

**Circuit-breaker, 4p, 500A****Part no.****NZMN3-4-A500  
109698****General specifications**

|                      |  |
|----------------------|--|
| Product name         | Eaton Moeller series NZM - Molded case circuit breaker |
| Part no.             | NZMN3-4-A500   |
| EAN                  | 4015081092840  |
| Product Length/Depth | 166 millimetre   |
| Product height       | 275 millimetre   |
| Product width        | 185 millimetre   |
| Product weight       | 7.3 kilogram   |
| Compliances          | RoHS conform   |
| Certifications       | IEC/EN 60947<br>IEC                                    |
| Product Tradename    | NZM  |
| Product Type         | Molded case circuit breaker                            |
| Product Sub Type     | None   |

**Delivery program**

|                            |   |
|----------------------------|---|
| Application                | Use in unearthed supply systems at 690 V  |
| Type                       | Circuit breaker   |
| Circuit breaker frame type | NZM3  |
| Number of poles            | Four-pole   |
| Amperage Rating            | 500 A   |
| Release system             | Thermomagnetic release  |
| Features                   | Protection unit<br>Motor drive optional   |
| 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 <sub>cn</sub> )<br>Rated current = rated uninterrupted current: 500 A<br>Set value in neutral conductor is synchronous with set value I <sub>r</sub> of main pole.<br>Terminal capacity hint: Up to 240 mm <sup>2</sup> can be connected depending on the cable manufacturer. |

**Technical Data - Electrical**

|   |                         |
|---|-------------------------|
| Voltage rating  | 690 V - 690 V           |
| Rated insulation voltage (U <sub>i</sub> )  | 1000 V AC               |
| Rated impulse withstand voltage (U <sub>imp</sub> ) at auxiliary contacts                   | 6000 V                  |
| Rated impulse withstand voltage (U <sub>imp</sub> ) at main contacts                        | 8000 V                  |
| Current rating of neutral conductor   | 200% of phase conductor |
| Rated short-time withstand current (t = 0.3 s)  | 3.3 kA                  |
| Rated short-time withstand current (t = 1 s)  | 3.3 kA                  |
| Instantaneous current setting (I <sub>i</sub> ) - min                                       | 6 A                     |
| Instantaneous current setting (I <sub>i</sub> ) - max                                       | 10 A                    |
| Overload current setting (I <sub>r</sub> )  | 400 A - 500 A           |
| Overload current setting (I <sub>r</sub> ) - min  | 400 A                   |
| Overload current setting (I <sub>r</sub> ) - max  | 500 A                   |
| Short delay current setting (I <sub>sd</sub> ) - min  | 0 A                     |
| Short delay current setting (I <sub>sd</sub> ) - max  | 0 A                     |
| Short-circuit release non-delayed setting - min   | 3000 A                  |
| Short-circuit release non-delayed setting - max   | 5000 A                  |
| Rated short-circuit breaking capacity I <sub>cs</sub> (IEC/EN 60947) at 230 V, 50/60 Hz     | 85 kA                   |
| Rated short-circuit breaking capacity I <sub>cs</sub> (IEC/EN 60947) at 400/415 V, 50/60 Hz | 50 kA                   |
| Rated short-circuit breaking capacity I <sub>cs</sub> (IEC/EN 60947) at 440 V, 50/60 Hz     | 35 kA                   |
| Rated short-circuit breaking capacity I <sub>cs</sub> (IEC/EN 60947) at 525 V, 50/60 Hz     | 13 kA                   |
| Rated short-circuit breaking capacity I <sub>cs</sub> (IEC/EN 60947) at 690 V, 50/60 Hz     | 5 kA                    |

