



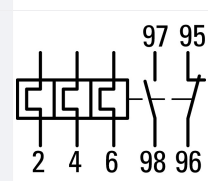
**Overload relay, I<sub>r</sub>= 2.4 - 4 A, 1 N/O, 1 N/C, Direct mounting**

**Part no.** ZE-4  
**Catalog No.** 014518  
**Alternate Catalog No.** XTOM004AC1  
**EL-Nummer (Norway)** 4130481

**Delivery program**

|                           |  |  |  |  |
|---------------------------|--|--|--|--|
| Product range             |  |  |  | ZE overload relays for mini contactor relays                         |
| Phase-failure sensitivity |  |  |  | IEC/EN 60947, VDE 0660 Part 102                                      |
| Description               |  |  |  | Test/off button<br>Reset pushbutton manual/auto<br>Trip-free release |
| Mounting type             |  |  |  | Direct mounting  |

**Setting range**

|                   |                |   |         |  |
|-------------------|----------------|---|---------|--|
| Overload releases | I <sub>r</sub> | A | 2.4 - 4 |  |
| Contact sequence  |                |   |         |  |

**Auxiliary contacts**

|                       |  |  |  |                       |
|-----------------------|--|--|--|-----------------------|
| N/O = Normally open   |  |  |  | 1 N/O                 |
| N/C = Normally closed |  |  |  | 1 N/C                 |
| For use with          |  |  |  | DILEM<br>DIULEM/21/MV |

**Short-circuit protection**

|                       |       |   |    |  |
|-----------------------|-------|---|----|--|
| Type "1" coordination | gG/gL | A | 35 |  |
| Type "2" coordination | gG/gL | A | 10 |  |

**Notes**

Overload trigger: tripping class 10 A  
 Short circuit protection: observe the maximum permissible fuse of the contactor with direct device mounting.  
 Suitable for protection of Ex e-motors



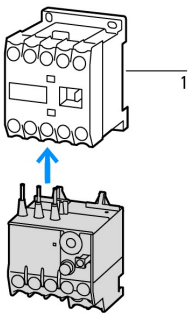
II(2)G [Ex d] [Ex e] [Ex px]

II(2)D [Ex p] [Ex t]  
 PTB 10 ATEX 3014

Observe manual MN03407003Z-DE/EN.

**Notes**

When fitted directly to the contactor a clearance of at least 5 mm is required between the overload relays.



1 Contactor

## Technical data

### General

|   |  |    |  |
|---|--|----|--|
| Standards   |  |    | IEC/EN 60947, VDE 0660, UL, CSA  |
| Climatic proofing   |  |    | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30 |
| Ambient temperature   |  |    | Operating range to IEC/EN 60947<br>PTB: -5 °C - +55 °C                         |
| Open  |  | °C | -25 - +50  |
| Enclosed  |  | °C | - 25 - 40  |
| Temperature compensation  |  |    | Continuous   |
| Weight  |  | kg | 0.077  |
| Mechanical shock resistance   |  | g  | 10<br>Sinusoidal<br>Shock duration 10 ms                                       |
| Degree of Protection  |  |    | IP20   |
| Protection against direct contact when actuated from front (EN 50274) |  |    | Finger and back-of-hand proof  |
| Altitude  |  | m  | Max. 2000  |

### Main conducting paths

|  |           |                 |                  |
|--|-----------|-----------------|------------------|
| Rated impulse withstand voltage                | $U_{imp}$ | V AC            | 6000             |
| Overvoltage category/pollution degree          |           |                 | III/3            |
| Rated insulation voltage                       | $U_i$     | V               | 690              |
| Rated operational voltage                      | $U_e$     | V AC            | 690              |
| Safe isolation to EN 61140                     |           |                 |                  |
| Between auxiliary contacts and main contacts   |           | V AC            | 300              |
| Between main circuits                          |           | V AC            | 300              |
| Temperatur compensation residual error > 40 °C |           |                 | $\leq 0.25 \%/K$ |
| Current heat loss (3 conductors)               |           |                 |                  |
| Lower value of the setting range               |           | W               | 2.5              |
| Maximum setting                                |           | W               | 5.7              |
| Terminal capacities                            |           | mm <sup>2</sup> |                  |
| Solid  |           | mm <sup>2</sup> | 1 x (0.75 - 2.5) |
| Flexible with ferrule                          |           | mm <sup>2</sup> | 1 x (0.5 - 1.5)  |
| Solid or stranded                              |           | AWG             | 18 - 14          |
| Terminal screw                                 |           |                 | M3.5             |
| Tightening torque                              |           | Nm              | 1.2              |
| Stripping length                               |           | mm              | 8                |
| Tools  |           |                 |                  |
| Pozidriv screwdriver                           |           | Size            | 2                |
| Standard screwdriver                           |           | mm              | 0.8 x 5.5        |

