







Circuit-breaker, 3p, 250A

Part no. **NZMH3-VEF250-NA**  
 Catalog No. **269316**

Similar to illustration

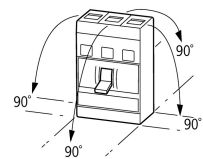
## Delivery program

|   |  |    |  |  |
|---|--|----|--|--|
| Product range   |  |    |  | Circuit-breaker  |
| Protective function   |  |    |  | Systems, cable, selectivity and generator 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 I <sub>r</sub><br>R.m.s. value measurement and "thermal memory"<br>adjustable time delay setting to overcome current peaks tr: 2 – 20 s at 6 x I <sub>r</sub><br>Adjustable delay time tsd: Steps: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms<br>i <sup>2</sup> t constant function: switchable |
| Frame size  |  |    |  | NZM3   |
| Number of poles   |  |    |  | 3 pole   |
| Standard equipment  |  |    |  | Screw connection   |
| <b>Switching capacity</b>   |  |    |  |  |
| SCCR 480Y/277 V 60 Hz   | I <sub>cu</sub>                        | kA |  | 100  |
| SCCR 480 V 60 Hz  | I <sub>cu</sub>                        | kA |  | 100  |
| SCCR 600Y/347 V 60 Hz   | I <sub>cu</sub>                        | kA |  | 50   |
| SCCR 600 V 60 Hz  | I <sub>cu</sub>                        | kA |  | 50   |
| <b>Rated current = rated uninterrupted current</b>                                  |  |    |  |  |
| Rated current = rated uninterrupted current   | I <sub>n</sub> = I <sub>u</sub>        | A  |  | 250  |
| <b>Setting range</b>  |  |    |  |  |
| Overload trip   |  |    |  |  |
|  |  |    |  |  |
| Overload release, min.  | I <sub>r</sub>                         | A  |  | 250  |
| Short-circuit releases  |  |    |  |  |
|  |  |    |  |  |
| Non-delayed   | I <sub>i</sub> = I <sub>n</sub> x ...  |    |  | 2 - 11   |
|  |  |    |  |  |
| Delayed   | I <sub>sd</sub> = I <sub>r</sub> x ... |    |  | 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               |  |    |  |  |
| 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   | 6.34  |
| 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   |
| Overtoltage 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 | 143 |
| 690 V 50/60 H                                   | $I_c$    | kA | 74  |
| 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 | 65  |
| 690 V 50/60 Hz                                  | $I_{cu}$ | kA | 35  |
| $I_{cs}$ 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 | 33  |
| 690 V 50/60 Hz                                  | $I_{cs}$ | kA | 9   |
| Maximum low-voltage h.b.c. fuse                 | A gG/gL  |    | 400 |

|   |            |       |   |
|---|------------|-------|---|
|   |            |       | 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    | 150   |
| SCCR 480Y/277 V 60 Hz   | $I_{cu}$   | kA    | 100   |
| SCCR 480 V 60 Hz  | $I_{cu}$   | kA    | 100   |
| SCCR 600Y/347 V 60 Hz   | $I_{cu}$   | kA    | 50  |
| SCCR 600 V 60 Hz  | $I_{cu}$   | kA    | 50  |
| 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                                      |            |       |   |
| Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release) |            |       |   |
| Operations  |            | 15000 |   |
| Lifespan, electrical  |            |       |   |
| AC-1  |            |       |   |
| 400 V 50/60 Hz  | Operations |       | 5000  |
| 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                |
| Round copper conductor                                    |      |        |                                 |
| Box terminal  |      |        |                                 |
| Stranded  |      | $mm^2$ | 1 x (2 - 500)                   |
| Tunnel terminal   |      |        |                                 |
| Solid   |      | $mm^2$ | 1 x (16 - 185)                  |
| Stranded  |      |        |                                 |
| Stranded  |      | $mm^2$ | 1 x (4 - 350)                   |
| Double hole   |      | $mm^2$ | 1 x (0 - 500)<br>2 x (0 - 500)  |
| Bolt terminal and rear-side connection                    |      |        |                                 |
| Direct on the switch                                      |      |        |                                 |
| Stranded  |      | $mm^2$ | 1 x (4 - 350)<br>2 x 350        |
| Connection width extension                                |      |        |                                 |
| Connection width extension                                |      | $mm^2$ | 2 x 500                         |
| Al conductors, Cu cable                                   |      |        |                                 |
| Tunnel terminal   |      |        |                                 |
| Solid   |      | $mm^2$ | 1 x 16                          |
| Stranded  |      |        |                                 |
| Double hole   |      | $mm^2$ | 1 x (0 - 500)<br>2 x (0 - 500)  |
| 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             |
| 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 |

|  |      |                 |                                |
|--|------|-----------------|--------------------------------|
|  |      |                 | (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                         |
| Connection width extension             |      | mm              |                                |
| Connection width extension             | max. | mm              | 2 x (10 x 50)                  |
| 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  | 250   |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub> | W  | 18.75 |
| 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>u</sub>  | A | 250       |
| Rated voltage   | V | 690 - 690 |

