







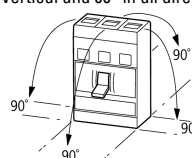
Circuit-breaker, 3p, 20A

Part no. **NZMB1-A20**
Article no. **280987**

Delivery programme

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 50/60 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 - + 80
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
				 <p>With residual-current release XFI:</p> <ul style="list-style-type: none"> - 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 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)		Weight Temperature dependency, Derating Effective power loss

Circuit-breakers

Rated current = rated uninterrupted current	$I_n = I_u$	A	20
Rated surge voltage invariability	U_{imp}		
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 unearthed supply systems		V	\leq 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 O-t-CO	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 O-t-CO-t-CO	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
Rated making and breaking capacity			
Rated operational current	I_e	A	
AC-1			
380 V 400 V	I_e	A	20
415 V	I_e	A	20
AC--3			
380 V 400 V	I_e	A	20
415 V	I_e	A	20
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
Current heat losses per pole at I_u are based on the maximum rated operational current of the frame size.		W	16.7

			For current heat loss per pole the specification refers to the maximum rated operational current of the frame size.																																								
Total downtime in a short-circuit		ms	< 10																																								
Terminal capacity																																											
Standard equipment			Box terminal																																								
Overview			<table border="0"> <tr> <td>Basic equipment</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Box terminal</td> <td>●</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Screw connection</td> <td>-</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Accessories</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Box terminal</td> <td>-</td> <td>●</td> <td>●</td> <td>-</td> </tr> <tr> <td>Screw connection</td> <td>●</td> <td>-</td> <td>-</td> <td>●</td> </tr> <tr> <td>Tunnel terminal</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Connection on rear Flat conductor terminal</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </table>	Basic equipment					Box terminal	●	-	-	-	Screw connection	-	●	●	●	Accessories					Box terminal	-	●	●	-	Screw connection	●	-	-	●	Tunnel terminal	●	●	●	●	Connection on rear Flat conductor terminal	●	●	●	●
Basic equipment																																											
Box terminal	●	-	-	-																																							
Screw connection	-	●	●	●																																							
Accessories																																											
Box terminal	-	●	●	-																																							
Screw connection	●	-	-	●																																							
Tunnel terminal	●	●	●	●																																							
Connection on rear Flat conductor terminal	●	●	●	●																																							
Round copper conductor																																											
Box terminal																																											
Solid		mm ²	1 x (10 - 16) 2 x (6 - 16)																																								
Stranded		mm ²	1 x (25 - 70) 2 x 25																																								
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)																																								
Al conductors, Cu cable																																											
Solid		mm ²	1 x 16																																								
Stranded		mm ²																																									
Stranded		mm ²	1 x (25 - 95)																																								
Cu strip (number of segments x width x segment thickness)																																											
Box terminal																																											
	min.	mm	2 x 9 x 0.8																																								
	max.	mm	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	12 x 5																																								
	max.	mm	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

