







Circuit-breaker, 3p, 160A 1000V

Part no. NZMH2-VE160-S1
Catalog No. 100778

EL-Nummer (Norway) 0004359044

Similar to illustration

Delivery program

| | | | |
|---|--|----|---|
| 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" adjustable time delay setting to overcome current peaks tr: 2 – 20 s at 6 x I _r also infinity (without overload releases) Adjustable delay time tsd: Steps: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms i ² t constant function: fixed OFF NZM...S1 terminal type: NZM...XKSA cover required |
| Number of poles | | | 3 pole |
| Standard equipment | | | Screw connection |
| Rated current = rated uninterrupted current | I _n = I _u | A | 160 |
| Switching capacity | | | |
| 1000 V 50/60 Hz | I _{cu} | kA | 10 |
| Setting range | | | |
| Overload trip | | | |
|  | I _r | A | 80 - 160 |
| Short-circuit releases | | | |
|  | | | |
| Non-delayed | I _i = I _n x ... | | 1920 A fixed |
|  | | | |
| Delayed | I _{sd} = I _r x ... | | 2 - 10 |
|  | | | |

Technical data

Circuit-breakers

| | | | |
|---|---------------------------------|------|-------------|
| Rated surge voltage invariability | U _{imp} | | |
| Main contacts | | V | 8000 |
| Auxiliary contacts | | V | 6000 |
| Rated operational voltage | U _e | V AC | 1000 |
| Rated current = rated uninterrupted current | I _n = I _u | A | 160 |
| Overvoltage category/pollution degree | | | III/3 |
| Rated insulation voltage | U _i | V | 1000 |
| Utilization category | | | A |
| Ambient temperature | | | |
| Ambient temperature, storage | | °C | - 40 - + 70 |
| Operation | | °C | -25 - +70 |

Rated short-circuit making capacity

| | | | |
|----------------|-----------------|----|-----|
| 240 V 50/60 Hz | I _{cm} | kA | 330 |
|----------------|-----------------|----|-----|

| | | | |
|--------------------|-----------------|----|-----|
| 400/415 V 50/60 Hz | 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 H | I _c | kA | 40 |
| 1000 V 50/60 Hz | I _{cm} | kA | 17 |

Rated short-circuit breaking capacity 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 Hz | I _{cu} | kA | 150 |
| 440 V 50/60 Hz | I _{cu} | kA | 130 |
| 525 V 50/60 Hz | I _{cu} | kA | 50 |
| 690 V 50/60 Hz | I _{cu} | kA | 20 |
| 1000 V 50/60 Hz | I _{cu} | kA | 10 |
| I _{cs} to IEC/EN 60947 test cycle O-t-CO-t-CO | I _{cs} | kA | |
| 230 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 |
| 1000 V AC | I _{cs} | kA | 3 |

Rated short-time withstand current

| | | | |
|--------------------------|-----------------|-------|---|
| t = 0.3 s | I _{cw} | kA | 1.9 |
| t = 1 s | I _{cw} | kA | 1.9 |
| Lifespan, mechanical | Operations | | 20000 |
| Max. operating frequency | | Ops/h | 120 |
| | | | Lifespan, mechanical: of which max. 50 % trip by shunt/undervoltage release |

Lifespan, electrical

| | | | |
|-----------------|------------|--|------|
| 1000 V 50/60 Hz | Operations | | 3000 |
|-----------------|------------|--|------|

Terminal capacity

| | | | |
|---|------|-----------------|---|
| Standard equipment | | | Screw connection |
| Round copper conductor | | | |
| Box terminal | | | |
| Solid | | mm ² | 1 x (10 - 16) 2 x (6-16) |
| Stranded | | mm ² | 1 x (25 - 185) 2 x (25-70) |
| Tunnel terminal | | | |
| Solid | | mm ² | 1 x 16 |
| Stranded | | | |
| Stranded | | mm ² | 1 x (25 - 185) |
| Bolt terminal and rear-side connection | | | |
| Direct on the switch | | | |
| Solid | | mm ² | 1 x (10 - 16) 2 x (10 - 16) |
| Stranded | | mm ² | 1 x (25 - 50) 2 x (25 - 50) |
| Al conductors, Cu cable | | | |
| Tunnel terminal | | | |
| Solid | | mm ² | 1 x 16 |
| Stranded | | | |
| Stranded | | mm ² | 1 x (25 - 185) ²⁾ |
| | | | ²⁾ Up to 240 mm ² can be connected depending on the cable manufacturer. |
| 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 |

| | | | |
|--|------|-----------------|--------------------------------------|
| | | | (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 x (0.75 - 2.5) 2 x (0.75 - 1.5) |