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| Rated short-circuit making capacity I <sub>cm</sub> at 240 V, 50/60 Hz     |  | 187 kA  |
| Rated short-circuit making capacity I <sub>cm</sub> at 400/415 V, 50/60 Hz |  | 105 kA  |
| Rated short-circuit making capacity I <sub>cm</sub> at 440 V, 50/60 Hz     |  | 74 kA   |
| Rated short-circuit making capacity I <sub>cm</sub> at 525 V, 50/60 Hz     |  | 53 kA   |
| Rated short-circuit making capacity I <sub>cm</sub> at 690 V, 50/60 Hz     |  | 40 kA   |
| Short-circuit total breaktime  |  | < 10 ms   |
| Electrical connection type of main circuit                                 |  | Screw connection  |
| Isolation  |  | 500 V AC (between auxiliary contacts and main contacts)<br>300 V AC (between the auxiliary contacts)  |
| Number of operations per hour - max  |  | 60  |
| Handle type  |  | Rocker lever  |
| Utilization category   |  | A (IEC/EN 60947-2)  |
| Overvoltage category   |  | III   |
| Pollution degree   |  | 3   |
| Lifespan, electrical   |  | 2000 operations at 400 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 415 V AC-3  |
| Direction of incoming supply   |  | As required   |
| <b>Technical Data - Mechanical</b>   |  |   |
| Mounting Method  |  | Built-in device fixed built-in technique<br>Fixed   |
| Degree of protection   |  | IP20<br>IP20 (basic degree of protection, in the operating controls area)   |
| Degree of protection (IP), front side                                      |  | IP66 (with door coupling rotary handle)<br>IP40 (with insulating surround)  |
| Degree of protection (terminations)  |  | IP00 (terminations, phase isolator and strip terminal)<br>IP10 (tunnel terminal)  |
| Protection against direct contact  |  | Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110   |
| Shock resistance   |  | 20 g (half-sinusoidal shock 20 ms)  |
| Number of auxiliary contacts (change-over contacts)                        |  | 0   |
| Number of auxiliary contacts (normally closed contacts)                    |  | 0   |
| Number of auxiliary contacts (normally open contacts)                      |  | 0   |
| Position of connection for main current circuit                            |  | Front side  |
| Climatic proofing  |  | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30  |
| 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 <sub>cn</sub> )<br>Rated current = rated uninterrupted current: 500 A<br>Set value in neutral conductor is synchronous with set value I <sub>r</sub> of main pole.<br>Terminal capacity hint: Up to 240 mm <sup>2</sup> can be connected depending on the cable manufacturer. |
| Lifespan, mechanical   |  | 15000 operations  |
| <b>Technical Data - Mechanical - Terminals</b>                             |  |   |
| Standard terminals   |  | Screw terminal  |
| Optional terminals   |  | Box terminal. Connection on rear. Tunnel terminal   |
| Terminal capacity (control cable)  |  | 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)  |
| Terminal capacity (aluminum solid conductor/cable)                         |  | 16 mm <sup>2</sup> (1x) at tunnel terminal  |
| Terminal capacity (aluminum stranded conductor/cable)                      |  | 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  |
| Terminal capacity (copper busbar)  |  | 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>M10 at rear-side screw connection<br>Max. 10 mm x 50 mm (2x) at rear-side width extension   |
| Terminal capacity (copper solid conductor/cable)                           |  | 16 mm <sup>2</sup> (1x) at tunnel terminal<br>16 mm <sup>2</sup> (1x) direct at switch rear-side connection<br>300 mm <sup>2</sup> (2x) at rear-side width extension<br>16 mm <sup>2</sup> (2x) at box terminal<br>16 mm <sup>2</sup> (2x) direct at switch rear-side connection  |
| Terminal capacity (copper stranded conductor/cable)                        |  | 35 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) at box terminal<br>25 mm <sup>2</sup> - 240 mm <sup>2</sup> (1x) direct at switch rear-side connection<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  |

