DATASHEET - NZMH2-A40-BT



Circuit-breaker, 3p, 40A, box terminals

NZMH2-A40-BT 110287



EL-Nummer (Norway)

Part no. Catalog No.

4358754

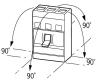
Similar to illustration

Delivery program

Product range			Circuit-breaker
Protective function			System and cable protection
Standard/Approval			IEC
Installation type			Fixed
Release system			Thermomagnetic release
Construction size			NZM2
Number of poles			3 pole
Standard equipment			Box terminal
Switching capacity			
400/415 V 50 Hz	l _{cu}	kA	150
Rated current = rated uninterrupted current			
Rated current = rated uninterrupted current	$I_n = I_u$	А	40
Setting range			
Overload trip			
с¢Г	l _r	A	32 - 40
Short-circuit releases			
Non-delayed	l _i = l _n x		8 - 10
Short-circuit releases	I _{rm}	А	320 - 400

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	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	AC 500
between the auxiliary contacts	V A	AC 300
Mounting position		Vertical and 90° in all directions



90° 90°	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
as required	
In the operating controls area: If	220 (basic degree of protection)
With insulating surround: IP40 With door coupling rotary handle	e: IP66
Tunnel terminal: IP10 Phase isolator and strip terminal	: IP00
Temperature dependency, Derat	ing

А	40
V	8000
V	6000
V AC	690
V DC	750

The following settings are required in order to ensure correct tripping:

The fast-response release will take longer to respond when used for DC applications. Because of this, the setting on the trip block inscription, which is specified for AC currents, must be set to a lower value for DC currents.

DC correction factor for instantaneous release response value:

o NZM1: 1.25

 $I_n = I_u$

U_{imp}

Ue

Ue

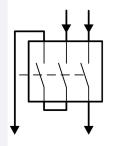
- o NZM2: 1.35
- o NZM3: 1.45
- Example: NZM3 le = 500A. Desired DC tripping current: 10 * le = 5000A.

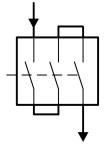
Calculation:

• Desired DC value / correction factor = AC setting on trip block

• 5000A / 1.45 = 3448 A ~ 7 * Ie = Value that needs to be set on the trip block

Permitted circuit configurations:





Overvoltage category/pollution degree III/3	
Rated insulation voltage U _i V 1000	
Use in unearthed supply systems V ≦ 690	
Switching capacity	
Rated short-circuit making capacity I _{cm}	
240 V I _{cm} kA 330	
400/415 V I _{cm} kA 330	
440 V 50/60 Hz kA 286	
525 V 50/60 Hz I _{cm} kA 105	
690 V 50/60 H Ic kA 40	
Rated short-circuit breaking capacity I _{cn} I _{cn}	

Direction of incoming supply Degree of protection Device Enclosures

Terminations

Circuit-breakers

Main contacts Auxiliary contacts Rated operational voltage

Rated operational voltage

Other technical data (sheet catalogue)

Rated surge voltage invariability

Rated current = rated uninterrupted current

Icu to IEC/EN 60947 test cycle 0-t-C0	lcu	kA	
240 V 50/60 Hz	I _{cu}	kA	150
400/415 V 50/60 Hz	l _{cu}	kA	150
440 V 50/60 Hz	l _{cu}	kA	130
525 V 50/60 Hz	I _{cu}	kA	50
690 V 50/60 Hz	l _{cu}	kA	20
500 V DC	l _{cu}	kA	60
750 V DC	I _{cu}	kA	60
Ics to IEC/EN 60947 test cycle 0-t-C0-t-C0	lcs	kA	
240 V 50/60 Hz	I _{cs}	kA	150
400/415 V 50/60 Hz	I _{cs}	kA	150
440 V 50/60 Hz	I _{cs}	kA	130
525 V 50/60 Hz	I _{cs}	kA	37.5
690 V 50/60 Hz	I _{cs}	kA	5
500 V DC	I _{cs}	kA	15
750 V DC		kA	15
	I _{cs}	M	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			Α
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		10000
690 V 50/60 Hz	Operations		7500
AC3			
400 V 50/60 Hz	Operations		6500
415 V 50/60 Hz	Operations		6500
690 V 50/60 Hz	Operations		5000
DC-1			
500 V DC	Operations		7500
750 V DC	Operations		7500
DC - 3			
500 V DC	Operations		3000
750 V DC	Operations		3000
Max. operating frequency		Ops/h	120
Total break time at short-circuit		ms	< 10
Terminal capacity Standard equipment			Box terminal
Optional accessories			Screw terminal Tunnel terminal connection on rear
Round copper conductor			
Box terminal			
Solid		mm ²	1 x (10 - 16) 2 x (6 - 16)
Stranded		mm ²	1 x (25 - 185) 2 x (25 - 70)
Tunnel terminal			
Solid		mm ²	1 × 16
Stranded			
1-hole		mm ²	1 x (25 - 185)
Bolt terminal and rear-side connection			

