## **DATASHEET - NZMC2-A160-SVE**



Circuit-breaker, 3p, 160A, plug-in module

NZMC2-A160-SVE Part no. Catalog No. 113220



Similar to illustration

|  | program |
|--|---------|
|  |         |

| Delivery program                            |                          |    |                             |
|---|--------------------------|----|-----------------------------|
| Product range                               |                          |    | Circuit-breaker             |
| Protective function                         |                          |    | System and cable protection |
| Standard/Approval                           |                          |    | IEC                         |
| Installation type                           |                          |    | Plug-in units               |
| Release system                              |                          |    | Thermomagnetic release      |
| Construction size                           |                          |    | NZM2                        |
| Number of poles                             |                          |    | 3 pole                      |
| Standard equipment                          |                          |    | Screw connection            |
| Switching capacity                          |                          |    |                             |
| 400/415 V 50 Hz                             | I <sub>cu</sub>          | kA | 36                          |
| Rated current = rated uninterrupted current |                          |    |                             |
| Rated current = rated uninterrupted current | $I_n = I_u$              | Α  | 160                         |
| Setting range                               |                          |    |                             |
| Overload trip                               |                          |    |                             |
| 4   | I <sub>r</sub>           | Α  | 125 - 160                   |
| Short-circuit releases                      |                          |    |                             |
| Non-delayed                                 | $I_i = I_n \times \dots$ |    | 6 - 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 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   | 2.345   |
| Mounting position   |      | Vertical and 90° in all directions  |



With XFI earth-fault release:
- NZM1, N1, NZM2, N2: vertical and 90° in all directions with plug-in unit
- NZM1, N1, NZM2, N2: vertical, 90° right/left with withdrawable unit:
- NZM3, N3: vertical, 90° right/left
- NZM4, N4: vertical with remote operator:
- NZM2, N(S)2, NZM3, N(S)3, NZM4, N(S)4: vertical and 90° in all directions

| 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) | Temperature dependency, Derating                                      |
| Circuit-hreakers                       |   |

#### Circuit-breakers

| Rated current = rated uninterrupted current | $I_n = I_u$      | Α    | 160   |
|---|------------------|------|-------|
| Rated surge voltage invariability           | $U_{\text{imp}}$ |      |       |
| Main contacts                               |                  | V    | 8000  |
| Auxiliary contacts                          |                  | ٧    | 6000  |
| Rated operational voltage                   | U <sub>e</sub>   | V AC | 690   |
| Overvoltage category/pollution degree       |                  |      | III/3 |
| Rated insulation voltage                    | Ui               | V    | 690   |
| Use in unearthed supply systems             |                  | V    | ≦ 690 |

| I <sub>cm</sub> |  |   |
|-----------------|--|---|
| I <sub>cm</sub> | kA   | 121   |
| I <sub>cm</sub> | kA   | 76  |
| I <sub>cm</sub> | kA   | 63  |
| I <sub>cm</sub> | kA   | 24  |
| Ic              | kA   | 14  |
| I <sub>cn</sub> |  |   |
| Icu             | kA   |   |
| I <sub>cu</sub> | kA   | 55  |
| I <sub>cu</sub> | kA   | 36  |
| I <sub>cu</sub> | kA   | 30  |
| I <sub>cu</sub> | kA   | 12  |
| I <sub>cu</sub> | kA   | 8   |
| Ics             | kA   |   |
| I <sub>cs</sub> | kA   | 55  |
| I <sub>cs</sub> | kA   | 36  |
| I <sub>cs</sub> | kA   | 22.5  |
| I <sub>cs</sub> | kA   | 6   |
| I <sub>cs</sub> | kA   | 4   |
|                 |  | Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.   |
|                 |  |   |
| I <sub>cw</sub> | kA   | 85  |
|                 |  | A   |
| Operations      |  | 20000   |
|                 |  |   |
|                 |  |   |
| Operations      |  | 10000   |
| Operations      |  | 7500  |
|                 | Icm Icm Icm Icm Icm Icm Ic Icu Icu Icu Icu Icu Icu Ics | I <sub>cm</sub> kA           I <sub>cm</sub> kA           I <sub>cm</sub> kA           I <sub>c</sub> kA           I <sub>c</sub> kA           I <sub>cu</sub> kA           I <sub>cu</sub> kA           I <sub>cu</sub> kA           I <sub>cu</sub> kA           I <sub>cs</sub> kA           I <sub>cw</sub> kA           Operations         Operations |

