

Thermal overload relays



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Thermal overload relays

Characteristics

Application

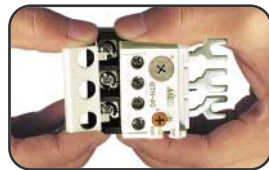
The TOR protect the motors Overload, Locking, Open phase(differential)

Characteristics



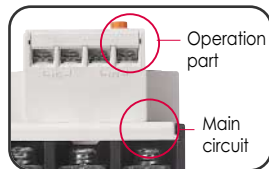
① Direct mounting structure

The TOR is mounted directly to the contactor without additional breakers.



② Safety cover

The finger proof safety cover prevent accidental contact with electric conductor



③ Separation of power part and operation part

The main circuit and the operation part are separately designed within the same unit for GTH-22, 40 and 85



④ Easy operation

● 3steps current setting

Rotating the reset button using a crosshead screw driver and set the rated current

● Manual / Auto reset setting

Manual reset

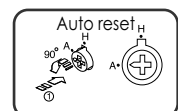
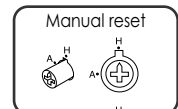
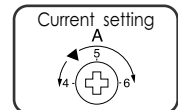
Rotate the reset button to the "H" position and this will protrude.

Auto reset

Press rotation the reset button to the "A" position.

● Trip / reset indicator

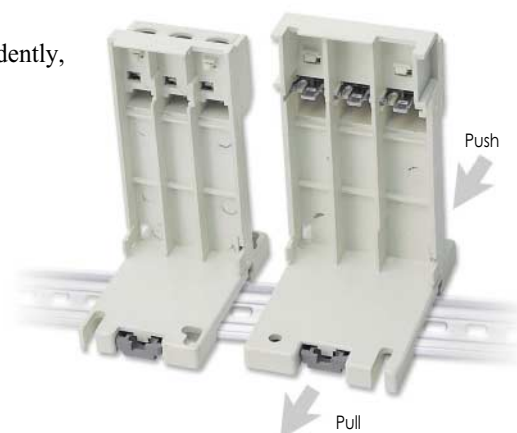
If the TOR is tripped, it protrudes 2~3mm and indicates the tripped condition.



TOR-DIN rail adapter kit (AZ-□H)

In case of installing the overload relays independently, the separate mounting kits are available for screw or 35mm Din-rail mounting.
(Applied model : GTH-22, 40, 85)

Note) Refer to Dimensions on page 207.



Rating of the Aux.contacts

Type	Rated current (A)				
	AC15			DC13	
	110V	220V	550V	110V	110V
GTH-22, 40, 85	2.5(0.3)	2(0.3)	1(0.3)	0.28(0.28)	0.14(0.14)
GTH-100, 150, 220, 400, 600	2.5(0.3)	2(0.3)	1(0.3)	0.28(0.28)	0.14(0.14)

Note) Are the ratings of NO contact under auto reset mode.

Combination of Contactor and TOR

Contactors	Thermal Overload Relays
GMC - 9	GTH(K) - 22
GMC - 12	
GMC - 18	
GMC - 22	
GMC - 32	GTH(K) - 40
GMC - 40	
GMC - 50	
GMC - 65	GTH(K) - 85
GMC - 75	
GMC - 85	
GMC - 100	GTH(K) - 100
GMC - 125	
GMC - 150	GTH(K) - 150
GMC - 180	GTH(K) - 220
GMC - 220	
GMC - 300	GTH(K) - 400
GMC - 400	
GMC - 600	
GMC - 800	



Thermal overload relays

Setting range selection guide

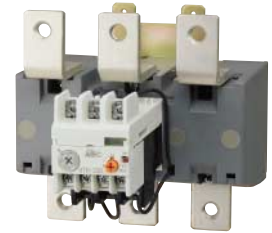
Class 10A



GTK-22



GTK-100



GTK-220

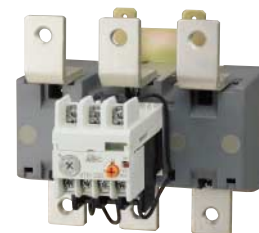
Three phase (4 pole) motor max. power						GTH(K)-22	GTH(K)-40	GTH(K)-85	GTH(K)-100	GTH(K)-150	GTH(K)-220	GTH(K)-400	GTH(K)-600
220V kW	380V kW	415V kW	440V kW	550V kW	660V kW								
•	•	•	•	•	•	0.1~0.16							
•	•	•	•	•	•	0.16~0.2							
•	•	•	•	•	0.37	0.25~0.4							
•	•	•	•	0.37	0.55	0.4~0.63							
•	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								
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								
•	•	4	4	•	•	5~8	6~9						
2.2	4	5.5	5.5	•	•								
3	5.5	5.5	5.5	5.5	7.5	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								
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			63~85	54~80	54~80			
30	50	60	60	75	85								
25	51	55	59	63	90				65~100	65~100	70~100		
35	70	75	80	85	125								
30	59	59	63	80	110				85~125	85~125	85~125	85~125	
40	80	80	85	110	150								
45	80	80	90	100	129					100~150	100~160	100~160	
60	110	110	125	135	175								
55	90	100	110	110	160						120~180	120~180	
75	125	135	150	150	220								
63	110	129	140	160	200						160~240	160~240	
85	150	175	190	220	270								
80	150	160	160	200	257							200~300	200~300
110	205	220	220	270	350								
110	185	200	220	257	335								
150	250	270	300	350	455							260~400	260~400
180	315	355	375	425	500								
245	430	480	510	580	680								400~600
220	400	425	450	500	•								520~800
300	545	580	610	680	•								
Applied contactors for direct starters						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



GTK-22/L



GTK-40/L



GTK-220/L

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								
•	•	4	4	•	•	5~8	6~9						
•	•	5.5	5.5	•	•								
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			63~85	54~80	54~80			
30	50	60	60	75	85								
25	51	55	59	63	90				65~100	65~100	65~100		
35	70	75	80	85	125								
30	59	59	63	80	110				85~125	85~125	85~125	85~125	
40	80	80	85	110	150								
45	80	80	90	100	129					100~150	100~160	100~160	
60	110	110	125	135	175								
55	90	100	110	110	160						120~180	120~180	
75	125	135	150	150	220								
63	110	129	140	160	200						160~240	160~240	
85	150	175	190	220	270								
80	150	160	160	200	257							200~300	200~300
110	205	220	220	270	350								
110	185	200	220	257	335							260~400	260~400
150	250	270	300	350	455								
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	•								
Applied contactors for direct starters						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
GTH(K)-22, 40, 85	2.5(0.3)	2(0.3)	1(0.3)	0.28(0.28)	0.14(0.14)
GTH(K)-100, 150, 220, 400, 600	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.

