

Circuit-breaker, 3p, 20A



Part no. **NZMN1-AF20-NA**
281565

| General specifications | | |
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| Product name | | Eaton Moeller series NZM molded case circuit breaker thermo-magnetic |
| Part no. | | NZMN1-AF20-NA |
| EAN | | 4015082815653 |
| Product Length/Depth | | 88 millimetre |
| Product height | | 165.5 millimetre |
| Product width | | 90 millimetre |
| Product weight | | 1.046 kilogram |
| Compliances | | RoHS conform |
| Certifications | | CSA (File No. 22086) CE marking Specially designed for North America CSA (Class No. 1432-01) CSA certified UL (File No. E31593) UL/CSA UL (Category Control Number DIVQ) UL 489 IEC 60947-2 CSA-C22.2 No. 5-09 IEC/EN 60947 IEC UL listed |
| Product Tradename | | NZM |
| Product Type | | Molded case circuit breaker |
| Product Sub Type | | Thermo-magnetic |
| Delivery program | | |
| Application | | Branch circuits, feeder circuits Use in unearthed supply systems at 690 V |
| Type | | Circuit breaker |
| Circuit breaker frame type | | NZM1 |
| Number of poles | | Three-pole |
| Amperage Rating | | 20 A |
| Release system | | Thermomagnetic release |
| Features | | Protection unit |
| 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: 20 A Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate. Fixed overload releases I _r |
| Technical Data - Electrical | | |
| Voltage rating | | 690 V - 690 V |
| Rated operating voltage U _e (UL) - max | | 480 Y / 277 V |
| Rated insulation voltage (U _i) | | 690 V AC |
| Rated impulse withstand voltage (U _{imp}) at auxiliary contacts | | 6000 V |
| Rated impulse withstand voltage (U _{imp}) at main contacts | | 6000 V |
| Rated operational current | | 160 A (380/400 V AC-1, making and breaking capacity) 20 A (690 V AC -1, making and breaking capacity) 125 A (415 V AC-1, making and breaking capacity) 20 A (660-690 V AC-3, making and breaking capacity) |
| Instantaneous current setting (I _i) - min | | 350 A |
| Instantaneous current setting (I _i) - max | | 350 A |
| Overload current setting (I _r) - min | | 20 A |
| Overload current setting (I _r) - max | | 20 A |
| Short delay current setting (I _{sd}) - min | | 0 A |
| Short delay current setting (I _{sd}) - max | | 0 A |

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| Short-circuit release non-delayed setting - min | | 350 A |
| Short-circuit release non-delayed setting - max | | 350 A |
| Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 230 V, 50/60 Hz | | 85 kA |
| Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 400/415 V, 50/60 Hz | | 50 kA |
| Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 440 V, 50/60 Hz | | 35 kA |
| Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 525 V, 50/60 Hz | | 10 kA |
| Rated short-circuit breaking capacity Ics (IEC/EN 60947) at 690 V, 50/60 Hz | | 7.5 kA |
| Rated short-circuit making capacity Icm at 240 V, 50/60 Hz | | 187 kA |
| Rated short-circuit making capacity Icm at 400/415 V, 50/60 Hz | | 105 kA |
| Rated short-circuit making capacity Icm at 440 V, 50/60 Hz | | 74 kA |
| Rated short-circuit making capacity Icm at 525 V, 50/60 Hz | | 40 kA |
| Rated short-circuit making capacity Icm at 690 V, 50/60 Hz | | 17 kA |
| Short-circuit total breaktime | | < 10 ms |
| Low-voltage HBC fuse - max | | 200 A gG/gL |
| Electrical connection type of main circuit | | Frame clamp |
| Isolation | | 500 V AC (between auxiliary contacts and main contacts) 300 V AC (between the auxiliary contacts) |
| Number of operations per hour - max | | 120 |
| Handle type | | Rocker lever |
| Utilization category | | A (IEC/EN 60947-2) |
| Overvoltage category | | III |
| Pollution degree | | 3 |
| Lifespan, electrical | | 7500 operations at 690 V AC-1 10000 operations at 400 V AC-1 |
| Direction of incoming supply | | As required |
| Technical Data - Mechanical | | |
| Mounting Method | | Built-in device fixed built-in technique DIN rail (top hat rail) mounting optional Fixed |
| Degree of protection | | IP20 IP20 (basic degree of protection, in the operating controls area) |
| Degree of protection (IP), front side | | IP40 (with insulating surround) IP66 (with door coupling rotary handle) |
| Degree of protection (terminations) | | IP00 (terminations, phase isolator and strip terminal) 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 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 Icn) Rated current = rated uninterrupted current: 20 A Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate. Fixed overload releases Ir |
| Lifespan, mechanical | | 20000 operations |
| Technical Data - Mechanical - Terminals | | |
| Standard terminals | | Box terminal |
| Terminal capacity (control cable) | | 14 mm ² - 18 mm ² (1x) 16 mm ² - 18 mm ² (2x) |
| Terminal capacity (aluminum solid conductor/cable) | | 16 mm ² (1x) at tunnel terminal |
| Terminal capacity (copper busbar) | | M8 at rear-side screw connection Max. 16 mm x 5 mm direct at switch rear-side connection Min. 12 mm x 5 mm direct at switch rear-side connection |
| Terminal capacity (copper solid conductor/cable) | | 16 mm ² - 95 mm ² (1x) at tunnel terminal 6 mm ² - 12 mm ² (1x) at box terminal 6 mm ² - 12 mm ² (1x) direct at switch rear-side connection 6 mm ² - 9 mm ² (2x) direct at switch rear-side connection |

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| Terminal capacity (copper stranded conductor/cable) | | 4 mm ² - 3/0 mm ² (1x) at tunnel terminal 25 mm ² - 70 mm ² (1x) at box terminal 4 mm ² - 2/0 mm ² (1x) direct at switch rear-side connection 25 mm ² (2x) at box terminal |
| Terminal capacity (copper strip) | | Max. 9 segments of 9 mm x 0.8 mm at box terminal Min. 2 segments of 9 mm x 0.8 mm at box terminal |
| Design verification as per IEC/EN 61439 - technical data | | |
| Rated operational current for specified heat dissipation (In) | | 20 A |
| Equipment heat dissipation, current-dependent | | 9.82 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 |
| Design verification as per IEC/EN 61439 | | |
| 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. |
| Additional information | | |
| Functions | | System and cable protection Current limiting circuit breaker |

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 (ecl@ss13-27-37-04-09 [AJZ716018]) | | |
| Rated permanent current Iu | A | 20 |
| Rated voltage | V | 690 - 690 |
| Rated short-circuit breaking capacity Icu at 400 V, 50 Hz | kA | 50 |
| Overload release current setting | A | 20 - 20 |
| Adjustment range short-term delayed short-circuit release | A | 0 - 0 |
| Adjustment range undelayed short-circuit release | A | 350 - 350 |
| Power loss | W | 9.8 |
| Device construction | | Built-in device fixed built-in technique |
| Integrated earth fault protection | | No |
| Type of electrical connection of main circuit | | Frame clamp |
| Suitable for DIN rail (top hat rail) mounting | | No |
| DIN rail (top hat rail) mounting optional | | Yes |

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| 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 | | | 3 |
| 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 | | | No |
| Degree of protection (IP) | | | IP20 |