# Specifications

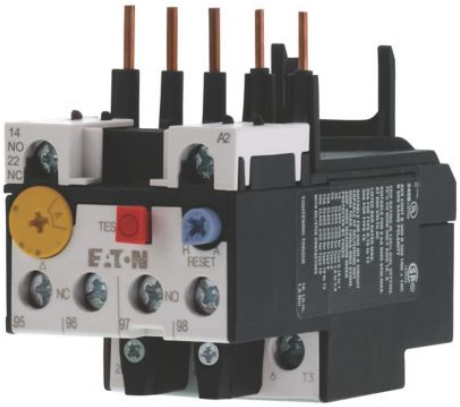
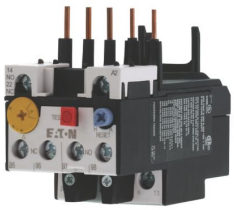
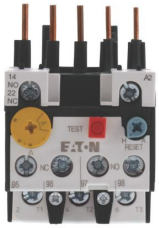


**Photo is representative**





## Eaton 278439

Eaton Moeller® series ZB Overload relay, ZB12, Ir= 4 - 6 A, 1 N/O, 1 N/C, Direct mounting, IP20

| General specifications | |
|---|---|
| **PRODUCT NAME** | Eaton Moeller® series ZB Thermal overload relay |
| **CATALOG NUMBER** | 278439 |
| **MODEL CODE** | ZB12-6 |
| **EAN** | 4015082784393 |
| **PRODUCT LENGTH/DEPTH** | 88 mm |
| **PRODUCT HEIGHT** | 67 mm |
| **PRODUCT WIDTH** | 45 mm |
| **PRODUCT WEIGHT** | 0.142 kg |
| **CERTIFICATIONS** | CSA<br>CSA File No.: 012528<br>IEC/EN 60947<br>UL<br>CSA Class No.: 3211-03<br>CE<br>IEC/EN 60947-4-1<br>UL 60947-4-1<br>UL Category Control No.: NKCR<br>UL File No.: E29184<br>CSA-C22.2 No. 60947-4-1-14<br>VDE 0660 |

## Contacts

| | |
|---|---|
| **NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)** | 0 |
| **NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)** | 1 |
| **NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)** | 1 |
| **NUMBER OF CONTACTS (NORMALLY CLOSED CONTACTS)** | 1 |
| **NUMBER OF CONTACTS (NORMALLY OPEN CONTACTS)** | 1 |

## Design verification

| | |
|---|---|
| **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. |
| **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 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. 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. |

| | |
|---|---|
| **10.9.2 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. |
| **EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID** | 5.1 W |
| **HEAT DISSIPATION CAPACITY PDISS** | 0 W |
| **HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID** | 1.7 W |
| **RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** | 6 A |
| **STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS** | 0 W |

## Electrical rating

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|---|---|
| **CONVENTIONAL THERMAL CURRENT ITH OF AUXILIARY CONTACTS (1-POLE, OPEN)** | 6 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-15, 120 V** | 1.5 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-15, 220 V, 230 V, 240 V** | 1.5 A |
| **RATED OPERATIONAL CURRENT (IE) AT AC-15, 380 V, 400 V, 415 V** | 0.9 A |
| **RATED OPERATIONAL CURRENT (IE) AT DC-13, 110 V** | 0.4 A |
| **RATED OPERATIONAL CURRENT (IE) AT DC-13, 220 V, 230 V** | 0.2 A |
| **RATED OPERATIONAL CURRENT (IE) AT DC-13, 24 V** | 0.9 A |
| **RATED OPERATIONAL CURRENT (IE) AT DC-13, 60 V** | 0.75 A |
| **RATED OPERATIONAL VOLTAGE (UE) - MAX** | 690 V |
| **SAFE ISOLATION** | 440 V AC, Between main circuits, According to EN 61140<br>240 V AC, Between auxiliary contacts, According to EN 61140<br>440 V, Between auxiliary contacts and main contacts, According to EN 61140 |
| **SWITCHING CAPACITY (AUXILIARY CONTACTS, PILOT DUTY)** | B300 at opposite polarity, AC operated (UL/CSA)<br>B600 at opposite polarity, AC operated (UL/CSA)<br>R300, DC operated (UL/CSA) |
| **VOLTAGE RATING - MAX** | 600 VAC |

## Features & functions

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|---|---|
| **FEATURES** | Reset pushbutton manual/auto<br>Test/off button<br>Trip-free release<br>Phase-failure sensitivity (according to IEC/EN 60947, VDE 0660 Part 102) |

