DATASHEET - NZMN3-ME450-AVE



Circuit-breaker, 3p, 450A, withdrawable unit

Part no. NZMN3-ME450-AVE Catalog No. 110848



Similar to illustration

Delivery program			
Product range			Circuit-breaker
Protective function			Motor protection
			IE3 ✓
Standard/Approval			IEC
Installation type			Withdrawable
Release system			Electronic release
Construction size			NZM3
Description			IEC/EN 60947-4-1, IEC/EN 60947-2
			The circuit-breaker fulfills all requirements for AC-3 switching category.
			R.m.s. value measurement and "thermal memory" Adjustable time delay setting to overcome current peaks tr at 6 x Ir also infinity (without overload releases) All AC-3 rating data applies to direct switching by the circuit-breaker under normal operating conditions. If, for example, a contactor takes over AC-3 switching under normal operating conditions, the full rated uninterrupted current applies to the circuit-breaker, In = Iu.
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	$I_n = I_u$	Α	450
Setting range			
Overload trip			
4	I _r	A	225 - 450
Short-circuit releases			
Non-delayed	$I_i = I_n x \dots$		2 - 14
Motor rating AC-3 50/60 Hz			
380 V 400 V	P	kW	250
660 V 690 V	P	kW	450
Motor rating AC-3 50/60 Hz			
400 V	P	kW	250
660 V 690 V	P	kW	450
Rated operational current AC-3 50/60 Hz			
400 V	I _e	Α	437
	-е		

