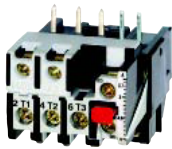


Thermal Overload Relays

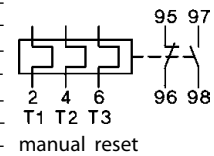


For plug-in mounting



| Setting Range D.O.L. (A) | Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|---|--------------|-----------------|--------------|------------------|
| With Manual Reset for contactors MB-.. | | | | |
| 0,12 - 0,18 | - | U12/16E 0,18 K1 | 1 | 0,10 |
| 0,18 - 0,27 | - | U12/16E 0,27 K1 | 1 | 0,10 |
| 0,27 - 0,4 | - | U12/16E 0,4 K1 | 1 | 0,10 |
| 0,4 - 0,6 | - | U12/16E 0,6 K1 | 1 | 0,10 |
| 0,6 - 0,9 | - | U12/16E 0,9 K1 | 1 | 0,10 |
| 0,8 - 1,2 | - | U12/16E 1,2 K1 | 1 | 0,10 |
| 1,2 - 1,8 | - | U12/16E 1,8 K1 | 1 | 0,10 |
| 1,8 - 2,7 | - | U12/16E 2,7 K1 | 1 | 0,10 |
| 2,7 - 4 4 | - | U12/16E 4 K1 | 1 | 0,10 |
| 4 - 6 6 | 7 - 10,5 | U12/16E 6 K1 | 1 | 0,10 |
| 6 - 9 9 | 10,5 - 15,5 | U12/16E 9 K1 | 1 | 0,10 |
| 8 - 11 | 14 - 19 | U12/16E 11 K1 | 1 | 0,10 |
| 10 - 14 | 18 - 24 | U12/16E 14 K1 | 1 | 0,10 |

Wiring Diagram

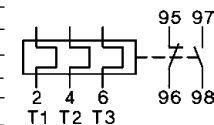


manual reset



| Setting Range D.O.L. (A) | Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|--|--------------|-----------------|--------------|------------------|
| With Manual Reset, for contactors MC (D)10-S.. to MC(D)22-S.. | | | | |
| 0,12 - 0,18 | - | U12/16E 0,18 MC | 1 | 0,10 |
| 0,18 - 0,27 | - | U12/16E 0,27 MC | 1 | 0,10 |
| 0,27 - 0,4 | - | U12/16E 0,4 MC | 1 | 0,10 |
| 0,4 - 0,6 | - | U12/16E 0,6 MC | 1 | 0,10 |
| 0,6 - 0,9 | - | U12/16E 0,9 MC | 1 | 0,10 |
| 0,8 - 1,2 | - | U12/16E 1,2 MC | 1 | 0,10 |
| 1,2 - 1,8 | - | U12/16E 1,8 MC | 1 | 0,10 |
| 1,8 - 2,7 | - | U12/16E 2,7 MC | 1 | 0,10 |
| 2,7 - 4 4 | - | U12/16E 4 MC | 1 | 0,10 |
| 4 - 6 6 | 7 - 10,5 | U12/16E 6 MC | 1 | 0,10 |
| 6 - 9 9 | 10,5 - 15,5 | U12/16E 9 MC | 1 | 0,10 |
| 8 - 11 | 14 - 19 | U12/16E 11 MC | 1 | 0,10 |
| 10 - 14 | 18 - 24 | U12/16E 14 MC | 1 | 0,10 |
| 13 - 18 | 23 - 31 | U12/16E 18 MC | 1 | 0,10 |
| 17 - 23 | 30 - 40 | U12/16E 23 MC | 1 | 0,10 |
| 22 - 30 | 38 - 52 | U12/16E 30 MC | 1 | 0,13 |

Wiring Diagram

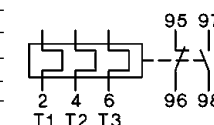


manual reset

For contactors MC-10-S.. to MC-22-S..