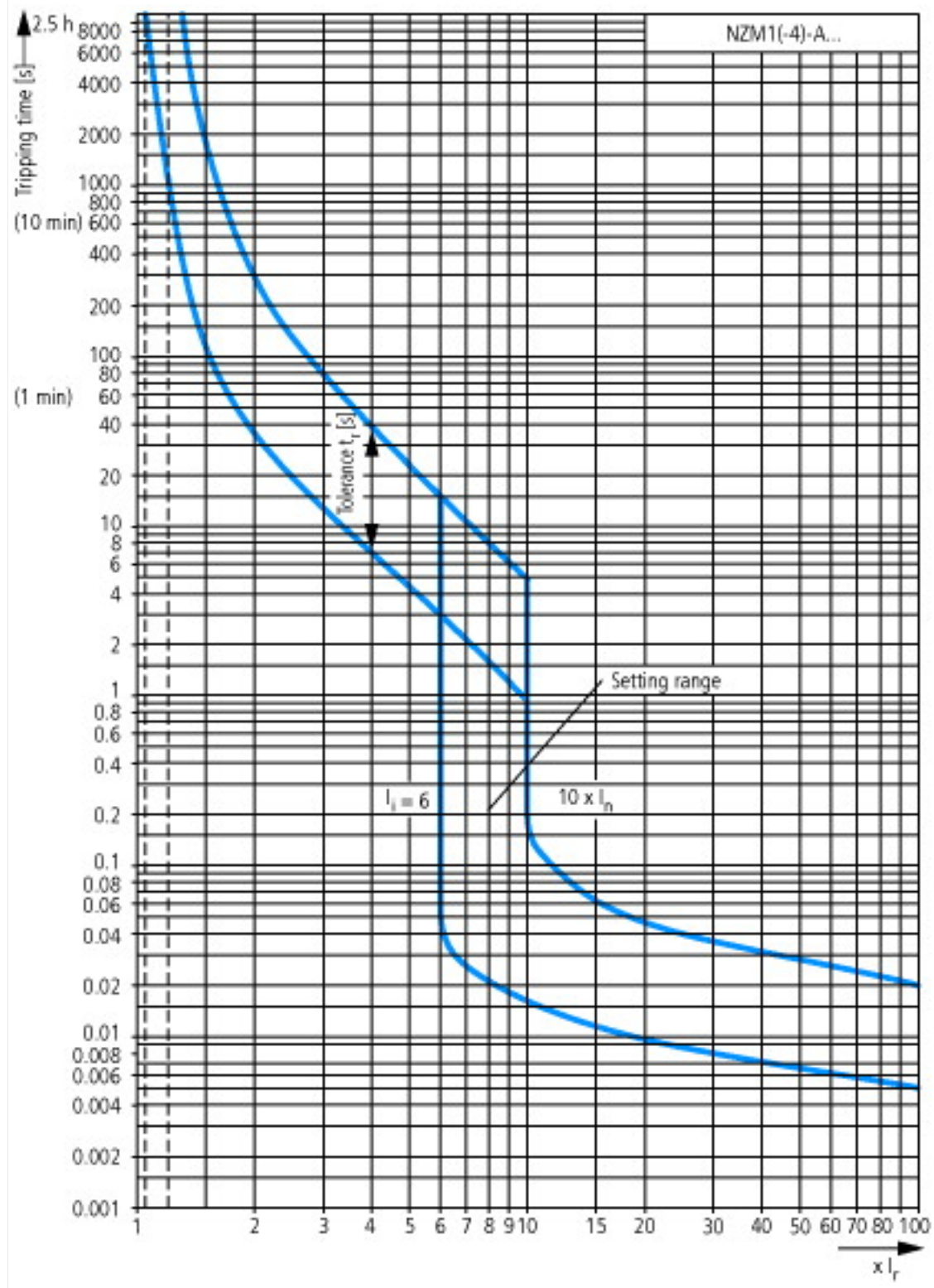
Technical data for design verification			
Rated operational current for specified heat dissipation	I _n	A	20
Equipment heat dissipation, current-dependent	P _{vid}	W	9.82
Operating ambient temperature min.		°C	-25