### Auxiliary and control circuits

|                                       |           |                 |                                      |
|---------------------------------------|-----------|-----------------|--------------------------------------|
| Rated impulse withstand voltage       | $U_{imp}$ | V               | 4000                                 |
| Overvoltage category/pollution degree |           |                 | III/3                                |
| Terminal capacities                   |           | mm <sup>2</sup> |                                      |
| Solid                                 |           | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5) |
| Flexible with ferrule                 |           | mm <sup>2</sup> | 1 x (0.5 - 1.5)                      |

|                                      |          |         |   |
|--------------------------------------|----------|---------|---|
|                                      |          |         | 2 x (0.5 - 1.5)   |
| Solid or stranded                    |          | AWG     | 2 x (18 - 12)   |
| Terminal screw                       |          |         | M3.5  |
| Tightening torque                    |          | Nm      | 1.2   |
| Stripping length                     |          | mm      | 8   |
| Tools                                |          |         |   |
| Pozidriv screwdriver                 |          | Size    | 2   |
| Standard screwdriver                 |          | mm      | 0.8 x 5.5   |
| Rated insulation voltage             | $U_i$    | V AC    | 500   |
| Rated operational voltage            | $U_e$    | V AC    | 500   |
| Safe isolation to EN 61140           |          |         |   |
| between the auxiliary contacts       |          | V AC    | 250   |
| Conventional thermal current         | $I_{th}$ | A       | 6   |
| Rated operational current            | $I_e$    | A       |   |
| AC-15                                |          |         |   |
| Make contact                         |          |         |   |
| 120 V                                | $I_e$    | A       | 1.5   |
| 220 V 230 V 240 V                    | $I_e$    | A       | 1.5   |
| 380 V 400 V 415 V                    | $I_e$    | A       | 0.7   |
| 500 V                                | $I_e$    | A       | 0.5   |
| Break contact                        |          |         |   |
| 120 V                                | $I_e$    | A       | 1.5   |
| 220 V 230 V 240 V                    | $I_e$    | A       | 1.5   |
| 380 V 400 V 415 V                    | $I_e$    | A       | 0.7   |
| 500 V                                | $I_e$    | A       | 0.5   |
| DC L/R $\leq$ 15 ms                  |          |         |   |
|                                      |          |         | Switch-on and switch-off conditions based on DC-13, time constant as specified. |
| 24 V                                 | $I_e$    | A       | 0.9   |
| 60 V                                 | $I_e$    | A       | 0.75  |
| 110 V                                | $I_e$    | A       | 0.4   |
| 220 V                                | $I_e$    | A       | 0.2   |
| Short-circuit rating without welding |          |         |   |
| max. fuse                            |          | A gG/gL | 4   |

## Notes

**Notes** Ambient air temperature: Operating range to IEC/EN 60947, PTB: -5°C to +50°C  
Main circuits terminal capacity solid and flexible conductors with ferrules: When using 2 conductors use equal cross-sections.

