



Switch-disconnector 3p 160A BG2

Part no. N2-160
Catalog No. 266008

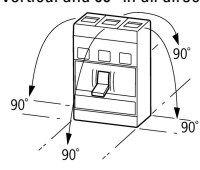
EL-Nummer (Norway) 0004315572

Delivery program

| | | | |
|--|-------------|------|--|
| Product range | | | Switch-disconnectors |
| Protective function | | | Disconnectors/main switches |
| Standard/Approval | | | IEC |
| Installation type | | | Fixed |
| Construction size | | | N2 |
| Description | | | 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. |
| Number of poles | | | 3 pole |
| Standard equipment | | | Screw connection |
| Switch positions | | | I, +, 0 |
| Rated current = rated uninterrupted current | $I_n = I_u$ | A | 160 |
| Short-circuit protection max. fuse gL-characteristic | | A gL | 250 |

Technical data

General

| | | | |
|---|--|------|---|
| Standards | | | IEC/EN 60947 |
| Protection against direct contact | | | Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110 |
| 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 |
| Mounting position | | | |
| Mounting position | | | Vertical and 90° in all directions  <ul style="list-style-type: none"> With residual-current release XFI: - NZM1, N1, NZM2, N2: vertical and 90° in all directions with plug-in adapter elements - NZM1, N1, NZM2, N2: vertical, 90° right/left with withdrawable unit: - NZM3, N3: vertical, 90° 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 area of the HMI devices: IP20 (basic protection type) |
| Enclosures | | | With insulating surround: IP40 With door coupling rotary handle: IP66 |
| Terminations | | | Tunnel terminal: IP10 Phase isolator and band terminal: IP00 |

Switch-disconnectors

| | | | |
|-----------------------------------|-----------|---|------|
| Rated surge voltage invariability | U_{imp} | | |
| Main contacts | | V | 8000 |

| | | | |
|---|---------------------------------|------|--|
| Auxiliary contacts | | V | 6000 |
| Rated operational voltage | U _e | V AC | 690 |
| Rated operating frequency | f | Hz | 50/60 |
| Rated current = rated uninterrupted current | I _n = I _u | A | 160 |
| Overvoltage category/pollution degree | | | III/3 |
| Rated insulation voltage | U _i | V | 690 |
| Use in unearthed supply systems | | V | ≤ 690 |
| Other technical data (sheet catalogue) | | | Weight Temperature dependency, Derating Effective power loss |

Rated short-circuit making capacity

| | | | |
|---------------|----------------|----|-----|
| 690 V 50/60 H | I _c | kA | 5.5 |
|---------------|----------------|----|-----|

Rated short-time withstand current

| | | | |
|-----------|-----------------|----|---|
| t = 0.3 s | I _{cw} | kA | 3.5 |
| t = 1 s | I _{cw} | kA | 3.5 |
| | | | The rated short-time withstand current for PN2/N2 in conjunction with earth-fault release NZM2-4-XFI...I _{cw} = 1.5 kA |

Rated conditional short-circuit current

| | | | |
|----------------------|--|---------|------------------------|
| With back-up fuse | | A gG/gL | PN2(N2)-160...250: 250 |
| 400 ... 415 V | | kA | 100 |
| 690 V | | kA | 80 |
| With downstream fuse | | A gG/gL | PN2(N2)-160...250: 250 |
| 400 ... 415 V | | kA | 100 |
| 690 V | | kA | 80 |

Rated making and breaking capacity

| | | | |
|---------------------------|----------------|-------|-------|
| Rated operational current | I _e | A | |
| AC-22/23A | | | |
| 415 V | I _e | A | 250 |
| 690 V | I _e | A | 250 |
| Lifespan, mechanical | Operations | | 20000 |
| Max. operating frequency | | Ops/h | 120 |

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 |

Terminal capacity

| | | | |
|--|--|-----------------|---|
| Standard equipment | | | Screw connection |
| Optional accessories | | | Box terminal Tunnel terminal connection on rear |
| Copper conductors and cables | | | |
| 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 | | | |
| 1-hole | | 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 (6 - 16) |

| | | | |
|---|------|-----------------|--------------------------------------|
| Stranded | | mm ² | 1 x (25 - 185) 2 x (25 - 70) |
| Al conductors, Al cable | | | |
| Tunnel terminal | | | |
| Solid | | mm ² | 1 x 16 |
| Stranded | | | |
| 1-hole | | 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 - 185) 2 x (25 - 70) |
| 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 |

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 | 19.66 |
| 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) / Switch disconnecter (EC000216) | | | |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Switch disconnecter (ecI@ss10.0.1-27-37-14-03 [AKF060013]) | | | |
| 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 | 3.5 |
| Rated operation power at AC-23, 400 V | | kW | 90 |
| Switching power at 400 V | | kW | 0 |
| 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 | | | Yes |
| Motor drive integrated | | | No |
| Voltage release optional | | | Yes |
| Device construction | | | Built-in device fixed built-in technique |
| Suitable for ground 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 | | | Screw connection |
| Degree of protection (IP), front side | | | IP20 |
| Degree of protection (NEMA) | | | |



Additional product information (links)

IL01206006Z (AWA1230-1916) Circuit-Breaker, basic unit

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|--|---|
| IL01206006Z (AWA1230-1916) Circuit-Breaker, basic unit | https://es-assets.eaton.com/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 |
| 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 | https://es-assets.eaton.com/DOCUMENTATION/PDF/nzm_techinc_de_en.pdf |