



**Circuit-breaker, 3p, 80A, plug-in module**





**Part no. NZMN1-M80-SVE**

**Catalog No. 112766**

**EL-Nummer (Norway) 4363479**

Similar to illustration

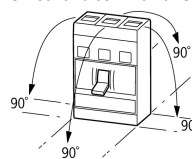
## Delivery program

|   |                          |    |  |   |
|---|--------------------------|----|--|---|
| Product range   |                          |    |  | Circuit-breaker   |
| Protective function   |                          |    |  | Motor protection  |
|   |                          |    |  |   |
| Standard/Approval   |                          |    |  | IEC   |
| Installation type   |                          |    |  | Plug-in units   |
| Release system  |                          |    |  | Thermomagnetic release  |
| Construction size   |                          |    |  | NZM1  |
| Description   |                          |    |  | With phase-failure sensitivity<br>Tripping class 10 A<br>IEC/EN 60947-4-1, IEC/EN 60947-2<br><br>The circuit-breaker fulfills all requirements for AC-3 switching category. |
| Number of poles   |                          |    |  | 3 pole  |
| Standard equipment  |                          |    |  | Box terminal  |
| <b>Switching capacity</b>   |                          |    |  |   |
| 400/415 V 50 Hz   | $I_{cu}$                 | kA |  | 50  |
| Rated current = rated uninterrupted current   | $I_n = I_u$              | A  |  | 80  |
| <b>Setting range</b>  |                          |    |  |   |
| Overload trip   |                          |    |  |   |
|  | $I_r$                    | A  |  | 63 - 80   |
| Short-circuit releases  |                          |    |  |   |
|  |                          |    |  |   |
| Non-delayed   | $I_i = I_n \times \dots$ |    |  | 8 - 14  |
|  |                          |    |  |   |
| <b>Motor rating AC-3 50/60 Hz</b>   |                          |    |  |   |
| 380 V 400 V   | P                        | kW |  | 37  |
| <b>Motor rating AC-3 50/60 Hz</b>   |                          |    |  |   |
| 400 V   | P                        | kW |  | 37  |
| <b>Rated operational current AC-3 50/60 Hz</b>                                      |                          |    |  |   |
| 400 V   | $I_e$                    | A  |  | 68  |

## 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   |      | <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)  |      | Temperature dependency, Derating  |

### Circuit-breakers

|   |             |      |       |
|---|-------------|------|-------|
| Rated current = rated uninterrupted current | $I_n = I_u$ | A    | 80    |
| Rated surge voltage invariability           | $U_{imp}$   |      |       |
| Main contacts                               |             | V    | 6000  |
| Auxiliary contacts                          |             | V    | 6000  |
| Rated operational voltage                   | $U_e$       | V AC | 690   |
| Overvoltage category/pollution degree       |             |      | III/3 |
| Rated insulation voltage                    | $U_i$       | V    | 690   |
| Use in unearthed supply systems             |             | V    | ≤ 690 |

### Switching capacity

|   |          |    |   |
|---|----------|----|---|
| Rated short-circuit making capacity             | $I_{cm}$ |    |   |
| 240 V   | $I_{cm}$ | kA | 187   |
| 400/415 V                                       | $I_{cm}$ | kA | 105   |
| 440 V 50/60 Hz                                  | $I_{cm}$ | kA | 74  |
| 525 V 50/60 Hz                                  | $I_{cm}$ | kA | 40  |
| 690 V 50/60 H                                   | $I_c$    | kA | 17  |
| 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 | 85  |
| 400/415 V 50/60 Hz                              | $I_{cu}$ | kA | 50  |
| 440 V 50/60 Hz                                  | $I_{cu}$ | kA | 35  |
| 525 V 50/60 Hz                                  | $I_{cu}$ | kA | 20  |
| 690 V 50/60 Hz                                  | $I_{cu}$ | kA | 10  |
| $I_{cs}$ to IEC/EN 60947 test cycle O-t-CO-t-CO | $I_{cs}$ | kA |   |
| 240 V 50/60 Hz                                  | $I_{cs}$ | kA | 85  |
| 400/415 V 50/60 Hz                              | $I_{cs}$ | kA | 50  |
| 440 V 50/60 Hz                                  | $I_{cs}$ | kA | 35  |
| 525 V 50/60 Hz                                  | $I_{cs}$ | kA | 10  |
| 690 V 50/60 Hz                                  | $I_{cs}$ | kA | 7.5   |
|   |          |    | Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker. |
| 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 |       | 10000 |
| 415 V 50/60 Hz  | Operations |       | 10000 |
| 690 V 50/60 Hz  | Operations |       | 7500  |
| AC--3   |            |       |       |
| 400 V 50/60 Hz  | Operations |       | 7500  |
| 415 V 50/60 Hz  | Operations |       | 7500  |
| 690 V 50/60 Hz  | Operations |       | 5000  |
| Max. operating frequency  |            | Ops/h | 120   |
| Total break time at short-circuit   |            | ms    | < 10  |

