



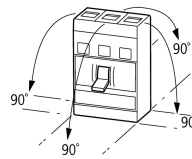
**Circuit-breaker 4-pole 630A, selective protect, earth fault protection, withdrawable unit**

**Part no. NZMS3-4-VE630-T-AVE**  
**Catalog No. 113606**

**Delivery program**

|  |                      |     |  |
|--|----------------------|-----|--|
| Product range                                      |                      |     | Circuit-breaker  |
| Protective function                                |                      |     | Systems, cable, selectivity and generator protection<br>Earth-fault protection   |
| Standard/Approval                                  |                      |     | IEC  |
| Installation type                                  |                      |     | Withdrawable   |
| Release system                                     |                      |     | Electronic release   |
| Construction size                                  |                      |     | NZM3   |
| Description  |                      |     | R.m.s. value measurement and “thermal memory”<br>Adjustable time delay setting to overcome current peaks $t_r$ at $6 \times I_r$ also infinity (without overload releases)<br>Adjustable delay time $t_{sd}$<br>$i^2t$ constant function: switchable<br>Earth-fault release: Not dependent on mains and control voltages<br>$I_g = 0.35 - 0.4 - 0.5 - 0.6 - 0.7 - 0.8 - 0.9 - 1.0 \times I_n$<br>$t_g = 0 - 20 - 60 - 100 - 200 - 300 - 500 - 750 - 1000$ ms |
| Number of poles                                    |                      |     | 4 pole   |
| Standard equipment                                 |                      |     | Screw connection   |
| <b>Switching capacity</b>                          |                      |     |  |
| 400/415 V 50 Hz                                    | $I_{cu}$             | kA  | 70   |
| <b>Rated current = rated uninterrupted current</b> |                      |     |  |
| Rated current = rated uninterrupted current        | $I_n = I_u$          | A   | 630  |
| Neutral conductor                                  | % of phase conductor | CSA | 100  |

**Technical data**

|   |  |      |   |
|---|--|------|---|
| <b>General</b>  |  |      |   |
| 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   |  |      | Vertical and 90° in all directions<br> <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) |  |  | Temperature dependency, Derating   |

### Circuit-breakers

|   |             |      |       |
|---|-------------|------|-------|
| Rated current = rated uninterrupted current | $I_n = I_u$ | A    | 630   |
| 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    | ≤ 690 |

### Switching capacity

|   |            |       |   |
|---|------------|-------|---|
| Rated short-circuit making capacity   | $I_{cm}$   |       |   |
| 240 V   | $I_{cm}$   | kA    | 220   |
| 400/415 V   | $I_{cm}$   | kA    | 154   |
| 440 V 50/60 Hz  | $I_{cm}$   | kA    | 143   |
| 525 V 50/60 Hz  | $I_{cm}$   | kA    | 80  |
| 690 V 50/60 H   | $I_c$      | kA    | 50  |
| Rated short-circuit breaking capacity $I_{cn}$                              | $I_{cn}$   |       |   |
| $I_{cu}$ to IEC/EN 60947 test cycle 0-t-CO                                  | $I_{cu}$   | kA    |   |
| 240 V 50/60 Hz  | $I_{cu}$   | kA    | 100   |
| 400/415 V 50/60 Hz  | $I_{cu}$   | kA    | 70  |
| 440 V 50/60 Hz  | $I_{cu}$   | kA    | 65  |
| 525 V 50/60 Hz  | $I_{cu}$   | kA    | 36  |
| 690 V 50/60 Hz  | $I_{cu}$   | kA    | 25  |
| $I_{cs}$ to IEC/EN 60947 test cycle 0-t-CO-t-CO                             | $I_{cs}$   | kA    |   |
| 240 V 50/60 Hz  | $I_{cs}$   | kA    | 100   |
| 400/415 V 50/60 Hz  | $I_{cs}$   | kA    | 70  |
| 440 V 50/60 Hz  | $I_{cs}$   | kA    | 65  |
| 525 V 50/60 Hz  | $I_{cs}$   | kA    | 18  |
| 690 V 50/60 Hz  | $I_{cs}$   | kA    | 6   |
|   |            |       | Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker. |
| Rated short-time withstand current  |            |       |   |
| $t = 0.3$ s   | $I_{cw}$   | kA    | 3.3   |
| $t = 1$ s   | $I_{cw}$   | kA    | 3.3   |
| Utilization category to IEC/EN 60947-2                                      |            |       | A   |
| Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release) | Operations |       | 15000   |
| Lifespan, electrical  |            |       |   |
| AC-1  |            |       |   |
| 400 V 50/60 Hz  | Operations |       | 5000  |
| 415 V 50/60 Hz  | Operations |       | 2000  |
| 690 V 50/60 Hz  | Operations |       | 3000  |
| AC--3   |            |       |   |
| 400 V 50/60 Hz  | Operations |       | 2000  |
| 415 V 50/60 Hz  | Operations |       | 2000  |
| 690 V 50/60 Hz  | Operations |       | 2000  |
| Max. operating frequency  |            | Ops/h | 60  |
| Total break time at short-circuit   |            | ms    | < 10  |

