DATASHEET - NZMS2-4-VX160/VAR-SVE



NZM2 PXR20 circuit breaker, 160A, 4p, variable, plug-in technology

Powering Business Worldwide*

Part no. NZMS2-4-VX160/VAR-SVE Catalog No. 191666

Similar to illustration

Delivery program			
Product range			Circuit-breaker
Protective function			Systems, cable, selectivity and generator protection
Standard/Approval			IEC
Installation type			Plug-in units
Release system			Electronic release
Construction size			NZM2
Description			LSI overload protection and delayed and non-delayed short-circuit protective device R.m.s. value measurement and "thermal memory" USB interface for configuration and test function with Power Xpert Protection Manager software Optionally communication-capable with interface module and internal Modbus RT module or CAM
Number of poles			4 pole
Standard equipment			Screw connection
Switching capacity			
400/415 V 50 Hz	I _{cu}	kA	70
Rated current = rated uninterrupted current			
Rated current = rated uninterrupted current	$I_n = I_u$	Α	160
Neutral conductor	% of phase conductor	%	0 - 100
Setting range			
Overload trip			
中	I _r	Α	64 - 160
Short-circuit releases			
Non-delayed	$I_i = I_n x \dots$		2 – 18
Delayed	$I_{sd} = I_r \times \dots$		2 – 10

Technical data

General

delicial		
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

habita and the smaller and the second		V AC	200
between the auxiliary contacts Mounting position		VAC	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
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
Circuit-breakers	1 -1	۸	160
Rated current = rated uninterrupted current	I _n = I _u	A	160
Rated surge voltage invariability	U _{imp}	V	2000
Main contacts		V	8000
Auxiliary contacts		V	6000
Rated operational voltage	U _e	V AC	690
Overvoltage category/pollution degree			III/3
Rated insulation voltage	Ui	V	690
Use in unearthed supply systems Switching capacity		V	≦ 690
Rated short-circuit making capacity	I _{cm}		
240 V	I _{cm}	kA	220
400/415 V	I _{cm}	kA	154
440 V 50/60 Hz	I _{cm}	kA	143
525 V 50/60 Hz	I _{cm}	kA	80
690 V 50/60 H	Ic	kA	40
Rated short-circuit breaking capacity I _{cn}	I _{cn}		
Icu to IEC/EN 60947 test cycle 0-t-C0	lcu	kA	
240 V 50/60 Hz	I _{cu}	kA	100
400/415 V 50/60 Hz	I _{cu}	kA	70
440 V 50/60 Hz	I _{cu}	kA	65
525 V 50/60 Hz	I _{cu}	kA	36
690 V 50/60 Hz	I _{cu}	kA	20
Ics to IEC/EN 60947 test cycle 0-t-C0-t-C0	Ics	kA	
240 V 50/60 Hz	I _{cs}	kA	100
400/415 V 50/60 Hz	I _{cs}	kA	70
440 V 50/60 Hz	I _{cs}	kA	65
525 V 50/60 Hz	I _{cs}	kA	36
690 V 50/60 Hz	I _{cs}	kA	6
			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	1.9
t = 1 s	I _{cw}	kA	1.9
Utilization category to IEC/EN 60947-2			A
Lifespan, mechanical(of which max. 50 $\%$ trip by shunt/undervoltage release)	Operations		20000
Lifespan, electrical			

