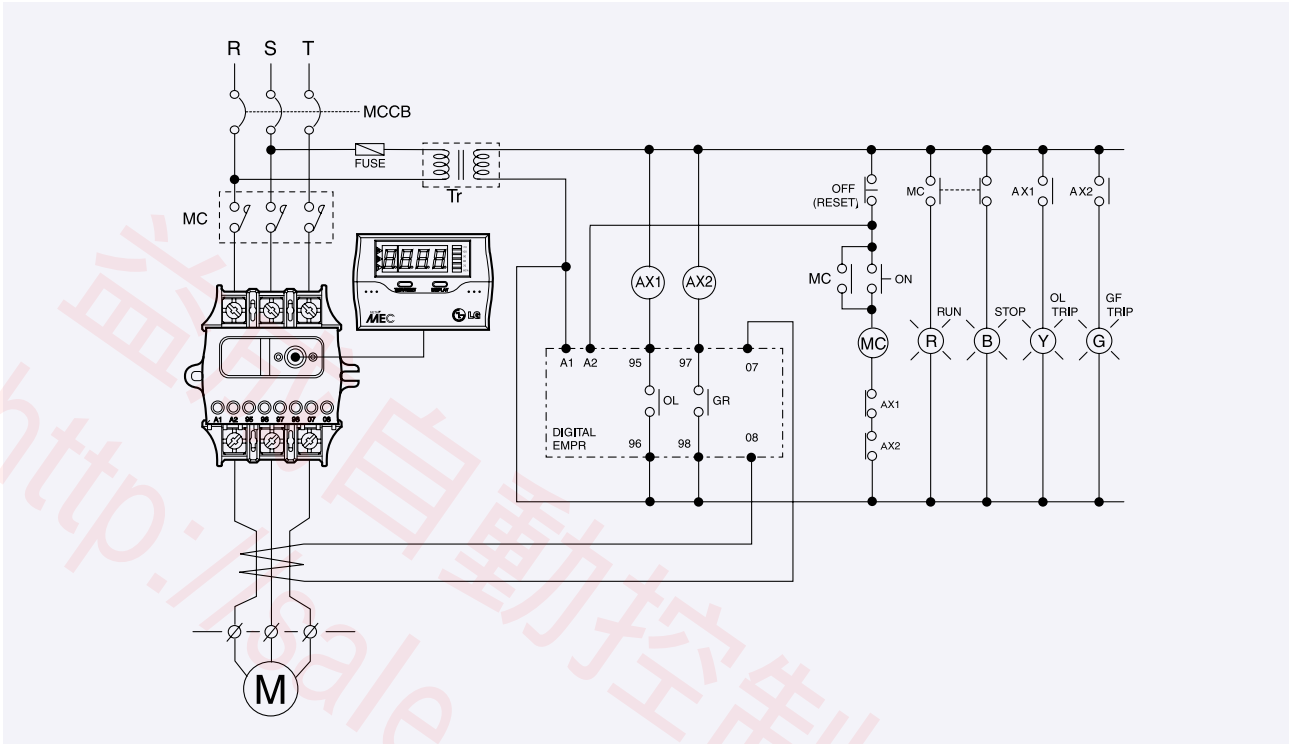
### Ratings

Model		DMP□-SZ	DMP□-TZ
Type	Wiring method	Screw	Tunnel
	Panel mount	Unit or Extension	
Operating characteristics		Inverse/definite type	
Alerting function		Variable between 60 and 110%	
Current range(A)	DMP06-□	0.5~6	
	DMP60-□	5~60	
Setting time	Definite Delay(D-T)	0~60seconds	
		Operating(O-T)	
	Inverse	0~60seconds	
	Reset type	Manual reset	
Operating voltage	voltage	AC 190~250V	
	Frequency	60Hz (50Hz)	
ZCT input (07-08)		200mA/110mV(ZCT) [30 φ , 50 φ , 65 φ , 80 φ ]	
Aux. contacts(2a, 2b, 1a1b) OL, GR 2-SPST(95-98)		3A/250Vac resistive load	
Indicate	7-segment	3-phase current value, fault cause	
	Bar-LED arrays	Load ratio (60~110%)	
Mounting		35mm Din-rail/Panel	

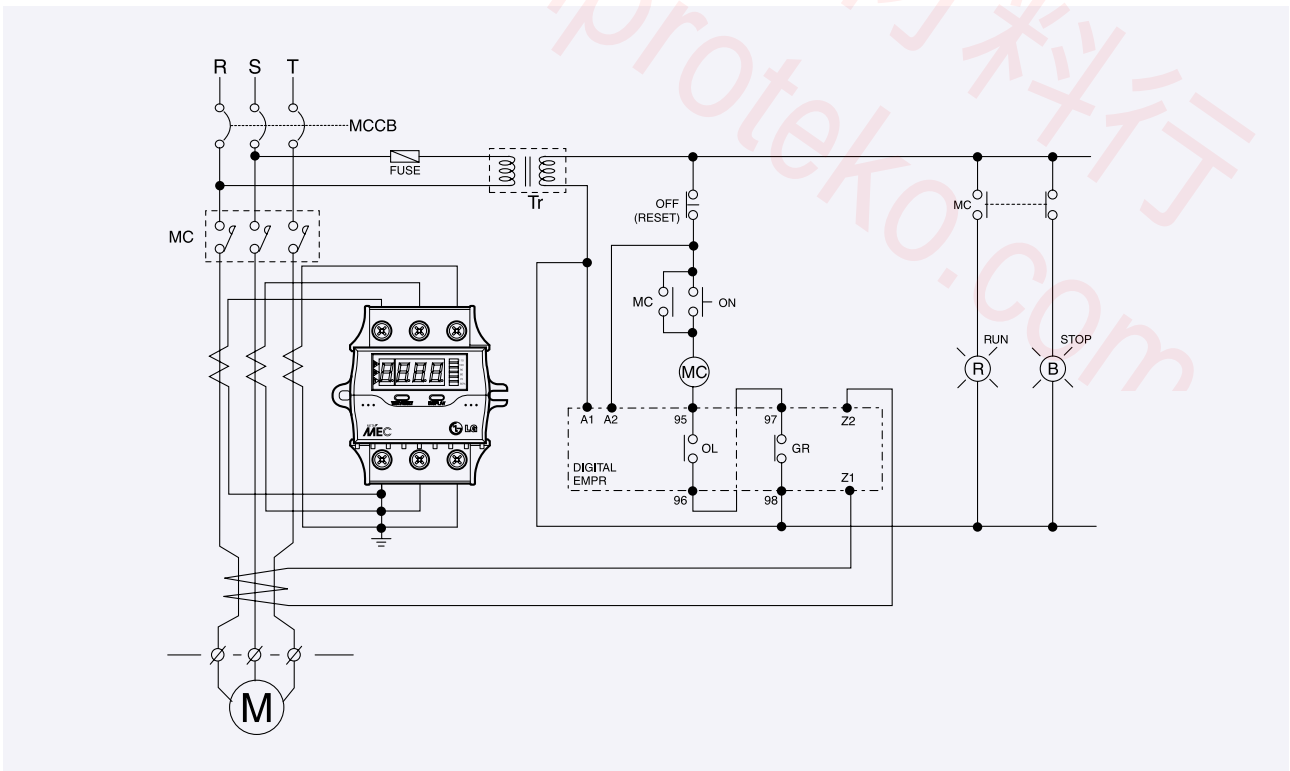
# Ordering



## Wiring method



## External CT combination





# Digital motor protection relays, DMPR

## Ordering

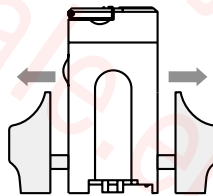
### DMP 06-SZ 220

<b>DMP</b>	—	<b>06</b>	<b>S</b>	<b>Z</b>	<b>220</b>
		<b>Current setting range</b>	<b>Wiring method</b>		<b>Option</b>
		06   0.5~6A	S   Screw	-   Standard	<b>Operational power</b>
		60   5~60A	T   Tunnel	Z   Ground fault	220   AC220V
					110   AC110V

\* The standard length of a extension cable is 1.5m, 2m, 4m cable is optional

\* For ground fault protection, ZCT (30 φ ,50 φ ,65 φ ,80 φ )made by LG is optionally required

#### 1) Detach the screw terminal



Remove the 3 screws either in the line side or the load side and pull out the bus bar.

If you remove the screw terminal, you can use it as a tunnel type digital EMPR, assemble it to the opposite sequence

#### 2) Select the ground fault sensitive current

Sensitive current (mA)	Dip s/w			
	1	2	3	4
100	○	○	○	○
200	1	○	○	○
500	○	1	○	○
1000	○	○	1	○
1500	○	○	○	1
2000	○	○	1	1
2500	1	1	1	1

**Note)** High sensitive current(30~300mA)is optional

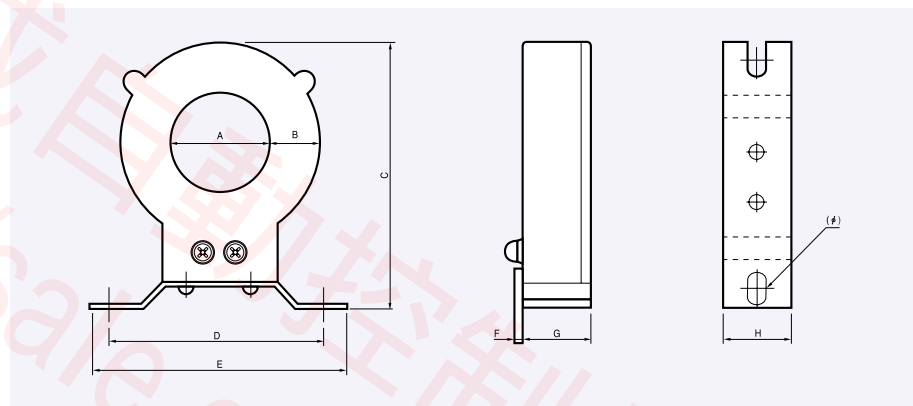


## ZCT( Zero-phase Sequence Current Transformer)

### Ratings

Type	Diameter(A)	Ratio	Weight(kg)	Model
ZCT, D30, DMP-Z	30	200mA/100mV	0.5	LZT-030
ZCT, D50, DMP-Z	50		0.7	LZT-050
ZCT, D65, DMP-Z	65		0.9	LZT-065
ZCT, D80, DMP-Z	80		1.5	LZT-080

### Dimension



Unit : m/m

Model	A	B	C	D	E	F	G	H	φ
LZT-030	30	25	108	100	114	7	32	32	6
LZT-050	50	25	131	100	122	7	32	36	6
LZT-065	65	26	143	114	133	7	39	37	6
LZT-080	80	34	174	160	180	7	40	40	6

# Accessories

## Auxiliary contact

### Option

**AU-1**  
Side mount  
2 pole block

**AU-2**  
Front mount  
2 pole block

**AU-4**  
Front mount  
4 pole block

**AU-100**  
Side mount  
2 pole block

**Applying contactor frames**

9A	12A	18A	22A
32A	40A	50A	65A
75A	85A		

**Applying contactor frames**

100A	125A	150A
180A	220A	300A
400A	600A	800A



# Auxiliary contact

## Type

Applying contactors	Mounting type	Poles	Composition	Type
GM-9 to 85 type (9 to 85A frame)	Front mount	2 pole	2NO	AU-2
			2NC	
			1NO+1NC	
		4 pole	4NO	AU-4
	3NO+1NC			
	2NO+2NC			
	1NO+3NC			
	Side mount	2 pole	1NO	AU-1
1NC				
GM-100 to 800 type (100 to 800A frame)	Side mount	2pole	1NO	AU-100
			1NC	

## Contact ratings

		AU-2	AU-4	AU-1	AU-100
<b>Continuous current, lth</b>		16A	16A	16A	16A
<b>AC15 duty (A600)</b>	120V	6A	6A	6A	6A
	240V	3A	3A	5A	5A
	480V	1.5A	1.5A	3A	3A
	600V	2A	2A	3A	3A
<b>DC13 duty (P600)</b>	125V	1.1A	1.1A	1.1A	1.1A
	250V	0.55A	0.55A	0.55A	0.55A
	440V	0.31A	0.31A	0.31A	0.31A
	600V	0.2A	0.2A	0.2A	0.2A

## Performance

		AU-2	AU-4	AU-1	AU-100
<b>Operation cycles/hour</b>		1800	1800	1800	1800
<b>Mechanical lifetime (mil. operations)</b>		20	20	25	10
<b>Electrical lifetime, (mil. operations)</b>					
<b>AC15 duty</b>	220V	0.5	0.5	0.5	0.5
	440V	0.5	0.5	0.5	0.5
<b>AC12 duty</b>	220V	0.25	0.25	0.25	0.25
	440V	0.25	0.25	0.25	0.25
<b>DC13, 12 duty</b>	24~220V	0.5	0.5	0.5	0.5

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# Accessories

## Mechanical interlock, AR9

- for contactor frames

9A

12A

18A

22A

32A

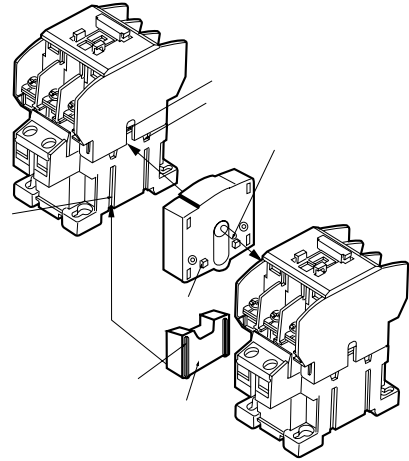
40A

50A

65A

75A

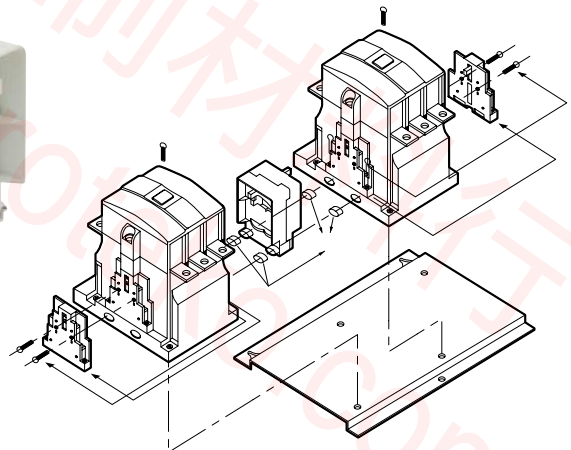
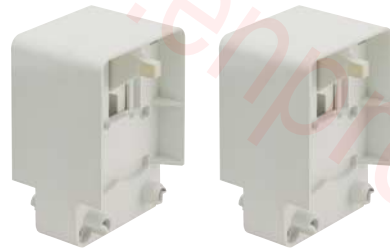
85A



## Mechanical interlock, AR100 and AR180

AR100 : 100A 125A 150A

AR180 : 180A 220A 300A 400A

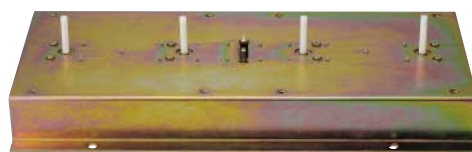


## Mechanical interlock, AR600

- for contactor frames

600A

800A



### Mechanical latch unit



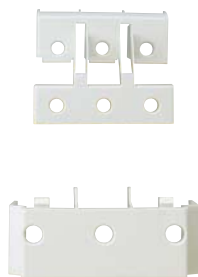
Applying contactors	Type	Rebound coil voltage	
		Nominal volt.	Rated volt.
GM-9 to 40 type (9 to 40A frame)	AL-9	AC100V	100~127V 50/60Hz
		AC200V	200~240V 50/60Hz
GM-50 to 85 type (50 to 85A frame)	AL-50	AC300V	260~350V 50/60Hz
		AC400V	380~440V 50/60Hz
		AC500V	460~550V 50/60Hz
		DC12V	DC12V
		DC24V	DC24V
		DC48V	DC48V
		DC100V	DC100~110V
		DC125V	DC120~125V
		DC200V	DC200~220V
		GMC-100, 125 type (100, 125A frame)	AL-100
GMC-150 type (150A frame)	AL-150	AC100V	100~127V 50/60H
		AC200V	200~240V 50/60Hz
GMC-180, 220 type (180, 220A frame)	AL-220		
GMC-300, 400 type (300, 400A frame)	AL-400		

### Terminal cover unit for Contactors



Applying contactors	Type		Remarks
	for 3 Pole	for 4 Pole	
GMC-100, 125 type (100, 125A frame)	AP100		2 pcs included
GMC-150 type (150A frame)	AP150	AP220/4	
GMC-180, 220 type (180, 220A frame)	AP220		
GMC-300, 400 type (300, 400A frame)	AP400	AP400	
GMC-600, 800 type (600, 800A frame)	AP600	AP600	

### Terminal cover unit for Thermal overload relays



Applying relays	Type	Remarks
GTK, GTH-125	APT125	
GTK, GTH-150	APT150	
GTK, GTH-220	APT220	
GTK, GTH-400	APT400	
GTK, GTH-600	APT600	

# Accessories



## Insulation barrier unit

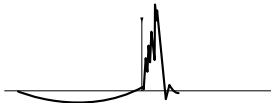
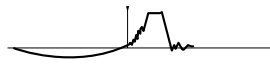

Applying contactors	Type	Remarks
GMC-100, 125, 150 type (100 to 150A frame)	AI-100	4 pcs required per contactor
GMC-180, 220, 300, 400 type (180 to 400A frame)	AI-180	
GMC-600, 800 type (600, 800A frame)	AI-600	

## Surge absorber unit



Type of element	Applying contactors	Operation voltage	Element spec.	Type
Varistor ①	All types GM-9 to 800 (9 to 800A frame)	AC/DC 24~48V	Varistor 120V	AS-11
		AC/DC 100~125V	Varistor 270V	AS-12
		AC/DC 200~240V	Varistor 470V	AS-13
		AC380~440V	Varistor 1000V	AS-14
CR + Varistor ②	GMD-9 to 85 (9 to 85A frame with AC coil)	AC24~48V	Varistor 120V 0.1 $\mu$ F, 100 $\Omega$	AS-1
		AC100~125V	Varistor 270V 0.1 $\mu$ F, 100 $\Omega$	AS-2
		AC200~240V	Varistor 470V 0.1 $\mu$ F, 100 $\Omega$	AS-3
	GMD-9 to 85 (9 to 85A frame with DC coil)	DC24~48V	Varistor 120V 0.47 $\mu$ F, 100 $\Omega$	AS-4
		DC100~125V	Varistor 270V 0.47 $\mu$ F, 100 $\Omega$	AS-5
		DC200~220V	Varistor 470V 0.47 $\mu$ F, 100 $\Omega$	AS-6

## Comparison

Without surge unit	① With Varistor unit	② With CR+Varistor unit
Surge voltage, arise when the coil is off, may provoke mis-operation and damage in the circuit.	Varistor has an effect to cut down the peak voltage	Varistor has an effect to cut down the peak voltage and high frequency wave
		

### Delayed opening device

Delayed opening device prevents the inadvertent opening of a contactor in the event of a wide voltage drop or brief supply voltage interruptions of control power for 1 to 4 seconds.



Applying contactors	Type	Control voltage	
<b>GMD-9, 12, 18, 22, 32, 40 type</b> (9 to 40A frame with DC coil)	AD-9	Delayed opening device	Contactor coil
<b>GMD-50, 65, 75, 85 type</b> (50 to 85A frame with DC coil)	AD-50		
<b>GMC-100, 125, 150, 180, 220 type</b> (100 to 220A frame)	AD-100	AC100~110V	DC100/110V
<b>GMC-300, 400 type</b> (300 to 400A frame)	AD-300	AC200~220V	DC200/220V
<b>GMC-600, 800 type</b> (600. 800A frame)	AD-600		

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### Pneumatic timer



Delay type	Setting range	Type	Remarks
ON delay	0.1 to 30 sec.	AT-1N	Applying contactors : <b>GMC-9 to 85</b> (9 to 85A frame. 3and 4 pole) Auxiliary contact : 1NO+1NC
	10 to 180 sec.	AT-2N	
OFF delay	0.1 to 30 sec.	AT-1F	
	10 to 180 sec.	AT-2F	

### Lug terminals for Contactors



Applying contactors	Type		Remarks
	for 3 Pole	for 4 Pole	
<b>GMC-100, 125 type</b> (100, 125A frame)	AJ100	AJ180	
<b>GMC-150 type</b> (150A frame)	AJ150	AJ180	
<b>GMC-180, 220 type</b> (180, 220A frame)	AJ180	AJ180	
<b>GMC-300, 400 type</b> (300. 400A frame)	AJ300		
<b>GMC-600, 800 type</b> (600. 800A frame)	AJ600		

### Separate mounting unit

In case of installing the overload relays independently, the separate mounting kits are available for screw or 35mm Din-rail mounting.



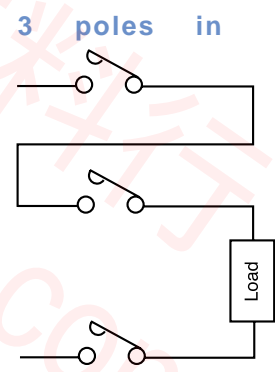
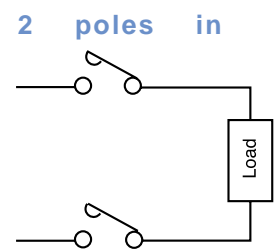
Type	Applied TOR
<b>AZ-22H</b>	GTH(K)-22
<b>AZ-22H</b>	GTH(K)-22
<b>AZ-22H</b>	GTH(K)-22



# Technical informations

## DC application

Type	Poles in series	Rated current (DC2, DC4) DC motor load (L/R=15ms)				Rated current (DC1) Resistant load (L/R=1ms)				Rated current (DC1) Coil load (L/R=100ms)			
		24V	48V	110V	220V	24V	48V	110V	220V	24V	48V	110V	220V
GMC(D)-9	2	8	4	2.5	0.8	10	10	6	3	8	4	2	0.3
	3	8	6	4	2	10	10	8	8	8	6	3	0.8
GMC(D)-12	2	12	6	4	1.2	12	12	10	7	12	6	3	0.5
	3	12	10	8	4	12	12	12	12	12	10	5	2
GMC(D)-18	2	12	6	4	1.2	18	18	13	8	12	6	3	0.5
	3	12	10	8	4	18	18	18	18	12	10	5	2
GMC(D)-22	2	20	15	8	2	20	20	15	10	20	12	3	1.2
	3	20	20	15	8	20	20	20	20	20	15	10	4
GMC(D)-32	2	25	20	10	3	25	25	25	12	25	15	4	1.2
	3	25	25	20	10	25	25	25	22	25	25	12	4
GMC(D)-40	2	35	20	10	3	35	35	25	12	35	15	4	1.2
	3	35	30	20	10	35	35	35	30	35	25	12	4
GMC(D)-50	2	45	25	15	3.5	50	40	35	15				
	3	50	35	30	12	50	50	50	40				
GMC(D)-65	2	45	25	15	3.5	50	40	35	15				
	3	50	35	30	12	65	65	65	50				
GMC(D)-75	2	65	40	20	5	75	65	50	20				
	3	80	60	50	20	75	75	75	55				
GMC(D)-85	2	65	40	20	5	80	65	50	20				
	3	80	60	50	20	80	80	80	60				
GMC-100	2	100	60	40	30	100	100	80	50				
	3	100	90	80	50	100	100	100	80				
GMC-125	2	120	60	40	30	120	100	80	50				
	3	120	90	80	50	120	120	100	80				
GMC-150	2	150	100	80	60	150	120	100	100				
	3	150	130	120	80	150	150	150	150				
GMC-180	2	180	150	120	80	180	180	150	150				
	3	180	180	150	100	180	180	180	180				
GMC-220	2	220	150	120	80	220	180	150	150				
	3	220	220	150	100	220	220	220	220				
GMC-300	2	300	200	150	90	300	240	200	200				
	3	300	280	200	150	300	300	300	300				
GMC-400	2	400	200	150	90	400	240	200	200				
	3	400	280	200	150	400	400	400	300				
GMC-600	2	630	630	630	630	630	630	630	630				
	3	630	630	630	630	630	630	630	630				
GMC-800	2	800	630	630	630	800	800	630	630				
	3	800	630	630	630	800	800	800	800				



# Contactor selection for star-delta combination



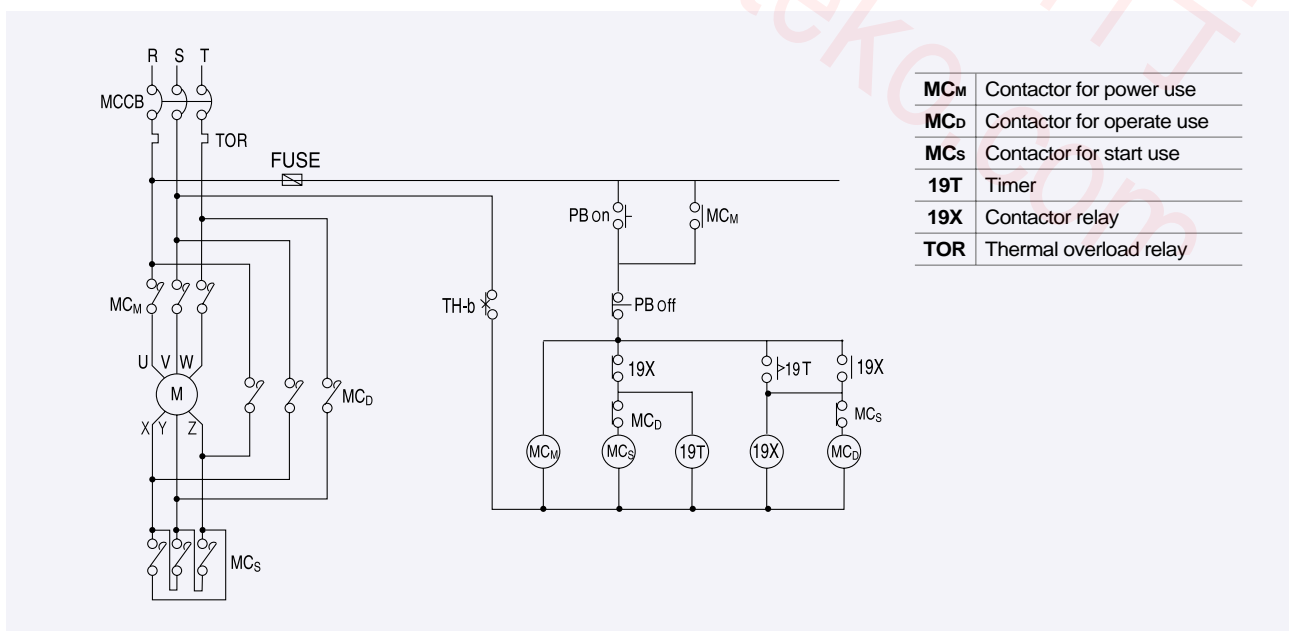
## Ratings for star-delta use Contactor

Start method	Start (Star contactors)				Operate (Delta contactor)		
	Start current	Torque	Full load current	Contact voltage	Full load current	Contact current	Contact voltage
Direct	6Im	1.5T	6Im	$E_m/\sqrt{3}$	Im	Im	$E_m/\sqrt{3}$
Star - delta	2Im	0.5T	2Im	$E_m/\sqrt{3}$	Im	$Im/\sqrt{3}$	$E_m$

## Contactor selection for star-delta use

Motor ratings		200~220V			380~480V		
(kW)	(HP)	Start use(MCs)	Operate use(MC <sub>D</sub> )	Power(MC <sub>M</sub> )	Start use(MCs)	Operate use(MC <sub>D</sub> )	Power(MC <sub>M</sub> )
5.5	7.5	GMC-9	GMC-18	GMC-18	GMC-9	GMC-12	GMC-12
7.5	10	GMC-12	GMC-18	GMC-18	GMC-9	GMC-18	GMC-18
11	10	GMC-18	GMC-32	GMC-32	GMC-12	GMC-18	GMC-18
15	20	GMC-22	GMC-50	GMC-50	GMC-18	GMC-18	GMC-18
18.5	25	GMC-32	GMC-50	GMC-50	GMC-18	GMC-22	GMC-22
22	30	GMC-32	GMC-65	GMC-65	GMC-18	GMC-32	GMC-32
30	40	GMC-65	GMC-85	GMC-85	GMC-22	GMC-50	GMC-50
37	50	GMC-65	GMC-100	GMC-100	GMC-32	GMC-50	GMC-50
45	50	GMC-75	GMC-125	GMC-125	GMC-32	GMC-65	GMC-65
55	60	GMC-85	GMC-150	GMC-150	GMC-50	GMC-85	GMC-85
75	100	GMC-100	GMC-180	GMC-180	GMC-65	GMC-100	GMC-100
90	125	GMC-125	GMC-220	GMC-220	GMC-65	GMC-125	GMC-125
110	125	GMC-150	GMC-300	GMC-300	GMC-85	GMC-150	GMC-150
132	150	GMC-180	GMC-300	GMC-300	GMC-100	GMC-180	GMC-180
160	200	GMC-220	GMC-400	GMC-400	GMC-125	GMC-220	GMC-220
250	300	GMC-300	GMC-600	GMC-600	GMC-150	GMC-300	GMC-300
300	400	GMC-400	GMC-600	GMC-600	GMC-220	GMC-400	GMC-400

- Note) 1. Above selection is made under AC3 standard squirrel cage motor use basis.  
 The selection may be changed according to the motor class or manufacturer  
 2. The motor start time is within 15sec  
 3. When you use phase advanced condenser, consider the inrush current for selection.



(Fig 1) Example of a wiring diagram for star-delta combination

# Technical informations

## Selection guide for lighting circuit switching

### Incandescent

Maximum quantity of lamps per contactor

Type	Consumption	100V								200V							
		100W	150W	200W	250W	300W	500W	1000W	1500W	100W	150W	200W	250W	300W	500W	1000W	1500W
GMC(D)-9		11	7	5	4	3	2	1	-	22	14	11	8	7	4	2	1
GMC(D)-12		13	8	6	5	4	2	1	-	26	17	13	10	8	5	2	1
GMC(D)-18		18	12	9	7	6	3	1	1	36	24	18	14	12	7	3	2
GMC(D)-22		19	12	9	7	6	3	1	1	38	25	19	15	12	7	3	2
GMC(D)-32		26	17	13	10	8	5	2	1	52	34	26	20	17	10	5	3
GMC(D)-40		35	23	17	14	11	7	3	2	70	46	35	28	23	14	7	4
GMC(D)-50		50	33	25	20	15	10	5	3	100	66	50	40	33	20	10	6
GMC(D)-65		65	42	32	26	19	13	6	4	130	85	65	52	42	26	13	8

### Fluorescent

Maximum quantity of rapid-start fluorescents per contactor

Type	Consumption	100V							200V							
		40W		60W	80W	110W		220W	40W		60W	80W	110W		220W	
	N° Fluorescent.	1	2	1	1	1	2	1	1	2	1	1	1	2	1	1
	(A)	0.95 (1.2)	0.96 (1.1)	0.92	1.17	1.55	2.5	2.7	0.29 (0.6)	0.48 (0.55)	0.46	0.58	0.78	1.3	1.36	2.5
GMC(D)-9		18 (9)	11 (10)	12	9	7	4	4	37 (18)	22 (20)	23	19	14	8	8	4
GMC(D)-12		22 (10)	13 (11)	14	11	8	5	4	44 (21)	27 (23)	28	22	16	10	9	5
GMC(D)-18		30 (15)	18 (16)	19	15	11	7	6	62 (30)	37 (32)	39	31	23	13	13	7
GMC(D)-22		32 (15)	19 (17)	20	16	12	7	7	65 (31)	39 (34)	41	32	24	14	14	7
GMC(D)-32		44 (21)	27 (23)	28	22	16	10	9	89 (43)	54 (47)	56	44	33	20	19	10
GMC(D)-40		59 (29)	36 (31)	38	29	22	14	13	120 (58)	72 (63)	76	60	44	26	25	14
GMC(D)-50		84 (41)	52 (45)	54	42	32	20	18	172 (83)	104 (90)	108	86	64	38	37	20
GMC(D)-65		110 (54)	67 (59)	70	55	41	26	24	224 (108)	135 (118)	141	112	83	50	48	26

Note) 1. In 1 lamps, ( ) is the number of the lamps with low power factor.  
 2. In 2 lamps, ( ) is the number of the flickerness type lamps.

