



**102687**  
**NS3-400-NA**

Overview

Specifications

Resources



## DELIVERY PROGRAM

[Delivery program](#)

Product range  
Switch-disconnectors

[Technical data](#)

Protective function  
Disconnectors/main switches

[Design verification as per IEC/EN 61439](#)

Standard/Approval  
UL/CSA, IEC

[Technical data ETIM 7.0](#)

Installation type  
Fixed

[Approvals](#)

Construction size  
N3

[Characteristics](#)

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

[Dimensions](#)

Number of poles

3 pole

Standard equipment

Screw connection

Switch positions

I, +, 0

Rated current = rated uninterrupted current [ $I_h = I_u$ ]

400 A

Rated current = rated uninterrupted current [ $I_h = I_u$ ]

400 A

## Switching capacity

SOCR 480Y/277 V 60 Hz [ $I_{cu}$ ]

100 kA

SOCR 480 V 60 Hz [ $I_{cu}$ ]

100 kA

SOCR 600Y/347 V 60 Hz [ $I_{cu}$ ]

50 kA

SOCR 600 V 60 Hz [ $I_{cu}$ ]

50 kA

## Short-circuit releases $I_{\text{rm}}$

Non-delayed  $I_{\text{rm}}$  [ $I = I_h \times \dots$ ]

6600 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 [ $U_e$ ]  
690 V AC

Rated current = rated uninterrupted current [ $I_h = I_u$ ]  
400 A

Rated current = rated uninterrupted current [ $I_h = I_u$ ]  
400 A

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

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

Overvoltage category/pollution degree  
III/3

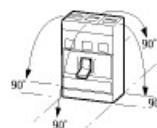
Rated insulation voltage [ $U_i$ ]  
1000 V

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 HM 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)

SOCR 240 V 60 Hz [ $I_{cu}$ ]

150 kA

SOCR 480Y/277 V 60 Hz [ $I_{cu}$ ]

100 kA

SOCR 480 V 60 Hz [ $I_{cu}$ ]

100 kA

SOCR 600Y/347 V 60 Hz [ $I_{cu}$ ]

50 kA

SCCR 600 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 [ $I_{cm}$ ]  
143 kA

690 V 50/60 Hz [ $I_c$ ]  
74 kA

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

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

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

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

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

$I_{cu}$  to IEC/EN 60947 test cycle O-t-OO [ $I_{cu}$ ]  
690 V 50/60 Hz [ $I_{cu}$ ]  
35 kA

$I_{cs}$  to IEC/EN 60947 test cycle O-t-OO-t-OO [ $I_{cs}$ ]  
230 V 50/60 Hz [ $I_{cs}$ ]

150 kA

Ics to IEC/EN 60947 test cycle O-t-OO-t-OO [Ics]  
400/415 V 50/60 Hz [Ics]  
150 kA

Ics to IEC/EN 60947 test cycle O-t-OO-t-OO [Ics]  
440 V 50/60 Hz [Ics]  
130 kA

Ics to IEC/EN 60947 test cycle O-t-OO-t-OO [Ics]  
525 V 50/60 Hz [Ics]  
33 kA

Ics to IEC/EN 60947 test cycle O-t-OO-t-OO [Ics]  
690 V 50/60 Hz [Ics]  
9 kA

Lifespan, mechanical [Operations]  
15000

Max. operating frequency  
60 Ops/h

### Lifespan, electrical

400 V 50/60 Hz [Operations]  
5000

415 V 50/60 Hz [Operations]  
3000

690 V 50/60 Hz [Operations]  
3000

400 V 50/60 Hz [Operations]  
2000

415 V 50/60 Hz [Operations]  
2000

690 V 50/60 Hz [Operations]  
2000

< 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  
2 x 16 mm<sup>2</sup>

Copper conductors and cables  
Box terminal  
Stranded  
1 x (35 - 240)  
2 x (25 - 120) mm<sup>2</sup>

Copper conductors and cables  
Tunnel terminal  
Stranded  
1-hole  
1 x (25 - 185) mm<sup>2</sup>

Copper conductors and cables  
Tunnel terminal  
Stranded  
Double hole  
1 x (50 - 240)  
2 x (50 - 240) mm<sup>2</sup>

Copper conductors and cables  
Bolt terminal and rear-side connection  
Direct on the switch  
Solid  
1 x 16  
2 x 16 mm<sup>2</sup>

Copper conductors and cables  
Bolt terminal and rear-side connection  
Direct on the switch  
Stranded  
1 x (25 - 240)  
2 x (25 - 240) mm<sup>2</sup>

Copper conductors and cables  
Bolt terminal and rear-side connection  
Connection width extension  
Connection width extension  
2 x 300 mm<sup>2</sup>

Al conductors, Al cable  
Tunnel terminal  
Solid  
1 x 16 mm<sup>2</sup>

Al conductors, Al cable  
Tunnel terminal  
Stranded  
1-hole  
1 x (25 - 185)<sup>2)</sup> mm<sup>2</sup>

Al conductors, Al cable  
Tunnel terminal  
Stranded  
2)<sup>2)</sup> Up to 240 mm<sup>2</sup> can be connected depending on  
the cable manufacturer.