## Rating data for approved types

|                              |  |      |                            |
|------------------------------|--|------|----------------------------|
| Auxiliary contacts           |  |      |                            |
| Pilot Duty                   |  |      |                            |
| AC operated                  |  |      | D300                       |
| DC operated                  |  |      | R300                       |
| General Use                  |  |      |                            |
| AC                           |  | V    | 240 V/1,5 A<br>600 V/0,6 A |
| Short Circuit Current Rating |  | SCCR |                            |
| Basic Rating                 |  |      |                            |
| Notes                        |  |      | CB for max. 480 V          |
| SCCR                         |  | kA   | 5                          |
| max. Fuse                    |  | A    | 15                         |
| max. CB                      |  | A    | 15                         |

## Design verification as per IEC/EN 61439

|  |           |   |     |
|--|-----------|---|-----|
| Technical data for design verification                   |           |   |     |
| Rated operational current for specified heat dissipation | $I_n$     | A | 4   |
| Heat dissipation per pole, current-dependent             | $P_{vid}$ | W | 1.9 |

|  |                   |    |  |
|--|-------------------|----|--|
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub>  | W  | 5.7  |
| Static heat dissipation, non-current-dependent   | P <sub>vs</sub>   | W  | 0  |
| Heat dissipation capacity  | P <sub>diss</sub> | W  | 0  |
| Operating ambient temperature min.   |                   | °C | -25  |
| Operating ambient temperature max.   |                   | °C | 50   |
| IEC/EN 61439 design verification   |                   |    |  |
| 10.2 Strength of materials and parts   |                   |    |  |
| 10.2.2 Corrosion resistance  |                   |    | Meets the product standard's requirements.   |
| 10.2.3.1 Verification of thermal stability of enclosures   |                   |    | Meets the product standard's requirements.   |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat   |                   |    | Meets the product standard's requirements.   |
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects |                   |    | Meets the product standard's requirements.   |
| 10.2.4 Resistance to ultra-violet (UV) radiation   |                   |    | Meets the product standard's requirements.   |
| 10.2.5 Lifting   |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.6 Mechanical impact   |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.7 Inscriptions  |                   |    | Meets the product standard's requirements.   |
| 10.3 Degree of protection of ASSEMBLIES  |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.4 Clearances and creepage distances   |                   |    | Meets the product standard's requirements.   |
| 10.5 Protection against electric shock   |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.6 Incorporation of switching devices and components   |                   |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.7 Internal electrical circuits and connections  |                   |    | Is the panel builder's responsibility.   |
| 10.8 Connections for external conductors   |                   |    | Is the panel builder's responsibility.   |
| 10.9 Insulation properties   |                   |    |  |
| 10.9.2 Power-frequency electric strength   |                   |    | Is the panel builder's responsibility.   |
| 10.9.3 Impulse withstand voltage   |                   |    | Is the panel builder's responsibility.   |
| 10.9.4 Testing of enclosures made of insulating material   |                   |    | Is the panel builder's responsibility.   |
| 10.10 Temperature rise   |                   |    | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| 10.11 Short-circuit rating   |                   |    | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| 10.12 Electromagnetic compatibility  |                   |    | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| 10.13 Mechanical function  |                   |    | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |

## Technical data ETIM 7.0

|  |  |   |                   |
|--|--|---|-------------------|
| Low-voltage industrial components (EG000017) / Thermal overload relay (EC000106)   |  |   |                   |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Overload protection device / Thermal overload relay (ecl@ss10.0.1-27-37-15-01 [AKF075014]) |  |   |                   |
| Adjustable current range   |  | A | 2.4 - 4           |
| Max. rated operation voltage U <sub>e</sub>  |  | V | 690               |
| Mounting method  |  |   | Direct attachment |
| Type of electrical connection of main circuit  |  |   | Screw connection  |
| Number of auxiliary contacts as normally closed contact  |  |   | 1                 |
| Number of auxiliary contacts as normally open contact  |  |   | 1                 |
| Number of auxiliary contacts as change-over contact  |  |   | 0                 |
| Release class  |  |   | CLASS 10          |
| Reset function input   |  |   | No                |
| Reset function automatic   |  |   | Yes               |
| Reset function push-button   |  |   | Yes               |

## Approvals

|                             |  |  |  |
|-----------------------------|--|--|--|
| Product Standards           |  |  | UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; IEC/EN 60947-5-1; CE marking |
| UL File No.                 |  |  | E29184   |
| UL Category Control No.     |  |  | NKCR   |
| CSA File No.                |  |  | 12528  |
| CSA Class No.               |  |  | 3211-03  |
| North America Certification |  |  | UL listed, CSA certified   |