### Terminal capacity

|                      |  |  |                  |
|----------------------|--|--|------------------|
| Standard equipment   |  |  | Screw connection |
| Accessories required |  |  | NZM3-4-XAVS      |
| Optional accessories |  |  | Box terminal     |

|   |      |                 |   |
|---|------|-----------------|---|
|   |      |                 | Tunnel terminal connection on rear  |
| Round copper conductor                                    |      |                 |   |
| Box terminal  |      |                 |   |
| Solid   |      | mm <sup>2</sup> | 2 x 16  |
| Stranded  |      | mm <sup>2</sup> | 1 x (35 - 240)<br>2 x (25-120)  |
| Tunnel terminal   |      |                 |   |
| Solid   |      | mm <sup>2</sup> | 1 x 16  |
| Stranded  |      |                 |   |
| 1-hole  |      | mm <sup>2</sup> | 1 x (16 - 185)  |
| Bolt terminal and rear-side connection                    |      |                 |   |
| Direct on the switch                                      |      |                 |   |
| Solid   |      | mm <sup>2</sup> | 1 x 16<br>2 x 16  |
| Stranded  |      | mm <sup>2</sup> | 1 x (25 - 240)<br>2 x (25 - 240)  |
| Connection width extension                                |      | mm <sup>2</sup> |   |
| Connection width extension                                |      | mm <sup>2</sup> | 2 x 300   |
| Al circular conductor                                     |      |                 |   |
| Tunnel terminal   |      |                 |   |
| Solid   |      | mm <sup>2</sup> | 1 x 16  |
| Stranded  |      |                 |   |
| Stranded  |      | mm <sup>2</sup> | 1 x (25 - 185) <sup>2)</sup>  |
| Double hole   |      | mm <sup>2</sup> | 1 x (50 - 240)<br>2 x (50 - 240)  |
|   |      |                 | <sup>2)</sup> Up to 240 mm <sup>2</sup> can be connected depending on the cable manufacturer. |
| Cu strip (number of segments x width x segment thickness) |      |                 |   |
| Box terminal  |      |                 |   |
|   | min. | mm              | 6 x 16 x 0.8  |
|   | max. | mm              | 10 x 24 x 1.0<br>+ 5 x 24 x 1.0<br>(2 x) 8 x 24 x 1.0   |
| Bolt terminal and rear-side connection                    |      |                 |   |
| Flat copper strip, with holes                             | min. | mm              | 6 x 16 x 0.8  |
| Flat copper strip, with holes                             | max. | mm              | 10 x 32 x 1.0 + 5 x 32 x 1.0  |
| Connection width extension                                |      | mm              | (2 x) 10 x 50 x 1.0   |
| Copper busbar (width x thickness)                         | mm   |                 |   |
| Bolt terminal and rear-side connection                    |      |                 |   |
| Screw connection  |      |                 | M10   |
| Direct on the switch                                      |      |                 |   |
|   | min. | mm              | 20 x 5  |
|   | max. | mm              | 30 x 10<br>+ 30 x 5   |
| Connection width extension                                |      | mm              |   |
| Connection width extension                                | max. | mm              | 2 x (10 x 50)   |
| Control cables  |      |                 |   |
|   |      | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 1.5)  |

## Design verification as per IEC/EN 61439

|  |                  |    |        |
|--|------------------|----|--------|
| Technical data for design verification                   |                  |    |        |
| Rated operational current for specified heat dissipation | I <sub>n</sub>   | A  | 630    |
| Equipment heat dissipation, current-dependent            | P <sub>vid</sub> | W  | 178.61 |
| 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

