### DATASHEET - NZMC2-4-A160/100-SVE

Part no. Catalog No.



Circuit-breaker, 4p, 160A, 100A in 4th pole, plug-in module

NZMC2-4-A160/100-SVE 113234



Similar to illustration

#### **Delivery program**

Product rangeCircuit-breakerProtectionCircuit-breakerProtection incomeSystem and able protectionStandard ApprovalCECInstallation typeCHernomagnetic releaseConstruction sizeCStandard ApprovalDescriptionCStandard ApprovalNumber of polesCStandard ApprovalStandard adjuipmentCStandard ApprovalStandard adjuipmentCStandard ApprovalStandard adjuipmentCStandard ApprovalStandard adjuipmentCStandard ApprovalStandard ApprovalCStandard ApprovalStandard ApprovalCStandard ApprovalStandard ApprovalCStandard ApprovalStandard ApprovalCStandard ApprovalApprovalLesKAStandard ApprovalCStandard ApprovalApprovalLesKARated current = rated uninterrupted currentLesKANeutral conductor protectionCCRated current = rated uninterrupted currentLesKARated current = rated uninterrupted currentLesKANeutral conductor protectionLesKAStandard ApprovalLesStandard ApprovalImplementLesStandard ApprovalStandard ApprovalLesStandard ApprovalImplementLesStandard ApprovalImplementLesStandard ApprovalImplementLesStandard Appr				
Standard/Approval     IC       Iastallation type     Intermonagnotic rolease       Release system     Intermonagnotic rolease       Construction size     Intermonagnotic rolease       Description     Intermonagnotic rolease       Number of poles     Set value in neutral conductor is synchronous with set value Ir of main pole.       Standard dymment     Set value in neutral conductor is synchronous with set value Ir of main pole.       Standard dymment     Set value in neutral conductor is synchronous with set value Ir of main pole.       Standard dymment     Set value in neutral conductor is synchronous with set value Ir of main pole.       AdovI 15 V 50 Hz     Incu     Kat       Reted current = rated uninterrupted current     Incu     Kat       Returnet = rated uninterrupted current     Incl Incu     Set of the incurrent of protection       Reduced neutral conductor protection     Incl Incu     Reduced neutral conductor protection       Neutral conductor protection     Incl Incurrent     Reduced neutral conductor protection       Verload trip     Incurrent     Incurrent       Incl In pole     Incurrent     Reduced neutral conductor protection       Main pole     Incurrent     Incurrent       Short-circuit releases     Incurrent releases     Incurrent releases	Product range			Circuit-breaker
Installation type         Image: set of the s	Protective function			System and cable protection
Release systm     Thermomagnetic release       Construction size     NZM2       Description     Set value in neutral conductor is synchronous with set value lr of main pole.       Number of poles     Set value in neutral conductor is synchronous with set value lr of main pole.       Standard quipment     Yee       Standard quipment     Yee       400/15 V 50 Hz     Icu     KA       Add/15 V 50 Hz     Icu     KA       Rated current = rated uninterrupted current     Yee       Rated current = rated uninterrupted current     In = lu     A       Neutral conductor protection     In = lu     A       Neutral conductor protection     Yee     Beduced neutral conductor protection       Setting range     Yee     Yee       Overload trip     Yee     Yee       Main pole     Ir     A       Main pole     Ir     A       Short-circuit releases     Ir     A       Short-circuit releases     Ir     A	Standard/Approval			IEC
Construction size     Image: Set and and set and set and	Installation type			Plug-in units
Description       Set value in neutral conductor is synchronous with set value Ir of main pole.         Number of poles       4 pole         Standard equipment       Screw connection         400/415 V 50 Hz       Icu       KA         Additis V 50 Hz       Icu       KA         Rated current = rated uninterrupted current       In = lu       A         Neutral conductor protection       % of phase       CSA         Reduced neutral conductor protection       % of phase       CSA         Overload trip       Image:	Release system			Thermomagnetic release
Number of poles     Pole       Standard equipment     Serve connection       Switching capacity     Lou     KA       400/415 V 50 Hz     Lou     KA       Rated current = rated uninterrupted current     Lou     KA       Rated current = rated uninterrupted current     In = lu     KA       Neutral conductor     No fyhass     Go       Reduced neutral conductor protection     A     10       Neutral conductor protection     A     Reduced neutral conductor protection       Setting range     Image: Conductor     Reduced neutral conductor protection       Neutral conductor protection     Image: Conductor     Reduced neutral conductor protection       Setting range     Image: Conductor     Image: Conductor     Reduced neutral conductor protection       Setting range     Image: Conductor     Image: Conductor     Reduced neutral conductor protection       Setting range     Image: Conductor     Image: Conductor protection     Reduced neutral conductor protection       Setting range     Image: Conductor     Image: Conductor protection     Reduced neutral conductor protection       Setting range     Image: Conductor Protection     Image: Conductor Protection     Reduced neutral conductor protection       Setting range     Image: Conductor Protection     Image: Conductor Protection     Image: Conductor Protection    <	Construction size			NZM2
