

# Specifications



Photo is representative



## Eaton 192313

Eaton Moeller series NZM - Molded Case Circuit Breaker. NZM3 PXR25, class 1, 250A, 4p, variable, earth-fault protection, ARMS and zone selectivity, withdrawable unit, N, 3

### General specifications

|                             |                                                                 |
|-----------------------------|-----------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton Moeller series NZM molded case circuit breaker electronic |
| <b>CATALOG NUMBER</b>       | 192313                                                          |
| <b>MODEL CODE</b>           | NZMN3-4-PX250/VAR-TAZ-AVE                                       |
| <b>EAN</b>                  | 4015081928644                                                   |
| <b>PRODUCT LENGTH/DEPTH</b> | 346 mm                                                          |
| <b>PRODUCT HEIGHT</b>       | 260 mm                                                          |
| <b>PRODUCT WIDTH</b>        | 230 mm                                                          |
| <b>PRODUCT WEIGHT</b>       | 6.65 kg                                                         |
| <b>COMPLIANCES</b>          | RoHS conform                                                    |
| <b>CERTIFICATIONS</b>       | IEC<br>IEC/EN 60947                                             |

## Additional information

### FUNCTIONS

Systems, cable, selectivity  
and generator protection  
ARMS maintenance mode  
Integrated earth fault  
protection  
Zone selectivity  
Earth-fault protection

## Delivery programme

**ACCESSORIES REQUIRED** NZM3-4-XAVS

**AMPERAGE RATING** 250 A

**APPLICATION** Use in unearthed supply  
systems at 690 V

**CIRCUIT BREAKER FRAME  
TYPE** NZM3

**FEATURES** Protection unit  
Motor drive optional

**NUMBER OF POLES** Four-pole

**RELEASE SYSTEM** Electronic release

### SPECIAL FEATURES

- LSIG overload protection and delayed and non-delayed short-circuit protective device, earth-fault protection
- Class 1 energy measurement, r.m.s. value measurement, and "thermal memory"
- USB interface for configuration and test function with Power Xpert Protection Manager software
- Zone selectivity ZSI
- Maintenance Mode ARMS
- Interface module in equipment supplied.
- Optionally communication-capable with internal Modbus RTU module or CAM
- 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  $I_{cn}$ )
- Rated current = rated

|             |                                                                                                                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>uninterrupted<br/>current: 250 A</p> <ul style="list-style-type: none"><li>• Terminal capacity<br/>hint: Up to 240<br/>mm<sup>2</sup> can be<br/>connected<br/>depending on the<br/>cable<br/>manufacturer.</li></ul> |
| <b>TYPE</b> | Circuit breaker                                                                                                                                                                                                          |

## Design verification to IEC/EN 61439

|                                                                                         |                                                                                                                                  |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <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.                                                                                       |
| <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</b>                                                                  | Does not apply, since the                                                                                                        |

## Design verification to IEC/EN 61439 - technical data

|                                                                      |         |
|----------------------------------------------------------------------|---------|
| <b>AMBIENT OPERATING TEMPERATURE - MAX</b>                           | 70 °C   |
| <b>AMBIENT STORAGE TEMPERATURE - MAX</b>                             | 70 °C   |
| <b>AMBIENT OPERATING TEMPERATURE - MIN</b>                           | -25 °C  |
| <b>AMBIENT STORAGE TEMPERATURE - MIN</b>                             | 40 °C   |
| <b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>                 | 28.13 W |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 250 A   |

|                                                                 |                                                                    |
|-----------------------------------------------------------------|--------------------------------------------------------------------|
| <b>AGAINST ELECTRIC SHOCK</b>                                   | 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.                             |

