

**Switch-disconnector 3p, 160A**

Part no. **PN1-160**
281235
EL Number **4359000**
(Norway)

General specifications

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| Product name | Eaton Moeller series NZM switch-disconnector |
| Part no. | PN1-160 |
| EAN | 4015082812355 |
| Product Length/Depth | 88 millimetre |
| Product height | 145 millimetre |
| Product width | 90 millimetre |
| Product weight | 0.886 kilogram |
| Compliances | RoHS conform |
| Certifications | IEC/EN 60947 IEC |
| Product Tradename | NZM |
| Product Type | Switch-disconnector |
| Product Sub Type | None |
| Catalog Notes | Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. Isolating characteristics to IEC/EN 60947-3 and VDE 0660. Busbar tag shroud to VDE 0160 Part 100. |

Delivery program

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| Application | Use in unearthed supply systems at 690 V |
| Type | Switch-disconnector |
| Circuit breaker frame type | PN1 |
| Number of poles | Three-pole |
| Amperage Rating | 160 A |
| Features | Version as emergency stop installation Version as maintenance-/service switch Version as main switch |
| Special features | Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. Isolating characteristics to IEC/EN 60947-3 and VDE 0660. Busbar tag shroud to VDE 0160 Part 100. Rated current = rated uninterrupted current: 160 A |
| Used with | Enclosure 100 x 800 x 800 mm |

Technical Data - Electrical

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| Voltage rating | 690 V - 690 V |
| Rated operating voltage (Ue) at AC - max | 690 V |
| Rated insulation voltage (Ui) | 690 V |
| Rated impulse withstand voltage (Uimp) at auxiliary contacts | 6000 V |
| Rated impulse withstand voltage (Uimp) at main contacts | 6000 V |
| Rated conditional short-circuit current (Iq) | 0 kA |
| Rated operational current | 160 A (415 V AC-22/23A, making and breaking capacity) 160 A (690 V AC-22/23A, making and breaking capacity) |
| Rated permanent current at AC-21, 400 V | 0 A |
| Rated permanent current at AC-23, 400 V | 0 A |
| Rated conditional short-circuit current with back-up fuse | 100 kA at 400/415 V 160 gR 80 kA at 690 V |
| Rated conditional short-circuit current with downstream fuse | 10 kA at 690 V 160 gR 100 kA at 400/415 V |
| Rated short-time withstand current (Icw) | 2 kA |
| Rated short-time withstand current (t = 0.3 s) | 2 kA |
| Rated short-time withstand current (t = 1 s) | 2 kA |
| Rated operating frequency | 50 Hz |
| Rated short-circuit making capacity Icm at 690 V, 50/60 Hz | 2.8 kA |

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| Rated operating power at AC-3, 400 V | | 0 kW |
| Rated operating power at AC-23, 400 V | | 90 kW |
| Switching power at 400 V | | 0 kW |
| Short-circuit protective device fuses - max | | 160 A gL |
| Electrical connection type of main circuit | | Frame clamp |
| Isolation | | 300 V AC (between the auxiliary contacts) 500 V AC (between auxiliary contacts and main contacts) |
| Number of operations per hour - max | | 120 |
| Handle type | | Rocker lever |
| Overvoltage category | | III |
| Pollution degree | | 3 |
| Lifespan, electrical | | 5000 operations at 690 V AC-1 7500 operations at 415 V AC-1 1000 operations at 400 V AC-23A 1000 operations at 415 V AC-23A 1000 operations at 690 V AC-23A 7500 operations at 400 V AC-1 |
| Direction of incoming supply | | As required |
| Technical Data - Mechanical | | |
| Mounting Method | | Fixed Built-in device fixed built-in technique Distribution board installation Ground mounting Intermediate mounting |
| Degree of protection | | IP20 (basic protection type, in the area of the HMI devices) Other |
| Degree of protection (IP), front side | | IP20 IP66 (with door coupling rotary handle) IP40 (with insulating surround) |
| Degree of protection (terminations) | | IP10 (tunnel terminal) IP00 (terminations, phase isolator and band terminal) |
| Protection against direct contact | | Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110 |
| Shock resistance | | 20 g (half-sinusoidal shock 20 ms) |
| Number of auxiliary contacts (change-over contacts) | | 0 |
| Number of auxiliary contacts (normally closed contacts) | | 0 |
| Number of auxiliary contacts (normally open contacts) | | 0 |
| Number of switches | | 1 |
| Handle color | | Black |
| Switch positions | | I, 0 |
| Climatic proofing | | Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78 |
| Special features | | Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. Isolating characteristics to IEC/EN 60947-3 and VDE 0660. Busbar tag shroud to VDE 0160 Part 100. Rated current = rated uninterrupted current: 160 A |
| Lifespan, mechanical | | 20000 operations |
| Technical Data - Mechanical - Terminals | | |
| Standard terminals | | Box terminal |
| Optional terminals | | Connection on rear. Screw terminal. Tunnel terminal |
| Terminal capacity (aluminum solid conductor/cable) | | 10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 10 mm ² - 16 mm ² (2x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal |
| Terminal capacity (aluminum stranded conductor/cable) | | 25 mm ² - 95 mm ² (1x) at 1-hole tunnel terminal |
| Terminal capacity (copper busbar) | | M6 at rear-side screw connection Max. 16 mm x 5 mm direct at switch rear-side connection Min. 12 mm x 5 mm direct at switch rear-side connection |
| Terminal capacity (copper solid conductor/cable) | | 10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 10 mm ² - 16 mm ² (1x) at box terminal 6 mm ² - 16 mm ² (2x) at box terminal 6 mm ² - 16 mm ² (2x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal |
| Terminal capacity (copper stranded conductor/cable) | | 25 mm ² - 70 mm ² (1x) direct at switch rear-side connection 6 mm ² - 25 mm ² (2x) at box terminal 25 mm ² - 95 mm ² (1x) at 1-hole tunnel terminal 10 mm ² - 70 mm ² (1x) at box terminal 25 mm ² (2x) direct at switch rear-side connection Terminal capacity hint: Up to 95 mm ² can be connected depending on the cable manufacturer |

