

# Specifications



Photo is representative

## Eaton 259092

Eaton Moeller series NZM - Molded Case Circuit Breaker. NZM2, 3 pole, Icu 400/415 V 50 Hz( Icu ): 50 kA, 160 A, Fixed, Screw connection, IEC

### General specifications

|                             |                                                                      |
|-----------------------------|----------------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton Moeller series NZM molded case circuit breaker thermo-magnetic |
| <b>CATALOG NUMBER</b>       | 259092                                                               |
| <b>MODEL CODE</b>           | NZMN2-A160                                                           |
| <b>EAN</b>                  | 4015082590925                                                        |
| <b>PRODUCT LENGTH/DEPTH</b> | 149 mm                                                               |
| <b>PRODUCT HEIGHT</b>       | 184 mm                                                               |
| <b>PRODUCT WIDTH</b>        | 105 mm                                                               |
| <b>PRODUCT WEIGHT</b>       | 2.321 kg                                                             |
| <b>COMPLIANCES</b>          | RoHS conform                                                         |
| <b>CERTIFICATIONS</b>       | IEC/EN 60947<br>IEC                                                  |
| <b>GLOBAL CATALOG</b>       | 259092                                                               |

## Product specifications

|                                                                                         |                                                                                                                                  |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>AMPERAGE RATING</b>                                                                  | 160 A                                                                                                                            |
| <b>VOLTAGE RATING</b>                                                                   | 690 V - 690 V                                                                                                                    |
| <b>CIRCUIT BREAKER FRAME TYPE</b>                                                       | NZM2                                                                                                                             |
| <b>FEATURES</b>                                                                         | Protection unit<br>Motor drive optional                                                                                          |
| <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.                         |
| <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.                                                                                       |

## Resources

|                            |                                                                                                                                                                                |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | <a href="#">eaton-nas-network-and-system-protection-brochure-br01301001zen-en-us.pdf</a>                                                                                       |
| BROCHURES                  | <a href="#">eaton-feerum-the-whole-grain-solution-success-story-en-us.pdf</a><br><a href="#">eaton-digital-nzm-brochure-br013003en-en-us.pdf</a>                               |
| CATALOGS                   | <a href="#">eaton-digital-nzm-catalog-ca013003en-en-us.pdf</a><br><a href="#">eaton-circuit-breaker-characteristic-power-defense-mccb-characteristic-curve-036.eps</a>         |
| CHARACTERISTIC CURVE       | <a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-050.eps</a><br><a href="#">eaton-circuit-breaker-let-through-current-nzm-mccb-characteristic-curve-004.eps</a> |
| DECLARATIONS OF CONFORMITY | <a href="#">eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250290en.pdf</a>                                                                                     |
|                            | <a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-019.eps</a>                                                                                                              |
| DRAWINGS                   | <a href="#">eaton-circuit-breaker-switch-nzm-mccb-dimensions-017.eps</a><br><a href="#">eaton-circuit-breaker-switch-nzm-mccb-3d-drawing.eps</a>                               |
| ECAD MODEL                 | <a href="#">ETN.259092.edz</a>                                                                                                                                                 |
| INSTALLATION INSTRUCTIONS  | <a href="#">eaton-circuit-breakers-basic-device-nzm2-il01206006z.pdf</a>                                                                                                       |
| INSTALLATION VIDEOS        | <a href="#">The new digital NZM Range</a><br><a href="#">Introduction of the new digital circuit breaker NZM</a>                                                               |
| MCAD MODEL                 | <a href="#">DA-CD-nzm2_3p</a><br><a href="#">DA-CS-nzm2_3p</a>                                                                                                                 |

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| <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.                                   |
| <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>POLLUTION DEGREE</b>                                         | 3                                                                                                    |
| <b>MOUNTING METHOD</b>                                          | Built-in device fixed built-in technique<br>Fixed<br>DIN rail (top hat rail)<br>mounting optional    |
| <b>CLIMATIC PROOFING</b>                                        | Damp heat, cyclic, to IEC 60068-2-30<br>Damp heat, constant, to IEC 60068-2-78                       |
| <b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>            | 38.4 W                                                                                               |
| <b>UTILIZATION CATEGORY</b>                                     | A (IEC/EN 60947-2)                                                                                   |
| <b>ISOLATION</b>                                                | 300 V AC (between the auxiliary contacts)<br>500 V AC (between auxiliary contacts and main contacts) |
| <b>AMBIENT OPERATING TEMPERATURE - MAX</b>                      | 70 °C                                                                                                |
| <b>AMBIENT OPERATING TEMPERATURE - MIN</b>                      | -25 °C                                                                                               |
| <b>AMBIENT STORAGE TEMPERATURE - MAX</b>                        | 70 °C                                                                                                |
| <b>AMBIENT STORAGE TEMPERATURE - MIN</b>                        | 40 °C                                                                                                |
| <b>NUMBER OF AUXILIARY</b>                                      | 0                                                                                                    |