Specially designed for North America

No

Suitable for

Branch circuits

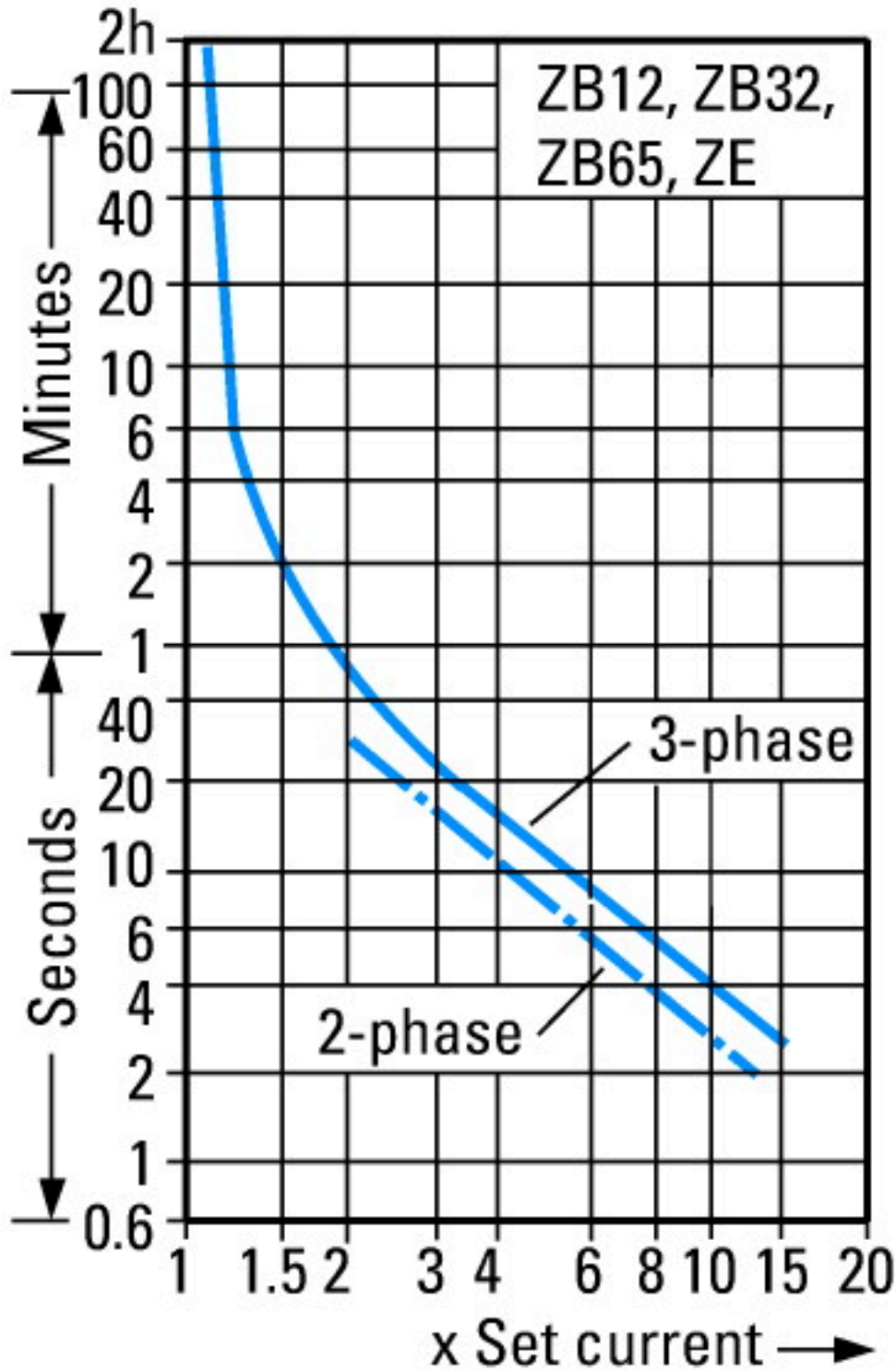
Max. Voltage Rating

600 V AC

Degree of Protection

IEC: IP20, UL/CSA Type: -

## Characteristics



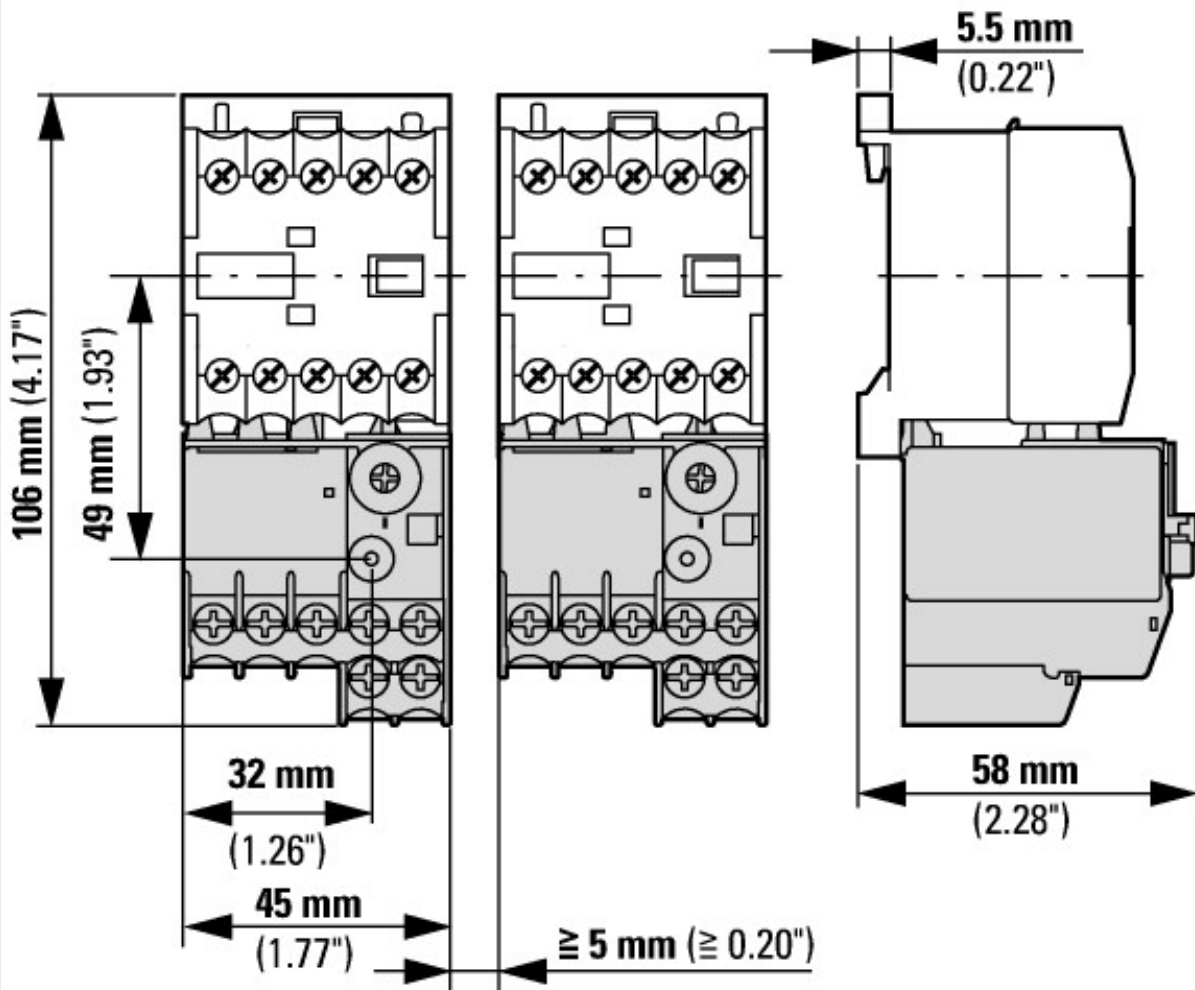