## General information

| | |
|---|---|
| **AMBIENT OPERATING TEMPERATURE - MAX** | 55 °C |
| **AMBIENT OPERATING TEMPERATURE - MIN** | -25 °C |
| **AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MAX** | 40 °C |
| **AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MIN** | -25 °C |
| **CLASS** | CLASS 10 A / IEC 60947-4-1, 8.2.1.5.1.1. c) 4 min |
| **CLIMATIC PROOFING** | Damp heat, cyclic, to IEC 60068-2-30<br>Damp heat, constant, to IEC 60068-2-78 |
| **DEGREE OF PROTECTION** | IP00 |
| **FRAME SIZE** | ZB12 |
| **MOUNTING METHOD** | Direct mounting |
| **OVERLOAD RELEASE CURRENT SETTING - MAX** | 6 A |
| **OVERLOAD RELEASE CURRENT SETTING - MIN** | 4 A |
| **OVERVOLTAGE CATEGORY** | III |
| **POLLUTION DEGREE** | 3 |
| **PRODUCT CATEGORY** | Overload relay ZB up to 150 A |
| **PROTECTION** | Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274) |
| **RATED IMPULSE WITHSTAND VOLTAGE (UIMP)** | 6000 V AC<br>4000 V (auxiliary and control circuits) |
| **SHOCK RESISTANCE** | 10 g, Mechanical, Sinusoidal, Shock duration 10 ms |
| **SUITABLE FOR** | Branch circuits, (UL/CSA) |
| **TEMPERATURE COMPENSATION** | ≤ 0.25 %/K, residual error for T > 40°<br>Continuous |

## Short-circuit rating

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|---|---|
| **SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 600 V)** | 100 kA, Fuse, SCCR (UL/CSA)<br>10 A, Class J/CC, max. Fuse, SCCR (UL/CSA) |
| **SHORT-CIRCUIT PROTECTION RATING** | Max. 6 A gG/gL, fuse, Without welding, Auxiliary and control circuits<br>20 A gG/gL, Fuse, Type “2” coordination<br>25 A gG/gL, Fuse, Type “1” coordination<br>Information on Type "1" and Type"2" coordination applies to 100 kA and 690 V |

## Terminal capacities

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|---|---|
| **SCREW SIZE** | M4, Terminal screw<br>M3.5, Terminal screw, Control circuit cables |
| **SCREWDRIVER SIZE** | 1 x 6 mm, Terminal screw, Standard screwdriver<br>2, Terminal screw, Pozidriv screwdriver |
| **STRIPPING LENGTH (CONTROL CIRCUIT CABLE)** | 8 mm |
| **STRIPPING LENGTH (MAIN CABLE)** | 10 mm |
| **TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)** | 2 x (1 - 4) mm², Main cables<br>1 x (0.75 - 2.5) mm², Control circuit cables<br>2 x (0.75 - 2.5) mm², Control circuit cables<br>1 x (1 - 4) mm², Main cables |
| **TERMINAL CAPACITY (SOLID)** | 2 x (1 - 6) mm², Main cables<br>1 x (0.75 - 4) mm², Control circuit cables<br>1 x (1 - 6) mm², Main cables<br>2 x (0.75 - 4) mm², Control circuit cables |
| **TERMINAL CAPACITY (SOLID/STRANDED AWG)** | 18 - 8, Main cables<br>2 x (18 - 14), Control circuit cables |
| **TIGHTENING TORQUE** | 1.2 Nm, Screw terminals, Control circuit cables<br>1.8 Nm, Screw terminals, Main cables |

## Resources

| | |
|---|---|
| **CATALOGUES** | eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf |
| **CHARACTERISTIC CURVE** | eaton-tripping-zb-overload-relay-characteristic-curve-002.eps<br><br>eaton-tripping-devices-zb-overload-relay-characteristic-curve-008.eps |
| **DECLARATIONS OF CONFORMITY** | eaton-thermal-overload-relay-declaration-of-conformity-uk251269en.pdf<br><br>eaton-thermal-overload-relay-declaration-of-conformity-eu250786en.pdf |
| **DRAWINGS** | eaton-tripping-devices-overload-relay-zb-overload-relay-dimensions-003.eps<br><br>eaton-tripping-devices-overload-relay-zb-overload-relay-3d-drawing.eps |
| **ECAD MODEL** | ETN.ZB12-6 |
| **INSTALLATION INSTRUCTIONS** | eaton-overload-relays-zb12-zb32-il03407015z.pdf<br><br>IL03407195Z |
| **MCAD MODEL** | DA-CS-zb12 |
| **PEP ECO-PASSPORT** | eaton-thermal-overload-relays-pep-eato-00458-v0101-en.pdf |
| **SALES NOTES** | eaton-dol-3phase-ac-motor-starter-ms-16a-flyer-fl034009en-en-us.pdf |
| **WIRING DIAGRAMS** | eaton-tripping-devices-overload-relay-zb-overload-relay-wiring-diagram-002.eps |

| | |
|---|---|
| **PROJECT NAME:** | |
| **PROJECT NUMBER:** | |
| **PREPARED BY:** | |
| **DATE:** | |

**Eaton Corporation plc** Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

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