



□□□□□

## Eaton 147397

Eaton Moeller series NZM - Molded Case Circuit Breaker. Circuit-breaker, 4p, 160A, box terminals, selectivity protection

□□□□

|                                 |                                                                       |
|---------------------------------|-----------------------------------------------------------------------|
| <b>PRODUCT NAME</b>             | Eaton Moeller series NZM<br>molded case circuit<br>breaker electronic |
| <b>CATALOG NUMBER</b>           | 147397                                                                |
| <b>PRODUCT<br/>LENGTH/DEPTH</b> | 149 mm                                                                |
| <b>PRODUCT HEIGHT</b>           | 184 mm                                                                |
| <b>PRODUCT WIDTH</b>            | 140 mm                                                                |
| <b>PRODUCT WEIGHT</b>           | 3.662 kg                                                              |
| <b>COMPLIANCES</b>              | RoHS conform                                                          |
| <b>CERTIFICATIONS</b>           | IEC<br>IEC/EN 60947                                                   |



Powering Business Worldwide

|                                                                                         |                                                                                                                                  |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>AMPERAGE RATING</b>                                                                  | 160 A                                                                                                                            |
| <b>VOLTAGE RATING</b>                                                                   | 690 V - 690 V                                                                                                                    |
| <b>CIRCUIT BREAKER FRAME TYPE</b>                                                       | NZM2                                                                                                                             |
| <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.                                                                                       |

|                      |                                                                                                                                                                                |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | <a href="#">eaton-circuit-breaker-characteristic-power-defense-mccb-characteristic-curve-036.eps</a>                                                                           |
| CHARACTERISTIC CURVE | <a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-054.eps</a><br><a href="#">eaton-circuit-breaker-let-through-current-nzm-mccb-characteristic-curve-004.eps</a> |
| □□                   | <a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-035.eps</a>                                                                                                              |

|                                                                 |                                                                                                      |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <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>LIFESPAN, MECHANICAL</b>                                     | 20000 operations                                                                                     |
| <b>UTILIZATION CATEGORY</b>                                     | A (IEC/EN 60947-2)                                                                                   |
| <b>MOUNTING METHOD</b>                                          | DIN rail (top hat rail)<br>mounting optional<br>Built-in device fixed built-in technique<br>Fixed    |
| <b>CLIMATIC PROOFING</b>                                        | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30                       |
| <b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>            | 21.12 W                                                                                              |
| <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                                                                                                                                                                                                                                                                                                             |
| <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>              | Frame clamp                                                                                                                                                                                                                                                                                                   |
| <b>CURRENT RATING OF NEUTRAL CONDUCTOR</b>                     | 200% of phase conductor                                                                                                                                                                                                                                                                                       |
| <b>OVERVOLTAGE CATEGORY</b>                                    | III                                                                                                                                                                                                                                                                                                           |
| <b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>                   | IP40 (with insulating surround)<br>IP66 (with door coupling rotary handle)                                                                                                                                                                                                                                    |
| <b>DEGREE OF PROTECTION (TERMINATIONS)</b>                     | IP10 (tunnel terminal)<br>IP00 (terminations, phase isolator and strip terminal)                                                                                                                                                                                                                              |
| <b>NUMBER OF POLES</b>                                         | Four-pole                                                                                                                                                                                                                                                                                                     |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                        | Min. 2 segments of 16 mm x 0.8 mm at rear-side connection (punched)<br>Max. 10 segments of 24 mm x 0.8 mm at rear-side connection (punched)<br>Min. 2 segments of 9 mm x 0.8 mm at box terminal<br>Max. 10 segments of 16 mm x 0.8 mm at box terminal<br>Max. 8 segments of 24 mm x 1 mm (2x) at box terminal |
| <b>LIFESPAN, ELECTRICAL</b>                                    | 6500 operations at 400 V AC-3<br>10000 operations at 400 V AC-1<br>5000 operations at 690 V AC-3<br>6500 operations at 415 V                                                                                                                                                                                  |

|                  |                                                                               |
|------------------|-------------------------------------------------------------------------------|
|                  | AC-3<br>10000 operations at 415 V<br>AC-1<br>7500 operations at 690 V<br>AC-1 |
| <b>FUNCTIONS</b> | Systems, cable, selectivity<br>and generator protection                       |
| <b>TYPE</b>      | Circuit breaker                                                               |

#### 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  $I_{cn}$ )
- 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)
- Adjustable delay time  $t_{sd}$
- $i^2t$  constant  
function: fixed OFF
- Set value in neutral conductor is synchronous with set value  $I_r$  of main pole.
- Rated current = rated uninterrupted current: 160 A

|                                                                      |                                          |
|----------------------------------------------------------------------|------------------------------------------|
| <b>APPLICATION</b>                                                   | Use in unearthed supply systems at 690 V |
| <b>SHOCK RESISTANCE</b>                                              | 20 g (half-sinusoidal shock 20 ms)       |
| <b>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b>               | Front side                               |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 160 A                                    |
| <b>POWER LOSS</b>                                                    | 21.12 W                                  |
| <b>RELEASE SYSTEM</b>                                                | Electronic release                       |