Direct on the switch			
Solid		mm ²	1 x (10 - 16) 2 x (6 - 16)
Stranded		mm ²	1 x (25 - 185) 2 x (25 - 70)
Al circular conductor			
Tunnel terminal			
Solid		mm ²	1 x 16
Stranded			
Stranded		mm ²	1 x (25 - 185)
Cu strip (number of segments x width x segment thickness)			
Box terminal			
	min.	mm	2 × 9 × 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 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	А	40
Equipment heat dissipation, current-dependent	P _{vid}	W	13.44
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.

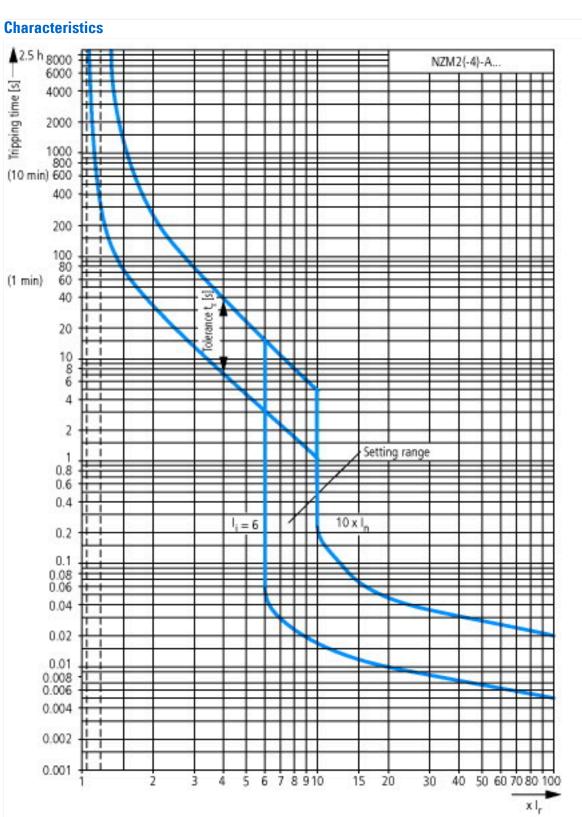
10.11 Short-circuit rating	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