Technical data General

Anabant temperature, starage Anabant temperature Anabant temperatur	General				
Committee proofsing	Standards			IEC/EN 60947	
Anabant temperature, starage Anabant temperature Anabant temperatur	Protection against direct contact			Finger and back of hand proof to VDE 0106 Part 100	
Applicant temperature, storage	Climatic proofing				
Microsinian index resistance (10 me half sin accided aboots) according to 150 20 20 20 20 20 20 20	Ambient temperature				
Machanization and censariance 10 ms half-amissacidal shock) according to IEC	Ambient temperature, storage		°C	- 40 - + 70	
Basile Leadering To 61 Feb 100	Operation		°C	-25 - +70	
Between autiliary contacts and main centacts VAC S00			g	20 (half-sinusoidal shock 20 ms)	
Montaning position					
Mounting position					
Muniting pestion With Interest and Street a					
Part	Weight		kg	6.34	
Degree of protection In the operating controls area: IP20 (basic degree of protection) Device In the operating controls area: IP20 (basic degree of protection) Enclosures With insulating surround: IP40 (With door coupling rotary handle; IP86) Terminations Tunnel terminal: IP10 (Phase isolator and strip terminal: IP00) Other technical data (sheet catalogue) Temperature dependency, Deraing Circuit-broakers V Rated surge voltage invariability Ump Main contacts V Auxiliary contacts V Bated operating low oftegee III Bated surge category/pollution degree III Bated presentional voltage V Use in unearthed surphy systems V Sex III Auxiliary contacts III Auxiliary contacts III	Mounting position			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	
Device	Direction of incoming supply			as required	
Enclosures	Degree of protection				
Terminations	Device			In the operating controls area: IP20 (basic degree of protection)	
Phase isolator and strip terminal: IP00	Enclosures			With insulating surround: IP40 With door coupling rotary handle: IP66	
Circuit-breakers In = Iu In In = Iu In = Iu In = Iu In In = Iu In	Terminations				
Rated current = rated uninterrupted current In = Iu Uninp A 400 Rated surge voltage invariability V 8000 Main contacts V 8000 Auxiliary contacts V 8000 Rated operational voltage V AC 800 Overvoltage category/pollution degree III/3 11/3 Rated issulation voltage U IV 1000 Use in unearthed supply systems V 569 Switching capacity Icm ICm Rated short-circuit making capacity Icm IA 440 V 50/60 Hz Icm IA 440 V 50/60 Hz Icm IA 880 V 50/60 Hz Icm IA 800 V 50/60 Hz Icm IA Icu to IEC/EN 60947 test cycle 0-t-CO Icu IA 400/415 V 50/60 Hz Icu IA 240 V 50/60 Hz Icu IA Icu to IEC/EN 60947 test cycle 0-t-CO Icu IA 400/415 V 50/60 Hz Icu IA 400/415 V 50/60 Hz Icu	Other technical data (sheet catalogue)			Temperature dependency, Derating	
Rated surge voltage invariability Vimp 8000 Main contacts V 8000 Auxiliary contacts V 6000 Rated operational voltage U ₀ VAC 690 Overvoltage category/pollution degree III/3 III/3 Rated insulation voltage U ₁ V 690 Use in unearthed supply systems V 690 Switching capacity Rated short-circuit making capacity I _{cm} KA 187 400/415 V I _{cm} KA 187 440 V 50/60 Hz I _{cm} KA 74 525 V 50/60 Hz I _{cm} KA 53 690 V 50/60 H I _c KA 40 Rated short-circuit breaking capacity I _{cm} I _c KA 53 690 V 50/60 Hz I _c KA 53 690 V 50/60 Hz I _c KA 40 Rated short-circuit breaking capacity I _{cm} I _c KA 53 1 cut to IEC/EN 60947 test cycle 0-t-CO I _c KA<					
Main contacts V 8000 Auxiliary contacts V 6000 Rated operational voltage Ue V AC 690 Overvoltage category/pollution degree III/3 III/3 Rated insulation voltage Ui V 1000 Use in unearthed supply systems V ≤ 690 Switching capacity Rated short-circuit making capacity Icm KA 187 400/415 V Icm KA 105 440 V 50/60 Hz Icm KA 14 525 V 50/60 Hz Icm KA 33 690 V 50/60 Hz Icm KA 40 Icu to IEC/EN 60947 test cycle 0-t-CO Icu KA 40 240 V 50/60 Hz Icu KA 55 400/415 V 50/60 Hz Icu KA 55 400/415 V 50/60 Hz Icu KA 50 440 V 50/60 Hz Icu KA 50 450 V 50/60 Hz Icu KA 50 690 V 50/6			Α	450	
Note	Rated surge voltage invariability	U _{imp}			
Nate Operational voltage Operational voltage Operational voltage Control tage Contro			V	8000	
Overvoltage category/pollution degree Hill/3 Ill/3 Rated insulation voltage Ui V 1000 Use in unearthed supply systems V ≤ 690 Switching capacity 240 V Icm KA 187 400/415 V Icm KA 105 440 V 50/60 Hz Icm KA 74 525 V 50/60 Hz Icm KA 53 690 V 50/60 Hz Icm KA 40 Rated short-circuit breaking capacity I _{cm} Icm KA 40 Icu to IEC/EN 60947 test cycle 0-t-CO Icu KA 55 440 V 50/60 Hz Icu KA 55 440 V 50/60 Hz Icu KA 55 440 V 50/60 Hz Icu KA 55 650 V 50/60 Hz Icu KA 50 650 V 50/60 Hz Icu KA 50 650 V 50/60 Hz Icu KA 25 650 V 50/60 Hz Icu KA 25	,				