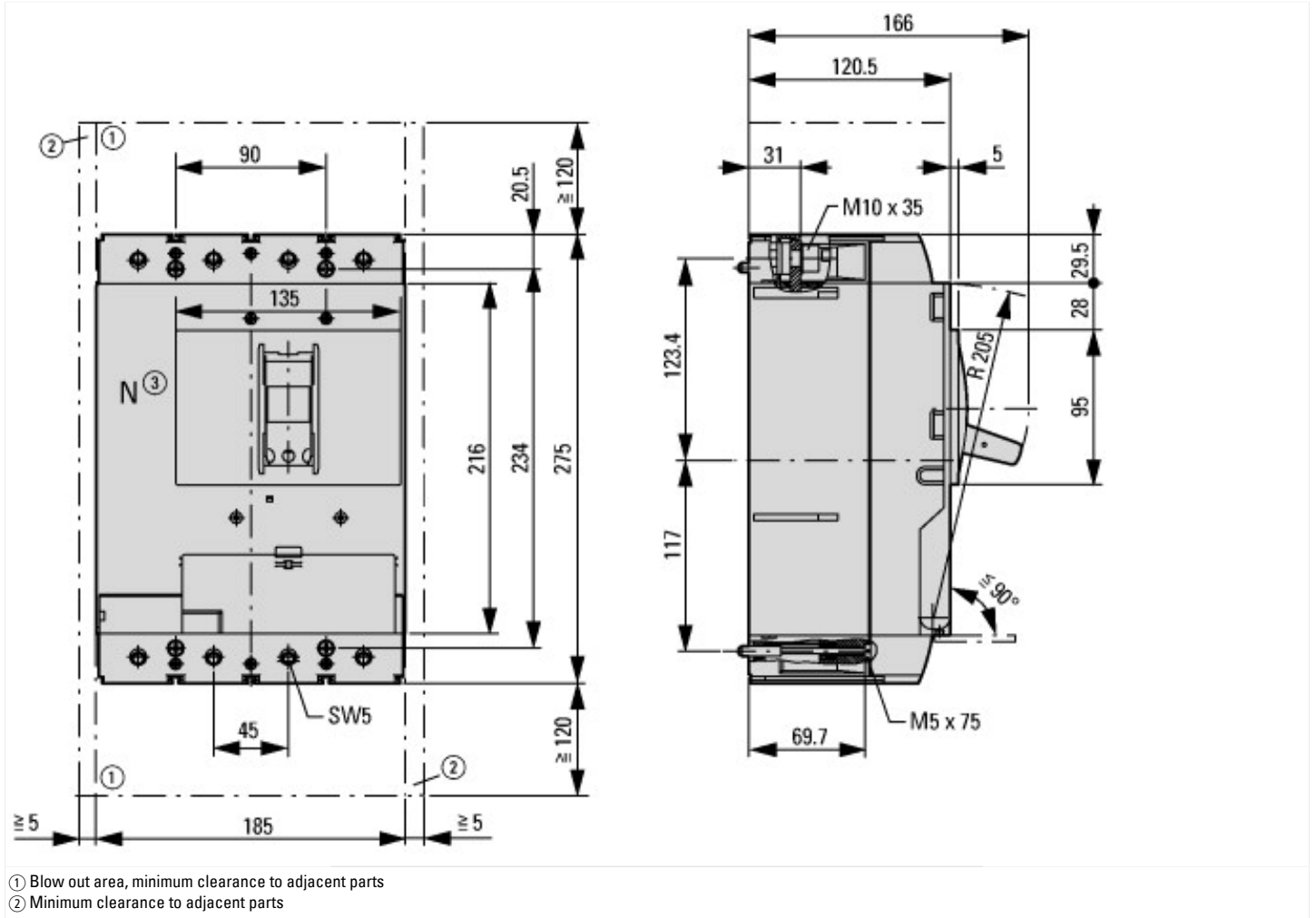
|   |    |   |
|---|----|---|
| Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)   |    |   |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Circuit breaker for power transformer, generator and system protection (ec1@ss10.0.1-27-37-04-09 [AJZ716013]) |    |   |
| Rated permanent current I <sub>u</sub>  | A  | 630   |
| Rated voltage   | V  | 690 - 690   |
| Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, 50 Hz   | kA | 150   |
| Overload release current setting  | A  | 315 - 630   |
| Adjustment range short-term delayed short-circuit release   | A  | 945 - 4410  |
| Adjustment range undelayed short-circuit release  | A  | 1260 - 5040                                       |
| Integrated earth fault protection   |    | Yes   |
| Type of electrical connection of main circuit   |    | Screw connection                                  |
| Device construction   |    | Built-in device slide-in technique (withdrawable) |
| 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   |    | 4   |
| Position of connection for main current circuit   |    | Back 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  |

## Characteristics

Let-through current

Let-through energy

## Dimensions





### Additional product information (links)

|   |   |
|---|---|
| Temperature dependency, Derating                      | <a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.172">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.172</a>   |
| CurveSelect characteristics program                   | <a href="http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/index.htm">http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/index.htm</a>         |
| Eaton configurator                                    | <a href="http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/ConfiguratorCircuitBreaker/index.htm">http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/ConfiguratorCircuitBreaker/index.htm</a> |
| additional technical information for NZM power switch | <a href="ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technik_de_en.pdf">ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technik_de_en.pdf</a>   |