

## Circuit-breaker, 3p, 160A

Part no.	<b>NZMB2-M160</b>
Catalog No.	<b>265716</b>
EL-Nummer (Norway)	<b>4315565</b>

Similar to illustration

## Delivery program

Product range	Circuit-breaker		
Protective function	Motor protection		
Standard/Approval	IEC		
Installation type	Fixed		
Release system	Thermomagnetic release		
Construction size	NZM2		
Description	Tripping class 10 A IEC/EN 60947-4-1, IEC/EN 60947-2 The circuit-breaker fulfills all requirements for AC-3 switching category.		
Number of poles	3 pole		
Standard equipment	Screw connection		

## Switching capacity

400/415 V 50 Hz	$I_{cu}$	kA	25
Rated current = rated uninterrupted current	$I_n = I_u$	A	160

## Setting range

Overload trip	$I_r$	A	125 - 160
Short-circuit releases	$I_i = I_n \times \dots$		8 - 14
Non-delayed			

## Motor rating AC-3 50/60 Hz

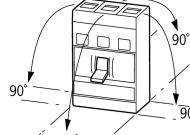
380 V 400 V	P	kW	75
400 V	P	kW	75

## Motor rating AC-3 50/60 Hz

400 V	$I_e$	A	134

## 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	Vertical and 90° in all directions	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
Mounting position				
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	
<b>Circuit-breakers</b>				
Rated current = rated uninterrupted current	$I_n = I_u$	A	160	
Rated surge voltage invariability	$U_{imp}$			
Main contacts		V	8000	
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	$\leq 440$	
<b>Switching capacity</b>				
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		10000	
415 V 50/60 Hz	Operations		7500	
Max. operating frequency		Ops/h	120	
Total break time at short-circuit		ms	< 10	
<b>Terminal capacity</b>				
Standard equipment			Screw connection	
Optional accessories			Box terminal Tunnel terminal connection on rear	
Round copper conductor				

Box terminal			
Solid	mm <sup>2</sup>	1 x (10 - 16) 2 x (6 - 16)	
Stranded	mm <sup>2</sup>	1 x (25 - 185) 2 x (25 - 70)	
Tunnel terminal			
Solid	mm <sup>2</sup>	1 x 16	
Stranded	mm <sup>2</sup>	1 x (25 - 185)	
1-hole	mm <sup>2</sup>	1 x (25 - 185)	
Bolt terminal and rear-side connection			
Direct on the switch			
Solid	mm <sup>2</sup>	1 x (10 - 16) 2 x (6 - 16)	
Stranded	mm <sup>2</sup>	1 x (25 - 185) 2 x (25 - 70)	
AI circular conductor			
Tunnel terminal			
Solid	mm <sup>2</sup>	1 x 16	
Stranded	mm <sup>2</sup>	1 x (25 - 185)	
Bolt terminal and rear-side connection			
Direct on the switch			
Solid	mm <sup>2</sup>	1 x (10 - 16) 2 x (10 - 16)	
Stranded	mm <sup>2</sup>	1 x (25 - 50) 2 x (25 - 50)	
Cu strip (number of segments x width x segment thickness)			
Box terminal	min.	mm	2 x 9 x 0.8
	max.	mm	10 x 16 x 0.8 (2x) 8 x 15.5 x 0.8
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	2 x 16 x 0.8
Flat copper strip, with holes	max.	mm	10 x 24 x 0.8
Copper busbar (width x thickness)	mm		
Bolt terminal and rear-side connection			
Screw connection			M8
Direct on the switch			
	min.	mm	16 x 5
	max.	mm	24 x 8
Control cables			
	mm <sup>2</sup>	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 <sub>h</sub>	A	160
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	38.4
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) / Motor protection circuit-breaker (EC000074)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecl@ss10.0.1-27-37-04-01 [AGZ529016])

Overload release current setting	A	125 - 160
Adjustment range undelayed short-circuit release	A	1280 - 2240
With thermal protection		Yes
Phase failure sensitive		No
Switch off technique		Thermomagnetic
Rated operating voltage	V	440 - 440
Rated permanent current $I_{\text{u}}$	A	160
Rated operation power at AC-3, 230 V	kW	45
Rated operation power at AC-3, 400 V	kW	90
Type of electrical connection of main circuit		Screw connection
Type of control element		Rocker lever
Device construction		Built-in device fixed built-in technique
With integrated auxiliary switch		No
With integrated under voltage release		No
Number of poles		3
Rated short-circuit breaking capacity $I_{\text{cu}}$ at 400 V, AC	kA	18.5
Degree of protection (IP)		IP20
Height	mm	184
Width	mm	105
Depth	mm	149