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|  |  | 25 mm <sup>2</sup> - 120 mm <sup>2</sup> (2x) at box terminal   |
| Terminal capacity (copper strip)   |  | Max. 10 segments of 24 mm x 1 mm + 5 segments of 24 mm x 1 mm<br>10 segments of 50 mm x 1 mm (2x) at rear-side width extension<br>Max. 8 segments of 24 mm x 1 mm (2x) at box terminal<br>Min. 6 segments of 16 mm x 0.8 mm at box terminal<br>Min. 6 segments of 16 mm x 0.8 mm at rear-side connection (punched)<br>Max. 10 segments of 32 mm x 1 mm + 5 segments of 32 mm x 1 mm at rear-side connection (punched) |
| <b>Design verification as per IEC/EN 61439 - technical data</b>                  |  |   |
| Rated operational current for specified heat dissipation (I <sub>n</sub> )       |  | 500 A   |
| Equipment heat dissipation, current-dependent                                    |  | 130.5 W   |
| Ambient operating temperature - min  |  | -25 °C  |
| Ambient operating temperature - max  |  | 70 °C   |
| Ambient storage temperature - min  |  | -40 °C  |
| Ambient storage temperature - max  |  | 70 °C   |
| <b>Design verification as per IEC/EN 61439</b>                                   |  |   |
| 10.2.2 Corrosion resistance  |  | Meets the product standard's requirements.  |
| 10.2.3.1 Verification of thermal stability of enclosures                         |  | Meets the product standard's requirements.  |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat       |  | Meets the product standard's requirements.  |
| 10.2.3.3 Resist. of insul. mat. to abnormal heat/fire by internal elect. effects |  | Meets the product standard's requirements.  |
| 10.2.4 Resistance to ultra-violet (UV) radiation                                 |  | Meets the product standard's requirements.  |
| 10.2.5 Lifting   |  | Does not apply, since the entire switchgear needs to be evaluated.  |
| 10.2.6 Mechanical impact   |  | Does not apply, since the entire switchgear needs to be evaluated.  |
| 10.2.7 Inscriptions  |  | Meets the product standard's requirements.  |
| 10.3 Degree of protection of assemblies  |  | Does not apply, since the entire switchgear needs to be evaluated.  |
| 10.4 Clearances and creepage distances   |  | Meets the product standard's requirements.  |
| 10.5 Protection against electric shock   |  | Does not apply, since the entire switchgear needs to be evaluated.  |
| 10.6 Incorporation of switching devices and components                           |  | Does not apply, since the entire switchgear needs to be evaluated.  |
| 10.7 Internal electrical circuits and connections                                |  | Is the panel builder's responsibility.  |
| 10.8 Connections for external conductors   |  | Is the panel builder's responsibility.  |
| 10.9.2 Power-frequency electric strength   |  | Is the panel builder's responsibility.  |
| 10.9.3 Impulse withstand voltage   |  | Is the panel builder's responsibility.  |
| 10.9.4 Testing of enclosures made of insulating material                         |  | Is the panel builder's responsibility.  |
| 10.10 Temperature rise   |  | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.  |
| 10.11 Short-circuit rating   |  | Is the panel builder's responsibility. The specifications for the switchgear must be observed.  |
| 10.12 Electromagnetic compatibility  |  | Is the panel builder's responsibility. The specifications for the switchgear must be observed.  |
| 10.13 Mechanical function  |  | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.  |
| <b>Additional information</b>  |  |   |
| Functions  |  | System and cable protection   |

## Technical data ETIM 9.0

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|---|----|--|
| Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)   |    |  |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Circuit breaker for power transformer, generator and system protection (ecI@ss13-27-37-04-09 [AJZ716018]) |    |  |
| Rated permanent current I <sub>u</sub>  | A  | 500                                      |
| Rated voltage   | V  | 690 - 690                                |
| Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, 50 Hz   | kA | 50                                       |
| Overload release current setting  | A  | 400 - 500                                |
| Adjustment range short-term delayed short-circuit release   | A  | 0 - 0                                    |
| Adjustment range undelayed short-circuit release  | A  | 6 - 10                                   |
| Power loss  | W  |  |
| Device construction   |    | Built-in device fixed built-in technique |
| Integrated earth fault protection   |    | No                                       |
| Type of electrical connection of main circuit   |    | Screw connection                         |
| Suitable for DIN rail (top hat rail) mounting   |    | No                                       |

|   |  |              |
|---|--|--------------|
| DIN rail (top hat rail) mounting optional               |  | No           |
| Number of auxiliary contacts as normally closed contact |  | 0            |
| Number of auxiliary contacts as normally open contact   |  | 0            |
| Number of auxiliary contacts as change-over contact     |  | 0            |
| With switched-off indicator                             |  | No           |
| With integrated under voltage release                   |  | No           |
| Number of poles   |  | 4            |
| Position of connection for main current circuit         |  | Front side   |
| Type of control element                                 |  | Rocker lever |
| Complete device with protection unit                    |  | Yes          |
| Motor drive integrated                                  |  | No           |
| Motor drive optional                                    |  | Yes          |
| Degree of protection (IP)                               |  | IP20         |