



Overload relay, ZB12, Ir= 2.4 - 4 A, 1 N/O, 1 N/C, Direct mounting, IP20



Part no. ZB12-4  
278438  
EL Number 4131833  
(Norway)

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| General specifications                         |  |  |
| Product name                                   |  | Eaton Moeller® series ZB Thermal overload relay  |
| Part no.                                       |  | ZB12-4   |
| EAN  |  | 4015082784386  |
| Product Length/Depth                           |  | 88 millimetre  |
| Product height                                 |  | 67 millimetre  |
| Product width                                  |  | 45 millimetre  |
| Product weight                                 |  | 0.142 kilogram   |
| Certifications                                 |  | UL 60947-4-1<br>UL File No.: E29184<br>CSA File No.: 012528<br>CE<br>UL<br>CSA-C22.2 No. 60947-4-1-14<br>VDE 0660<br>CSA<br>IEC/EN 60947<br>IEC/EN 60947-4-1<br>UL Category Control No.: NKCR<br>CSA Class No.: 3211-03  |
| Product Tradename                              |  | ZB   |
| Product Type                                   |  | Thermal overload relay   |
| Product Sub Type                               |  | None   |
| Catalog Notes                                  |  | Ambient air temperature: Operating range to IEC/EN 60947, PTB: -5°C to +55°C<br>Ambient operating temperature (according to IEC/EN 60947)<br>PTB: -5 °C - +55 °C<br>Rated operational current: Switch-on and switch-off conditions based on DC-13, time constant as specified. |
| Features & Functions                           |  |  |
| Features                                       |  | Trip-free release<br>Reset pushbutton manual/auto<br>Test/off button<br>Phase-failure sensitivity (according to IEC/EN 60947, VDE 0660 Part 102)   |
| General information                            |  |  |
| Ambient operating temperature - min            |  | -25 °C   |
| Ambient operating temperature - max            |  | 55 °C  |
| Ambient operating temperature (enclosed) - min |  | 25 °C  |
| Ambient operating temperature (enclosed) - max |  | 40 °C  |
| Class  |  | CLASS 10 A   |
| Climatic proofing                              |  | Damp heat, cyclic, to IEC 60068-2-30<br>Damp heat, constant, to IEC 60068-2-78   |
| Degree of protection                           |  | IP20   |
| Frame size                                     |  | ZB12   |
| Mounting method                                |  | Direct attachment<br>Direct mounting   |
| Overload release current setting - min         |  | 2.4 A  |
| Overload release current setting - max         |  | 4 A  |
| Overvoltage category                           |  | III  |
| Pollution degree                               |  | 3  |
| Product category                               |  | Accessories<br>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)  |

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| Temperature compensation  |  |  | ≤ 0.25 %/K, residual error for T > 40°<br>Continuous   |
| <b>Terminal capacities</b>  |  |  |  |
| Terminal capacity (flexible with ferrule)   |  |  | 1 x (1 - 4) mm <sup>2</sup> , Main cables<br>2 x (1 - 4) mm <sup>2</sup> , Main cables<br>2 x (0.75 - 2.5) mm <sup>2</sup> , Control circuit cables<br>1 x (0.75 - 2.5) mm <sup>2</sup> , Control circuit cables |
| Terminal capacity (solid)   |  |  | 2 x (0.75 - 4) mm <sup>2</sup> , Control circuit cables<br>1 x (0.75 - 4) mm <sup>2</sup> , Control circuit cables<br>1 x (1 - 6) mm <sup>2</sup> , Main cables<br>2 x (1 - 6) mm <sup>2</sup> , Main cables     |
| Terminal capacity (solid/stranded AWG)  |  |  | 18 - 8, Main cables<br>2 x (18 - 14), Control circuit cables   |
| Stripping length (main cable)   |  |  | 10 mm  |
| Stripping length (control circuit cable)  |  |  | 8 mm   |
| 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  |
| Tightening torque   |  |  | 1.8 Nm, Screw terminals, Main cables<br>1.2 Nm, Screw terminals, Control circuit cables  |
| <b>Electrical rating</b>  |  |  |  |
| Conventional thermal current I <sub>th</sub> of auxiliary contacts (1-pole, open) |  |  | 6 A  |
| Rated operational current (I <sub>e</sub> ) at AC-15, 120 V                       |  |  | 1.5 A  |
| Rated operational current (I <sub>e</sub> ) at AC-15, 220 V, 230 V, 240 V         |  |  | 1.5 A  |
| Rated operational current (I <sub>e</sub> ) at AC-15, 380 V, 400 V, 415 V         |  |  | 0.9 A  |
| Rated operational current (I <sub>e</sub> ) at DC-13, 110 V                       |  |  | 0.4 A  |
| Rated operational current (I <sub>e</sub> ) at DC-13, 220 V, 230 V                |  |  | 0.2 A  |
| Rated operational current (I <sub>e</sub> ) at DC-13, 24 V                        |  |  | 0.9 A  |
| Rated operational current (I <sub>e</sub> ) at DC-13, 60 V                        |  |  | 0.75 A   |
| Rated operational voltage (U <sub>e</sub> ) - max                                 |  |  | 690 V  |
| Safe isolation  |  |  | 440 V, Between auxiliary contacts and main contacts, According to EN 61140<br>440 V AC, Between main circuits, According to EN 61140<br>240 V AC, Between auxiliary contacts, According to EN 61140              |
| Switching capacity (auxiliary contacts, pilot duty)                               |  |  | R300, DC operated (UL/CSA)<br>B300 at opposite polarity, AC operated (UL/CSA)<br>B600 at opposite polarity, AC operated (UL/CSA)   |
| Voltage rating - max  |  |  | 600 V AC   |
| <b>Short-circuit rating</b>   |  |  |  |
| Short-circuit current rating (high fault at 600 V)                                |  |  | 6 A, Class J/CC, max. Fuse, SCCR (UL/CSA)<br>100 kA, Fuse, SCCR (UL/CSA)   |
| Short-circuit protection rating   |  |  | 25 A gG/gL, Fuse, Type "1" coordination<br>Max. 6 A gG/gL, fuse, Without welding, Auxiliary and control circuits<br>16 A gG/gL, Fuse, Type "2" coordination  |
| <b>Contacts</b>   |  |  |  |
| 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  |
| <b>Design verification</b>  |  |  |  |
| Equipment heat dissipation, current-dependent P <sub>vid</sub>                    |  |  | 6 W  |
| Heat dissipation capacity P <sub>diss</sub>                                       |  |  | 0 W  |
| Heat dissipation per pole, current-dependent P <sub>vid</sub>                     |  |  | 2 W  |
| Rated operational current for specified heat dissipation (I <sub>n</sub> )        |  |  | 4 A  |
| Static heat dissipation, non-current-dependent P <sub>vs</sub>                    |  |  | 0 W  |
| 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.   |

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| 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.   |
| 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 9.0

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| 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 (ecI@ss13-27-37-15-01 [AKF075019]) |   |                   |
| Adjustable current range   | A | 2.4 - 4           |
| Max. rated operation voltage Ue  | 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 A        |
| Reset function input   |   | No                |
| Reset function automatic   |   | Yes               |
| Reset function push-button   |   | Yes               |