








## Circuit-breaker, 4p, 160A

**Part no.** NZMN1-4-A160  
**Catalog No.** 281251  
**EL-Nummer (Norway)** 4358990

Similar to illustration

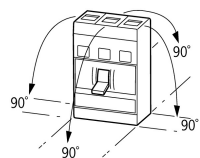
## Delivery program

Product range				Circuit-breaker
Protective function				System and cable protection
Standard/Approval				IEC
Installation type				Fixed
Release system				Thermomagnetic release
Construction size				NZM1
Description				Set value in neutral conductor is synchronous with set value $I_r$ of main pole.
Number of poles				4 pole
Standard equipment				Box terminal
<b>Switching capacity</b>				
400/415 V 50 Hz	$I_{cu}$	kA		50
<b>Rated current = rated uninterrupted current</b>				
Rated current = rated uninterrupted current	$I_n = I_u$	A		160
Neutral conductor	% of phase conductor	CSA		100
<b>Setting range</b>				
Overload trip				
	$I_r$	A		125 - 160
Main pole 	$I_r$	A		125 - 160
Short-circuit releases				
				
Non-delayed	$I_i = I_n \times \dots$			1280 A fixed
				
Short-circuit releases				
				
max.		A		1280

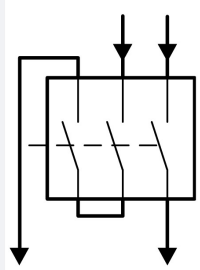
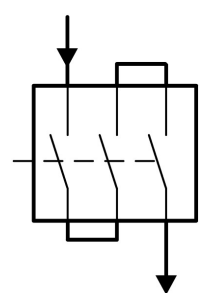
## Technical data

### 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 AC		500

between the auxiliary contacts	V AC	300	
Mounting position		Vertical and 90° in all directions	 <p>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</p>
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

Rated current = rated uninterrupted current	$I_n = I_u$	A	160
Rated surge voltage invariability	$U_{imp}$		
Main contacts		V	6000
Auxiliary contacts		V	6000
Rated operational voltage	$U_e$	V AC	690
			<p>Details apply for 3 pole system protection circuit-breaker with thermomagnetic release NZMN(H)1(2)(3)-A... to 500 A.</p> <p>For rated operating voltage switching via 3 contacts:</p> <p>DC correction factor for instantaneous release response value: NZM1: 1.25, NZM2: 1.35, NZM3: 1.45</p> <p>Set value for <math>I_i</math> at DC = set value <math>I_i</math> AC/correction factor DC</p> <p><b>Circuit type: 2 pole, + and -, two sides</b></p>  <p><b>Circuit type: 1 pole, + or -, two sides</b></p> 
Overvoltage category/pollution degree			III/3
Rated insulation voltage	$U_i$	V	690
Use in unearthed supply systems		V	≅ 690

### Switching capacity

Rated short-circuit making capacity	$I_{cm}$		
240 V	$I_{cm}$	kA	187
400/415 V	$I_{cm}$	kA	105
440 V 50/60 Hz	$I_{cm}$	kA	74
525 V 50/60 Hz	$I_{cm}$	kA	40
690 V 50/60 Hz	$I_c$	kA	17
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	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 <sub>CU</sub>	kA	20
690 V 50/60 Hz	I <sub>CU</sub>	kA	10
I <sub>CS</sub> to IEC/EN 60947 test cycle O-t-CO-t-CO	I <sub>CS</sub>	kA	
240 V 50/60 Hz	I <sub>CS</sub>	kA	85
400/415 V 50/60 Hz	I <sub>CS</sub>	kA	50
440 V 50/60 Hz	I <sub>CS</sub>	kA	35
525 V 50/60 Hz	I <sub>CS</sub>	kA	10
690 V 50/60 Hz	I <sub>CS</sub>	kA	7.5
			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 <sub>e</sub>	A	
AC-1			
380 V 400 V	I <sub>e</sub>	A	160
415 V	I <sub>e</sub>	A	160
690 V	I <sub>e</sub>	A	160
AC--3			
380 V 400 V	I <sub>e</sub>	A	160
415 V	I <sub>e</sub>	A	160
660 V 690 V	I <sub>e</sub>	A	160
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
AC--3			
400 V 50/60 Hz	Operations		7500
415 V 50/60 Hz	Operations		7500
690 V 50/60 Hz	Operations		5000
Max. operating frequency		Ops/h	120
Total downtime in a short-circuit		ms	< 10

### Terminal capacity

Standard equipment			Box terminal
Optional accessories			Screw connection 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 (10 - 70) <sup>3)</sup> 2 x (6-25)
			<sup>3)</sup> Up to 95 mm <sup>2</sup> can be connected depending on the cable manufacturer.
Tunnel terminal			
Solid		mm <sup>2</sup>	1 x 16
Stranded		mm <sup>2</sup>	
1-hole		mm <sup>2</sup>	1 x (25 - 95)
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 (10 - 70) <sup>3)</sup> 2 x 25
			<sup>3)</sup> Up to 95 mm <sup>2</sup> can be connected depending on the cable manufacturer.