Standard equipment     Ice     Ice     Screw connection       Switching capacity     Icu     KA     36       400/415 V 50 Hz     Icu     KA     36       Rated current = rated uninterrupted current     In= Iu     A     100       Reduced neutral conductor protection     Image: Conductor     Conductor     Conductor       Reduced neutral conductor protection     Image: Conductor     Reduced neutral conductor protection       Setting range     Image: Conductor     Image: Conductor       Overload trip     Image: Conductor     Image: Conductor       Main pole     Image: Conductor     Image: Conductor       Short-circuit releases     Image: Conductor     Image: Conductor       Short-circuit releases     Image: Conductor     Image: Conductor	Description			Set value in neutral conductor is synchronous with set value Ir of main pole.
Switching capacityIII400/415 V 50 HzIcuKa36Rated current = rated uninterrupted currentIIRated current = rated uninterrupted currentIn = IuA160Neutral conductor% of phase conductorSA60Reduced neutral conductor protectionA100Neutral conductor protectionAICUNeutral conductor protectionAICUSetting rangeAICUInterventionAICUSetting rangeAICUInterventionAICUInterventionAICUInterventionAICUInterventionAICUInterventionAICUInterventionAICUInterventionAICUInterventionAICUInterventionICUICUInterventionICUICUInterventionICUICUInterventionICUICUInterventionICUICUInterventionICUICUInterventionICUICU	Number of poles			4 pole
400/415 V 50 HzIcuKA36Rated current = rated uninterrupted currentIcuKA160Returent = rated uninterrupted currentIcuKA160Neutral conductor% of phase conductorCSA0Reduced neutral conductor protectionA100Neutral conductor protectionA100Setting rangeIcuIcuReduced neutral conductor protectionOverload tripIcuIcuSaMain poleIruA80 - 100Short-circuit releasesIcuIcuIcuShort-circuit releasesIcuIcuIcu	Standard equipment			Screw connection
Rated current = rated uninterrupted current     In = Iu     A     160       Retd current = rated uninterrupted current     In = Iu     A     160       Neutral conductor     % of phase conductor     CSA     60       Reduced neutral conductor protection     A     100       Neutral conductor protection     A     100       Setting range     Verload trip     Reduced neutral conductor protection       Overload trip     Ir     A     100       Main pole     Ir     A     25 - 160       Short-circuit releases     Ir     A     80 - 100	Switching capacity			
Rated current = rated uninterrupted current       In = Iu       A       100         Neutral conductor       % of phase       CSA       0         Reduced neutral conductor protection       A       100         Neutral conductor protection       A       Reduced neutral conductor protection         Setting range       A       Neutral conductor protection         Overload trip       A       Reduced neutral conductor protection         Main pole       Ir       A         Main pole       Ir       A         Short-circuit releases       Ir       Ir	400/415 V 50 Hz	I <sub>cu</sub>	kA	36
Neutral conductor       % of phase conductor       CSA conductor       6         Reduced neutral conductor protection       A       100         Neutral conductor protection       Feed Reduced neutral conductor protection       Reduced neutral conductor protection         Setting range       Feed Feed neutral conductor protection       Reduced neutral conductor protection         Overload trip       Feed Feed neutral conductor protection       Feed Feed neutral conductor protection         Main pole       Ir       A       So - 100         Short-circuit releases       Ir       Ir       A       So - 100	Rated current = rated uninterrupted current			
Reduced neutral conductor protection         A         00           Neutral conductor protection         Reduced neutral conductor protection         Reduced neutral conductor protection           Setting range         Image: Conductor         Reduced neutral conductor protection           Overload trip         Image: Conductor         Image: Conductor           Image: Conductor	Rated current = rated uninterrupted current	$I_n = I_u$	А	160
Neutral conductor protection     Reduced neutral conductor protection       Setting range     Reduced neutral conductor protection       Overload trip     Image: Content of the set of the	Neutral conductor		CSA	60
Setting range     Image: Product of the	Reduced neutral conductor protection		А	100
Overload tripImage: Constraint of the second se	Neutral conductor protection			Reduced neutral conductor protection
Image: ProblemImage:	Setting range			
Main pole   Image: Short-circuit releases     Image: Short-circuit releases     Image: Short-circuit releases	Overload trip			
Short-circuit releases	द	l <sub>r</sub>	A	125 - 160
	Main pole	l <sub>r</sub>	A	80 - 100
Non-delayed $I_i = I_n \times \qquad 6 - 10$				
	Non-delayed	l <sub>i</sub> = l <sub>n</sub> x		6 - 10