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SHORT-CIRCUIT TOTAL<br/>BREAKTIME</b>                           | < 10 ms                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>RATED SHORT-TIME<br/>WITHSTAND CURRENT (T<br/>= 0.3 S)</b>      | 1.9 kA                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>RATED SHORT-TIME<br/>WITHSTAND CURRENT (T<br/>= 1 S)</b>        | 1.9 kA                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SHORT-CIRCUIT RELEASE<br/>DELAYED SETTING - MAX</b>             | 1600 A                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SHORT-CIRCUIT RELEASE<br/>DELAYED SETTING - MIN</b>             | 160 A                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>SHORT-CIRCUIT RELEASE<br/>NON-DELAYED SETTING -<br/>MAX</b>     | 1920 A                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SHORT-CIRCUIT RELEASE<br/>NON-DELAYED SETTING -<br/>MIN</b>     | 1920 A                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>TERMINAL CAPACITY<br/>(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<br/>(COPPER BUSBAR)</b>                       | Max. 24 mm x 8 mm direct<br>at switch rear-side<br>connection<br>Min. 16 mm x 5 mm direct<br>at switch rear-side<br>connection<br>M8 at rear-side screw<br>connection                                                                                                                                                                                                                                      |
| <b>TERMINAL CAPACITY<br/>(COPPER SOLID<br/>CONDUCTOR/CABLE)</b>    | 10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) at<br>box terminal<br>16 mm <sup>2</sup> (1x) at tunnel<br>terminal<br>10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection<br>6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct<br>at switch rear-side<br>connection<br>6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) at<br>box terminal                                  |
| <b>TERMINAL CAPACITY<br/>(ALUMINUM SOLID<br/>CONDUCTOR/CABLE)</b>  | 16 mm <sup>2</sup> (1x) at tunnel<br>terminal                                                                                                                                                                                                                                                                                                                                                              |
| <b>TERMINAL CAPACITY<br/>(COPPER STRANDED<br/>CONDUCTOR/CABLE)</b> | 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) at<br>box terminal<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>1-hole tunnel terminal<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>box terminal<br>25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x)<br>direct at switch rear-side<br>connection |

|                                                                                                    |                                                                     |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <b>TERMINAL CAPACITY<br/>(ALUMINUM STRANDED<br/>CONDUCTOR/CABLE)</b>                               | 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>tunnel terminal |
| <b>HANDLE TYPE</b>                                                                                 | Rocker lever                                                        |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MAX</b>                                                 | 1600 A                                                              |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MIN</b>                                                 | 160 A                                                               |
| <b>INSTANTANEOUS<br/>CURRENT SETTING (II) -<br/>MAX</b>                                            | 1920 A                                                              |
| <b>INSTANTANEOUS<br/>CURRENT SETTING (II) -<br/>MIN</b>                                            | 1920 A                                                              |
| <b>NUMBER OF<br/>OPERATIONS PER HOUR -<br/>MAX</b>                                                 | 120                                                                 |
| <b>OVERLOAD CURRENT<br/>SETTING (IR) - MAX</b>                                                     | 160 A                                                               |
| <b>OVERLOAD CURRENT<br/>SETTING (IR) - MIN</b>                                                     | 80 A                                                                |
| <b>OVERLOAD CURRENT<br/>SETTING (IR)</b>                                                           | 80 A - 160 A                                                        |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 230 V,<br/>50/60 HZ</b>     | 85 kA                                                               |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT<br/>400/415 V, 50/60 HZ</b> | 50 kA                                                               |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 440 V,<br/>50/60 HZ</b>     | 35 kA                                                               |
| <b>RATED SHORT-CIRCUIT<br/>BREAKING CAPACITY ICS<br/>(IEC/EN 60947) AT 525 V,<br/>50/60 HZ</b>     | 25 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 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>STANDARD TERMINALS</b>                                                       | Box terminal                                           |
| <b>OPTIONAL TERMINALS</b>                                                       | Connection on rear. Screw<br>terminal. Tunnel terminal |
| <b>RATED SHORT-CIRCUIT<br/>MAKING CAPACITY ICM<br/>AT 240 V, 50/60 HZ</b>       | 187 kA                                                 |
| <b>RATED IMPULSE<br/>WITHSTAND VOLTAGE<br/>(UIMP) AT AUXILIARY<br/>CONTACTS</b> | 6000 V                                                 |
| <b>RATED IMPULSE<br/>WITHSTAND VOLTAGE<br/>(UIMP) AT MAIN<br/>CONTACTS</b>      | 8000 V                                                 |
| <b>RATED INSULATION<br/>VOLTAGE (UI)</b>                                        | 1000 V AC                                              |

|       |
|-------|
| □□□□: |
| □□□□: |
| □□□:  |
| □□:   |