## Technical data - electrical

|                                                                     |                                                                                                      |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>AMPERAGE RATING</b>                                              | 250 A                                                                                                |
| <b>CURRENT RATING OF NEUTRAL CONDUCTOR</b>                          | 0 - 60% - 100% of phase conductor                                                                    |
| <b>DIRECTION OF INCOMING SUPPLY</b>                                 | As required                                                                                          |
| <b>EARTH-FAULT CURRENT SETTING (IG) - MAX</b>                       | 250 x I <sub>n</sub>                                                                                 |
| <b>EARTH-FAULT CURRENT SETTING (IG) - MIN</b>                       | 50 x I <sub>n</sub>                                                                                  |
| <b>ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT</b>                   | Other                                                                                                |
| <b>HANDLE TYPE</b>                                                  | Rocker lever                                                                                         |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>                     | 18 A                                                                                                 |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>                     | 2 A                                                                                                  |
| <b>ISOLATION</b>                                                    | 300 V AC (between the auxiliary contacts)<br>500 V AC (between auxiliary contacts and main contacts) |
| <b>LIFESPAN, ELECTRICAL</b>                                         | 5000 operations at 400 V AC-1<br>5000 operations at 415 V AC-1<br>3000 operations at 690 V AC-1      |
| <b>NUMBER OF OPERATIONS PER HOUR - MAX</b>                          | 60                                                                                                   |
| <b>OVERLOAD CURRENT SETTING (IR) - MAX</b>                          | 250 A                                                                                                |
| <b>OVERLOAD CURRENT SETTING (IR) - MIN</b>                          | 100 A                                                                                                |
| <b>OVERVOLTAGE CATEGORY</b>                                         | III                                                                                                  |
| <b>POLLUTION DEGREE</b>                                             | 3                                                                                                    |
| <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>                                | 690 V AC                                                                                             |

## Technical data - mechanical

|                                                                |                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CLIMATIC PROOFING</b>                                       | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30                                                                                                                                                                                                                                     |
| <b>DEGREE OF PROTECTION</b>                                    | IP20<br>IP20 (basic degree of protection, in the operating controls area)                                                                                                                                                                                                                                          |
| <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>LIFESPAN, MECHANICAL</b>                                    | 15000 operations                                                                                                                                                                                                                                                                                                   |
| <b>MOUNTING METHOD</b>                                         | Built-in device slide-in technique (withdrawable)<br>Withdrawable                                                                                                                                                                                                                                                  |
| <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>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b>         | Connection at separate chassis part                                                                                                                                                                                                                                                                                |
| <b>PROTECTION AGAINST DIRECT CONTACT</b>                       | Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110                                                                                                                                                                                                                                                    |
| <b>SHOCK RESISTANCE</b>                                        | 20 g (half-sinusoidal shock 20 ms)                                                                                                                                                                                                                                                                                 |
| <b>SPECIAL FEATURES</b>                                        | <ul style="list-style-type: none"> <li>LSIG overload protection and delayed and non-delayed short-circuit protective device, earth-fault protection</li> <li>Class 1 energy measurement, r.m.s. value measurement, and "thermal memory"</li> <li>USB interface for configuration and test function with</li> </ul> |

|                                                                                                    |        |
|----------------------------------------------------------------------------------------------------|--------|
| <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<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 690 V,<br/>50/60 HZ</b>     | 5 kA   |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 240 V, 50/60 HZ</b>                          | 187 kA |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 400/415 V, 50/60 HZ</b>                      | 105 kA |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 440 V, 50/60 HZ</b>                          | 74 kA  |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 525 V, 50/60 HZ</b>                          | 53 kA  |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 690 V, 50/60 HZ</b>                          | 40 kA  |
| <b>RATED SHORT-TIME<br/>WITHSTAND CURRENT (T<br/>= 0.3 S)</b>                                      | 3.3 kA |
| <b>RATED SHORT-TIME<br/>WITHSTAND CURRENT (T<br/>= 1 S)</b>                                        | 3.3 kA |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MAX</b>                                                 | 10 A   |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MIN</b>                                                 | 2 A    |
| <b>SHORT-CIRCUIT RELEASE<br/>DELAYED SETTING - MAX</b>                                             | 2500 A |
| <b>SHORT-CIRCUIT RELEASE<br/>DELAYED SETTING - MIN</b>                                             | 200 A  |
| <b>SHORT-CIRCUIT RELEASE<br/>NON-DELAYED SETTING -<br/>MAX</b>                                     | 4500 A |
| <b>SHORT-CIRCUIT RELEASE</b>                                                                       | 500 A  |

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- Power Xpert  
Protection  
Manager software
- Zone selectivity ZSI
  - Maintenance Mode ARMS
  - Interface module in equipment supplied.
  - Optionally communication-capable with internal Modbus RTU module or CAM
  - 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 I<sub>cn</sub>)
  - Rated current = rated uninterrupted current: 250 A
  - Terminal capacity hint: Up to 240 mm<sup>2</sup> can be connected depending on the cable manufacturer.
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|                               |                    |
|-------------------------------|--------------------|
| NON-DELAYED SETTING - MIN     |                    |
| SHORT-CIRCUIT TOTAL BREAKTIME | < 10 ms            |
| UTILIZATION CATEGORY          | A (IEC/EN 60947-2) |
| VOLTAGE RATING                | 690 V - 690 V      |

