







## Circuit-breaker, 3p, 250A

**Part no.** NZMH2-VE250  
**Article no.** 259127

Similar to illustration

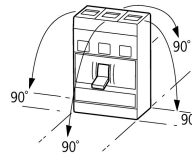
## Delivery programme

|   |                             |    |  |
|---|-----------------------------|----|--|
| Product range   |                             |    | Circuit-breaker  |
| Protective function   |                             |    | Systems, cable, selectivity and generator protection   |
| Standard/Approval   |                             |    | IEC  |
| Installation type   |                             |    | Fixed  |
| Release system  |                             |    | Electronic release   |
| Construction size   |                             |    | NZM2   |
| Description   |                             |    | R.m.s. value measurement and "thermal memory"<br>adjustable time delay setting to overcome current peaks $t_r: 2 - 20$ s at $6 \times I_r$ also infinity (without overload releases)<br>Adjustable delay time $t_{sd}$ : Steps: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms<br>$i^2t$ constant function: fixed OFF |
| Number of poles   |                             |    | 3 pole   |
| Standard equipment  |                             |    | Screw connection   |
| <b>Switching capacity</b>   |                             |    |  |
| 400/415 V 50/60 Hz  | $I_{cu}$                    | kA | 150  |
| <b>Rated current = rated uninterrupted current</b>                                  |                             |    |  |
| Rated current = rated uninterrupted current   | $I_n = I_u$                 | A  | 250  |
| <b>Setting range</b>  |                             |    |  |
| Overload trip   |                             |    |  |
|  | $I_r$                       | A  | 125 - 250  |
| Short-circuit releases  |                             |    |  |
|  |                             |    |  |
| Non-delayed   | $I_i = I_n \times \dots$    |    | 3000 A fixed   |
|  |                             |    |  |
| Delayed   | $I_{sd} = I_r \times \dots$ |    | 2 - 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   |  | °C   |  |
| Ambient temperature, storage  |  | °C   | - 40 - + 80  |
| 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   | 2.345  |

|  |  |  |   |   |
|--|--|--|---|---|
| Mounting position                      |  | Vertical and 90° in all directions                                       |  | <p>With residual-current release XFI:</p> <ul style="list-style-type: none"> <li>- NZM1, N1, NZM2, N2: vertical and 90° in all directions</li> </ul> <p>with plug-in adapter elements</p> <ul style="list-style-type: none"> <li>- NZM1, N1, NZM2, N2: vertical, 90° right/left</li> </ul> <p>with withdrawable unit:</p> <ul style="list-style-type: none"> <li>- NZM3, N3: vertical, 90° left</li> <li>- NZM4, N4: vertical</li> </ul> <p>with remote operator:</p> <ul style="list-style-type: none"> <li>- NZM2, N(S)2, NZM3, N(S)3, NZM4, N(S)4: vertical and 90° in all directions</li> </ul> |
| 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 current = rated uninterrupted current | $I_n = I_u$ | A    | 250   |
| 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 | 330   |
| 400/415 V                                       | $I_{cm}$ | kA | 330   |
| 440 V 50/60 Hz                                  | $I_{cm}$ | kA | 286   |
| 525 V 50/60 Hz                                  | $I_{cm}$ | kA | 105   |
| 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 | 150   |
| 400/415 V 50/60 Hz                              | $I_{cu}$ | kA | 150   |
| 440 V 50/60 Hz                                  | $I_{cu}$ | kA | 130   |
| 525 V 50/60 Hz                                  | $I_{cu}$ | kA | 50  |
| $I_{cs}$ to IEC/EN 60947 test cycle O-t-CO-t-CO | $I_{cs}$ | kA |   |
| 240 V 50/60 Hz                                  | $I_{cs}$ | kA | 150   |
| 400/415 V 50/60 Hz                              | $I_{cs}$ | kA | 150   |
| 440 V 50/60 Hz                                  | $I_{cs}$ | kA | 130   |
| 525 V 50/60 Hz                                  | $I_{cs}$ | kA | 37.5  |
| 690 V 50/60 Hz                                  | $I_{cs}$ | kA | 5   |
|   |          |    | 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 | 1.9   |
| $t = 1$ s                                       | $I_{cw}$ | kA | 1.9   |
| Utilization category to IEC/EN 60947-2          |          |    | A   |
| Rated making and breaking capacity              |          |    |   |
| Rated operational current                       | $I_e$    | A  |   |
| AC-1  |          |    |   |