# 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 A	C 500
between the auxiliary contacts	V A	C 300

Mounting position			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 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) Circuit-breakers			Temperature dependency, Derating
CITCUIT-DREAKERS Rated current = rated uninterrupted current	I <sub>n</sub> = I <sub>u</sub>	А	160
Rated surge voltage invariability	U <sub>imp</sub>		
	O <sub>IMp</sub>	V	2000
Main contacts		v	8000 6000
Auxiliary contacts Rated operational voltage	U <sub>e</sub>	V AC	690
	0 <sub>e</sub>	V AU	111/3
Overvoltage category/pollution degree Rated insulation voltage	Ui	V	690
Use in unearthed supply systems	01	v	≦ 690
Switching capacity		v	= 050
Rated short-circuit making capacity	I <sub>cm</sub>		
240 V	I <sub>cm</sub>	kA	121
400/415 V	I <sub>cm</sub>	kA	76
440 V 50/60 Hz	I <sub>cm</sub>	kA	63
525 V 50/60 Hz	I <sub>cm</sub>	kA	24
690 V 50/60 H	lc	kA	14
Rated short-circuit breaking capacity I <sub>cn</sub>	I <sub>cn</sub>		
Icu to IEC/EN 60947 test cycle 0-t-C0	lcu	kA	
240 V 50/60 Hz	I <sub>cu</sub>	kA	55
400/415 V 50/60 Hz	I <sub>cu</sub>	kA	36
440 V 50/60 Hz	I <sub>cu</sub>	kA	30
525 V 50/60 Hz		kA	12
690 V 50/60 Hz	I <sub>cu</sub> I <sub>cu</sub>	kA kA	8
Ics to IEC/EN 60947 test cycle 0-t-C0-t-C0		kA	
240 V 50/60 Hz	lcs	кА kA	55
	I <sub>cs</sub>		
400/415 V 50/60 Hz	I <sub>cs</sub>	kA kA	36
440 V 50/60 Hz	I <sub>cs</sub>	kA	22.5
525 V 50/60 Hz	I <sub>cs</sub>	kA	6
690 V 50/60 Hz Utilization category to IEC/EN 60947-2	I <sub>cs</sub>	kA	4 Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker. 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
690 V 50/60 Hz	Operations		5000

Max. operating frequency		Ops/h	120
Total break time at short-circuit		ms	< 10
Terminal capacity			
Standard equipment			Screw connection
Accessories required			NZM2-4-XSVS
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			
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)
Al circular conductor			
Tunnel terminal			
Solid		mm <sup>2</sup>	1 x 16
Stranded			
Stranded		mm <sup>2</sup>	1 x (25 - 185)
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	In	А	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.

