

# Specifications



## Eaton 189650

NZMH4-4-PX1600/VAR. NZM4 PXR25 circuit breaker - integrated energy measurement class 1, 1600A, 4p, variable, Screw terminal

### General specifications

|                             |                                                                 |
|-----------------------------|-----------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton Moeller series NZM molded case circuit breaker electronic |
| <b>CATALOG NUMBER</b>       | 189650                                                          |
| <b>MODEL CODE</b>           | NZMH4-4-PX1600/VAR                                              |
| <b>EAN</b>                  | 4015081875979                                                   |
| <b>PRODUCT LENGTH/DEPTH</b> | 375 mm                                                          |
| <b>PRODUCT HEIGHT</b>       | 170 mm                                                          |
| <b>PRODUCT WIDTH</b>        | 280 mm                                                          |
| <b>PRODUCT WEIGHT</b>       | 25.5 kg                                                         |
| <b>COMPLIANCES</b>          | RoHS conform                                                    |
| <b>CERTIFICATIONS</b>       | IEC/EN 60947<br>IEC                                             |
| <b>GLOBAL CATALOG</b>       | 189650                                                          |



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## Product specifications

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| <b>AMPERAGE RATING</b>                                                                  | 1600 A                                                                                                                           |
| <b>VOLTAGE RATING</b>                                                                   | 690 V - 690 V                                                                                                                    |
| <b>CIRCUIT BREAKER FRAME TYPE</b>                                                       | NZM4                                                                                                                             |
| <b>FEATURES</b>                                                                         | Motor drive optional<br>Protection unit                                                                                          |
| <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

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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>CATALOGS</b>                   | <a href="#">eaton-digital-nzm-catalog-ca013003en-en-us.pdf</a>                                                                                   |
| <b>DECLARATIONS OF CONFORMITY</b> | <a href="#">eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250294en.pdf</a>                                                       |
| <b>DRAWINGS</b>                   | <a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-023.eps</a>                                                                                |
| <b>INSTALLATION INSTRUCTIONS</b>  | <a href="#">eaton-circuit-breaker-basic-unit-bg4-il012101zu.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-nzm4_4p</a><br><a href="#">DA-CS-nzm4_4p</a>                                                                                   |
| <b>PEP ECO-PASSPORT</b>           | <a href="#">eaton-molded-case-switches-pep-eato-00230-v0101-en.pdf</a>                                                                           |
| <b>TECHNICAL DATA SHEETS</b>      | <a href="#">eaton-nzm-technical-information-sheet</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>                                          | Fixed<br>Built-in device fixed built-in technique                                                    |
| <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>            | 284 W                                                                                                |
| <b>UTILIZATION CATEGORY</b>                                     | B (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 CONTACTS (CHANGE-OVER CONTACTS)</b>      | 0                                                                                                    |

|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <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>CURRENT RATING OF NEUTRAL CONDUCTOR</b>                     | 0 - 60% - 100% of phase conductor                                                                                                                                                                                                                                                                                                                                                                                |
| <b>LIFESPAN, MECHANICAL</b>                                    | 10000 operations                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>OVERVOLTAGE CATEGORY</b>                                    | III                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>                   | IP66 (with door coupling rotary handle)<br>IP40 (with insulating surround)                                                                                                                                                                                                                                                                                                                                       |
| <b>DEGREE OF PROTECTION (TERMINATIONS)</b>                     | IP10 (tunnel terminal)<br>IP00 (terminations, phase isolator and strip terminal)                                                                                                                                                                                                                                                                                                                                 |
| <b>NUMBER OF POLES</b>                                         | Four-pole                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                        | 10 segments of 80 mm x 1 mm (2x) at rear-side width extension<br>Max. 10 segments of 32 mm x 1 mm (2x) at flat conductor terminal<br>Min. 5 segments of 25 mm x 1 mm at rear-side connection (punched)<br>Max. 10 segments of 50 mm x 1 mm (2x) at rear-side connection (punched)<br><br>10 segments of 50 mm x 1 mm (2x) at 1-hole module plate<br>Min. 6 segments of 16 mm x 0.8 mm at flat conductor terminal |
| <b>LIFESPAN, ELECTRICAL</b>                                    | 3000 operations at 415 V AC-1<br>2000 operations at 690 V AC-1                                                                                                                                                                                                                                                                                                                                                   |

|                  |                                                      |
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|                  | 3000 operations at 400 V AC-1                        |
| <b>FUNCTIONS</b> | Systems, cable, selectivity and generator protection |
| <b>TYPE</b>      | Circuit breaker                                      |