### Terminal capacity

|   |      |                 |  |
|---|------|-----------------|--|
| Standard equipment  |      |                 | Box terminal   |
| Accessories required                                      |      |                 | NZM1-XSVS  |
| Optional accessories                                      |      |                 | Screw connection<br>Tunnel terminal<br>connection on rear                                    |
| 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 (10 - 70) <sup>3)</sup><br>2 x (6-25)  |
|   |      |                 | <sup>3)</sup> Up to 95 mm <sup>2</sup> can be connected depending on the cable manufacturer. |
| Tunnel terminal   |      |                 |  |
| Solid   |      | mm <sup>2</sup> | 1 x 16   |
| Stranded  |      |                 |  |
| 1-hole  |      | mm <sup>2</sup> | 1 x (25 - 95)  |
| Bolt terminal and rear-side connection                    |      |                 |  |
| Direct on the switch                                      |      |                 |  |
| Solid   |      | mm <sup>2</sup> | 1 x (10 - 16)<br>2 x (6 - 16)  |
| Stranded  |      | mm <sup>2</sup> | 1 x (10 - 70) <sup>3)</sup><br>2 x 25  |
|   |      |                 | <sup>3)</sup> Up to 95 mm <sup>2</sup> can be connected depending on the cable manufacturer. |
| Al circular conductor                                     |      |                 |  |
| Tunnel terminal   |      |                 |  |
| Solid   |      | mm <sup>2</sup> | 1 x 16   |
| Stranded  |      |                 |  |
| Stranded  |      | mm <sup>2</sup> | 1 x (25 - 95)  |
| 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 - 35)<br>2 x (25 - 35)   |
| 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  |      |                 | M6   |
| Direct on the switch                                      |      |                 |  |
|   | min. | mm              | 12 x 5   |
|   | max. | mm              | 16 x 5   |

|                |  |                 |                                      |
|----------------|--|-----------------|--------------------------------------|
| 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