| Setting Range | Type | Pack | Weight |
|---------------|-------------|------|--------|
| 0,12 - 0,18 | MCOR-1 0,18 | 1 | 0,14 |
| 0,18 - 0,27 | MCOR-1 0,27 | 1 | 0,14 |
| 0,27 - 0,4 | MCOR-1 0,4 | 1 | 0,14 |
| 0,4 - 0,6 | MCOR-1 0,6 | 1 | 0,14 |
| 0,6 - 0,9 | MCOR-1 0,9 | 1 | 0,14 |
| 0,8 - 1,2 | MCOR-1 1,2 | 1 | 0,14 |
| 1,2 - 1,8 | MCOR-1 1,8 | 1 | 0,14 |
| 1,8 - 2,7 | MCOR-1 2,7 | 1 | 0,14 |
| 2,7 - 4 4 | MCOR-1 4 | 1 | 0,14 |
| 4 - 6 6 | MCOR-1 6 | 1 | 0,14 |
| 6 - 9 9 | MCOR-1 9 | 1 | 0,14 |
| 8 - 11 | MCOR-1 11 | 1 | 0,14 |
| 10 - 14 | MCOR-1 14 | 1 | 0,14 |
| 13 - 18 | MCOR-1 18 | 1 | 0,14 |
| 17 - 24 | MCOR-1 24 | 1 | 0,14 |
| 23 - 32 | MCOR-1 32 | 1 | 0,14 |



manual and auto reset

Thermal Overload Relays



For plug-in mounting

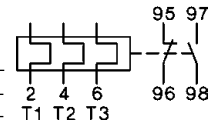


Setting Range
D.O.L. (A) Δ (A)

For contactors MC24-S.. to MC40-S..

| Setting Range D.O.L. (A) | Setting Range Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|-----------------------------|-------------------------------|-----------|-----------|---------------|
| 10 - 14 | 18 - 24 | MCOR-2 14 | 1 | 0,30 |
| 14 - 20 | 24 - 35 | MCOR-2 20 | 1 | 0,30 |
| 20 - 28 | 35 - 48 | MCOR-2 28 | 1 | 0,30 |
| 28 - 42 | 48 - 73 | MCOR-2 42 | 1 | 0,30 |

Wiring Diagram

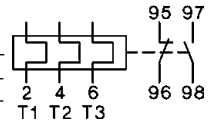


manual and auto reset



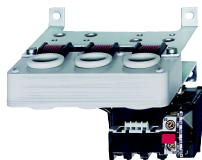
For contactors MC50-S.. to MC74-S..

| Setting Range D.O.L. (A) | Setting Range Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|-----------------------------|-------------------------------|-----------|-----------|---------------|
| 20 - 28 | 35 - 48 | MCOR-3 28 | 1 | 0,40 |
| 28 - 42 | 48 - 73 | MCOR-3 42 | 1 | 0,40 |
| 40 - 52 | 70 - 90 | MCOR-3 52 | 1 | 0,40 |
| 52 - 65 | 90 - 112 | MCOR-3 65 | 1 | 0,40 |
| 60 - 74 | 104 - 128 | MCOR-3 74 | 1 | 0,40 |



manual and auto reset

For separate mounting

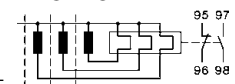


Setting Range
D.O.L. (A) Δ (A)

For contactors MC9-S.. to MC115-S..

| Setting Range D.O.L. (A) | Setting Range Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|-----------------------------|-------------------------------|------------|-----------|---------------|
| 60 - 90 | 104 - 156 | MCOR-4 90 | 1 | 0,90 |
| 80 - 120 | 140 - 207 | MCOR-4 120 | 1 | 0,90 |

Wiring Diagram



manual reset



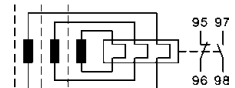
For contactors MC-151.. and MC-176.., busbars included

| Setting Range D.O.L. (A) | Setting Range Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|-----------------------------|-------------------------------|------------|-----------|---------------|
| 120 - 180 | 208 - 312 | MCOR-5 180 | 1 | 1,5 |

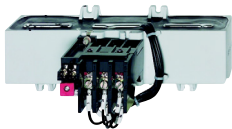


For contactors MC-210.. up to MC-316.., busbars included

| Setting Range D.O.L. (A) | Setting Range Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|-----------------------------|-------------------------------|------------|-----------|---------------|
| 144 - 216 | 250 - 374 | MCOR-6 216 | 1 | 1,8 |
| 216 - 320 | 374 - 554 | MCOR-6 320 | 1 | 1,8 |



manual and auto reset



For contactors MC-316.., MC-450.., MC-550.., MC-700.., MC-860..