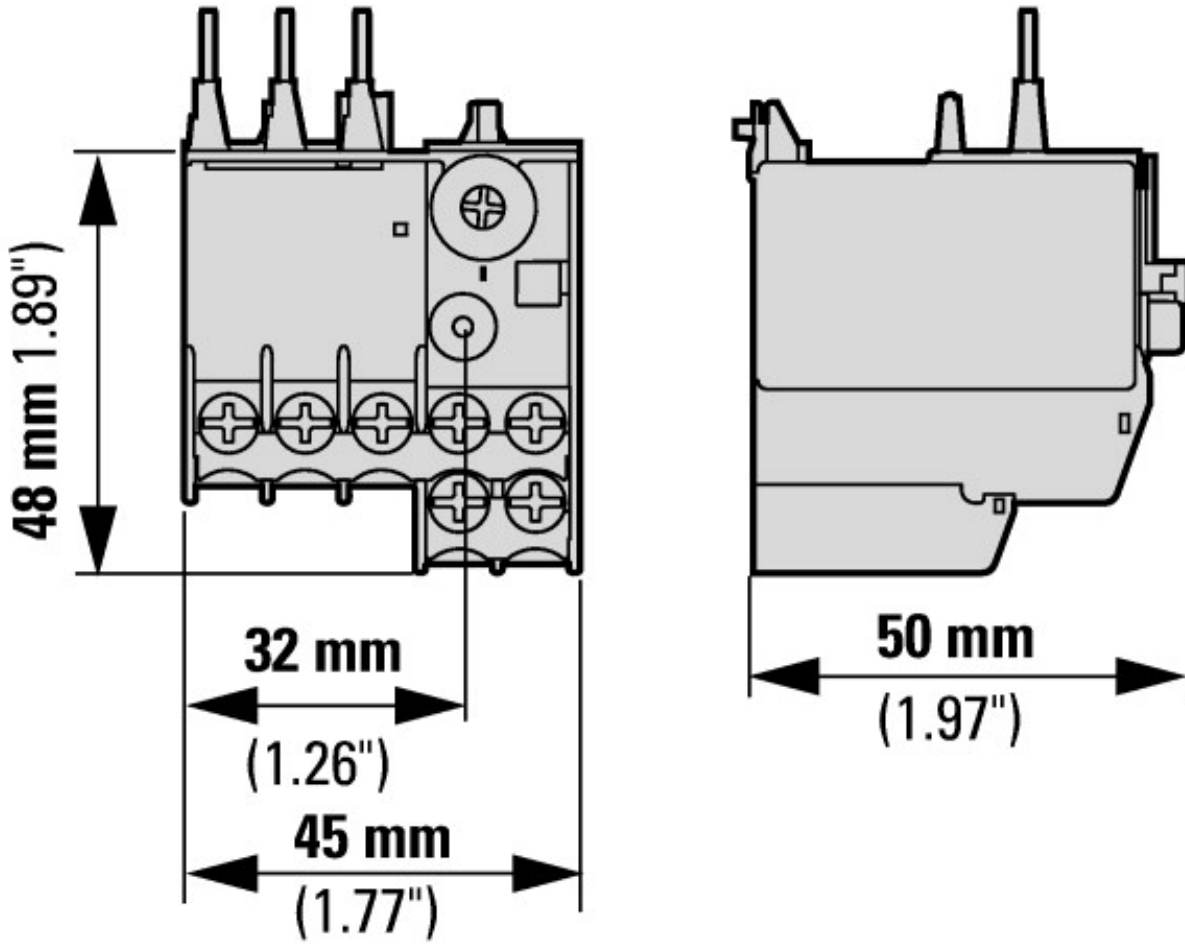
These tripping characteristics are mean values of the spreads at 20 °C ambient air temperature in a cold state.

Tripping time depends on response current.

When the devices are at operational temperature the tripping time of the overload relay falls to approx. 25 % of the read off value.

- 1: Minimum level, 3-phase
- 2: Maximum level, 3-phase
- 3: Minimum marker, 2-phase
- 4: Highest marker, 2-phase

## Dimensions



ZE... + DIL(E)EM-...(-G)