| 690 V 50/60 Hz  | Operations |                 | 5000                                 |
|---|------------|-----------------|--------------------------------------|
|   | Operations | Ops/h           | 120                                  |
| Max. operating frequency                                  |            |                 |                                      |
| Total break time at short-circuit  Terminal capacity      |            | ms              | < 10                                 |
| Standard equipment  |            |                 | Screw connection                     |
| Accessories required                                      |            |                 | NZM2-XSVS                            |
| Optional accessories                                      |            |                 | Box terminal                         |
|   |            |                 | Tunnel terminal 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 (25 - 185)<br>2 x (25 - 70)      |
| Tunnel terminal   |            |                 |                                      |
| Solid   |            | $\text{mm}^2$   | 1 x 16                               |
| Stranded  |            |                 |                                      |
| 1-hole  |            | 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 (6 - 16)        |
| Stranded  |            | mm <sup>2</sup> | 1 x (25 - 185)<br>2 x (25 - 70)      |
| Al circular conductor                                     |            |                 |                                      |
| Tunnel terminal   |            |                 |                                      |
| Solid   |            | mm <sup>2</sup> | 1 x 16                               |
| Stranded  |            |                 |                                      |
| Stranded  |            | mm <sup>2</sup> | 1 x (25 - 185)                       |
| Cu strip (number of segments x width x segment thickness) |            |                 |                                      |
| Box terminal  |            |                 |                                      |
| 257.05.11.110.  | min.       | mm              | 2 x 9 x 0.8                          |
|   | max.       | mm              | 10 x 16 x 0.8                        |
|   |            |                 | (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  |            |                 |                                      |
|   |            | $mm^2$          | 1 × (0.75 - 2.5)<br>2 × (0.75 - 1.5) |
|   |            |                 | - 1,01.0 1.0/                        |

# Design verification as per IEC/EN 61439

| Technical data for design verification                   |                  |    |  |
|--|------------------|----|--|
| Rated operational current for specified heat dissipation | In               | Α  | 160  |
| Equipment heat dissipation, current-dependent            | P <sub>vid</sub> | W  | 38.4                                       |
| 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. |

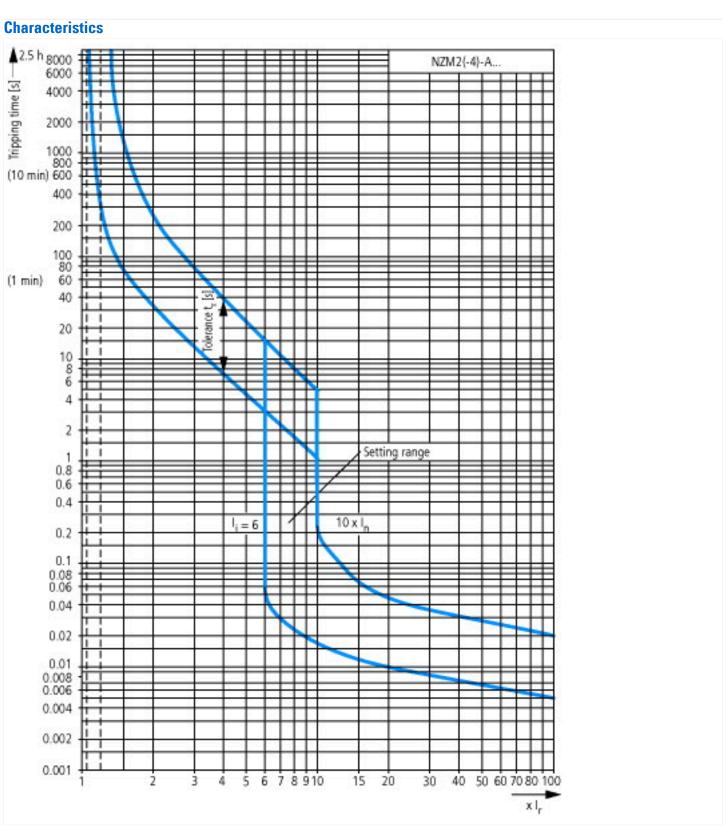
| 10.2.3.2 Verification of resistance of insulating materials to normal heat   | Meets the product standard's requirements.   |
|--|--|
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects | Meets the product standard's requirements.   |
| 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 b 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.                         |