Electronic overload relays

Specification

Ratings



Model		GMP22-2P		GMP22-2P(1a1b) GMP22-3P/3PR		GMP22-2S	GMP22-3S/3SR	GMP22-2T	GMP22-3T/3TR	
Type		Pin type				Screw type		Tunnel type		
No. of CT		2CT		2CT	3CT	2CT		3CT	2CT	3CT
Protection	Overcurrent	●		●	●	●		●	●	●
	Phase failure	● Note1)		●	●	●		●	●	●
	Stall	●		●	●	●		●	●	●
	Asymmetry	—		—	●	—		●	—	●
	Reverse phase	—		—	●(3PR)	—		●(3SR)	—	●(3TR)
Current setting range(A)		0.3~1.5								
		1~5								
		4.4~22								
Operating time characteristics		Inverse time characteristics(GMP22-2PD: Definite time characteristics)								
Time setting (sec)	Inverse time	0~30 sec								
	Definite D-time	0.2~60 sec for GMP22-2PD								
	O-time	5sec (Fixed) for GMP22-2PD								
Tolerance	Current	± 5%								
	Time	± 5%(or±0.5sec)								
Control power	Voltage	AC 110V/220V(± 10%)		AC 100~260V						
	Frequency	50/60Hz								
Aux. contact	Contact	1SPDT(1c) Note2)			2SPST(When power applied, 1a1b)					
	Ratings	5A/250VAC Resistive load			3A/250VAC Resistive load					
	Operate	(95 ⇄ 96 Close)			(95 ⇄ 96 Close)			(97 ⇄ 98 Open)		
Insulation resistance		Min 100MΩ at 500Vdc								
Surge endurance(IEC 1000-4-5)		1.2×50μs 6kV Apply the standard wave								
Fast transient burst(IEC 1000-4-4)		2.5kV/5min.								
Environment Temperature	Operation	-25~70℃								
	Storage	-30~80℃								
	Relative humidity	30~90%RH(No freezing)								
Trip indicator		Red LED		Red/Green LED		Red LED	Red/Green LED	Red LED	Red/Green LED	
Dimension(mm)	W×H×D	44×71×78		53×77.5×87.5		53×68×87.5		53×38×87.5		
Mounting type		Direct mount onto a MC				Separate mount(Screw or Din-rail) Note3)				
Applied MC		GMC-9, GMC-12, GMC-18, GMC-22								
Certification		UL, cUL, CE								

Note1) When it is 2CT model, only two-phase protection is available

Note2) 1a1b Aux. switch is optional in GMP 22-2P model

Note3) The bracket for Din-rail mount is optional

Ratings



Model		GMP40-2P	GMP40-3P/3PR	GMP40-2S	GMP40-3S/3SR	GMP40-2T	GMP40-3T/3TR	GMP80-2S	GMP80-3S/3SR
Type		Pin type		Screw type		Tunnel type		Screw type	
No. of CT		2CT	3CT	2CT	3CT	2CT	3CT	2CT	3CT
Protection	Overcurrent	●	●	●	●	●	●	●	●
	Phase failure	●	●	●	●	●	●	●	●
	Stall	●	●	●	●	●	●	●	●
	Asymmetry	—	●	—	●	—	●	—	●
	Reverse phase	—	●(3PR)	—	●(3SR)	—	●(3TR)	—	●(3SR)
Current setting range(A)		4~20						16~80	
		8~40							
Operating time characteristics		Inverse time characteristics							
Time setting (sec)	Inverse time	0~30 sec							
	Reset time	Manual reset (Prompt)							
		Reset after 1 Min.(Optional)							
Tolerance	Current	±5%							
	Time	±5%(or±0.5sec)							
Control power	Voltage	AC 100~260V							
	Frequency	50/60Hz							
Aux. contact	Contact	2SPST(When power applied, 1a1b)							
	Rating	3A/250VAC Resistive load							
	Operate	(95 ~96 Close)				(97~1 98 Open)			
Insulation resistance		Min 100MΩ at 500Vdc							
Surge endurance(IEC 1000-4-5)		1.2 × 50μs 6kV Apply the standard wave							
Fast transient burst(IEC 1000-4-4)		2.5kV/5min.							
Environment	Operation	-25~70℃							
Temperature	Storage	-30~80℃							
	Relative humidity	30~90%RH((No freezing)							
Trip indicator		Red LED	Red/Green LED	Red LED	Red/Green LED	Red LED	Red/Green LED	Red LED	2Red LEDs
Dimension(mm)	W × H × D	53 × 77.5 × 87.5		53 × 68 × 87.5		53 × 38 × 87.5		89 × 77.5 × 97.4	
Mounting type		Direct mount onto a MC		Separate mount(Screw or Din-rail)				Direct/Separate mount (Screw or Din-rail)	
Applied MC		GMC-32, GMC-40						GMC-50, GMC-65, GMC-75, GMC-85	
Certification		UL, cUL, CE							

Digital motor protection relays

Specification



DMP□-S & DMP□-Sa



DMP□-T & DMP□-Ta



Model No.			DMP06-S/Sa	DMP60-S/Sa	DMP06-T/Ta	DMP60-T/Ta
Wiring			Screw type		Tunnel type	
Panel mount			Unit or Extension Note1)			
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 Note2)	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 Note3)		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℃			
		Storage	-30~80℃			
	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 part 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

Mini overload relays

Bimetallic style

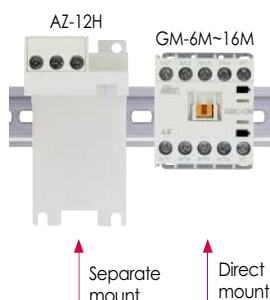


Description

- 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 • 0.14	GTH-12M/3 • 0.14	GTH-12M • 0.14
0.16 - 0.25	GTK-12M • 0.21	GTH-12M/3 • 0.21	GTH-12M • 0.21
0.25 - 0.4	GTK-12M • 0.33	GTH-12M/3 • 0.33	GTH-12M • 0.33
0.4 - 0.63	GTK-12M • 0.52	GTH-12M/3 • 0.52	GTH-12M • 0.52
0.63 - 1	GTK-12M • 0.82	GTH-12M/3 • 0.82	GTH-12M • 0.82
1 - 1.6	GTK-12M • 1.3	GTH-12M/3 • 1.3	GTH-12M • 1.3
1.6 - 2.5	GTK-12M • 2.1	GTH-12M/3 • 2.1	GTH-12M • 2.1
2.5 - 4	GTK-12M • 3.3	GTH-12M/3 • 3.3	GTH-12M • 3.3
4 - 6	GTK-12M • 5	GTH-12M/3 • 5	GTH-12M • 5
5 - 8	GTK-12M • 6.5	GTH-12M/3 • 6.5	GTH-12M • 6.5
6 - 9	GTK-12M • 7.5	GTH-12M/3 • 7.5	GTH-12M • 7.5
7 - 10	GTK-12M • 8.5	GTH-12M/3 • 8.5	GTH-12M • 8.5
9 - 13	GTK-12M • 12	GTH-12M/3 • 12	GTH-12M • 12
12 - 16	GTK-12M • 14	GTH-12M/3 • 14	GTH-12M • 14

