102684
NS2-160-NA

DELIVERY PROGRAM

Product range
Switch-disconnectors

Protective function
Disconnectors/main switches

Standard/Approval
UL/CSA, IEC

Installation type
Fixed

Construction size
N2

Description
IEC/EN 60947-2: Circuit-breakers without overcurrent (CBI-X) with main switch characteristics and isolating characteristics to IEC/EN 60204.

Number of poles
3 pole

Standard equipment
Screw connection

Switch positions
I, +, 0

Rated current = rated uninterrupted current [$I_n = I_u$]
160 A

Rated current = rated uninterrupted current [$I_n = I_u$]
160 A

Switching capacity

SCCR 480Y/277 V 60 Hz [I_{cu}]
100 kA

SCCR 480 V 60 Hz [I_{cu}]
100 kA

SCCR 600Y/347 V 60 Hz [I_{cu}]
50 kA

Short-circuit releases [I_{rm}]

Non-delayed [$I_i = I_n$ x ...]
2500 A fixed

TECHNICAL DATA

Switch-disconnectors

Rated surge voltage invariability [U_{imp}]
Main contacts
8000 V

Rated surge voltage invariability [U_{imp}]
Auxiliary contacts
6000 V

Rated operational voltage [Ue]
690 V AC

Rated current = rated uninterrupted current [$I_n = I_u$]
160 A

Rated current = rated uninterrupted current [$I_n = I_u$]
160 A

Rated uninterrupted current [I_u]
IEC/EN 61131-3 [I_u]
250 A

Rated uninterrupted current [I_u]
UL 489, CSA 22.2 No. 5.1 [I_u]
250 A

Overvoltage category/pollution degree
III/3

Rated insulation voltage [U_i]
1000 V

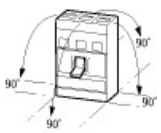
Other technical data (sheet catalogue)
Weight
Temperature dependency, Derating
Effective power loss

Ambient temperature
Ambient temperature, storage
- 40 - + 70 °C

Ambient temperature
Operation
-25 - +70 °C

Mounting position

Vertical and 90° in all directions



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)

Degree of protection
Enclosures
With insulating surround: IP40
With door coupling rotary handle: IP66

Degree of protection
Terminations
Tunnel terminal: IP10
Phase isolator and band terminal: IP00

Switching capacity (UL489, CSA 22.2 No. 5.1)

SCCR 240 V 60 Hz [I_{cu}]
150 kA

SCCR 480Y/277 V 60 Hz [I_{cu}]
100 kA

SCCR 480 V 60 Hz [I_{cu}]
100 kA

SCCR 600Y/347 V 60 Hz [I_{cu}]
50 kA

Rated short-circuit making capacity [I_{cm}]

240 V 50/60 Hz [I_{cm}]
330 kA

400/415 V 50/60 Hz [I_{cm}]
330 kA

440 V 50/60 Hz [I_{cm}]
286 kA

525 V 50/60 Hz [I_{cm}]
105 kA

690 V 50/60 H [Ic]
53 kA

Rated short-circuit breaking capacity I_{cn} [I_{cn}]

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
240 V 50/60 Hz [I_{cu}]
150 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
400/415 V 50 Hz [I_{cu}]
150 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
440 V 50/60 Hz [I_{cu}]
130 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
525 V 50/60 Hz [I_{cu}]
50 kA

Icu to IEC/EN 60947 test cycle O-t-CO [Icu]
690 V 50/60 Hz [I_{cu}]
20 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
230 V 50/60 Hz [I_{cs}]
150 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
400/415 V 50/60 Hz [I_{cs}]
150 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
440 V 50/60 Hz [I_{cs}]
130 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
525 V 50/60 Hz [I_{cs}]
37.5 kA

Ics to IEC/EN 60947 test cycle O-t-CO-t-CO [Ics]
690 V 50/60 Hz [I_{cs}]
5 kA

Lifespan, mechanical [Operations]
20000

Max. operating frequency
120 Ops/h

Lifespan, electrical

400 V 50/60 Hz [Operations]
10000

415 V 50/60 Hz [Operations]
10000

690 V 50/60 Hz [Operations]
7500

400 V 50/60 Hz [Operations]
6500

415 V 50/60 Hz [Operations]
6500

690 V 50/60 Hz [Operations]
5000

< 10 ms

Terminal capacity IEC

Standard equipment
Screw connection

Optional accessories
Box terminal
Tunnel terminal
connection on rear

Copper conductors and cables
Box terminal
Solid
1 x (10 - 16)
2 x (6 - 16) mm^2

Copper conductors and cables
Box terminal
Stranded
1 x (10 - 70) [3)]
2 x (6 - 25) mm^2

Copper conductors and cables
Tunnel terminal
Solid
1 x 16 mm^2

Copper conductors and cables
Tunnel terminal
Stranded
1-hole
1 x (25 - 185) mm^2

Copper conductors and cables
Bolt terminal and rear-side connection
Direct on the switch
Solid
1 x (10 - 16)
2 x (4 - 16) mm^2

Copper conductors and cables
Bolt terminal and rear-side connection
Direct on the switch
Stranded
1 x (25 - 185)
2 x (25 - 70) mm^2