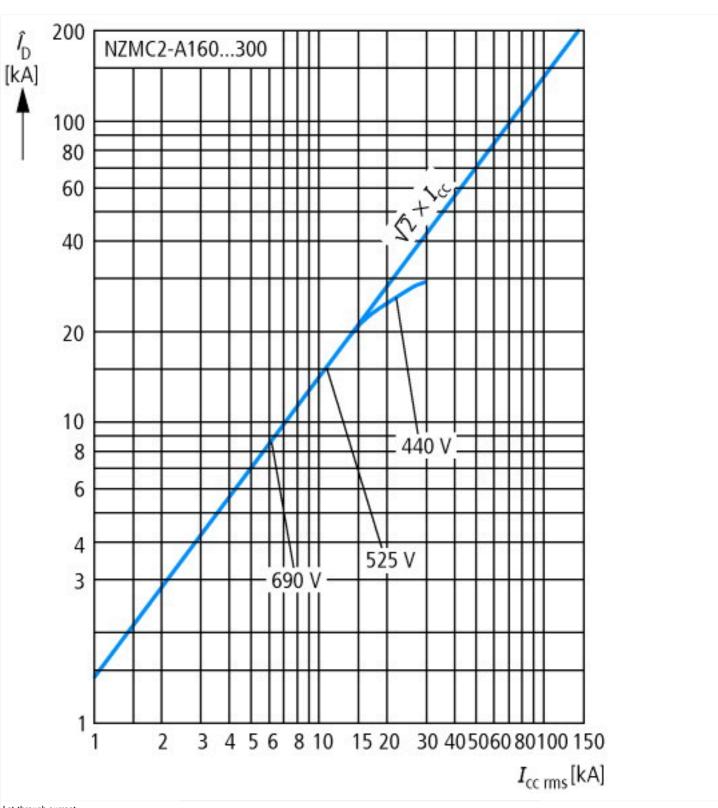
### **Technical data ETIM 7.0**

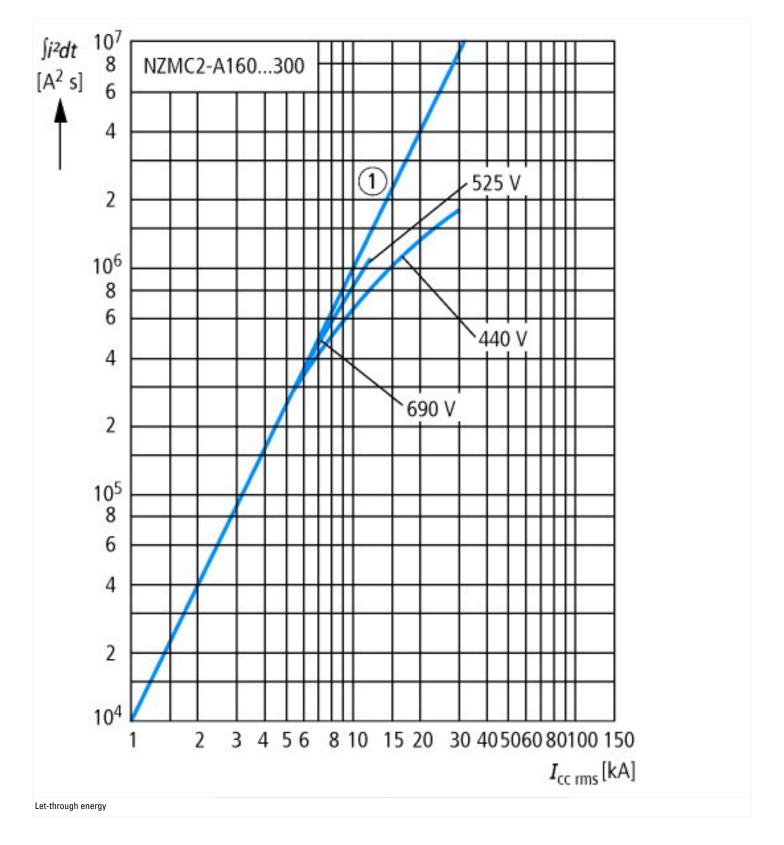
Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)

