

# Specifications



## Eaton 191374

Eaton Moeller series Molded case circuit breaker, PXR20, Electronic, NZMH3, 450 A, Three-pole, 690 V, plug-in technology

### General specifications

|                             |                                                                 |
|-----------------------------|-----------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton Moeller series NZM molded case circuit breaker electronic |
| <b>CATALOG NUMBER</b>       | 191374                                                          |
| <b>MODEL CODE</b>           | NZMH3-MX450-SVE                                                 |
| <b>EAN</b>                  | 4015081918867                                                   |
| <b>PRODUCT LENGTH/DEPTH</b> | 335 mm                                                          |
| <b>PRODUCT HEIGHT</b>       | 215.2 mm                                                        |
| <b>PRODUCT WIDTH</b>        | 140 mm                                                          |
| <b>PRODUCT WEIGHT</b>       | 7.72 kg                                                         |
| <b>COMPLIANCES</b>          | RoHS conform                                                    |
| <b>CERTIFICATIONS</b>       | IEC/EN 60947<br>IEC                                             |

## Additional information

### FUNCTIONS

Phase failure sensitive  
Motor protection

## Delivery programme

**ACCESSORIES REQUIRED** NZM3-XSVS

**AMPERAGE RATING** 450 A

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

**CIRCUIT BREAKER FRAME TYPE** NZM3

**FITTED WITH:** Thermal protection

**NUMBER OF POLES** Three-pole

**RELEASE SYSTEM** Electronic release

### SPECIAL FEATURES

- IEC/EN 60947-2 with characteristic conforming to IEC/EN 60947-4-1 with phase failure sensitivity
- The circuit-breaker fulfills all requirements for AC-3 switching category.
- R.m.s. value measurement and "thermal memory"
- Adjustable time delay setting to overcome current peaks  $I_r$  at  $6 \times I_r$  also infinity (without overload releases)
- All AC-3 rating data applies to direct switching by the circuit-breaker under normal operating conditions. If, for example, a contactor takes over AC-3 switching under normal operating conditions, the full rated uninterrupted current applies to the circuit-breaker,  $I_n = I_u$ .
- Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the

|             |                                                                                                                                                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>switching capacity of the circuit breaker (Rated short-circuit breaking capacity <math>I_{cn}</math>)</p> <ul style="list-style-type: none"><li>• Rated current = rated uninterrupted current: 450 A</li><li>• Terminal capacity hint: Up to 240 mm<sup>2</sup> can be connected depending on the cable 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>                 | 60.75 W |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 450 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>                                              | 450 A                                                                                                                                                                                              |
| <b>DIRECTION OF INCOMING SUPPLY</b>                                 | As required                                                                                                                                                                                        |
| <b>ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT</b>                   | Other                                                                                                                                                                                              |
| <b>HANDLE TYPE</b>                                                  | Rocker lever                                                                                                                                                                                       |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>                     | 12 A                                                                                                                                                                                               |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>                     | 2 A                                                                                                                                                                                                |
| <b>ISOLATION</b>                                                    | 500 V AC (between auxiliary contacts and main contacts)<br>300 V AC (between the auxiliary contacts)                                                                                               |
| <b>LIFESPAN, ELECTRICAL</b>                                         | 2000 operations at 415 V AC-3<br>3000 operations at 690 V AC-1<br>5000 operations at 400 V AC-1<br>5000 operations at 415 V AC-1<br>2000 operations at 690 V AC-3<br>2000 operations at 400 V AC-3 |
| <b>NUMBER OF OPERATIONS PER HOUR - MAX</b>                          | 60                                                                                                                                                                                                 |
| <b>OVERLOAD CURRENT SETTING (IR) - MAX</b>                          | 450 A                                                                                                                                                                                              |
| <b>OVERLOAD CURRENT SETTING (IR) - MIN</b>                          | 180 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                                                                                                                                                                                              |
| <b>RATED OPERATING</b>                                              | 132 kW                                                                                                                                                                                             |

## Technical data - mechanical

|                                              |                                                                                  |
|----------------------------------------------|----------------------------------------------------------------------------------|
| <b>CLIMATIC PROOFING</b>                     | Damp heat, cyclic, to IEC 60068-2-30<br>Damp heat, constant, to IEC 60068-2-78   |
| <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> | 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>LIFESPAN, MECHANICAL</b>                  | 15000 operations                                                                 |
| <b>MOUNTING METHOD</b>                       | Plug-in unit<br>Built-in device plug-in technique                                |
| <b>PROTECTION AGAINST DIRECT CONTACT</b>     | Finger and back-of-hand proof to VDE 0106 part 100                               |
| <b>SHOCK RESISTANCE</b>                      | 20 g (half-sinusoidal shock 20 ms)                                               |