Al conductors, Al cable  
Tunnel terminal  
Stranded  
Double hole  
1 x (50 - 240)  
2 x (50 - 240) mm<sup>2</sup>

Al conductors, Al cable  
Bolt terminal and rear-side connection  
Direct on the switch  
Solid  
1 x 16  
2 x (10 - 16) mm<sup>2</sup>

Al conductors, Al cable  
Bolt terminal and rear-side connection  
Direct on the switch  
Stranded  
1 x (25 - 120)  
2 x (25 - 120) mm<sup>2</sup>

Qu strip (number of segments x width x segment  
thickness)  
Box terminal [min.]  
6 x 16 x 0.8 mm

Qu strip (number of segments x width x segment  
thickness)  
Box terminal [max.]

10 x 24 x 1.0  
+ 5 x 24 x 1.0  
(2 x) 8 x 24 x 1.0 mm

Cu strip (number of segments x width x segment thickness)  
Bolt terminal and rear-side connection  
Flat copper strip, with holes [min.]  
6 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 32 x 1.0 + 5 x 32 x 1.0 mm

Cu strip (number of segments x width x segment thickness)  
Bolt terminal and rear-side connection  
Connection width extension  
(2 x) 10 x 50 x 1.0 mm

Copper busbar (width x thickness) [mm]  
Bolt terminal and rear-side connection  
Screw connection  
M10

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

Copper busbar (width x thickness) [mm]  
Bolt terminal and rear-side connection  
Direct on the switch [max.]  
30 x 10  
+ 30 x 5 mm

Copper busbar (width x thickness) [mm]  
Bolt terminal and rear-side connection  
Connection width extension  
Connection width extension [max.]  
2 x (10 x 50) mm

## NA terminal capacity

Copper conductors and cables  
Box terminal  
Stranded  
1 x (2 - 500) AWG/kcmil

Copper conductors and cables  
Tunnel terminal  
solid  
1 x 6 AWG

Copper conductors and cables  
Tunnel terminal  
Stranded  
Double hole fitting  
1 x (0 - 500)  
2 x (0 - 500) AWG/kcmil

Copper conductors and cables  
Bolt terminal and rear-side connection  
Connection width extension  
Connection width extension  
2 x 500 AWG/kcmil

Cu strip (number of segments x width x segment thickness)  
Box terminal [min.]  
6 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.]  
6 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 32 x 1.0 + 5 x 32 x 1.0 mm

Cu strip (number of segments x width x segment thickness)  
Bolt terminal and rear-side connection  
Connection width extension  
(2 x) 10 x 50 x 1.0 mm

Copper busbar (width x thickness) [mm]  
Bolt terminal and rear-side connection  
Screw connection  
M10

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

Copper busbar (width x thickness) [mm]  
Bolt terminal and rear-side connection  
Direct on the switch [max.]  
30 x 10  
+ 30 x 5 mm

Copper busbar (width x thickness) [mm]  
Bolt terminal and rear-side connection  
Connection width extension  
Connection width extension [max.]  
2 x (10 x 50) mm

## DESIGN VERIFICATION AS PER IEC/EN 61439

### Technical data for design verification

Rated operational current for specified heat dissipation [ $I_h$ ]  
400 A

Equipment heat dissipation, current-dependent [ $P_{vid}$ ]  
48 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  $I_p$   
400 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  
6600 - 6600 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

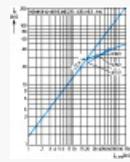
Current Limiting Circuit-Breaker  
No

Max. Voltage Rating  
600 V

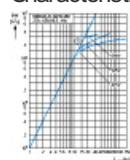
Degree of Protection  
IEC: IP20; UL/CSA Type: -

## CHARACTERISTICS

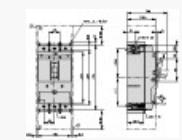
Characteristic curve



Characteristic curve



## DIMENSIONS



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