Al conductors, Al cable
Tunnel terminal
Solid
1 x 16 mm^2

Al conductors, Al cable
Tunnel terminal
Stranded
1-hole

1 x (25 - 185) mm²

Al conductors, Al cable
Bolt terminal and rear-side connection
Direct on the switch
Solid
1 x (10 - 16)
2 x (10 - 16) mm²

Al conductors, Al cable
Bolt terminal and rear-side connection
Direct on the switch
Stranded
1 x (25 - 35)
2 x (25 - 35) mm²

Cu strip (number of segments x width x segment thickness)
Box terminal [min.]
2 x 9 x 0.8 mm

Cu strip (number of segments x width x segment thickness)
Box terminal [max.]
10 x 16 x 0.8
(2x) 8 x 15.5 x 0.8 mm

Cu strip (number of segments x width x segment thickness)
Bolt terminal and rear-side connection
Flat copper strip, with holes [min.]
2 x 16 x 0.8 mm

Cu strip (number of segments x width x segment thickness)
Bolt terminal and rear-side connection
Flat copper strip, with holes [max.]
10 x 24 x 0.8 mm

Copper busbar (width x thickness) [mm]
Bolt terminal and rear-side connection
Screw connection
M8

Copper busbar (width x thickness) [mm]
Bolt terminal and rear-side connection
Direct on the switch [min.]
16 x 5 mm

Copper busbar (width x thickness) [mm]
Bolt terminal and rear-side connection
Direct on the switch [max.]

24 x 8 mm

NA terminal capacity

Copper conductors and cables
Box terminal
solid
1 x (12 - 6) AWG

Copper conductors and cables
Box terminal
Stranded
1 x (4 - 350) AWG/kcmil

Copper conductors and cables
Tunnel terminal
solid
1 x 6 AWG

Copper conductors and cables
Tunnel terminal
Stranded
1-hole
1 x (4 - 350) AWG/kcmil

Copper conductors and cables
Bolt terminal and rear-side connection
Direct on the switch
solid
1 x (12 - 6) AWG

Cu strip (number of segments x width x segment thickness)
Box terminal [min.]
2 x 9 x 0.8 mm

Cu strip (number of segments x width x segment thickness)
Box terminal [max.]
10 x 16 x 0.8 mm

Cu strip (number of segments x width x segment thickness)
Bolt terminal and rear-side connection
Flat copper strip, with holes [min.]
2 x 16 x 0.8 mm

Cu strip (number of segments x width x segment thickness)
Bolt terminal and rear-side connection

Flat copper strip, with holes [max.]
10 x 16 x 0.8 mm

Copper busbar (width x thickness) [mm]
Bolt terminal and rear-side connection
Screw connection
M8

Copper busbar (width x thickness) [mm]
Bolt terminal and rear-side connection
Direct on the switch [min.]
16 x 5 mm

Copper busbar (width x thickness) [mm]
Bolt terminal and rear-side connection
Direct on the switch [max.]
20 x 5 mm

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat dissipation [I_n]
160 A

Equipment heat dissipation, current-dependent [P_{vid}]
24.35 W

Operating ambient temperature min.
-25 °C

Operating ambient temperature max.
+70 °C

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 Strength of materials and parts
10.2.3.1 Verification of thermal stability of

enclosures
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.2 Verification of resistance of insulating materials to normal heat
Meets the product standard's requirements.

10.2 Strength of materials and parts
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 Strength of materials and parts
10.2.4 Resistance to ultra-violet (UV) radiation
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.5 Lifting
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts
10.2.6 Mechanical impact
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts
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 Insulation properties
10.9.3 Impulse withstand voltage
Is the panel builder's responsibility.

10.9 Insulation properties
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 (ecl@ss10.0.1-27-37-04-09 [AJZ716013])

Rated permanent current Iu
160 A

Rated voltage
690 - 690 V

Rated short-circuit breaking capacity Icu at 400 V, 50 Hz
150 kA

Overload release current setting
0 - 0 A

Adjustment range short-term delayed short-circuit release
0 - 0 A

Adjustment range undelayed short-circuit release
2500 - 2500 A

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

APPROVALS

Product Standards
UL 489; CSA-C22.2 No. 5-09; IEC 60947-2; CE marking

UL File No.
E148671

UL Category Control No.

WJAZ

CSA File No.
022086

CSA Class No.
4652-06

North America Certification
UL listed, CSA certified

Specially designed for North America
Yes

Suitable for
Feeder circuits, branch circuits

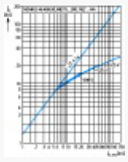
Current Limiting Circuit-Breaker
No

Max. Voltage Rating
600Y/347 V

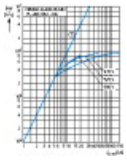
Degree of Protection
IEC: IP20; UL/CSA Type: -

CHARACTERISTICS

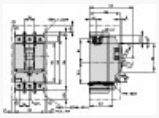
Characteristic curve



Characteristic curve



DIMENSIONS



□ Blow out area, minimum clearance to adjacent parts
□ Mnimum clearance to adjacent parts