Auxiliary (Trip) contact rating

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

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

For more information

- Drawings ➔ page 174
- Mini Contactors ➔ page 24~27
- Starters ➔ page 50
- Separate mounting unit ➔ page 113

Certificate
CE, ULcUL

Thermal overload relays, Class 10A

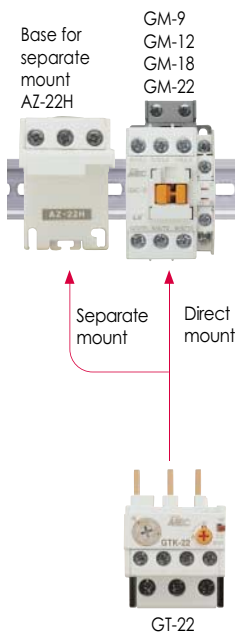
22A



GT-22

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



Catalog No.

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
0.1 - 0.16	GTK-22 · 0.14	GTH-22/3 · 0.14	GTH-22 · 0.14
0.16 - 0.25	GTK-22 · 0.21	GTH-22/3 · 0.21	GTH-22 · 0.21
0.25 - 0.4	GTK-22 · 0.33	GTH-22/3 · 0.33	GTH-22 · 0.33
0.4 - 0.63	GTK-22 · 0.52	GTH-22/3 · 0.52	GTH-22 · 0.52
0.63 - 1	GTK-22 · 0.82	GTH-22/3 · 0.82	GTH-22 · 0.82
1 - 1.6	GTK-22 · 1.3	GTH-22/3 · 1.3	GTH-22 · 1.3
1.6 - 2.5	GTK-22 · 2.1	GTH-22/3 · 2.1	GTH-22 · 2.1
2.5 - 4	GTK-22 · 3.3	GTH-22/3 · 3.3	GTH-22 · 3.3
4 - 6	GTK-22 · 5	GTH-22/3 · 5	GTH-22 · 5
5 - 8	GTK-22 · 6.5	GTH-22/3 · 6.5	GTH-22 · 6.5
6 - 9	GTK-22 · 7.5	GTH-22/3 · 7.5	GTH-22 · 7.5
7 - 10	GTK-22 · 8.5	GTH-22/3 · 8.5	GTH-22 · 8.5
9 - 13	GTK-22 · 11	GTH-22/3 · 11	GTH-22 · 11
12 - 18	GTK-22 · 15	GTH-22/3 · 15	GTH-22 · 15
16 - 22	GTK-22 · 19	GTH-22/3 · 19	GTH-22 · 19

Connection

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

Ordering information

Specify catalog number

For more information

Technical specification	➔ page 123~158
Drawings	➔ page 175
Contactors	➔ page 28
Starters	➔ page 51
Separate mounting unit	➔ page 171
Electronic overload relay	➔ page 100
Operating curves	➔ page 153

Certificate

CE, ULcUL, Lloyd,
CCC(China)



GT-40

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

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 · 5	GTH-40/3 · 5	GTH-40 · 5
5 - 8	GTK-40 · 6.5	GTH-40/3 · 6.5	GTH-40 · 6.5
6 - 9	GTK-40 · 7.5	GTH-40/3 · 7.5	GTH-40 · 7.5
7 - 10	GTK-40 · 8.5	GTH-40/3 · 8.5	GTH-40 · 8.5
9 - 13	GTK-40 · 11	GTH-40/3 · 11	GTH-40 · 11
12 - 18	GTK-40 · 15	GTH-40/3 · 15	GTH-40 · 15
16 - 22	GTK-40 · 19	GTH-40/3 · 19	GTH-40 · 19
18 - 26	GTK-40 · 22	GTH-40/3 · 22	GTH-40 · 22
24 - 36	GTK-40 · 30	GTH-40/3 · 30	GTH-40 · 30
28 - 40	GTK-40 · 34	GTH-40/3 · 34	GTH-40 · 34

Connection

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

Ordering information

Specify catalog number

For more information

Technical specification	➔ page 123~158
Drawings	➔ page 175
Contactors	➔ page 30
Starters	➔ page 51
Separate mounting unit	➔ page 171
Electronic overload relay	➔ page 102
Operating curves	➔ page 153

Certificate

CE, ULcUL, Lloyd,
CCC(China)

Thermal overload relays, Class 10A

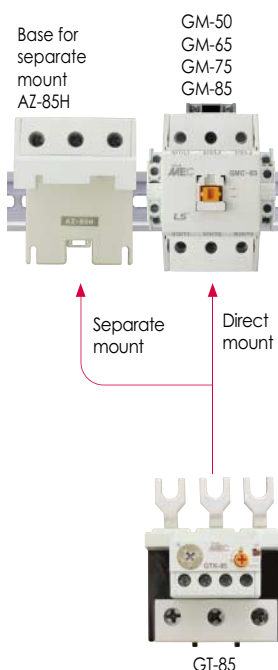
85A

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



Catalog No.