|  |                |       |   |
|--|----------------|-------|---|
| 380 V 400 V  | I <sub>e</sub> | A     | 250   |
| 415 V  | I <sub>e</sub> | A     | 250   |
| 690 V  | I <sub>e</sub> | A     | 250   |
| AC--3  |                |       |   |
| 380 V 400 V  | I <sub>e</sub> | A     | 250   |
| 415 V  | I <sub>e</sub> | A     | 250   |
| 660 V 690 V  | I <sub>e</sub> | A     | 250   |
| Lifespan, mechanical (of which max. 50 % trip by shunt/undervoltage release)   | Operations     |       | 20000   |
| Lifespan, electrical   |                |       |   |
| AC-1   |                |       |   |
| 400 V 50/60 Hz   | Operations     |       | 10000   |
| 415 V 50/60 Hz   | Operations     |       | 10000   |
| 690 V 50/60 Hz   | Operations     |       | 7500  |
| AC--3  |                |       |   |
| 400 V 50/60 Hz   | Operations     |       | 6500  |
| 415 V 50/60 Hz   | Operations     |       | 6500  |
| 690 V 50/60 Hz   | Operations     |       | 5000  |
| Max. operating frequency   |                | Ops/h | 120   |
| Current heat losses per pole at I <sub>u</sub> are based on the maximum rated operational current of the frame size. |                | W     | 19  |
|  |                |       | For current heat loss per pole the specification refers to the maximum rated operational current of the frame size. |
| Total downtime in a short-circuit  |                | ms    | < 10  |

## Terminal capacity

|  |   |                 |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
|--|---|-----------------|--|--------------|---|---|---|---|------------------|---|---|---|---|--------------|---|---|---|---|------------------|---|---|---|---|-----------------|---|---|---|---|--------------------|---|---|---|---|-------------------------|---|---|---|---|
| Standard equipment                     |   |                 | Screw connection   |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Overview                               |   |                 | <p>Basic equipment</p> <table border="0"> <tr> <td>Box terminal</td> <td>●</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Screw connection</td> <td>-</td> <td>●</td> <td>●</td> <td>●</td> </tr> </table> <p>Accessories</p> <table border="0"> <tr> <td>Box terminal</td> <td>-</td> <td>●</td> <td>●</td> <td>-</td> </tr> <tr> <td>Screw connection</td> <td>●</td> <td>-</td> <td>-</td> <td>●</td> </tr> <tr> <td>Tunnel terminal</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Connection on rear</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Flat conductor terminal</td> <td>-</td> <td>-</td> <td>-</td> <td>●</td> </tr> </table> | Box terminal | ● | - | - | - | Screw connection | - | ● | ● | ● | Box terminal | - | ● | ● | - | Screw connection | ● | - | - | ● | Tunnel terminal | ● | ● | ● | ● | Connection on rear | ● | ● | ● | ● | Flat conductor terminal | - | - | - | ● |
| Box terminal                           | ● | -               | -  | -            |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Screw connection                       | - | ●               | ●  | ●            |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Box terminal                           | - | ●               | ●  | -            |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Screw connection                       | ● | -               | -  | ●            |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Tunnel terminal                        | ● | ●               | ●  | ●            |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Connection on rear                     | ● | ●               | ●  | ●            |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Flat conductor terminal                | - | -               | -  | ●            |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Round copper conductor                 |   |                 |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Box terminal                           |   |                 |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Solid                                  |   | mm <sup>2</sup> | 1 x (10 - 16)<br>2 x (6-16)  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Stranded                               |   | mm <sup>2</sup> | 1 x (25 - 185)<br>2 x (25 - 70)  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Tunnel terminal                        |   |                 |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Solid                                  |   | mm <sup>2</sup> | 1 x 16   |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Stranded                               |   | mm <sup>2</sup> |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Stranded                               |   | mm <sup>2</sup> | 1 x (25 - 185)   |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Bolt terminal and rear-side connection |   |                 |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Direct on the switch                   |   |                 |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Solid                                  |   | mm <sup>2</sup> | 1 x (10 - 16)<br>2 x (10 - 16)   |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Stranded                               |   | mm <sup>2</sup> | 1 x (25 - 50)<br>2 x (25 - 50)   |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Al conductors, Cu cable                |   |                 |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Solid                                  |   | mm <sup>2</sup> | 1 x 16   |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |
| Stranded                               |   | mm <sup>2</sup> |  |              |   |   |   |   |                  |   |   |   |   |              |   |   |   |   |                  |   |   |   |   |                 |   |   |   |   |                    |   |   |   |   |                         |   |   |   |   |

