






## Circuit-breaker, 4p, 80A, box terminals

Part no. **NZMH2-4-AF80-BT-NA**  
 Article no. **153394**  
 Catalog No. **NZMH2-4-AF80-BT-NA**

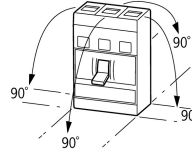
Similar to illustration

## Delivery program

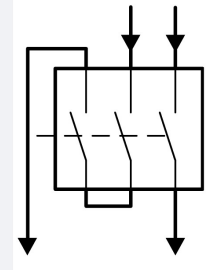
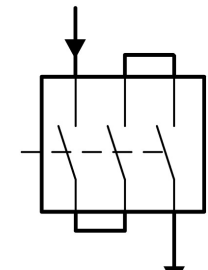

|  |                          |     |  |  |
|--|--------------------------|-----|--|--|
| Product range  |                          |     |  | Circuit-breaker  |
| Protective function  |                          |     |  | System and cable protection  |
| Standard/Approval  |                          |     |  | UL/CSA, IEC  |
| Release system   |                          |     |  | Thermomagnetic release   |
| Installation type  |                          |     |  | Fixed  |
| Description  |                          |     |  | Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate.<br>Fixed overload releases Ir |
| Frame size   |                          |     |  | NZM2   |
| Number of poles  |                          |     |  | 4 pole   |
| Standard equipment   |                          |     |  | Box terminal   |
| <b>Switching capacity</b>  |                          |     |  |  |
| 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   |
| <b>Rated current = rated uninterrupted current</b>   |                          |     |  |  |
| Rated current = rated uninterrupted current  | $I_n = I_u$              | A   |  | 80   |
| Neutral conductor  | % of phase conductor     | CSA |  | 100  |
| <b>Setting range</b>   |                          |     |  |  |
| Overload trip  |                          |     |  |  |
|                 | $I_r$                    | A   |  | 80 - 80  |
| Main pole<br>   | $I_r$                    | A   |  | 80 - 80  |
| Neutral conductor  |                          |     |  |  |
| Neutral conductor  | % of phase conductor     | CSA |  | 100  |
| Short-circuit releases   |                          |     |  |  |
| Non-delayed<br> | $I_i = I_n \times \dots$ |     |  | Approx. 6 - 10   |

## 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                            |      |  |  |
| Mounting position                            |      |  | <p>Vertical and 90° in all directions</p>  <p>With residual-current release XFI:<br/> - NZM1, N1, NZM2, N2: vertical and 90° in all directions<br/> with plug-in adapter elements<br/> - NZM1, N1, NZM2, N2: vertical, 90° right/left<br/> with withdrawable unit:<br/> - NZM3, N3: vertical, 90° 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, 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   |
| Rated operational voltage   | $U_e$     | V DC | 750   |
| <p>Details apply for 3 pole system protection circuit-breaker with thermomagnetic release NZMN(H)1(2)(3)-A... to 500 A.</p> <p>For rated operating voltage switching via 3 contacts:</p> <p>DC correction factor for instantaneous release response value: NZM1: 1.25, NZM2: 1.35, NZM3: 1.45</p> <p>Set value for <math>I_i</math> at DC = set value <math>I_i</math> AC/correction factor DC</p> <p><b>Switching of one pole via two series contacts</b></p>  <p><b>Switching of one pole via three series contacts</b></p>  |           |      |   |
| 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 $I_{cn}$ | $I_{cn}$ |    |     |