Most passed bit Operations 10000 Most passed 100000 Most passed 10000 Most passed 100000 Most passed 100000 Most passed 100000 Most passed 100000 Most passed 100000	AC-1			
Diget Dige	400 V 50/60 Hz	Operations		10000
Max. operating trequency 10 path 128	415 V 50/60 Hz	Operations		10000
Tends	690 V 50/60 Hz	Operations		7500
Section of component of content of the content of	Max. operating frequency		Ops/h	120
Sandard quipment	Total break time at short-circuit		ms	<10
Accessories required Optional accessories Optional accessories Round copper conductor Box terminal Solid Sitranded	Terminal capacity			
Optional accessories Sex serminal Temper terminal connection on rear connection connect	Standard equipment			Screw connection
Name	Accessories required			NZM2-4-XSVS
Box terminal Salid mm² 1 x (10 - 16) 2 x (6 - 16) mm² 1 x (25 - 183) 2 x (25 - 70) mm² 1 x (25 - 183) 2 x (25 - 70) mm² 1 x (25 - 183) 2 x (25 - 70) mm² 1 x (25 - 183) 2 x (25 - 70) mm² 1 x (25 - 183) mm² 1 x (Optional accessories			Tunnel terminal
Solid mm²	Round copper conductor			
Stranded	Box terminal			
Tunnel terminal Solid Stranded Solid	Solid		mm ²	
Solid Stranded I - I - I - I - I - I - I - I - I - I	Stranded		mm ²	
Stranded 1-hole mm² 1 x (25 - 185)				
1-hole	Solid		mm^2	1 x 16
Bolt terminal and rear-side connection Direct on the switch Solid mm² 1x (10 - 16) 2x (6 - 16) 2x (6 - 16) 2x (2	Stranded			
Direct on the switch Solid mm² 1 x (10 - 16) 2 x (6 - 16)	1-hole		mm^2	1 x (25 - 185)
Note	Bolt terminal and rear-side connection			
Stranded	Direct on the switch			
Al circular conductor Tunnel terminal Solid mm² 1 x 16	Solid		mm ²	
Tunnel terminal Solid mm² 1 x 16	Stranded		mm ²	
Stranded Stranded 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 Direct on the switch min. mm 16 x 5 max. mm 16 x 5 max. mm 24 x 8 Control cables	Al circular conductor			
Stranded Stranded 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 Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables	Tunnel terminal			
Stranded Cu strip (number of segments x width x segment thickness) Box terminal min. mm 2x9x0.8 max. mm 10x16x0.8 (2x) 8x15.5x0.8 Bolt terminal and rear-side connection Flat copper strip, with holes min. mm 2x16x0.8 Flat copper strip, with holes max. mm 10x24x0.8 Copper busbar (width x thickness) mm Bolt terminal and rear-side connection Screw connection Direct on the switch min. mm 16x5 max. mm 24x8 Control cables	Solid		mm^2	1 x 16
Cu strip (number of segments x width x segment thickness) Box terminal min. mm 2x 9x 0.8 max. mm 10x 16x 0.8 (2x) 8 x 15.5 x 0,8 Bolt terminal and rear-side connection Flat copper strip, with holes min. mm 2x 16x 0.8 Flat copper strip, with holes max. mm 10x 24 x 0.8 Copper busbar (width x thickness) mm Bolt terminal and rear-side connection Screw connection Direct on the switch min. mm 16x 5 max. mm 24x 8 Control cables	Stranded			
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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 Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables	Cu strip (number of segments x width x segment thickness)			
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 Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables	Box terminal			
Bolt terminal and rear-side connection Flat copper strip, with holes 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 Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables		min.	mm	2 x 9 x 0.8
Flat copper strip, with holes 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 Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables		max.	mm	
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 Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables mm² 1 x (0.75 - 2.5)	Bolt terminal and rear-side connection			
Copper busbar (width x thickness) Bolt terminal and rear-side connection Screw connection Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables	Flat copper strip, with holes	min.	mm	2 x 16 x 0.8
Bolt terminal and rear-side connection Screw connection Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables	Flat copper strip, with holes	max.	mm	10 x 24 x 0.8
Screw connection M8 Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables mm² 1 x (0.75 - 2.5)	Copper busbar (width x thickness)	mm		
Direct on the switch min. mm 16 x 5 max. mm 24 x 8 Control cables	Bolt terminal and rear-side connection			
min. mm 16 x 5 max. mm 24 x 8 Control cables mm ² 1 x (0.75 - 2.5)	Screw connection			M8
Control cables max. mm 24 x 8 Control cables 1 x (0.75 - 2.5)	Direct on the switch			
Control cables mm ² 1 x (0.75 - 2.5)		min.	mm	16 x 5
mm^2 1 x (0.75 - 2.5)	Control cables	max.	mm	24 x 8
			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	In	Α	160
Equipment heat dissipation, current-dependent	P _{vid}	W	21.12
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	70
EC/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 observed.
10.12 Electromagnetic compatibility	Is the panel builder's responsibility. The specifications for the switchgear must observed.
10.13 Mechanical function	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