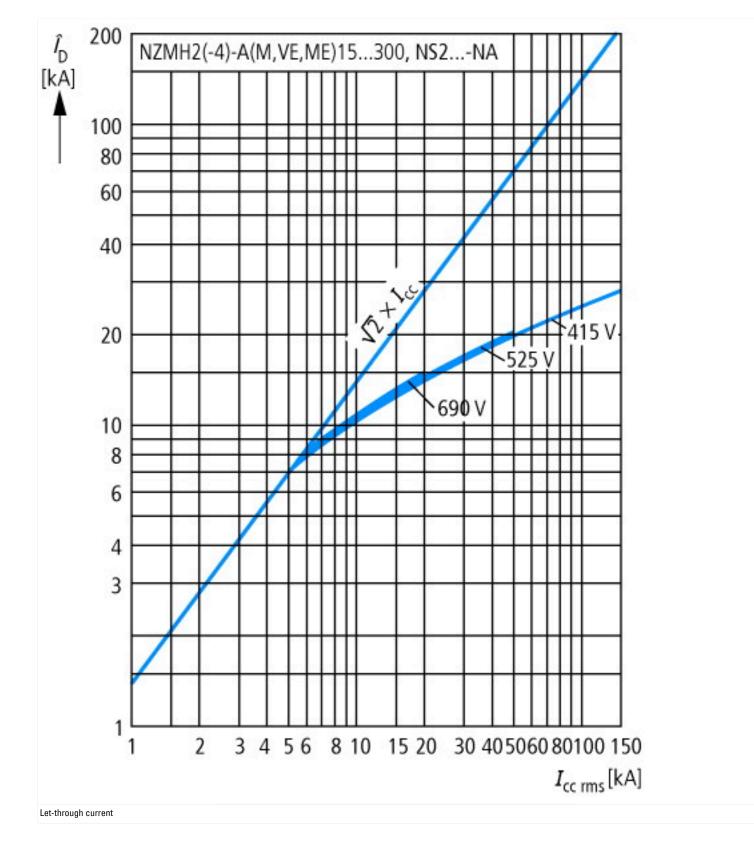
Technical data ETIM 7.0

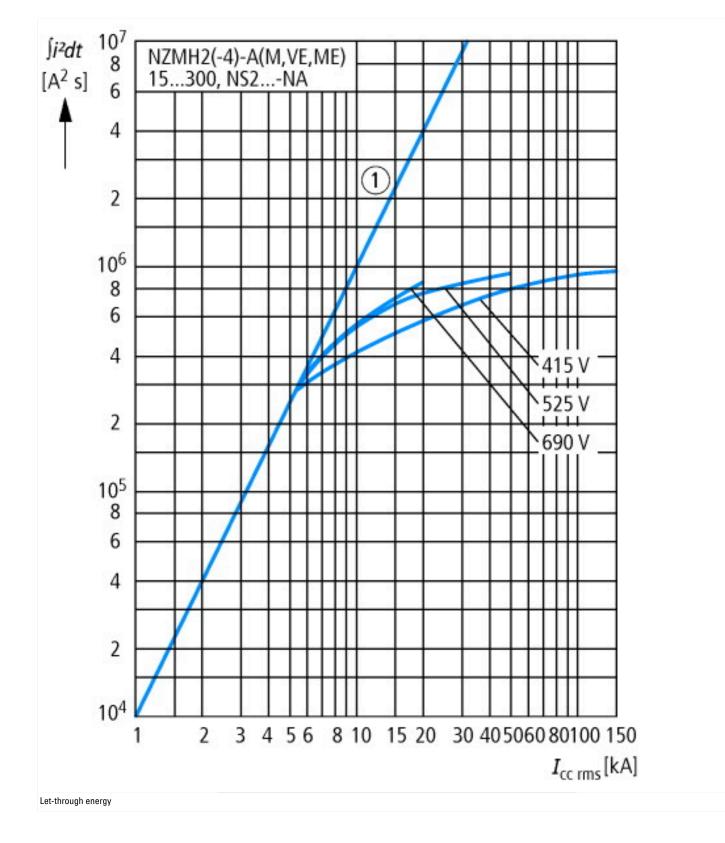
Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)

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])