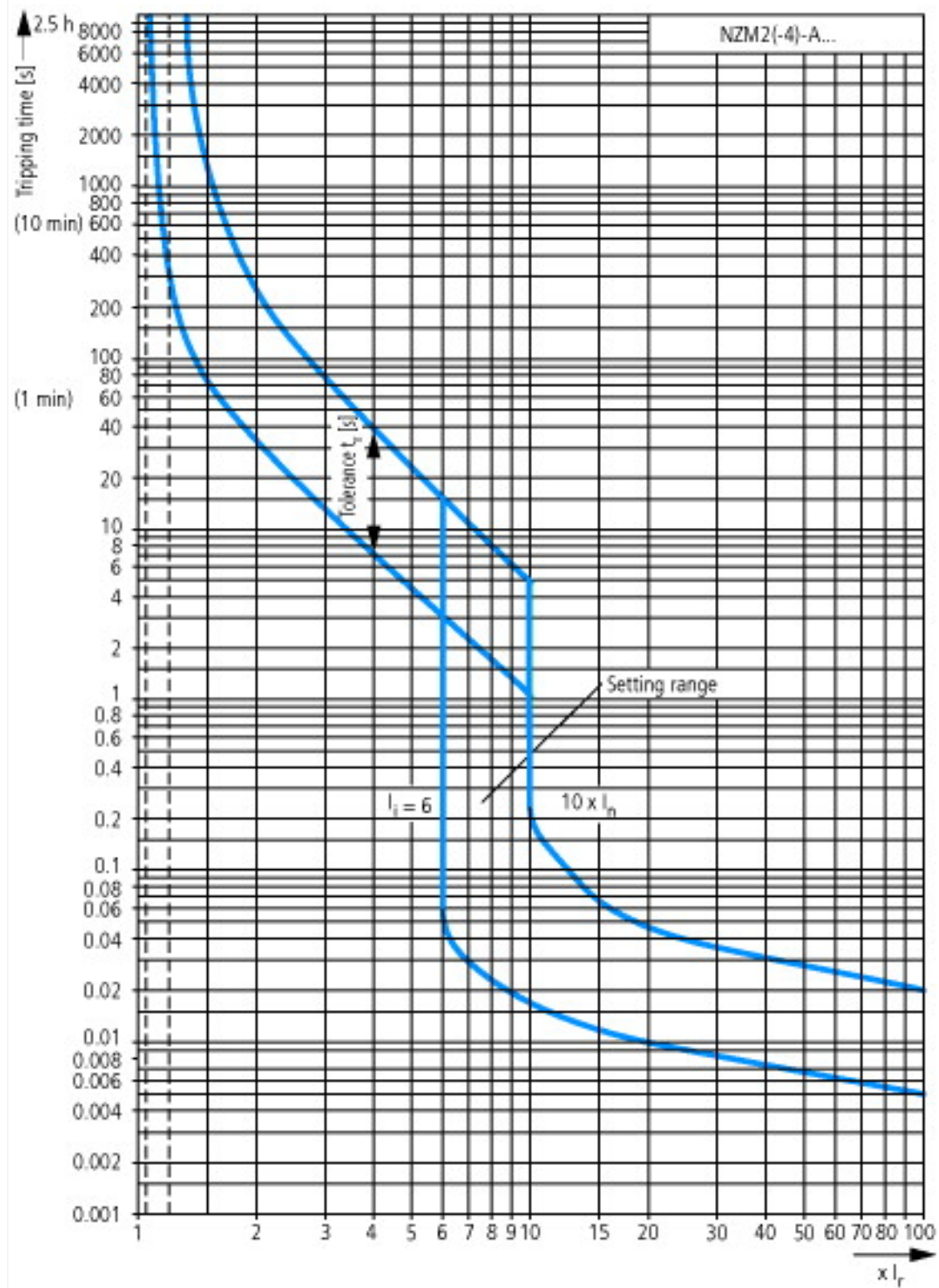
|   |                 |            |   |
|---|-----------------|------------|---|
| Icu to IEC/EN 60947 test cycle O-t-CO                                       | I <sub>cu</sub> | kA         |   |
| 240 V 50/60 Hz  | I <sub>cu</sub> | kA         | 150   |
| 400/415 V 50/60 Hz  | I <sub>cu</sub> | kA         | 150   |
| 440 V 50/60 Hz  | I <sub>cu</sub> | kA         | 130   |
| 525 V 50/60 Hz  | I <sub>cu</sub> | kA         | 50  |
| 690 V 50/60 Hz  | I <sub>cu</sub> | kA         | 20  |
| 500 V DC  | I <sub>cu</sub> | kA         | 60  |
| 750 V DC  | I <sub>cu</sub> | kA         | 60  |
| Ics 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         | 150   |
| 400/415 V 50/60 Hz  | I <sub>cs</sub> | kA         | 150   |
| 440 V 50/60 Hz  | I <sub>cs</sub> | kA         | 130   |
| 525 V 50/60 Hz  | I <sub>cs</sub> | kA         | 37.5  |
| 690 V 50/60 Hz  | I <sub>cs</sub> | kA         | 5   |
| Maximum low-voltage h.b.c. fuse   |                 | A gG/gL    | 355   |
|   |                 |            | 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         | 150   |
| 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  |
| Rated short-time withstand current  |                 |            |   |
| t = 0.3 s   | I <sub>cw</sub> | kA         | 1.9   |
| t = 1 s   | I <sub>cw</sub> | kA         | 1.9   |
| Utilization category to IEC/EN 60947-2                                      |                 |            |   |
| Rated making and breaking capacity  |                 |            |   |
| Rated operational current   | I <sub>e</sub>  | A          |   |
| AC-1  |                 |            |   |
| 690 V 50/60 Hz  | I <sub>e</sub>  | A          | 80  |
| AC--3   |                 |            |   |
| 400/415 V 50/60 Hz  | I <sub>e</sub>  | A          | 80  |
| DC-1  |                 |            |   |
| 500 V DC  | I <sub>e</sub>  | CSA        | 80  |
| 750 V DC  | I <sub>e</sub>  | CSA        | 80  |
| DC - 3  |                 |            |   |
| 500 V DC  | I <sub>e</sub>  | CSA        | 80  |
| 750 V DC  | I <sub>e</sub>  | CSA        | 80  |
| Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release) | Operations      |            | 20000   |
| Lifespan, electrical  |                 |            |   |
| AC-1  |                 |            |   |
| 400 V 50/60 Hz  | Operations      |            | 10000   |
| 690 V 50/60 Hz  | Operations      |            | 7500  |
| AC--3   |                 |            |   |
| 400 V 50/60 Hz  | Operations      |            | 6500  |
| 690 V 50/60 Hz  | Operations      |            | 5000  |
| DC-1  |                 |            |   |
| 500 V DC  |                 | Operations | 3500  |
| 750 V DC  |                 | Operations | 3500  |
| DC - 3  |                 |            |   |
| 500 V DC  | Operations      |            | 3000  |
| 750 V DC  | Operations      |            | 3000  |