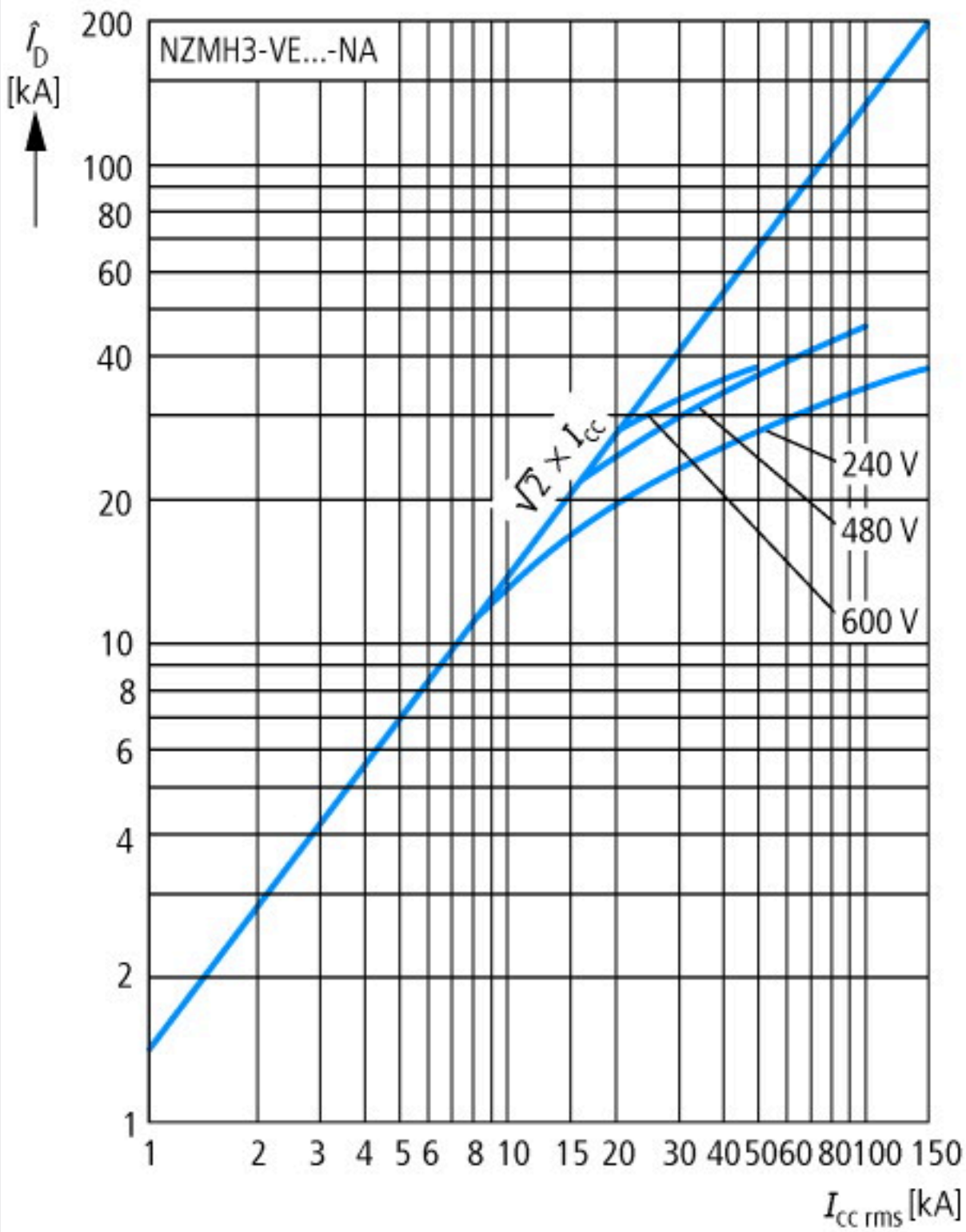
|   |    |  |
|---|----|--|
| Rated short-circuit breaking capacity Icu at 400 V, 50 Hz | kA | 150                                      |
| Overload release current setting                          | A  | 250 - 250                                |
| Adjustment range short-term delayed short-circuit release | A  | 500 - 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                 |    | 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                                     |

