

Circuit-breaker, 3p, 400A, withdrawable unit

Part no. **NZMN3-A400-AVE**
Catalog No. **110859**



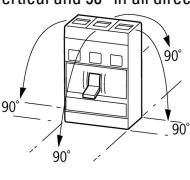
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Delivery program

Product range	Circuit-breaker			
Protective function	System and cable protection			
Standard/Approval	IEC			
Installation type	Withdrawable			
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	$I_n = I_u$	A	400	
Setting range				
Overload trip		I_r	A	320 - 400
Short-circuit releases				
Non-delayed		$I_i = I_n \times \dots$		6 - 10

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	
		 With XFI earth-fault release: <ul style="list-style-type: none"> - 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: 	

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

- 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
Overtoltage category/pollution degree			III/3
Rated insulation voltage	U_i	V	1000
Use in unearthed 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-C0	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
I _{cs} to IEC/EN 60947 test cycle 0-t-C0-t-C0	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
			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

Max. operating frequency		Ops/h	60		
Total break time at short-circuit		ms	< 10		
Terminal capacity					
Standard equipment	Screw connection				
Accessories required	NZM3-XAVS				
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	mm ²				
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				
Stranded	mm ²	1 x (25 - 185) ²⁾			
Double hole	mm ²	1 x (50 - 240) 2 x (50 - 240)			
²⁾ Up to 240 mm ² can be connected depending on the cable manufacturer.					
Cu strip (number of segments x width x segment thickness)					
Box terminal		min.	6 x 16 x 0.8		
		max.	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.	20 x 5		
		max.	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 _n	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 slide-in technique (withdrawable)
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