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
7 - 10	GTK-85 · 8.5	GTH-85/3 · 8.5	GTH-85 · 8.5
9 - 13	GTK-85 · 11	GTH-85/3 · 11	GTH-85 · 11
12 - 18	GTK-85 · 15	GTH-85/3 · 15	GTH-85 · 15
16 - 22	GTK-85 · 19	GTH-85/3 · 19	GTH-85 · 19
18 - 26	GTK-85 · 22	GTH-85/3 · 22	GTH-85 · 22
24 - 36	GTK-85 · 30	GTH-85/3 · 30	GTH-85 · 30
28 - 40	GTK-85 · 34	GTH-85/3 · 34	GTH-85 · 34
34 - 50	GTK-85 · 42	GTH-85/3 · 42	GTH-85 · 42
45 - 65	GTK-85 · 55	GTH-85/3 · 55	GTH-85 · 55
54 - 75	GTK-85 · 65	GTH-85/3 · 65	GTH-85 · 65
63 - 85	GTK-85 · 74	GTH-85/3 · 74	GTH-85 · 74

Connection

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

Ordering information

Specify catalog number

For more information

- Technical specification ➔ page 123~158
- Drawings ➔ page 175
- Contactors ➔ page 32
- Starters ➔ page 51
- Separate mounting unit ➔ page 171
- Electronic overload relay ➔ page 104
- Operating curves ➔ page 153

Certificate

CE, ULcUL, Lloyd,
CCC(China)

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



GT-100

Catalog No. for 100A frame

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
34 - 50	GTK-100 · 41	GTH-100/3 · 41	GTH-100 · 41
39 - 57	GTK-100 · 48	GTH-100/3 · 48	GTH-100 · 48
43 - 65	GTK-100 · 56	GTH-100/3 · 56	GTH-100 · 56
54 - 80	GTK-100 · 67	GTH-100/3 · 67	GTH-100 · 67
65 - 100	GTK-100 · 80	GTH-100/3 · 80	GTH-100 · 80
85 - 125	GTK-100 · 107	GTH-100/3 · 107	GTH-100 · 107



GT-150

Catalog No. for 150A frame

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
34 - 50	GTK-150 · 41	GTH-150/3 · 41	GTH-150 · 41
39 - 57	GTK-150 · 48	GTH-150/3 · 48	GTH-150 · 48
43 - 65	GTK-150 · 56	GTH-150/3 · 56	GTH-150 · 56
54 - 80	GTK-150 · 67	GTH-150/3 · 67	GTH-150 · 67
65 - 150	GTK-150 · 80	GTH-150/3 · 80	GTH-150 · 80
85 - 125	GTK-150 · 107	GTH-150/3 · 107	GTH-150 · 107
100 - 150	GTK-150 · 130	GTH-150/3 · 130	GTH-150 · 130

Connection

Main	Screw(M8) clamp terminal
(Load)	Cable capacity : 2~100mm ²
Auxiliary	Screw(M4) clamp terminal

Ordering information

Specify catalog number

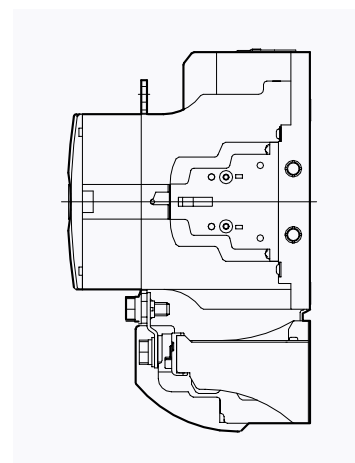
For more information

Technical specification	➔ page 123~158
Drawings	➔ page 176
Contactors	➔ page 34
Starters	➔ page 51
Operating curves	➔ page 154
Terminal covers	➔ page 117

Certificate

CE, ULcUL, Lloyd,
CCC(China)

Direct mount to a contactor



Thermal overload relays, Class 10A

220A **400A**

Description

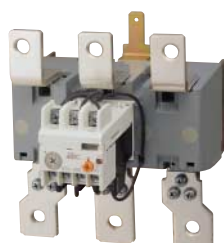
- Directly mountable to the contactors.
- GT-220 for GMC-180, 220 contactors (180, 220A frames)
- GT-400 for GMC-300, 400 contactors (300, 400A frames)
- 1NO+1NC trip contacts
- Trip class 10A
- Differential current/Phase failure protection : GTK types
- Non-differential GTH types are available for the 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 · 80	GTH-220/3 · 80	GTH-220 · 80
85 - 125	GTK-220 · 107	GTH-220/3 · 107	GTH-220 · 107
100 - 160	GTK-220 · 130	GTH-220/3 · 130	GTH-220 · 130
120 - 180	GTK-220 · 150	GTH-220/3 · 150	GTH-220 · 150
160 - 240	GTK-220 · 200	GTH-220/3 · 200	GTH-220 · 200



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 · 107	GTH-400/3 · 107	GTH-400 · 107
100 - 160	GTK-400 · 130	GTH-400/3 · 130	GTH-400 · 130
120 - 180	GTK-400 · 150	GTH-400/3 · 150	GTH-400 · 150
160 - 240	GTK-400 · 200	GTH-400/3 · 200	GTH-400 · 200
200 - 300	GTK-400 · 250	GTH-400/3 · 250	GTH-400 · 250
260 - 400	GTK-400 · 350	GTH-400/3 · 350	GTH-400 · 350

Connection

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

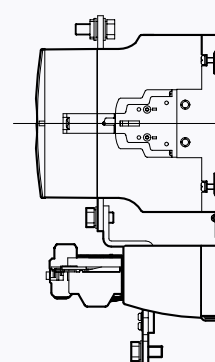
Ordering information

Specify catalog number

For more information

- Technical specification ➔ page 123~158
- Drawings ➔ page 177
- Contactors ➔ page 36
- Starters ➔ page 51
- Operating curves ➔ page 154
- Terminal covers ➔ page 117

Direct mount to a contactor



Certificate

CE, ULcUL, Lloyd,
CCC(China)

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



GT-600

Catalog No.

Setting ranges(A)	Differential type	Non-differential type	
	3-heater	3-heater	2-heater
200 - 300	GTK-600 · 250	GTH-600/3 · 250	GTH-600 · 250
260 - 400	GTK-600 · 350	GTH-600/3 · 350	GTH-600 · 350
400 - 600	GTK-600 · 500	GTH-600/3 · 500	GTH-600 · 500
520 - 800	GTK-600 · 660	GTH-600/3 · 660	GTH-600 · 660

Connection

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

Ordering information

Specify catalog number

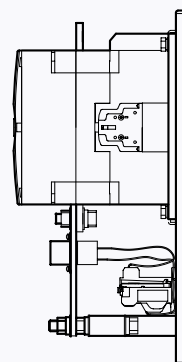
For more information

Technical specification	➔ page 123~158
Drawings	➔ page 177
Contactors	➔ page 38
Starters	➔ page 51
Operating curves	➔ page 154
Terminal covers	➔ page 117

Certificate

CE, ULcUL, Lloyd,
CCC(China)

Direct mount to a contactor



Thermal overload relays, Class 20

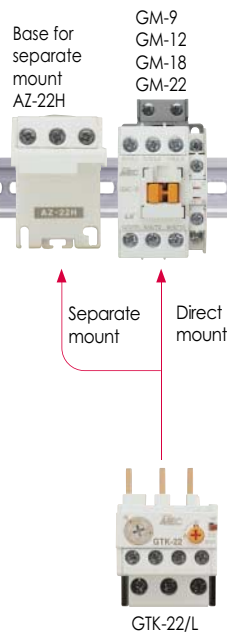
22A



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



Catalog No.

