






Circuit-breaker, 3p, 800A

Part no. **NZMN4-AEF800-NA**  
 Catalog No. **271110**

Similar to illustration

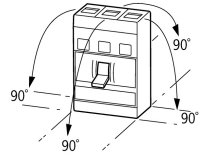
## Delivery program

|   |                          |    |  |   |
|---|--------------------------|----|--|---|
| Product range   |                          |    |  | Circuit-breaker   |
| Protective function   |                          |    |  | System and cable protection   |
| Standard/Approval   |                          |    |  | UL/CSA, IEC   |
| Release system  |                          |    |  | Electronic release  |
| Installation type   |                          |    |  | Fixed   |
| Description   |                          |    |  | Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate.<br>Fixed overload releases Ir<br>R.m.s. value measurement and "thermal memory" |
| Frame size  |                          |    |  | NZM4  |
| Number of poles   |                          |    |  | 3 pole  |
| Standard equipment  |                          |    |  | Screw connection  |
| <b>Switching capacity</b>   |                          |    |  |   |
| SCCR 480Y/277 V 60 Hz   | $I_{cu}$                 | kA |  | 100   |
| SCCR 480 V 60 Hz  | $I_{cu}$                 | kA |  | 42  |
| SCCR 600 V 60 Hz  | $I_{cu}$                 | kA |  | 35  |
| <b>Rated current = rated uninterrupted current</b>                                  |                          |    |  |   |
| Rated current = rated uninterrupted current   | $I_n = I_u$              | A  |  | 800   |
| <b>Setting range</b>  |                          |    |  |   |
| Overload trip   |                          |    |  |   |
|  |                          |    |  |   |
| Overload release, min.  | $I_r$                    | A  |  | 800   |
| Short-circuit releases  |                          |    |  |   |
|  |                          |    |  |   |
| Non-delayed   | $I_i = I_n \times \dots$ |    |  | 2 - 12  |
|  |                          |    |  |   |

## Technical data

### General

|   |  |      |  |  |
|---|--|------|--|--|
| Standards   |  |      |  | IEC/EN 60947   |
| Protection against direct contact   |  |      |  | Finger and back of hand proof to VDE 0106 Part 100                             |
| Climatic proofing   |  |      |  | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30 |
| Ambient temperature   |  |      |  |  |
| Ambient temperature, storage  |  | °C   |  | - 40 - + 70  |
| Operation   |  | °C   |  | -25 - +70  |
| Mechanical shock resistance (10 ms half-sinusoidal shock) according to IEC 60068-2-27 |  | g    |  | 20 (half-sinusoidal shock 20 ms)   |
| Safe isolation to EN 61140  |  |      |  |  |
| Between auxiliary contacts and main contacts  |  | V AC |  | 500  |
| between the auxiliary contacts  |  | V AC |  | 300  |

|  |    |   |
|--|----|---|
| Weight                                 | kg | 21  |
| Mounting position                      |    |   |
| Mounting position                      |    | <p>Vertical and 90° in all directions</p>  <p>With XFI earth-fault release:<br/> - NZM1, N1, NZM2, N2: vertical and 90° in all directions<br/> with plug-in unit<br/> - NZM1, N1, NZM2, N2: vertical, 90° right/left<br/> with withdrawable unit:<br/> - NZM3, N3: vertical, 90° right/left<br/> - NZM4, N4: vertical<br/> with remote operator:<br/> - NZM2, N(S)2, NZM3, N(S)3, NZM4, N(S)4: vertical and 90° in all directions</p> |
| Direction of incoming supply           |    | as required   |
| Degree of protection                   |    |   |
| Device                                 |    | In the operating controls area: IP20 (basic degree of protection)   |
| Enclosures                             |    | With insulating surround: IP40<br>With door coupling rotary handle: IP66  |
| Terminations                           |    | Tunnel terminal: IP10<br>Phase isolator and strip terminal: IP00  |
| Other technical data (sheet catalogue) |    | Weight<br>Temperature dependency, Derating<br>Effective power loss  |

### Circuit-breakers

|                                       |           |      |       |
|---------------------------------------|-----------|------|-------|
| Rated surge voltage invariability     | $U_{imp}$ |      |       |
| Main contacts                         | V         |      | 8000  |
| Auxiliary contacts                    | V         |      | 6000  |
| Rated operational voltage             | $U_e$     | V AC | 690   |
| Overvoltage category/pollution degree |           |      | III/3 |
| Rated insulation voltage              | $U_i$     | V    | 1000  |
| Use in unearthed supply systems       | V         |      | ≤ 525 |