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| Terminal capacity (copper strip) | | | Max. 9 segments of 9 mm x 0.8 mm at box terminal Min. 2 segments of 9 mm x 0.8 mm at box terminal |
| Design verification as per IEC/EN 61439 - technical data | | | |
| Rated operational current for specified heat dissipation (In) | | | 160 A |
| Equipment heat dissipation, current-dependent | | | 29.18 W |
| Ambient operating temperature - min | | | -25 °C |
| Ambient operating temperature - max | | | 70 °C |
| Ambient storage temperature - min | | | 40 °C |
| Ambient storage temperature - max | | | 70 °C |
| Design verification as per IEC/EN 61439 | | | |
| 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 Resist. of insul. mat. to abnormal heat/fire by internal elect. 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. |
| 10.9.2 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. |
| Additional information | | | |
| Functions | | | Interlockable Disconnectors/main switches |

Technical data ETIM 9.0

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| Low-voltage industrial components (EG000017) / Switch disconnector (low voltage) (EC000216) | | | |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Switch disconnector (ecl@ss13-27-37-14-03 [AKF060018]) | | | |
| Version as main switch | | | Yes |
| Version as maintenance-/service switch | | | Yes |
| Version as safety switch | | | No |
| Version as emergency stop installation | | | Yes |
| Version as reversing switch | | | No |
| Number of switches | | | 1 |
| Max. rated operation voltage Ue AC | | V | 690 |
| Rated operating voltage | | V | 690 - 690 |
| Rated permanent current Iu | | A | 160 |
| Rated permanent current at AC-23, 400 V | | A | 0 |
| Rated permanent current at AC-21, 400 V | | A | 0 |
| Rated operation power at AC-3, 400 V | | kW | 0 |
| Rated short-time withstand current Icw | | kA | 2 |
| Rated operation power at AC-23, 400 V | | kW | 90 |
| Switching power at 400 V | | kW | 0 |

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| Conditioned rated short-circuit current Iq | | kA | 0 |
| Number of poles | | | 3 |
| 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 |
| Motor drive optional | | | No |
| Motor drive integrated | | | No |
| Voltage release optional | | | No |
| Device construction | | | Built-in device fixed built-in technique |
| Suitable for floor mounting | | | Yes |
| Suitable for front mounting 4-hole | | | No |
| Suitable for front mounting centre | | | No |
| Suitable for distribution board installation | | | Yes |
| Suitable for intermediate mounting | | | Yes |
| Colour control element | | | Black |
| Type of control element | | | Rocker lever |
| Interlockable | | | Yes |
| Type of electrical connection of main circuit | | | Frame clamp |
| With pre-assembled cabling | | | No |
| Degree of protection (IP), front side | | | IP20 |
| Degree of protection (NEMA) | | | Other |
| Width | | mm | 90 |
| Height | | mm | 145 |
| Depth | | mm | 88 |
| Width in number of modular spacings | | | |