Setting ranges(A)	Class 20
	3-heater
1 - 1.6	GTK-22/L · 1.3
1.6 - 2.5	GTK-22/L · 2.1
2.5 - 4	GTK-22/L · 3.3
4 - 6	GTK-22/L · 5
5 - 8	GTK-22/L · 6.5
6 - 9	GTK-22/L · 7.5
7 - 10	GTK-22/L · 8.5
9 - 13	GTK-22/L · 11
12 - 18	GTK-22/L · 15
16 - 22	GTK-22/L · 19

Connection

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

Ordering information

Specify catalog number

For more information

- Technical specification ➔ page 123~158
- Drawings ➔ page 178
- Contactors ➔ page 28
- Starters ➔ page 51
- Separate mounting unit ➔ page 174
- Electronic overload relay ➔ page 100
- Operating curves ➔ page 153

Certificate
CE, ULcUL, Lloyd,
CCC(China)



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

Separate
mountDirect
mount

GTK-40/L

Catalog No.

Setting ranges(A)	Class 20
	3-heater
4 - 6	GTK-40/L · 5
5 - 8	GTK-40/L · 6.5
6 - 9	GTK-40/L · 7.5
7 - 10	GTK-40/L · 8.5
9 - 13	GTK-40/L · 11
12 - 18	GTK-40/L · 15
16 - 22	GTK-40/L · 19
18 - 26	GTK-40/L · 22
24 - 36	GTK-40/L · 30
28 - 40	GTK-40/L · 34

Connection

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

Ordering information

Specify catalog number

For more information

Technical specification	➔ page 123~158
Drawings	➔ page 178
Contactors	➔ page 30
Starters	➔ page 51
Separate mounting unit	➔ page 174
Electronic overload relay	➔ page 102
Operating curves	➔ page 153

Certificate

CE, ULcUL, Lloyd,
CCC(China)

Thermal overload relays, Class 20

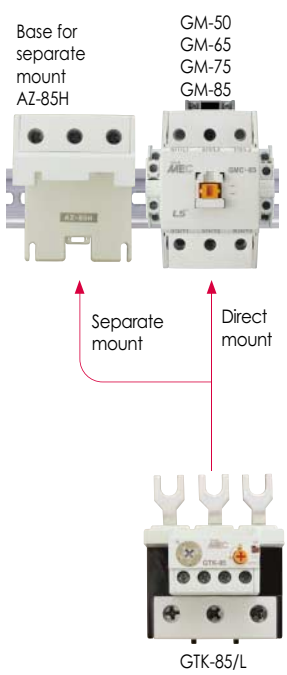
85A



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



Catalog No.

Setting ranges(A)	Class 20
	3-heater
7 - 10	GTK-85/L · 8.5
9 - 13	GTK-85/L · 11
12 - 18	GTK-85/L · 15
16 - 22	GTK-85/L · 19
18 - 26	GTK-85/L · 22
24 - 36	GTK-85/L · 30
28 - 40	GTK-85/L · 34
34 - 50	GTK-85/L · 42
45 - 65	GTK-85/L · 55
54 - 75	GTK-85/L · 65
63 - 85	GTK-85/L · 74

Connection

Main (Load)	up to 50A	Screw(M6) clamp terminal
		Cable capacity : 2~22mm²
	above 50A	Screw(M8) clamp terminal
		Cable capacity : 2~38mm²
Auxiliary		Screw(M3.5) clamp terminal

Ordering information

Specify catalog number

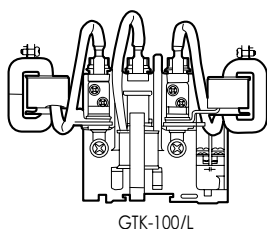
For more information

- Technical specification ➔ page 123~158
- Drawings ➔ page 178
- Contactors ➔ page 32
- Starters ➔ page 51
- Separate mounting unit ➔ page 172
- Electronic overload relay ➔ page 104
- Operating curves ➔ page 155

Certificate
CE, ULcUL, Lloyd,
CCC(China)

Description

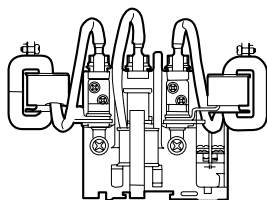
- Directly mountable to the contactors with brackets and connectors.
GT-100 for GMC-100, 125 contactors (100, 125A frames)
GT-150 for GMC-150 contactor (150A frame)
- 1NO+1NC trip contacts
- Trip class 20
- Differential current/Phase failure protection
- Ambient compensated -5 to 40°C
- Manual/Automatic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



GTK-100/L

Catalog No. for 100A frame

Setting ranges(A)	Class 20
	3-heater
34 - 50	GTK-100/L · 41
39 - 57	GTK-100/L · 48
43 - 65	GTK-100/L · 56
54 - 80	GTK-100/L · 67
65 - 100	GTK-100/L · 80
85 - 125	GTK-100/L · 107



GTK-150/L

Catalog No. for 150A frame

Setting ranges(A)	Class 20
	3-heater
34 - 50	GTK-150/L · 41
39 - 57	GTK-150/L · 48
43 - 65	GTK-150/L · 56
54 - 80	GTK-150/L · 67
65 - 150	GTK-150/L · 80
85 - 125	GTK-150/L · 107
100 - 150	GTK-150/L · 130

Connection

Main	Screw(M8) clamp terminal
(Load)	Cable capacity : 2~100mm ²
Auxiliary	Screw(M4) clamp terminal

Ordering information

Specify catalog number

For more information

Technical specification	➔ page 123~158
Drawings	➔ page 179
Contactors	➔ page 34
Starters	➔ page 51
Operating curves	➔ page 155

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

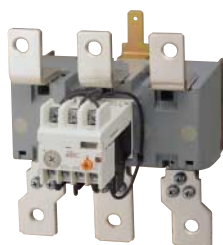
Catalog No. for 220A frame



GTK-220/L

Setting ranges(A)	Class 20
3-heater	
65 - 100	GTK-220/L · 80
85 - 125	GTK-220/L · 107
100 - 160	GTK-220/L · 130
120 - 180	GTK-220/L · 150
160 - 240	GTK-220/L · 200