### Switching capacity

|   |          |    |   |
|---|----------|----|---|
| Rated short-circuit making capacity                                 | $I_{cm}$ |    |   |
| 240 V   | $I_{cm}$ | kA | 105   |
| 400/415 V   | $I_{cm}$ | kA | 105   |
| 440 V 50/60 Hz  | $I_{cm}$ | kA | 74  |
| 525 V 50/60 Hz  | $I_{cm}$ | kA | 53  |
| 690 V 50/60 Hz  | $I_c$    | kA | 40  |
| Rated short-circuit breaking capacity $I_{cn}$                      | $I_{cn}$ |    |   |
| $I_{cu}$ to IEC/EN 60947 test cycle O-t-CO                          | $I_{cu}$ | kA |   |
| 240 V 50/60 Hz  | $I_{cu}$ | kA | 50  |
| 400/415 V 50/60 Hz  | $I_{cu}$ | kA | 50  |
| 440 V 50/60 Hz  | $I_{cu}$ | kA | 35  |
| 525 V 50/60 Hz  | $I_{cu}$ | kA | 25  |
| 690 V 50/60 Hz  | $I_{cu}$ | kA | 20  |
| $I_{cs}$ to IEC/EN 60947 test cycle O-t-CO-t-CO                     | $I_{cs}$ | kA |   |
| 240 V 50/60 Hz  | $I_{cs}$ | kA | 37  |
| 400/415 V 50/60 Hz  | $I_{cs}$ | kA | 37  |
| 440 V 50/60 Hz  | $I_{cs}$ | kA | 26  |
| 525 V 50/60 Hz  | $I_{cs}$ | kA | 19  |
| 690 V 50/60 Hz  | $I_{cs}$ | kA | 15  |
| Maximum low-voltage h.b.c. fuse                                     | A gG/gL  |    | 2 x 630   |
|   |          |    | Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker. |
| <b>Technical data that diverge from products for the IEC market</b> |          |    |   |
| Switching capacity of NA switches (UL489, CSA 22.2 No. 5.1)         |          |    |   |
| Short-circuit current rating SCCR                                   |          |    |   |
| SCCR 240 V 60 Hz  | $I_{cu}$ | kA | 85  |
| SCCR 480Y/277 V 60 Hz   | $I_{cu}$ | kA | 100   |

|   |                 |       |                            |
|---|-----------------|-------|----------------------------|
| SCCR 480 V 60 Hz  | I <sub>cu</sub> | kA    | 42                         |
| SCCR 600 V 60 Hz  | I <sub>cu</sub> | kA    | 35                         |
| Rated short-time withstand current  |                 |       |                            |
| t = 0.3 s   | I <sub>cw</sub> | kA    | 19.2                       |
| t = 1 s   | I <sub>cw</sub> | kA    | 19.2                       |
| Utilization category to IEC/EN 60947-2                                      |                 |       | A                          |
| Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release) | Operations      |       | 10000                      |
| Lifespan, electrical  |                 |       |                            |
| AC-1  |                 |       |                            |
| 400 V 50/60 Hz  | Operations      |       | 3000                       |
| 690 V 50/60 Hz  | Operations      |       | 2000                       |
| AC--3   |                 |       |                            |
| 400 V 50/60 Hz  | Operations      |       | 2000                       |
| 415 V 50/60 Hz  | Operations      |       | 2000                       |
| 690 V 50/60 Hz  | Operations      |       | 1000                       |
| Max. operating frequency  |                 | Ops/h | 60                         |
| Total break time at short-circuit   |                 | ms    | < 25 ≤ 415 V; < 35 > 415 V |