### Mercury lamp

Maximum quantity of mercury lamps per contactor

Type	Consumption	Low power factor type-High power factor type															
		40W	100W	200W	250W	300W	400W	700W	1000W	40W	100W	200W	250W	300W	400W	700W	1000W
		(A)	1.25	2.6	4.6	5.1	6.0	8.0	14.5	21	0.53	1.0	1.9	2.1	2.5	3.3	5.9
		0.55	1.4	2.6	3.0	3.7	4.9	8.5	12	-	0.65	1.2	1.5	1.8	2.3	4.1	5.8
GMC(D)-9		8/20	4/7	2/4	2/3	1/2	1/1	-/-	-/-	20/-	11/16	5/9	5/7	4/6	3/4	1/2	1/1
GMC(D)-12		10/23	5/9	2/5	2/4	2/3	1/1	-/1	-/1	24/-	13/20	6/10	6/8	5/7	3/5	2/3	1/2
GMC(D)-18		14/32	6/12	3/6	3/6	3/4	2/3	1/2	-/1	33/-	18/27	9/15	8/12	7/10	5/7	3/3	2/3
GMC(D)-22		15/34	7/13	4/7	3/6	3/5	2/3	1/2	-/1	35/-	19/29	10/15	9/12	7/10	5/8	3/4	2/3
GMC(D)-32		20/47	10/18	5/10	5/8	4/7	3/5	1/3	1/2	49/-	26/40	13/21	12/17	10/14	7/11	4/6	3/4
GMC(D)-40		28/63	13/25	7/13	6/11	5/9	4/7	2/4	1/2	66/-	35/53	18/29	16/23	14/19	10/15	5/8	4/6
GMC(D)-50		40/90	19/35	10/19	9/16	8/13	6/10	3/5	2/4	94/-	50/76	26/41	23/33	20/27	15/21	8/12	6/8
GMC(D)-65		52/118	25/46	14/25	12/21	10/17	8/13	4/7	3/5	122/-	65/100	34/54	30/43	26/36	19/28	11/15	7/11



# Short circuit coordination

## Direct starters with molded case circuit breakers (50kA-415V · IEC60947)

Motor		MCCB		Contactor	Thermal overload relay	
(kW)	440V(A)	Type	Rating Ir(A)	Type	Type	Settings range (A)
5.5	11	GBH(L)53	16	GMC-32	GTH(K)-40	9~13
7.5	15	GBH(L)53	16	GMC-32	GTH(K)-40	12~18
10	19	GBH(L)53	25	GMC-32	GTH(K)-40	18~26
11	21	GBH(L)53	25	GMC-32	GTH(K)-40	18~26
15	28	GBH(L)53	32	GMC-32	GTH(K)-40	24~36
18.5	34	GBH(L)53	40	GMC-75	GTH(K)-85	28~40
22	39	GBH(L)53	50	GMC-75	GTH(K)-85	34~50
30	54	GBH(L)103	63	GMC-75	GTH(K)-85	45~65
37	66	GBH(L)103	80	GMC-75	GTH(K)-85	54~75
45	80	GBH(L)103	100	GMC-100	GTH(K)-100	65~100
55	99	GBH(L)103	100	GMC-100	GTH(K)-100	85~125
75	135	GBH(L)203	160	GMC-150	GTH(K)-150	100~150
90	160	GBH(L)203	200	GMC-180	GTH(K)-220	120~180
110	192	GBH(L)203	200	GMC-180	GTH(K)-220	160~240
132	226	GBH(L)203	250	GMC-220	GTH(K)-220	160~240
160	265	ABH(L)403b	300	GMC-400	GTH(K)-400	200~300
200	330	ABH(L)403b	350	GMC-400	GTH(K)-400	260~400
220	353	ABH(L)403b	400	GMC-400	GTH(K)-400	260~400
250	400	ABS(L)603b	500	GMC-600	GTH(K)-600	260~400
300	480	ABS(L)603b	500	GMC-600	GTH(K)-600	400~600

Note) \* Magnetic only

## Direct starters with molded case circuit breakers (85kA-415V · IEC60947)

Motor		MCCB		Contactor	Thermal overload relay	
(kW)	440V(A)	Type	Rating Ir(A)	Type	Type	Settings range (A)
5.5	11	GBL53	16	GMC-32	GTH(K)-40	9~13
7.5	15	GBL53	16	GMC-32	GTH(K)-40	12~18
10	19	GBL53	25	GMC-32	GTH(K)-40	18~26
11	21	GBL53	25	GMC-32	GTH(K)-40	18~26
15	28	GBL53	32	GMC-32	GTH(K)-40	24~36
18.5	34	GBL53	40	GMC-75	GTH(K)-85	28~40
22	39	GBL53	50	GMC-75	GTH(K)-85	34~50
30	54	GBL103	63	GMC-75	GTH(K)-85	45~65
37	66	GBL103	80	GMC-75	GTH(K)-85	54~75
45	80	GBL103	100	GMC-100	GTH(K)-100	65~100
55	99	GBL103	100	GMC-100	GTH(K)-100	85~125
75	135	GBL203	160	GMC-150	GTH(K)-150	100~150
90	160	GBL203	200	GMC-180	GTH(K)-220	120~180
110	192	GBL203	200	GMC-180	GTH(K)-220	160~240
132	226	GBL203	250	GMC-220	GTH(K)-220	160~240
160	265	ABL403b	300	GMC-400	GTH(K)-400	200~300
200	330	ABL403b	350	GMC-400	GTH(K)-400	260~400
220	353	ABL403b	400	GMC-400	GTH(K)-400	260~400
250	400	ABL603b	500	GMC-600	GTH(K)-600	260~400
300	480	ABL603b	500	GMC-600	GTH(K)-600	400~600

Note) Tables are based on a combination of tests on a previous range and technical comparison.

# Technical informations

## Short circuit coordination

### Contactors with protection fuses

Type	AC1(A)	690V AC3 Ie(A)	Short-circuit test	
			Fuse available fault current 100,000A	Ue / "r"
<b>GMC-9</b>	20	5	gL/gG 25A	690V/1kA
<b>GMC-12</b>	20	9	gL/gG 32A	690V/1kA
<b>GMC-18</b>	25	9	gL/gG 35A	690V/3kA
<b>GMC-22</b>	32	18	gL/gG 50A	690V/3kA
<b>GMC-32</b>	50	20	gL/gG 63A	690V/3kA
<b>GMC-40</b>	60	23	gL/gG 80A	690V/3kA
<b>GMC-50</b>	80	28	gL/gG 100A	690V/3kA
<b>GMC-65</b>	100	35	gL/gG 100A	690V/3kA
<b>GMC-75</b>	110	42	gL/gG 100A	690V/3kA
<b>GMC-85</b>	135	45	gL/gG 200A	690V/3kA
<b>GMC-100</b>	150	65	gL/gG 150A	690V/5kA
<b>GMC-125</b>	150	70	gL/gG 160A	690V/5kA
<b>GMC-150</b>	200	100	gL/gG 200A	690V/5kA
<b>GMC-180</b>	230	120	gL/gG 225A	690V/5kA
<b>GMC-220</b>	260	150	gL/gG 250A	690V/10kA
<b>GMC-300</b>	350	220	gL/gG 355A	690V/10kA
<b>GMC-400</b>	420	300	gL/gG 400A	690V/10kA
<b>GMC-600</b>	660	420	gL/gG 630A	690V/18kA
<b>GMC-800</b>	800	630	gL/gG 800A	690V/18kA

Note) Tables are based on a combination of tests on a previous range and technical comparison.



**Thermal overload relays with protection fuses**

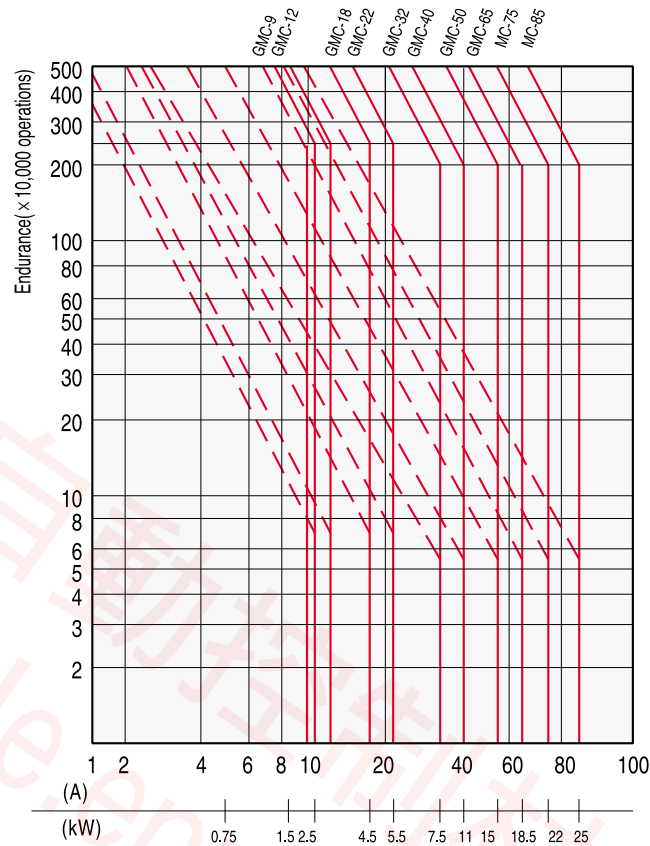
Type	AC1(A)	690V AC3 Ie(A)	Short-circuit test	
			Fuse available fault current 100,000A	Ue / "r"
GTH(K)-22	32	1.6	gL/gG 4A	690V/1kA
GTH(K)-22		2.5	gL/gG 6A	690V/1kA
GTH(K)-22		4	gL/gG 10A	690V/1kA
GTH(K)-22		22	gL/gG 50A	690V/3kA
GTH(K)-40	60	6	gL/gG 16A	690V/1kA
GTH(K)-40		8	gL/gG 20A	690V/1kA
GTH(K)-40		9	gL/gG 20A	690V/1kA
GTH(K)-40		40	gL/gG 80A	690V/3kA
GTH(K)-85	135	18	gL/gG 35A	690V/3kA
GTH(K)-85		22	gL/gG 50A	690V/3kA
GTH(K)-85		26	gL/gG 63A	690V/3kA
GTH(K)-85		36	gL/gG 80A	690V/3kA
GTH(K)-85		40	gL/gG 80A	690V/3kA
GTH(K)-85		50	gL/gG 100A	690V/3kA
GTH(K)-85		65	gL/gG 160A	690V/5kA
GTH(K)-85		75	gL/gG 160A	690V/5kA
GTH(K)-85	150	85	gL/gG 200A	690V/5kA
GTH(K)-100		65	gL/gG 150A	690V/5kA
GTH(K)-100	200	125	gL/gG 225A	690V/5kA
GTH(K)-150		100	gL/gG 200A	690V/5kA
GTH(K)-150	260	150	gL/gG 250A	690V/10kA
GTH(K)-220		150	gL/gG 250A	690V/10kA
GTH(K)-220	420	240	gL/gG 355A	690V/10kA
GTH(K)-400		300	gL/gG 400A	690V/10kA
GTH(K)-400	800	400	gL/gG 630A	690V/18kA
GTH(K)-600		400	gL/gG 630A	690V/18kA
GTH(K)-600		630	gL/gG 800A	690V/18kA
GTH(K)-600		800	gL/gG 1400A	690V/30kA

Note) Tables are based on a combination of tests on a previous range and technical comparison.

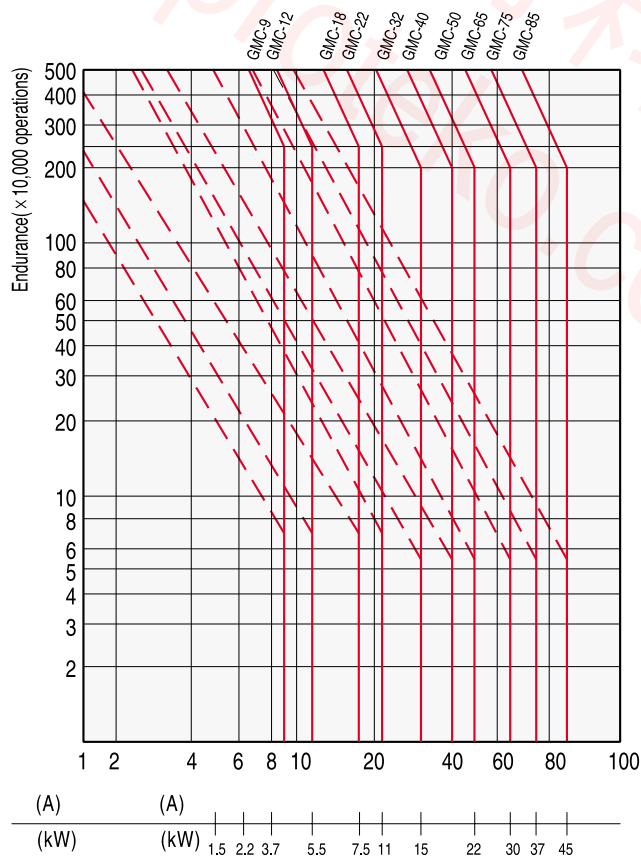
# Technical informations

## Electrical lifetime : GMC-9 to 85

3 phase /  
AC 220~240V



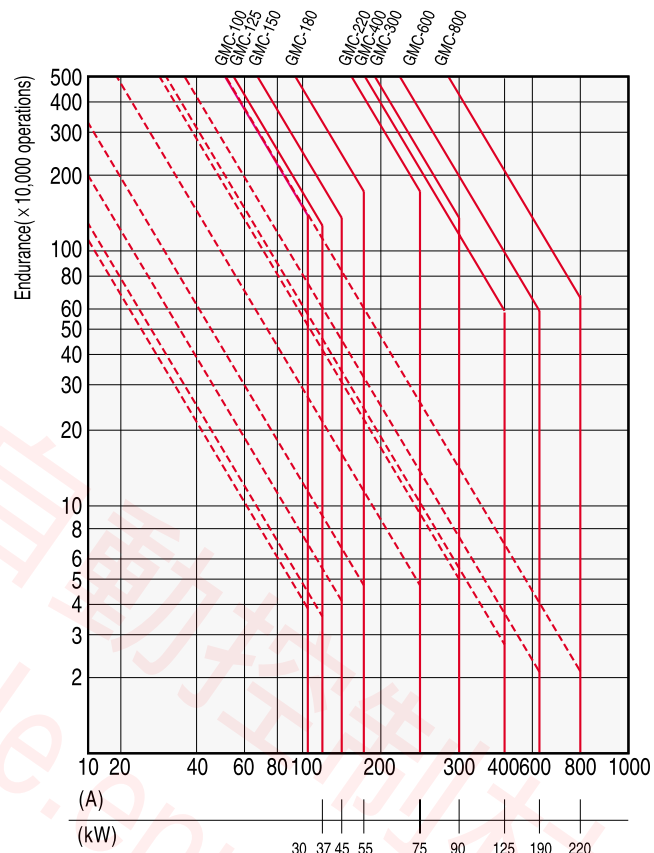
3 phase /  
AC 380~440V



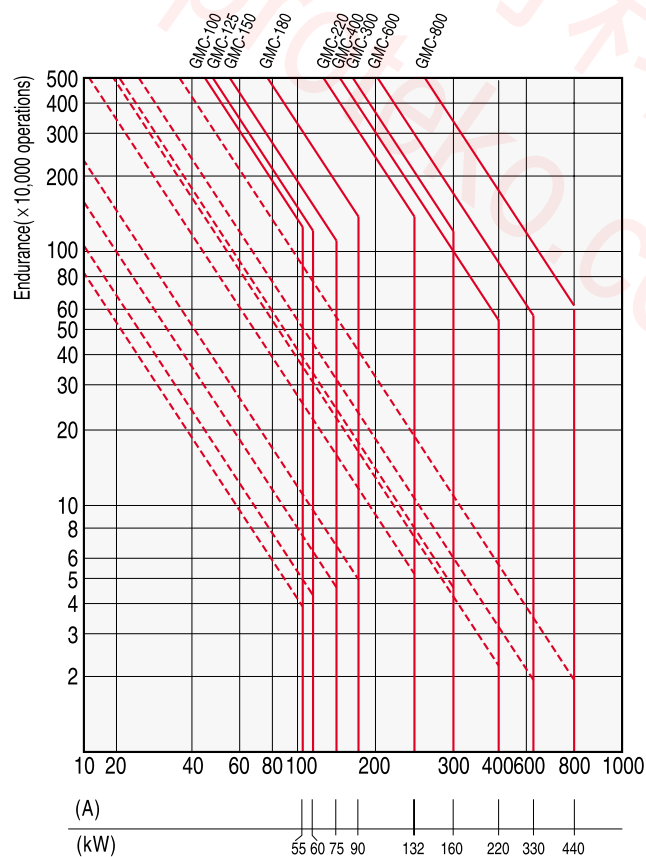
# Electrical lifetime : GMC-100 to 800



3 phase /  
AC 220~240V



3 phase /  
AC 380~440V





# Technical informations

## Ratings of Auxiliary contacts

Type	Rated current(A)																AC1 ( lth) A
	AC13				DC 13				AC 12				DC 13				
	110V	120V	440V	550V	24V	48V	110V	220V	110V	220V	440V	550V	24V	48V	110V	220V	
GMC(D)-9~22	6	3	1.5	1.2	3	1.5	0.55	0.27	10	8	5	5	5	3	2.5	1	16
GMC(D)-32~85	6	3	1.5	1.2	3	1.5	0.55	0.27	10	8	5	5	5	3	2.5	1	16
GMC-100~800	6	5	3	3	6	3	1.2	0.2	10	10	5	5	5	3	1.5	0.25	16

## Coil characteristics

### Operating limits

When the operating coil is in the energized state an operating tolerance of between 85~110% of the coil's rated voltage is permitted, at temperatures up to 40°C at standard operating frequency. Operation out with the above may cause deterioration to electrical insulation and mechanical operation.

### Selections of coil

In GMC-9~85 contactors, 50Hz coil and 60Hz coil are separated. But in GMC-100~800 contactors, the coils are AC/DC common use. (under DC 220V)

### Characteristics of AC coil

#### AC 220V

Type	Coil consumption (VA)		Thermal dissipation (W)	Operational voltage(V)		Coil current (mA)	Operational time (ms)	
	Inrush	Holding		Pick-up	Drop-out		Closing	Opening
GMC-9(/4)~22(/4)	95	9	2	141~156(142~157)*	105~125(112~132)*	41(36)	10~17	6~9
GMC-32(/4), 40(/4)	95	9	2	150~165(151~166)*	110~130(117~137)*	41(36)	11~19	6~10
GMC-50(/4)~85(/4)	220	17	5	145~160(146~161)*	100~120(107~127)*	77(68)	16~25	8~15
GMC-100, 125	298	12.3	4.4	77	48	56	30~34	63~67
GMC-150	298	12.3	4.4	77	48	56	37~41	47~52
GMC-180, 200	380	11.6	4.7	77	48	53	45	45
GMC-100(/4)~220(/4)	380	11.6	4.7	77	48	53	45	45
GMC-300(/4), 400(/4)	571	14	5	77	48	64	45~50	48~52
GMC-600(/4), 800(/4)	1000	29	7.8	150	91	132	66~69	55

Note) 1. Average values. 2. ( ) \* values for 50Hz.

#### AC 110V

Type	Coil consumption (VA)		Thermal dissipation (W)	Operational voltage(V)		Coil current (mA)	Operational time (ms)	
	Inrush	Holding		Pick-up	Drop-out		Closing	Opening
GMC-9(/4)~22(/4)	95	9	2	75~85(74~84)*	55~65(54~64)*	73(73)*	11~18	6~9
GMC-32(/4), 40(/4)	95	9	2	75~85(74~84)*	55~65(54~64)*	73(73)*	13~20	6~9
GMC-50(/4)~85(/4)	220	17	5.5	68~78(67~77)*	40~50(39~49)*	154(154)*	16~25	9~16
GMC-100, 125	162	9.8	3.1	77	48	89	46~50	49~53
GMC-150	162	12.2	3	77	48	111	56~60	44~48
GMC-180, 200	220	9.1	3.4	77	48	83	60	41
GMC-100(/4)~220(/4)	220	9.1	3.4	77	48	83	60	41
GMC-300(/4), 400(/4)	393	14	4.4	77	48	128	64~68	43~47
GMC-600(/4), 800(/4)	1000	17	6.3	77	48	155	66~70	45~49

Note) 1. Average values. 2. ( ) \* values for 50Hz.

### Characteristics of DC coil

#### DC 110V

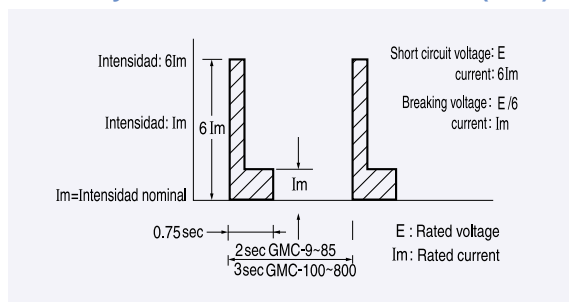
Type	Coil consumption (VA)		Thermal contact (W)	Operational voltage(V)		Coil current (mA)	Operational time (ms)	
	Inrush	Holding		Pick-up	Drop-out		Closing	Opening
GMD-9(/4)~22(/4)	9	9	50	60~75	15~35	82	45~55	8~15
GMD-32(/4), 40(/4)	9	9	50	60~75	15~35	82	45~55	8~15
GMD-50(/4)~85(/4)	220	5	-	65~80	15~35	46	20~30	13~20



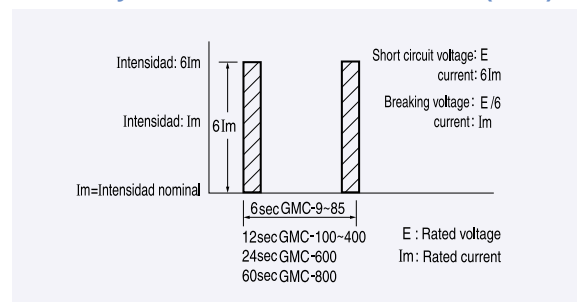
# Performance of Contactors

Type	Rated voltage (V)	Rated current (A)	Short circuit max. current	Breaking capacity	Cycles per hour at AC3	Endurance (×10,000 operations)		Performance Indicate
						Mechanical	Electrical	
GMC-9	220	11	132	110	1800	2500	250	AC3 · 1 · 0-0
	440	9	108	90				
GMC-12	220	13	156	130	1800	2500	250	AC3 · 1 · 0-0
	440	12	144	120				
GMC-18	220	18	216	180	1800	2500	250	AC3 · 1 · 0-0
	440	18	216	180				
GMC-22	220	22	264	220	1800	2500	250	AC3 · 1 · 0-0
	440	22	264	220				
GMC-32	220	32	385	320	1800	1500	200	AC3 · 1 · 0-0
	440	32	385	320				
GMC-40	220	40	480	400	1800	1500	200	AC3 · 1 · 0-0
	440	40	480	400				
GMC-50	220	55	660	550	1200	1000	200	AC3 · 1 · 0-0
	440	50	600	500				
GMC-65	220	65	780	650	1200	1000	200	AC3 · 1 · 0-0
	440	65	780	650				
GMC-75	220	75	900	750	1200	1000	200	AC3 · 1 · 0-0
	440	75	900	750				
GMC-85	220	80	960	800	1200	1000	200	AC3 · 1 · 0-0
	440	80	960	800				
GMC-100	220	105	1050	1050	1200	500	100	AC3 · 1 · 1-0
	440	105	1050	1050				
GMC-125	220	125	1250	1250	1200	500	100	AC3 · 1 · 1-0
	440	120	1200	1200				
GMC-150	440	150	1500	1500	1200	500	100	AC3 · 1 · 1-0
	440	150	1500	1500				
GMC-180	220	180	1800	1800	1200	500	100	AC3 · 1 · 1-0
	440	180	1800	1800				
GMC-220	220	220	2200	2200	1200	500	100	ACC3 · 1 · 1-0
	440	220	2200	2200				
GMC-300	220	300	3000	3000	1200	500	100	AC3 · 1 · 1-0
	440	300	3000	3000				
GMC-400	220	400	4000	4000	1200	500	50	AC3 · 1 · 1-1
	440	400	4000	4000				
GMC-600	220	630	6300	6300	1200	500	50	ACC3 · 1 · 1-1
	440	630	6300	6300				
GMC-800	220	800	8000	8000	1200	500	50	AC3 · 1 · 1-1
	440	800	8000	8000				

## Test duty of the electrical endurance (AC3)



## Test duty of the electrical endurance (AC4)



# Technical informations

## Cabling and tightening torque

### 3-pole Contactors

Type	Cable section		Screw size		Torque(Nm)		
	AWG /MCM	ISOmm <sup>2</sup>		Contactor terminal	Coil terminal	Principal main	Aux.
		MIN	MAX				
GMC-9	10 AWG	1,5	4	M4	M3.5	2,3	2,3
GMC-12	10 AWG	1,5	4	M4	M3.5	2,3	2,3
GMC-18	10 AWG	1,5	6	M4	M3.5	4	2,3
GMC-22	8 AWG	2,5	10	M4	M3.5	4	2,3
GMC-32	6 AWG	4	16	M5	M3.5	4	2,3
GMC-40	6 AWG	4	16	M5	M3.5	4	2,3
GMC-50	4 AWG	6	25	M6	M3.5	5	2,3
GMC-65	2 AWG	10	35	M8	M3.5	5	2,3
GMC-75	2 AWG	10	35	M8	M3.5	5	2,3
GMC-85	0 AWG	10	50	M8	M3.5	5	2,3
GMC-100	00 AWG	25	70	M8	M4	9	2,3
GMC-125	00 AWG	25	70	M8	M4	9	2,3
GMC-150	0000 AWG	35	95	M8	M4	9	2,3
GMC-180	250 MCM	50	120	M10	M4	15	2,3
GMC-220	300 MCM	70	150	M10	M4	15	2,3
GMC-300	500 MCM	95	240	M12	M4	23	2,3
GMC-400	N° 2 30×5	150		M12	M4	23	2,3
GMC-600	N° 2 50×5	240		M16	M4	57	2,3
GMC-800	N° 2 60×5	240		M16	M4	57	2,3

### 4-pole Contactors

Type	Cable section		Screw size		Torque(Nm)	
	AWG/MCM	ISOmm <sup>2</sup>	Contactor terminal	Coil terminal	Principal main	Aux.
GMC-9/4	10 AWG	4	M3.5	M3.5	2,3	2,3
GMC-12/4	10 AWG	4	M3.5	M3.5	2,3	2,3
GMC-18/4	8 AWG	6	M4	M3.5	4	2,3
GMC-22/4	8 AWG	10	M4	M3.5	4	2,3
GMC-32/4	6 AWG	16	M5	M3.5	4	2,3
GMC-40/4	6 AWG	16	M5	M3.5	4	2,3
GMC-50/4	4 AWG	25	M6	M3.5	5	2,3
GMC-65/4	2 AWG	35	M8	M3.5	5	2,3
GMC-75/4	2 AWG	35	M8	M3.5	5	2,3
GMC-85/4	0 AWG	50	M8	M3.5	5	2,3
GMC-100/4	00 AWG	70	M8	M4	9	2,3
GMC-125/4	00 AWG	70	M8	M4	9	2,3
GMC-150/4	0000 AWG	95	M8	M4	9	2,3
GMC-180/4	250 MCM	120	M10	M4	15	2,3
GMC-220/4	300 MCM	150	M10	M4	15	2,3
GMC-300/4	500 MCM	240	M12	M4	23	2,3
GMC-400/4	N° 2 30×5	150	M12	M4	23	2,3
GMC-600/4	N° 2 50×5	240	M16	M4	57	2,3
GMC-800/4	N° 2 60×5	240	M16	M4	57	2,3

### Thermal overload relays

Tornillo Type	Setting range	Cable selection		Torque	
		AWG	ISOmm <sup>2</sup>	(Nm)	screw
GTH(K)-22	0.1-0.16	18AWG	1,5	2,3	M4
	0.16-0.25	18AWG	1,5	2,3	M4
	0.25-0.4	18AWG	1,5	2,3	M4
	0.4-0.63	18AWG	1,5	2,3	M4
	0.63-1	18AWG	1,5	2,3	M4
	1-1.6	18AWG	1,5	2,3	M4
	1.6-2.5	18AWG	1,5	2,3	M4
	2.5-4	18AWG	1,5	2,3	M4
	4-6	18AWG	1,5	2,3	M4
	5-8	16AWG	1,5	2,3	M4
	6-9	16AWG	1,5	2,3	M4
	7-10	16AWG	1,5	2,3	M4
	9-13	14AWG	1,5-2,5	2,3	M4
	12-18	12AWG	2,5	2,3	M4
	16-22	10AWG	2,5-4,0	2,3	M4
	GTH(K)-40	4-6	18AWG	1,5	4
5-8		16AWG	1,5	4	M5
6-9		16AWG	1,5	4	M5
7-10		16AWG	1,5	4	M5
9-13		14AWG	1,5-2,5	4	M5
12-18		12AWG	2,5	4	M5
16-22		10AWG	2,5-4,0	4	M5
18-26		10AWG	2,5-6,0	4	M5
24-36		10AWG	4,0-10	4	M5
28-40		10AWG	6,0-10	4	M5
7-10		16AWG	1,5	5,1	M6
9-13		14AWG	1,5-2,5	5,1	M6
12-18		12AWG	2,5	5,1	M6
16-22		10AWG	2,5-4,0	5,1	M6
18-26		10AWG	2,5-6,6	5,1	M6
24-36		10AWG	4,0-10	5,1	M6
GTH(K)-85	28-40	10AWG	6,0-10	5,1	M6
	34-50	6AWG	10-16	5,1	M6
	45-65	4AWG	10-25	5,1	M8
	54-75	4AWG	16-25	5,1	M8
	63-85	3AWG	16-35	5,1	M8
	34-50	6AWG	10-16	9	M8
	39-57	6AWG	10-16	9	M8
	43-65	4AWG	10-25	9	M8
	54-80	4AWG	16-25	9	M8
	65-100	2AWG	25-35	9	M8
	85-125	1AWG	35-50	9	M8
	34-50	6AWG	10-16	9	M8
	39-57	6AWG	10-16	9	M8
	43-65	4AWG	10-25	9	M8
	54-80	4AWG	16-25	9	M8
	65-100	2AWG	25-35	9	M8
GTH(K)-100	85-125	1AWG	35-50	9	M8
	100-150	00AWG	35-70	9	M8
	65-100	2AWG	25-35	15	M10
	85-125	1AWG	35-50	15	M10
	100-160	00AWG	35-70	15	M10
	120-180	000AWG	50-95	15	M10
	160-240	250AWG	70-120	15	M10
	85-125	1AWG	35-50	23	M12
	100-160	00AWG	35-70	23	M12
	120-180	000AWG	50-95	23	M12
	160-240	250AWG	70-120	23	M12
	200-300	400AWG	95-185	23	M12
	260-400	500AWG	150-240	23	M12
	200-300	400AWG	95-185	57	M16
	260-400	500AWG	150-240	57	M16
	GTH(K)-220	400-600	N° 2 40×5	150-185	57
520-800		N° 2 60×5	185-240	57	M16

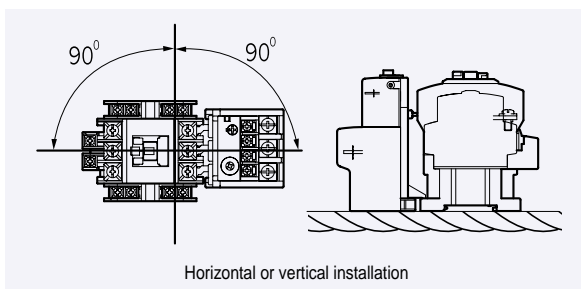
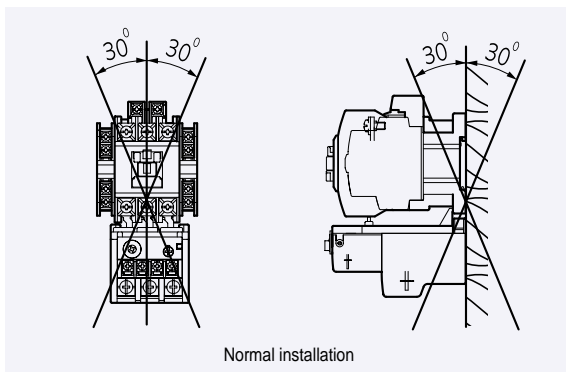
# Terminal dimensions

Type	Dimensions of terminal				Type	Dimensions of terminal			
	Main circuit		Auxiliary circuit			Main circuit		Auxiliary circuit	
	Tornillo screw	A × B × C (mm)	Tornillo screw	A × B × C (mm)		Tornillo screw	A × B × C (mm)	Tornillo screw	A × B × C (mm)
GMC-9(/4)	M4	9.5 × 5 × 4.9	M3.5	8 × 5 × 4.9	GTH(K)-22	M4	10 × 6.5 × 5	M3.5	7.8 × 4.3 × 7.3
GMC-12(/4)	M4	9.5 × 5 × 4.9	M3.5	8 × 5 × 4.9					
GMC-18(/4)	M4	9.5 × 5 × 4.9	M3.5	8 × 5 × 4.9					
GMC-22(/4)	M4	9.5 × 5 × 4.9	M3.5	8 × 5 × 4.9					
GMC-32(/4)	M5	12.4 × 6.5 × 6	M3.5	8 × 5 × 4.9	GTH(K)-40	M5	12.4 × 6.2 × 6.3	M3.5	7.8 × 4.3 × 7.3
GMC-40(/4)	M5	12.4 × 6.5 × 6	M3.5	8 × 5 × 4.9					
GMC-50(/4)	M6	17.5 × 7 × 8.7	M3.5	8 × 5 × 4.9	GTH(K)-85	M6	19 × 8.5 × 9	M3.5	7.8 × 4.3 × 7.3
GMC-65(/4)	M8	17.5 × 7 × 8.7	M3.5	8 × 5 × 4.9					
GMC-75(/4)	M8	17.5 × 7 × 8.7	M3.5	8 × 5 × 4.9					
GMC-85(/4)	M8	17.5 × 7 × 8.7	M3.5	8 × 5 × 4.9	GTH(K)-125	M8	15 × 9.5 × 9	M4	8.2 × 4.1 × 5.2
GMC-100(/4)	M8	15 × 8.5 × 9.5	M4	10.8 × 4.1 × 4.1					
GMC-125(/4)	M8	15 × 8.5 × 9.5	M4	10.8 × 4.1 × 4.1	GTH(K)-150	M8	20 × 10 × 10	M4	8.2 × 4.1 × 5.2
GMC-150(/4)	M8	20.5 × 10 × 9	M4	10.8 × 4.1 × 4.1					
GMC-180(/4)	M10	25 × 12.5 × 15	M4	10.8 × 4.1 × 4.1	GTH(K)-220	M10	25 × 12.5 × 13.5	M3.5	7.7 × 5 × 4.5
GMC-220(/4)	M10	25 × 12.5 × 15	M4	10.8 × 4.1 × 4.1					
GMC-300(/4)	M12	30 × 14.5 × 20	M4	10.8 × 4.1 × 4.1	GTH(K)-400	M12	30 × 15 × 11	M3.5	7.7 × 5 × 4.5
GMC-400(/4)	M12	30 × 14.5 × 20	M4	10.8 × 4.1 × 4.1					
GMC-600(/4)	M16	40 × 20 × 40.5	M4	10.8 × 4.1 × 4.1	GTH(K)-600	M16	30 × 11.2 × 23.2	M3.5	7.7 × 5 × 4.5
GMC-800(/4)	M16	40 × 20 × 40.5	M4	10.8 × 4.1 × 4.1					

## Installation and environment

### Installation

1) Operating position



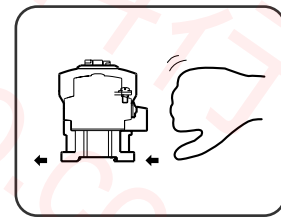
• In special installations, the endurance and other characteristics may be deteriorated.