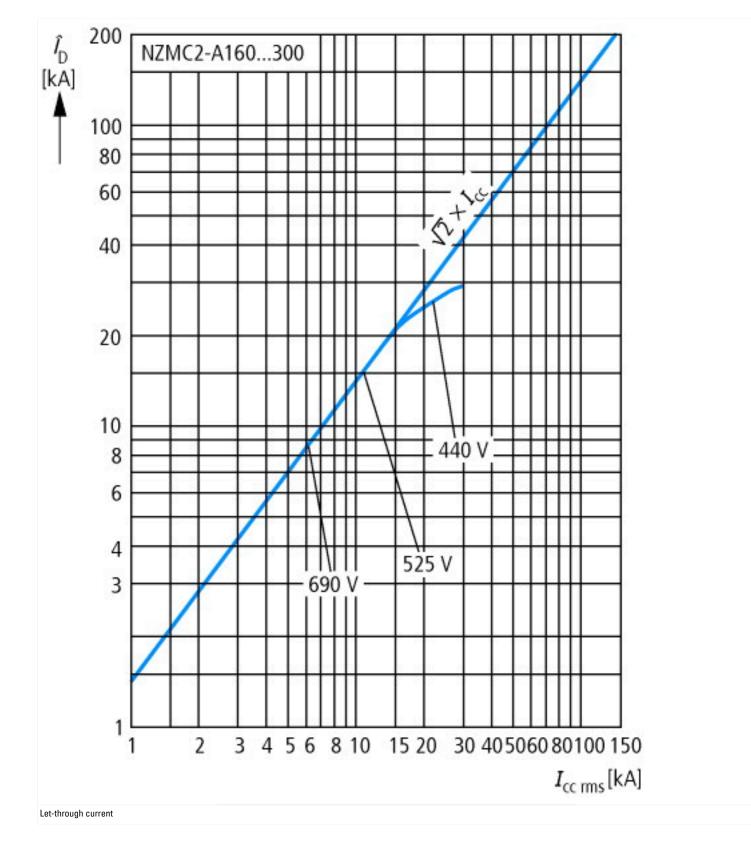
#### **Technical data ETIM 7.0**

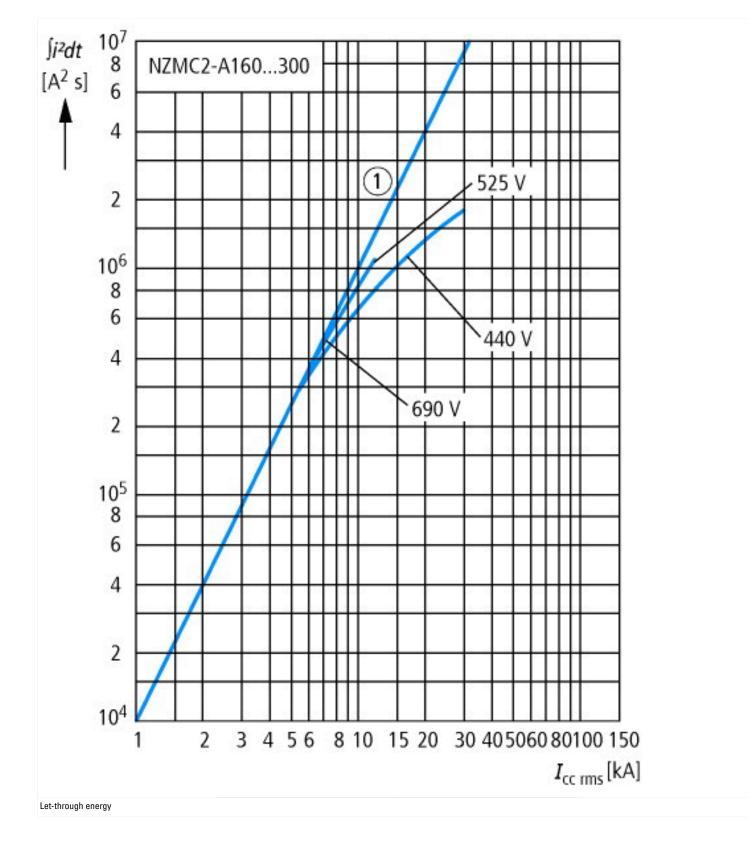
Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)

