

# Specifications



Photo is representative



## Eaton 191616

Eaton Moeller series NZM - Molded Case Circuit Breaker. NZM3 PXR20 circuit breaker, 400A, 4p, variable, withdrawable unit, N, 3

### General specifications

|                             |   |
|-----------------------------|---|
| <b>PRODUCT NAME</b>         | Eaton Moeller series NZM molded case circuit breaker electronic |
| <b>CATALOG NUMBER</b>       | 191616  |
| <b>EAN</b>                  | 4015081921287   |
| <b>PRODUCT LENGTH/DEPTH</b> | 346 mm  |
| <b>PRODUCT HEIGHT</b>       | 260 mm  |
| <b>PRODUCT WIDTH</b>        | 230 mm  |
| <b>PRODUCT WEIGHT</b>       | 14 kg   |
| <b>COMPLIANCES</b>          | RoHS conform  |
| <b>CERTIFICATIONS</b>       | IEC/EN 60947<br>IEC   |
| <b>MODEL CODE</b>           | NZMN3-4-VX400/VAR-AVE   |

## Product specifications

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| <b>AMPERAGE RATING</b>  | 400 A  |
| <b>VOLTAGE RATING</b>   | 690 V - 690 V  |
| <b>CIRCUIT BREAKER FRAME TYPE</b>   | NZM3   |
| <b>FEATURES</b>   | Protection unit<br>Motor drive optional  |
| <b>ACCESSORIES REQUIRED</b>   | NZM3-4-XAVS  |
| <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.   |

## Resources

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| <b>BROCHURES</b>                  | <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>           |
| <b>CATALOGUES</b>                 | <a href="#">eaton-digital-nzm-catalog-ca013003en-en-us.pdf</a>   |
| <b>CHARACTERISTIC CURVE</b>       | <a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-015.eps</a><br><a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-011.eps</a> |
| <b>DECLARATIONS OF CONFORMITY</b> | <a href="#">eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250293en.pdf</a>   |
| <b>DRAWINGS</b>                   | <a href="#">eaton-circuit-breaker-switch-nzm-mccb-dimensions-016.eps</a><br><a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-021.eps</a>              |
| <b>INSTALLATION INSTRUCTIONS</b>  | <a href="#">eaton-circuit-breaker-basic-unit-bg3-il012100zu.pdf</a>  |
| <b>INSTALLATION VIDEOS</b>        | <a href="#">Introduction of the new digital circuit breaker NZM</a><br><a href="#">The new digital NZM Range</a>   |
| <b>MCAD MODEL</b>                 | <a href="#">DA-CD-nzm3_4_xave</a><br><a href="#">DA-CS-nzm3_4_xave</a>   |
| <b>PEP ECO-PASSPORT</b>           | <a href="#">eaton-molded-case-switches-pep-eato-00252-v0101-en.pdf</a>   |
| <b>TECHNICAL DATA SHEETS</b>      | <a href="#">eaton-nzm-technical-information-sheet</a>  |

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| <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.                                   |
| <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>  | Withdrawable<br>Built-in device slide-in technique (withdrawable)                                    |
| <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>            | 72 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  |

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| <b>NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)</b>     | 0   |
| <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>              | Other   |
| <b>CURRENT RATING OF NEUTRAL CONDUCTOR</b>                     | 0 - 60% - 100% of phase conductor   |
| <b>LIFESPAN, MECHANICAL</b>                                    | 15000 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>                     | IP00 (terminations, phase isolator and strip terminal)<br>IP10 (tunnel terminal)  |
| <b>NUMBER OF POLES</b>   | Four-pole   |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                        | 10 segments of 50 mm x 1 mm (2x) at rear-side width extension<br>Max. 10 segments of 24 mm x 1 mm + 5 segments of 24 mm x 1 mm<br>Min. 6 segments of 16 mm x 0.8 mm at box terminal<br>Min. 6 segments of 16 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 32 mm x 1 mm + 5 segments of 32 mm x 1 mm at rear-side connection (punched) |
| <b>LIFESPAN, ELECTRICAL</b>                                    | 3000 operations at 690 V  |

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|                         | AC-1<br>5000 operations at 415 V<br>AC-1<br>5000 operations at 400 V<br>AC-1   |
| <b>FUNCTIONS</b>        | Systems, cable, selectivity and generator protection   |
| <b>TYPE</b>             | Circuit breaker  |
| <b>SPECIAL FEATURES</b> | <ul style="list-style-type: none"> <li>• LSI overload protection and delayed and non-delayed short-circuit protective device</li> <li>• R.m.s. value measurement and “thermal memory”</li> <li>• USB interface for configuration and test function with Power Xpert Protection Manager software</li> <li>• Optionally communication-capable with interface module and internal Modbus RTU module or CAM</li> <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: 400 A</li> <li>• Terminal capacity hint: Up to 240 mm<sup>2</sup> can be connected depending on the cable manufacturer.</li> </ul> |
| <b>APPLICATION</b>      | Use in unearthed supply systems at 690 V   |
| <b>SHOCK RESISTANCE</b> | 20 g (half-sinusoidal shock  |