### DIN rail(GMC-9~85)

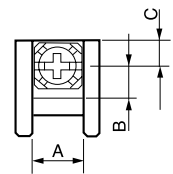
• 35mm DIN rail



Installation



Un-install



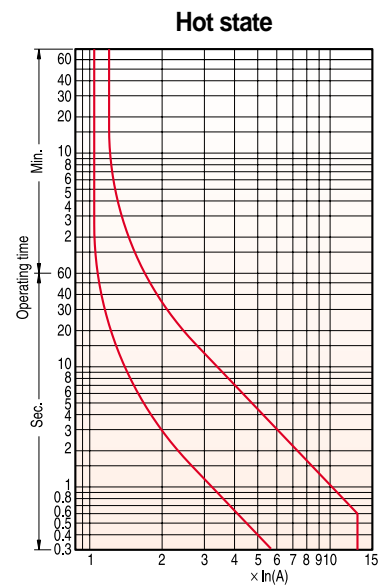
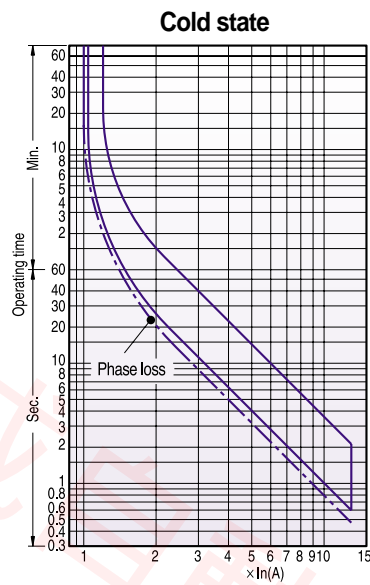
### Environment

- 1) Ambient temperature
  - -25~40°C
- 2) Storage temperature
  - -30~65°C
- 3) Altitude : below 2,000m
- 4) Do not install below freezing point.

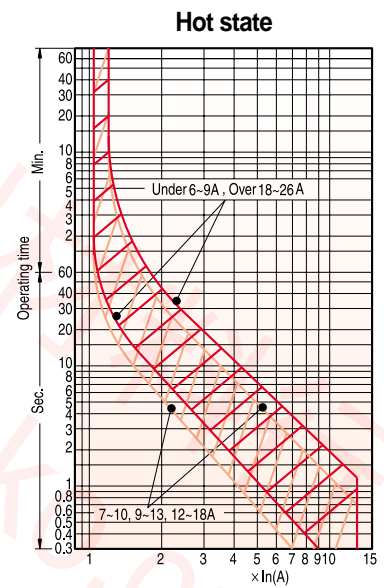
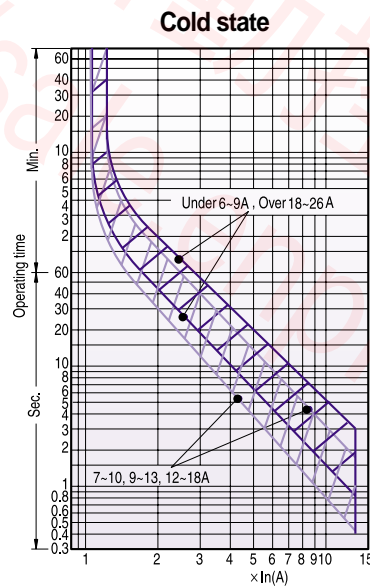
# Technical informations

## Trip curves for thermal overload relays

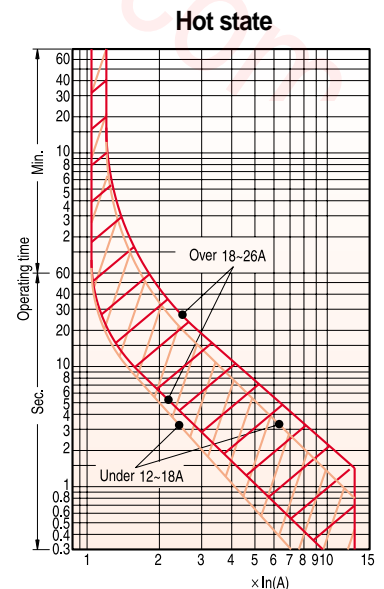
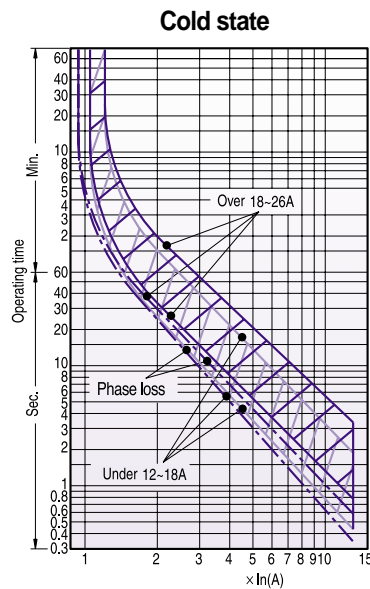
GTH(K)-22



GTH(K)-40

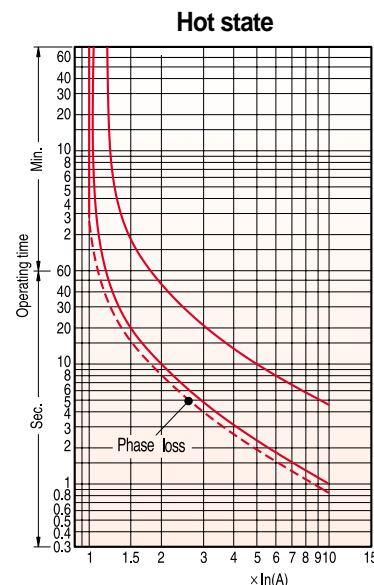
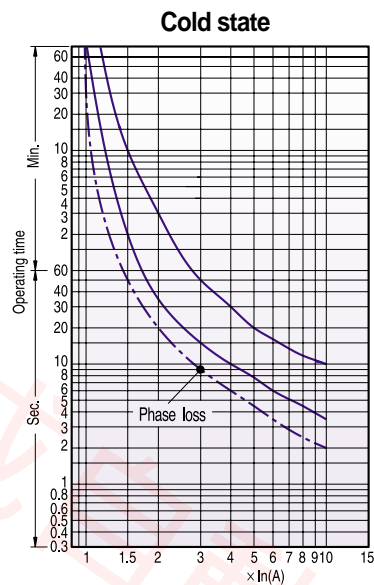


GTH(K)-85

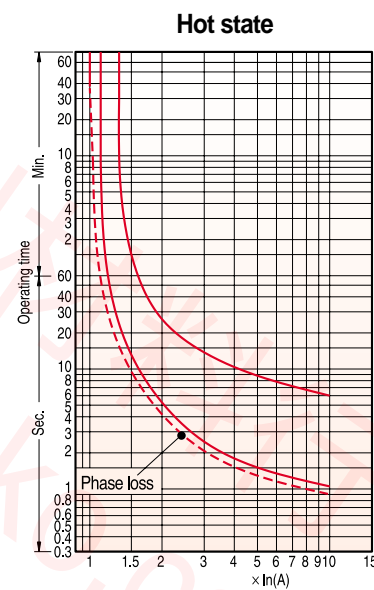
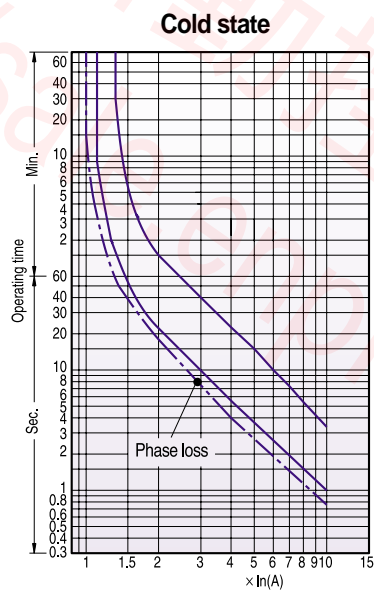




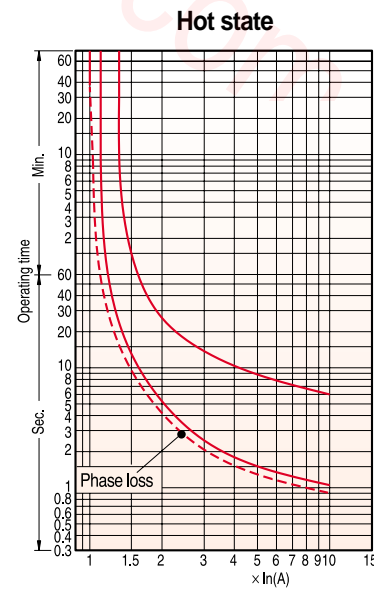
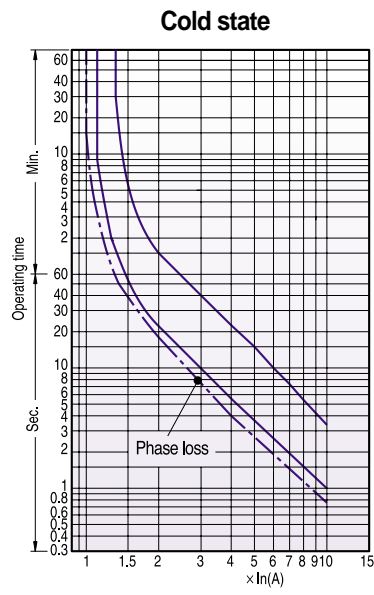
GTH(K)-100  
GTH(K)-150



GTH(K)-220  
GTH(K)-400



GTH(K)-600

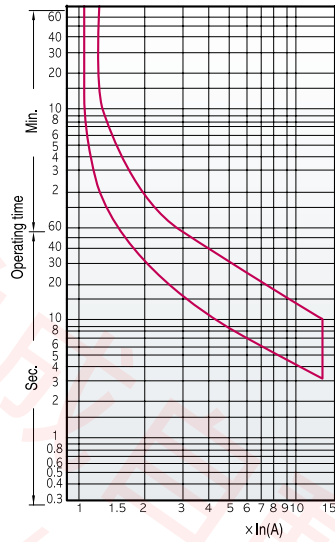


# Technical informations

## Trip curves for thermal overload relays, Class 20

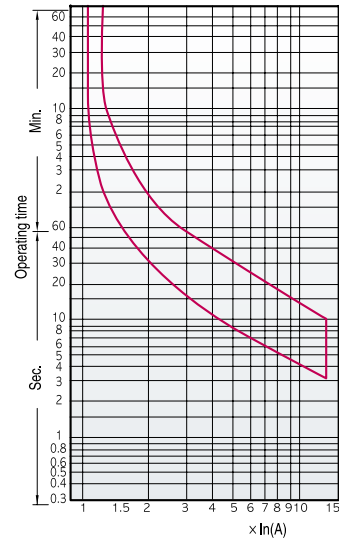
**GTK-22/L**

**Tripping characteristics**

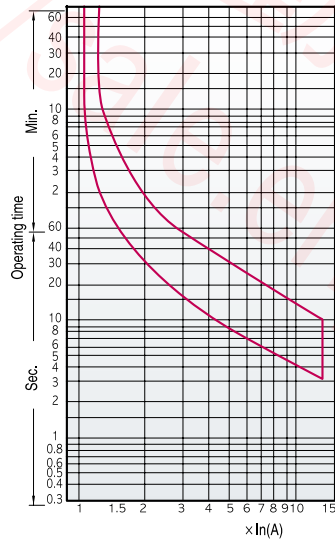


**GTK-40/L**

**Tripping characteristics**

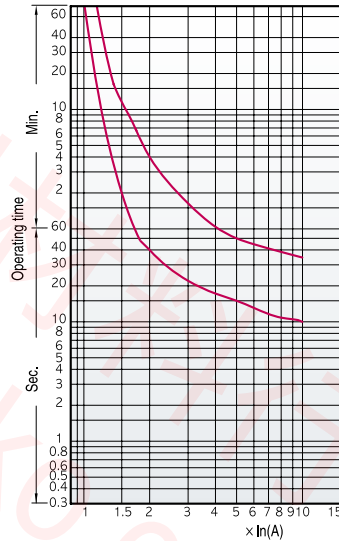


**GTK-85/L**



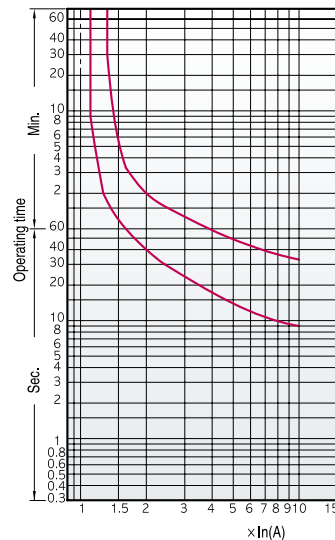
**GTK-100/L**

**GTK-150/L**

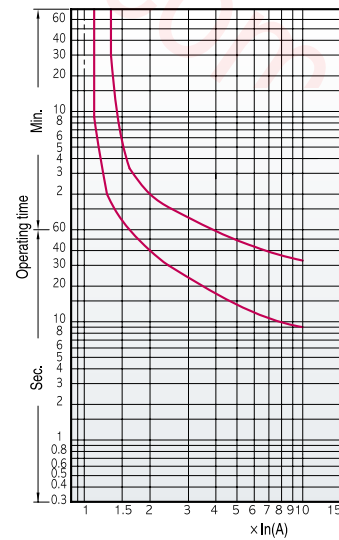


**GTK-220/L**

**GTK-400/L**



**GTK-600/L**

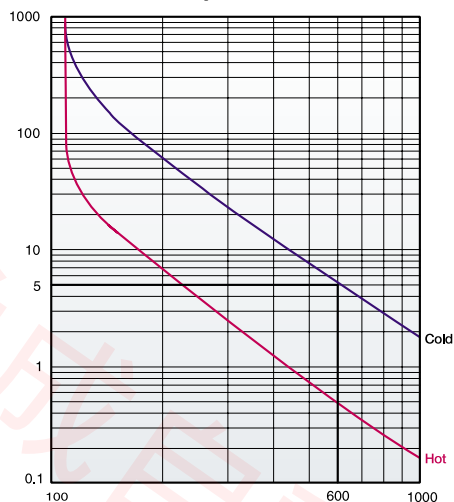


# Trip curves for electronic overload relays

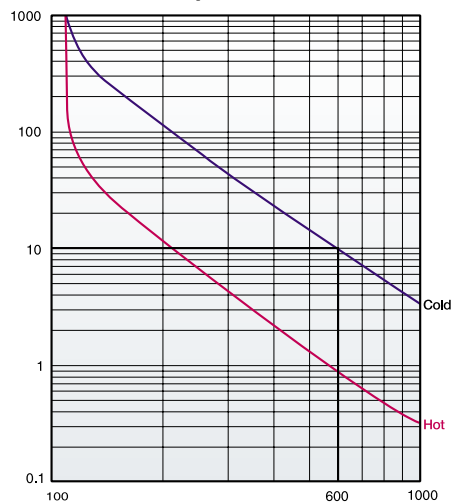


GMP

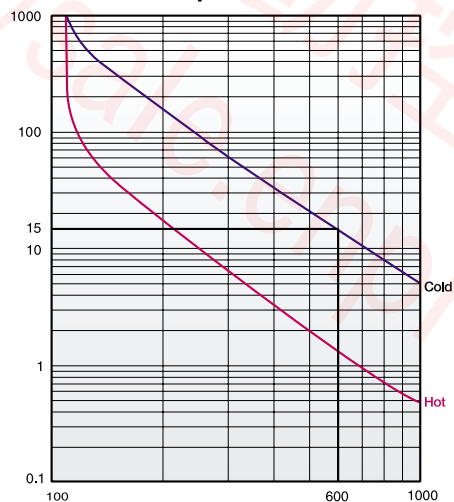
**Trip class 5**



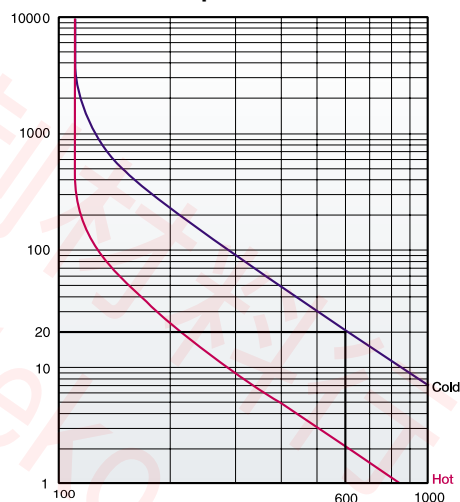
**Trip class 10**



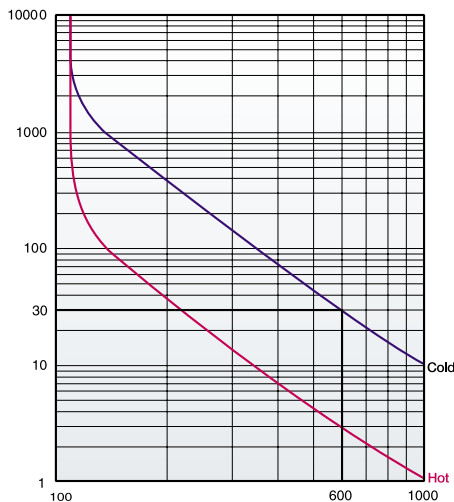
**Trip class 15**



**Trip class 20**



**Trip class 30**



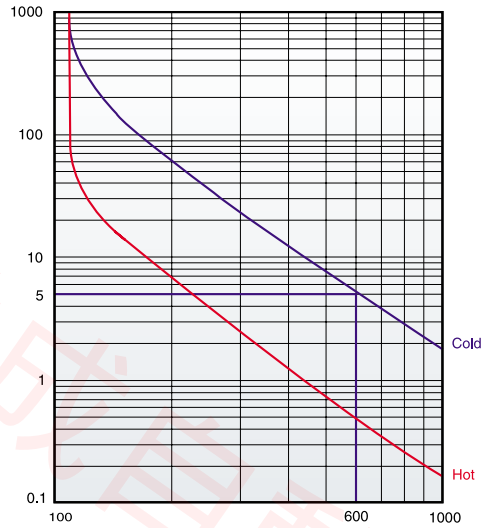


# Technical informations

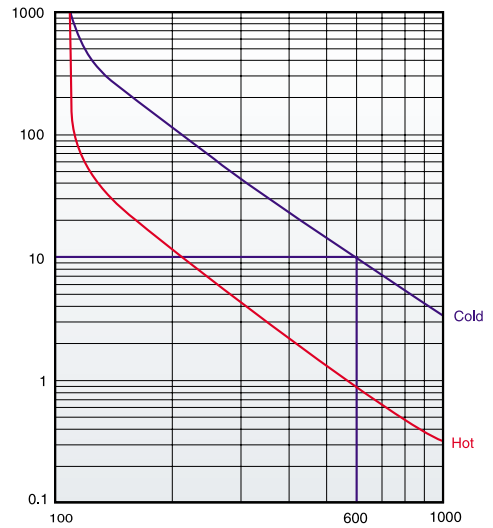
## Trip curves for Digital motor protection relays

**DMP**

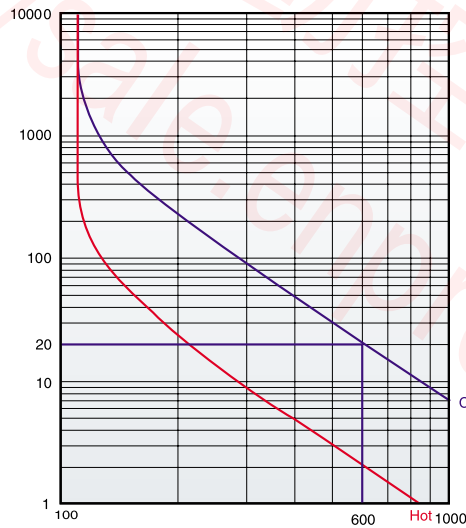
**Trip class 5**



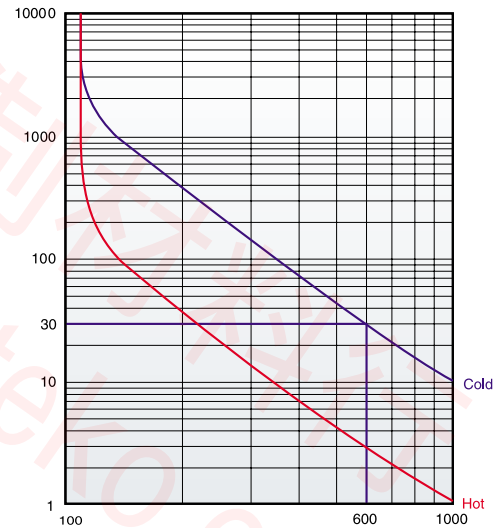
**Trip class 10**



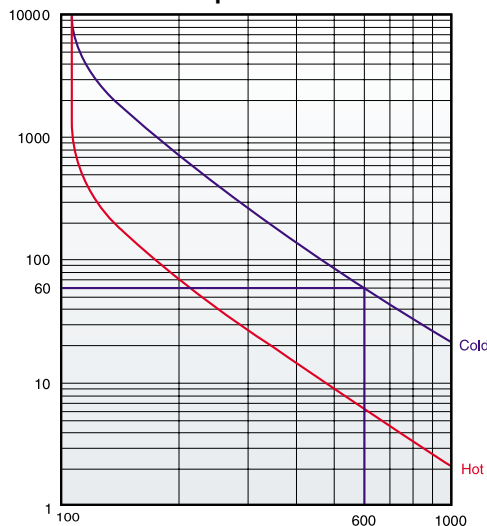
**Trip class 20**



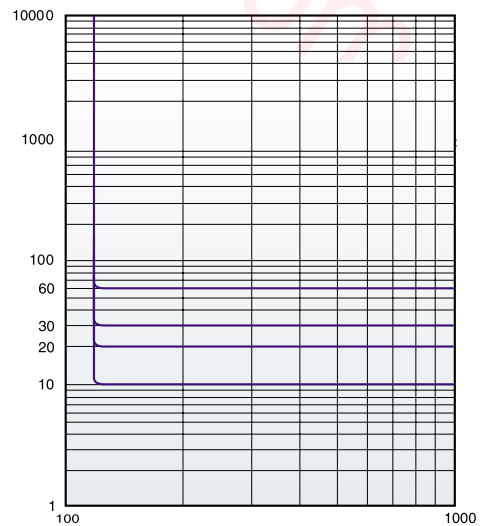
**Trip class 30**



**Trip class 60**



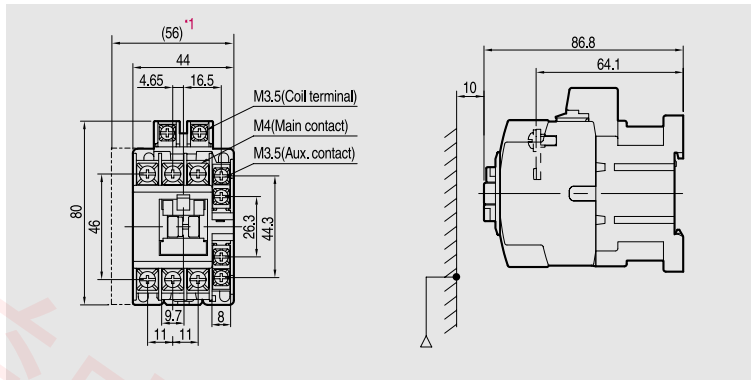
**Definite time characteristics**



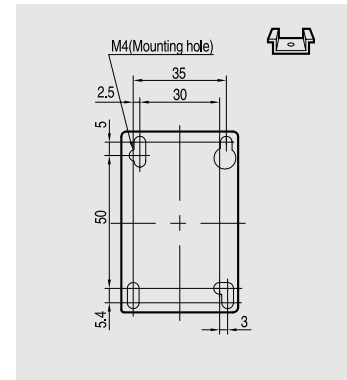
# Dimensions

## 3-pole Contactors / AC coil

- GMC-9
- GMC-12
- GMC-18
- GMC-22

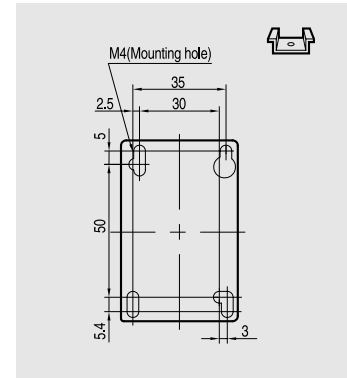
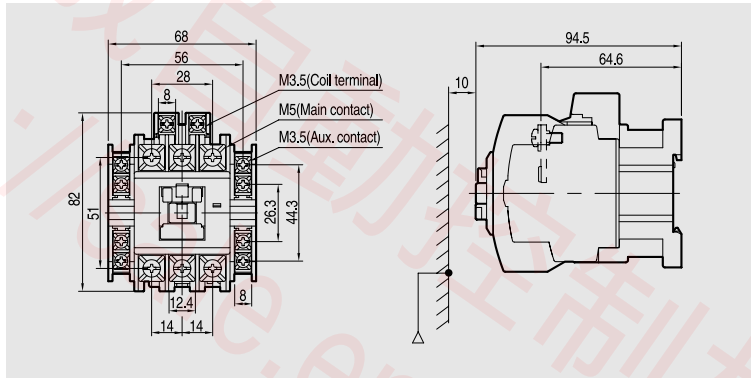


\* 1 : Optional auxiliary contact unit ( side mount type )



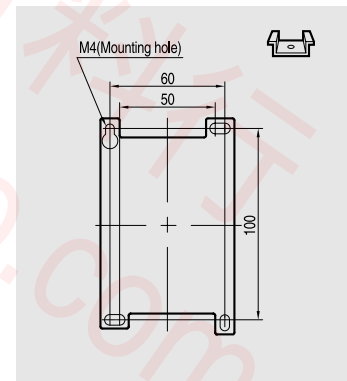
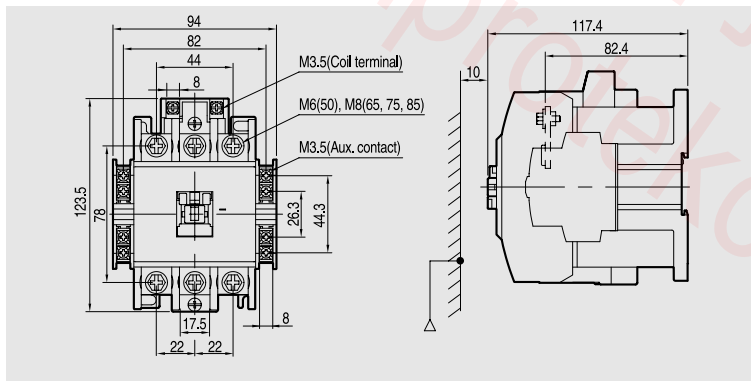
GMC-9,12:0.33kg  
GMC-18,22:0.37kg

- GMC-32
- GMC-40



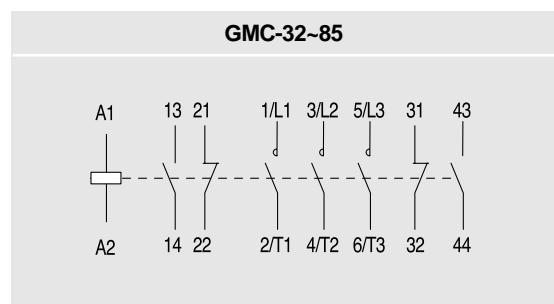
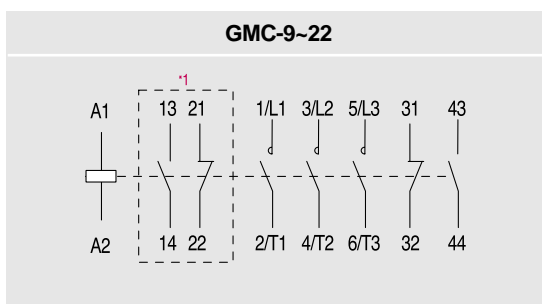
0.45kg

- GMC-50
- GMC-65
- GMC-75
- GMC-85



1kg

### Circuit diagram

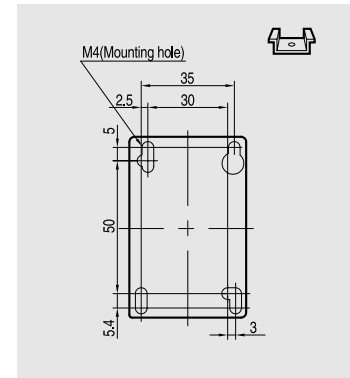
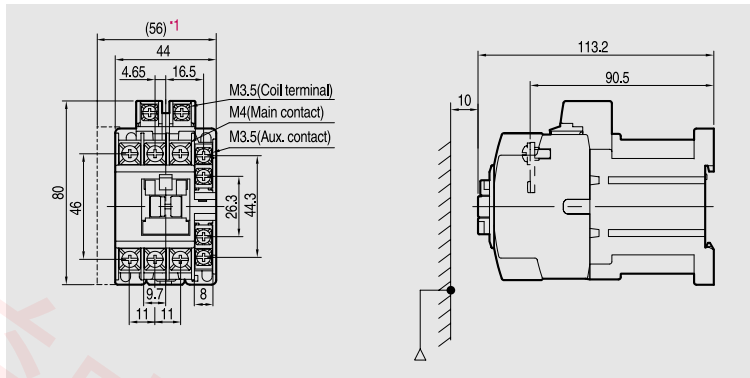


\* 1 : Optional auxiliary contact unit



# 3-pole Contactors / DC coil

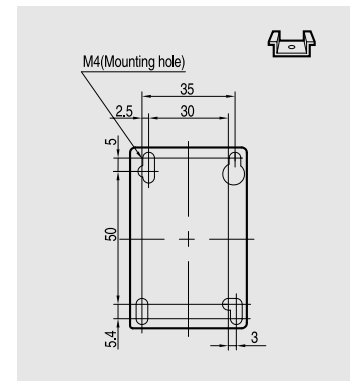
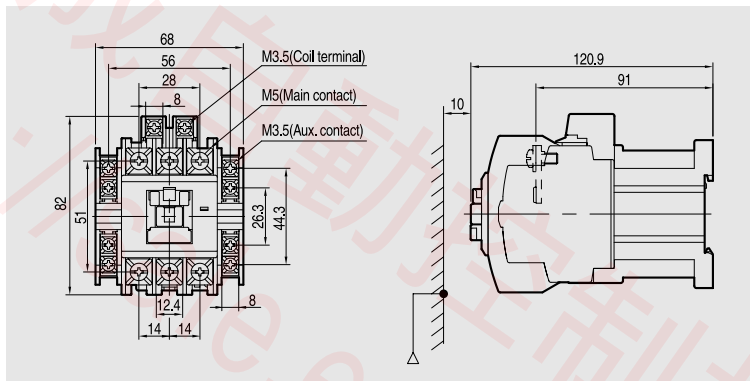
- GMD-9
- GMD-12
- GMD-18
- GMD-22