|   |      |                 |                                      |
|---|------|-----------------|--------------------------------------|
| Stranded  |      | mm <sup>2</sup> | 1 x (25 - 185)                       |
| Bolt terminal and rear-side connection                    |      |                 |                                      |
| Flat copper strip, with holes                             | min. | mm              | 2 x 16 x 0.8                         |
| Flat copper strip, with holes                             | max. | mm              | 10 x 24 x 0.8                        |
| Cu strip (number of segments x width x segment thickness) |      |                 |                                      |
| Box terminal  |      |                 |                                      |
|   | min. | mm              | 2 x 9 x 0.8                          |
|   | max. | mm              | 10 x 16 x 0.8<br>(2x) 8 x 15.5 x 0,8 |
| Bolt terminal and rear-side connection                    |      |                 |                                      |
| Flat copper strip, with holes                             | min. | mm              | 2 x 16 x 0.8                         |
| Flat copper strip, with holes                             | max. | mm              | 10 x 24 x 0.8                        |
| Copper busbar (width x thickness)                         |      | mm              |                                      |
| Bolt terminal and rear-side connection                    |      |                 |                                      |
| Screw connection  |      |                 | M8                                   |
| Direct on the switch                                      |      |                 |                                      |
|   | min. | mm              | 16 x 5                               |
|   | max. | mm              | 24 x 8                               |
| Control cables  |      |                 |                                      |
|   |      | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 1.5) |

