

Circuit-breaker, 3p, 400A

Part no. **NZMN3-A400**
 Catalog No. **109670**

EL-Nummer
 (Norway) **4315515**



Powering Business Worldwide™

Similar to illustration

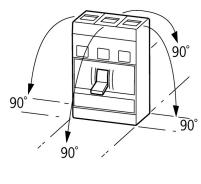
Delivery program

Product range	Circuit-breaker		
Protective function	System and cable protection		
Standard/Approval	IEC		
Installation type	Fixed		
Release system	Thermomagnetic release		
Construction size	NZM3		
Number of poles	3 pole		
Standard equipment	Screw connection		
Switching capacity			
400/415 V 50 Hz	I_{cu}	kA	50
Rated current = rated uninterrupted current			
Rated current = rated uninterrupted current	$I_n = I_u$	A	400
Setting range			
Overload trip		I_r	A 320 - 400
Short-circuit releases			
Non-delayed		$I_i = I_n \times \dots$	6 - 10
Short-circuit releases		I_{rm}	A 2400 - 4000

Technical data

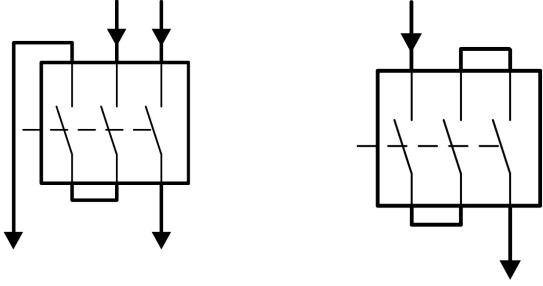
General			
Standards	IEC/EN 60947		
Protection against direct contact	Finger and back of hand proof to VDE 0106 Part 100		
Climatic proofing	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30		
Ambient temperature			
Ambient temperature, storage	°C	- 40 - + 70	
Operation	°C	- 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	Vertical and 90° in all directions		

Direction of incoming supply	as required
Degree of protection	
Device	In the operating controls area: IP20 (basic degree of protection)
Enclosures	With insulating surround: IP40 With door coupling rotary handle: IP66
Terminations	Tunnel terminal: IP10 Phase isolator and strip terminal: IP00
Other technical data (sheet catalogue)	Temperature dependency, Derating



With XFI earth-fault release:
 - NZM1, N1, NZM2, N2: vertical and 90° in all directions with plug-in unit
 - NZM1, N1, NZM2, N2: vertical, 90° right/left with withdrawable unit:
 - NZM3, N3: vertical, 90° right/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

Circuit-breakers

Rated current = rated uninterrupted current	$I_n = I_u$	A	400	
Rated surge voltage invariability	U_{imp}			
Main contacts		V	8000	
Auxiliary contacts		V	6000	
Rated operational voltage	U_e	V AC	690	
Rated operational voltage	U_e	V DC	750	
				The following settings are required in order to ensure correct tripping: The fast-response release will take longer to respond when used for DC applications. Because of this, the setting on the trip block inscription, which is specified for AC currents, must be set to a lower value for DC currents. DC correction factor for instantaneous release response value: o NZM1: 1.25 o NZM2: 1.35 o NZM3: 1.45 Example: NZM3 $I_e = 500A$. Desired DC tripping current: $10 * I_e = 5000A$. Calculation: • Desired DC value / correction factor = AC setting on trip block • $5000A / 1.45 = 3448 A \sim 7 * I_e =$ Value that needs to be set on the trip block Permitted circuit configurations: 
Overvoltage category/pollution degree			III/3	
Rated insulation voltage	U_i	V	1000	
Use in unearthing supply systems		V	≤ 690	
Switching capacity				
Rated short-circuit making capacity	I_{cm}			
240 V	I_{cm}	kA	187	
400/415 V	I_{cm}	kA	105	
440 V 50/60 Hz	I_{cm}	kA	74	
525 V 50/60 Hz	I_{cm}	kA	53	
690 V 50/60 Hz	I_c	kA	40	
Rated short-circuit breaking capacity I_{cn}	I_{cn}			