Rated insulation voltage Ui be in unearthed supply systems V be 690 Switching capacity Lom	Rated operational voltage	U _e	V AC	690	
Use in unearthed supply systems V ≤ 690 Switching capacity Rated short-circuit making capacity Icm KA 187 400/415 V Icm KA 105 440 V 50/60 Hz Icm KA 74 525 V 50/60 Hz Icm KA 53 690 V 50/60 H Ic KA 40 Rated short-circuit breaking capacity I _{cm} Icu KA 40 Icu to IEC/EN 60947 test cycle 0-t-CO Icu KA 85 400/415 V 50/60 Hz Icu KA 50 400/415 V 50/60 Hz Icu KA 50 440 V 50/60 Hz Icu KA 35 690 V 50/60 Hz Icu KA 25 690 V 50/60 Hz Icu KA 25	Overvoltage category/pollution degree			111/3	
Switching capacity Rated short-circuit making capacity Icm KA 187 400/415 V Icm KA 105 440 V 50/60 Hz Icm KA 74 525 V 50/60 Hz Icm KA 53 690 V 50/60 H Ic KA 40 Rated short-circuit breaking capacity I _{cm} Icu KA 40 Icu to IEC/EN 60947 test cycle 0-t-CO Icu KA 85 400/415 V 50/60 Hz Icu KA 50 440 V 50/60 Hz Icu KA 50 440 V 50/60 Hz Icu KA 50 450 V 50/60 Hz Icu KA 25 525 V 50/60 Hz Icu KA 25 690 V 50/60 Hz Icu KA 25	Rated insulation voltage	Ui	V	1000	
Rated short-circuit making capacity Icm IA 240 V Icm IA 187 400/415 V Icm IA 105 440 V 50/60 Hz Icm IA 74 525 V 50/60 Hz Icm IA 53 690 V 50/60 Hz Icm Icm ICm Rated short-circuit breaking capacity Icm Icm Icm ICm Icu to IEC/EN 60947 test cycle 0-t-CO Icu Icu ICm ICm 400/415 V 50/60 Hz Icu Icu ICm	Use in unearthed supply systems		V	≦ 690	
240 V Lom kA 187 400/415 V Lom kA 105 440 V 50/60 Hz Lom kA 74 525 V 50/60 Hz Lom kA 53 690 V 50/60 H Lom kA 40 Rated short-circuit breaking capacity I _{cn} Icu kA 40 Icu to IEC/EN 60947 test cycle 0-t-CO Icu kA 85 400/415 V 50/60 Hz Icu kA 50 440 V 50/60 Hz Icu kA 35 440 V 50/60 Hz Icu kA 35 690 V 50/60 Hz Icu kA 26 690 V 50/60 Hz Icu kA 25					
400/415 V					
440 V 50/60 Hz	240 V	I _{cm}	kA	187	
525 V 50/60 Hz Icm KA 53 690 V 50/60 H Ic KA 40 Rated short-circuit breaking capacity I _{cn} Icu KA 40 1cu to IEC/EN 60947 test cycle 0-t-CO Icu KA 5 240 V 50/60 Hz Icu KA 85 400/415 V 50/60 Hz Icu KA 50 440 V 50/60 Hz Icu KA 35 525 V 50/60 Hz Icu KA 25 690 V 50/60 Hz Icu KA 20	400/415 V	I _{cm}	kA	105	
690 V 50/60 H Rated short-circuit breaking capacity I _{cn} Icu to IEC/EN 60947 test cycle 0-t-CO Icu kA 240 V 50/60 Hz 400/415 V 50/60 Hz 1cu kA 1cu kA 50 440 V 50/60 Hz 1cu kA 50 690 V 50/60 Hz	440 V 50/60 Hz	I _{cm}	kA	74	
Rated short-circuit breaking capacity I _{cn} I _{cn} I _{cn} Icu to IEC/EN 60947 test cycle O-t-CO Icu 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	525 V 50/60 Hz	I _{cm}	kA	53	
Icu to IEC/EN 60947 test cycle 0-t-CO Icu kA 240 V 50/60 Hz Icu kA 85 400/415 V 50/60 Hz Icu kA 50 440 V 50/60 Hz Icu kA 35 525 V 50/60 Hz Icu kA 25 690 V 50/60 Hz Icu kA 20	690 V 50/60 H	Ic	kA	40	
240 V 50/60 Hz Icu kA 85 400/415 V 50/60 Hz Icu kA 50 440 V 50/60 Hz Icu kA 35 525 V 50/60 Hz Icu kA 25 690 V 50/60 Hz Icu kA 20	Rated short-circuit breaking capacity I_{cn}	I _{cn}			
400/415 V 50/60 Hz 440 V 50/60 Hz 1cu kA 35 525 V 50/60 Hz 1cu kA 25 690 V 50/60 Hz 1cu kA 20	Icu to IEC/EN 60947 test cycle 0-t-C0	lcu	kA		
440 V 50/60 Hz	240 V 50/60 Hz	I _{cu}	kA	85	
525 V 50/60 Hz	400/415 V 50/60 Hz	I _{cu}	kA	50	
690 V 50/60 Hz I _{CU} kA 20	440 V 50/60 Hz	I _{cu}	kA	35	
690 V 50/60 Hz I _{GU} kA 20	525 V 50/60 Hz	I _{cu}	kA	25	
tu e e e e e e e e e e e e e e e e e e e	690 V 50/60 Hz		kA	20	
	Ics to IEC/EN 60947 test cycle 0-t-C0-t-C0	Ics	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
Rated short-time withstand current			location exceed the switching capacity of the circuit-breaker.
t = 0.3 s		kA	3.3
t=0.35	I _{cw}	kA	3.3
	I _{cw}	KA	
Utilization category to IEC/EN 60947-2 Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release)	Operations		A 15000
Lifespan, electrical	орегинона		13000
AC-1			
400 V 50/60 Hz	Operations		5000
415 V 50/60 Hz	Operations		5000
690 V 50/60 Hz	Operations		3000
AC3			
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		2	2 x 16
		mm ²	
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	£ A 120 ° 270)
Connection width extension		mm ²	2 x 300
Al circular conductor		mm"	
Al circular conductor Tunnel terminal			
Solid		mm ²	1 x 16
		mm-	
Stranded		2	21
Stranded		mm ²	1 x (25 - 185) ²⁾
Double hole		mm ²	1 x (50 - 240) 2 x (50 - 240)
			$^{2)}\mbox{Up to 240}\mbox{ mm}^{2}\mbox{can be connected depending on the cable manufacturer.}$
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 61439Technical data for design verification