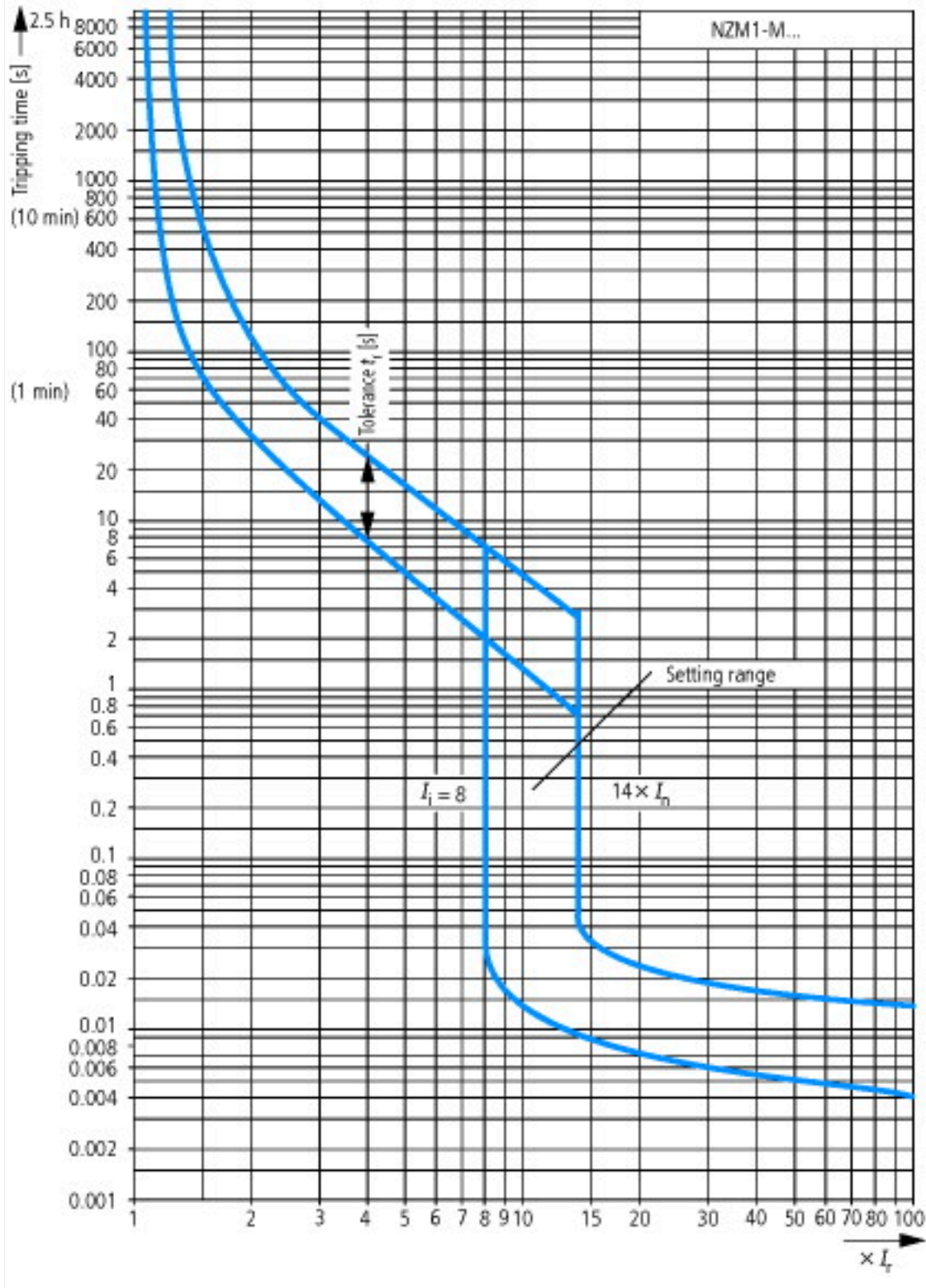
|  |                  |    |  |
|--|------------------|----|--|
| Technical data for design verification   |                  |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>   | A  | 80   |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub> | W  | 20.83  |
| 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  |                  |    |  |
| 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) / Motor protection circuit-breaker (EC000074)  |  |    |                                   |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecl@ss10.0.1-27-37-04-01 [AGZ529016]) |  |    |                                   |
| Overload release current setting  |  | A  | 63 - 80                           |
| Adjustment range undelayed short-circuit release  |  | A  | 640 - 1120                        |
| With thermal protection   |  |    | Yes                               |
| Phase failure sensitive   |  |    | Yes                               |
| Switch off technique  |  |    | Thermomagnetic                    |
| Rated operating voltage   |  | V  | 690 - 690                         |
| Rated permanent current I <sub>u</sub>  |  | A  | 80                                |
| Rated operation power at AC-3, 230 V  |  | kW | 22                                |
| Rated operation power at AC-3, 400 V  |  | kW | 45                                |
| Type of electrical connection of main circuit   |  |    | Other                             |
| Type of control element   |  |    | Rocker lever                      |
| Device construction   |  |    | Built-in device plug-in technique |
| With integrated auxiliary switch  |  |    | No                                |
| With integrated under voltage release   |  |    | No                                |

|   |    |      |
|---|----|------|
| Number of poles   |    | 3    |
| Rated short-circuit breaking capacity $I_{cu}$ at 400 V, AC | kA | 50   |
| Degree of protection (IP)                                   |    | IP20 |
| Height  | mm | 201  |
| Width   | mm | 95   |
| Depth   | mm | 90   |