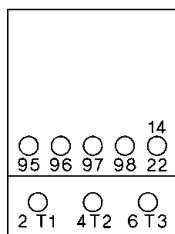
| Setting Range D.O.L. (A) | Setting Range Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|-----------------------------|-------------------------------|------------|-----------|---------------|
| 240 - 360 | 416 - 623 | MCOR-7 360 | 1 | 4,1 |
| 360 - 540 | 623 - 935 | MCOR-7 540 | 1 | 4,1 |
| 540 - 800 | 935 - 1385 | MCOR-7 800 | 1 | 4,1 |

For contactors MC-1000.., MC-1200..

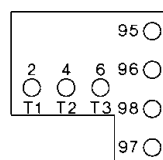
| Setting Range D.O.L. (A) | Setting Range Δ (A) | Type | Pack pcs. | Weight kg/pc. |
|-----------------------------|-------------------------------|-------------|-----------|---------------|
| 700 - 1000 | 1200 - 1730 | MCOR-8 1000 | 1 | 7,0 |
| 875 - 1250 | 1510 - 2160 | MCOR-8 1200 | 1 | 7,0 |

Position of Terminals

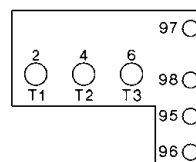
MCOR-1



U12/16E



MCOR-2, MCOR-3



Thermal Overload Relays



Data according to IEC 947-4-1, IEC 947-5-1, VDE 0660, EN 60947-4-1, EN 60947-5-1

| Type | | MCOR-1 | U12/16 ⁶⁾ | MCOR-2 | MCOR-3 | MCOR-4 | MCOR-5 | MCOR-6 | MCOR-7 | MCOR-8 | |
|---|-----------------------------------|-----------------|----------------------|-------------------------------|---------------|--------------------|---------------|---------------|-----------------|---------------------|---|
| Rated insulation voltage U_i ¹⁾ | V~ | 690 | 690 | 690 | 690 | 750 | 690 | 1000 | 1000 | 690 | |
| Permissible ambient temperature operation | open °C | | | | | | | | -25 to +55 | | |
| storage | °C | | | | | | | | -40 to +70 | | |
| Trip class according to IEC 947-4-1 | A | 10 | 10 | 10 | 10 | 10 | 20 | 10 | 10 | 10 | |
| Cable cross-section | | | | | | | | | | | |
| main connector | solid or stranded | mm ² | 0,75-6 | 0,75-6+0,75-2,5 ²⁾ | 0,75-10 | 4-35 ²⁾ | 3) | 7) | - | 7) | - |
| | flexible | mm ² | 1-4 | 0,75-4+0,5-2,5 ²⁾ | 0,75-6 | 6-25 ²⁾ | | | | | |
| | flexible with multicore cable end | mm ² | 0,75-4 | 0,5-2,5+0,5-1,5 | 0,75-6 | 4-25 | | | | | |
| Cables per clamp | number | 2 | 1+1 | 2 | 1 | | | | | | |
| auxiliary connector | solid | mm ² | | | | | | | | 1-2,5 ²⁾ | |
| | flexible | mm ² | | | | | | | | 1-2,5 ²⁾ | |
| | flexible with multicore cable end | mm ² | | | | | | | | 1-2,5 ²⁾ | |
| Cables per clamp | number | | | | | | | | 2 | | |
| Type | | MCOR-1 | U12/16 | MCOR-2 | MCOR-3 | MCOR-4 | MCOR-5 | MCOR-6 | MCOR-7 | MCOR-8 | |
| Auxiliary contacts | | | | | | | | | | | |
| Rated insulation voltage U_i ¹⁾ | | | | | | | | | | | |
| same potential | V~ | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 500 | 690 | |
| different potential | V~ | 440 | - | 440 | 440 | 250 | 440 | 440 | 500 | 440 | |
| Utilization category AC15 | | | | | | | | | | | |
| Rated operational current I_e | 24V A | 3 | 4 | 5 | 5 | 4 | 5 | 3 | 4 ⁵⁾ | 5 | |
| | 230V A | 2 | 2,5 | 3 | 3 | 2,5 | 3 | 2 | 2,5 | 3 | |
| | 400V A | 1 | 1,5 | 2 | 2 | 1,5 | 2 | 1 | 1,5 | 2 | |
| | 690V A | 0,5 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,5 | 0,6 | 0,6 | |
| Utilization category DC13 | | | | | | | | | | | |
| Rated operational current I_e | 24V A | 1 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | |
| | 110V A | 0,15 | 0,15 | 0,15 | 0,15 | 0,15 | 0,15 | 0,15 | 0,15 | 0,15 | |
| | 220V A | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 | |
| Short circuit prot. (without welding 1kA) highest fuse rating | gL (gG) A | 4 | 4 | 6 | 6 | 6 | 6 | 4 | 6 | 6 | |
| Type | | MCOR-1 | U12/16 | U12/16E | MCOR-2 | MCOR-2 | MCOR-3 | MCOR-3 | MCOR-4 | | |
| Setting range | | all | to 23A | 22 - 30A | to 28A | 28 - 42A | to 52A | 52 - 65A | all | | |
| Power loss per current path (max.) | | | | | | | | | | | |
| minimum setting value | W | 1,1 | 1,1 | 1,7 | 1,3 | 1,3 | 2,0 | 2,9 | 1,1 | | |
| maximum setting value | W | 2,3 | 2,3 | 3,7 | 2,6 | 3,3 | 3,7 | 4,5 | 2,5 | | |