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|  | 20 ms)   |
| <b>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b>               | Front side   |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 400 A  |
| <b>RELEASE SYSTEM</b>  | Electronic release   |
| <b>SHORT-CIRCUIT TOTAL BREAKTIME</b>                                 | < 10 ms  |
| <b>RATED SHORT-TIME WITHSTAND CURRENT (T = 0.3 S)</b>                | 3.3 kA   |
| <b>RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)</b>                  | 3.3 kA   |
| <b>SHORT-CIRCUIT RELEASE DELAYED SETTING - MAX</b>                   | 4000 A   |
| <b>SHORT-CIRCUIT RELEASE DELAYED SETTING - MIN</b>                   | 320 A  |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>               | 4800 A   |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN</b>               | 800 A  |
| <b>TERMINAL CAPACITY (CONTROL CABLE)</b>                             | 0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x)<br>0.75 mm <sup>2</sup> - 1.5 mm <sup>2</sup> (2x)   |
| <b>TERMINAL CAPACITY (COPPER BUSBAR)</b>                             | Min. 20 mm x 5 mm direct at switch rear-side connection<br>Max. 10 mm x 50 mm (2x) at rear-side width extension<br>Max. 30 mm x 10 mm + 30 mm x 5 mm direct at switch rear-side connection<br>M10 at rear-side screw connection  |
| <b>TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)</b>              | 16 mm <sup>2</sup> (1x) at tunnel terminal<br>16 mm <sup>2</sup> (1x) direct at switch rear-side connection<br>300 mm <sup>2</sup> (2x) at rear-side width extension<br>16 mm <sup>2</sup> (2x) at box terminal<br>16 mm <sup>2</sup> (2x) direct at switch rear-side connection |
| <b>TERMINAL CAPACITY (ALUMINUM SOLID)</b>                            | 16 mm <sup>2</sup> (1x) at tunnel terminal   |

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| <b>CONDUCTOR/CABLE)</b>  |  |
| <b>TERMINAL CAPACITY<br/>(COPPER STRANDED<br/>CONDUCTOR/CABLE)</b>                                 | 25 mm <sup>2</sup> - 240 mm <sup>2</sup> (2x)<br>direct at switch rear-side<br>connection<br>16 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>1-hole tunnel terminal<br>25 mm <sup>2</sup> - 120 mm <sup>2</sup> (2x) at<br>box terminal<br>35 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at<br>box terminal<br>25 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection |
| <b>TERMINAL CAPACITY<br/>(ALUMINUM STRANDED<br/>CONDUCTOR/CABLE)</b>                               | 50 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at<br>2-hole tunnel terminal<br>50 mm <sup>2</sup> - 240 mm <sup>2</sup> (2x) at<br>2-hole tunnel terminal<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>   | 10 A   |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MIN</b>   | 2 A  |
| <b>INSTANTANEOUS<br/>CURRENT SETTING (II) -<br/>MAX</b>  | 12 A   |
| <b>INSTANTANEOUS<br/>CURRENT SETTING (II) -<br/>MIN</b>  | 2 A  |
| <b>NUMBER OF<br/>OPERATIONS PER HOUR -<br/>MAX</b>   | 60   |
| <b>OVERLOAD CURRENT<br/>SETTING (IR) - MAX</b>   | 400 A  |
| <b>OVERLOAD CURRENT<br/>SETTING (IR) - MIN</b>   | 160 A  |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 230 V,<br/>50/60 HZ</b>     | 85 kA  |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT<br/>400/415 V, 50/60 HZ</b> | 50 kA  |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 440 V,<br/>50/60 HZ</b>     | 35 kA  |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 525 V,<br/>50/60 HZ</b>     | 13 kA  |
| <b>RATED SHORT-CIRCUIT</b>   | 5 kA   |

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| <b>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 690 V,<br/>50/60 HZ</b>          |  |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 400/415 V, 50/60 HZ</b>   | 110 kA   |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 440 V, 50/60 HZ</b>       | 77 kA  |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 525 V, 50/60 HZ</b>       | 55 kA  |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 690 V, 50/60 HZ</b>       | 40 kA  |
| <b>STANDARD TERMINALS</b>   | Screw terminal                                       |
| <b>OPTIONAL TERMINALS</b>   | Box terminal. Connection<br>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>RATED INSULATION<br/>VOLTAGE (UI)</b>  | 690 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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