GMD-9,12:0.55kg  
GMD-18,22:0.59kg

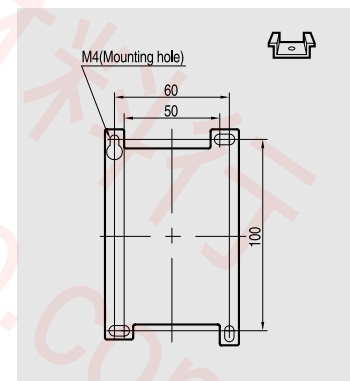
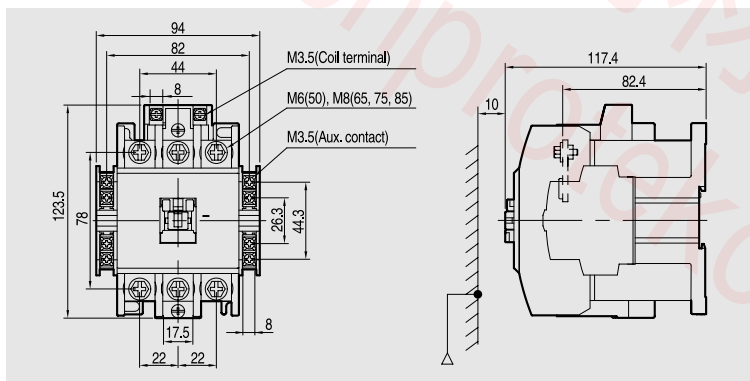
\*1 : Optional auxiliary contact unit ( side mount type )

- GMD-32
- GMD-40



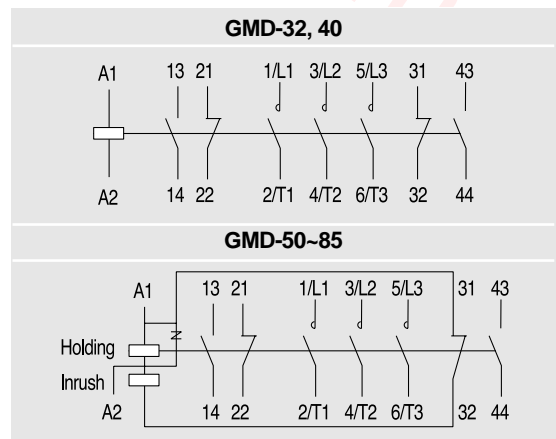
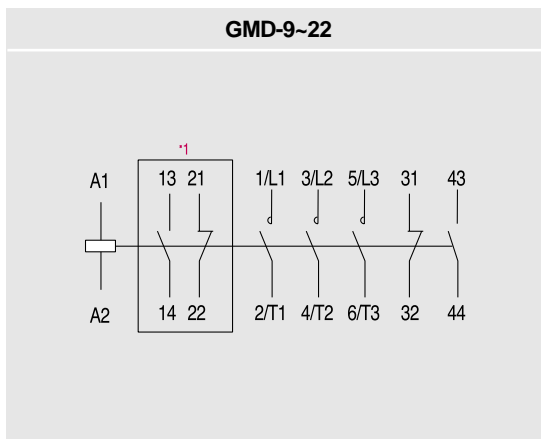
0.67kg

- GMD-50
- GMD-65
- GMD-75
- GMD-85



1.06kg

## Circuit diagram



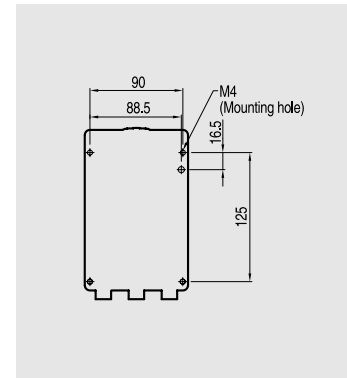
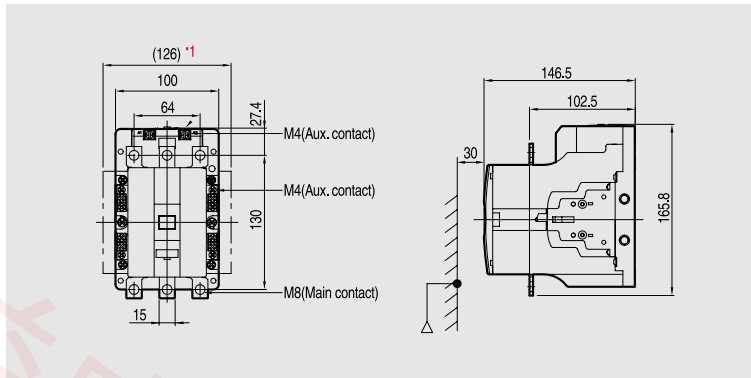
\*1 : Optional auxiliary contact unit

# Dimensions

## 3-pole Contactors

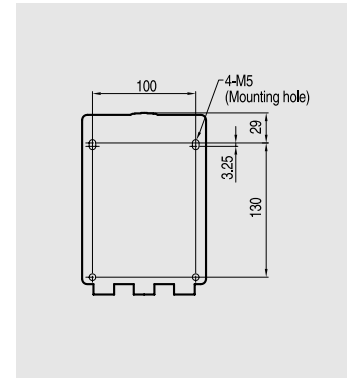
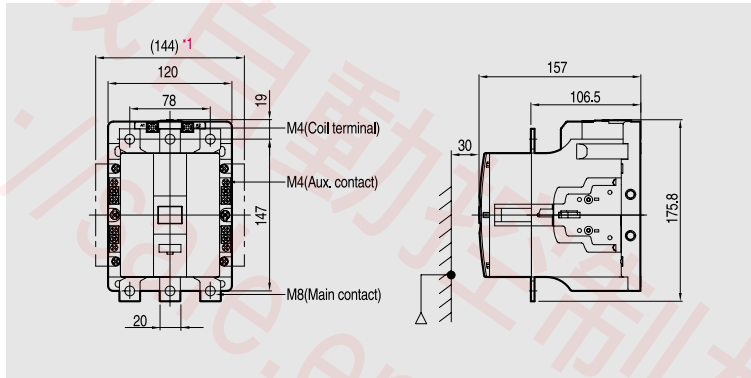
GMC-100

GMC-125



2.9kg

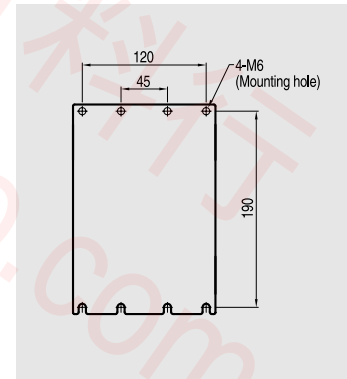
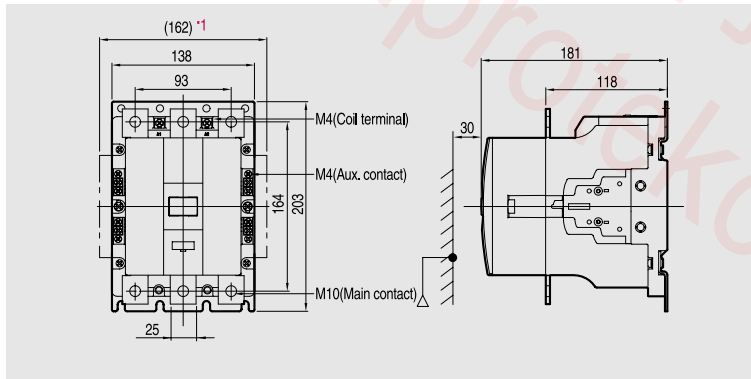
GMC-150



3.4kg

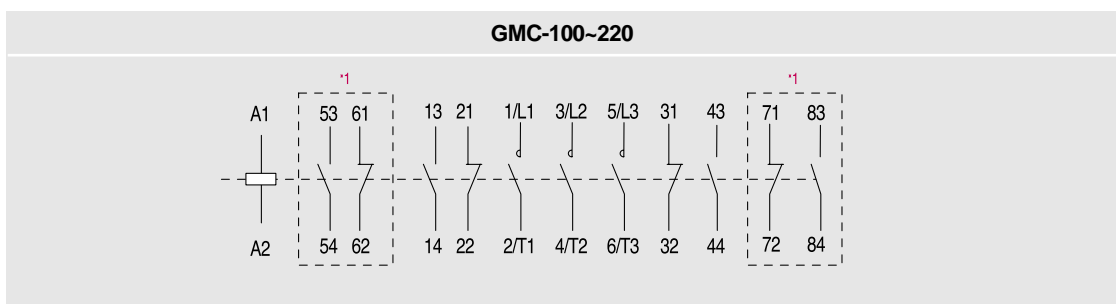
GMC-180

GMC-220



5.4kg

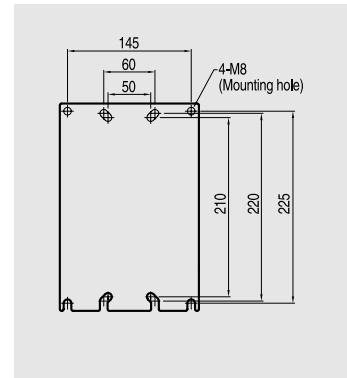
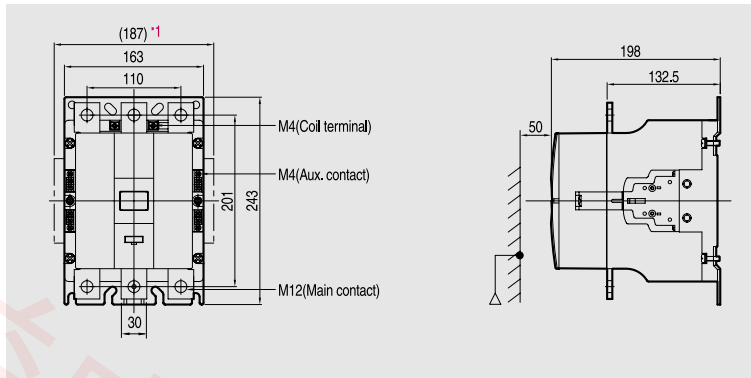
### Circuit diagram



\* 1 : Optional auxiliary contact unit ( side mount type )

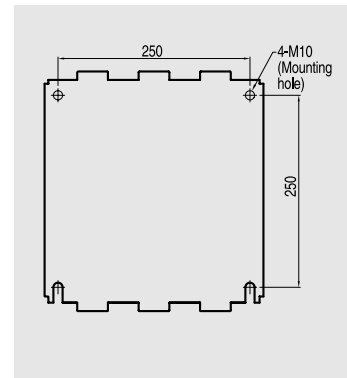
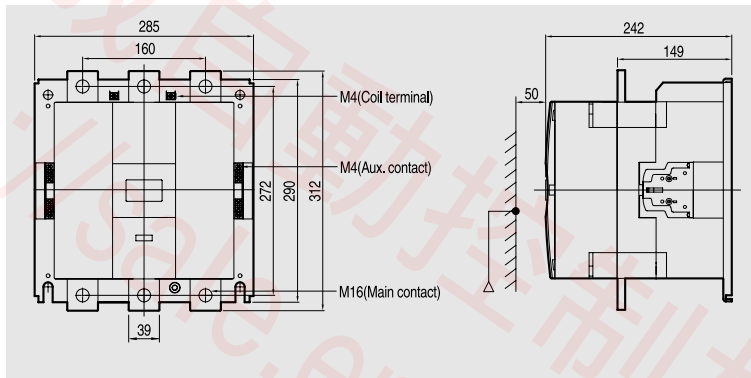


GMC-300  
GMC-400



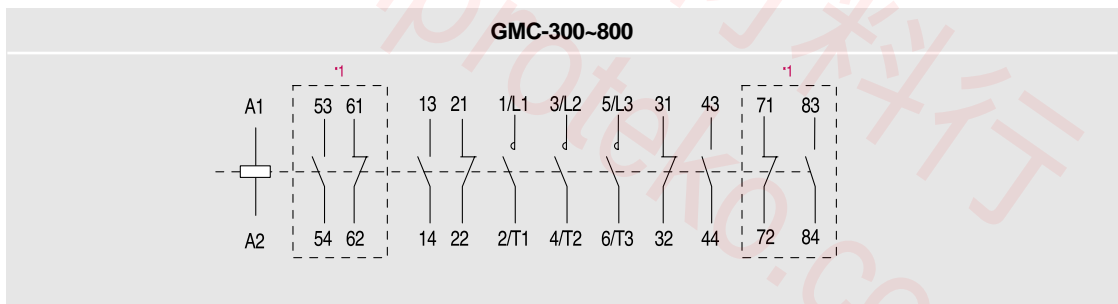
9.2kg

GMC-600  
GMC-800



22.4kg

Circuit diagram



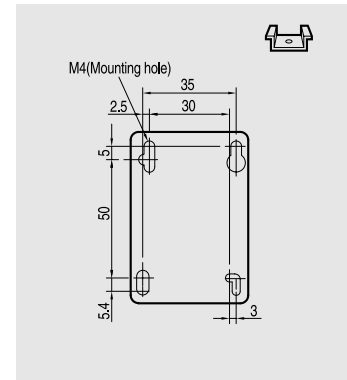
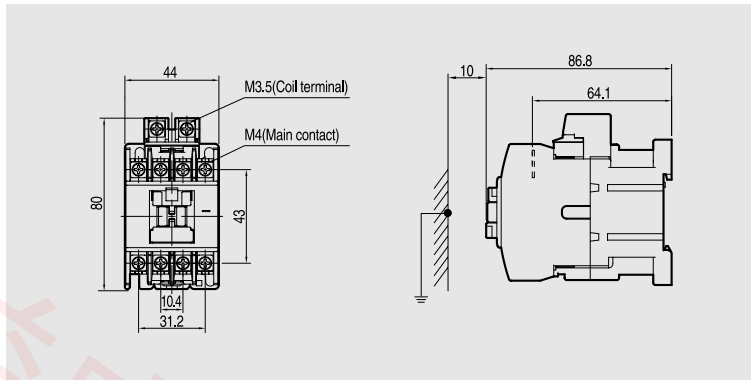
\*1 : Optional auxiliary contact unit ( side mount type )

# Dimensions

## 4-pole Contactors / AC coil

GMC-9/4

GMC-12/4

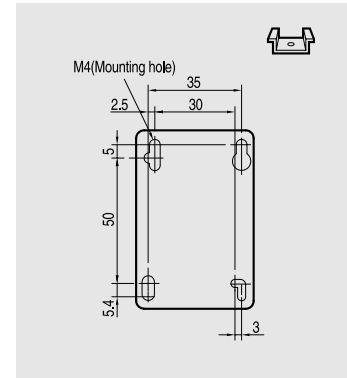
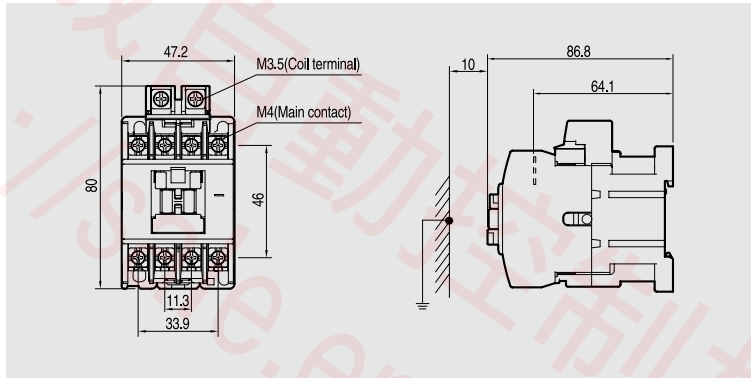


\* 1 : Optional auxiliary contact unit (side mount type)

0.33kg

GMC-18/4

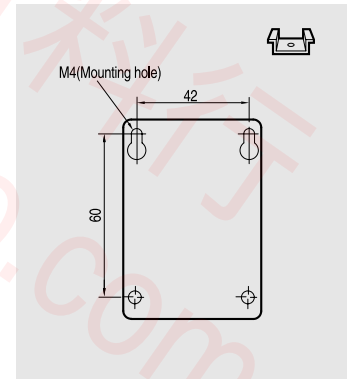
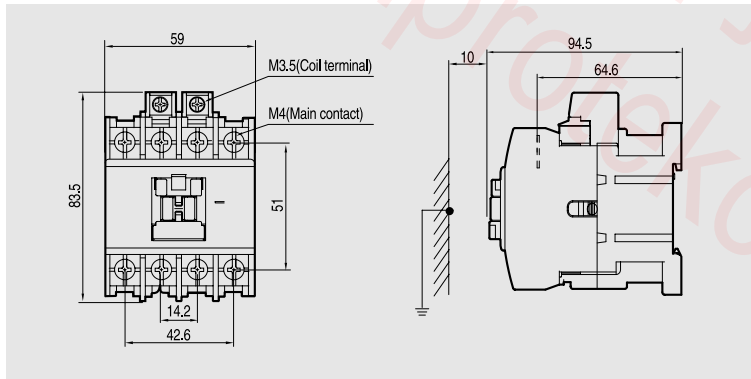
GMC-22/4



0.4kg

GMC-32/4

GMC-40/4



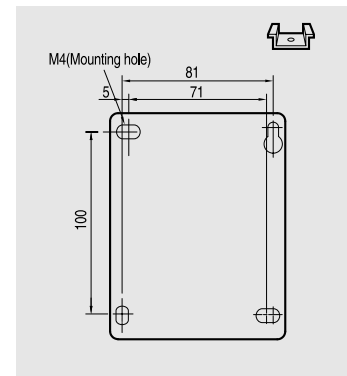
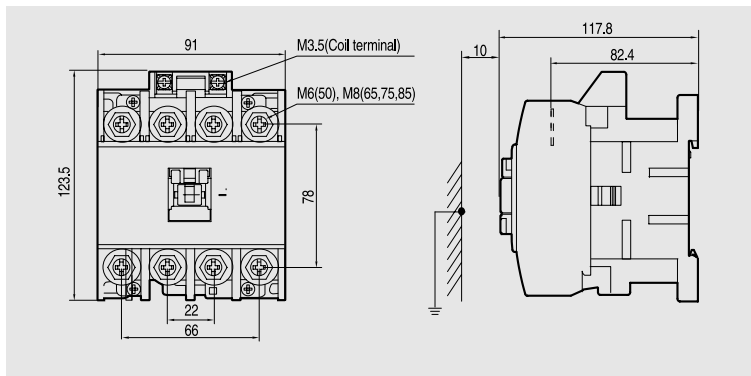
0.59kg

GMC-50/4

GMC-65/4

GMC-75/4

GMC-85/4

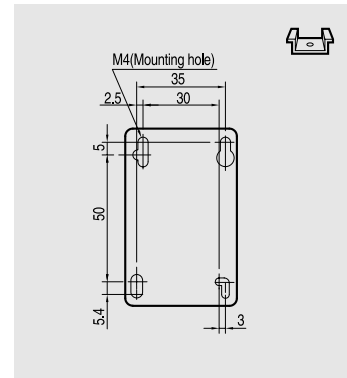
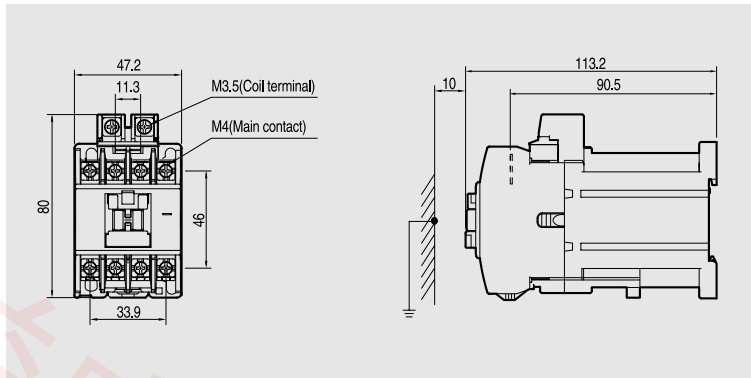


1.2kg



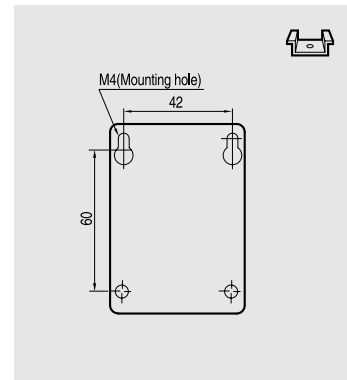
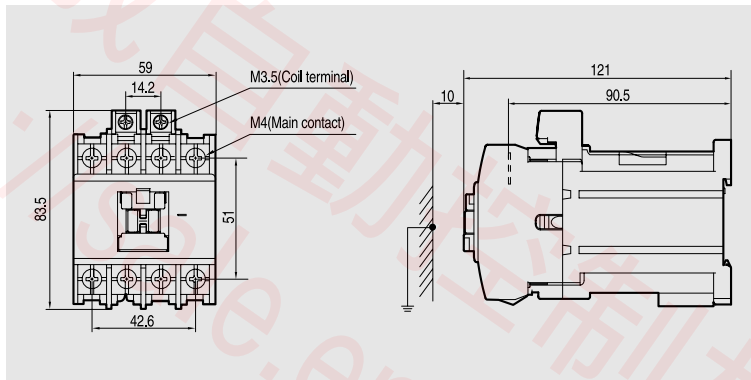
# 4-pole Contactors / DC coil

- GMD-9/4
- GMD-12/4
- GMD-18/4
- GMD-22/4



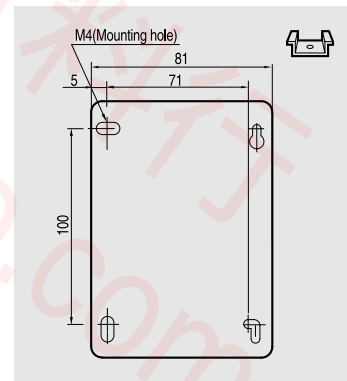
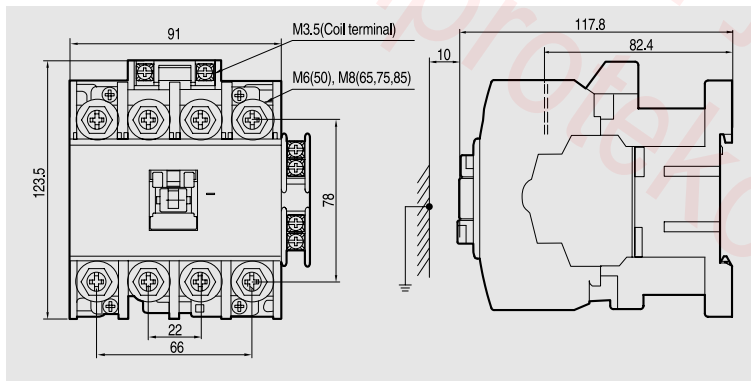
0.5kg

- GMD-32/4
- GMD-40/4



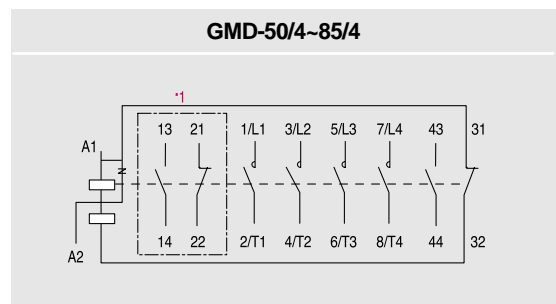
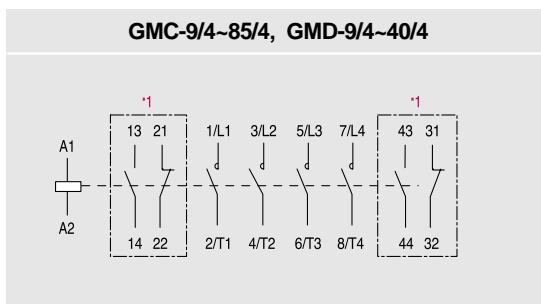
0.7kg

- GMD-50/4
- GMD-65/4
- GMD-75/4
- GMD-85/4



1.29kg

## Circuit diagram

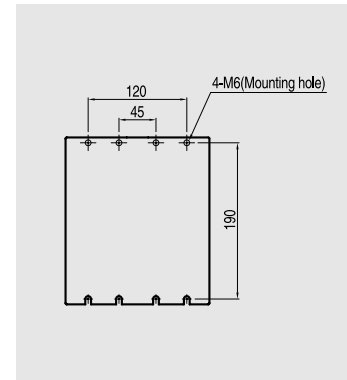
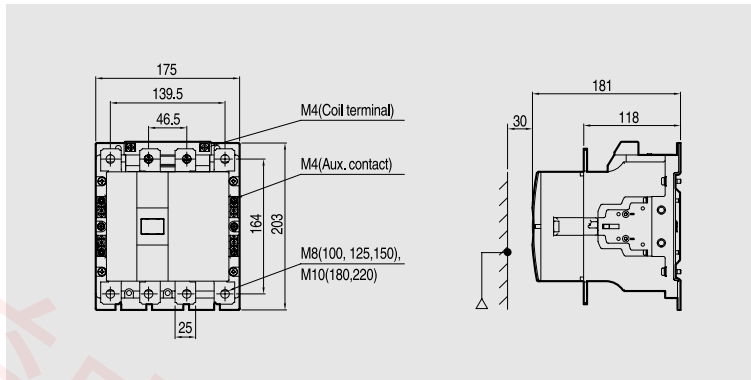


\*1, \*2 : Optional auxiliary contact unit

# Dimensions

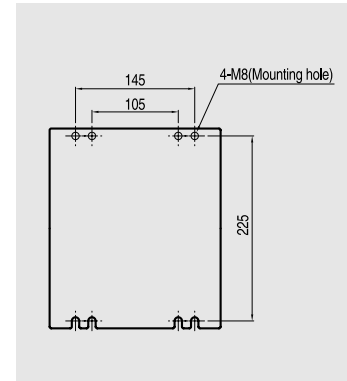
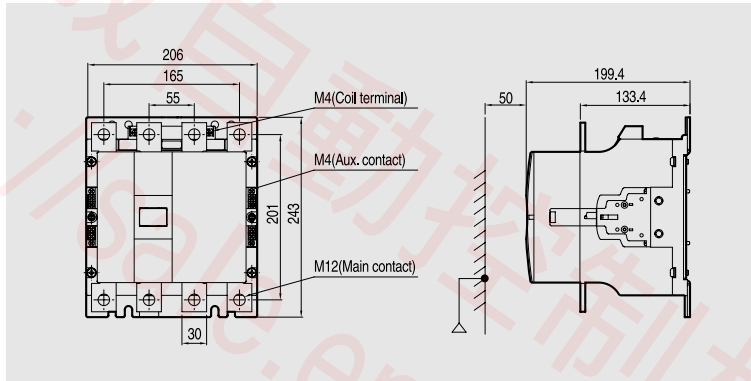
## 4-pole Contactors

- GMC-100/4
- GMC-125/4
- GMC-150/4
- GMC-180/4
- GMC-220/4



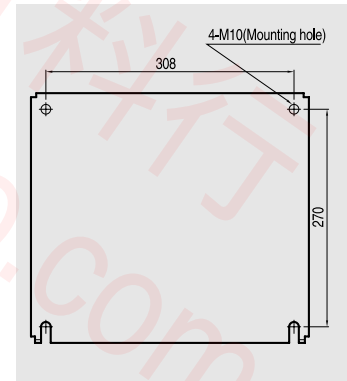
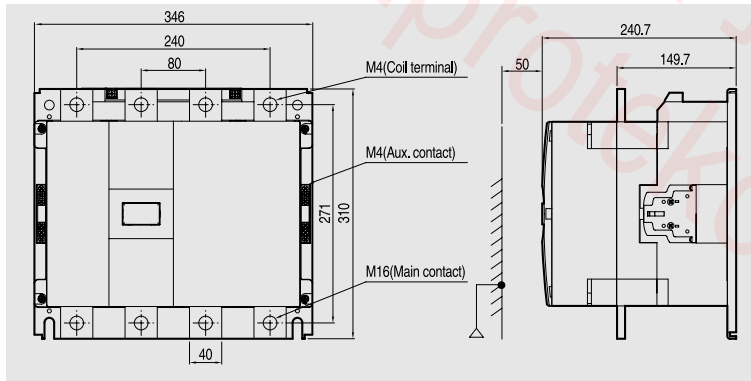
5.6kg

- GMC-300/4
- GMC-400/4



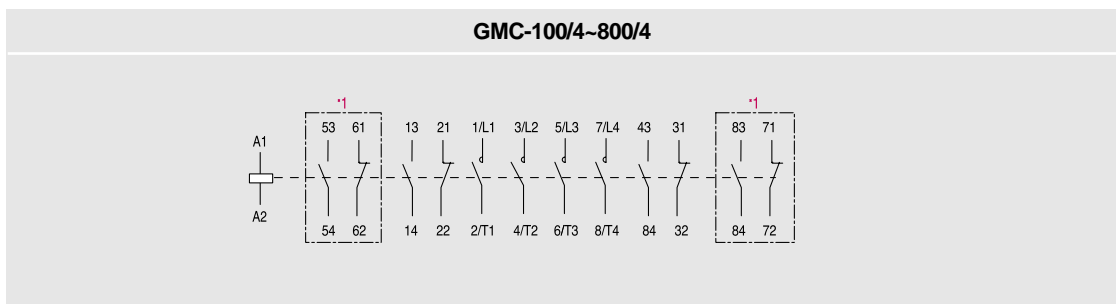
9.9kg

- GMC-600/4
- GMC-800/4



26.3kg

### Circuit diagram



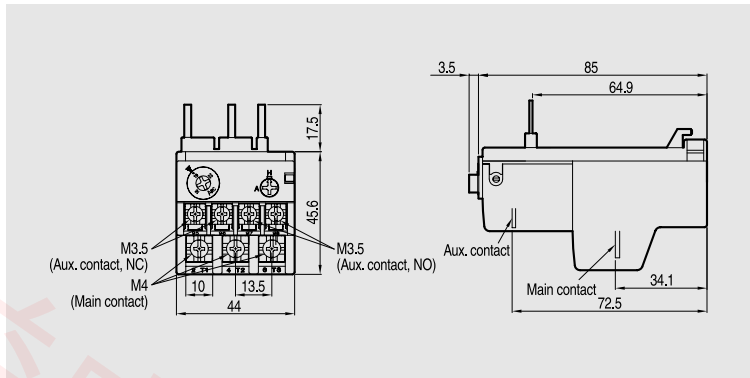
\* 1 : Optional auxiliary contact unit ( side mount type )



# Thermal overload relays



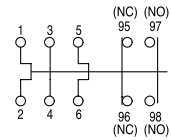
- GTH-22
- GTK-22
- GTH-22/3



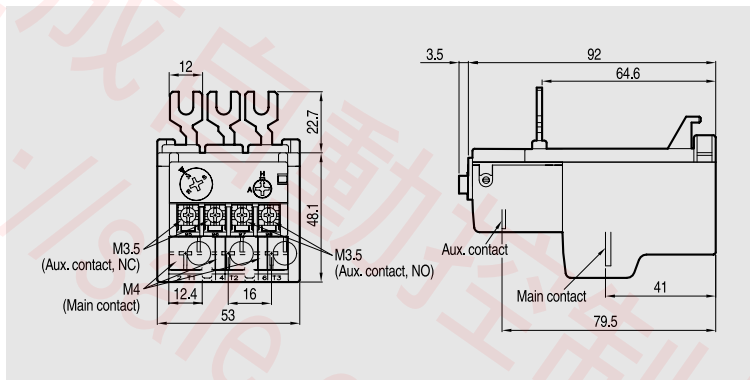
0.11kg

## Diagrams

GTH-22, 40, 85  
(2 heater types)