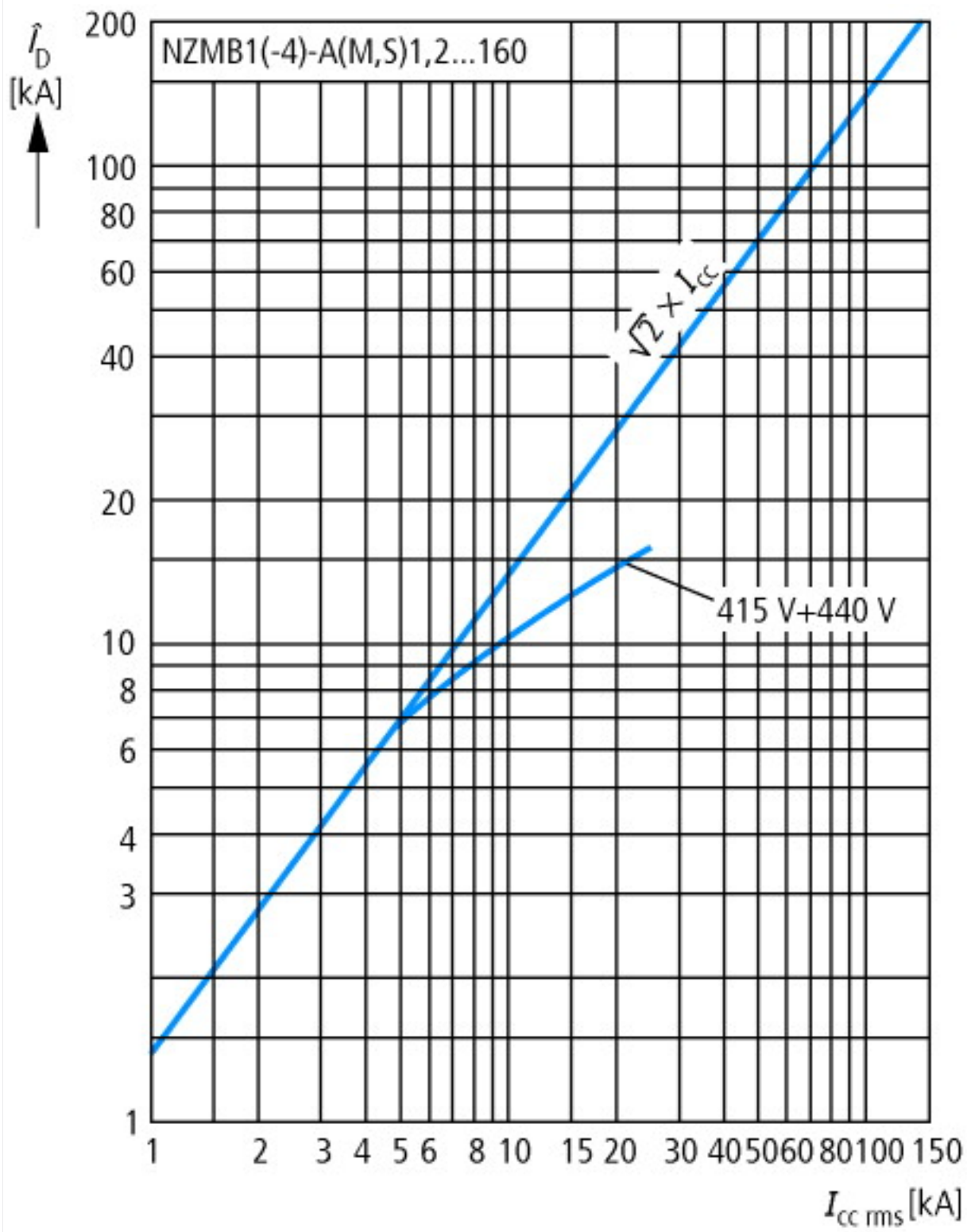
Operating ambient temperature max.	°C	70
IEC/EN 61439 design verification		
10.2 Strength of materials and parts		
10.2.2 Corrosion resistance		Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures		Meets the product standard's requirements.
10.2.3.2 Verification 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 6.0

Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation prot. (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@ss8.1-27-37-04-09 [AJZ716010])		
Rated permanent current I _u	A	20
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
Switched-off indicator available		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		No
Degree of protection (IP)		IP20