## SPECIAL FEATURES

- IEC/EN 60947-2 with characteristic conforming to IEC/EN 60947-4-1 with phase failure sensitivity
- The circuit-breaker fulfills all requirements for AC-3 switching category.
- R.m.s. value measurement and "thermal memory"
- Adjustable time delay setting to overcome current peaks  $t_r$  at  $6 \times I_r$  also infinity (without overload releases)
- All AC-3 rating data applies to direct switching by the circuit-breaker under normal operating

|                                                                                        |                    |
|----------------------------------------------------------------------------------------|--------------------|
| <b>POWER AT AC-3, 230 V</b>                                                            |                    |
| <b>RATED OPERATING POWER AT AC-3, 400 V</b>                                            | 250 kW             |
| <b>RATED OPERATIONAL CURRENT</b>                                                       | 437 A (400 V AC-3) |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ</b>     | 150 kA             |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ</b> | 130 kA             |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 440 V, 50/60 HZ</b>     | 130 kA             |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 525 V, 50/60 HZ</b>     | 33 kA              |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 690 V, 50/60 HZ</b>     | 9 kA               |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ</b>                      | 330 kA             |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ</b>                  | 330 kA             |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ</b>                      | 286 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>                      | 74 kA              |
| <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 NON-DELAYED SETTING - MAX</b>                                 | 5400 A             |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN</b>                                 | 900 A              |
| <b>SHORT-CIRCUIT TOTAL</b>                                                             | < 10 ms            |

conditions. If, for example, a contactor takes over AC-3 switching under normal operating conditions, the full rated uninterrupted current applies to the circuit-breaker,  $I_n = I_u$ .

- 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 uninterrupted current: 450 A
- Terminal capacity hint: Up to 240 mm<sup>2</sup> can be connected depending on the cable manufacturer.

|                             |            |
|-----------------------------|------------|
| <b>SWITCH OFF TECHNIQUE</b> | Electronic |
|-----------------------------|------------|

|                      |                    |
|----------------------|--------------------|
| BREAKTIME            |                    |
| 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> | 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at tunnel terminal<br>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                                                                                                                                                                  |
| <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>                     | M10 at rear-side screw connection<br>Min. 20 mm x 5 mm direct at switch rear-side 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) at box terminal<br>300 mm <sup>2</sup> (2x) at rear-side width extension<br>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                                                                                                        |
| <b>TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)</b>   | 25 mm <sup>2</sup> - 240 mm <sup>2</sup> (2x) direct at switch rear-side connection<br>25 mm <sup>2</sup> - 120 mm <sup>2</sup> (2x) at box terminal<br>35 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at box terminal<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 |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                      | Min. 6 segments of 16 mm x 0.8 mm at box terminal<br>10 segments of 50 mm x 1 mm (2x) at rear-side width extension                                                                                                                                                                                                                                                                      |

## Resources

|                                   |                                                                                                                                                                                                                      |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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-016.eps</a><br><a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-012.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-020.eps</a><br><a href="#">eaton-general-ie-ready-dilm-contactor-standards.eps</a> |
| <b>INSTALLATION INSTRUCTIONS</b>  | <a href="#">eaton-circuit-breaker-plug-in-adapter-nzm2-il01219023z.pdf</a><br><a href="#">eaton-circuit-breaker-basic-unit-bg3-il012100zu.pdf</a>                                                                    |
| <b>INSTALLATION VIDEOS</b>        | <a href="#">The new digital NZM Range</a><br><a href="#">Introduction of the new digital circuit breaker NZM</a>                                                                                                     |
| <b>MCAD MODEL</b>                 | <a href="#">eaton-molded-case-switches-mcad-drawings-nzm3-3p-xsve.dwg</a><br><a href="#">eaton-molded-case-switches-mcad-3d-models-nzm3-3p-xsve.stp</a>                                                              |
| <b>PEP ECO-PASSPORT</b>           | <a href="#">eaton-molded-case-switches-pep-eato-00227-v0101-en.pdf</a>                                                                                                                                               |
| <b>TECHNICAL DATA SHEETS</b>      | <a href="#">eaton-nzm-technical-information-sheet</a>                                                                                                                                                                |

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Max. 10 segments of 32 mm x 1 mm + 5 segments of 32 mm x 1 mm at rear-side connection (punched)

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

Max. 8 segments of 24 mm x 1 mm (2x) at box terminal

Max. 10 segments of 24 mm x 1 mm + 5 segments of 24 mm x 1 mm at box terminal

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**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**

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