### Terminal capacity

|   |      |                 |                                      |
|---|------|-----------------|--------------------------------------|
| Standard equipment  |      |                 | Screw connection                     |
| Round copper conductor                                    |      |                 |                                      |
| Tunnel terminal   |      |                 |                                      |
| Stranded  |      |                 |                                      |
| 4-hole  |      | mm <sup>2</sup> | 4 x (1/0 - 500)                      |
| Bolt terminal and rear-side connection                    |      |                 |                                      |
| Direct on the switch                                      |      |                 |                                      |
| Stranded  |      | mm <sup>2</sup> | 1 x (250 ... 350)<br>4 x (0 ... 350) |
| Module plate  |      |                 |                                      |
| Single hole   | min. | mm <sup>2</sup> | 1 x (250 - 600)                      |
| Single hole   | max. | mm <sup>2</sup> | 2 x (3/0 - 600)                      |
| Module plate  |      |                 |                                      |
| Double hole   | min. | mm <sup>2</sup> | 2 x (3/0 - 350)                      |
| Double hole   | max. | mm <sup>2</sup> | 4 x (2 - 350)                        |
| Connection width extension                                |      |                 |                                      |
| Connection width extension                                |      | mm <sup>2</sup> | 4 x 600<br>6 x (3/0 - 500)           |
| Al conductors, Cu cable                                   |      |                 |                                      |
| Tunnel terminal   |      |                 |                                      |
| Stranded  |      |                 |                                      |
| 4-hole  |      | mm <sup>2</sup> | 4 x (50 - 240)                       |
| Bolt terminal and rear-side connection                    |      |                 |                                      |
| Flat copper strip, with holes                             | min. | mm              | (2 x) 10 x 50 x 1.0                  |
| Flat copper strip, with holes                             | max. | mm              | (2 x) 10 x 50 x 1.0                  |
| Connection width extension                                |      | mm              | (2 x) 10 x 80 x 1.0                  |
| Cu strip (number of segments x width x segment thickness) |      |                 |                                      |
| Flat conductor terminal                                   |      |                 |                                      |
|   | min. | mm              | 6 x 16 x 0.8                         |
|   | max. | mm              | (2 x) 10 x 32 x 1.0                  |
| Module plate  |      |                 |                                      |
| Single hole   |      | mm              | (2 x) 10 x 50 x 1.0                  |
| Bolt terminal and rear-side connection                    |      |                 |                                      |
| Flat copper strip, with holes                             | min. | mm              | (2 x) 10 x 50 x 1.0                  |
| Flat copper strip, with holes                             | max. | mm              | (2 x) 10 x 50 x 1.0                  |
| Connection width extension                                |      | mm              | (2 x) 10 x 80 x 1.0                  |
| Copper busbar (width x thickness)                         | mm   |                 |                                      |

|  |      |                 |                                    |
|--|------|-----------------|------------------------------------|
| Bolt terminal and rear-side connection |      |                 |                                    |
| Screw connection                       |      |                 | M10                                |
| Direct on the switch                   |      |                 |                                    |
|  | min. | mm              | 25 x 5                             |
|  | max. | mm              | 2 x (50 x 10)<br>2 x (80 x 10)     |
| Module plate                           |      |                 |                                    |
| Single hole                            | min. | mm              | 25 x 5                             |
| Single hole                            | max. | mm              | 2 x (50 x 10)                      |
| Module plate                           |      |                 |                                    |
| Double hole                            |      | mm              | 2 x (50 x 10)                      |
| Connection width extension             |      |                 |                                    |
| Connection width extension             | min. | mm              | 60 x 10                            |
| Connection width extension             | max. | mm              | 2 x (80 x 10)                      |
| Control cables                         |      |                 |                                    |
|  |      | mm <sup>2</sup> | 1 x (18 ... 14)<br>2 x (18 ... 16) |

## Design verification as per IEC/EN 61439

|  |                  |    |  |
|--|------------------|----|--|
| Technical data for design verification   |                  |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>   | A  | 800  |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub> | W  | 106  |
| Operating ambient temperature min.   |                  | °C | -25  |
| Operating ambient temperature max.   |                  | °C | 70   |
| IEC/EN 61439 design verification   |                  |    |  |
| 10.2 Strength of materials and parts   |                  |    |  |
| 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 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric 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 Insulation properties   |                  |    |  |
| 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.                         |

## Technical data ETIM 7.0

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@ss10.0.1-27-37-04-09 [AJZ716013])

|   |    |  |
|---|----|--|
| Rated permanent current I <sub>n</sub>                                | A  | 800                                      |
| 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  | 800 - 800                                |
| Adjustment range short-term delayed short-circuit release             | A  | 0 - 0                                    |
| Adjustment range undelayed short-circuit release                      | A  | 1600 - 9600                              |
| Integrated earth fault protection                                     |    | No                                       |
| Type of electrical connection of main circuit                         |    | Screw connection                         |
| Device construction   |    | Built-in device fixed built-in technique |
| 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 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  |    | Yes                                      |
| Degree of protection (IP)   |    | IP20                                     |

## Approvals

|                                      |  |   |
|--------------------------------------|--|---|
| Product Standards                    |  | UL 489; CSA-C22.2 No. 5-09; IEC 60947-2; CE marking |
| UL File No.                          |  | E31593  |
| UL Category Control No.              |  | DIVQ  |
| CSA File No.                         |  | 022086  |
| CSA Class No.                        |  | 1432-01   |
| North America Certification          |  | UL listed, CSA certified                            |
| Specially designed for North America |  | Yes   |
| Suitable for                         |  | Feeder circuits, branch circuits                    |
| Current Limiting Circuit-Breaker     |  | No  |
| Max. Voltage Rating                  |  | 600 V   |
| Degree of Protection                 |  | IEC: IP20; UL/CSA Type: -                           |

# Characteristics

