

## Circuit-breaker, 3p, 100A

Part no. **NZMB1-AF100-NA**  
 Catalog No. **272252**

Similar to illustration

## Delivery program

|                     |  |  |                             |
|---------------------|--|--|-----------------------------|
| Product range       |  |  | Circuit-breaker             |
| Protective function |  |  | System and cable protection |
| Standard/Approval   |  |  | IEC, UL                     |
| Release system      |  |  | Thermomagnetic release      |
| Installation type   |  |  | Fixed                       |
| Description         |  |  | Fixed overload releases Ir  |
| Frame size          |  |  | NZM1                        |
| Number of poles     |  |  | 3 pole                      |
| Standard equipment  |  |  | Box terminal                |

## Switching capacity

|                       |          |    |    |
|-----------------------|----------|----|----|
| SCCR 480Y/277 V 60 Hz | $I_{cu}$ | kA | 25 |
|-----------------------|----------|----|----|

## Rated current = rated uninterrupted current

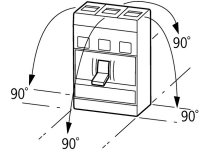
|                                             |             |   |     |
|---------------------------------------------|-------------|---|-----|
| Rated current = rated uninterrupted current | $I_n = I_u$ | A | 100 |
|---------------------------------------------|-------------|---|-----|

## Setting range

|                                                                                     |                          |   |                |
|-------------------------------------------------------------------------------------|--------------------------|---|----------------|
| Overload trip                                                                       |                          |   |                |
|  | $I_r$                    | A | 100 - 100      |
| Short-circuit releases                                                              |                          |   |                |
|  |                          |   |                |
| Non-delayed                                                                         | $I_i = I_n \times \dots$ |   | Approx. 6 - 10 |
|  |                          |   |                |

## 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                                                                                                                                                                                                                                                                                                                                                                                       |
| Mounting position                                                                     |  |      |                                                                                                                                                                                                                                                                                                                                                                                           |
| Mounting position                                                                     |  |      | Vertical and 90° in all directions<br><br>With XF1 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 |

|                                        |  |  |                                                                                                            |
|----------------------------------------|--|--|------------------------------------------------------------------------------------------------------------|
|                                        |  |  | with remote operator:<br>- NZM2, N(S)2, NZM3, N(S)3,<br>NZM4, N(S)4: vertical and 90° in all<br>directions |
| 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 <sub>imp</sub> |      |       |
| Main contacts                         |                  | V    | 6000  |
| Auxiliary contacts                    |                  | V    | 6000  |
| Rated operational voltage             | U <sub>e</sub>   | V AC | 440   |
| Overvoltage category/pollution degree |                  |      | III/3 |
| Rated insulation voltage              | U <sub>i</sub>   | V    | 690   |
| Use in unearthed supply systems       |                  | V    | ≤ 440 |