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| PEP ECO-PASSPORT      | <a href="#">eaton-molded-case-switches-pep-eato-00207-v0101-en.pdf</a> |
| TECHNICAL DATA SHEETS | <a href="#">eaton-nzm-technical-information-sheet</a>                  |

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| <b>CONTACTS (CHANGE-OVER CONTACTS)</b>                         |                                                                                                                                                                                                                                                                                                               |
| <b>NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)</b> | 0                                                                                                                                                                                                                                                                                                             |
| <b>NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)</b>   | 0                                                                                                                                                                                                                                                                                                             |
| <b>PROTECTION AGAINST DIRECT CONTACT</b>                       | Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110                                                                                                                                                                                                                                               |
| <b>DEGREE OF PROTECTION</b>                                    | IP20<br>IP20 (basic degree of protection, in the operating controls area)                                                                                                                                                                                                                                     |
| <b>DIRECTION OF INCOMING SUPPLY</b>                            | As required                                                                                                                                                                                                                                                                                                   |
| <b>ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT</b>              | Screw connection                                                                                                                                                                                                                                                                                              |
| <b>LIFESPAN, MECHANICAL</b>                                    | 20000 operations                                                                                                                                                                                                                                                                                              |
| <b>OVERVOLTAGE CATEGORY</b>                                    | III                                                                                                                                                                                                                                                                                                           |
| <b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>                   | IP40 (with insulating surround)<br>IP66 (with door coupling rotary handle)                                                                                                                                                                                                                                    |
| <b>DEGREE OF PROTECTION (TERMINATIONS)</b>                     | IP10 (tunnel terminal)<br>IP00 (terminations, phase isolator and strip terminal)                                                                                                                                                                                                                              |
| <b>NUMBER OF POLES</b>                                         | Three-pole                                                                                                                                                                                                                                                                                                    |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                        | Max. 10 segments of 24 mm x 0.8 mm at rear-side connection (punched)<br>Max. 8 segments of 24 mm x 1 mm (2x) at box terminal<br>Max. 10 segments of 16 mm x 0.8 mm at box terminal<br>Min. 2 segments of 16 mm x 0.8 mm at rear-side connection (punched)<br>Min. 2 segments of 9 mm x 0.8 mm at box terminal |
| <b>LIFESPAN, ELECTRICAL</b>                                    | 7500 operations at 690 V AC-1<br>10000 operations at 400 V AC-1<br>6500 operations at 400 V AC-3<br>10000 operations at 415 V AC-1<br>3000 operations at 500 V                                                                                                                                                |

|                                                                      |                                                                                                                                                                                                                                                                                                                              |
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|                                                                      | DC-3<br>7500 operations at 500 V<br>DC-1<br>3000 operations at 750 V<br>DC-3<br>6500 operations at 415 V<br>AC-3<br>7500 operations at 750 V<br>DC-1<br>5000 operations at 690 V<br>AC-3                                                                                                                                     |
| <b>FUNCTIONS</b>                                                     | System and cable protection                                                                                                                                                                                                                                                                                                  |
| <b>TYPE</b>                                                          | Circuit breaker                                                                                                                                                                                                                                                                                                              |
| <b>SPECIAL FEATURES</b>                                              | <ul style="list-style-type: none"> <li>• Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit breaker (Rated short-circuit breaking capacity <math>I_{cn}</math>)</li> <li>• Rated current = rated uninterrupted current: 160 A</li> </ul> |
| <b>APPLICATION</b>                                                   | Use in unearthed supply systems at 690 V                                                                                                                                                                                                                                                                                     |
| <b>SHOCK RESISTANCE</b>                                              | 20 g (half-sinusoidal shock 20 ms)                                                                                                                                                                                                                                                                                           |
| <b>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b>               | Front side                                                                                                                                                                                                                                                                                                                   |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 160 A                                                                                                                                                                                                                                                                                                                        |
| <b>POWER LOSS</b>                                                    | 38.4 W                                                                                                                                                                                                                                                                                                                       |
| <b>RELEASE SYSTEM</b>                                                | Thermomagnetic release                                                                                                                                                                                                                                                                                                       |
| <b>SHORT-CIRCUIT TOTAL BREAKTIME</b>                                 | < 10 ms                                                                                                                                                                                                                                                                                                                      |
| <b>RATED SHORT-TIME WITHSTAND CURRENT (T = 0.3 S)</b>                | 1.9 kA                                                                                                                                                                                                                                                                                                                       |
| <b>RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)</b>                  | 1.9 kA                                                                                                                                                                                                                                                                                                                       |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>               | 1600 A                                                                                                                                                                                                                                                                                                                       |