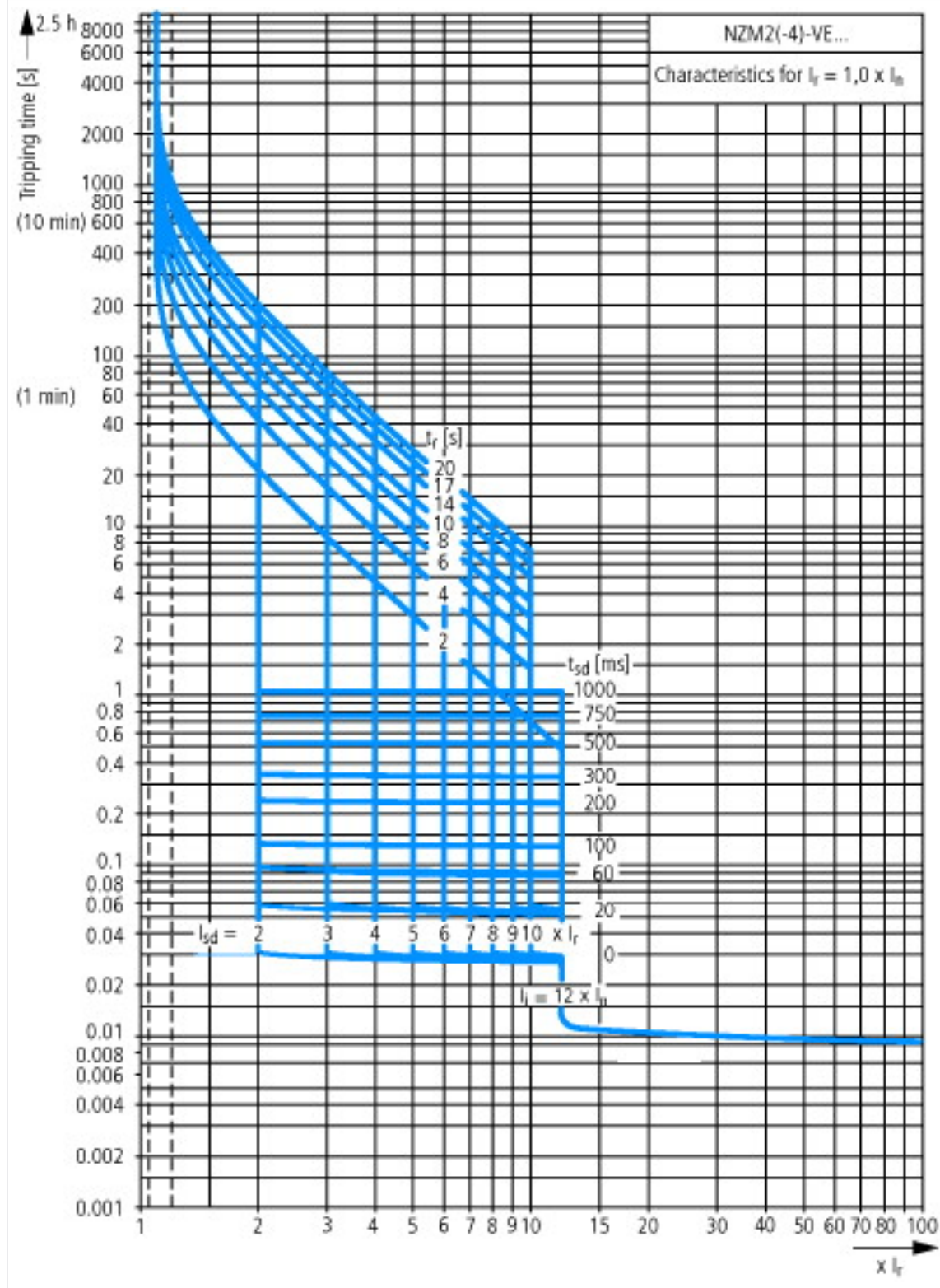
## Design verification as per IEC/EN 61439