Catalog No. for 400A frame



GTK-400/L

Setting ranges(A)	Class 20
3-heater	
85 - 125	GTK-400/L · 107
100 - 160	GTK-400/L · 130
120 - 180	GTK-400/L · 150
160 - 240	GTK-400/L · 200
200 - 300	GTK-400/L · 250
260 - 400	GTK-400/L · 350

Connection

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

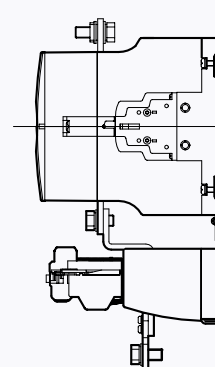
Ordering information

Specify catalog number

For more information

Technical specification	➔ page 123~158
Drawings	➔ page 179
Contactors	➔ page 36
Starters	➔ page 51
Operating curves	➔ page 155
Terminal covers	➔ page 117

Direct mount to a contactor



Certificate

CE, ULcUL, Lloyd,
CCC(China)

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
	3-heater
200 - 300	GTK-600/L · 250
260 - 400	GTK-600/L · 350
400 - 600	GTK-600/L · 500
520 - 800	GTK-600/L · 660

Connection

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

Ordering information

Specify catalog number

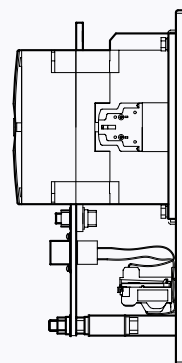
For more information

Technical specification	➔ page 123~158
Drawings	➔ page 179
Contactors	➔ page 38
Starters	➔ page 51
Operating curves	➔ page 155
Terminal covers	➔ page 117

Certificate

CE, ULcUL, Lloyd,
CCC(China)

Direct mount to a contactor



Electronic overload relays

22A Inverse time characteristics



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
 - Separately mountable on 35mm DIN rail or with screws
- 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

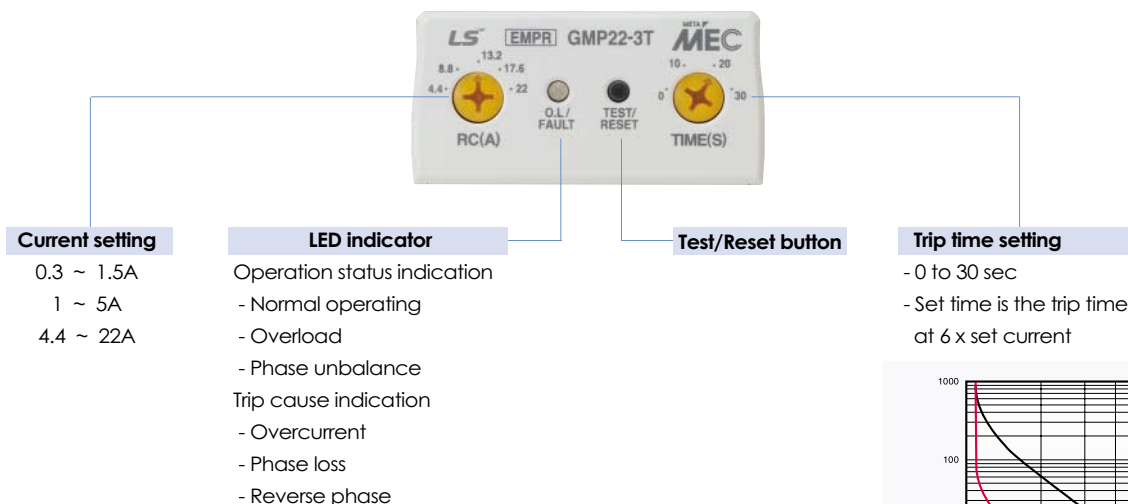
Mount/Connection	Sensor	Setting range	Catalog No.
Directly on a contactor	2-sensor (2 CT)	0.3 - 1.5A	GMP22 - 2P · 1.5
		1 - 5A	GMP22 - 2P · 5
		4.4 - 22A	GMP22 - 2P · 22
	3-sensor (3 CT)	0.3 - 1.5A	GMP22 - 3P · 1.5
		1 - 5A	GMP22 - 3P · 5
		4.4 - 22A	GMP22 - 3P · 22
	3-sensor Reverse phase detection	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

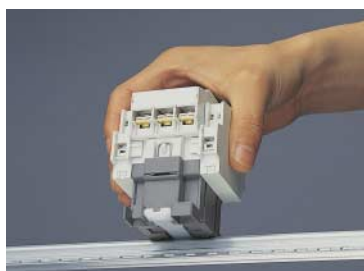
Ordering information

Specify catalog number

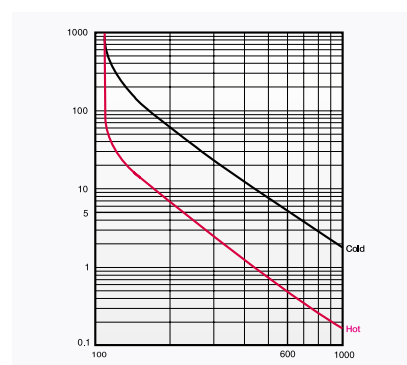
Front face configuration



① To mount on 35mm DIN rail



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



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 $\pm 0.5\text{sec}$)
Insulation resistance	Min 100M Ω at 500V DC
Impulse withstand voltage	1.2x50 μs 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 209
Connections	➔ page 195
Contactors	➔ page 28
Starters	➔ page 51
Bimetallic overload relay	➔ page 88
Operating curves	➔ page 157

Electronic overload relays

40A Inverse time characteristics



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
 - Separately mountable on 35mm DIN rail or with screws
- 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