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| <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>• Class 1 energy measurement, 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>• Interface module in equipment supplied.</li> <li>• Optionally communication-capable with 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: 1600 A</li> </ul> |
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| <b>APPLICATION</b>                                     | Use in unearthed supply systems at 525 V |
| <b>SHOCK RESISTANCE</b>                                | 15 g (half-sinusoidal shock 11 ms)       |
| <b>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b> | Front side                               |
| <b>RATED OPERATIONAL</b>                               | 1600 A                                   |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <b>CURRENT FOR SPECIFIED<br/>HEAT DISSIPATION (IN)</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>RELEASE SYSTEM</b>                                           | Electronic release                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>SHORT-CIRCUIT TOTAL<br/>BREAKTIME</b>                        | < 25 ms ( $\leq$ 415 V); < 35 ms<br>(> 415 V)                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>RATED SHORT-TIME<br/>WITHSTAND CURRENT (T<br/>= 0.3 S)</b>   | 19.2 kA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>RATED SHORT-TIME<br/>WITHSTAND CURRENT (T<br/>= 1 S)</b>     | 19.2 kA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SHORT-CIRCUIT RELEASE<br/>DELAYED SETTING - MAX</b>          | 16000 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SHORT-CIRCUIT RELEASE<br/>DELAYED SETTING - MIN</b>          | 1600 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>SHORT-CIRCUIT RELEASE<br/>NON-DELAYED SETTING -<br/>MAX</b>  | 19200 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SHORT-CIRCUIT RELEASE<br/>NON-DELAYED SETTING -<br/>MIN</b>  | 3200 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>TERMINAL CAPACITY<br/>(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<br/>(COPPER BUSBAR)</b>                    | Max. 50 mm x 10 mm (2x)<br>at rear-side 1-hole module<br>plate<br>50 mm x 10 mm (2x) at<br>rear-side 2-hole module<br>plate<br>Min. 25 mm x 5 mm direct<br>at switch rear-side<br>connection<br>Min. 25 mm x 5 mm at<br>rear-side 1-hole module<br>plate<br>Max. 50 mm x 10 mm (2x)<br>direct at switch rear-side<br>connection<br>Max. 80 mm x 10 mm (2x)<br>at rear-side width<br>extension<br>M10 at rear-side screw<br>connection<br>Min. 60 mm x 10 mm at<br>rear-side width extension |
| <b>TERMINAL CAPACITY<br/>(COPPER SOLID<br/>CONDUCTOR/CABLE)</b> | 95 mm <sup>2</sup> - 240 mm <sup>2</sup> (6x) at<br>rear-side width extension<br>50 mm <sup>2</sup> - 240 mm <sup>2</sup> (4x) at<br>4-hole tunnel terminal<br>95 mm <sup>2</sup> - 300 mm <sup>2</sup> (2x) at<br>rear-side 1-hole module<br>plate<br>300 mm <sup>2</sup> (4x) at rear-side<br>width extension<br>120 mm <sup>2</sup> - 300 mm <sup>2</sup> (1x) at                                                                                                                        |

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|                                                                                        | rear-side 1-hole module plate<br>95 mm <sup>2</sup> - 185 mm <sup>2</sup> (2x) at rear-side 2-hole module plate<br>35 mm <sup>2</sup> - 185 mm <sup>2</sup> (4x) at rear-side 2-hole module plate |
| <b>TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)</b>                             | 50 mm <sup>2</sup> - 185 mm <sup>2</sup> (4x) direct at switch rear-side connection<br>120 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) direct at switch rear-side connection                       |
| <b>TERMINAL CAPACITY (ALUMINUM STRANDED CONDUCTOR/CABLE)</b>                           | 50 mm <sup>2</sup> - 240 mm <sup>2</sup> (4x) at 4-hole tunnel terminal                                                                                                                           |
| <b>HANDLE TYPE</b>                                                                     | Rocker lever                                                                                                                                                                                      |
| <b>SHORT DELAY CURRENT SETTING (ISD) - MAX</b>                                         | 10 A                                                                                                                                                                                              |
| <b>SHORT DELAY CURRENT SETTING (ISD) - MIN</b>                                         | 2 A                                                                                                                                                                                               |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>                                        | 38400 A                                                                                                                                                                                           |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>                                        | 3200 A                                                                                                                                                                                            |
| <b>NUMBER OF OPERATIONS PER HOUR - MAX</b>                                             | 60                                                                                                                                                                                                |
| <b>OVERLOAD CURRENT SETTING (IR) - MAX</b>                                             | 1600 A                                                                                                                                                                                            |
| <b>OVERLOAD CURRENT SETTING (IR) - MIN</b>                                             | 800 A                                                                                                                                                                                             |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ</b>     | 63 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>     | 50 kA                                                                                                                                                                                             |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 525 V, 50/60 HZ</b>     | 37 kA                                                                                                                                                                                             |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 690 V,</b>              | 37 kA                                                                                                                                                                                             |

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| <b>50/60 HZ</b>                                                       |                                                     |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ</b> | 187 kA                                              |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ</b>     | 187 kA                                              |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 525 V, 50/60 HZ</b>     | 143 kA                                              |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 690 V, 50/60 HZ</b>     | 100 kA                                              |
| <b>STANDARD TERMINALS</b>                                             | Screw terminal                                      |
| <b>OPTIONAL TERMINALS</b>                                             | Connection on rear. Strip terminal. Tunnel terminal |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ</b>     | 275 kA                                              |
| <b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT AUXILIARY CONTACTS</b>   | 6000 V                                              |
| <b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT MAIN CONTACTS</b>        | 8000 V                                              |
| <b>RATED INSULATION VOLTAGE (UI)</b>                                  | 1000 V AC                                           |

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



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