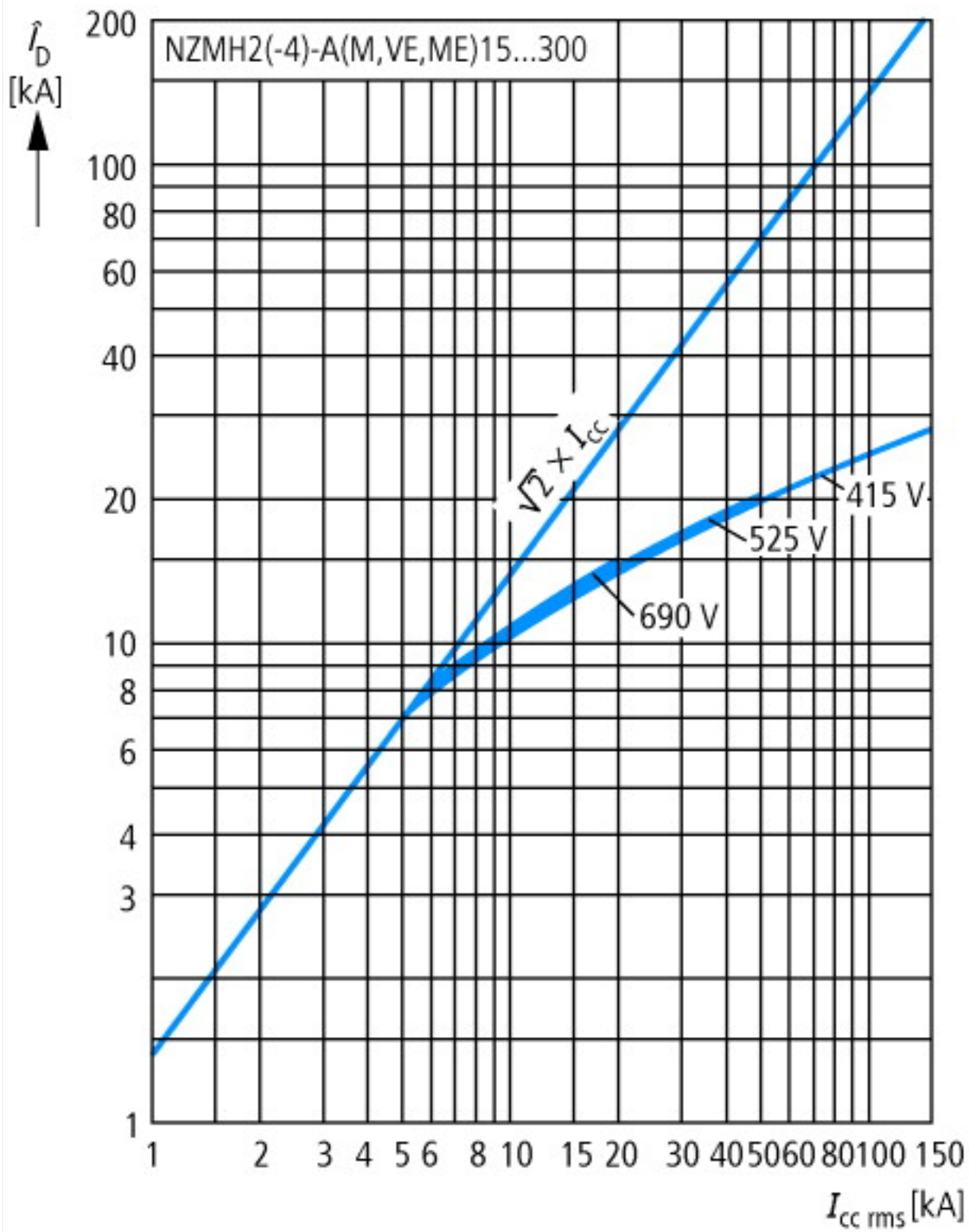
|  |                  |    |  |
|--|------------------|----|--|
| Technical data for design verification   |                  |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>   | A  | 250  |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub> | W  | 51.56  |
| 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.                         |