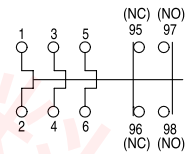


- GTH-40
- GTK-40
- GTH-40/3

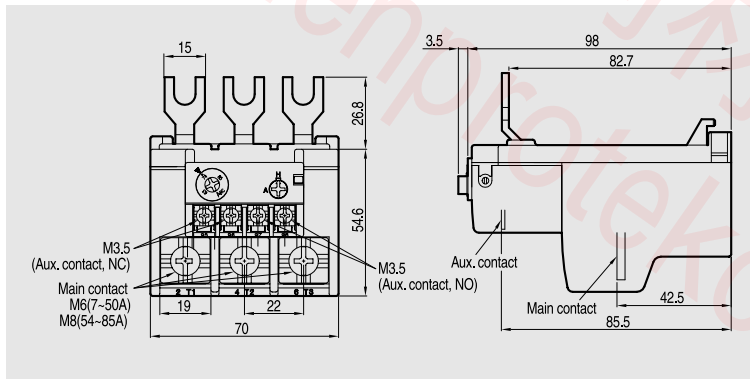


0.17kg

GTH-22/3, 40/3, 85/3  
GTK-22, 40, 85  
(3 heater types)



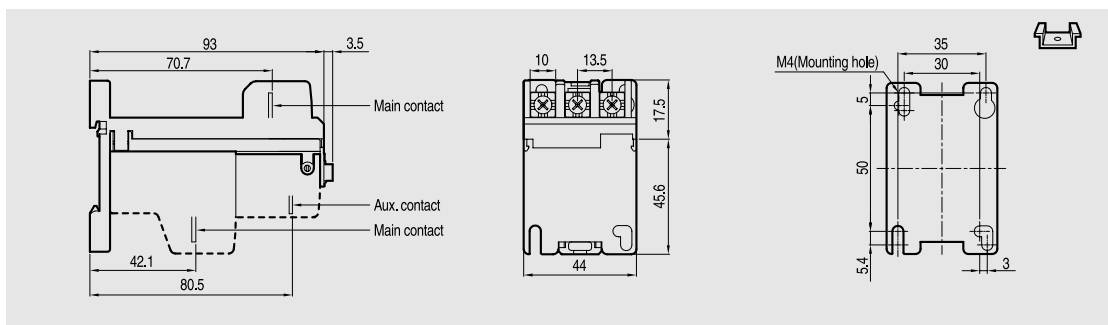
- GTH-85
- GTK-85
- GTH-85/3



0.3kg

# Separate mounting units for overload relays

- AZ-22H
- for use with  
overload relay  
GTH(K)-22



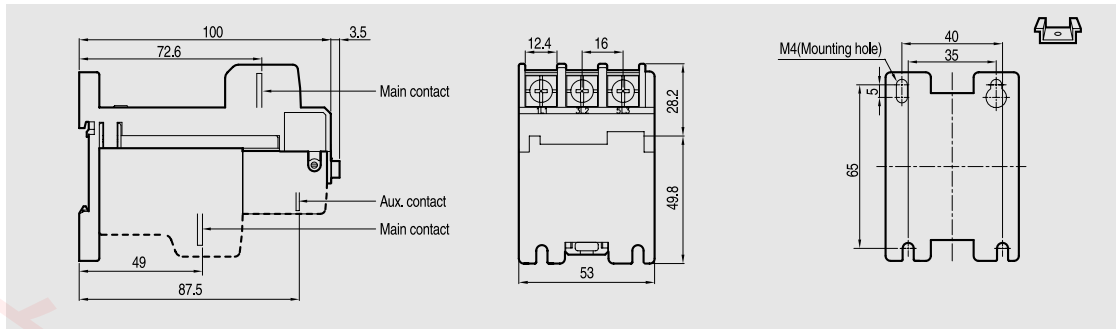
44g

# Dimensions

## Separate mounting units for overload relays

### AZ-40H

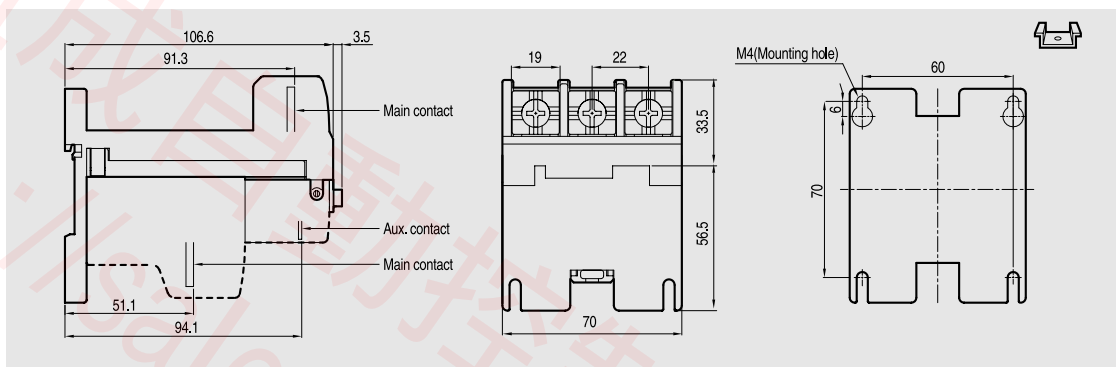
for use with  
overload relay  
GTH(K)-40



72g

### AZ-85H

for use with  
overload relay  
GTH(K)-85



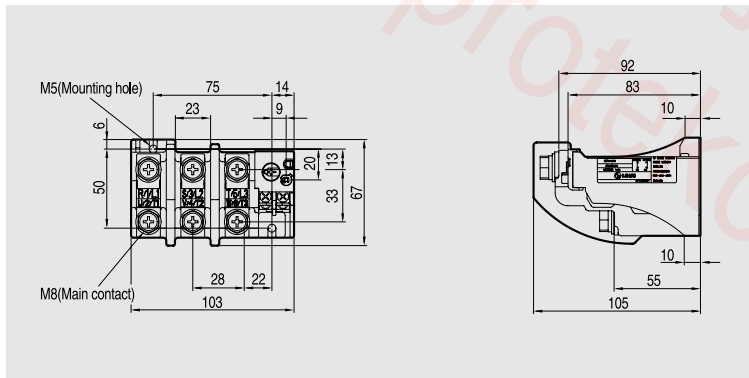
144g

## Thermal overload relays

### GTH-100

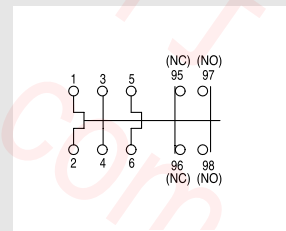
### GTK-100

### GTH-100/3



### Diagrams

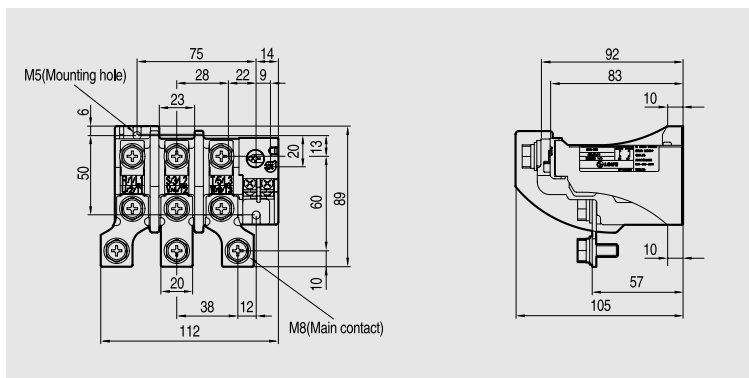
**GTH-100, 150**  
**(2 heater types)**



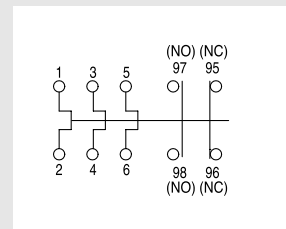
### GTH-150

### GTK-150

### GTH-150/3

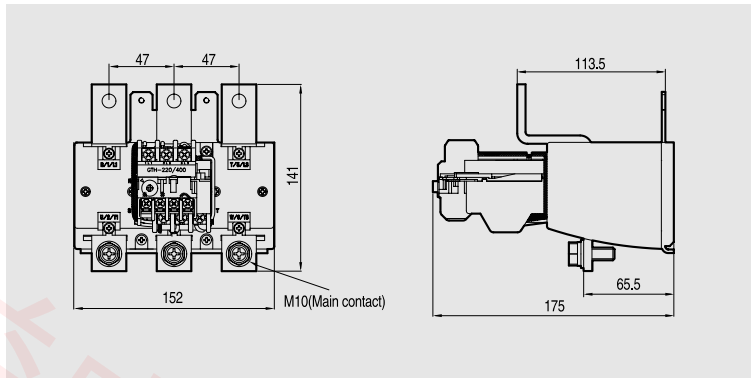


**GTH-100/3, 150/3**  
**GTK-100, 150**  
**(3 heater types)**



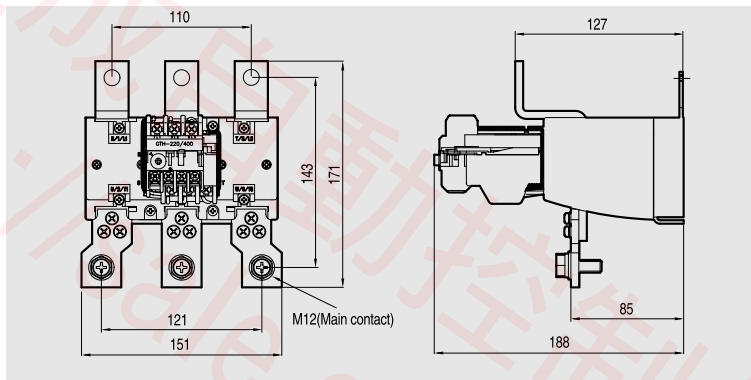
# Thermal overload relays

- GTH-220
- GTK-220
- GTH-220/3



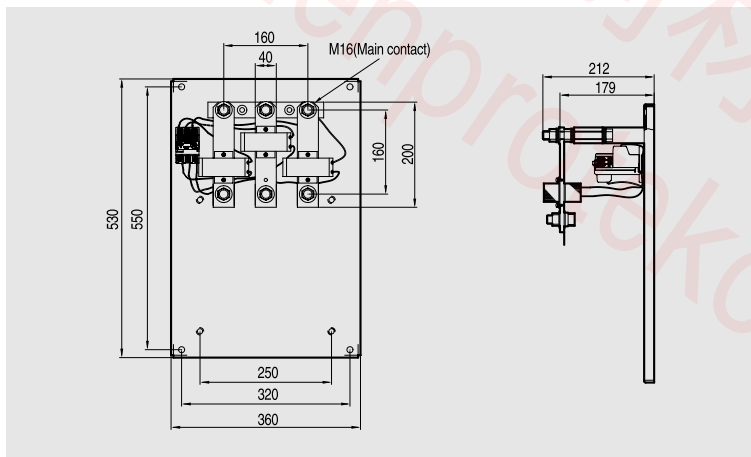
2.5kg

- GTH-400
- GTK-400
- GTH-400/3



2.6kg

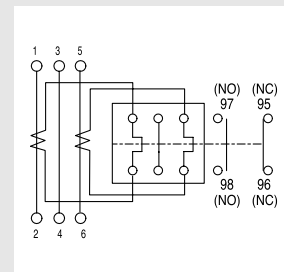
- GTH-600
- GTK-600
- GTH-600/3



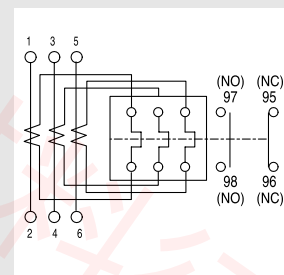
5.5kg

## Diagrams

GTH- 220, 400, 600  
(2 heater types)



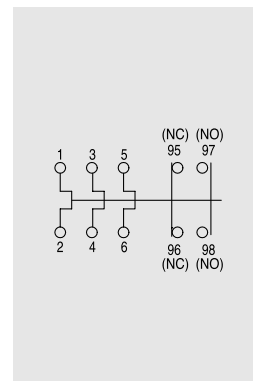
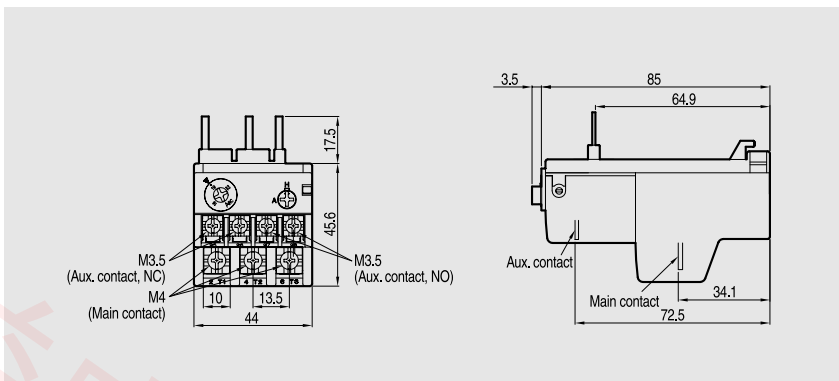
GTH-220/3, 400/3, 600/3  
GTK-220, 400, 600  
(3 heater types)



# Dimensions

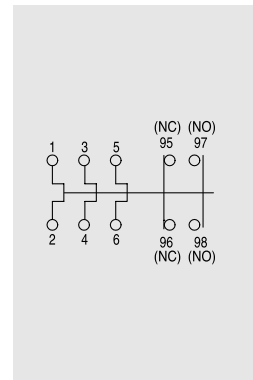
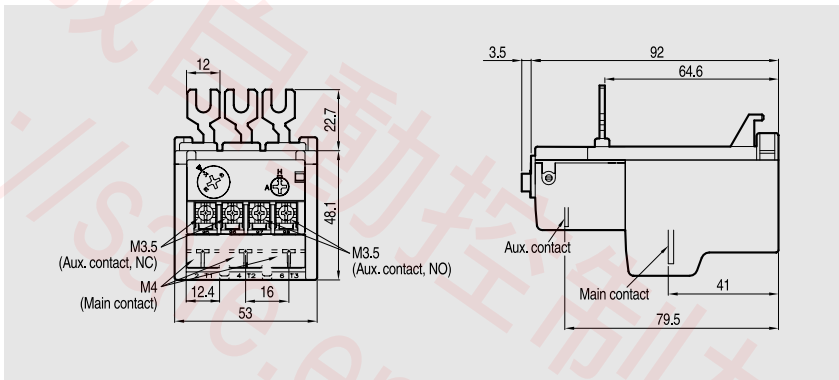
## Thermal overload relays ( class 20 )

**GTK-22/L**



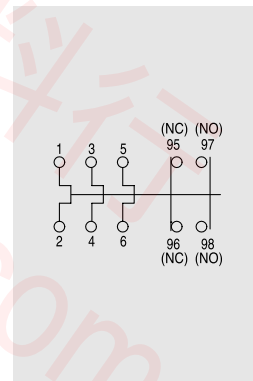
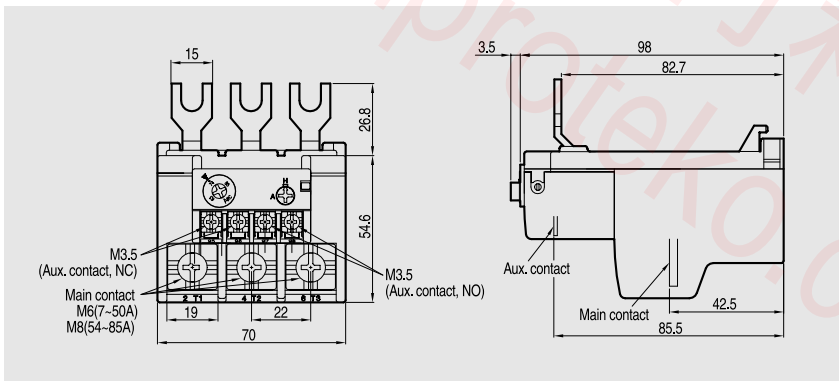
0.11Kg

**GTK-40/L**



0.17Kg

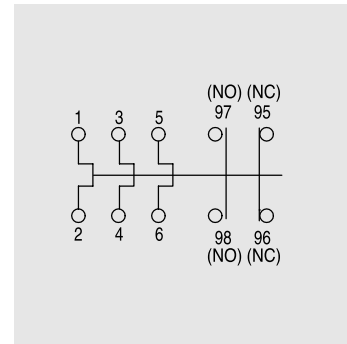
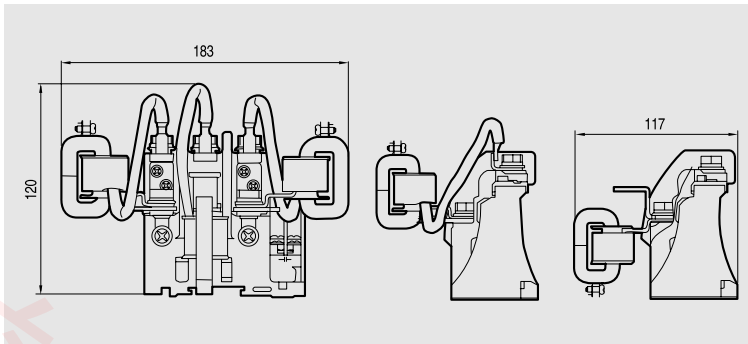
**GTK-85/L**



0.3Kg

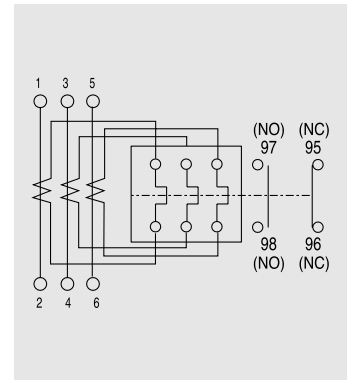
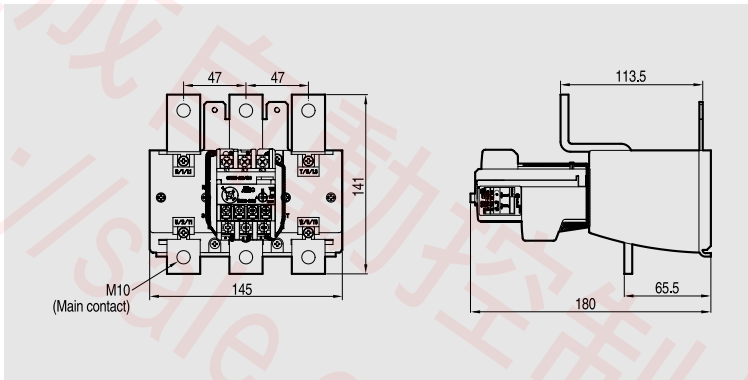
GTK-100/L

GTK-150/L



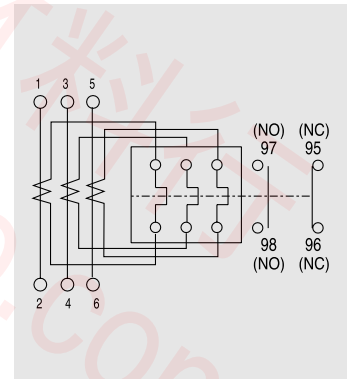
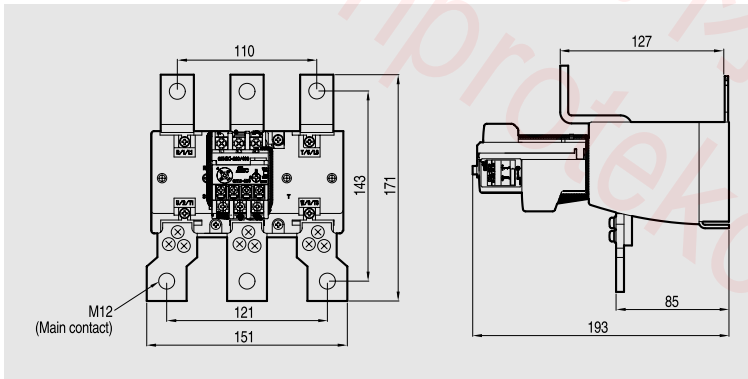
0.8Kg

GTK-220/L



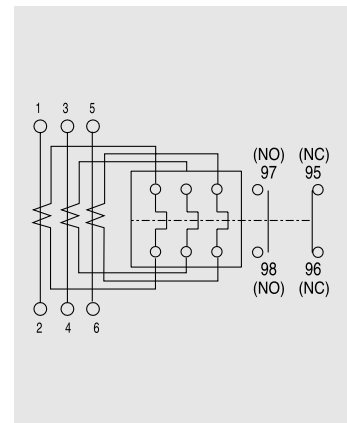
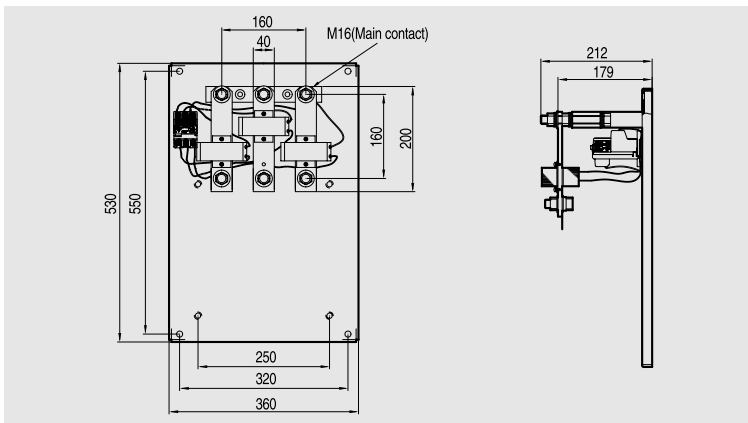
2.5Kg

GTK-400/L



2.6Kg

GTK-600/L



11.5Kg

# Dimensions

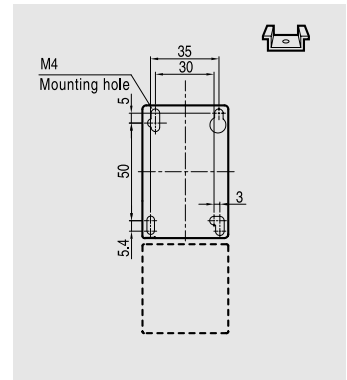
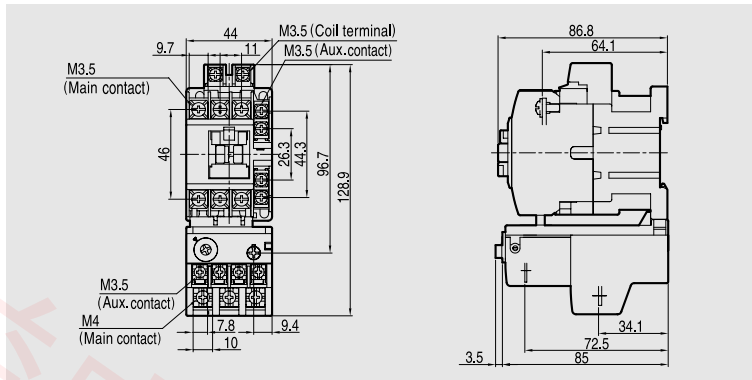
## Motor starters, open

GMS-9/K

GMS-12/K

GMS-18/K

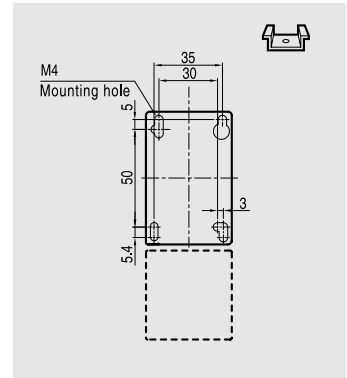
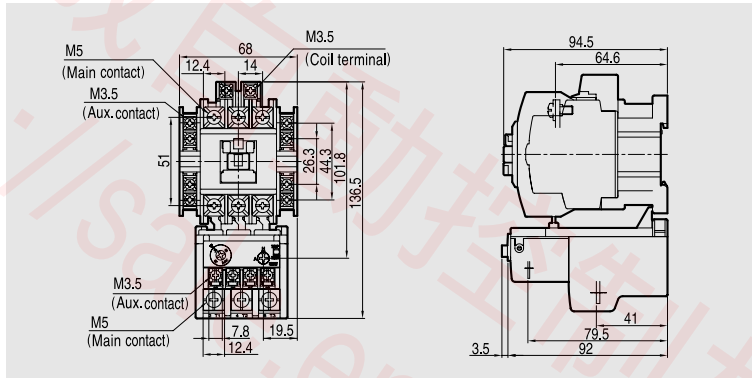
GMS-22/K



GMC-9, 12 + GTH(K) :0.46kg  
GMC-18, 22 + GTH(K):0.5kg

GMS-32/K

GMS-40/K



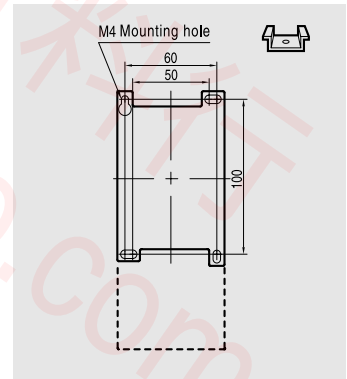
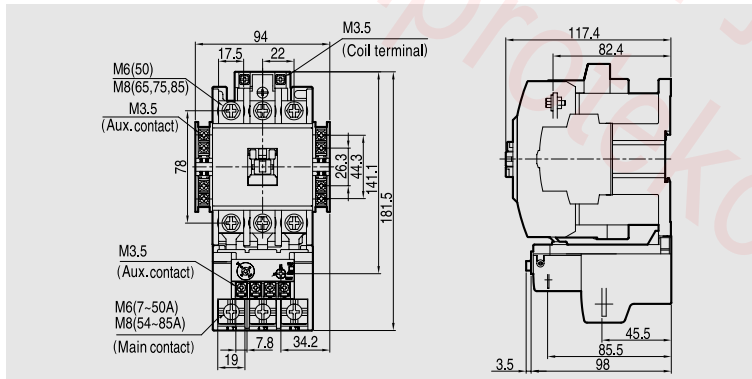
0.65kg

GMS-50/K

GMS-65/K

GMS-75/K

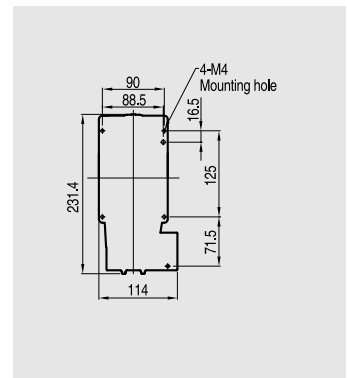
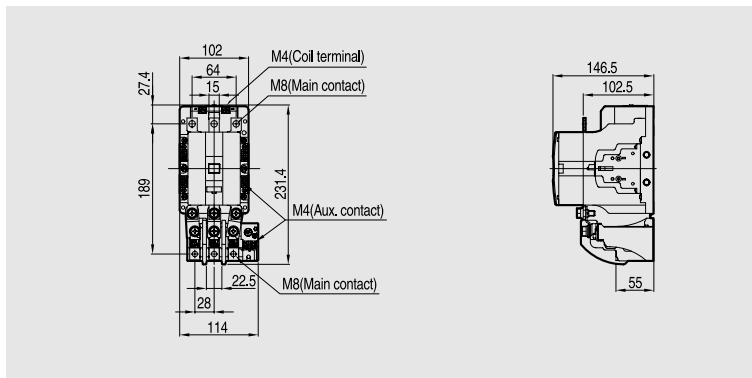
GMS-85/K



1.12kg

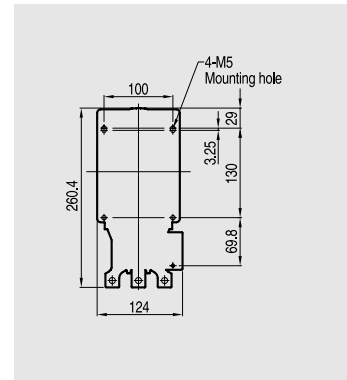
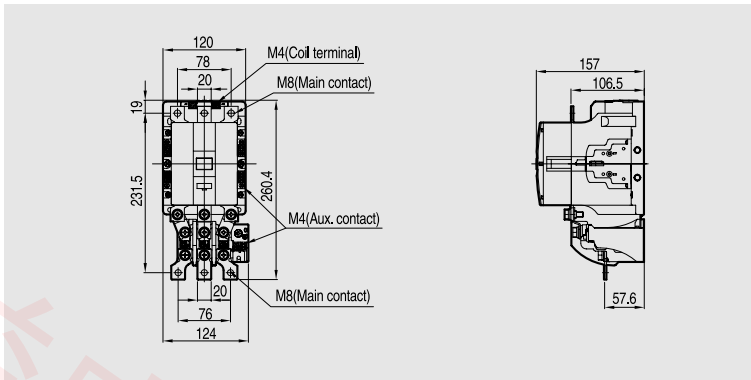
GMS-100/K

GMS-125/K



3.4kg

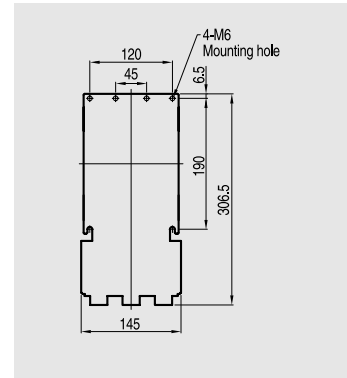
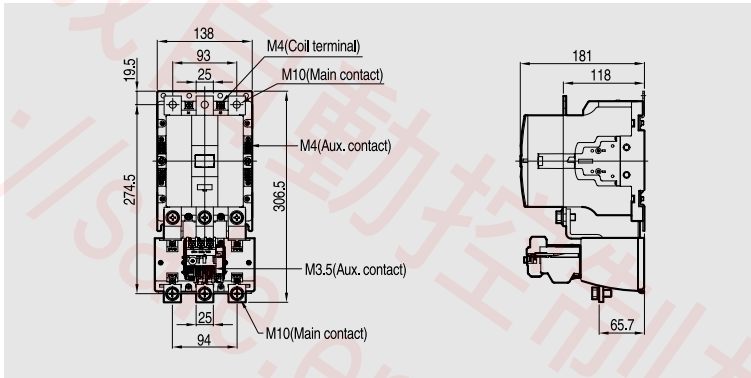
**GMS-150/K**



4kg

**GMS-180/K**

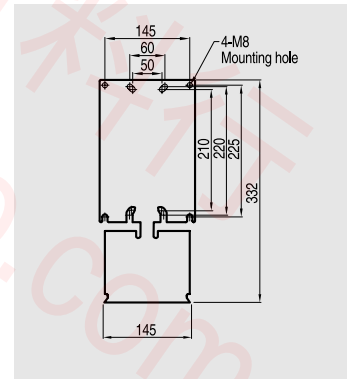
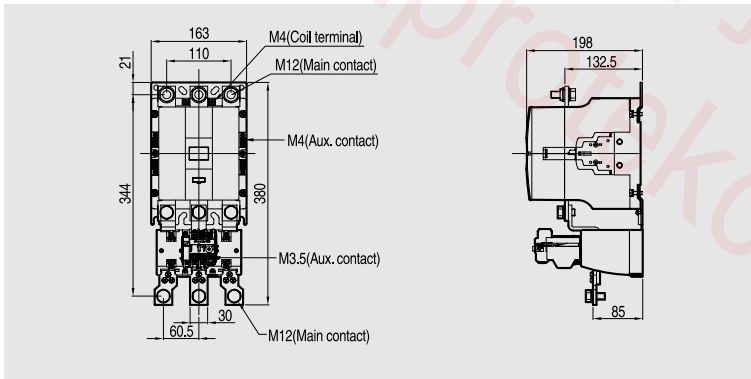
**GMS-220/K**



7.9kg

**GMS-300/K**

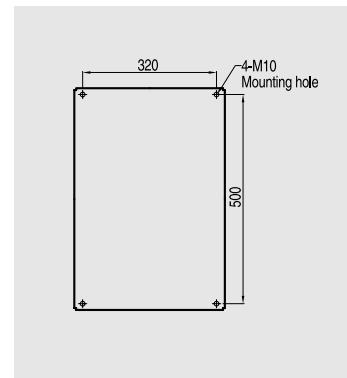
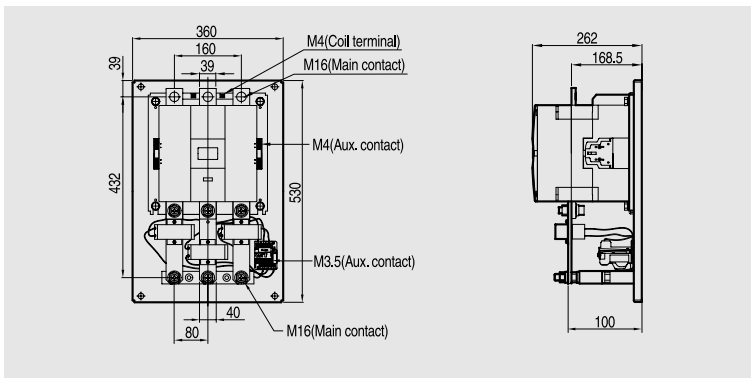
**GMS-400/K**