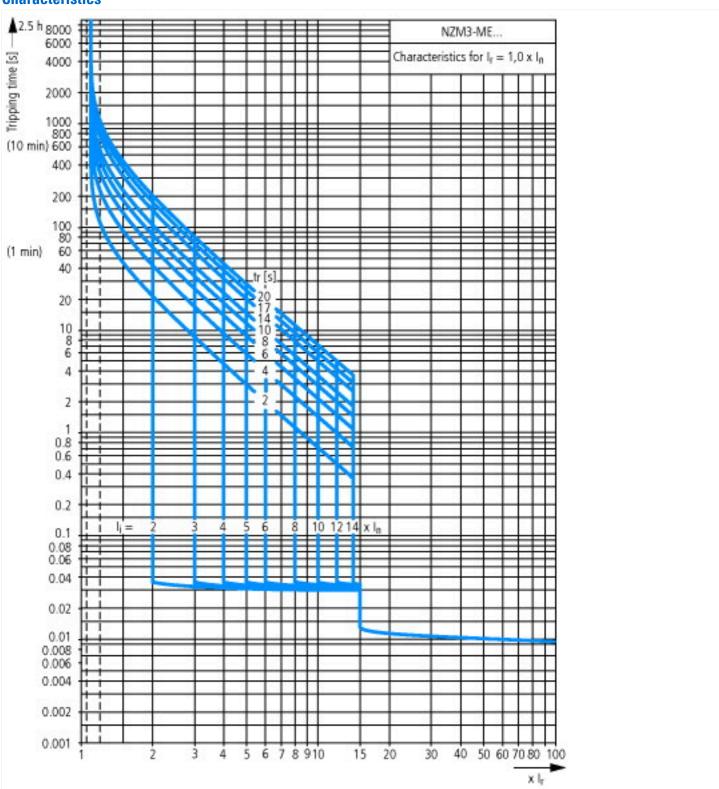
Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	450
Equipment heat dissipation, current-dependent	P _{vid}	W	60.75
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	70
IEC/EN 61439 design verification			
10.2 Strength 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.