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])

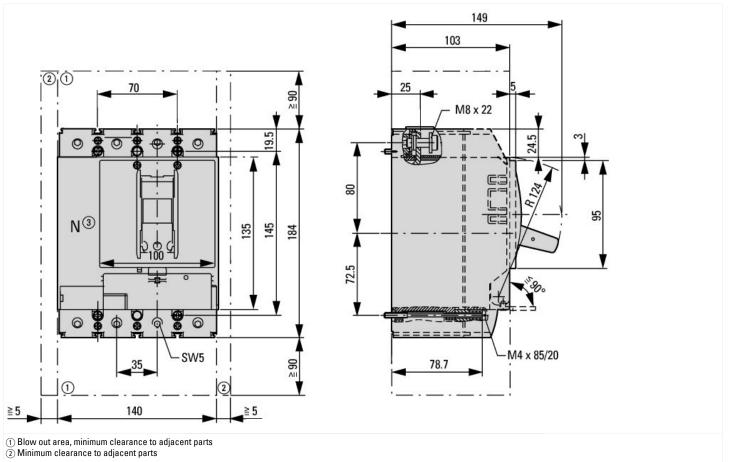
Rated permanent current lu	А	160
Rated voltage	V	690 - 690
Rated short-circuit breaking capacity Icu at 400 V, 50 Hz	kA	36
Overload release current setting	А	125 - 160
Adjustment range short-term delayed short-circuit release	А	0 - 0
Adjustment range undelayed short-circuit release	А	6 - 10
Integrated earth fault protection		No
Type of electrical connection of main circuit		Screw connection
Device construction		Built-in device plug-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 under voltage release		No
Number of poles		4
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		Yes
Degree of protection (IP)		IP20

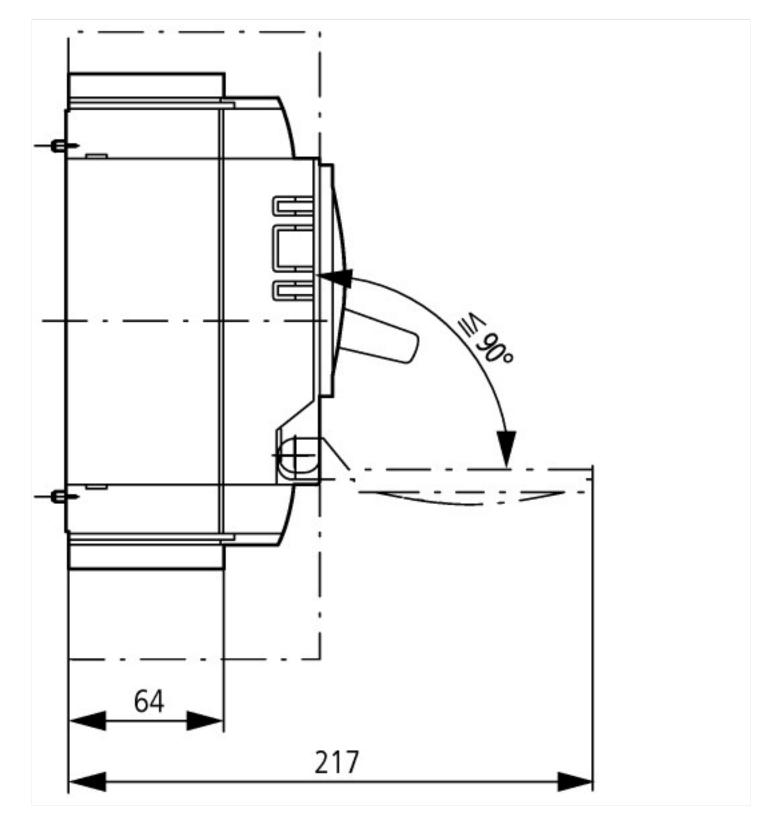












# Additional product information (links)

Temperature dependency, Derating	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172
CurveSelect characteristics program	http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/ index.htm
additional technical information for NZM power switch	ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technic_de_en.pdf