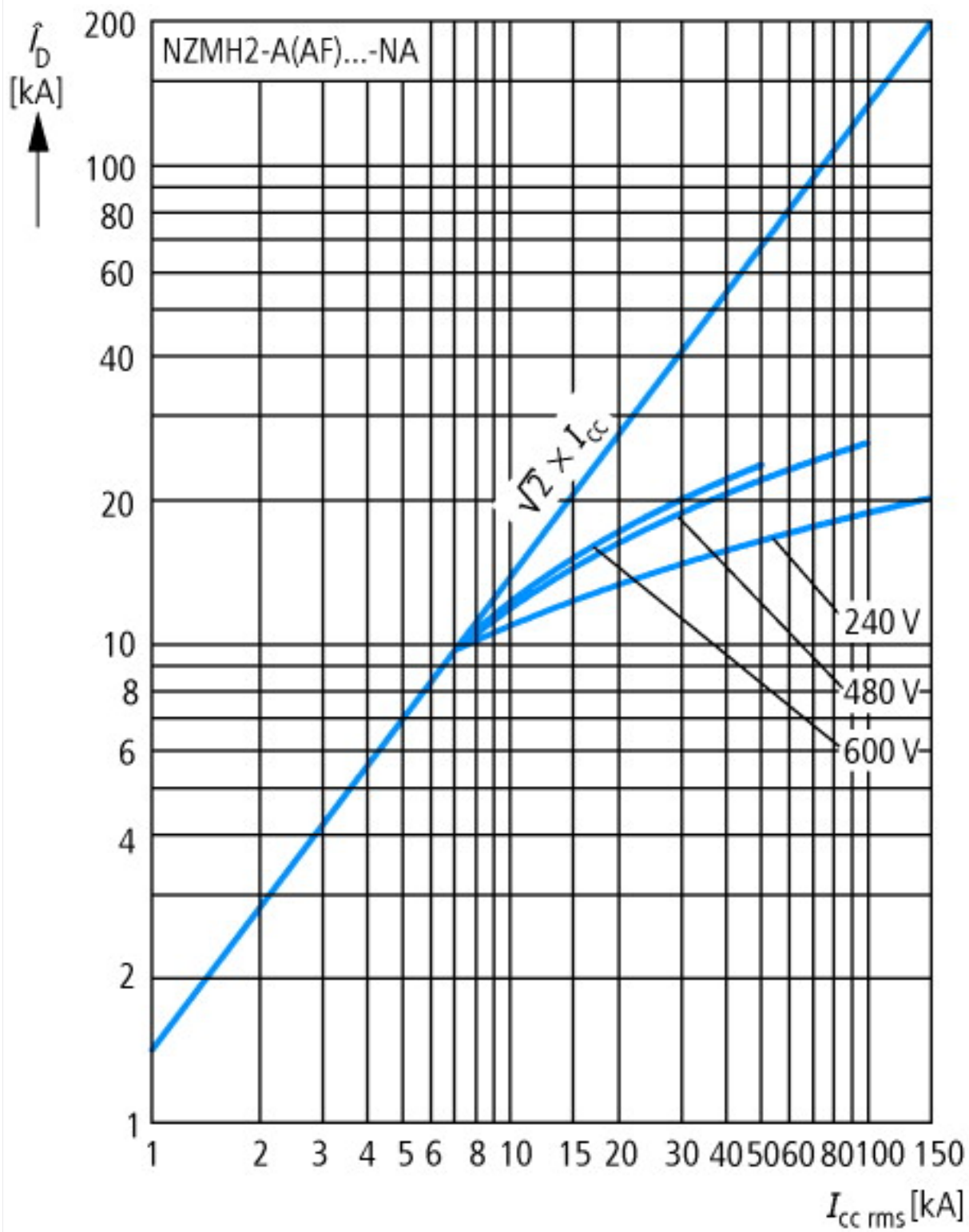
|                                   |                 |              |
|-----------------------------------|-----------------|--------------|
| Max. operating frequency          | Ops/h           | 120          |
| Total downtime in a short-circuit | ms              | < 10         |
| <b>Terminal capacity</b>          |                 |              |
| Standard equipment                |                 | Box terminal |
| Al conductors, Cu cable           |                 |              |
| Solid                             | mm <sup>2</sup> | 1 x 16       |