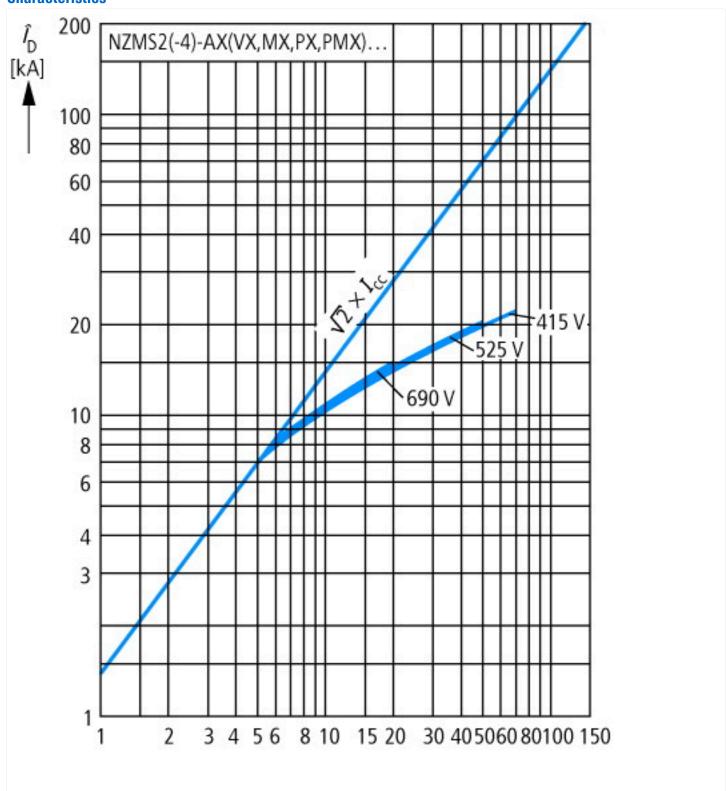
Technical data ETIM 7.0

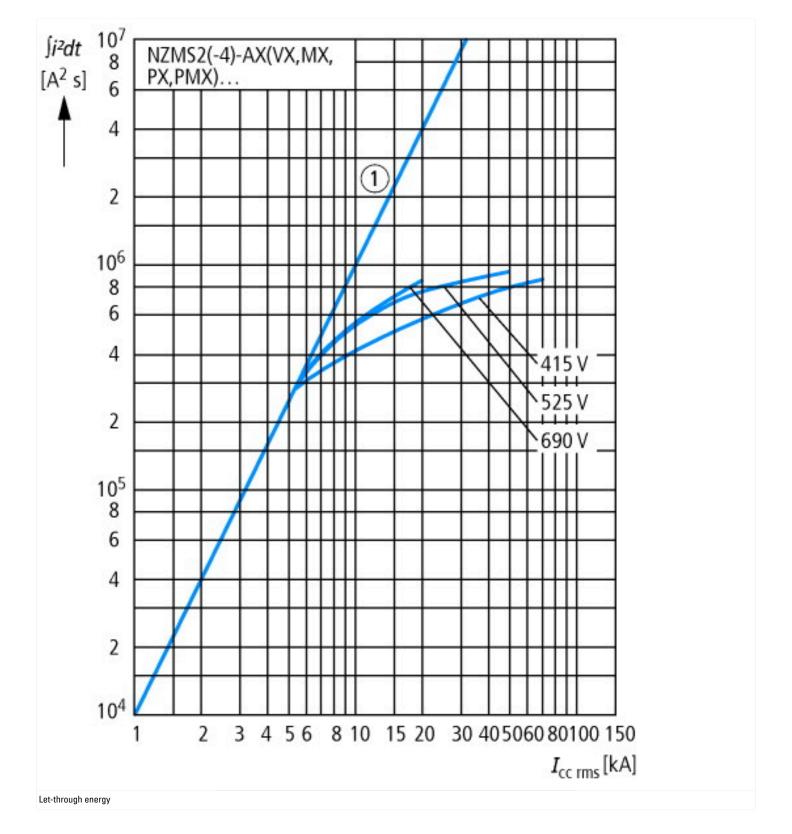
Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)