Design verification as per IEC/EN 61439

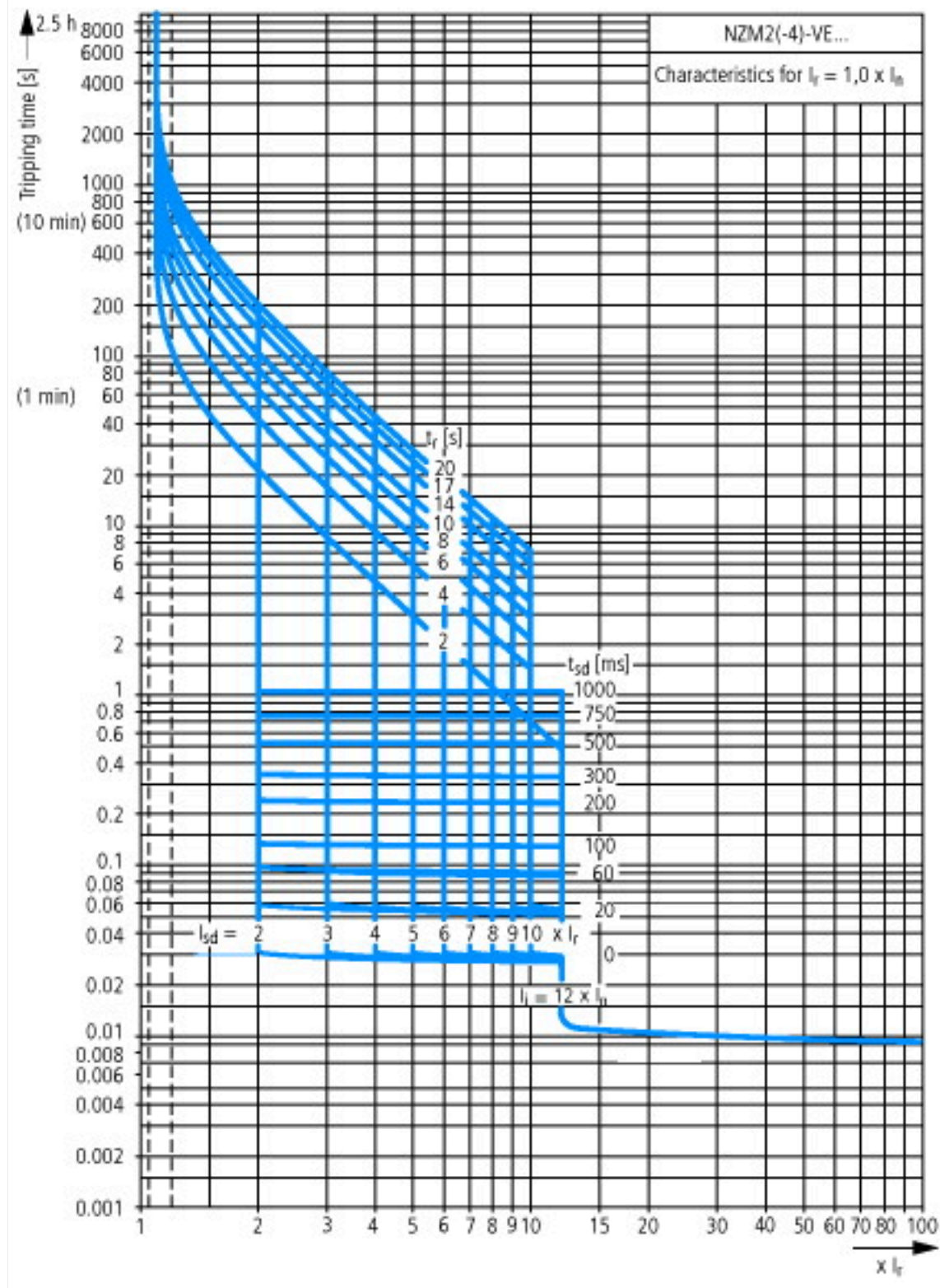
| | | | |
|--|------------------|----|--|
| Technical data for design verification | | | |
| Rated operational current for specified heat dissipation | I _n | A | 160 |
| Equipment heat dissipation, current-dependent | P _{vid} | W | 21.12 |
| Operating ambient temperature min. | | °C | -25 |
| Operating 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 (ecI@ss10.0.1-27-37-04-09 [AJZ716013]) | | | |
| Rated permanent current I _u | | A | 160 |
| Rated voltage | | V | 1000 - 1000 |
| Rated short-circuit breaking capacity I _{cu} at 400 V, 50 Hz | | kA | 150 |
| Overload release current setting | | A | 80 - 160 |