## Switching capacity

|                                                                             |                 |         |                                                                                                                                                 |
|-----------------------------------------------------------------------------|-----------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated short-circuit making capacity                                         | I <sub>cm</sub> |         |                                                                                                                                                 |
| 240 V                                                                       | I <sub>cm</sub> | kA      | 63                                                                                                                                              |
| 400/415 V                                                                   | I <sub>cm</sub> | kA      | 53                                                                                                                                              |
| 440 V 50/60 Hz                                                              | I <sub>cm</sub> | kA      | 53                                                                                                                                              |
| Rated short-circuit breaking capacity I <sub>cn</sub>                       | I <sub>cn</sub> |         |                                                                                                                                                 |
| I <sub>cu</sub> to IEC/EN 60947 test cycle O-t-CO                           | I <sub>cu</sub> | kA      |                                                                                                                                                 |
| 240 V 50/60 Hz                                                              | I <sub>cu</sub> | kA      | 30                                                                                                                                              |
| 400/415 V 50/60 Hz                                                          | I <sub>cu</sub> | kA      | 25                                                                                                                                              |
| 440 V 50/60 Hz                                                              | I <sub>cu</sub> | kA      | 25                                                                                                                                              |
| I <sub>cs</sub> to IEC/EN 60947 test cycle O-t-CO-t-CO                      | I <sub>cs</sub> | kA      |                                                                                                                                                 |
| 240 V 50/60 Hz                                                              | I <sub>cs</sub> | kA      | 30                                                                                                                                              |
| 400/415 V 50/60 Hz                                                          | I <sub>cs</sub> | kA      | 25                                                                                                                                              |
| 440 V 50/60 Hz                                                              | I <sub>cs</sub> | kA      | 18.5                                                                                                                                            |
| Maximum low-voltage h.b.c. fuse                                             |                 | A gG/gL | 200                                                                                                                                             |
|                                                                             |                 |         | 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 <sub>cu</sub> | kA      | 35                                                                                                                                              |
| SCCR 480V/277 V 60 Hz                                                       | I <sub>cu</sub> | kA      | 25                                                                                                                                              |
| Utilization category to IEC/EN 60947-2                                      |                 |         | A                                                                                                                                               |
| Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release) | Operations      |         | 20000                                                                                                                                           |
| Lifespan, electrical                                                        |                 |         |                                                                                                                                                 |
| AC-1                                                                        |                 |         |                                                                                                                                                 |
| 400 V 50/60 Hz                                                              | Operations      |         | 7500                                                                                                                                            |
| Max. operating frequency                                                    |                 | Ops/h   | 120                                                                                                                                             |
| Total break time at short-circuit                                           |                 | ms      | < 10                                                                                                                                            |

## Terminal capacity

|                        |  |                 |                         |
|------------------------|--|-----------------|-------------------------|
| Standard equipment     |  |                 | Box terminal            |
| Round copper conductor |  |                 |                         |
| Box terminal           |  |                 |                         |
| Solid                  |  | mm <sup>2</sup> | 1 x (12 ... 6)          |
| Stranded               |  | mm <sup>2</sup> | 1 x (25 - 70)<br>2 x 25 |
| Tunnel terminal        |  |                 |                         |

|                                                           |      |                 |                                    |
|-----------------------------------------------------------|------|-----------------|------------------------------------|
| Solid                                                     |      | mm <sup>2</sup> | 1 x (16 - 95)                      |
| Stranded                                                  |      |                 |                                    |
| Stranded                                                  |      | mm <sup>2</sup> | 1 x (4 ... 3/0)                    |
| Bolt terminal and rear-side connection                    |      |                 |                                    |
| Direct on the switch                                      |      |                 |                                    |
| Solid                                                     |      | mm <sup>2</sup> | 1 x (12 ... 6)<br>2 x (9 ... 6)    |
| Stranded                                                  |      | mm <sup>2</sup> | 1 x (4 ... 2/0)                    |
| Al conductors, Cu cable                                   |      |                 |                                    |
| Tunnel terminal                                           |      |                 |                                    |
| Solid                                                     |      | mm <sup>2</sup> | 1 x 16                             |
| Cu strip (number of segments x width x segment thickness) |      |                 |                                    |
| Box terminal                                              |      |                 |                                    |
|                                                           | min. | mm              | 2 x 9 x 0.8                        |
|                                                           | max. | mm              | 9 x 9 x 0.8                        |
| Copper busbar (width x thickness)                         | mm   |                 |                                    |
| Bolt terminal and rear-side connection                    |      |                 |                                    |
| Screw connection                                          |      |                 | M8                                 |
| Direct on the switch                                      |      |                 |                                    |
|                                                           | min. | mm              | 12 x 5                             |
|                                                           | max. | mm              | 16 x 5                             |
| 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  | 100                                                                                                                              |
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub> | W  | 21.9                                                                                                                             |
| 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 8.0

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>u</sub>                                | A  | 100                                      |
| Rated voltage                                                         | V  | 440 - 440                                |
| Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, 50 Hz | kA | 25                                       |
| Overload release current setting                                      | A  | 100 - 100                                |
| Adjustment range short-term delayed short-circuit release             | A  | 0 - 0                                    |
| Adjustment range undelayed short-circuit release                      | A  | 600 - 1000                               |
| Integrated earth fault protection                                     |    | No                                       |
| Type of electrical connection of main circuit                         |    | Frame clamp                              |
| 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                             |    | Yes                                      |
| 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                                     |