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])

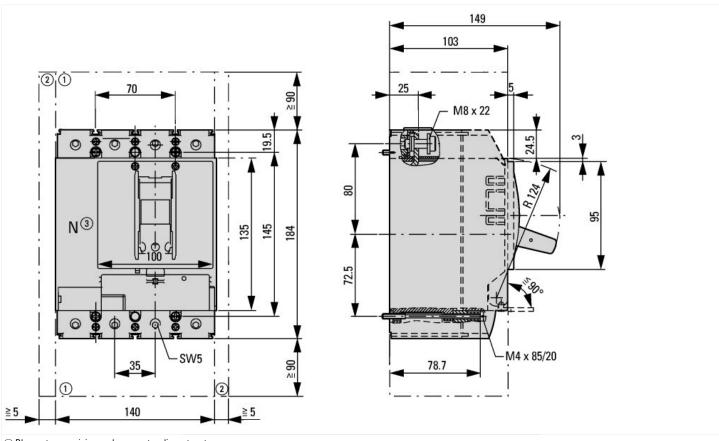
Rated voltage V 690 - 69	protection (ecl@ss10.0.1-27-37-04-09 [AJZ716013])		
Rated short-circuit breaking capacity lcu at 400 V, 50 Hz Overload release current setting Adjustment range short-term delayed short-circuit release Adjustment range undelayed short-circuit release No Other Nurber of ecutrical connection of main circuit Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact No No No No No No No No No N	Rated permanent current lu	Α	160
Overload release current setting Adjustment range short-term delayed short-circuit release Adjustment range undelayed short-circuit release Built-in device plug-in technique Adjustment range undelayed short-circuit Adjustment range undelayed short-circuit Adjustment range undelayed short-circuit Adjustment range undelayed short-circuit release Adjustment range undelayed short-c	Rated voltage	V	690 - 690
Adjustment range short-term delayed short-circuit release Adjustment range undelayed short-circuit release Integrated earth fault protection Type of electrical connection of main circuit Device construction Built-in device plug-in technique Built-in device plug-in technique No DIN rail (top hat rail) mounting No No No No Number of auxiliary contacts as normally closed contact O Number of auxiliary contacts as normally open contact O Number of auxiliary contacts as change-over contact No No With switched-off indicator No With under voltage release No Number of poles A Position of connection for main current circuit Type of control element Complete device with protection unit No Motor drive integrated No Motor drive integrated No No Motor drive optional	Rated short-circuit breaking capacity Icu at 400 V, 50 Hz	kA	70
Adjustment range undelayed short-circuit release A 2 - 18 Integrated earth fault protection Type of electrical connection of main circuit Device construction Suitable for DIN rail (top hat rail) mounting DIN rail (top hat rail) mounting optional Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as change-over contact Number of auxiliary contacts as change-over contact Nith switched-off indicator Number of poles Number of poles Number of poles Number of poles Number of connection for main current circuit Type of control element Complete device with protection unit Number of poteonal Number of poles No	Overload release current setting	А	64 - 160
Integrated earth fault protection Type of electrical connection of main circuit Device construction Built-in device plug-in technique Suitable for DIN rail (top hat rail) mounting DIN rail (top hat rail) mounting optional No No Number of auxiliary contacts as normally closed contact Outpet of auxiliary contacts as normally open contact Outpet of auxiliary contacts as change-over contact Outpet of auxiliary contacts as normally closed contact Outpet of auxiliary contacts as normally clo	Adjustment range short-term delayed short-circuit release	Α	2 - 10
Type of electrical connection of main circuit Device construction Suitable for DIN rail (top hat rail) mounting DIN rail (top hat rail) mounting optional No No Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as change-over contact Number of auxiliary contacts as change-over contact No With switched-off indicator No With under voltage release No No Number of poles A Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive integrated Motor drive optional Other Built-in device plug-in technique Built-in device plug-in technique No No Ro Ro Ro Ro Ro Ro Ro Ro	Adjustment range undelayed short-circuit release	Α	2 - 18