I _{cu} to IEC/EN 60947 test cycle 0-t-CO	I _{cu}	kA	
240 V 50/60 Hz	I _{cu}	kA	85
400/415 V 50/60 Hz	I _{cu}	kA	50
440 V 50/60 Hz	I _{cu}	kA	35
525 V 50/60 Hz	I _{cu}	kA	25
690 V 50/60 Hz	I _{cu}	kA	20
500 V DC	I _{cu}	kA	30
750 V DC	I _{cu}	kA	30
I _{cs} to IEC/EN 60947 test cycle 0-t-CO-t-CO	I _{cs}	kA	
240 V 50/60 Hz	I _{cs}	kA	85
400/415 V 50/60 Hz	I _{cs}	kA	50
440 V 50/60 Hz	I _{cs}	kA	35
525 V 50/60 Hz	I _{cs}	kA	13
690 V 50/60 Hz	I _{cs}	kA	5
500 V DC	I _{cs}	kA	30
750 V DC	I _{cs}	kA	30
			Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.
Rated short-time withstand current			
t = 0.3 s	I _{cw}	kA	3.3
t = 1 s	I _{cw}	kA	3.3
Utilization category to IEC/EN 60947-2			A
Lifespan, mechanical (of which max. 50 % trip by shunt/undervoltage release)	Operations		15000
Lifespan, electrical			
AC-1			
400 V 50/60 Hz	Operations		5000
415 V 50/60 Hz	Operations		5000
690 V 50/60 Hz	Operations		3000
AC-3			
400 V 50/60 Hz	Operations		2000
415 V 50/60 Hz	Operations		2000
690 V 50/60 Hz	Operations		2000
DC-1			
500 V DC	Operations		5000
750 V DC	Operations		5000
DC - 3			
500 V DC	Operations		2000
750 V DC	Operations		2000
Max. operating frequency		Ops/h	60
Total break time at short-circuit		ms	< 10

Terminal capacity

Standard equipment		Screw connection
Optional accessories		Box terminal Tunnel terminal connection on rear
Round copper conductor		
Box terminal		
Solid	mm ²	2 x 16
Stranded	mm ²	1 x (35 - 240) 2 x (25-120)
Tunnel terminal		
Solid	mm ²	1 x 16
Stranded		
1-hole	mm ²	1 x (16 - 185)
Bolt terminal and rear-side connection		

Direct on the switch			
Solid	mm ²	1 x 16 2 x 16	
Stranded	mm ²	1 x (25 - 240) 2 x (25 - 240)	
Connection width extension	mm ²		
Connection width extension	mm ²	2 x 300	
Al circular conductor			
Tunnel terminal			
Solid	mm ²	1 x 16	
Stranded	mm ²	1 x (25 - 185) ²⁾	
Double hole	mm ²	1 x (50 - 240) 2 x (50 - 240)	
Cu strip (number of segments x width x segment thickness)			
Box terminal	min.	mm	6 x 16 x 0.8
	max.	mm	10 x 24 x 1.0 + 5 x 24 x 1.0 (2 x) 8 x 24 x 1.0
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	6 x 16 x 0.8
Flat copper strip, with holes	max.	mm	10 x 32 x 1.0 + 5 x 32 x 1.0
Connection width extension		mm	(2 x) 10 x 50 x 1.0
Copper busbar (width x thickness)	mm		
Bolt terminal and rear-side connection			
Screw connection			M10
Direct on the switch	min.	mm	20 x 5
	max.	mm	30 x 10 + 30 x 5
Connection width extension		mm	
Connection width extension	max.	mm	2 x (10 x 50)
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	400
Equipment heat dissipation, current-dependent	P _{vid}	W	72.48
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 8.0

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}	A	400
Rated voltage	V	690 - 690
Rated short-circuit breaking capacity I_{cu} at 400 V, 50 Hz	kA	50
Overload release current setting	A	320 - 400
Adjustment range short-term delayed short-circuit release	A	0 - 0
Adjustment range undelayed short-circuit release	A	2400 - 4000
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		No
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 integrated 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