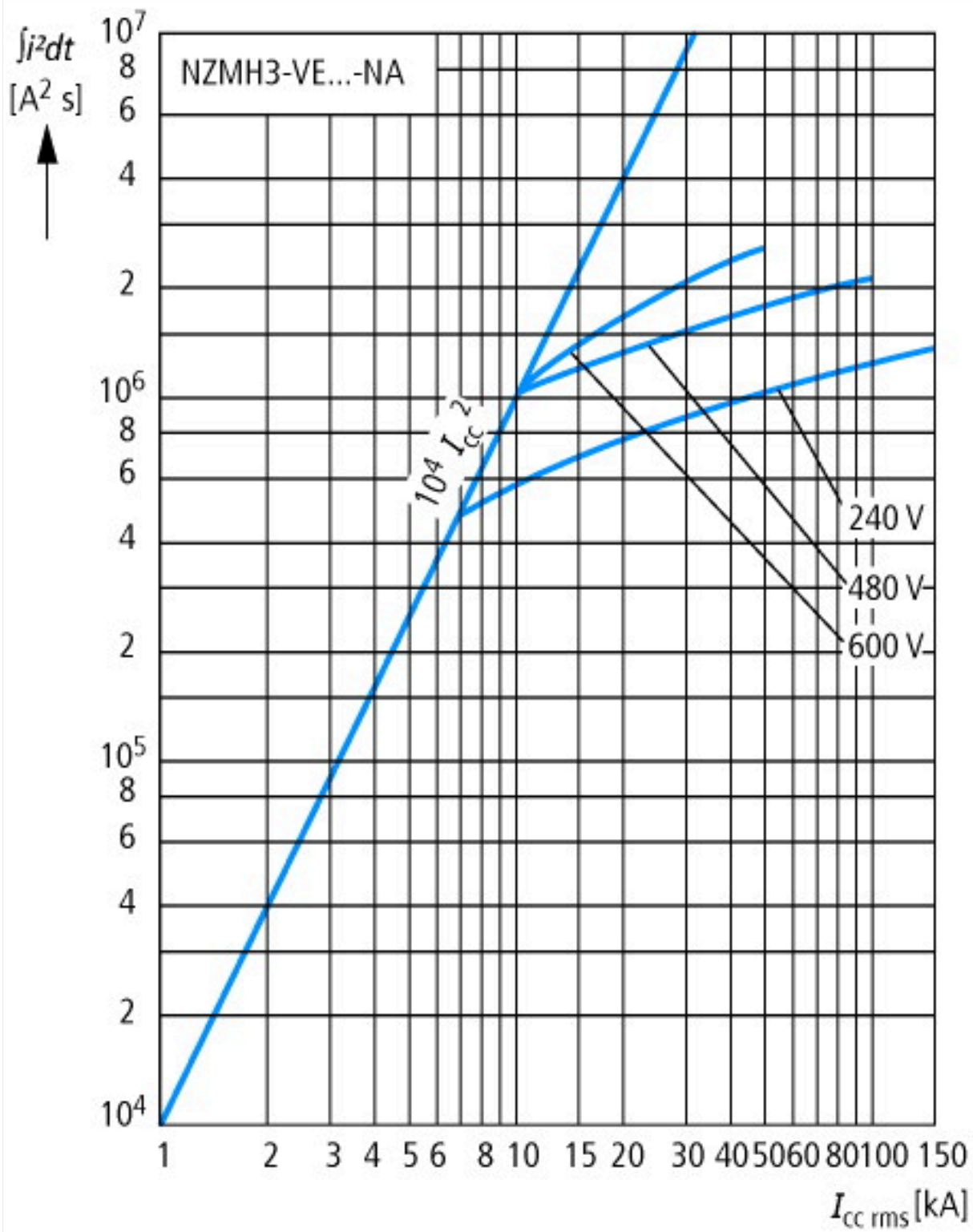
## Approvals

|                                      |  |   |
|--------------------------------------|--|---|
| 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     |  | Yes   |
| Max. Voltage Rating                  |  | 600 V   |
| Degree of Protection                 |  | IEC: IP20; UL/CSA Type: -                           |

