

# Specifications



Photo is representative

## Eaton 115453

Eaton Moeller series Molded case circuit breaker, Thermomagnetic, NZMH1, 80 A, Three-pole, 690 V

### General specifications

|                             |                                                                      |
|-----------------------------|----------------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton Moeller series NZM molded case circuit breaker thermo-magnetic |
| <b>CATALOG NUMBER</b>       | 115453                                                               |
| <b>MODEL CODE</b>           | NZMH1-M80                                                            |
| <b>EAN</b>                  | 4015081151936                                                        |
| <b>PRODUCT LENGTH/DEPTH</b> | 88 mm                                                                |
| <b>PRODUCT HEIGHT</b>       | 145 mm                                                               |
| <b>PRODUCT WIDTH</b>        | 90 mm                                                                |
| <b>PRODUCT WEIGHT</b>       | 1.021 kg                                                             |
| <b>COMPLIANCES</b>          | RoHS conform                                                         |
| <b>CERTIFICATIONS</b>       | IEC/EN 60947<br>IEC                                                  |

## Additional information

### FUNCTIONS

Phase failure sensitive  
Motor protection

## Delivery programme

**AMPERAGE RATING** 80 A

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

**CIRCUIT BREAKER FRAME TYPE** NZM1

**FITTED WITH:** Thermal protection

**NUMBER OF POLES** Three-pole

**RELEASE SYSTEM** Thermomagnetic release

### SPECIAL FEATURES

- 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: 80 A
- Terminal capacity hint: Up to 95 mm<sup>2</sup> can be connected depending on the cable manufacturer.
- With phase-failure sensitivity
- Tripping class 10 A
- IEC/EN 60947-4-1, IEC/EN 60947-2
- The circuit-breaker fulfills all requirements for AC-3 switching category.

**TYPE** 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>                 | 20.83 W |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 80 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>                                              | 80 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>                     | 1120 A                                                                                                                                                                                               |
| <b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>                     | 640 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>                                         | 7500 operations at 400 V AC-3<br>7500 operations at 415 V AC-3<br>10000 operations at 415 V AC-1<br>5000 operations at 690 V AC-3<br>10000 operations at 400 V AC-1<br>7500 operations at 690 V AC-1 |
| <b>NUMBER OF OPERATIONS PER HOUR - MAX</b>                          | 120                                                                                                                                                                                                  |
| <b>OVERLOAD CURRENT SETTING (IR) - MAX</b>                          | 80 A                                                                                                                                                                                                 |
| <b>OVERLOAD CURRENT SETTING (IR) - MIN</b>                          | 63 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>      | 6000 V                                                                                                                                                                                               |
| <b>RATED INSULATION VOLTAGE (UI)</b>                                | 690 V                                                                                                                                                                                                |
| <b>RATED OPERATING</b>                                              | 22 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 (basic degree of protection, in the operating controls area)<br>IP20        |
| <b>DEGREE OF PROTECTION (IP), FRONT SIDE</b> | IP40 (with insulating surround)<br>IP66 (with door coupling rotary handle)       |
| <b>DEGREE OF PROTECTION (TERMINATIONS)</b>   | IP10 (tunnel terminal)<br>IP00 (terminations, phase isolator and strip terminal) |
| <b>LIFESPAN, MECHANICAL</b>                  | 20000 operations                                                                 |
| <b>MOUNTING METHOD</b>                       | Built-in device fixed built-in technique<br>Fixed                                |
| <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

- 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 Icn)
- Rated current = rated uninterrupted current: 80 A
- Terminal capacity hint: Up to 95 mm<sup>2</sup> can be connected depending on the cable manufacturer.
- With phase-failure sensitivity
- Tripping class 10 A
- IEC/EN 60947-4-1, IEC/EN 60947-2
- The circuit-breaker