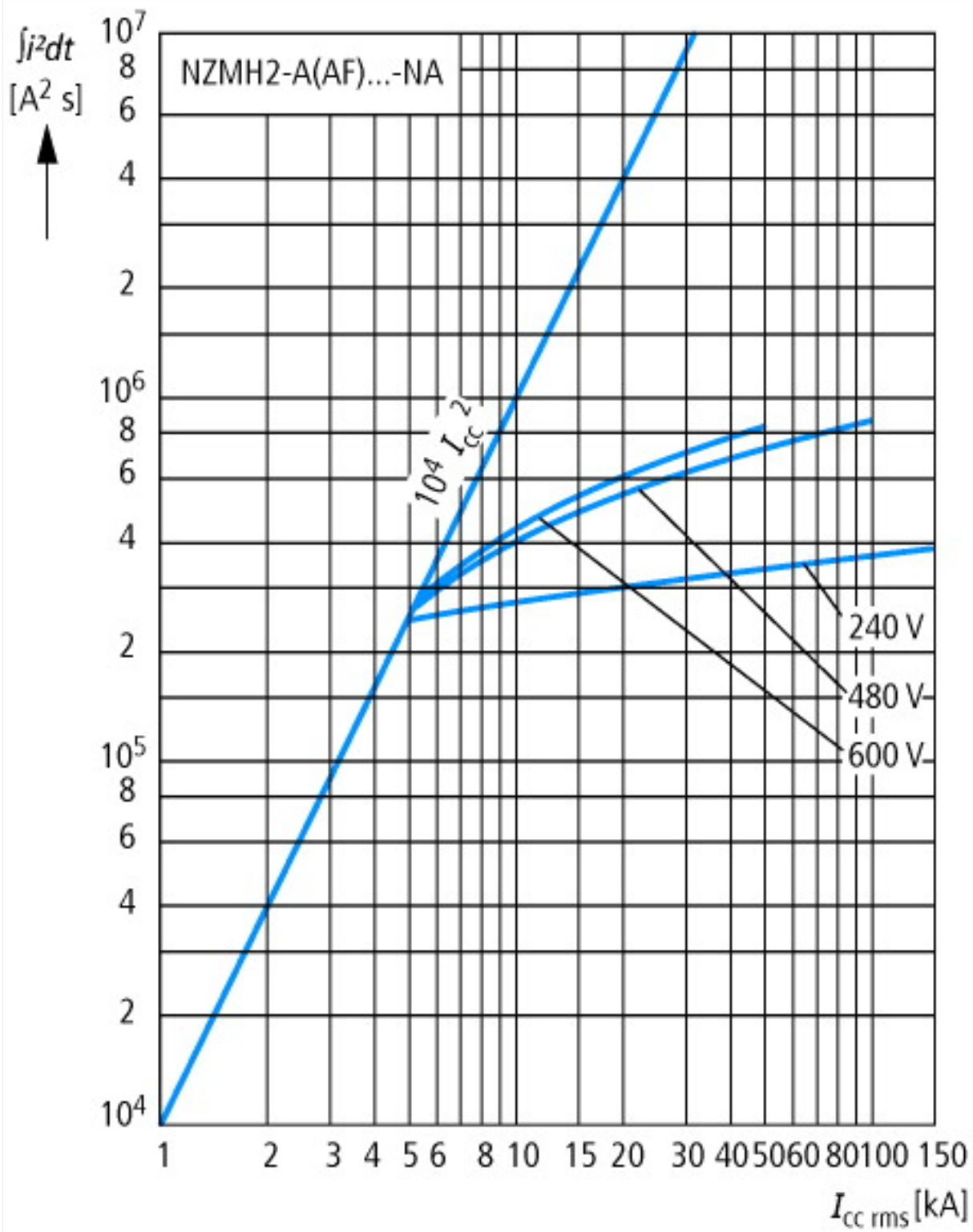
## Design verification as per IEC/EN 61439

