

Thermal overload relays

Characteristics

Application

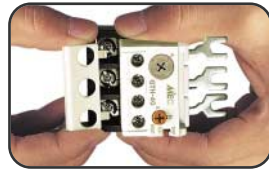
The TOR protect the motors Overload, Locking, Open phase(differential)

Characteristics



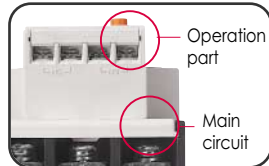
① Direct mounting structure

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

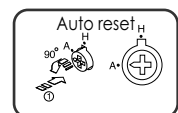
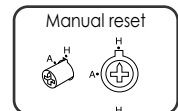
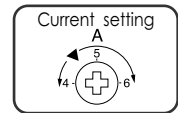
Rotate the reset button to the "H" position and this will protrude.

Auto reset

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

● Trip / reset indicator

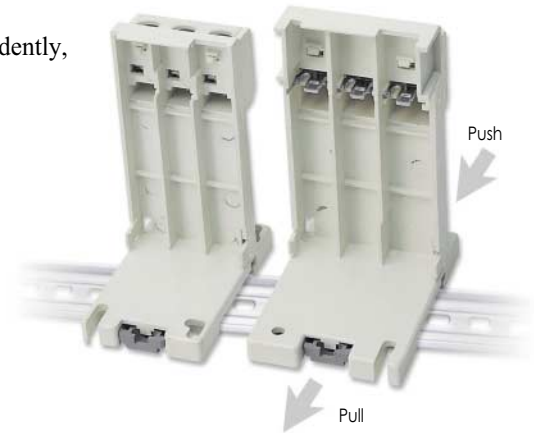
If the TOR is tripped, it protrudes 2~3mm and indicates the tripped condition.



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	GTH(K) - 150
GMC - 150	GTH(K) - 220
GMC - 180	GTH(K) - 400
GMC - 220	
GMC - 300	
GMC - 400	
GMC - 600	GTH(K) - 600
GMC - 800	



Thermal overload relays

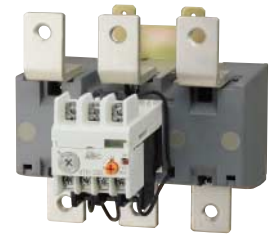
Setting range selection guide



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							
•	•	•	•	•	0.37	0.25~0.4							
•	•	•	•	0.37	0.5	0.4~0.63							
•	0.37	•	0.55	0.75	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								
4	7.5	7.5	7.5	10	13.5	7~10	9~13	9~13					
4	7.5	9	9	10	15								
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	•	•								
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								
25	40	50	50	60	75			54~75	43~65	43~65			
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	70~100		
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							160~240	
85	150	175	190	220	270								
80	150	160	160	200	257								200~300
110	205	220	220	270	350								200~300
110	185	200	220	257	335								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
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

Mini overload relays

Bimetallic style

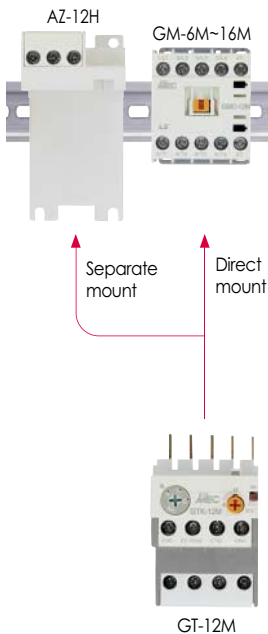


Description

- 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



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

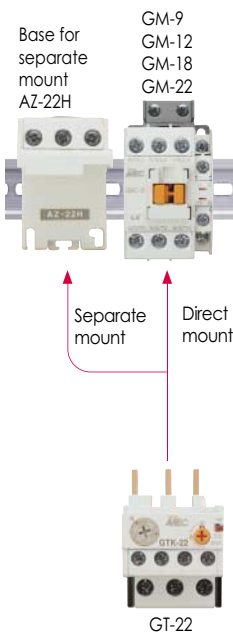
22A

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



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

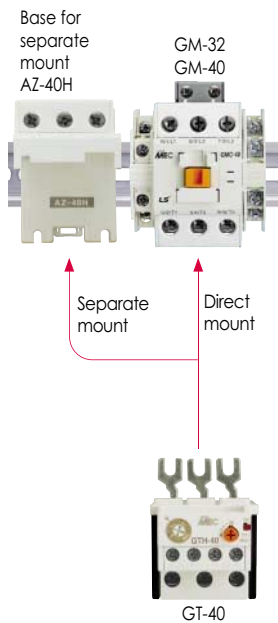
CE, ULcUL, Lloyd,
CCC(China)

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



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

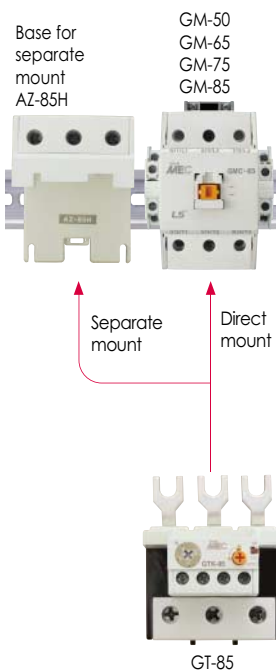
85A

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

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 · 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

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

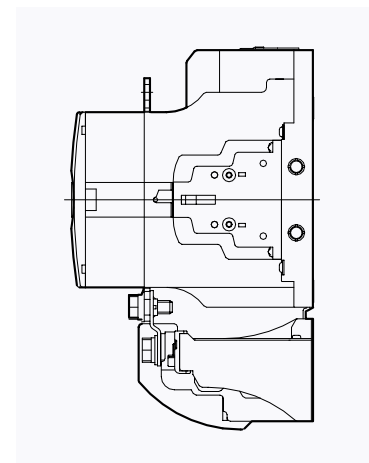
Ordering information

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

Direct mount to a contactor



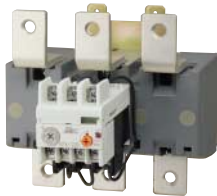
Certificate
CE, ULcUL, Lloyd,
CCC(China)

Thermal overload relays, Class 10A

220A 400A

Description

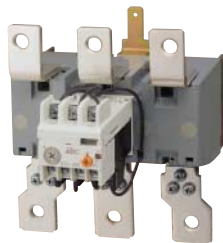
- Directly mountable to the contactors.
 - GT-220 for GMC-180, 220 contactors (180, 220A frames)
 - GT-400 for GMC-300, 400 contactors (300, 400A frames)
- 1NO+1NC trip contacts
- Trip class 10A
- Differential current/Phase failure protection : GTK types
- Non-differential GTH types are available for 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 · 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

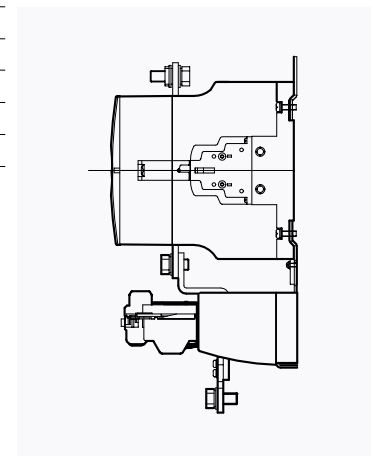
Ordering information

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)