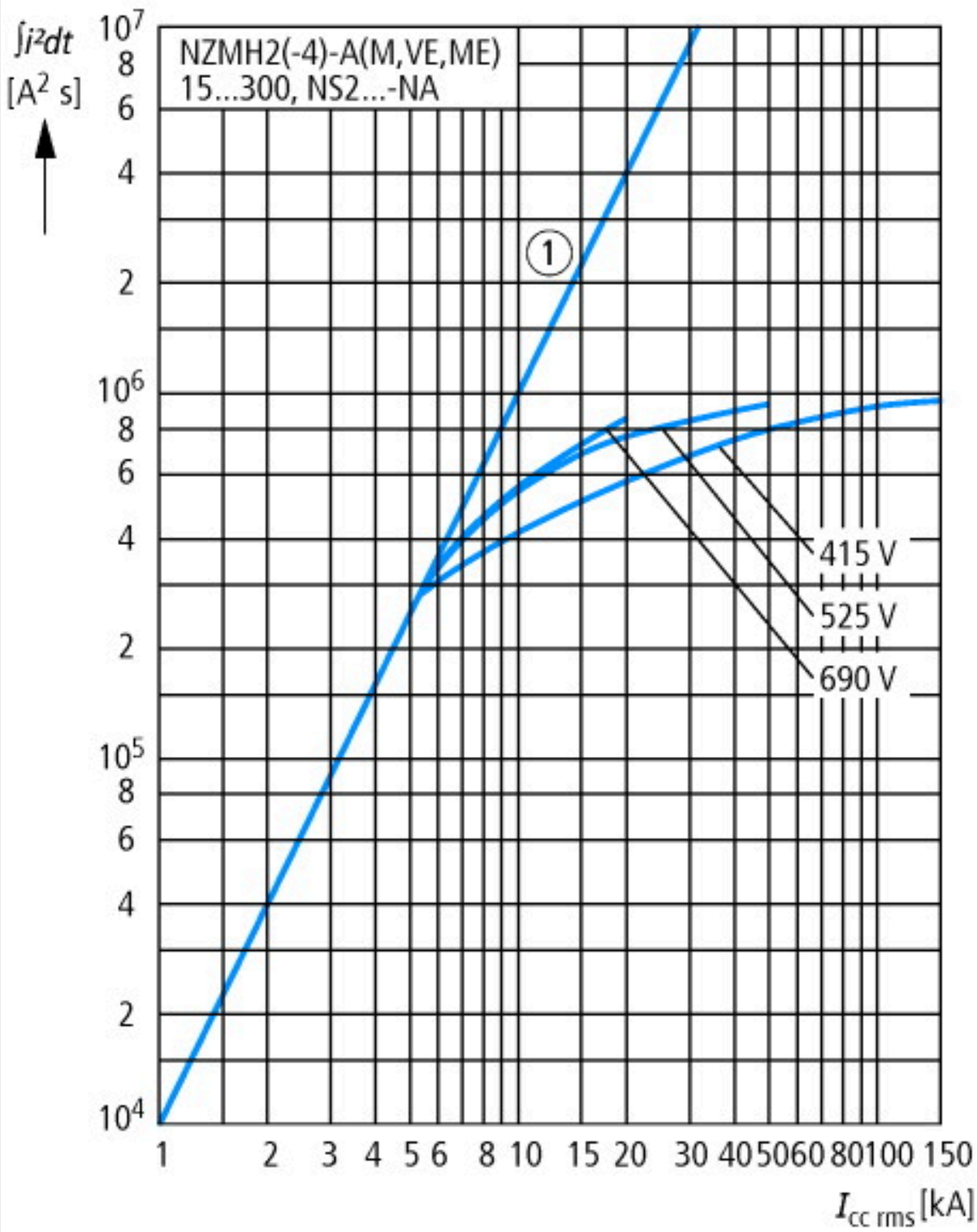
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|---|---|--|
| Adjustment range short-term delayed short-circuit release | A | 160 - 1600 |
| Adjustment range undelayed short-circuit release | A | 1920 - 1920 |
| Integrated earth fault protection | | No |
| Type of electrical connection of main 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 |
| 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 |