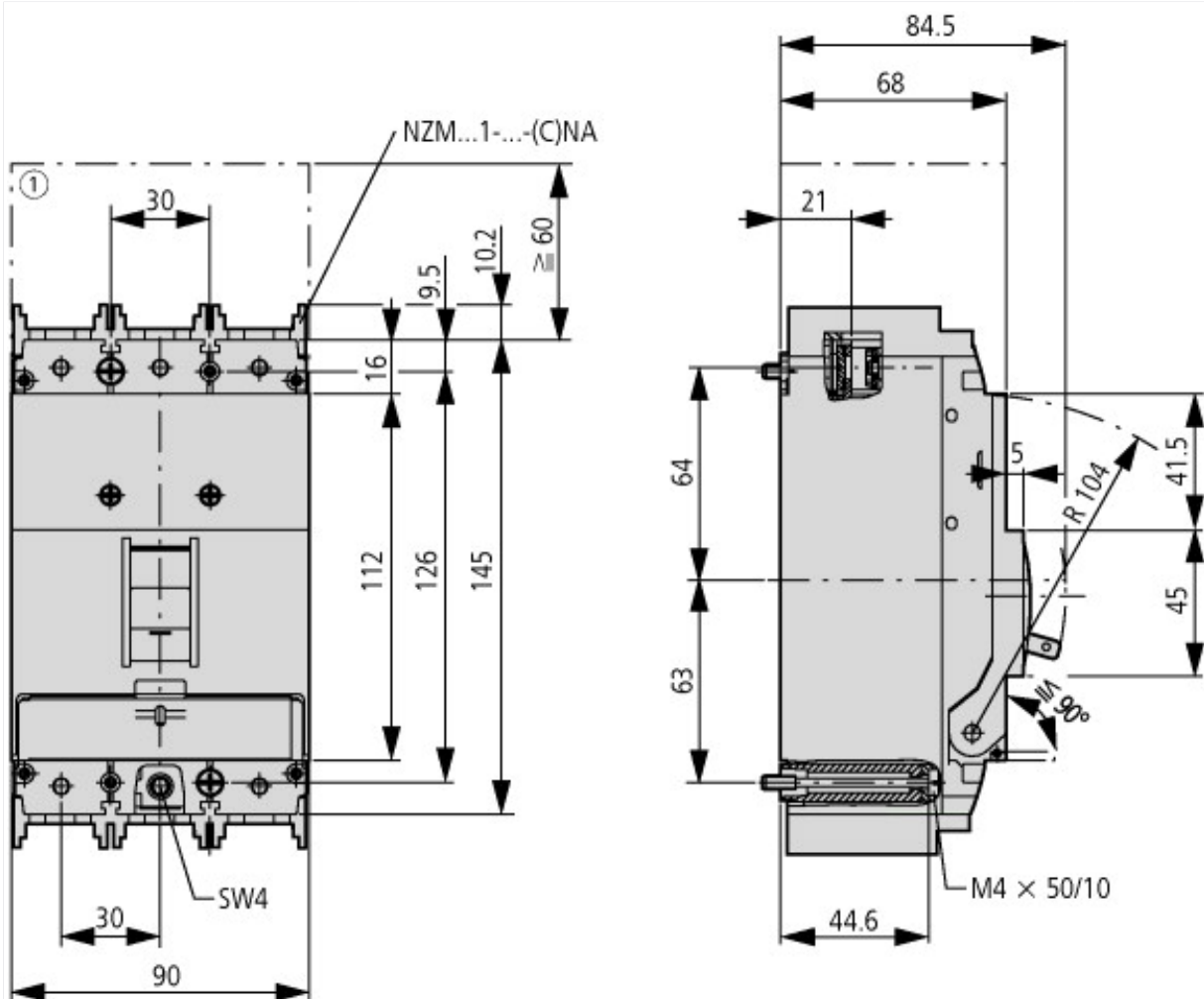
Characteristics







Dimensions



① Blow out area, minimum clearance to adjacent parts



Additional product information (links)

IL01203004Z (AWA1230-1913) Circuit-breaker, Switch-Disconnecter

IL01203004Z (AWA1230-1913) Circuit-breaker, Switch-Disconnecter ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01203004Z2015_11.pdf

Weight <http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.171>

Temperature dependency, Derating <http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172>

Effective power loss <http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.174>

Setting-Specific Representation of Tripping Characteristics and Competent Assessment of their Interaction http://www.moeller.net/binary/ver_techpapers/ver943en.pdf

Busbar Component Adapters for modern Industrial control panels http://www.moeller.net/binary/ver_techpapers/ver960en.pdf