|  |                  |    |  |
|--|------------------|----|--|
| Technical data for design verification   |                  |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>   | A  | 80   |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub> | W  | 20.54  |
| 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.                         |

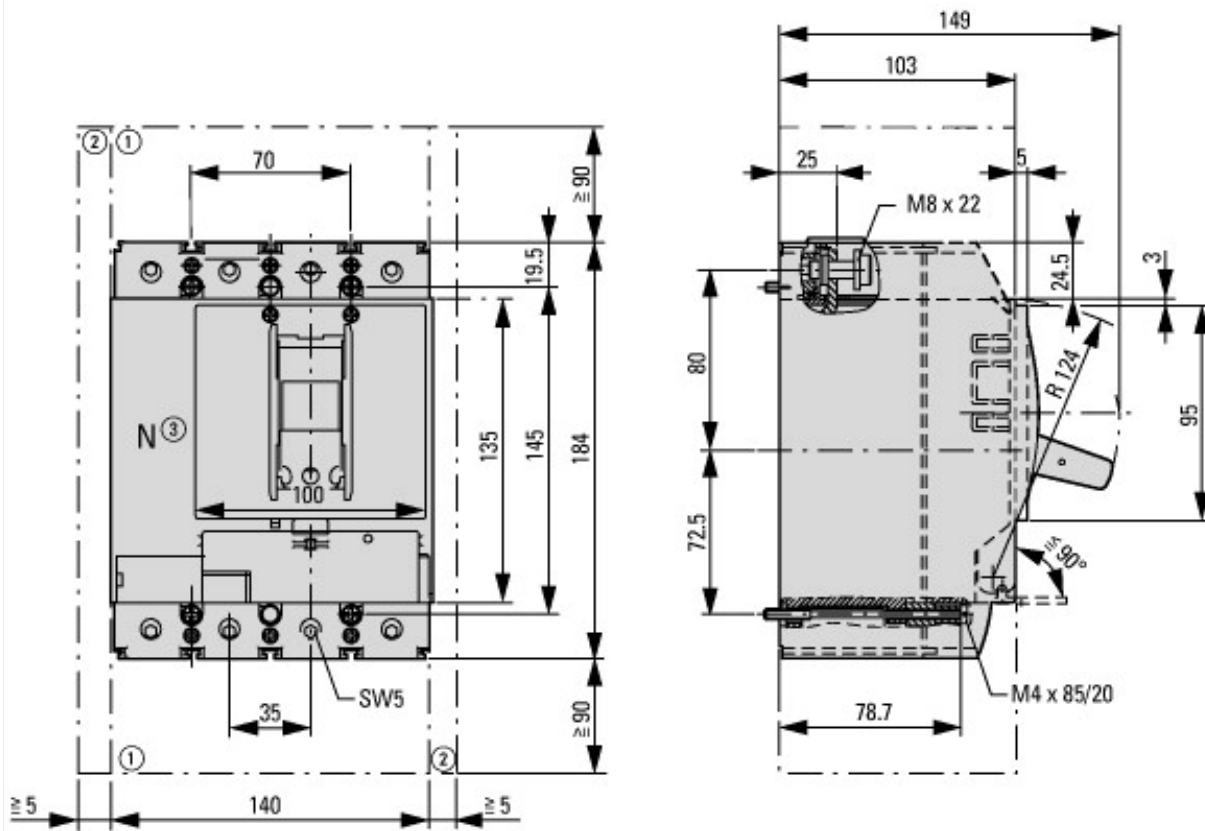
## Characteristics







## Dimensions



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





### Additional product information (links)

|                                  |   |
|----------------------------------|---|
| 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> |