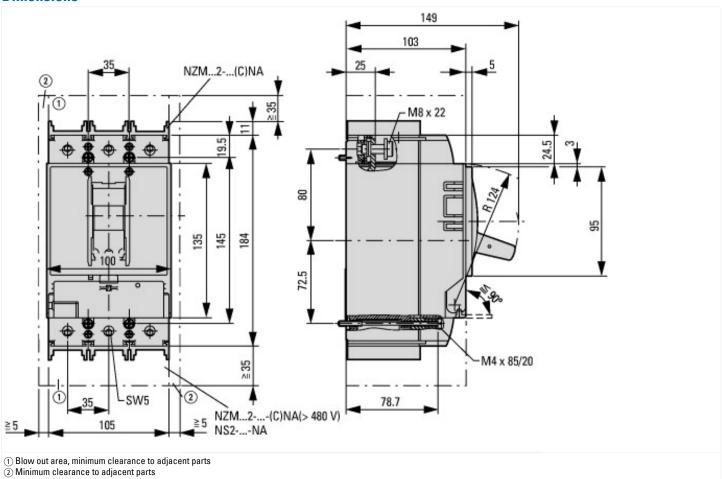
Rate dormane A A A Reid outoge N Sole Sole Reid short-circuit reaking capacity (cu at 400 V, 50 Hz) N Sole Sole Outodar lease current setting Sole Sole Sole Sole Adjustmart range short-circuit release A Sole Sole Adjustmart range undeleyed short-circuit release A Sole Sole Nater ange undeleyed short-circuit release A Sole Sole Nater ange undeleyed short-circuit release A Sole Sole Sole Sole Sole Sole Sole Sole Sole Sole	protection (eci@ss10.0.1-27-37-04-09 [AJZ710013])		
Rate abort-circuit preaking capacity lou at 400 V, 50 Hz Image abort preaking capacity lou at 400 V, 5	Rated permanent current lu	А	40
Overload release current setting A 2 40 Adjustment range short-term delayed short-circuit release A 0 0 Adjustment range undelayed short-circuit release A 20 400 Integrated earth fault protection No No No Type of electrical connection of main circuit M M M Mo Divice construction M M Mo Mo Mo Divice for DIN rail (top hat rail) mounting optional M Mo	Rated voltage	V	690 - 690
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Adjustment range undelayed short-circuit release A 20-400 Integrated earth fault protection Fame clamp No Type of electrical connection of main circuit Fame clamp Built-in device fixed built-in technique Davice construction Fame clamp Built-in device fixed built-in technique Suitable for DN rail (top hat rail) mounting optional Fame clamp Built-in device fixed built-in technique Number of auxiliary contacts as normally closed contact Fame clamp Fame clamp Number of auxiliary contacts as normally closed contact Fame clamp Fame clamp Number of auxiliary contacts as normally closed contact Fame clamp Fame clamp Number of auxiliary contacts as normally closed contact Fame clamp Fame clamp Number of auxiliary contacts as normally closed contact Fame clamp Fame clamp Number of auxiliary contacts as normally closed contact Fame clamp Fame clamp Number of plasi Fame clamp Fame clamp Fame clamp Number of plase Fame clamp Fame clamp Fame clamp Number of plase Fame clamp Fame clamp Fame clamp You of control element Fame clamp Fame clamp <td>Overload release current setting</td> <td>А</td> <td>32 - 40</td>	Overload release current setting	А	32 - 40
Integrated earth fault protection No Type of electrical connection of main circuit Fame 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 No Number of auxiliary contacts as normally closed contact No Number of auxiliary contacts as normally closed contact O Number of auxiliary contacts as normally closed contact O Number of auxiliary contacts as normally closed contact O Number of auxiliary contacts as normally closed contact No Number of auxiliary contacts as normally closed contact O Number of auxiliary contacts as change-over contact No With under voltage release No Number of poles No Position of connection for main current circuit No Type of control element Farse Complete device with protection unit Position Nord rive integrated No Motor drive integrated No Motor drive integrated No Motor drive integrated No	Adjustment range short-term delayed short-circuit release	А	0 - 0
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 O Number of auxiliary contacts as normally contact O Number of auxiliary contacts as change-over contact O With under voltage release No Number of formain current circuit Yes Type of control element Ford side Complete device with protection unit No Moor drive optional Yes	Adjustment range undelayed short-circuit release	А	320 - 400
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 Ves 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 0 With under voltage release No Number of function for main current circuit No Type of control element Fort side Yes Solder Participation Yes No Number of poles No Number of poles No Yes Solder Participation Yes Solder	Integrated earth fault protection		No
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 contact 0 Number of auxiliary contacts as normally copen contact 0 Number of auxiliary contacts as normally copen contact 0 Number of auxiliary contacts as change-over contact 0 Number of auxiliary contacts as change-over contact No Number of auxiliary contacts as change-over contact No Number of auxiliary contacts as normally copen contact No Number of auxiliary contacts as normally copen contact No Number of auxiliary contacts as change-over contact No With under voltage release No Number of poles No Position of connection formain current circuit Front side Type of control element Rocker lever Complet device with protection unit No Motor drive integrated No Motor drive optional Yes	Type of electrical connection of main circuit		Frame clamp
DIN rail (top hat rail) mounting optionalYesNumber of auxiliary contacts as normally closed contact0Number of auxiliary contacts as normally open contact0Number of auxiliary contacts as normally open contact0Number of auxiliary contacts as change-over contact0With switched-off indicatorNoWith under voltage releaseNoNumber of poles3Position of connection for main current circuitFort sideType of control elementRocker leverComplete device with protection unitYesMotor drive integratedYesMotor drive optionalYesMotor drive option	Device construction		Built-in device fixed built-in technique
Number of auxiliary contacts as normally closed contactImage: Contact of auxiliary contacts as normally open contactImage: Contact of auxiliary contacts as change-over contactImage: Contact of auxiliary contacts as normally open contacts as normally open contacts as normally contacts as normally open contacts as normally open contacts as normally contacts as normally open contacts as normally contacts as normal normally contacts a	Suitable for DIN rail (top hat rail) mounting		No
Number of auxiliary contacts as normally open contactImage: Content of auxiliary contacts as change-over contactImage: Content of auxiliary content of auxiliary contacts as change-over contactImage: Content of auxiliary content of au	DIN rail (top hat rail) mounting optional		Yes
Number of auxiliary contacts as change-over contact Image: Content of auxiliary contacts as change-over contact With switched-off indicator Image: Content of auxiliary contacts as change-over contact With under voltage release Image: Content of auxiliary contacts as change-over contact Number of poles Image: Content of auxiliary contacts as change-over contacts Position of connection for main current circuit Image: Content of auxiliary contacts Type of control element Image: Content of auxiliary contacts Complete device with protection unit Image: Content of auxiliary contacts Motor drive integrated Image: Content of auxiliary contacts Motor drive optional Image: Content of auxiliary content of auxiliary contacts <td>Number of auxiliary contacts as normally closed contact</td> <td></td> <td>0</td>	Number of auxiliary contacts as normally closed contact		0
With switched-off indicatorImage: Solution of consection for main current circuitImage: Solution consection for main current circuitImage: Solution consection consection for ma	Number of auxiliary contacts as normally open contact		0
With under voltage releaseNoNumber of poles3Position of connection for main current circuitFont sideType of control elementRocker leverComplete device with protection unitYesNotor drive integratedNoMotor drive optionalSet Set Set Set Set Set Set Set Set Set	Number of auxiliary contacts as change-over contact		0
Number of poles 3 Position of connection for main current circuit 6 5 Type of control element 6 6 Complete device with protection unit 6 6 Motor drive integrated 6 6 Motor drive optional 6 6	With switched-off indicator		No
Position of connection for main current circuit Position Front side Type of control element Rocker lever Complete device with protection unit Yes Motor drive integrated No Motor drive optional Yes	With under voltage release		No
Type of control element Rocker lever Complete device with protection unit Yes Motor drive integrated No Motor drive optional Yes	Number of poles		3
Complete device with protection unit Yes Motor drive integrated No Motor drive optional Set	Position of connection for main current circuit		Front side
Motor drive optional Motor	Type of control element		Rocker lever
Motor drive optional Yes	Complete device with protection unit		Yes
	Motor drive integrated		No
Degree of protection (IP) IP20	Motor drive optional		Yes
	Degree of protection (IP)		IP20

