

Circuit-breaker, 3p, 20A

Part no. **NZMB1-A20**
 Catalog No. **280987**
 EL-Nummer **4359030**
 (Norway)

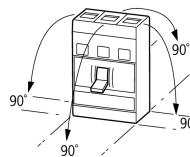


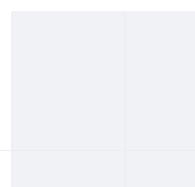
Powering Business Worldwide™

Delivery program

Product range		Circuit-breaker
Protective function		System and cable protection
Standard/Approval		IEC
Installation type		Fixed
Release system		Thermomagnetic release
Construction size		NZM1
Number of poles		3 pole
Standard equipment		Box terminal
Switching capacity		
400/415 V 50 Hz	I_{cu}	kA 25
Rated current = rated uninterrupted current		
Rated current = rated uninterrupted current	$I_n = I_u$	A 20
Setting range		
Overload trip		I_r A 15 - 20
Short-circuit releases		
Non-delayed		$I_i = I_n \times \dots$ 350 A fixed
Short-circuit releases		
min.		A 350

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		<p>Vertical and 90° in all directions</p>  <p>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</p>



- 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	In the operating controls area: IP20 (basic degree of protection) With insulating surround: IP40 With door coupling rotary handle: IP66		
Device	I _n = I _U	A	20
Enclosures	U _{imp}	V	6000
Terminations	U _e	V AC	440
Other technical data (sheet catalogue)	Temperature dependency, Derating		

Circuit-breakers

Rated current = rated uninterrupted current	I _n = I _U	A	20
Rated surge voltage invariability	U _{imp}	V	6000
Main contacts		V	6000
Auxiliary contacts		V	6000
Rated operational voltage	U _e	V AC	440
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U _i	V	690
Use in unearthing supply systems		V	≤ 440

Switching capacity

Rated short-circuit making capacity	I _{cm}		
240 V	I _{cm}	kA	63
400/415 V	I _{cm}	kA	53
440 V 50/60 Hz	I _{cm}	kA	53
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	30
400/415 V 50/60 Hz	I _{cu}	kA	25
440 V 50/60 Hz	I _{cu}	kA	25
I _{cs} to IEC/EN 60947 test cycle 0-t-C0-t-C0	I _{cs}	kA	
240 V 50/60 Hz	I _{cs}	kA	30
400/415 V 50/60 Hz	I _{cs}	kA	25
440 V 50/60 Hz	I _{cs}	kA	18.5

Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.

Utilization category to IEC/EN 60947-2		A	
Lifespan, mechanical (of which max. 50 % trip by shunt/undervoltage release)	Operations	20000	
Lifespan, electrical			
AC-1			
400 V 50/60 Hz	Operations	7500	
415 V 50/60 Hz	Operations	7500	
Max. operating frequency		Ops/h	120
Total break time at short-circuit		ms	< 10

Terminal capacity

Standard equipment		Box terminal	
Optional accessories		Screw connection Tunnel terminal connection on rear	
Round copper conductor			
Box terminal			
Solid	mm ²	1 x (6 - 16) 2 x (4 - 16)	
Stranded	mm ²	1 x (6 - 70) ³⁾ 2 x (4 - 25)	
Tunnel terminal		3) Up to 95 mm ² can be connected depending on the cable manufacturer.	

Solid		mm ²	1 x 16
Stranded		mm ²	
1-hole		mm ²	1 x (25 - 95)
Bolt terminal and rear-side connection			
Direct on the switch			
Solid		mm ²	1 x (6 - 16) 2 x (4 - 16)
Stranded		mm ²	1 x (6 - 70) ³⁾ 2 x (4 - 25)
			³⁾ Up to 95 mm ² can be connected depending on the cable manufacturer.
Al circular conductor			
Tunnel terminal			
Solid		mm ²	1 x 16
Stranded		mm ²	
Stranded		mm ²	1 x (25 - 95)
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 - 35) 2 x (25 - 35)
Cu strip (number of segments x width x segment thickness)			
Box terminal		min.	mm
		max.	mm
			2 x 9 x 0.8
			9 x 9 x 0.8
Copper busbar (width x thickness)		mm	
Bolt terminal and rear-side connection			
Screw connection			M6
Direct on the switch		min.	mm
		max.	mm
			12 x 5
			16 x 5
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	20
Equipment heat dissipation, current-dependent	P _{vid}	W	9.82
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	440 - 440
Rated short-circuit breaking capacity I_{cu} at 400 V, 50 Hz	kA	25
Overload release current setting	A	15 - 20
Adjustment range short-term delayed short-circuit release	A	0 - 0
Adjustment range undelayed short-circuit release	A	350 - 350
Integrated earth fault protection		No
Type of electrical connection of main circuit		Frame clamp
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 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		No
Degree of protection (IP)		IP20