## Characteristics



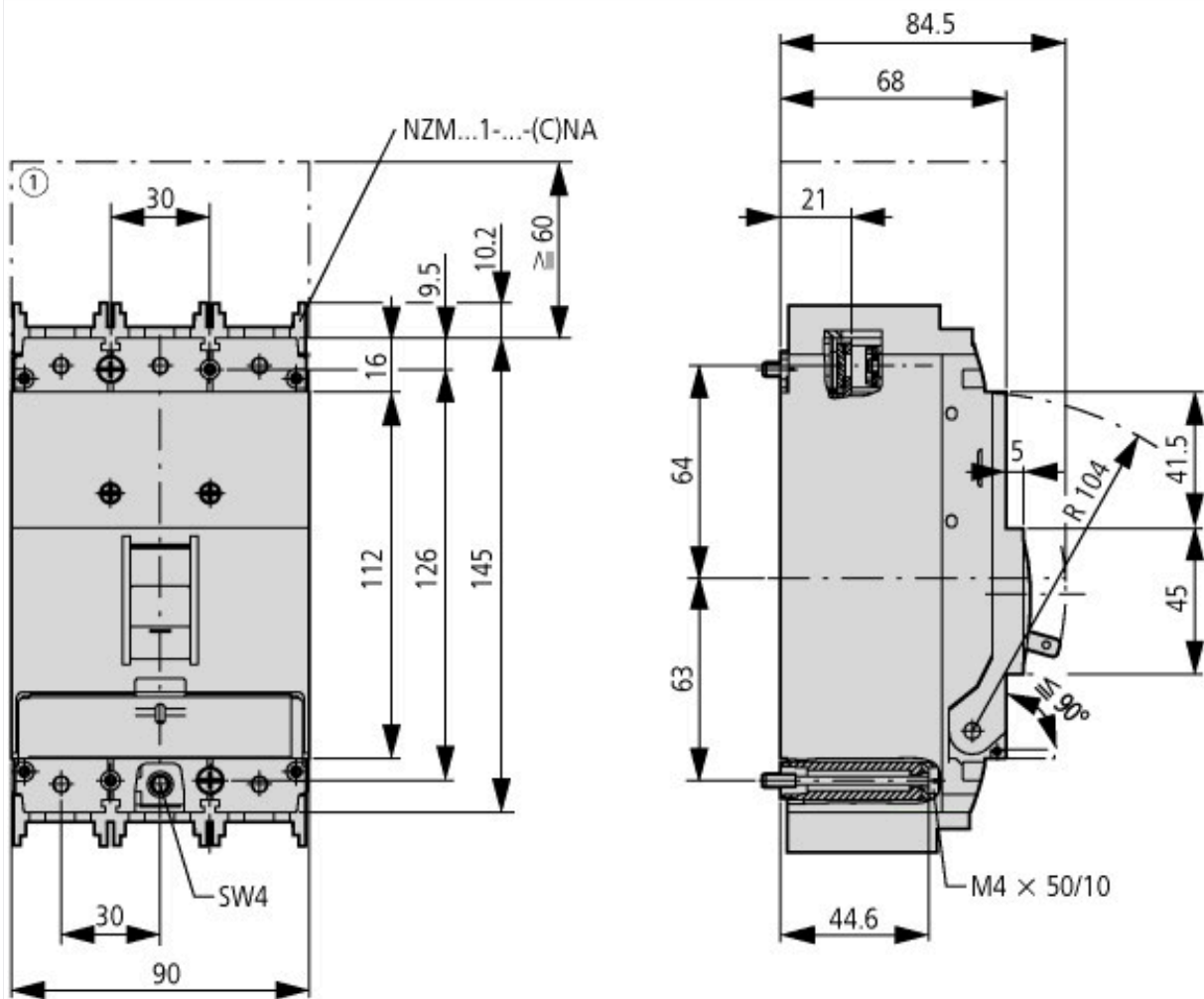


Let-through current



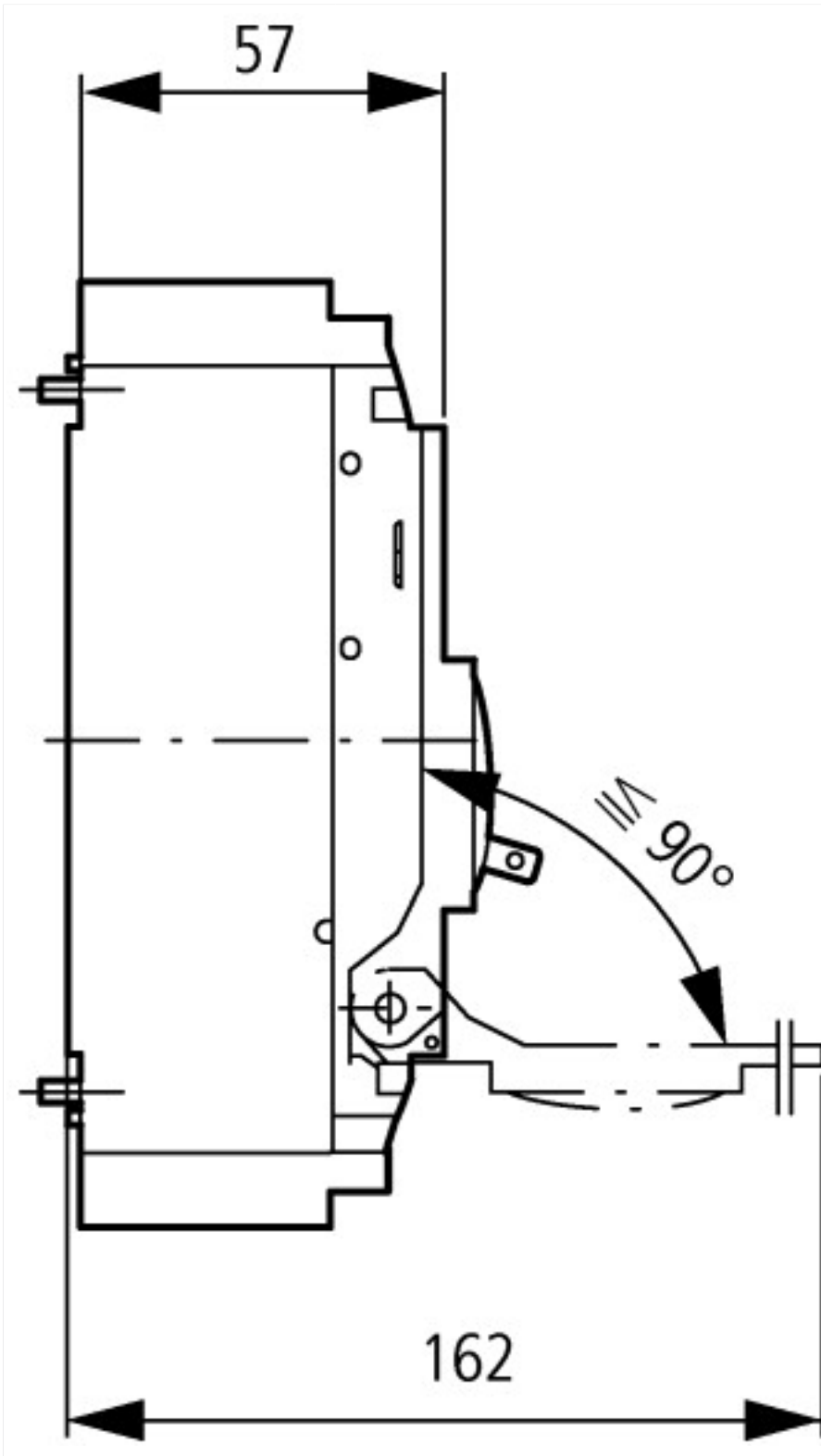
Let-through energy

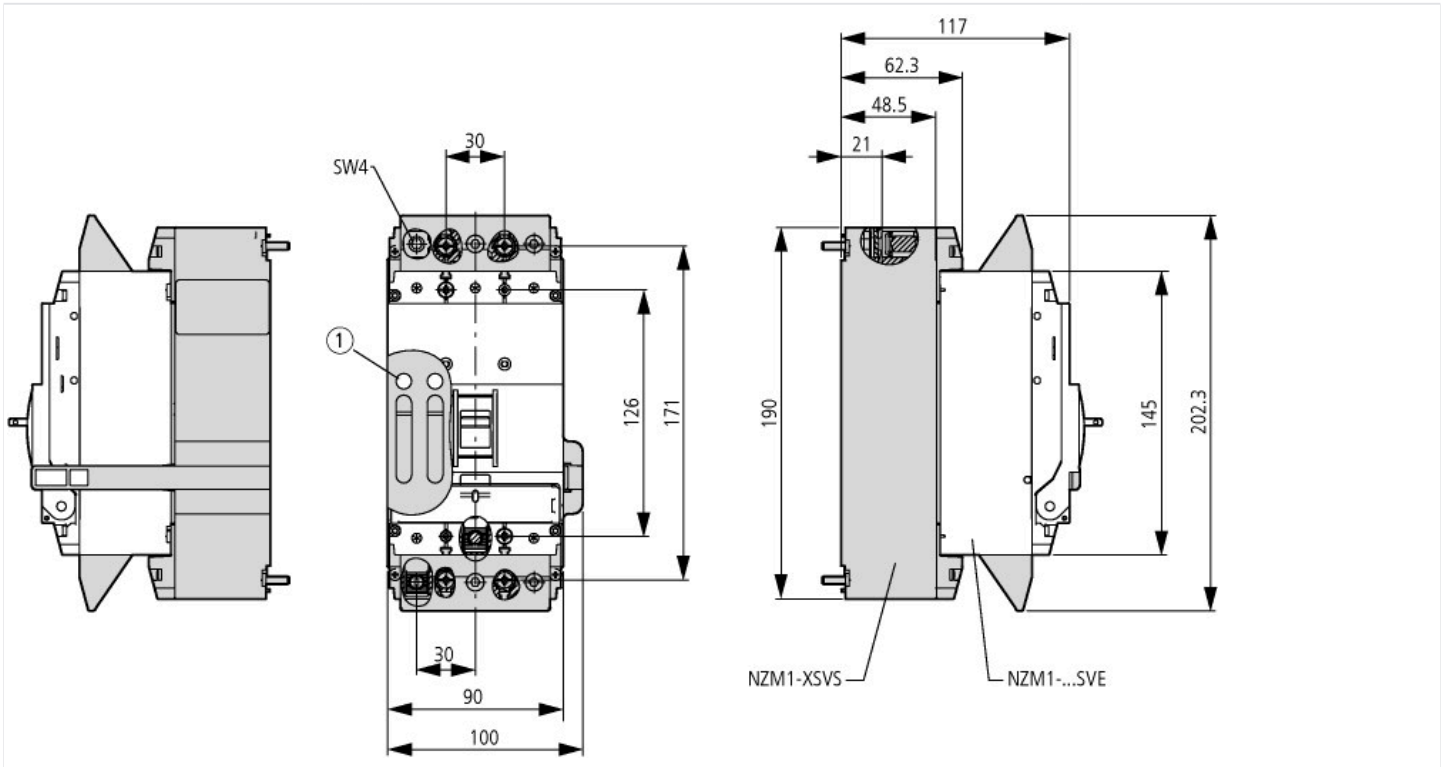
## Dimensions



① Blow out area, minimum clearance to adjacent parts







① Up to 2 padlocks

## Additional product information (links)

### IL01203004Z (AWA1230-1913) Circuit-breaker, Switch-Disconnecter

IL01203004Z (AWA1230-1913) Circuit-breaker, Switch-Disconnecter [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL01203004Z2015\\_11.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01203004Z2015_11.pdf)

### IL01219023Z (AWA1230-2052) Plug-in adapter

IL01219023Z (AWA1230-2052) Plug-in adapter [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL01219023Z2016\\_02.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01219023Z2016_02.pdf)

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

additional technical information for NZM power switch [ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm\\_techinc\\_de\\_en.pdf](ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_techinc_de_en.pdf)