Data according to cULus

| Type | | MCOR-1 | MCOR-2 | U12/16E | MCOR-3 | MCOR-4 |
|-------------------------------------|------|--------|--------|---------|--------|--------|
| Rated insulation voltage | V~ | 600 | 600 | 600 | 600 | 600 |
| Rated current | A | 32 | 23 | 42 | 74 | 85 |
| Auxiliary contacts | | | | | | |
| Rated voltage | | | | | | |
| same potential | V AC | 600 | 600 | 600 | 600 | 600 |
| different potential | V~ | 150 | 150 | 150 | 150 | 150 |
| Switching capacity of aux. contacts | VA | 500 | 500 | 600 | 600 | 600 |
| | A | 2 | 4 | 4 | 4 | 4 |

Temperature Compensation

In case of higher ambient temperature use the following formula:
 (Ambient temperature - 20) x 0,125 = correction factor in % of the full load motor current

Example: Ambient temperature 70°C, full load motor current 7A
 (70 - 20) x 0,125 = 6,25%
 Setting value: 7A + 6,25% = 7,44A

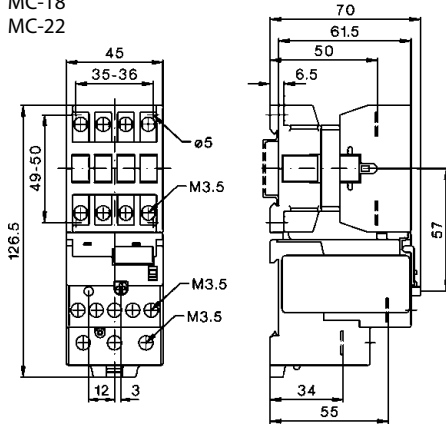
- 1) Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): $U_{imp} = 4kV$ (at 440V), 6kV (at 690V). Data for other conditions on request.
- 2) Maximum cable cross-section with prepared conductor
- 3) Without terminals, suitable for bushing one connector 70mm² (stranded) per phase
- 4) Switching capacity of the start contact: AC15 300VA, max. 1,5A, DC13 (max. 220V) 30W, max. 1,5A
- 5) Switching capacity of the make contact: AC15 400VA, max. 1,7A, DC13 (max. 220V) 10W, max. 1A
- 6) U12/16E 30: Cable cross-section for main connector like type MCOR-2, one connector only