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])

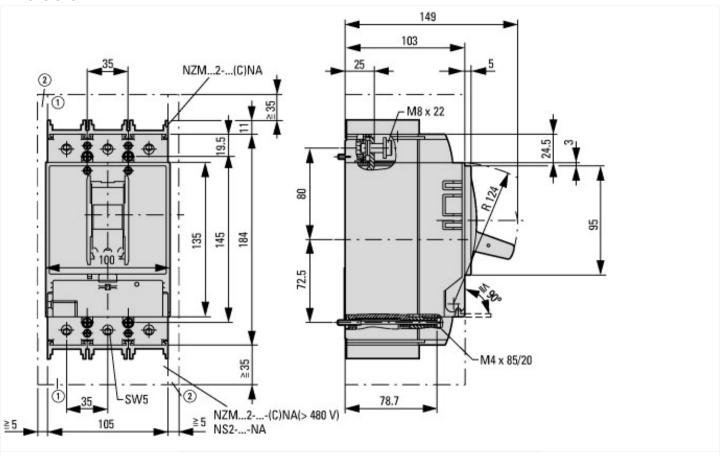
| Rated permanent current lu                                | Α  | 160                               |
|---|----|-----------------------------------|
| Rated voltage   | V  | 690 - 690                         |
| Rated short-circuit breaking capacity Icu at 400 V, 50 Hz | kA | 36                                |
| Overload release current setting                          | Α  | 125 - 160                         |
| Adjustment range short-term delayed short-circuit release | А  | 0 - 0                             |
| Adjustment range undelayed short-circuit release          | Α  | 960 - 1600                        |
| Integrated earth fault protection                         |    | No                                |
| Type of electrical connection of main circuit             |    | Screw connection                  |
| Device construction                                       |    | Built-in device plug-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                                 |
| 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                              |
|   |    |                                   |



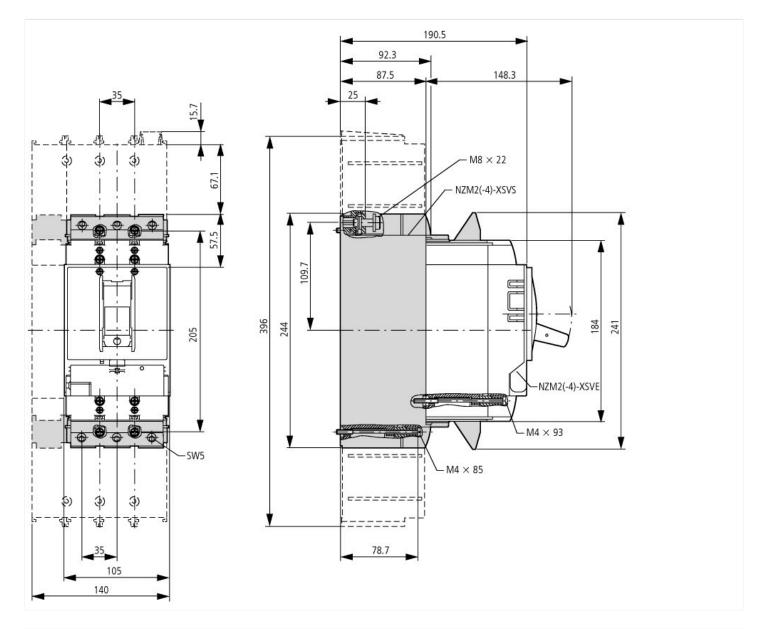




# **Dimensions**



Blow out area, minimum clearance to adjacent parts
 Minimum clearance to adjacent parts



# **Additional product information (links)**

| Temperature dependency, Derating                      | http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172   |
|---|--|
| CurveSelect characteristics program                   | http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/index.htm |
| additional technical information for NZM power switch | ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technic_de_en.pdf  |