Device construction Suitable for DIN rail (top hat rail) mounting DIN rail (top hat rail) mounting optional Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Output of auxiliary contacts as change-over contact Output of indicator Output of pidease Output of connection for main current circuit Output of connection for main current circuit Output of connection for main current circuit Output of control element Complete device with protection unit Output of rive integrated Output of control of the control of	Integrated earth fault protection		No
Suitable for DIN rail (top hat rail) mounting DIN rail (top hat rail) mounting optional Number of auxiliary contacts as normally closed contact O Number of auxiliary contacts as normally open contact O Number of auxiliary contacts as change-over contact O Number of auxiliary contacts as change-over contact O Number of auxiliary contacts as change-over contact O Number of pindicator No With switched-off indicator No No Number of poles A Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive integrated No Motor drive optional No	Type of electrical connection of main circuit		Other
DIN rail (top hat rail) mounting optional Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as change-over contact Number of auxiliary contacts as change-over contact No With switched-off indicator With under voltage release No Number of poles A Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive integrated No Motor drive optional No No No No No No No No No N	Device construction		Built-in device plug-in technique
Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as change-over contact Number of auxiliary contacts as change-over contact No With switched-off indicator With under voltage release No No Number of poles Vers Position of connection for main current circuit Type of control element Complete device with protection unit Wotor drive integrated No Motor drive optional O O O No No No No No No No N	Suitable for DIN rail (top hat rail) mounting		No
Number of auxiliary contacts as normally open contact Number of auxiliary contacts as change-over contact No With switched-off indicator With under voltage release No No Number of poles Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive integrated Motor drive optional O O O O O O O O O O O O O	DIN rail (top hat rail) mounting optional		No
Number of auxiliary contacts as change-over contact With switched-off indicator No With under voltage release No Number of poles Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive integrated Motor drive optional O No No No No No No Yes	Number of auxiliary contacts as normally closed contact		0
With switched-off indicator With under voltage release No Number of poles Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive optional No No No No No No No Yes	Number of auxiliary contacts as normally open contact		0
With under voltage release No Number of poles 4 Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive optional No	Number of auxiliary contacts as change-over contact		0
Number of poles 4 Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive optional 4 Rocker lever Rocker lever Yes No Yes	With switched-off indicator		No
Position of connection for main current circuit Type of control element Complete device with protection unit Motor drive optional Front side Rocker lever Yes Yes Yes	With under voltage release		No
Type of control element Complete device with protection unit Motor drive optional Rocker lever Yes No Yes	Number of poles		4
Complete device with protection unit Yes Motor drive integrated No Motor drive optional Yes	Position of connection for main current circuit		Front side
Motor drive integrated No Yes	Type of control element		Rocker lever
Motor drive optional Yes	Complete device with protection unit		Yes
·	Motor drive integrated		No
Degree of protection (IP)	Motor drive optional		Yes
	Degree of protection (IP)		IP20