Thermal Overload Relays

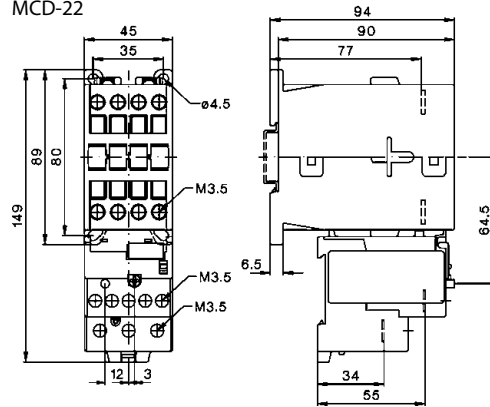


Dimensions

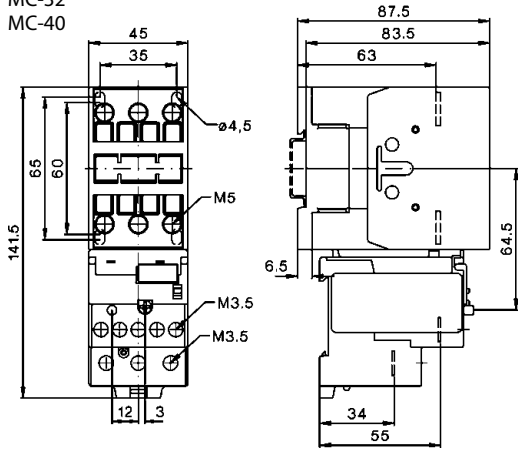
MC-10+ MCOR-1
MC-14
MC-18
MC-22



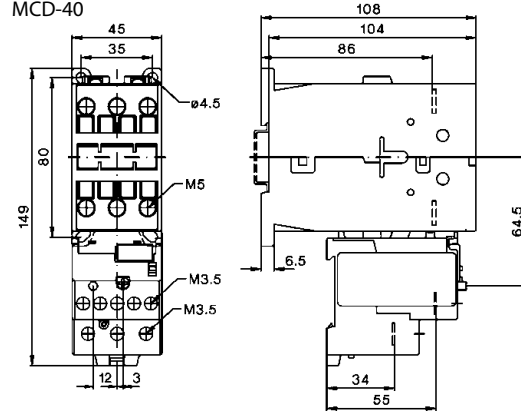
MCD-10 + MCOR-1
MCD-14
MCD-18
MCD-22



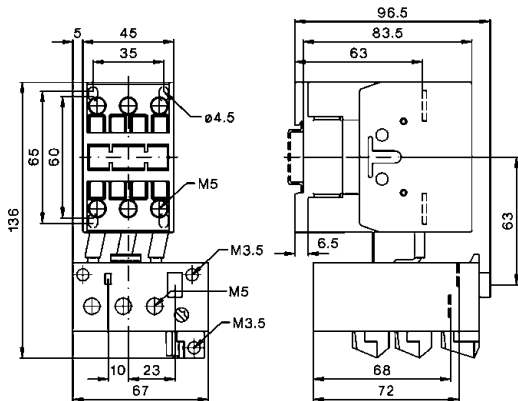
MC-24+ MCOR-1
MC-32
MC-40



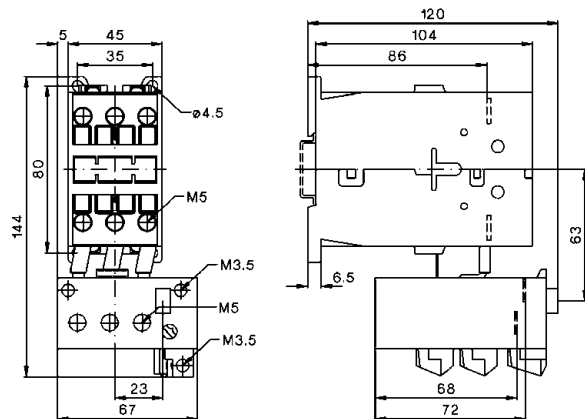
MCD-24 + MCOR-1
MCD-32
MCD-40



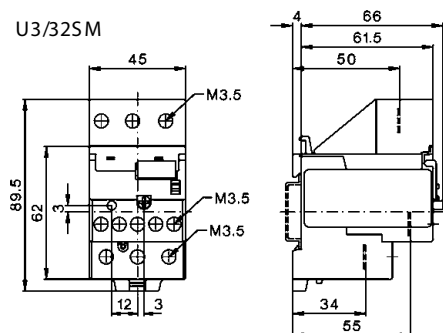
MC-24+ MCOR-2
MC-32
MC-40



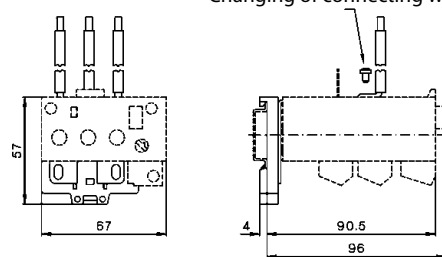
MCD-24 + MCOR-2
MCD-32
MCD-40



U3/32SM



U3/42G +LG5830-4.