11.8kg

**GMS-600/K**

**GMS-800/K**



28kg

# Dimensions

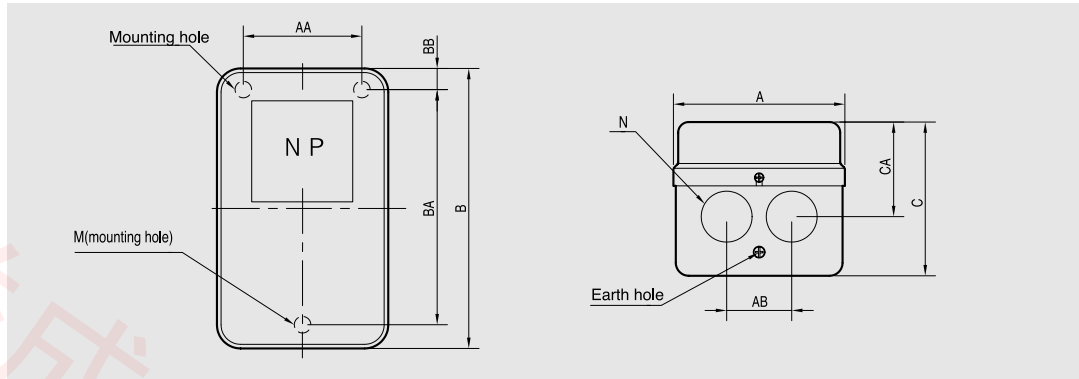
## Enclosed motor starters

### Metal enclosure

GMW-9-22

GMW-9/3-22/3

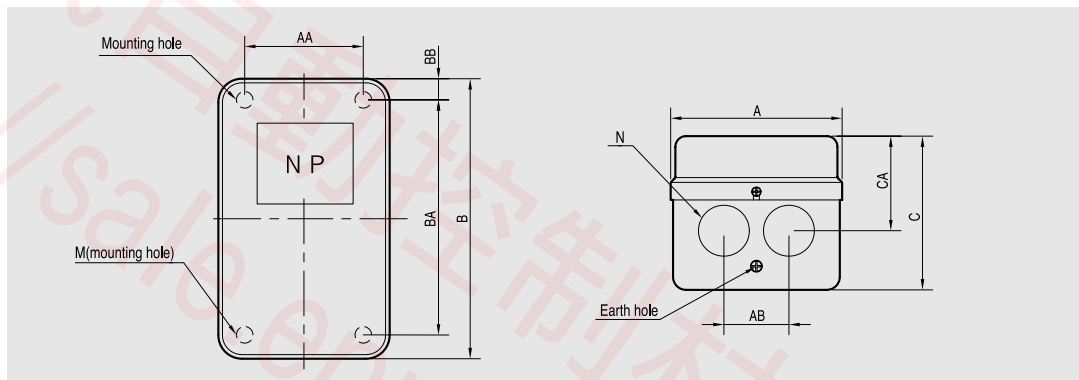
GMW-9/K-22/K



GMW-32-85

GMW-32/3-85/3

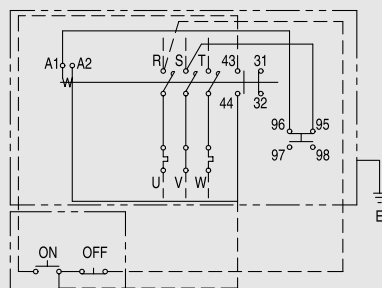
GMW-32/K-85/K



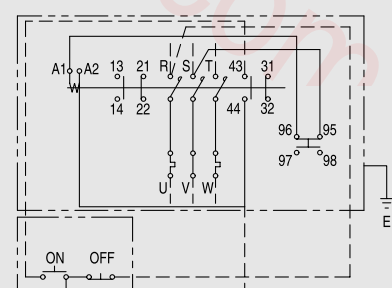
Type	A	AA	AB	B	BA	BB	C	CA	M	N	Weight(kg)
GMW-9, 12, 18, 22	104	76	40	170	140	15	114	41	M5	∅ 22	1.1
GMW-32, 40	145	95	55	245	165	40	130	50	M5	∅ 35	1.7
GMW-50, 65, 75, 85	160	120	74	290	220	35	141	50	M5	∅ 35	3.6

### Circuit diagram

GMW-9-22



GMW-32-85



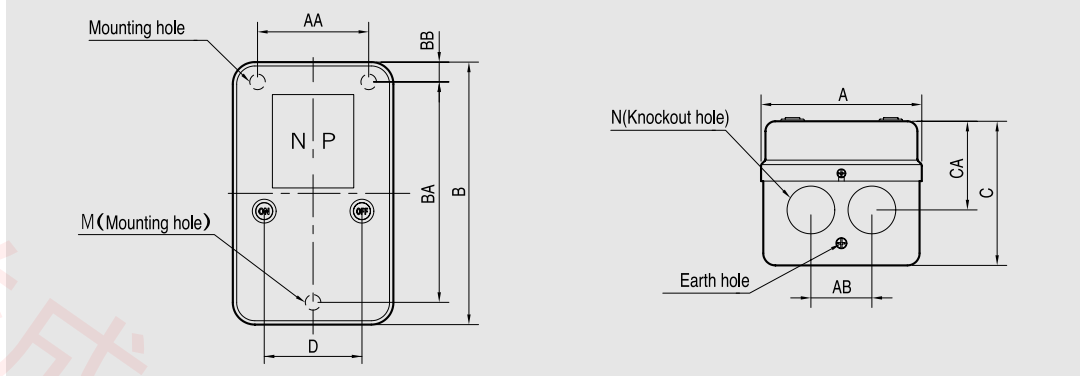




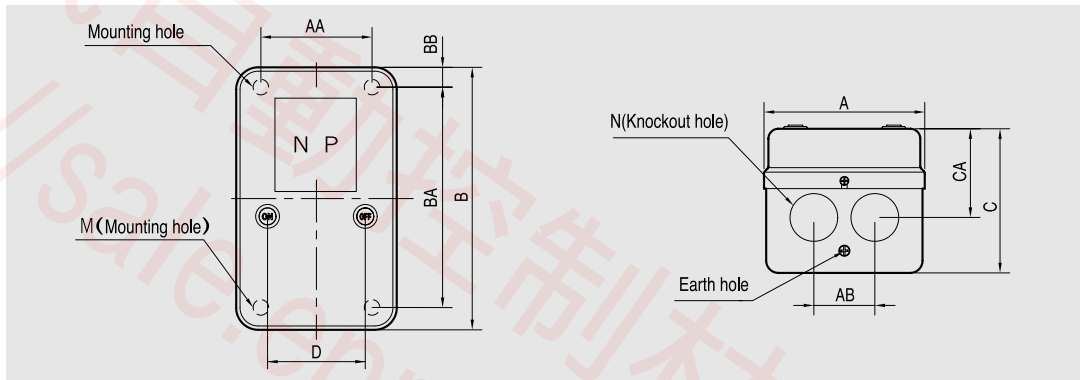
# Enclosed motor starters with push buttons

## Metal enclosure

- GMW-9B~22B
- GMW-9B/3~22B/3
- GMW-9B/K~22B/K

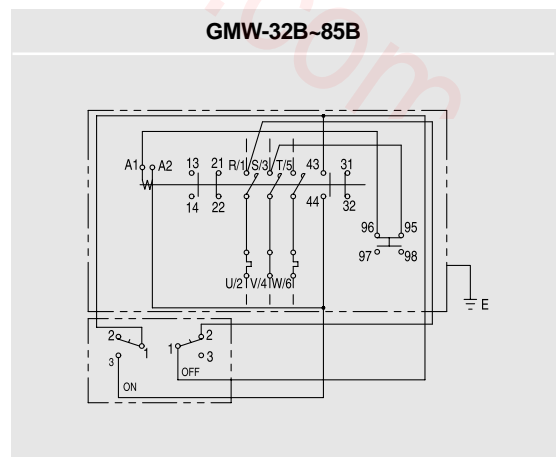
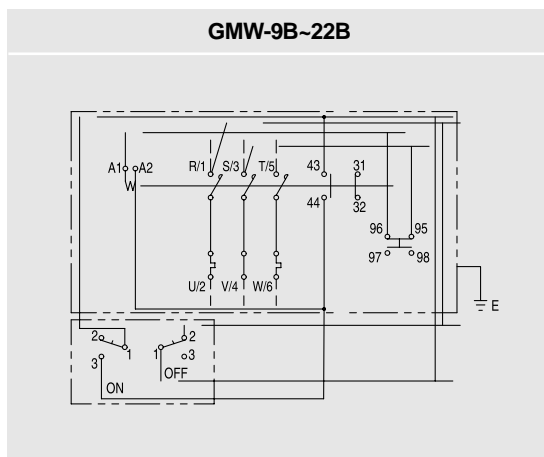


- GMW-32B~85B
- GMW-32B/3~85B/3
- GMW-32B/K~85B/K



Type	A	AA	AB	B	BA	BB	C	CA	D	M	N	Weight(kg)
GMW-9B, 12B, 18B, 22B	104	76	40	170	140	15	114	41	59	M5	φ 22	1.1
GMW-32B, 40B	145	95	55	245	165	40	130	50	97	M5	φ 35	1.7
GMW-50B, 65B, 75B, 85B	160	120	74	290	220	35	141	50	114	M5	φ 35	3.6

## Circuit diagram



# Dimensions

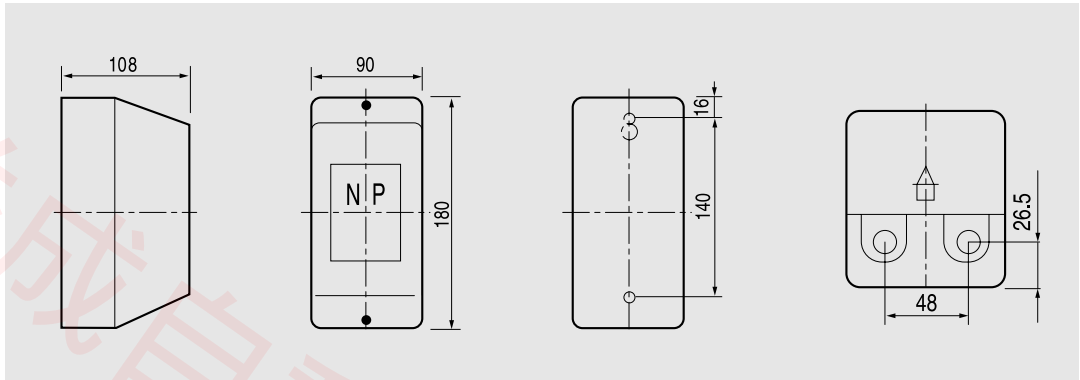
## Enclosed motor starters with push buttons

### Mould enclosure

#### Types without push buttons

GMW-9M~22M

GMW-9M/K~22M/K

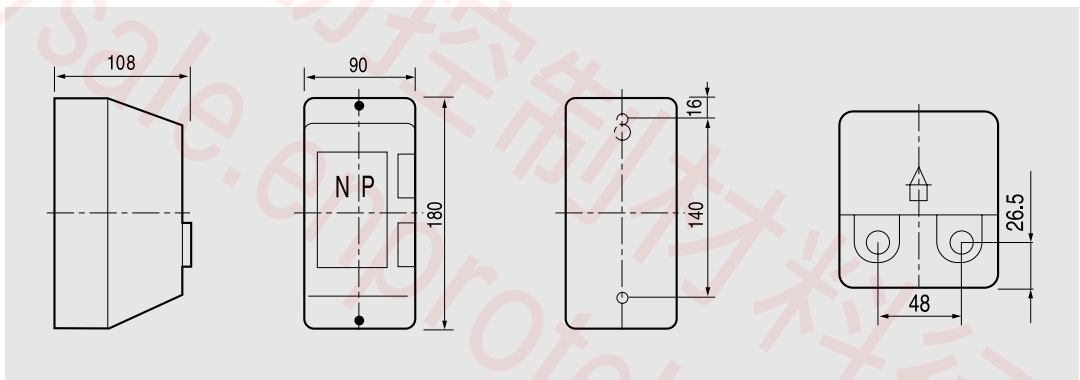


GMW-9M, 12M:0.83kg  
GMW-18M, 22M:0.88kg

#### Types with push buttons

GMW-9MB~22MB

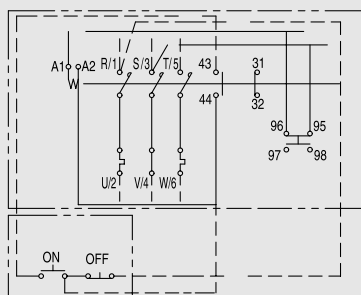
GMW-9MB/K~22MB/K



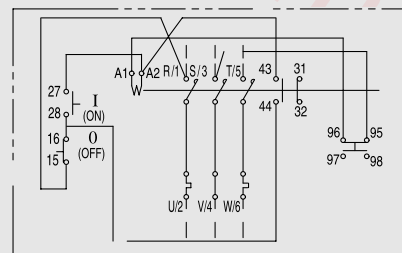
GMW-9MB, 12MB:0.83kg  
GMW-18MB, 22MB:0.88kg

### Circuit diagram

GMW-9M~22M



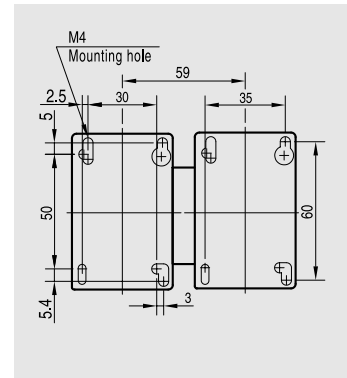
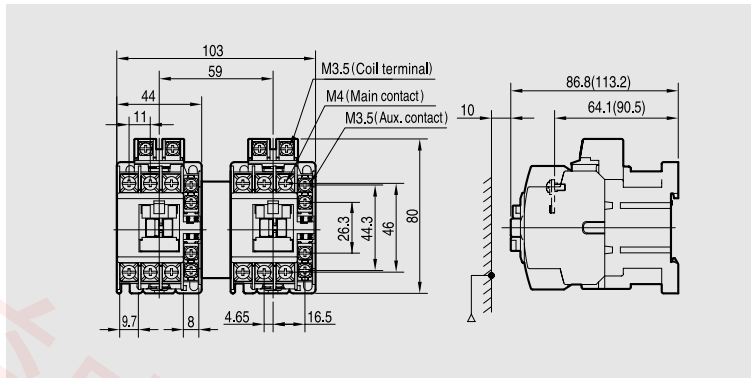
GMW-9MB~22MB





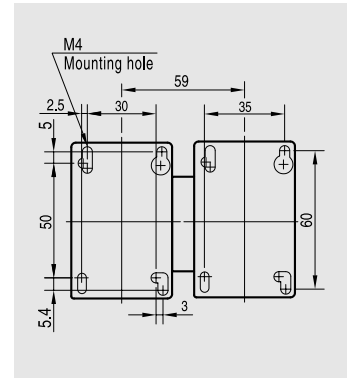
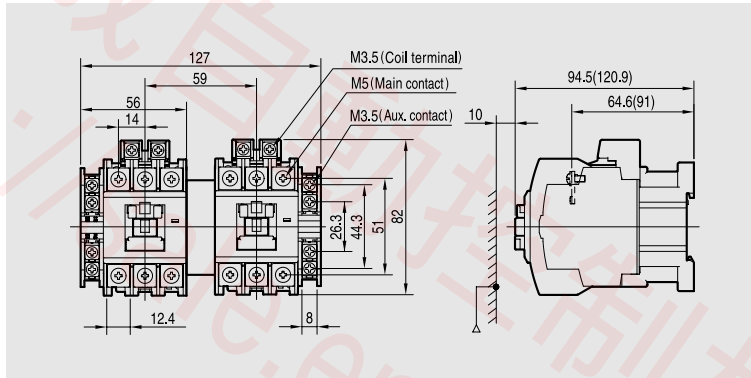
# Reversing contactors , 3-pole

- GMC(D)-9R
- GMC(D)-12R
- GMC(D)-18R
- GMC(D)-22R



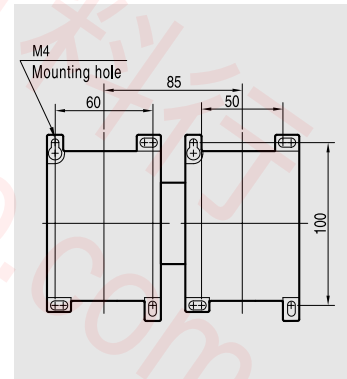
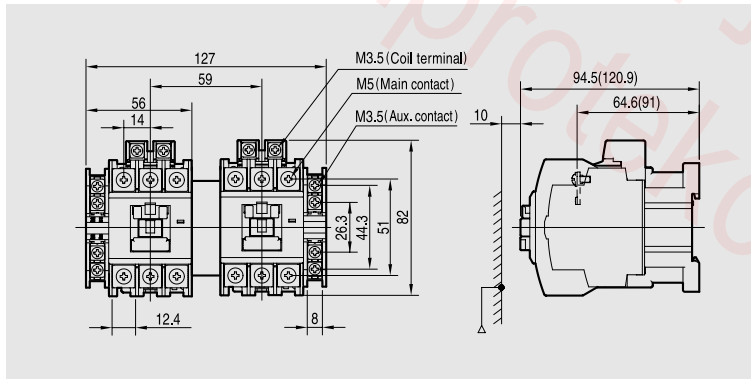
GMC(D)-9R, 12R:0.69(1.13)kg  
GMC(D)-18R, 22R:0.77(1.21)kg

- GMC(D)-32R
- GMC(D)-40R



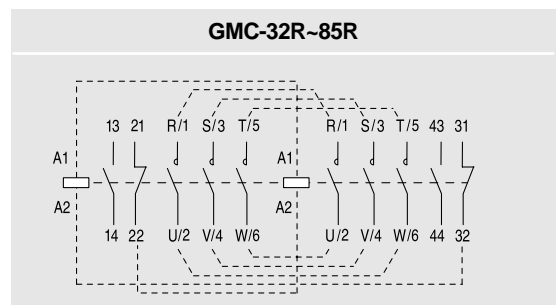
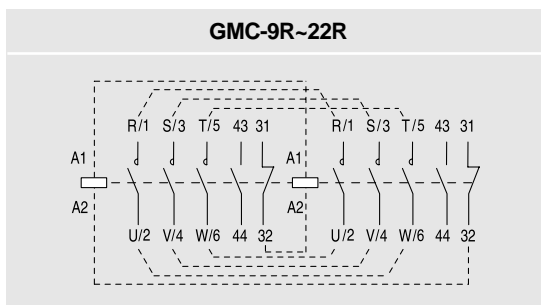
1.0(1.44)kg

- GMC(D)-50R
- GMC(D)-65R
- GMC(D)-75R
- GMC(D)-85R



2.1(2.2)kg

## Circuit diagram

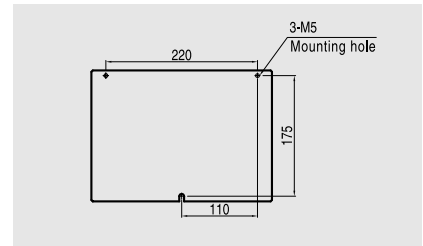
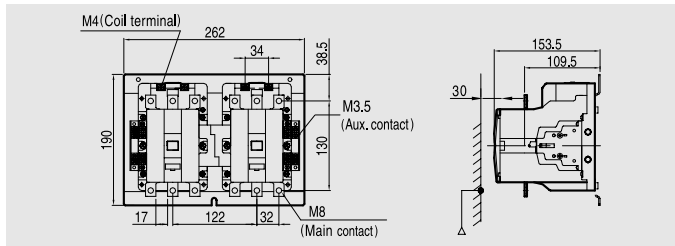


# Dimensions

## Reversing contactors , 3-pole

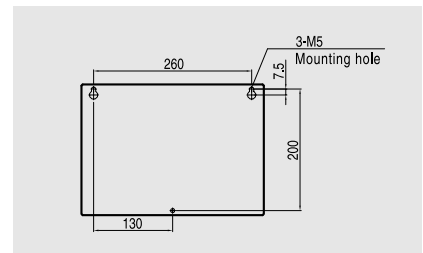
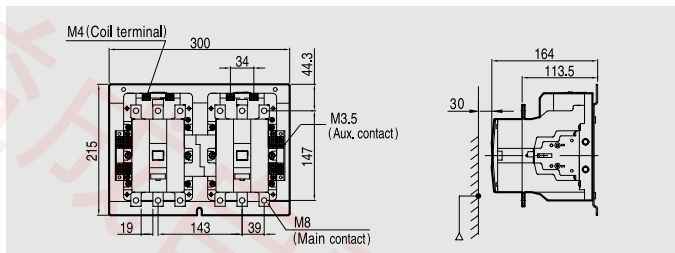
**GMC-100R**

**GMC-125R**



6.7kg

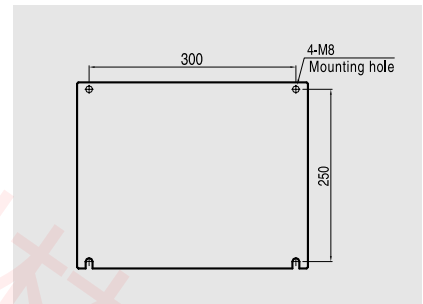
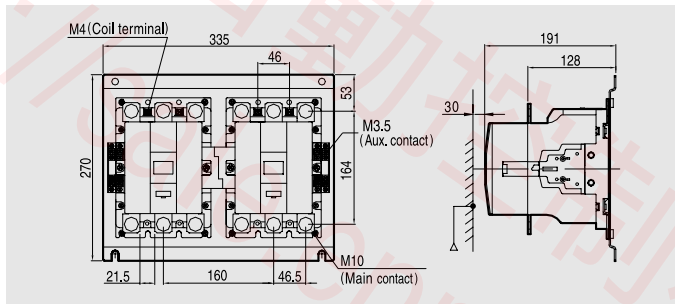
**GMC-150R**



8.1kg

**GMC-180R**

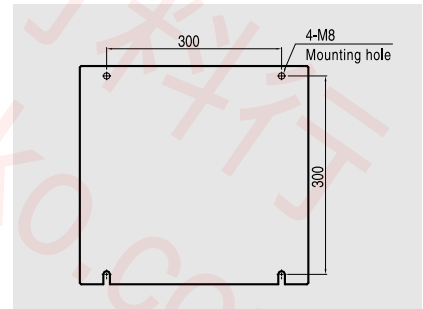
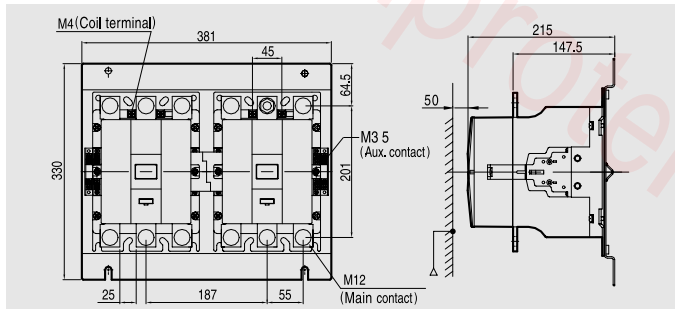
**GMC-220R**



12.9kg

**GMC-300R**

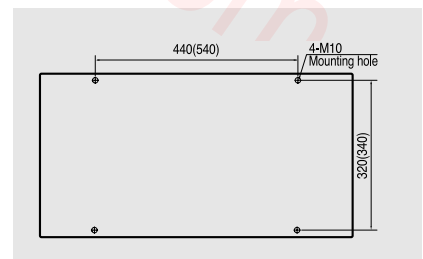
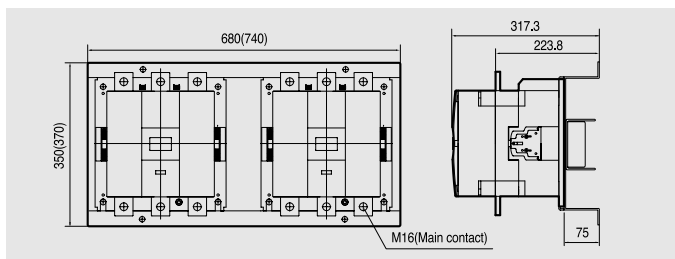
**GMC-400R**



21.4kg

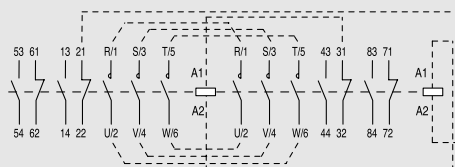
**GMC-600R**

**GMC-800R**



### Circuit diagram

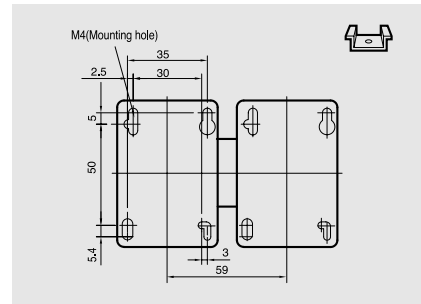
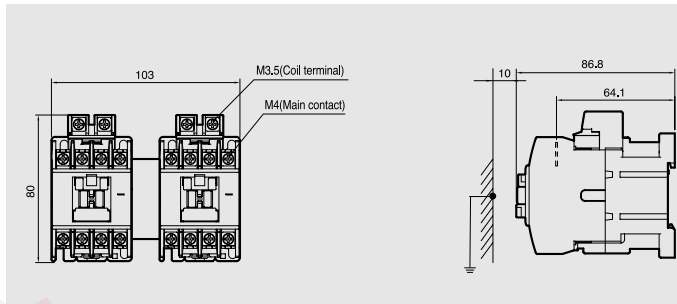
**GMC-100R~800R**





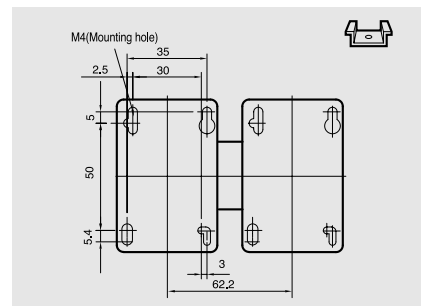
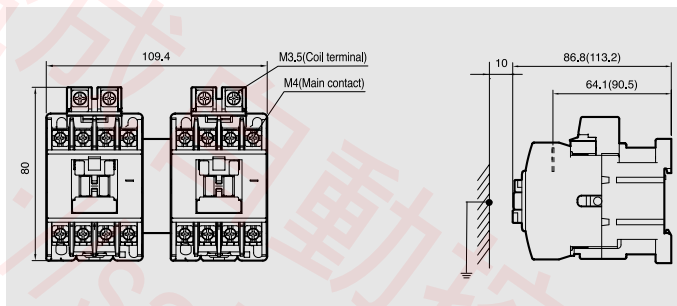
# Reversing contactors , 4-pole

- GMC-9R/4
- GMC-12R/4
- GMC-18R/4
- GMC-22R/4



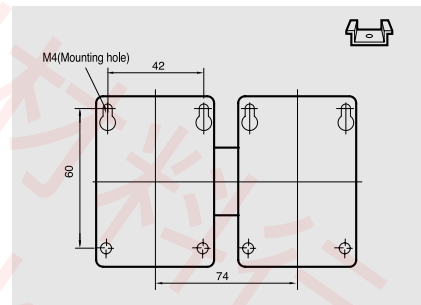
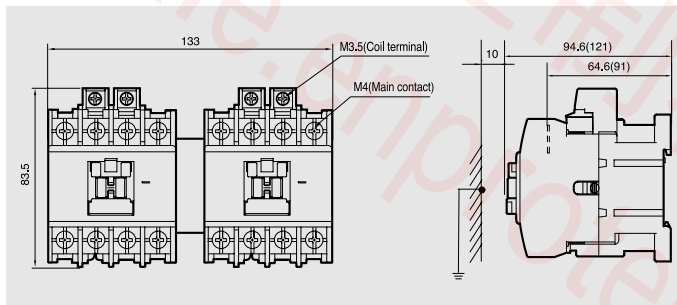
3.33kg

- GMD-9R/4
- GMD-12R/4
- GMD-18R/4
- GMD-22R/4



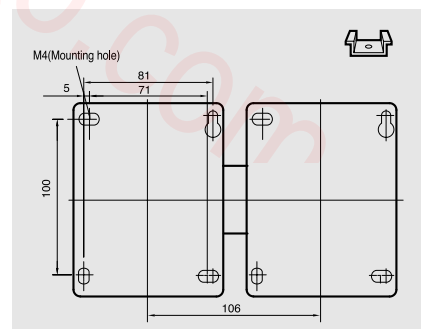
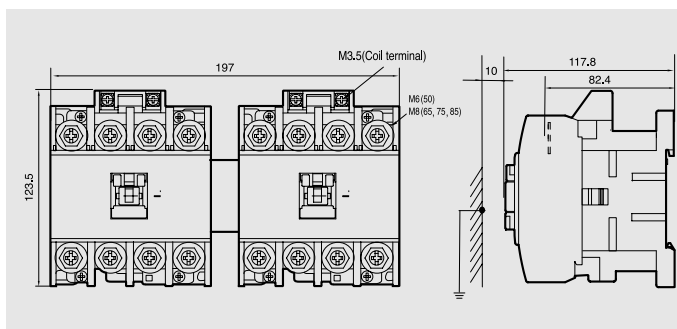
0.4kg

- GMC(D)-32/4
- GMC(D)-40/4



0.59kg

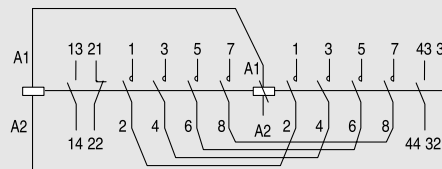
- GMC(D)-50/4
- GMC(D)-65/4
- GMC(D)-75/4
- GMC(D)-85/4



1.2kg

## Circuit diagram

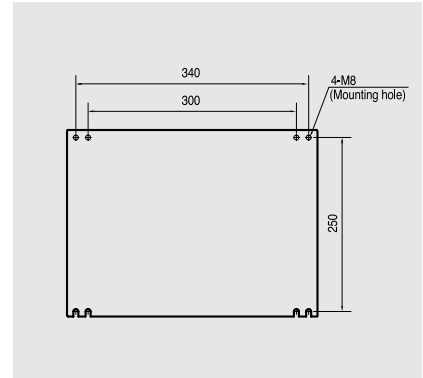
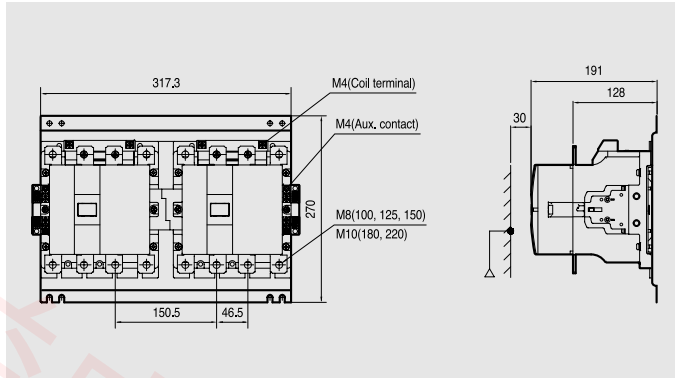
GMC-19R/4-85R/4



# Dimensions

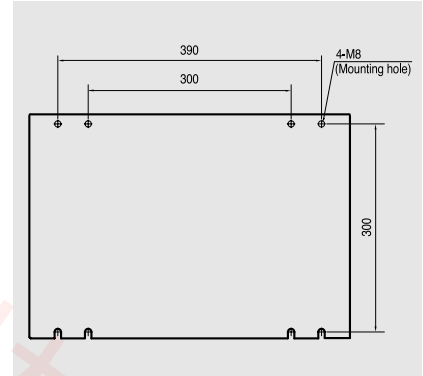
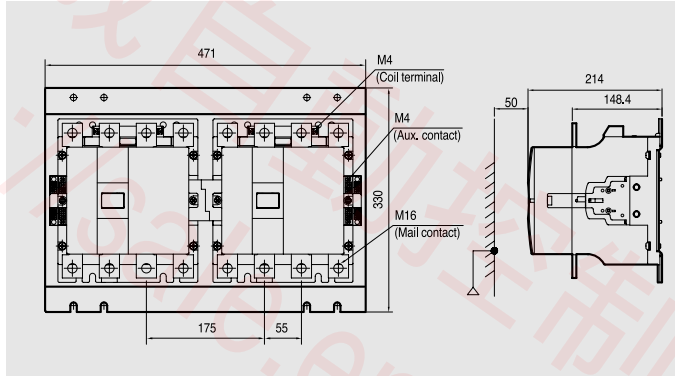
## Reversing contactors , 4-pole