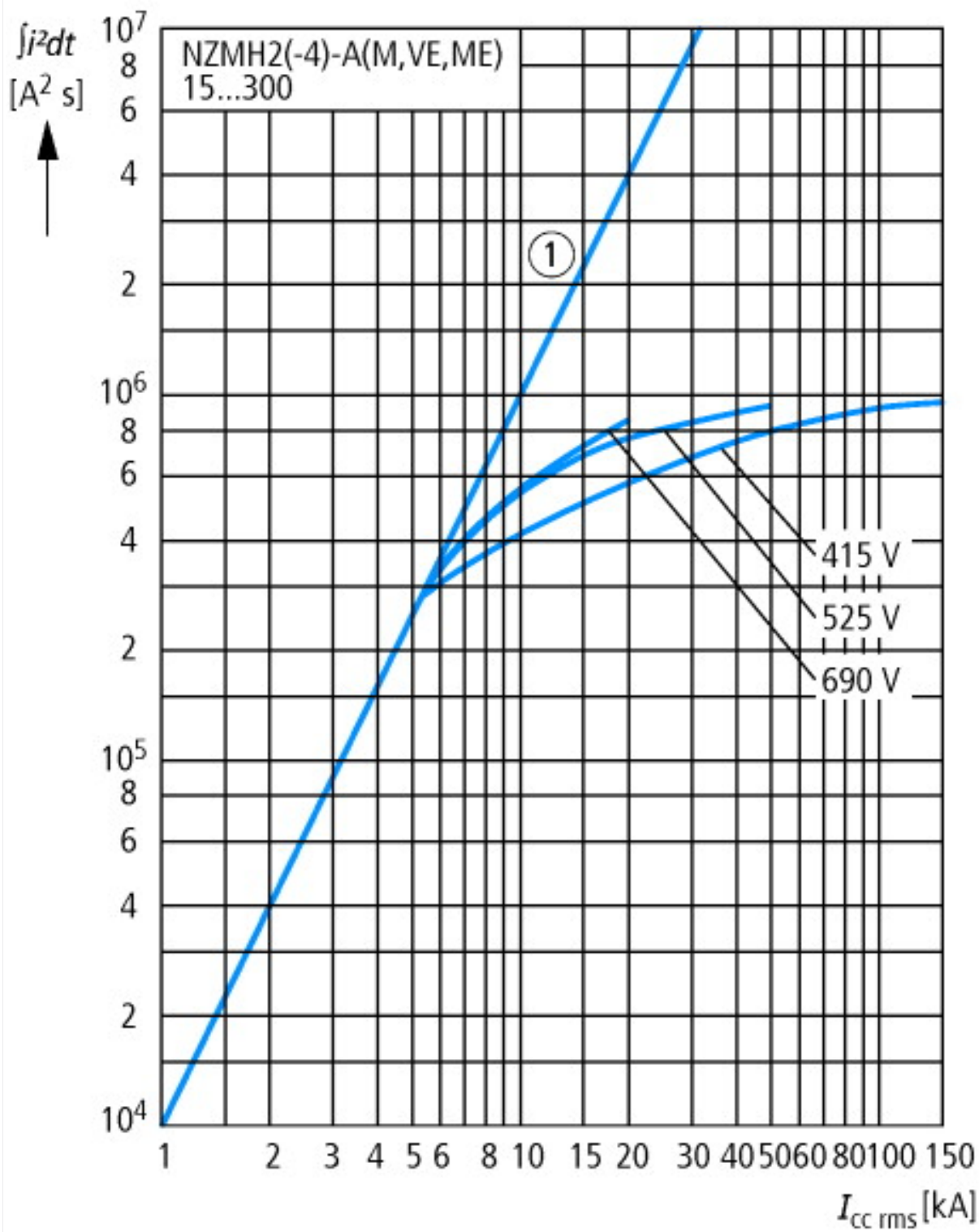
## Technical data ETIM 6.0

|  |    |  |
|--|----|--|
| Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation prot. (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@ss8.1-27-37-04-09 [AJZ716010]) |    |  |
| Rated permanent current I <sub>u</sub>   | A  | 250                                      |
| Rated voltage  | V  | 690 - 690                                |
| Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, 50 Hz  | kA | 55                                       |
| Overload release current setting   | A  | 125 - 250                                |
| Adjustment range short-term delayed short-circuit release  | A  | 250 - 2500                               |
| Adjustment range undelayed short-circuit release   | A  | 3000 - 3000                              |
| 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  |    | 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  |
| Switched-off indicator available   |    | 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                                     |

# Characteristics











### Additional product information (links)

#### IL01206006Z (AWA1230-1916) Circuit-Breaker, basic unit

IL01206006Z (AWA1230-1916) Circuit-Breaker, basic unit [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL01206006Z2014\\_07.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01206006Z2014_07.pdf)

Weight <http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.171>

Temperature dependency, Derating <http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172>

Effective power loss <http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.174>

Setting-Specific Representation of Tripping Characteristics and Competent Assessment of their Interaction [http://www.moeller.net/binary/ver\\_techpapers/ver943en.pdf](http://www.moeller.net/binary/ver_techpapers/ver943en.pdf)

Busbar Component Adapters for modern Industrial control panels [http://www.moeller.net/binary/ver\\_techpapers/ver960en.pdf](http://www.moeller.net/binary/ver_techpapers/ver960en.pdf)