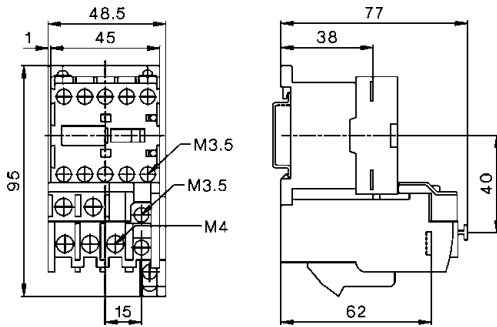


Thermal Overload Relays

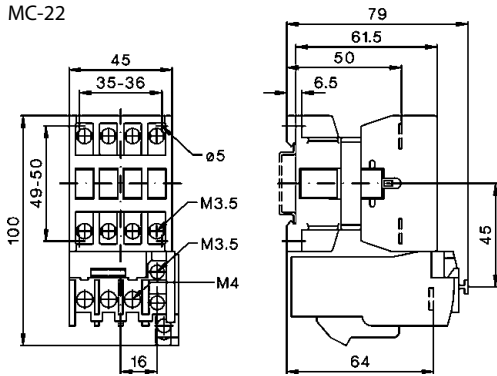


Dimensions

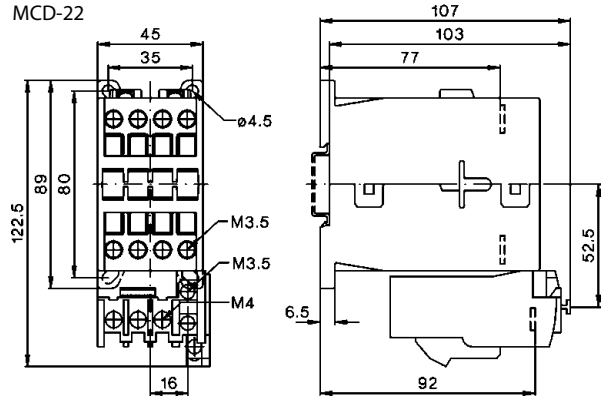
MB-09 + U12/16.. K1
MB-12



MC-10 + U12/16 MC
MC-14
MC-18
MC-22

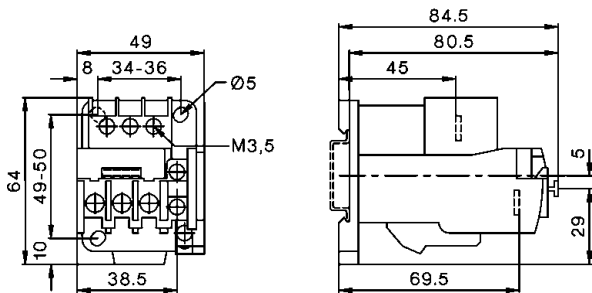


MCD-10 + U12/16 MC
MCD-14
MCD-18
MCD-22

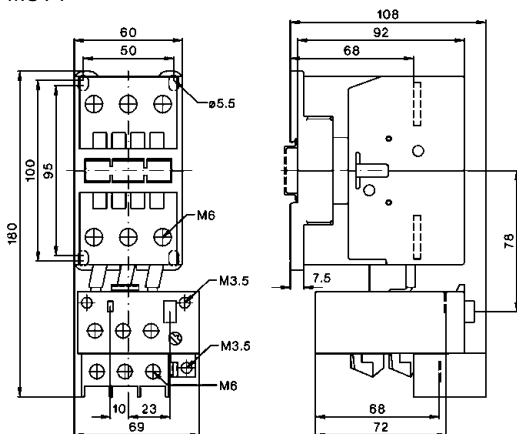


U12SM-MC

U12/16 + U12SM for snap-on 35mm DIN-rail according to DIN EN50022 and screw mounting (single mounting)