# Characteristics



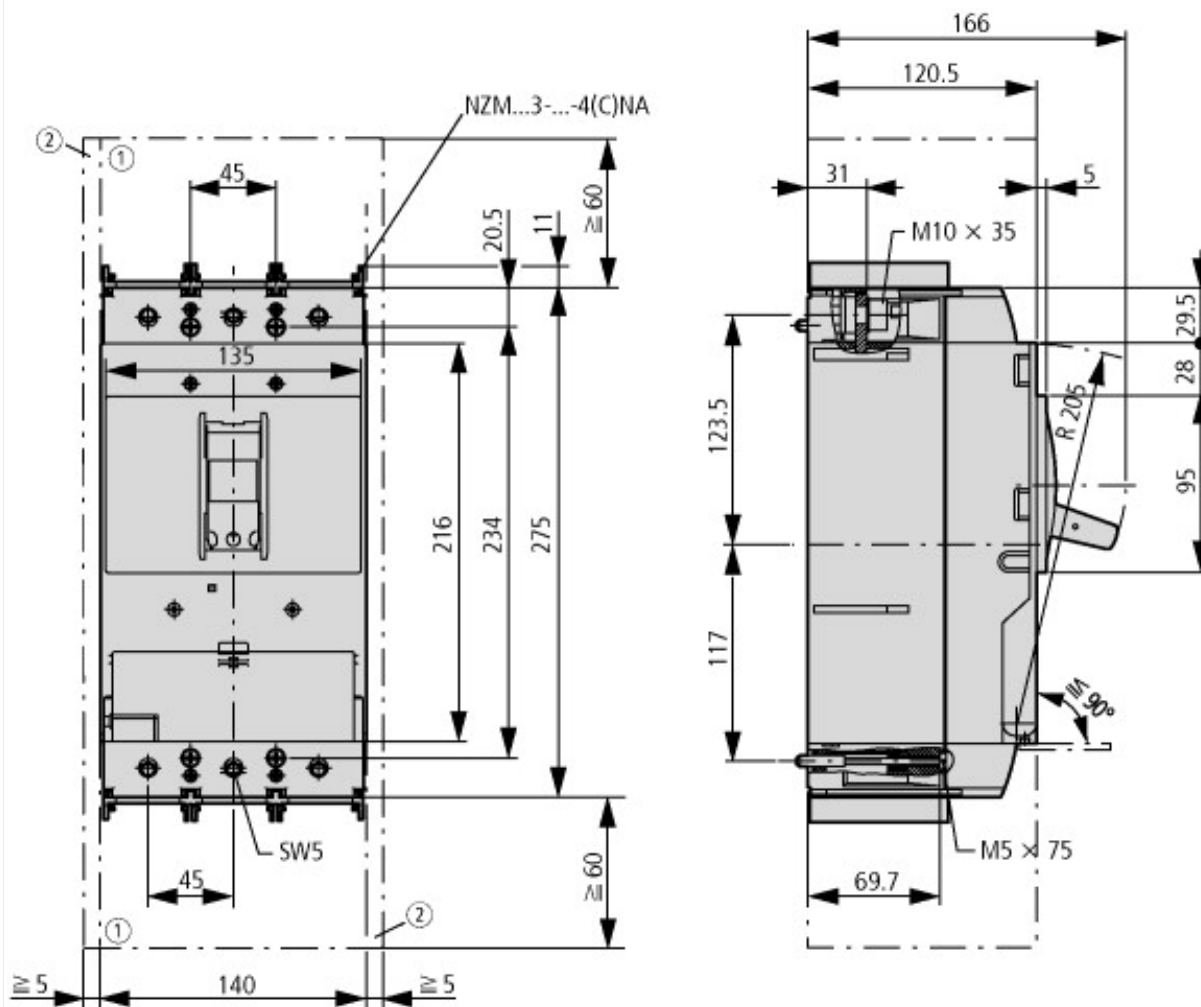








## Dimensions



- ① Blow out area, minimum clearance to adjacent parts
- ② Minimum clearance to adjacent parts



## Additional product information (links)

### IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit

|  |   |
|--|---|
| IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL01208009Z2018_11.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL01208009Z2018_11.pdf</a> |
| Weight   | <a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.171">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.171</a>                           |
| 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>                           |
| Effective power loss                                   | <a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.174">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.174</a>                           |
| additional technical information for NZM power switch  | <a href="https://es-assets.eaton.com/DOCUMENTATION/PDF/nzm_technic_de_en.pdf">https://es-assets.eaton.com/DOCUMENTATION/PDF/nzm_technic_de_en.pdf</a>                             |