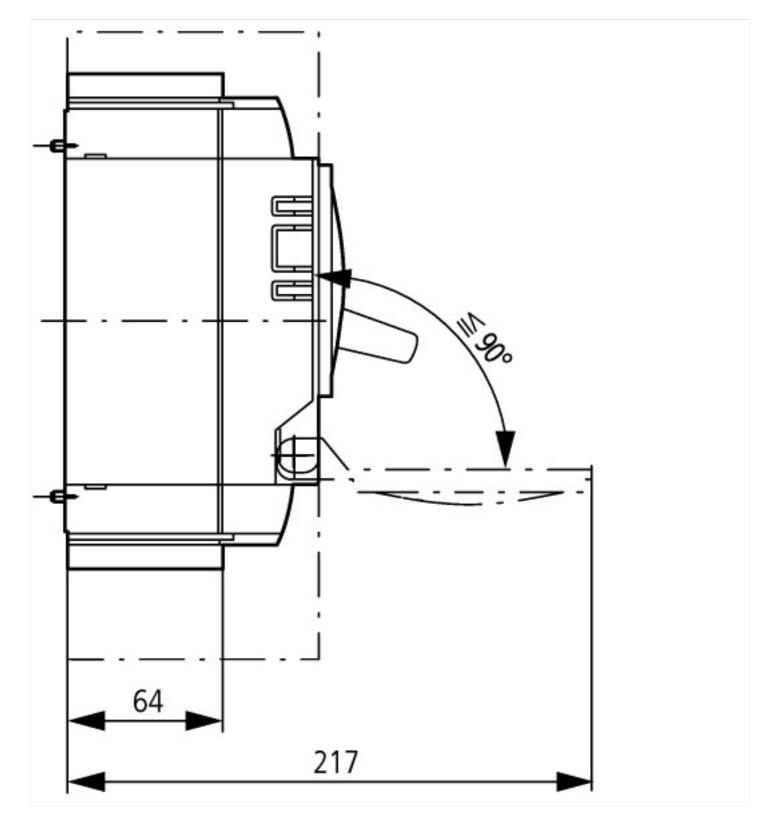






Dimensions





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	https://es-assets.eaton.com/DOCUMENTATION/PDF/nzm_technic_de_en.pdf