MC-50 + MCOR-3
MC-62
MC-74

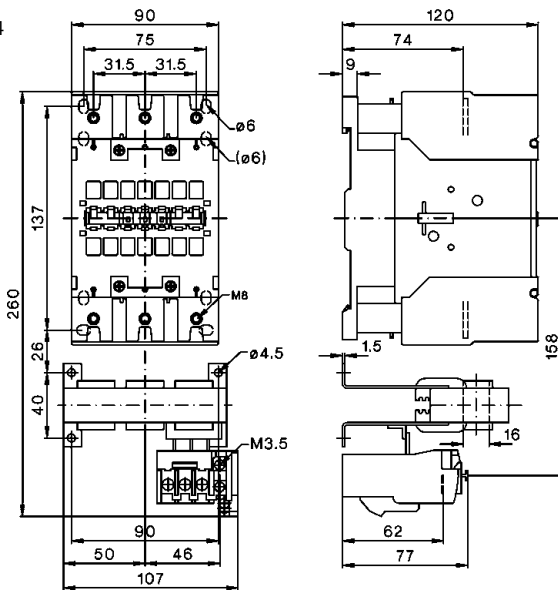


Thermal Overload Relays



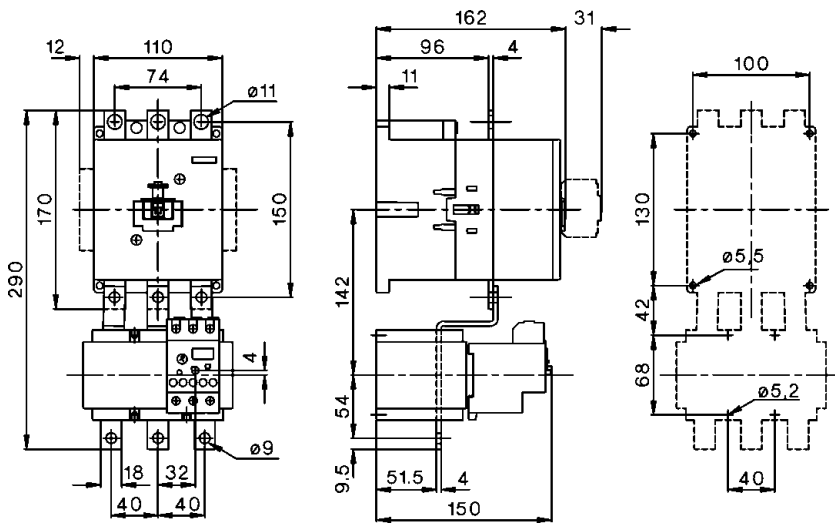
Dimensions

MC-90 + MCOR-4
MC-115



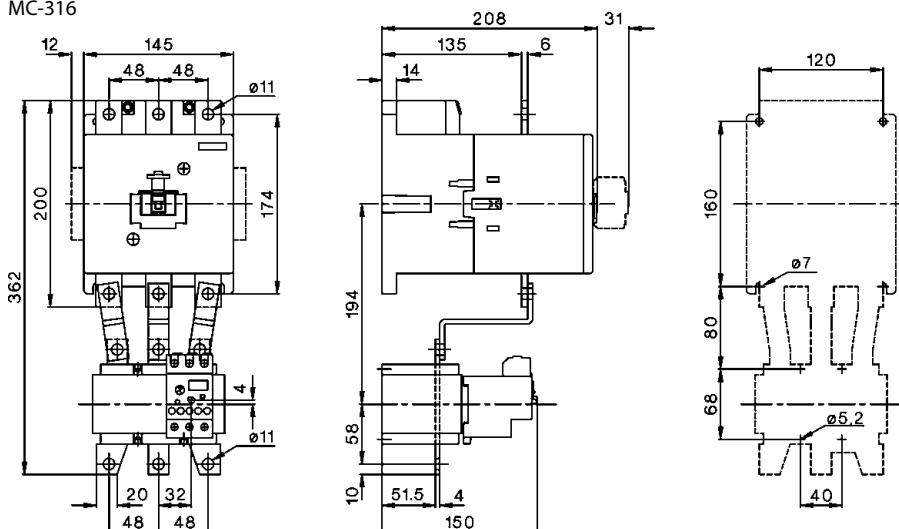
MC-151 + MCOR-5
MC-176

Fixing Points



MC-210 + MCOR-6
MC-260
MC-316

Fixing points

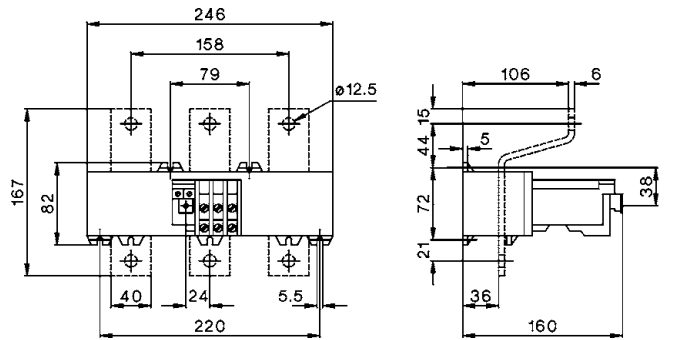


Thermal Overload Relays

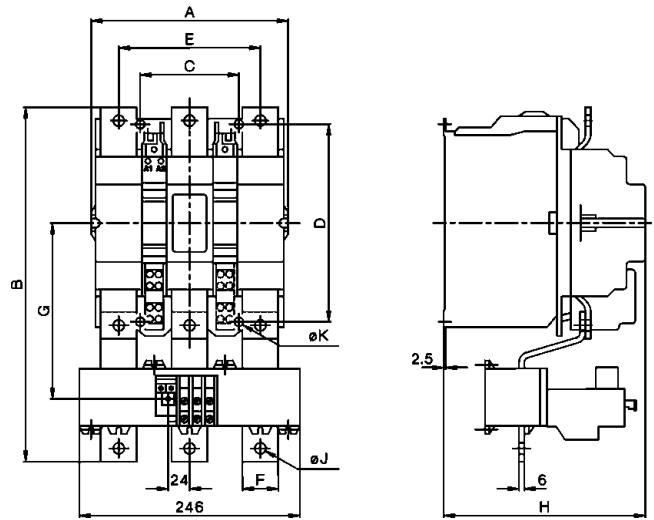


Dimensions

MCOR-7



| U800 with | A | B | C | D | E | F | G | H | J | K |
|-----------|-----|-----|-----|-----|-----|----|-----|-----|------|----|
| MC-450 | 220 | 372 | 110 | 220 | 158 | 40 | 185 | 225 | 12,5 | 9 |
| MC-550 | 220 | 395 | 110 | 220 | 158 | 40 | 196 | 225 | 12,5 | 9 |
| MC-550 | 220 | 395 | 110 | 220 | 158 | 40 | 196 | 225 | 14,5 | 11 |
| MC-860 | 280 | 540 | 175 | 280 | 202 | 50 | 280 | 291 | 14,5 | 11 |



MCOR-8