- GMC-100/4R
- GMC-125/4R
- GMC-150/4R
- GMC-180/4R
- GMC-220/4R



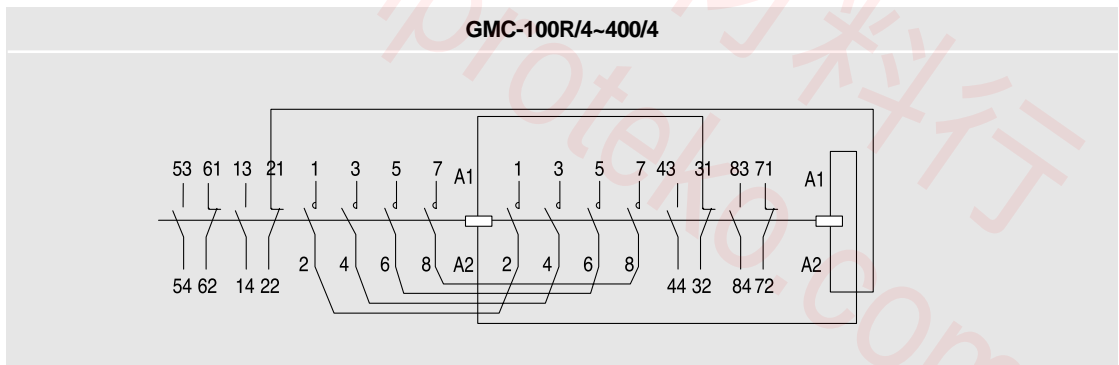
5.6kg

- GMC-300/4R
- GMC-400/4R



9.9kg

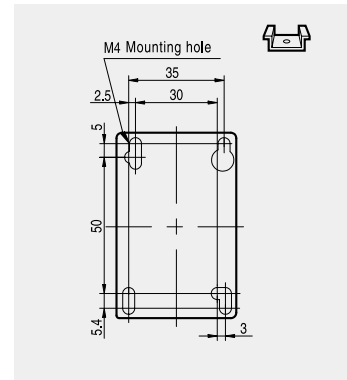
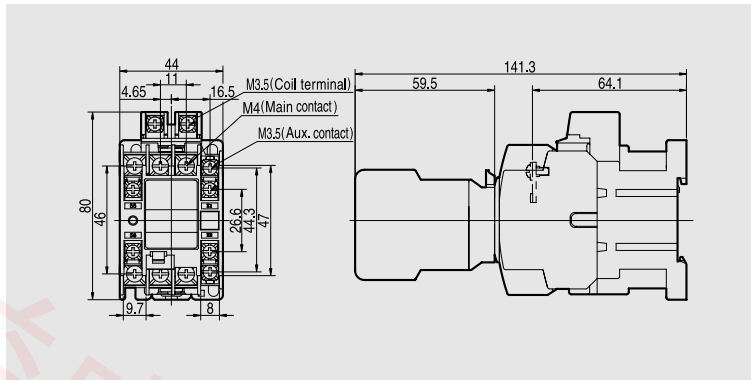
### Circuit diagram





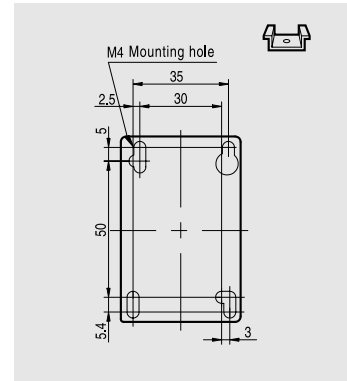
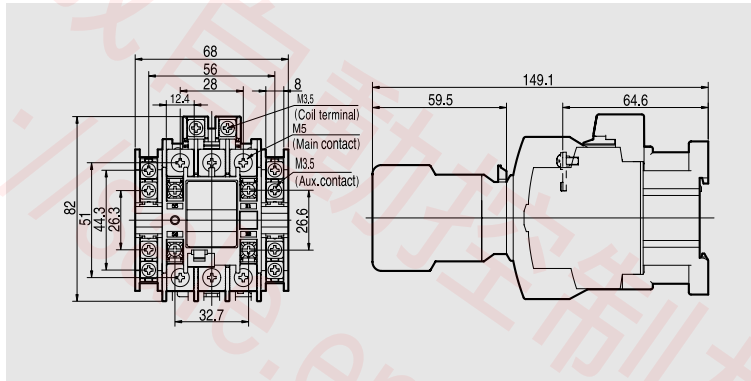
# Latching contactors

- GMC-9L
- GMC-12L
- GMC-18L
- GMC-22L



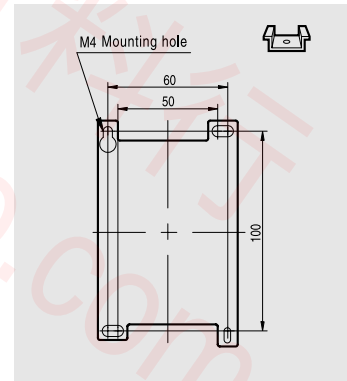
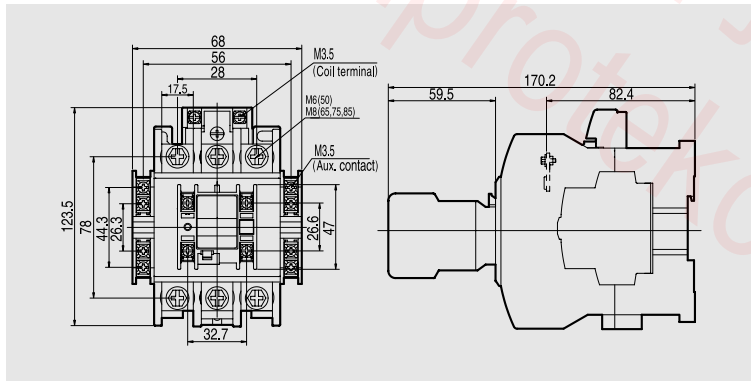
GMC-9L,12L:0.47kg  
GMC-18L,22L :0.51kg

- GMC-32L
- GMC-40L



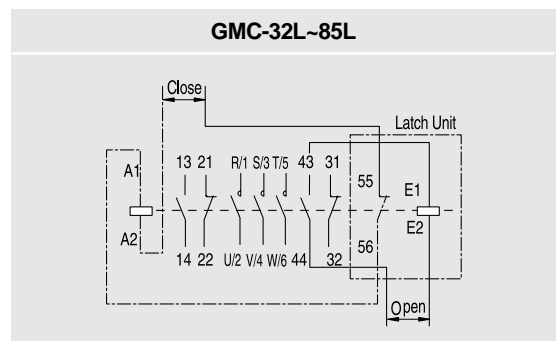
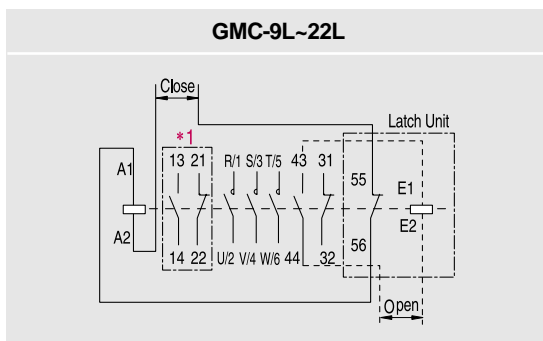
0.59kg

- GMC-50L
- GMC-65L
- GMC-75L
- GMC-85L



1.14kg

## Circuit diagram



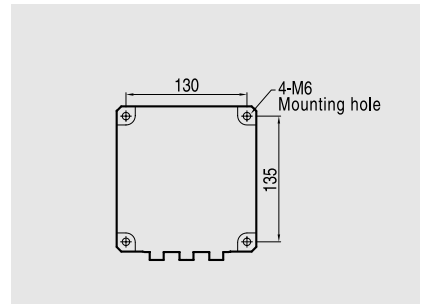
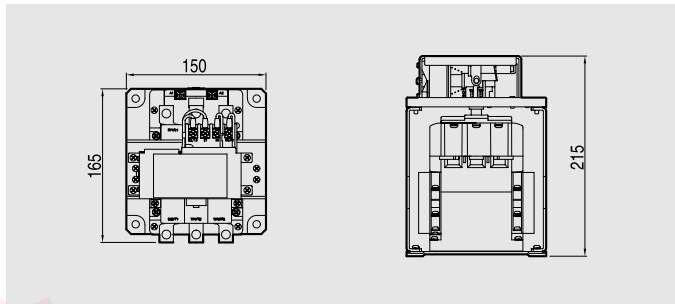
\* 1: Aux. contacts 2NO 2NC

# Dimensions

## Latching contactors

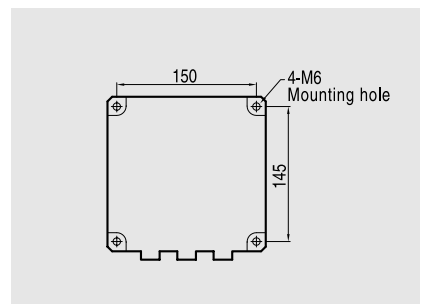
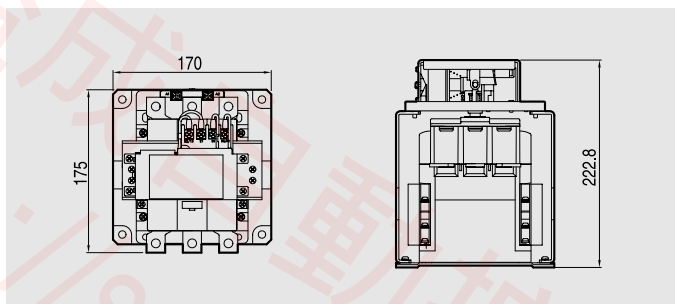
GMC-100L

GMC-125L



4.5kg

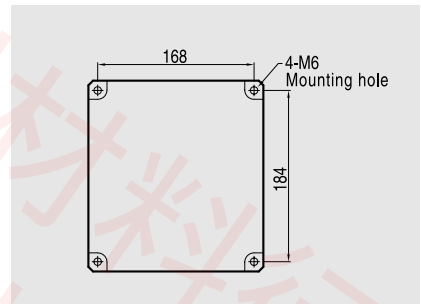
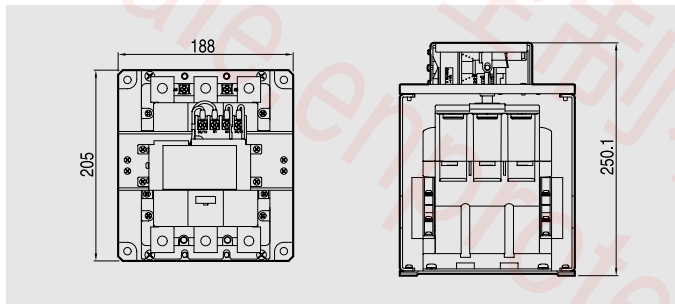
GMC-150L



5.1kg

GMC-180L

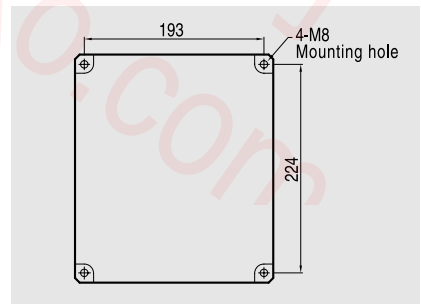
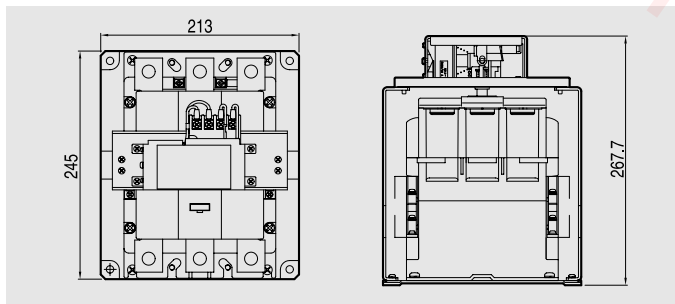
GMC-220L



7.4kg

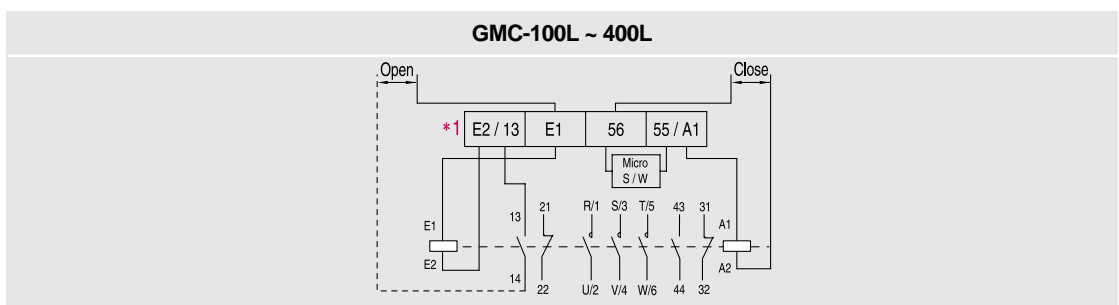
GMC-300L

GMC-400L



11.6kg

### Circuit diagram



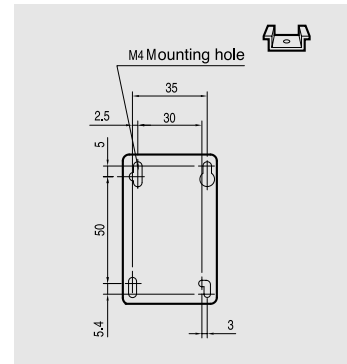
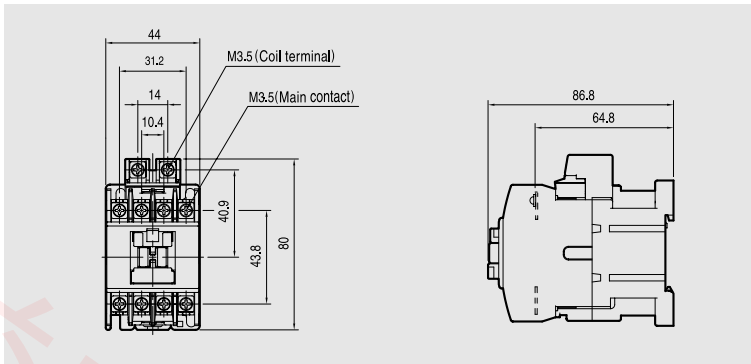
\* 1 : Customer wiring shown intermittent.





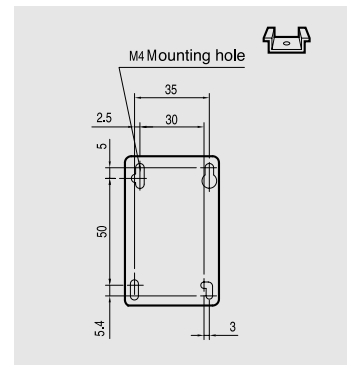
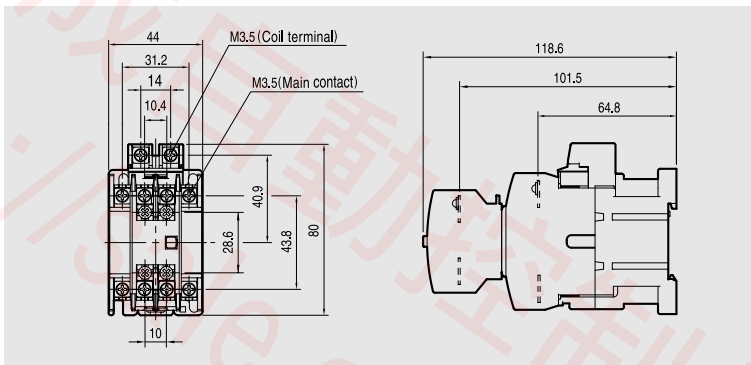
# Contactor relays, AC coil

**GMR-4**



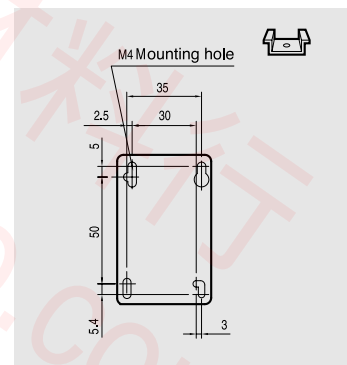
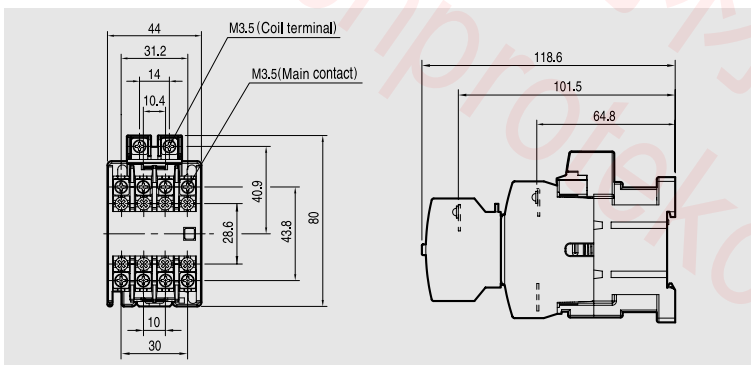
0.33kg

**GMR-6**



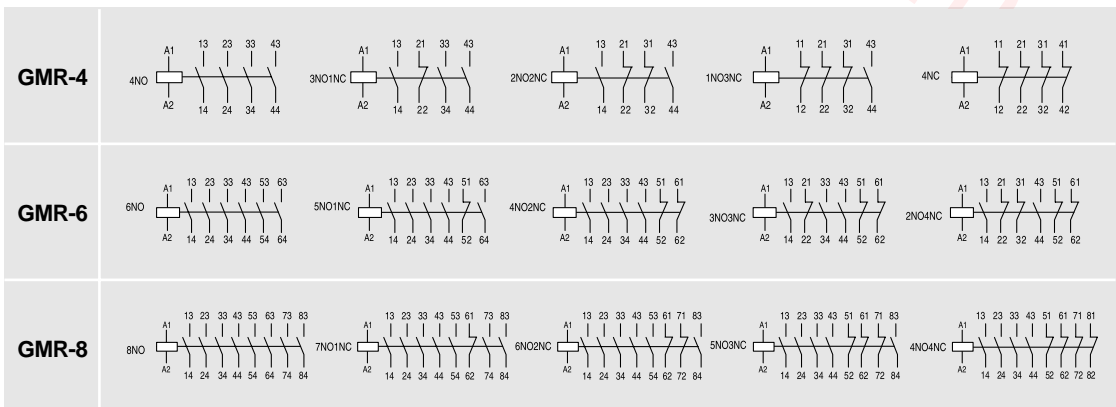
0.36kg

**GMR-8**



0.38kg

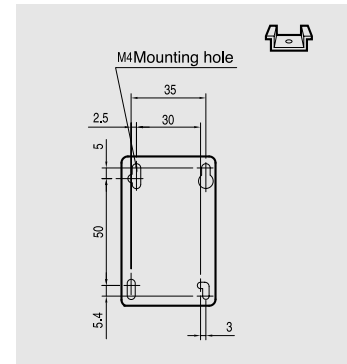
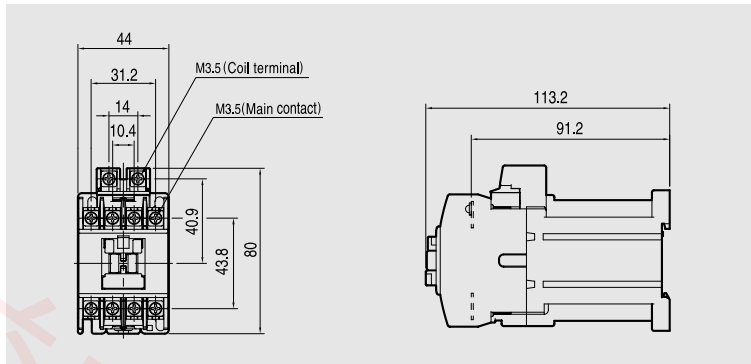
## Circuit diagram



# Dimensions

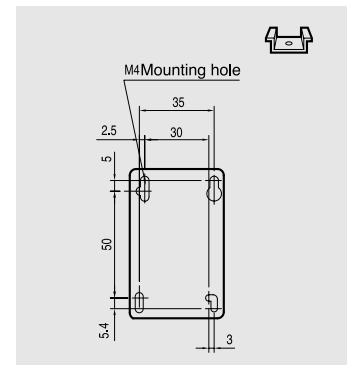
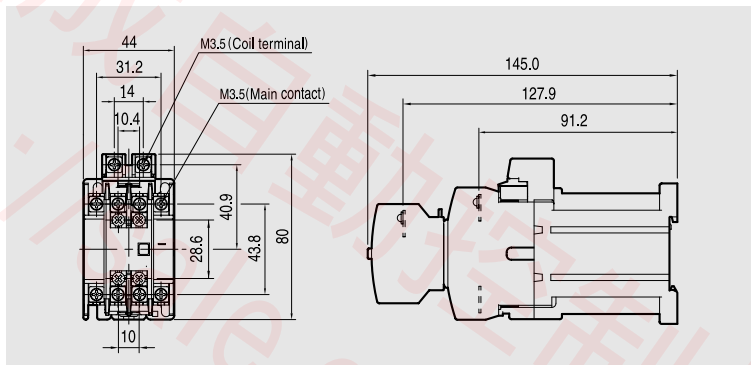
## Contactor relays, DC coil

**GMR-4D**



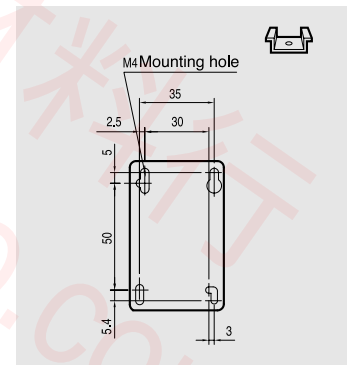
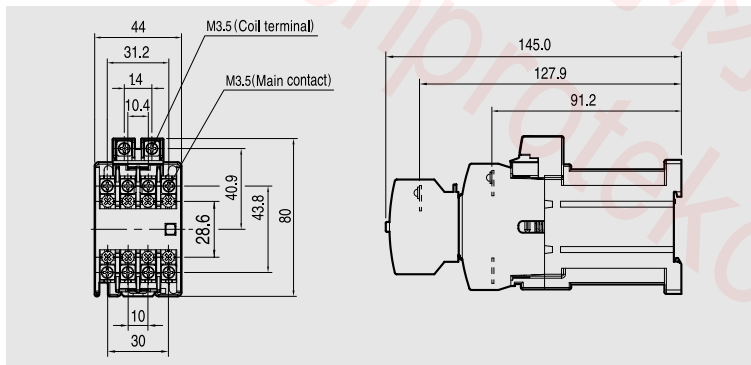
0.55kg

**GMR-6D**



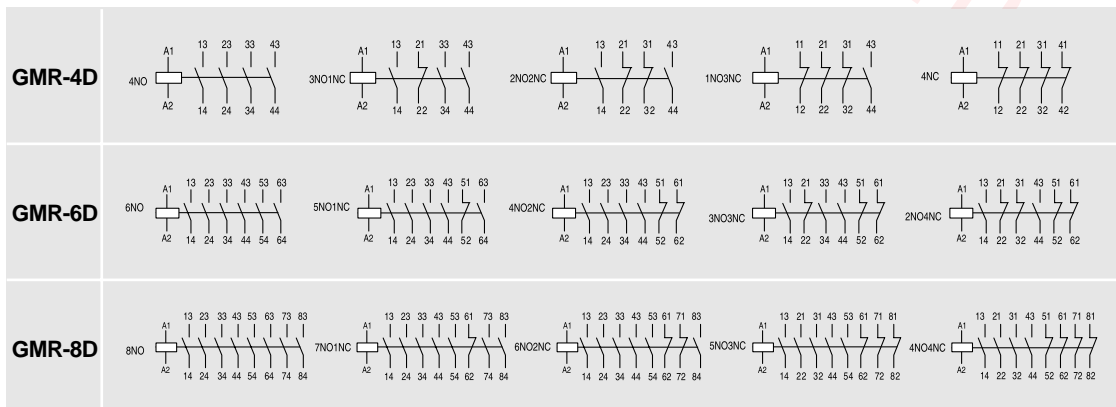
0.57kg

**GMR-8D**



0.59kg

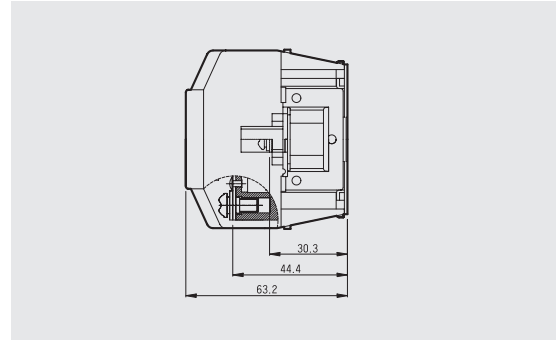
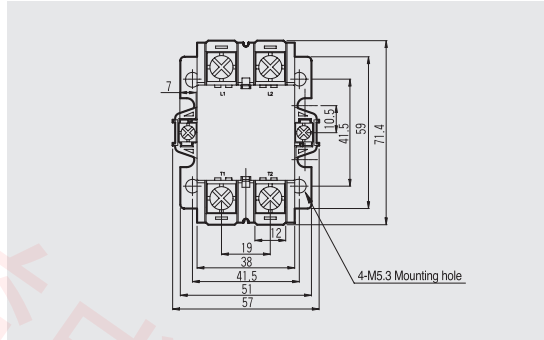
### Circuit diagram



# 2-pole AC Contactors

## Terminal type : TSBS

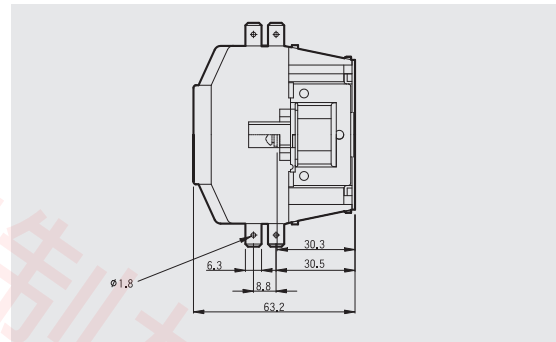
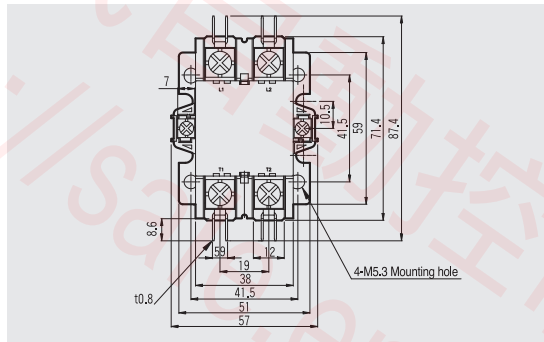
- SMC-20P2
- SMC-25P2
- SMC-30P2



0.25kg

## Terminal type : TQBS

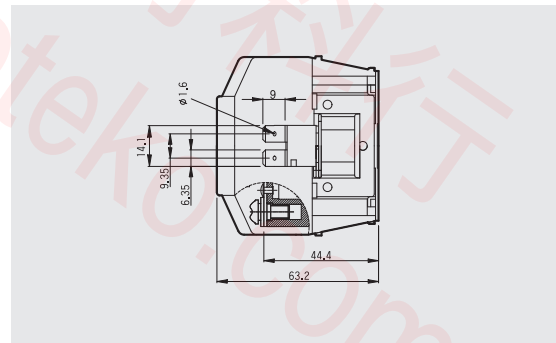
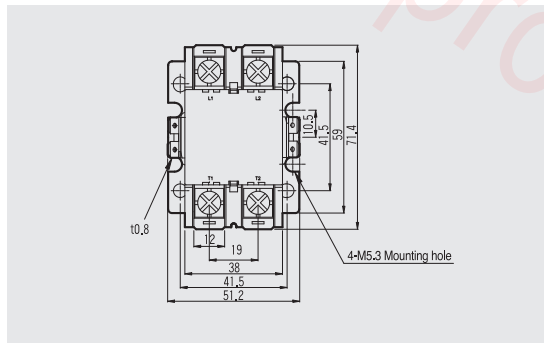
- SMC-20P2
- SMC-25P2



0.26kg

## Terminal type : TSBQ

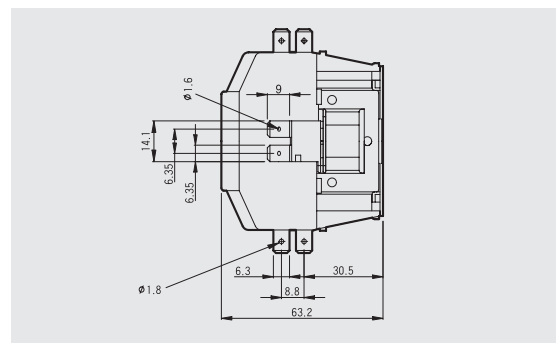
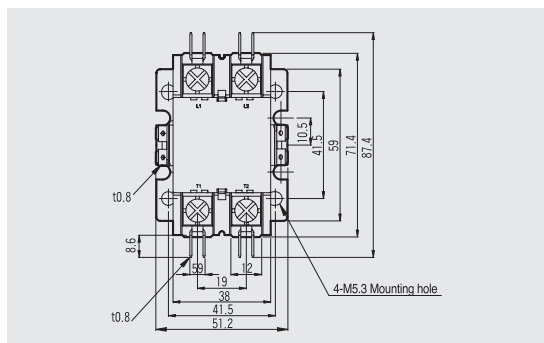
- SMC-20P2
- SMC-25P2
- SMC-30P2



0.25kg

## Terminal type : TQBQ

- SMC-20P2
- SMC-25P2



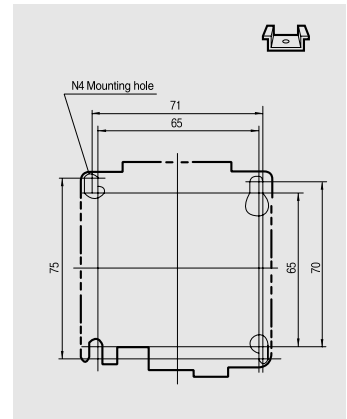
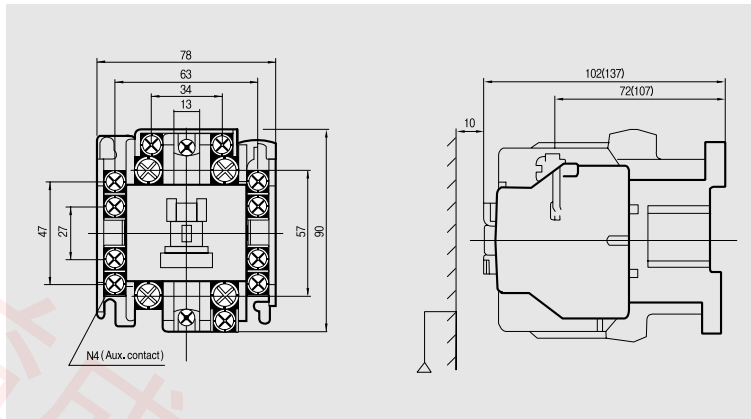
0.26kg

# Dimensions

## 2-pole DC Contactors

SMM-30P

SMM-30DP



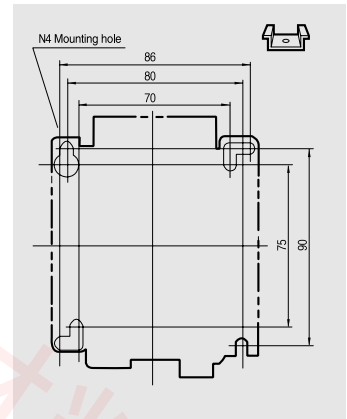
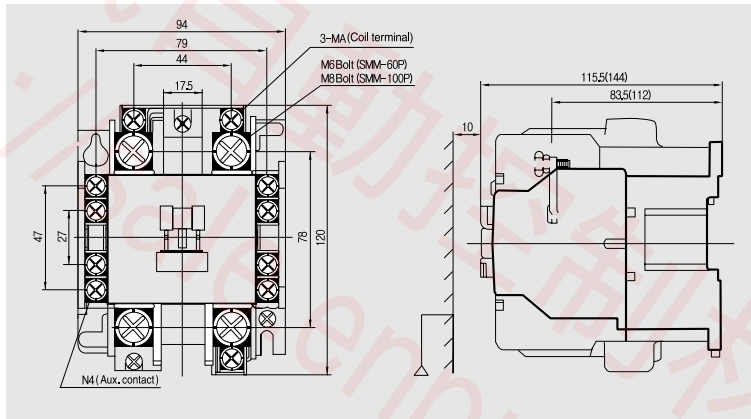
0.61(0.93)kg