Characteristics





Let-through current

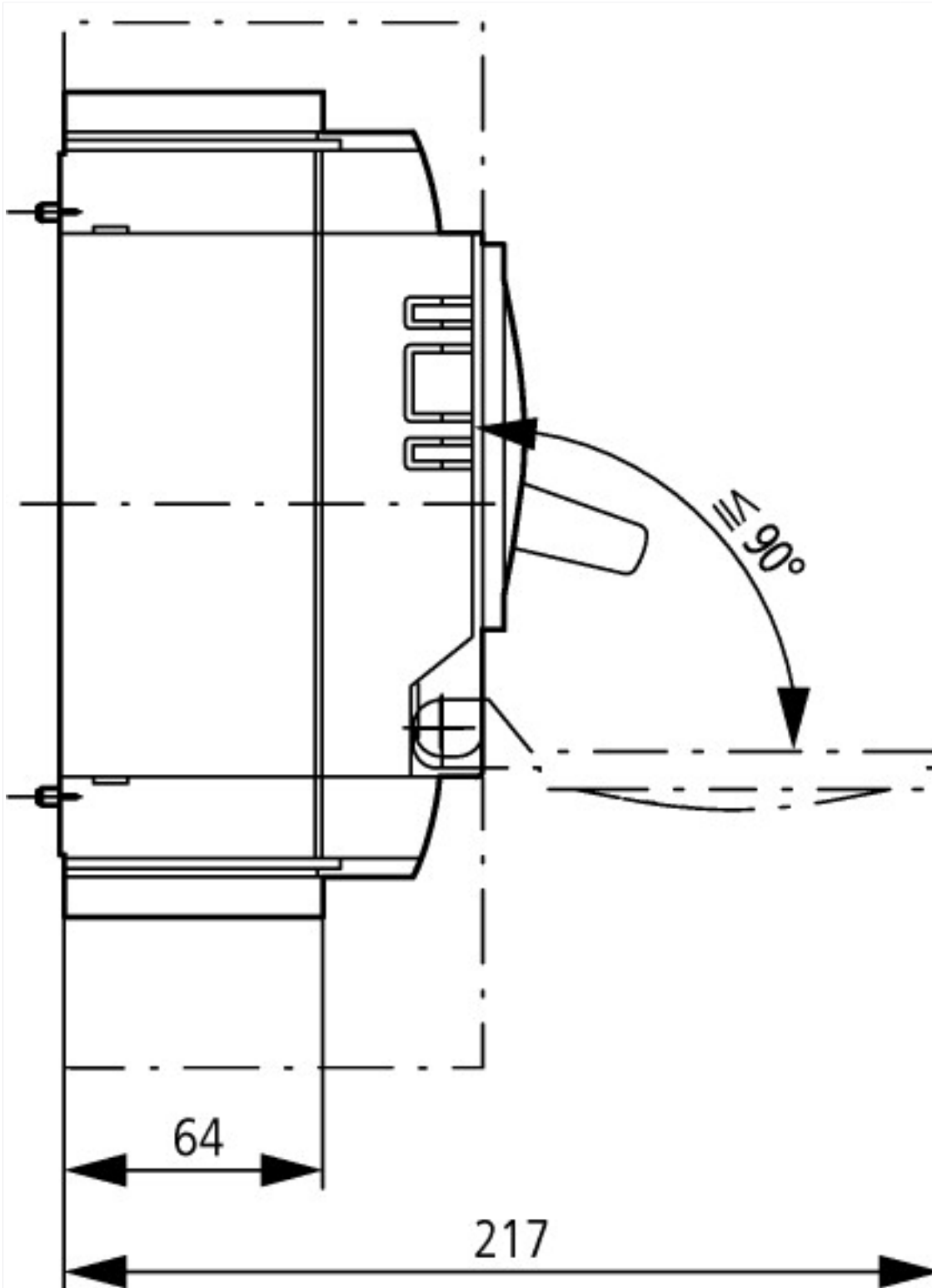


Let-through energy

Dimensions



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



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/IL01206006Z2015_11.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 |
| Selectivity, Back Up Protection and Coordination Guide | http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1198913.pdf |
| Setting-Specific Representation of Tripping Characteristics and Competent Assessment of their Interaction | 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 |
| CurveSelect characteristics program | http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/index.htm |

| | |
|---|---|
| Eaton configurator | http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/ConfiguratorCircuitBreaker/index.htm |
| additional technical information for NZM power switch | ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technik_de_en.pdf |