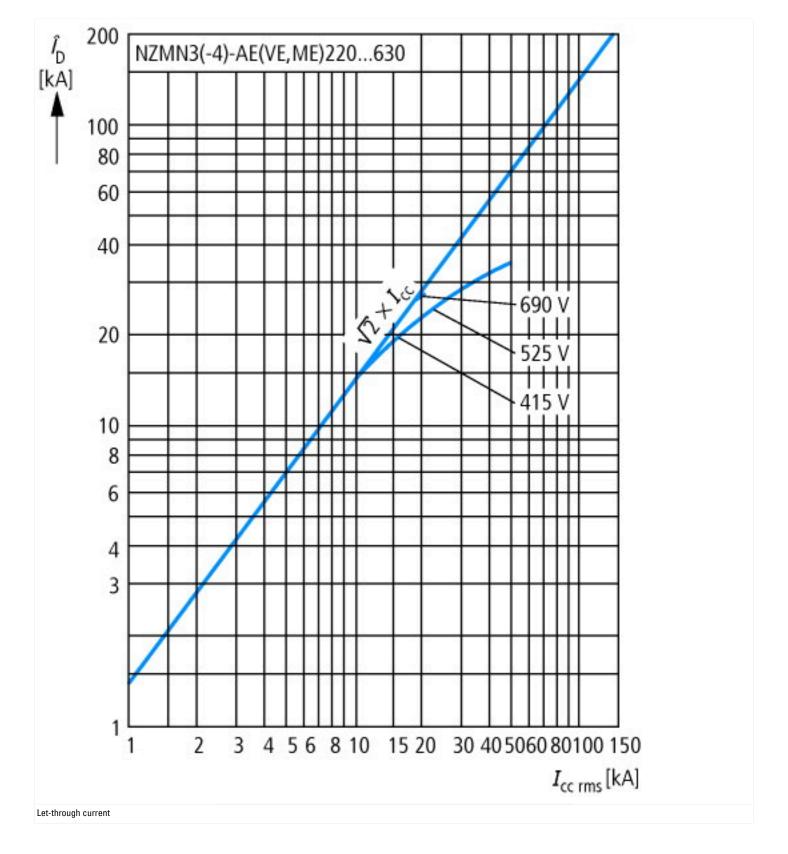
Technical data ETIM 7.0

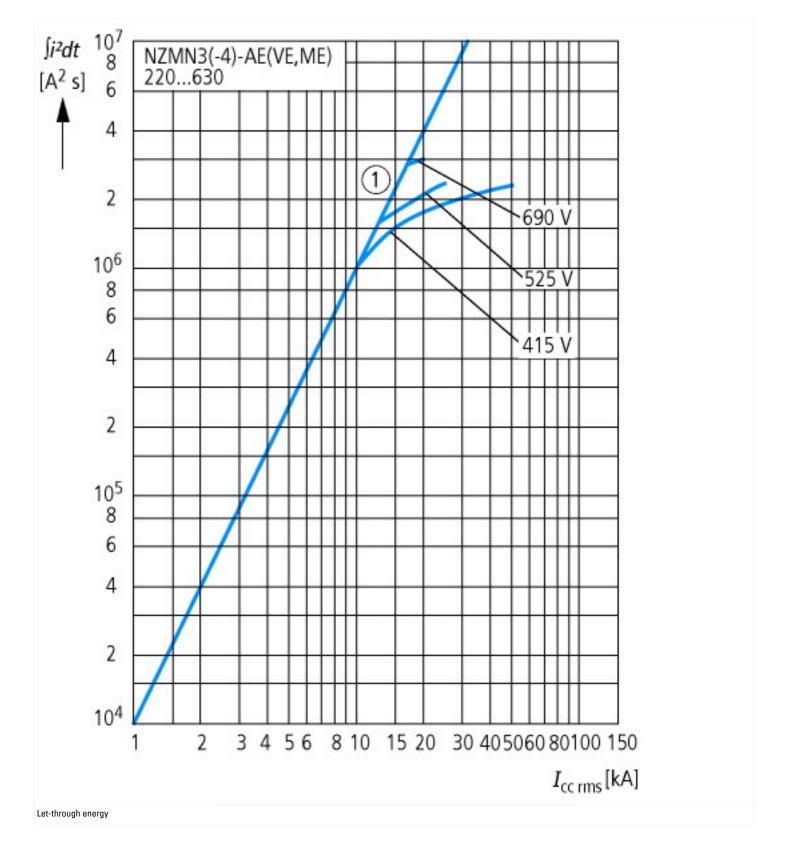
Low-voltage industrial components (EG000017) / Motor protection circuit-breaker (EC000074)

Electric engineering, automation, process control engineering / Low-voltage switc	h technology / Circuit h	reaker (LV < 1 kV) / Motor protection circuit-breaker (ec/@ss10 0 1-27-37-04-01
[AGZ529016])	tooimology / on cult b	TOURCE (2.5 C. R.F.) MOUSE PROCESSION CHICAGO PROGRAM (COMSSSTON).1-27-07-04-01
Overload release current setting	Α	225 - 450
Adjustment range undelayed short-circuit release	А	450 - 6300
With thermal protection		Yes
Phase failure sensitive		Yes
Switch off technique		Electronic
Rated operating voltage	V	690 - 690
Rated permanent current lu	Α	450
Rated operation power at AC-3, 230 V	kW	132
Rated operation power at AC-3, 400 V	kW	250
Type of electrical connection of main circuit		Screw connection
Type of control element		Rocker lever
Device construction		Built-in device slide-in technique (withdrawable)
With integrated auxiliary switch		No
With integrated under voltage release		No
Number of poles		3
Rated short-circuit breaking capacity Icu at 400 V, AC	kA	50
Degree of protection (IP)		IP20
Height	mm	346
Width	mm	185
Depth	mm	260