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| <b>SHORT-CIRCUIT RELEASE<br/>NON-DELAYED SETTING -<br/>MIN</b>       | 960 A                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>TERMINAL CAPACITY<br/>(CONTROL CABLE)</b>                         | 0.75 mm <sup>2</sup> - 1.5 mm <sup>2</sup> (2x)<br>0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x)                                                                                                                                                                                                                                                                                                         |
| <b>TERMINAL CAPACITY<br/>(COPPER BUSBAR)</b>                         | M8 at rear-side screw<br>connection<br>Min. 16 mm x 5 mm direct<br>at switch rear-side<br>connection<br>Max. 24 mm x 8 mm direct<br>at switch rear-side<br>connection                                                                                                                                                                                                                                      |
| <b>TERMINAL CAPACITY<br/>(COPPER SOLID<br/>CONDUCTOR/CABLE)</b>      | 10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection<br>6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) at<br>box terminal<br>6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct<br>at switch rear-side<br>connection<br>10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) at<br>box terminal<br>16 mm <sup>2</sup> (1x) at tunnel<br>terminal                                  |
| <b>TERMINAL CAPACITY<br/>(ALUMINUM SOLID<br/>CONDUCTOR/CABLE)</b>    | 16 mm <sup>2</sup> (1x) at tunnel<br>terminal<br>10 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x)<br>direct at switch rear-side<br>connection<br>10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection                                                                                                                                                                      |
| <b>TERMINAL CAPACITY<br/>(COPPER STRANDED<br/>CONDUCTOR/CABLE)</b>   | 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) at<br>box terminal<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>box terminal<br>25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x)<br>direct at switch rear-side<br>connection<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>1-hole tunnel terminal |
| <b>TERMINAL CAPACITY<br/>(ALUMINUM STRANDED<br/>CONDUCTOR/CABLE)</b> | 25 mm <sup>2</sup> - 50 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection<br>25 mm <sup>2</sup> - 50 mm <sup>2</sup> (2x)<br>direct at switch rear-side<br>connection<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>tunnel terminal                                                                                                                                                |
| <b>HANDLE TYPE</b>                                                   | Rocker lever                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MAX</b>                   | 0 A                                                                                                                                                                                                                                                                                                                                                                                                        |

|                                                                                        |        |
|----------------------------------------------------------------------------------------|--------|
| <b>SHORT DELAY CURRENT SETTING (ISD) - MIN</b>                                         | 0 A    |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>                                        | 1600 A |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>                                        | 960 A  |
| <b>NUMBER OF OPERATIONS PER HOUR - MAX</b>                                             | 120    |
| <b>OVERLOAD CURRENT SETTING (IR) - MAX</b>                                             | 160 A  |
| <b>OVERLOAD CURRENT SETTING (IR) - MIN</b>                                             | 125 A  |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ</b>     | 85 kA  |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ</b> | 50 kA  |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 440 V, 50/60 HZ</b>     | 35 kA  |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 500 V DC</b>            | 7.5 kA |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 525 V, 50/60 HZ</b>     | 25 kA  |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 690 V, 50/60 HZ</b>     | 5 kA   |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 750 V DC</b>            | 7.5 kA |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ</b>                  | 105 kA |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ</b>                      | 74 kA  |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 525 V, 50/60 HZ</b>                      | 53 kA  |
| <b>RATED SHORT-CIRCUIT</b>                                                             | 40 kA  |

|                                                                                 |                                                   |
|---------------------------------------------------------------------------------|---------------------------------------------------|
| <b>MAKING CAPACITY ICM<br/>AT 690 V, 50/60 HZ</b>                               |                                                   |
| <b>STANDARD TERMINALS</b>                                                       | Screw terminal                                    |
| <b>OPTIONAL TERMINALS</b>                                                       | Box terminal. Connection on rear. Tunnel terminal |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 240 V, 50/60 HZ</b>       | 187 kA                                            |
| <b>RATED IMPULSE<br/>WITHSTAND VOLTAGE<br/>(UIMP) AT AUXILIARY<br/>CONTACTS</b> | 6000 V                                            |
| <b>RATED IMPULSE<br/>WITHSTAND VOLTAGE<br/>(UIMP) AT MAIN<br/>CONTACTS</b>      | 8000 V                                            |
| <b>VOLTAGE RATING (DC)</b>                                                      | 750 VDC                                           |
| <b>RATED INSULATION<br/>VOLTAGE (UI)</b>                                        | 1000 V AC                                         |

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|------------------------|
| <b>PROJECT NAME:</b>   |
| <b>PROJECT NUMBER:</b> |
| <b>PREPARED BY:</b>    |
| <b>DATE:</b>           |



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