## Technical data - mechanical - terminals

|                                                              |                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OPTIONAL TERMINALS</b>                                    | Box terminal. Connection on rear. Tunnel terminal                                                                                                                                                                                                                                                                                                                                       |
| <b>STANDARD TERMINALS</b>                                    | Screw terminal                                                                                                                                                                                                                                                                                                                                                                          |
| <b>TERMINAL CAPACITY (ALUMINUM SOLID CONDUCTOR/CABLE)</b>    | 16 mm <sup>2</sup> (1x) at tunnel terminal                                                                                                                                                                                                                                                                                                                                              |
| <b>TERMINAL CAPACITY (ALUMINUM STRANDED CONDUCTOR/CABLE)</b> | 50 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at 2-hole tunnel terminal<br>50 mm <sup>2</sup> - 240 mm <sup>2</sup> (2x) at 2-hole tunnel terminal<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at tunnel terminal                                                                                                                                                                  |
| <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>M10 at rear-side screw connection<br>Max. 30 mm x 10 mm + 30 mm x 5 mm direct at switch rear-side connection<br>Max. 10 mm x 50 mm (2x) at rear-side width extension                                                                                                                                                         |
| <b>TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)</b>      | 16 mm <sup>2</sup> (2x) direct at switch rear-side connection<br>16 mm <sup>2</sup> (1x) at tunnel terminal<br>16 mm <sup>2</sup> (1x) direct at switch rear-side connection<br>16 mm <sup>2</sup> (2x) at box terminal<br>300 mm <sup>2</sup> (2x) at rear-side width extension                                                                                                        |
| <b>TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)</b>   | 25 mm <sup>2</sup> - 120 mm <sup>2</sup> (2x) at box terminal<br>25 mm <sup>2</sup> - 240 mm <sup>2</sup> (2x) direct at switch rear-side connection<br>16 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at 1-hole tunnel terminal<br>25 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) direct at switch rear-side connection<br>35 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at box terminal |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                      | 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                                                                                                                                                                                                                                                                                   |

## Resources

|                            |                                                                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BROCHURES                  | <a href="#">eaton-digital-nzm-brochure-br013003en-en-us.pdf</a><br><a href="#">eaton-feerum-the-whole-grain-solution-success-story-en-us.pdf</a>                                                                                     |
| CATALOGUES                 | <a href="#">eaton-digital-nzm-catalog-ca013003en-en-us.pdf</a>                                                                                                                                                                       |
| CHARACTERISTIC CURVE       | <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>                                                                           |
| DECLARATIONS OF CONFORMITY | <a href="#">eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250293en.pdf</a>                                                                                                                                           |
| DRAWINGS                   | <a href="#">eaton-circuit-breaker-withdrawable-unit-nzm-mccb-dimensions-002.eps</a><br><a href="#">eaton-circuit-breaker-switch-nzm-mccb-dimensions-016.eps</a><br><a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-021.eps</a> |
| INSTALLATION INSTRUCTIONS  | <a href="#">eaton-circuit-breaker-basic-unit-bg3-il012100zu.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="#">eaton-molded-case-switches-mcad-3d-models-nzm3-4p-xave.stp</a><br><a href="#">eaton-molded-case-switches-mcad-drawings-nzm3-4p-xave.dwg</a>                                                                              |
| PEP ECO-PASSPORT           | <a href="#">eaton-molded-case-switches-pep-eato-00252-v0101-en.pdf</a>                                                                                                                                                               |
| TECHNICAL DATA SHEETS      | <a href="#">eaton-nzm-technical-information-sheet</a>                                                                                                                                                                                |

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of 32 mm x 1 mm at rear-side connection (punched)

Min. 6 segments of 16 mm x 0.8 mm at box terminal

Max. 10 segments of 24 mm x 1 mm + 5 segments of 24 mm x 1 mm

Min. 6 segments of 16 mm x 0.8 mm at rear-side connection (punched)

10 segments of 50 mm x 1 mm (2x) at rear-side width extension

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**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**

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