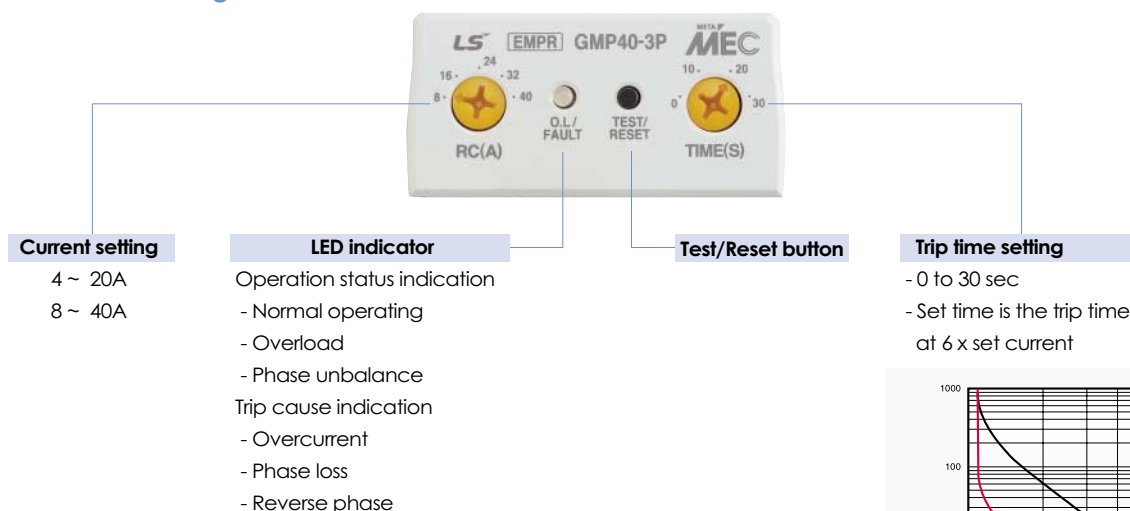
Mount/Connection	Sensor	Setting range	Catalog No.
Directly on a contactor	2-sensor (2 CT)	4 - 20A 8 - 40A	GMP40-2P · 20 GMP40-2P · 40
	3-sensor (3 CT)	4 - 20A 8 - 40A	GMP40-3P · 20 GMP40-3P · 40
	3-sensor Reverse phase detection	4 - 20A 8 - 40A	GMP40-3PR · 20 GMP40-3PR · 40
	2-sensor (2 CT)	4 - 20A 8 - 40A	GMP40-2S · 20 GMP40-2S · 40
	3-sensor (3 CT)	4 - 20A 8 - 40A	GMP40-3S · 20 GMP40-3S · 40
	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
Cable connection with a screw ②	3-sensor (3 CT)	4 - 20A 8 - 40A	GMP40-3T · 20 GMP40-3T · 40
	3-sensor Reverse phase detection	4 - 20A 8 - 40A	GMP40-3TR · 20 GMP40-3TR · 40
	2-sensor (2 CT)	4 - 20A 8 - 40A	GMP40-2T · 20 GMP40-2T · 40
	3-sensor (3 CT)	4 - 20A 8 - 40A	GMP40-3T · 20 GMP40-3T · 40
Separate mount ①	3-sensor Reverse phase detection	4 - 20A 8 - 40A	GMP40-3TR · 20 GMP40-3TR · 40
	2-sensor (2 CT)	4 - 20A 8 - 40A	GMP40-2T · 20 GMP40-2T · 40
	3-sensor (3 CT)	4 - 20A 8 - 40A	GMP40-3T · 20 GMP40-3T · 40

Certificate
CE, ULcUL

Ordering information

Specify catalog number

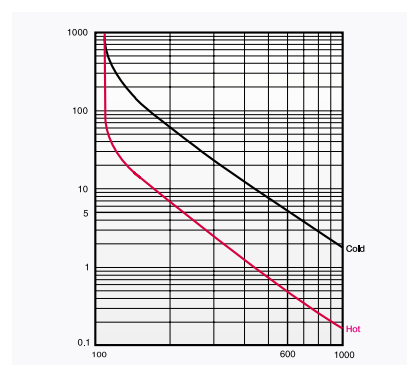
Front face configuration



① To mount on 35mm DIN rail



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



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 $\pm 0.5\text{sec}$)
Insulation resistance	Min 100M Ω at 500V DC
Impulse withstand voltage	1.2x50 μs 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 209
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Starters	➔ page 51
Bimetallic overload relay	➔ page 89
Operating curves	➔ page 157

Electronic overload relays

80A Inverse time characteristics



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
	3-sensor (3 CT)	16 - 80A	GMP80-3S · 80
Cable connection with a screw	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 ± 5% Time ± 5% (or ±0.5sec)
Insulation resistance	Min 100MΩ at 500V DC
Impulse withstand voltage	1.2x50μs 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

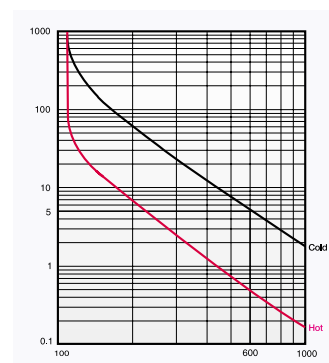
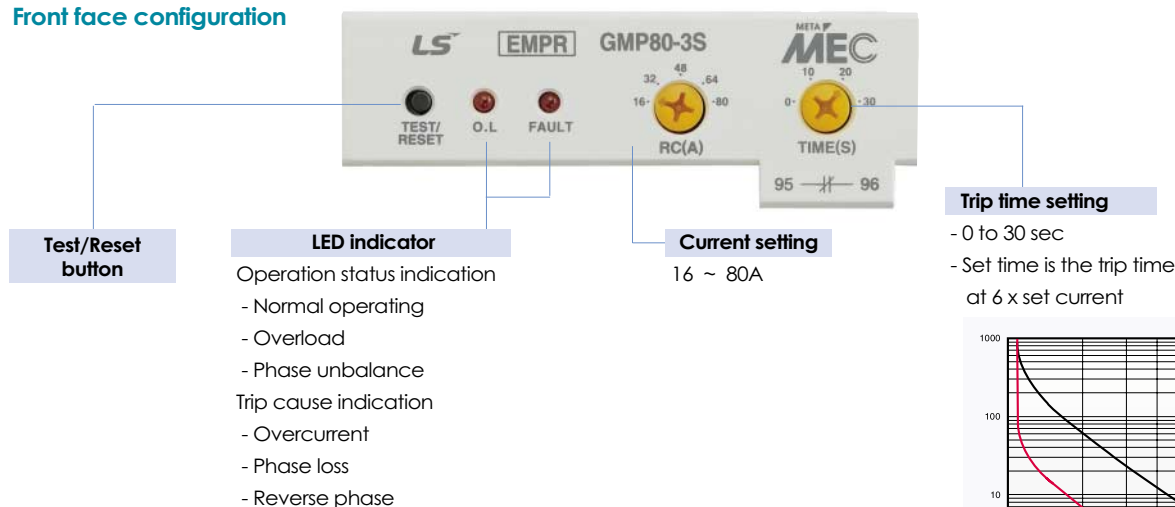
- Drawings ➔ page 209
- Connections ➔ page 195
- Contactors ➔ page 32
- Starters ➔ page 51
- Bimetallic overload relay ➔ page 90
- Operating curves ➔ page 157