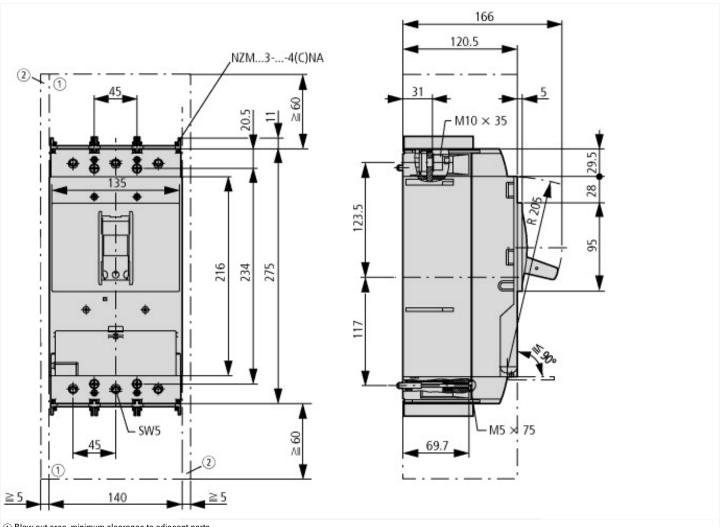
Characteristics

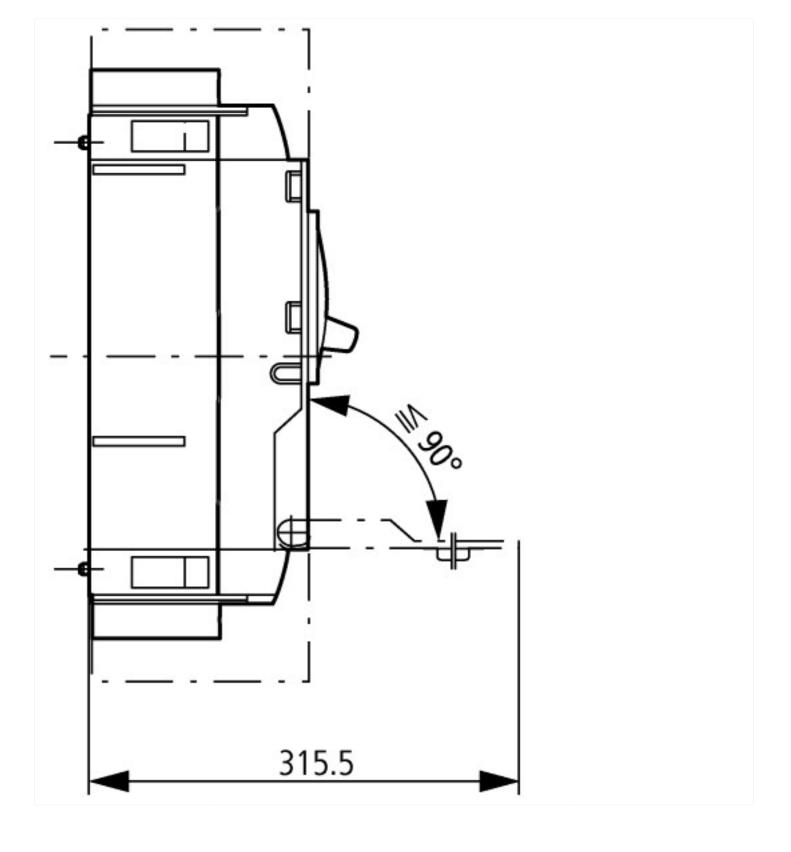


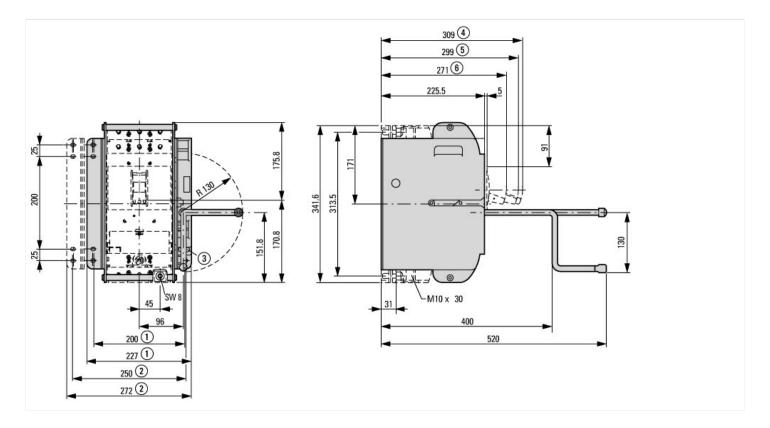




Dimensions







Additional product information (links)

	Additional product information (links)					
IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit						
	IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01208009Z2018_11.pdf				
	Temperature dependency, Derating	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172				
	additional technical information for NZM power switch	ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technic_de_en.pdf				