

# Specifications



Photo is representative



## Eaton 278441

Eaton Moeller® series ZB Overload relay, ZB12, Ir= 9 - 12 A, 1 N/O, 1 N/C, Direct mounting, IP20

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller® series ZB Thermal overload relay
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<b>CATALOG NUMBER</b>	278441
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<b>EAN</b>	4015082784416
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<b>UPC</b>	782116358755
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<b>PRODUCT LENGTH/DEPTH</b>	88 mm
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<b>PRODUCT HEIGHT</b>	67 mm
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<b>PRODUCT WIDTH</b>	45 mm
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<b>PRODUCT WEIGHT</b>	0.145 kg
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<b>CERTIFICATIONS</b>	IEC/EN 60947 CSA File No.: 012528 UL File No.: E29184 CE CSA CSA Class No.: 3211-03 CSA-C22.2 No. 60947-4-1-14 UL 60947-4-1 IEC/EN 60947-4-1 UL UL Category Control No.: NKCR VDE 0660
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<b>MODEL CODE</b>	ZB12-12
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## Features & Functions

### FEATURES

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

## General information

<b>AMBIENT OPERATING TEMPERATURE - MIN</b>	-25 °C
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	55 °C
<b>AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MIN</b>	25 °C
<b>AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MAX</b>	40 °C
<b>CLASS</b>	CLASS 10 A
<b>CLIMATIC PROOFING</b>	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
<b>DEGREE OF PROTECTION</b>	IP20
<b>FRAME SIZE</b>	ZB12
<b>MOUNTING METHOD</b>	Direct mounting
<b>OVERLOAD RELEASE CURRENT SETTING - MIN</b>	9 A
<b>OVERLOAD RELEASE CURRENT SETTING - MAX</b>	12 A
<b>OVERVOLTAGE CATEGORY</b>	III
<b>POLLUTION DEGREE</b>	3
<b>PRODUCT CATEGORY</b>	Overload relay ZB up to 150 A
<b>PROTECTION</b>	Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274)
<b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP)</b>	4000 V (auxiliary and control circuits) 6000 V AC
<b>SHOCK RESISTANCE</b>	10 g, Mechanical, Sinusoidal, Shock duration 10 ms
<b>SUITABLE FOR</b>	Branch circuits, (UL/CSA)
<b>TEMPERATURE COMPENSATION</b>	Continuous ≤ 0.25 %/K, residual error for T > 40°

## Terminal capacities

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

## Electrical rating

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

## Short-circuit rating

<b>SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 600 V)</b>	15 A, Class J/CC, max. Fuse, SCCR (UL/CSA) 100 kA, Fuse, SCCR (UL/CSA)
<b>SHORT-CIRCUIT PROTECTION RATING</b>	25 A gG/gL, Fuse, Type "2" coordination Max. 6 A gG/gL, fuse, Without welding, Auxiliary and control circuits 50 A gG/gL, Fuse, Type "1" coordination

## Contacts

<b>NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)</b>	0
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)</b>	1
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)</b>	1
<b>NUMBER OF CONTACTS (NORMALLY CLOSED CONTACTS)</b>	1
<b>NUMBER OF CONTACTS (NORMALLY OPEN CONTACTS)</b>	1

## Design verification

<b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID</b>	6.9 W
<b>HEAT DISSIPATION CAPACITY PDISS</b>	0 W
<b>HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID</b>	2.3 W
<b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>	12 A
<b>STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS</b>	0 W
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>	Meets the product standard's requirements.
<b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.6 MECHANICAL IMPACT</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.
<b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>	Does not apply, since the entire switchgear needs to be evaluated.

## Resources

CATALOGUES	<a href="#">eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf</a> <a href="#">Product Range Catalog Switching and protecting motors</a>
CHARACTERISTIC CURVE	<a href="#">eaton-tripping-zb-overload-relay-characteristic-curve-002.eps</a> <a href="#">eaton-tripping-devices-zb-overload-relay-characteristic-curve-003.eps</a>
DECLARATIONS OF CONFORMITY	<a href="#">eaton-thermal-overload-relay-declaration-of-conformity-eu250786en.pdf</a> <a href="#">eaton-thermal-overload-relay-declaration-of-conformity-uk251269en.pdf</a>
DRAWINGS	<a href="#">eaton-tripping-devices-overload-relay-zb-overload-relay-dimensions-003.eps</a> <a href="#">eaton-tripping-devices-overload-relay-zb-overload-relay-3d-drawing.eps</a>
ECAD MODEL	<a href="#">ETN.ZB12-12</a>
INSTALLATION INSTRUCTIONS	<a href="#">IL03407195Z</a> <a href="#">eaton-overload-relays-zb12-zb32-il03407015z.pdf</a>
MCAD MODEL	<a href="#">DA-CS-zb12</a> <a href="#">DA-CD-zb12</a>
PEP ECO-PASSPORT	<a href="#">eaton-thermal-overload-relays-pep-eato-00458-v0101-en.pdf</a>
SALES NOTES	<a href="#">eaton-dol-3phase-ac-motor-starter-ms-16a-flyer-fl034009en-en-us.pdf</a>
SELLING POLICY AND T&CS	<a href="#">Hydraulic Warranty</a>
WIRING DIAGRAMS	<a href="#">eaton-tripping-devices-overload-relay-zb-overload-relay-wiring-diagram-002.eps</a>

<b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>	Is the panel builder's responsibility.
<b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>	Is the panel builder's responsibility.
<b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>	Is the panel builder's responsibility.
<b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>	Is the panel builder's responsibility.
<b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>	Is the panel builder's responsibility.
<b>10.10 TEMPERATURE RISE</b>	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
<b>10.11 SHORT-CIRCUIT RATING</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.13 MECHANICAL FUNCTION</b>	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

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**PROJECT NAME:**

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**PROJECT NUMBER:**

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**PREPARED BY:**

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**DATE:**

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