Ordering information

Specify catalog number

Certificate
CE, ULcUL

Front face configuration



Indicate the cause of the fault by the LEDs

When it is tripped, you can check the causes of the fault by seeing the LED on it and you can troubleshoot the causes in a short time

Condition		Red O.L LED		Green Fault LED		Note
Operation	Normal	Off		Off		
	Over current	On & Off		Off		0.4 second interval
	Over current	On		Off		
Trip	Phase failure (3CT)	R On		On & Off		1 Times for 3second
		S On		On & Off		2 Times for 3second
		T On		On & Off		3 Times for 3second
	Phase failure(2CT)	On & Off		Protect 2phases of 3phases, trips within 3sec.		
	Reverse phase(3CT)	On & Off		On & Off		One after the other

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 $\pm 0.5\text{sec}$)
Insulation resistance	Min 100M Ω at 500V DC
Impulse withstand voltage	1.2x50 μs 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

Electronic overload relays

60A Definite time characteristics



Description

- Small size, economical
- Delay time setting in starting and operation
- Over current, phase failure protection
- Definite time characteristics
- Wide current setting range
- Screw or Din-rail mounting

Extended protective functions

Number of sensors		2CT
Types (GMP-60T)		
Functions	Overcurrent	✓
	Phase loss	✓ Δ Note1)
	Locked rotor	✓
	Phase unbalance	
	Phase reversed	

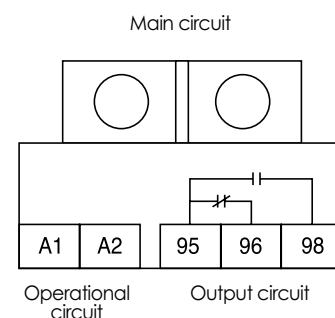
Ratings (Tunnel type)

Model		GMP60T
Type		Tunnel type
No. of CT		2
Current setting range(A)		0.5~6
		3~30
		5~60
Operating time characteristics		Definite time characteristics
Time setting (sec.)	Starting time	0.2~30
	Operating time	0.2~15
	Reset time	Manual reset
Allowable error	Current	$\pm 5\%$
	Time	$\pm 5\%$ (or ± 0.5 sec.)
Control power	Voltage	180~260V (110V / 440V) Note2)
	Frequency	50 / 60Hz
Aux. s/w	Contact	1SPDT (1c)
	Ratings	5A 250Vac, resistive load
	Operation	95 $\nearrow$ 96close
Insulation resistance		Min. 50M Ω at 500Vdc
Surge insurance(IEC 1000-4-5)		7kV(6times for 1min. Interval)
Fast transient burst(IEC 1000-4-4)		2.5kV/5min.
Environment	Operation	-25~70°C
	Storage	-50~80°C
Relative humidity		46~85 RH(No freezing)
Trip indicator		LED
Dimension(mm) W × H × D		72 × 63 × 69
Mounting type		Separate mount(Screw & Din-rail)
Applied MC		GMC-9, 12, 18, 32, 40, 50
Certification		UL, CUL, CE

Note 1) Under phase failure condition over current flows
The EMPR tripped if it is over the setting over current

Note 2) () are optional specifications

Contact configuration



Tunnel type EMPR protects the current under 0.1A

- The tunnel type EMPR with 0.5~6A nominal current, can detect the current under 0.1A

If we increase the number of times of a wire pass through the CT (Tunnel), the EMPR can detect the lower current

No. of times to pass through	Current setting range
1	0.5~6
2	0.25~3
3	0.17~2
4	0.12~1.5

Digital motor protection relays, DMPR

DMP-S/T & DMP-Sa/Ta **New**



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

Over current	Depend on setting time	Selectable the inverse/definite
Phase loss	Within 3seconds	Over 70% of the rate of unbalance
Phase unbalance	Within 5seconds	Over 50% of the rate of unbalance
Phase reverse	Within 0.1seconds	Function enable
Stall	Within 5seconds	Over 180% of the setting current
Lock	Within 0.5seconds	Setting 200~900% of rated current
Under current	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
b. StA	0~120	Operating time setting by month
c. StH	10~730	Operating time setting by hour
d. tAH	A000,000.0	Displaying total operating time (month, hour)
E. rAH	A000,000.0	Displaying operating time (month, hour)
Sto	Sto	Store

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

Note 2) Functions for b to e are available for only Sa & Ta type.

Ratings

Model		DMP□-S/Sa	DMP□-T/Ta
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-□ DMP60-□	0.5~6 5~60	
Setting time	Definite Delay(D-T) Operating(O-T) Inverse	0~60seconds 0~30seconds 0~60seconds	
Reset type		Manual reset	
Operating voltage	Voltage Frequency	AC 190~250V 60Hz (50Hz)	
Aux. contacts	OL 2-SPST(95~98) AL SPST(07-08)	3A/250Vac resistive load 3A/250Vac resistive load	
Indicate	7-segment Bar-LED arrays	3-phase current value, fault cause Load ratio (60~110%)	
Mounting		35mm Din-rail/Panel	

Digital motor protection relays, DMPR

DMP-S/T & DMP-SZa/TZa



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

Over current	Depend on setting time	Selectable the inverse/definite
Phase loss	Within 3seconds	Over 70% of the rate of unbalance
Phase unbalance	Within 5seconds	Over 50% of the rate of unbalance
Phase reverse	Within 0.1seconds	Function enable
Stall	Within 5seconds	Over 180% of the setting current
Lock	Within 0.5seconds	Setting 200~900% of rated current
Under current	Within 3seconds	Setting 30~70% of rated current
Ground fault Note)	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
A. gFd	oFF/on	Setting delay of ground fault
b. StA	0~120	Operating time setting by month
c. StH	10~730	Operating time setting by hour
d. tAH	A000,000.0	Displaying total operating time (month, hour)
E. rAH	A000,000.0	Displaying operating time (month, hour)
Sto	Sto	Store

Note 1) [2.dEF] is only displayed when [dEF] is selected in a [1.CHA] mode ※ [2.dEF]: Refer to page 10

Note 2) Ground fault sensitive current selection: Refer to page 114

Note 3) Functions for b to e are available for only SZa & TZa type.

Ratings

Model		DMP□-SZ/SZa	DMP□-TZ/TZa
Type	Wiring method	Screw	Tunnel
	Panel mount	Unit or Extension	
Operating characteristics		Inverse/definite type	
Alerting function		Variable between 60 and 110%	
Current	DMP06-□	0.5~6	
range(A)	DMP60-□	5~60	
Setting time	Definite	Delay(D-T)	0~60seconds
		Operating(O-T)	0~30seconds
	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		