SMM-60P

SMM-100P

SMM-60DP

SMM-100DP

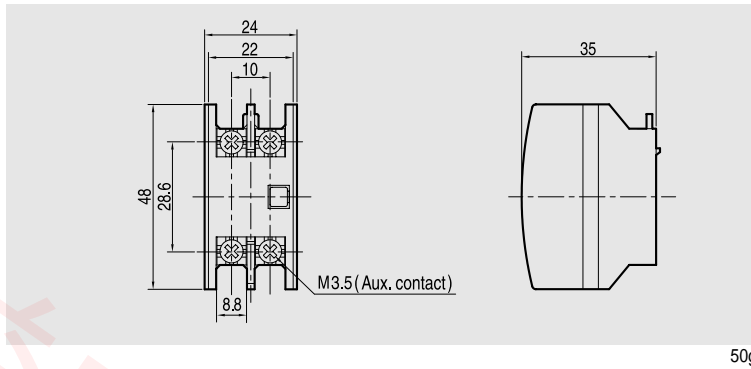


1.15(2.17)kg

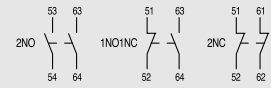


# Auxiliary contact blocks, front mount

**AU-2**

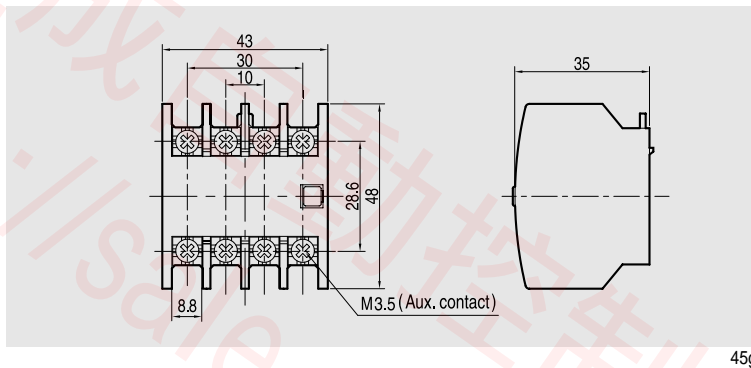


**Circuit diagram**

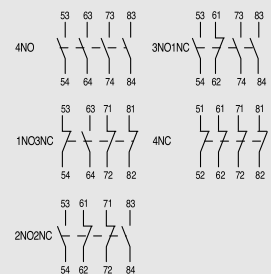


50g

**AU-4**



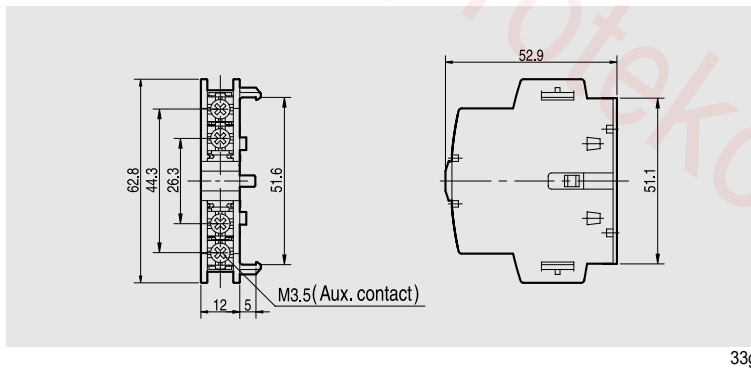
**Circuit diagram**



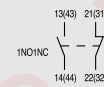
45g

# Auxiliary contact blocks, side mount

**AU-1**

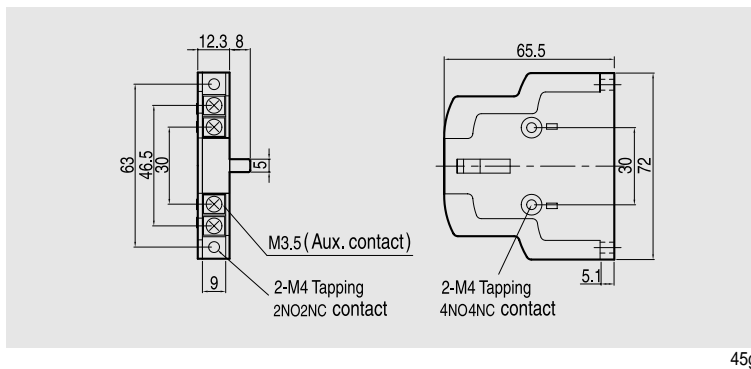


**Circuit diagram**

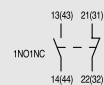


33g

**AU-100**



**Circuit diagram**

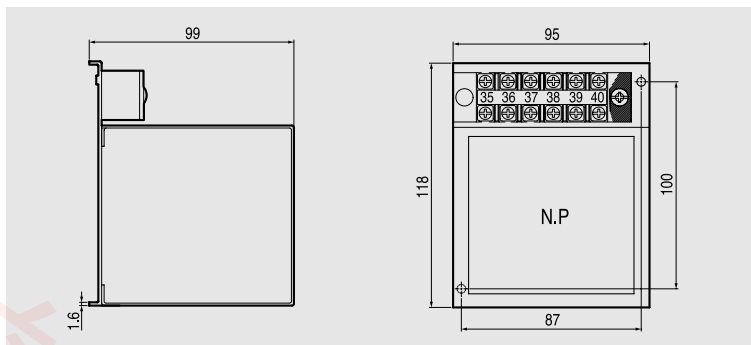


45g

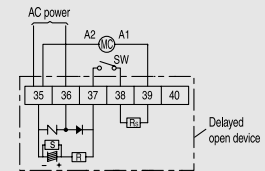
# Dimensions

## Delayed opening devices

AD-9



### Circuit diagram



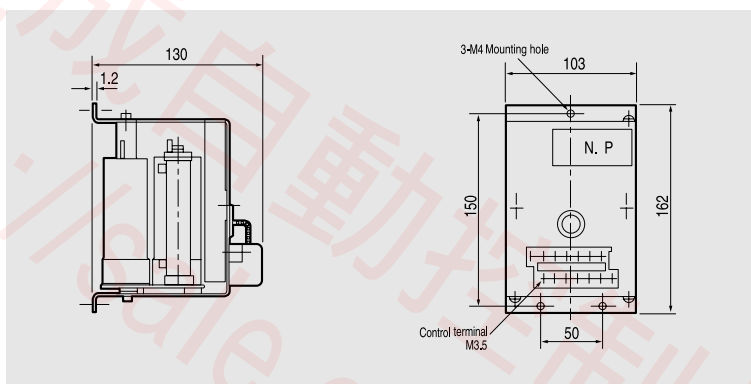
0.85kg

AD-50

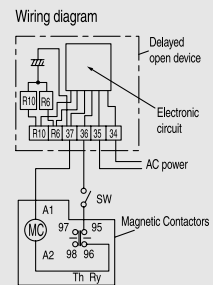
AD-100

AD-300

AD-600



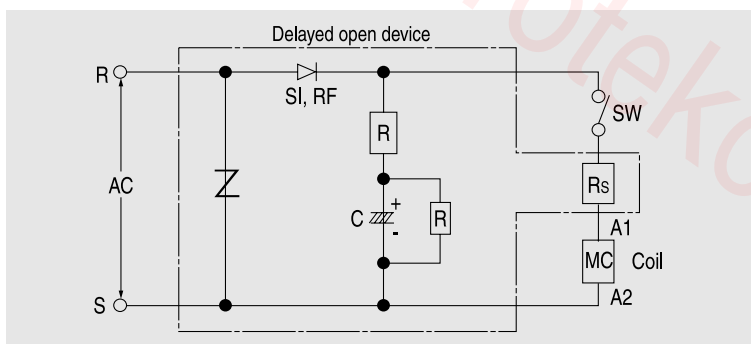
### Circuit diagram



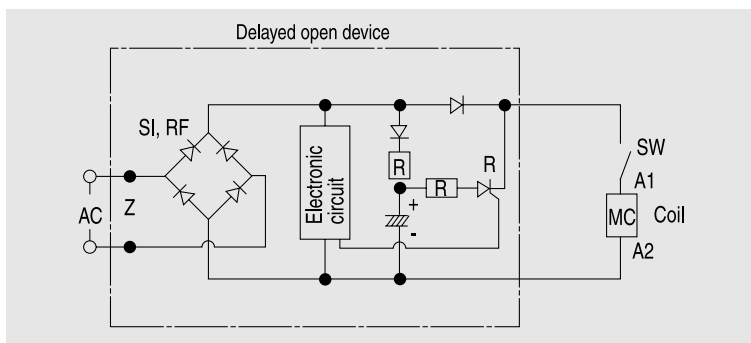
0.8kg

## Control circuit diagram

AD-9



AD-50-600

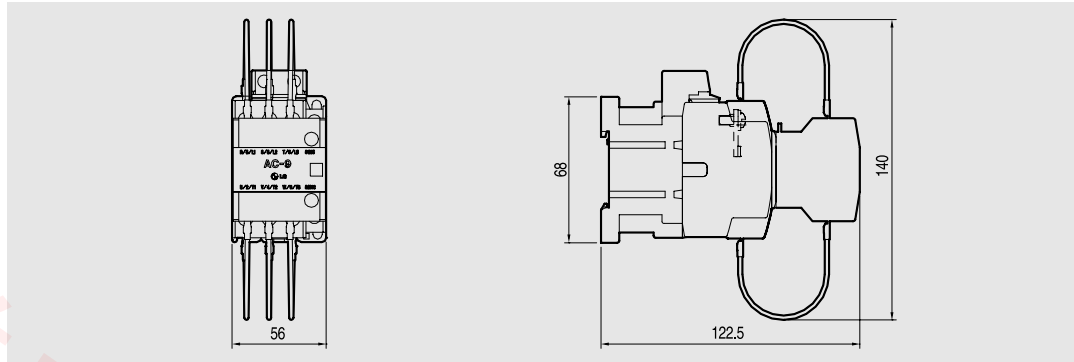


MC : Contactor  
 SW : Switch  
 SI, RF : Rectifier  
 C : Condenser  
 Rs : Resistance in series

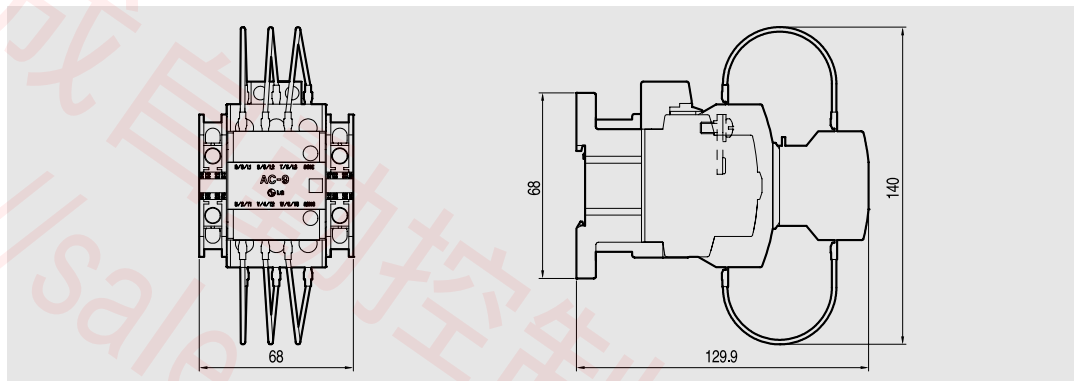
# Capacitor contactors



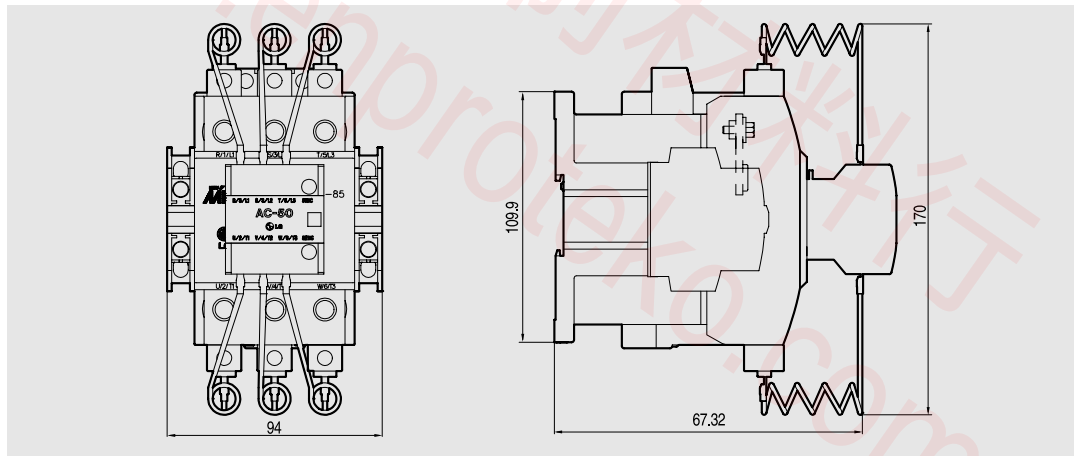
**GMC-9C~22C**



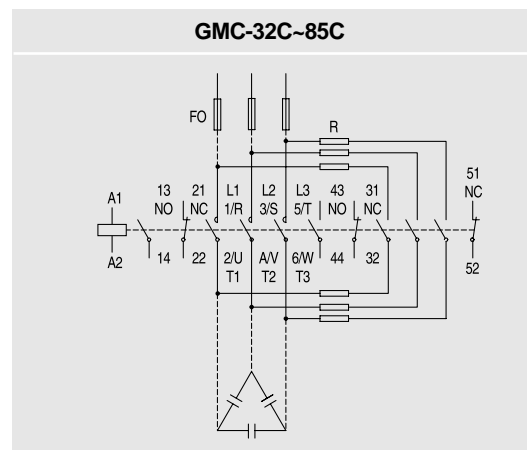
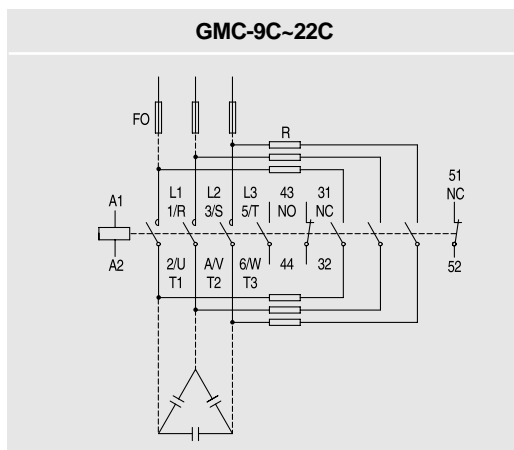
**GMC-32C, 40C**



**GMC-50C~85C**



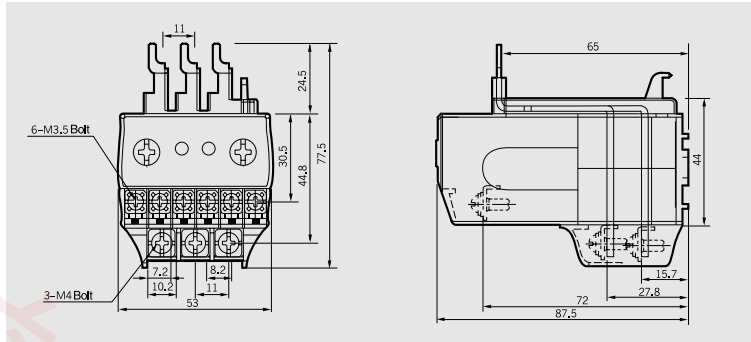
## Circuit diagram



# Dimensions

## Electronic Overload Relays

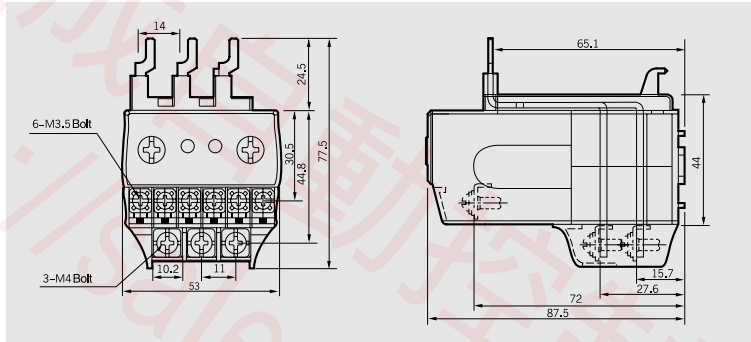
- GMP22-2P
- GMP22-3P
- GMP22-3PR



Terminal configuration : See Fig. 1 on the next page

0.18kg

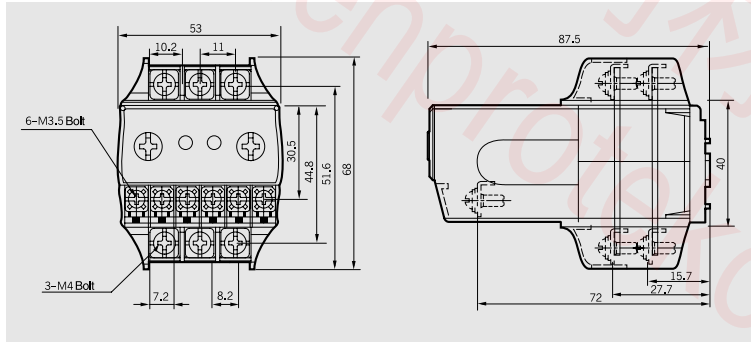
- GMP40-2P
- GMP40-3P
- GMP40-3PR



Terminal configuration : See Fig. 1 on the next page

0.20kg/0.22kg

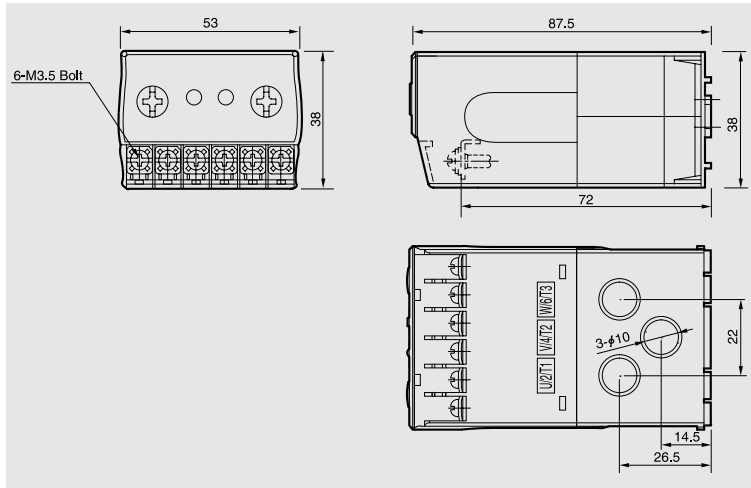
- GMP22-2S
- GMP22-3S
- GMP22-3SR
- GMP40-2S
- GMP40-3S
- GMP40-3SR



Terminal configuration : See Fig. 2 on the next page

0.19kg/0.21kg

- GMP22-2T
- GMP22-3T
- GMP22-3TR
- GMP40-2T
- GMP40-3T
- GMP40-3TR



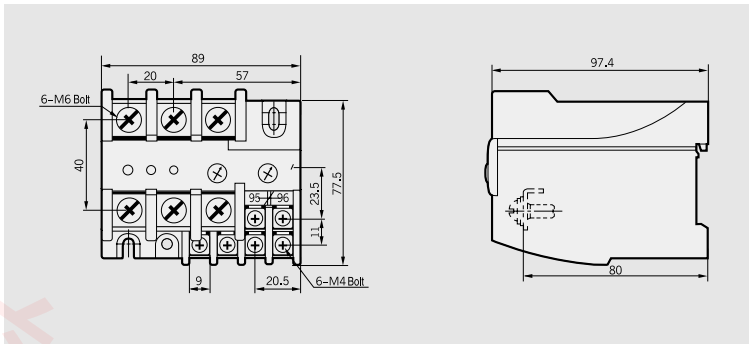
Terminal configuration : See Fig. 3 on the next page

0.14kg/0.16kg





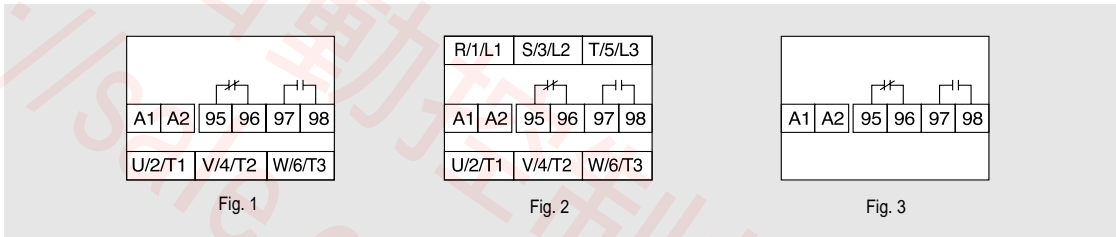
- GMP80-2S
- GMP80-3S
- GMP80-3SR



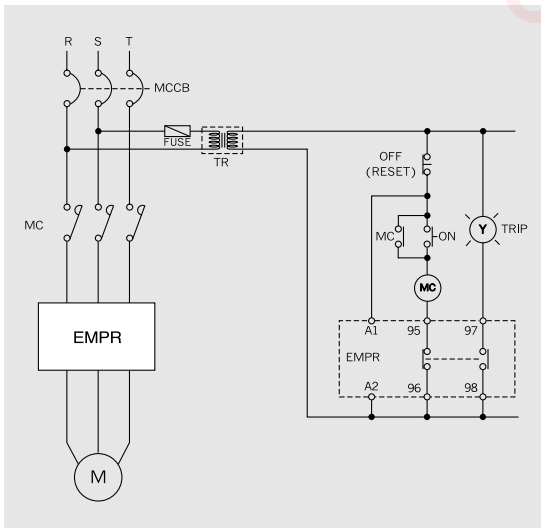
Terminal configuration : See Fig. 2

0.42kg/0.46kg

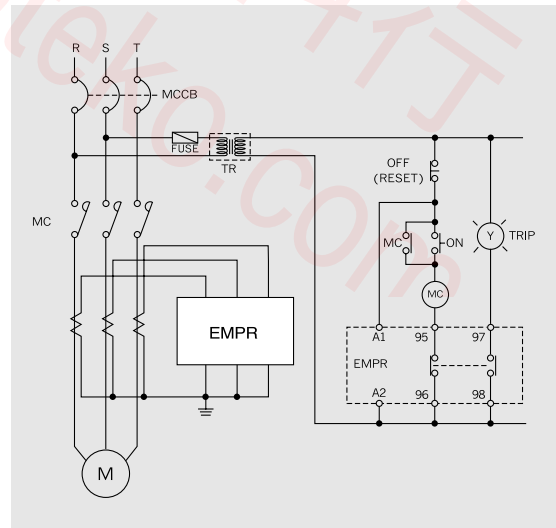
### Terminal configuration



### Circuit diagram



Without additional CTs

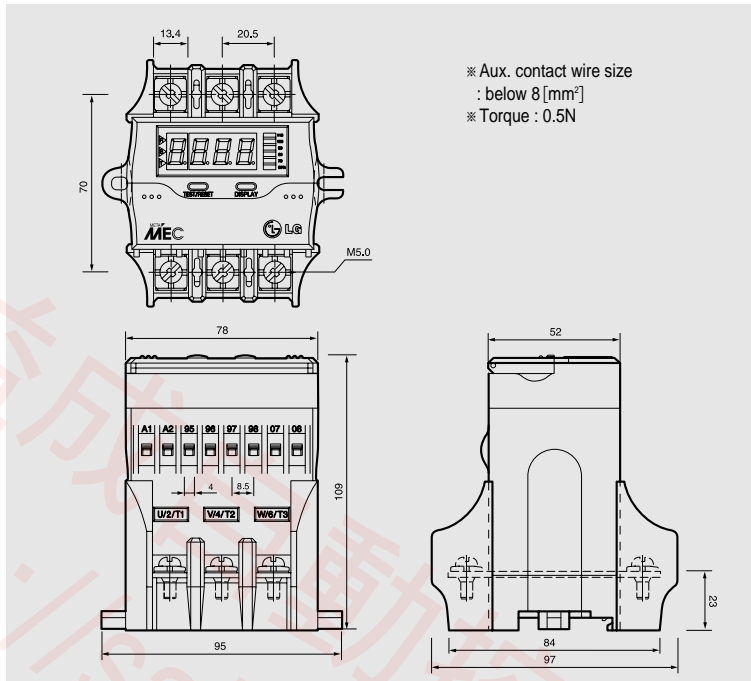


In case of using additional CTs

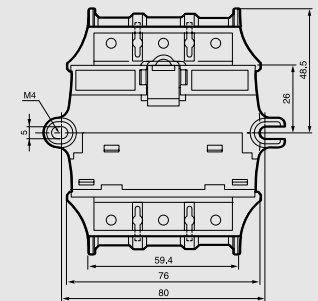
# Dimensions

## Digital motor protection relay

DMP□-S  
DMP□-SZ



Mounting dimensions

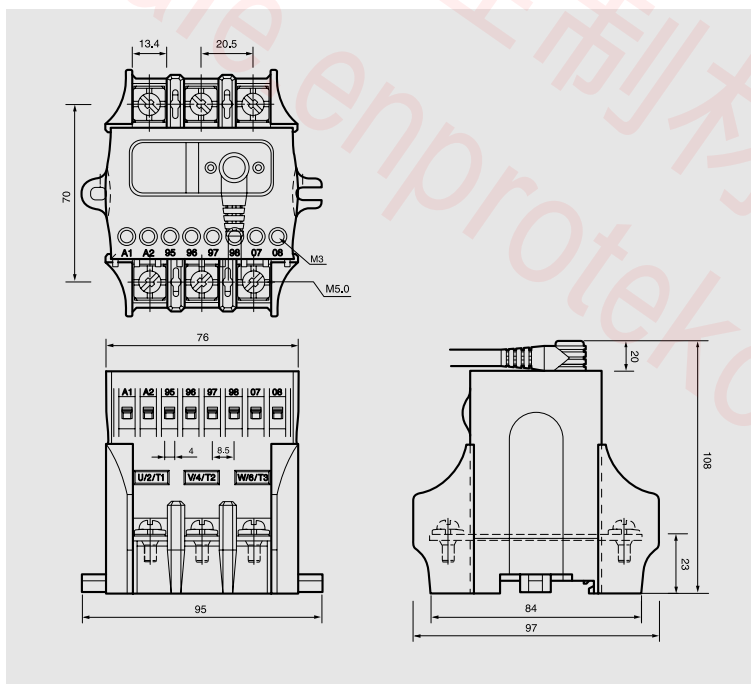


R/1/L1	S/3/L2	T/5/L3
A1 A2	95 96 97	98 07 08
U/2/T1	V/4/T2	W/6/T3

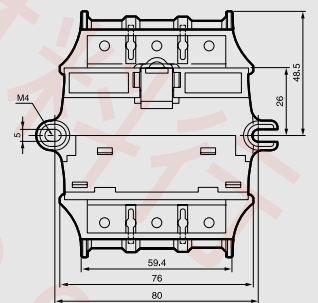


0.7kg

DMP□-S  
DMP□-SZ



Mounting dimensions

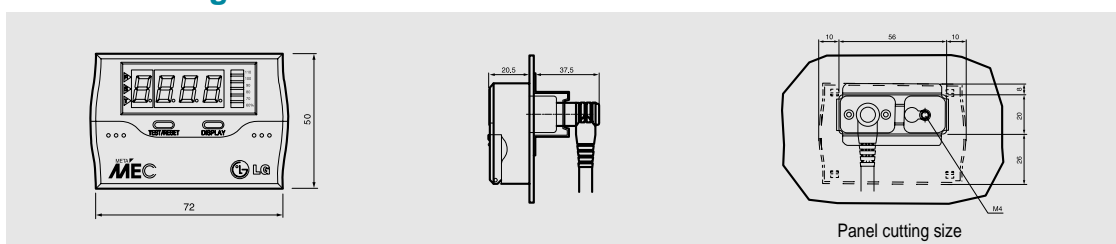


R/1/L1	S/3/L2	T/5/L3
A1 A2	95 96 97	98 07 08
U/2/T1	V/4/T2	W/6/T3



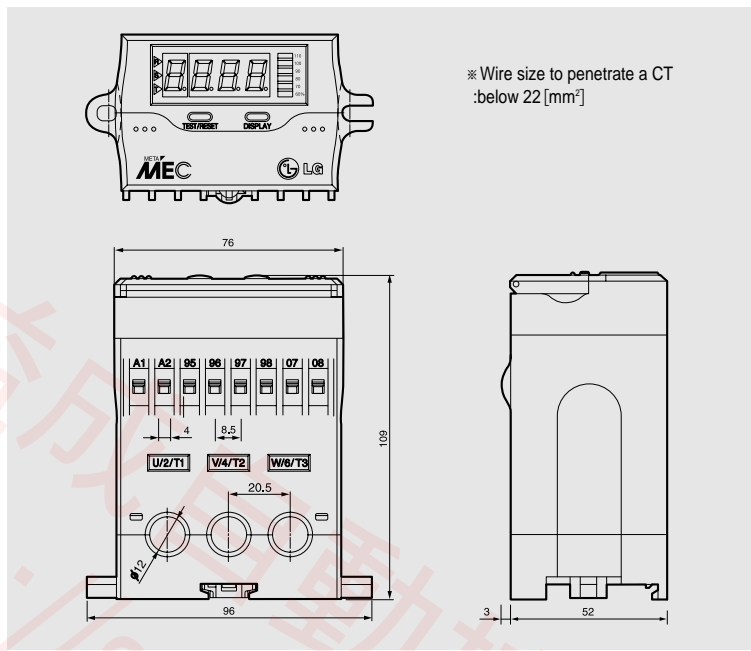
0.64kg

### Panel mounting

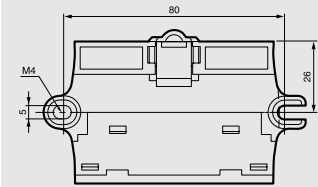




DMP□-T  
DMP□-TZ



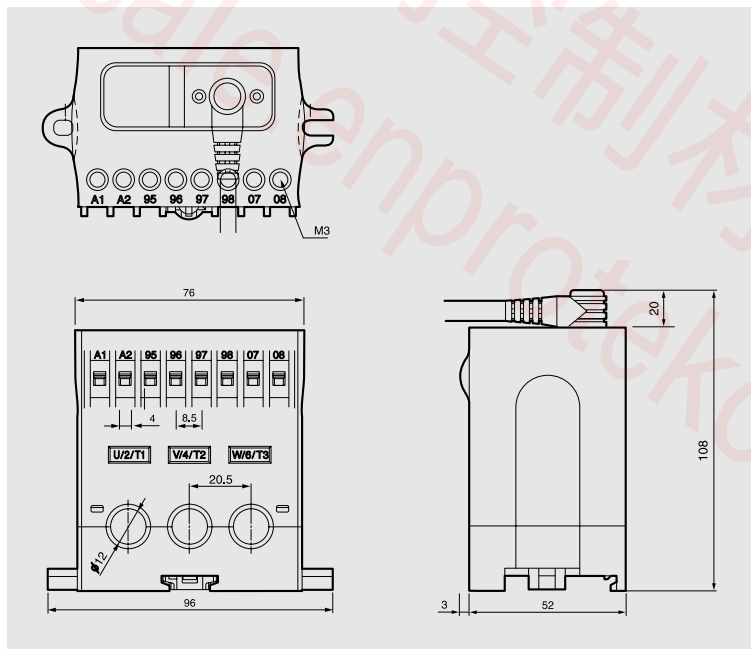
Mounting dimensions



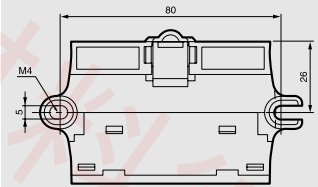
R/1/L1	S/3/L2	T/5/L3
A1	A2	95
96	97	98
07	08	
U/2/T1	V/4/T2	W/6/T3

0.56kg

DMP□-T  
DMP□-TZ



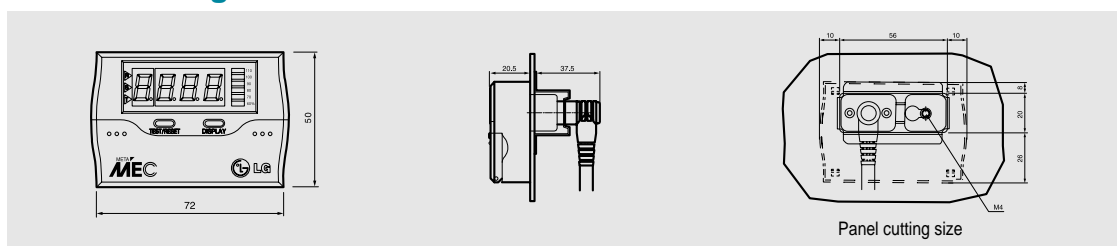
Mounting dimensions



R/1/L1	S/3/L2	T/5/L3
A1	A2	95
96	97	98
07	08	
U/2/T1	V/4/T2	W/6/T3

0.5kg

Panel mounting



- Note) 1. In extension type, the digital EMPR is calibrated with combining the display unit and mainbody so, please cautious not to combine the display unit and mainbody with different part No.  
2. The 07-08 contacts are the ZCT input terminal (Digital EMPR with ground fault function)