|                                                                                        |                    |
|----------------------------------------------------------------------------------------|--------------------|
| <b>POWER AT AC-3, 230 V</b>                                                            |                    |
| <b>RATED OPERATING POWER AT AC-3, 400 V</b>                                            | 45 kW              |
| <b>RATED OPERATIONAL CURRENT</b>                                                       | 68 A (400 V AC-3)  |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ</b>     | 100 kA             |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ</b> | 35 kA              |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 440 V, 50/60 HZ</b>     | 35 kA              |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 525 V, 50/60 HZ</b>     | 10 kA              |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 690 V, 50/60 HZ</b>     | 7.5 kA             |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ</b>                      | 220 kA             |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ</b>                  | 220 kA             |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ</b>                      | 154 kA             |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 525 V, 50/60 HZ</b>                      | 40 kA              |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 690 V, 50/60 HZ</b>                      | 17 kA              |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>                                 | 1120 A             |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN</b>                                 | 640 A              |
| <b>SHORT-CIRCUIT TOTAL BREAKTIME</b>                                                   | < 10 ms            |
| <b>UTILIZATION CATEGORY</b>                                                            | A (IEC/EN 60947-2) |
| <b>VOLTAGE RATING</b>                                                                  | 690 V - 690 V      |

fulfills all requirements for AC-3 switching category.

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

## Technical data - mechanical - terminals

|                                                              |                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OPTIONAL TERMINALS</b>                                    | Connection on rear. Screw terminal. Tunnel terminal                                                                                                                                                                                                                                                                                                          |
| <b>STANDARD TERMINALS</b>                                    | Box 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> - 95 mm <sup>2</sup> (1x) at tunnel terminal                                                                                                                                                                                                                                                                                              |
| <b>TERMINAL CAPACITY (CONTROL CABLE)</b>                     | 0.75 mm <sup>2</sup> - 1.5 mm <sup>2</sup> (2x)<br>0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x)                                                                                                                                                                                                                                                           |
| <b>TERMINAL CAPACITY (COPPER BUSBAR)</b>                     | Min. 12 mm x 5 mm direct at switch rear-side connection<br>M6 at rear-side screw connection<br>Max. 16 mm x 5 mm direct at switch rear-side connection                                                                                                                                                                                                       |
| <b>TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)</b>      | 6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) at box terminal<br>10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) at box terminal<br>10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) direct at switch rear-side connection<br>6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct at switch rear-side connection<br>16 mm <sup>2</sup> (1x) at tunnel terminal         |
| <b>TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)</b>   | 25 mm <sup>2</sup> (2x) direct at switch rear-side connection<br>25 mm <sup>2</sup> - 95 mm <sup>2</sup> (1x) at 1-hole tunnel terminal<br>10 mm <sup>2</sup> - 70 mm <sup>2</sup> (1x) at box terminal<br>10 mm <sup>2</sup> - 70 mm <sup>2</sup> (1x) direct at switch rear-side connection<br>6 mm <sup>2</sup> - 25 mm <sup>2</sup> (2x) at box terminal |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                      | Max. 9 segments of 9 mm x 0.8 mm at box terminal<br>Min. 2 segments of 9 mm x 0.8 mm at box terminal                                                                                                                                                                                                                                                         |

## Resources

|                                   |                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BROCHURES</b>                  | <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>                                                                                                                                                                                          |
| <b>CATALOGUES</b>                 | <a href="#">eaton-digital-nzm-catalog-ca013003en-en-us.pdf</a><br><a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-058.eps</a>                                                                                                                                                                                             |
| <b>CHARACTERISTIC CURVE</b>       | <a href="#">eaton-circuit-breaker-let-through-current-nzm-mccb-characteristic-curve-003.eps</a>                                                                                                                                                                                                                                           |
| <b>DECLARATIONS OF CONFORMITY</b> | <a href="#">eaton-molded-case-circuit-breaker-declaration-of-conformity-uk251450en.pdf</a><br><a href="#">eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250289en.pdf</a><br><a href="#">eaton-circuit-breaker-switch-nzm-mccb-dimensions-014.eps</a><br><a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-017.eps</a> |
| <b>DRAWINGS</b>                   | <a href="#">eaton-circuit-breaker-socket-nzm-mccb-3d-drawing.eps</a><br><a href="#">eaton-general-ie-ready-dilm-contactor-standards.eps</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><br><a href="#">DA-CD-nzm1_3p</a>                                                                                                                                                                                         |
| <b>MCAD MODEL</b>                 | <a href="#">eaton-molded-case-switches-mcad-3d-models-nzm1-3p.stp</a><br><a href="#">eaton-molded-case-switches-mcad-drawings-nzm1-3p.dwg</a>                                                                                                                                                                                             |
| <b>PEP ECO-PASSPORT</b>           | <a href="#">eaton-molded-case-switches-pep-eato-00225-v0101-en.pdf</a>                                                                                                                                                                                                                                                                    |

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**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**

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