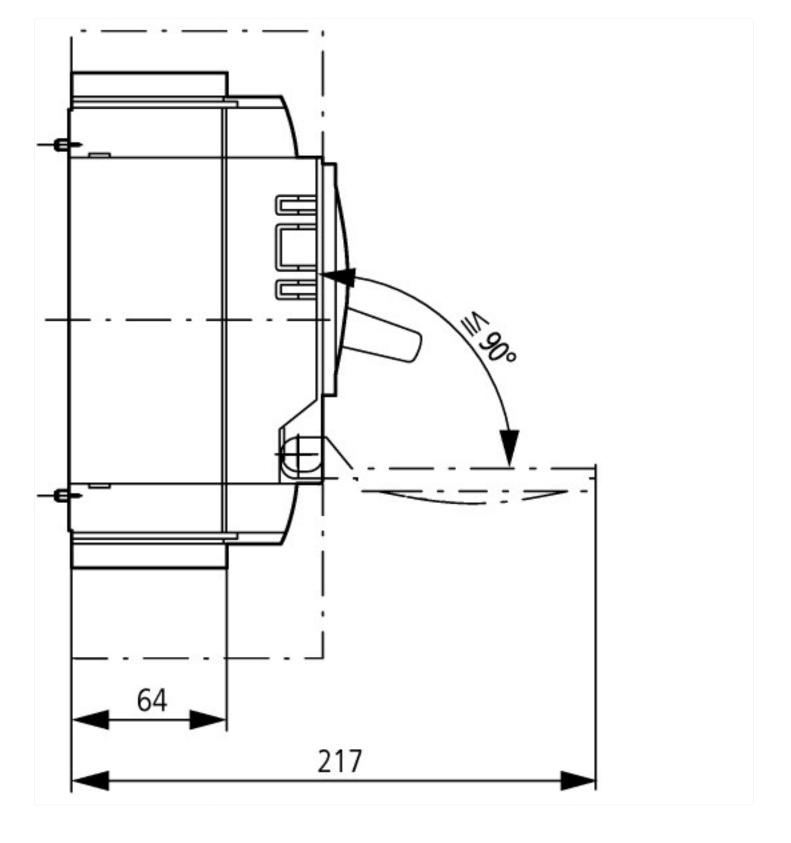
Characteristics

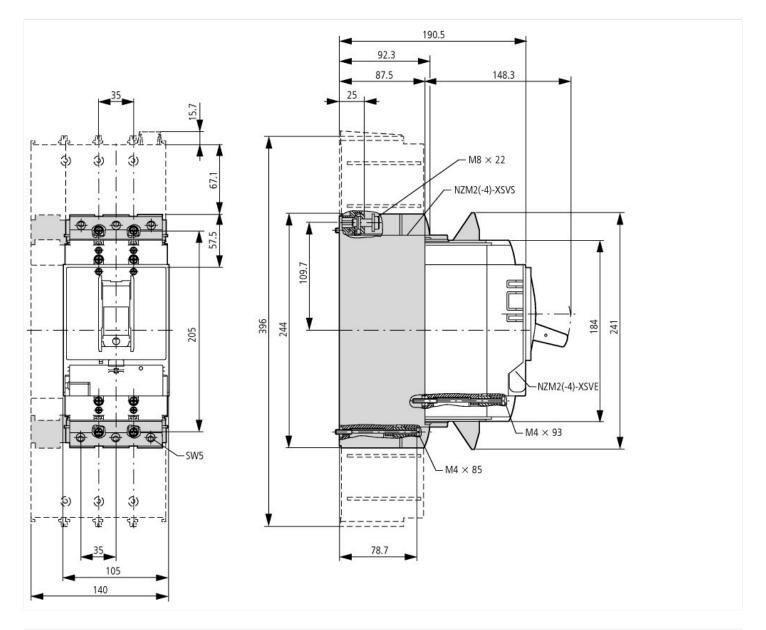




Dimensions







Additional product information (links)

Additional product information (miks)		
IL012099ZU NZM2-PXR circuit-breaker, basic device, NZM2-PXR Circuit-Breaker, basic unit		
IL012099ZU NZM2-PXR circuit-breaker, basic device, NZM2-PXR Circuit-Breaker, basic unit	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL012099ZU2019_03.pdf	
Temperature dependency, Derating	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172	
additional technical information for NZM power switch	https://es-assets.eaton.com/DOCUMENTATION/PDF/nzm_technic_de_en.pdf	