Al conductors, Cu cable			
Solid		mm <sup>2</sup>	1 x 16
Stranded		mm <sup>2</sup>	
Stranded		mm <sup>2</sup>	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)			
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 <sup>2</sup>	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)

## Design verification as per IEC/EN 61439

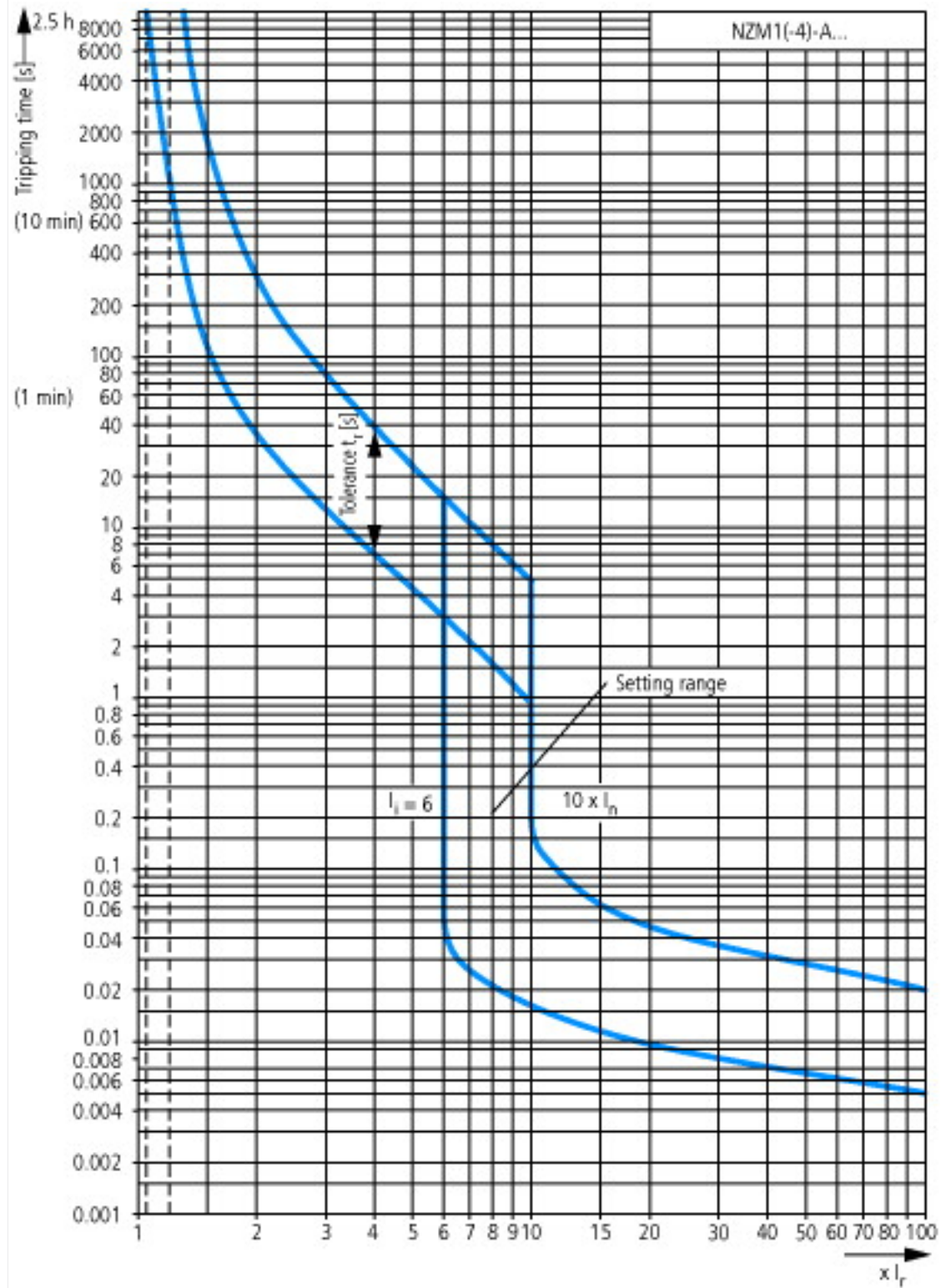
Technical data for design verification			
Rated operational current for specified heat dissipation	I <sub>n</sub>	A	160
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	36.1
Operating ambient temperature max.		°C	-25
Operating ambient temperature max.		°C	70
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3 Verification of thermal stability of enclosures			
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)

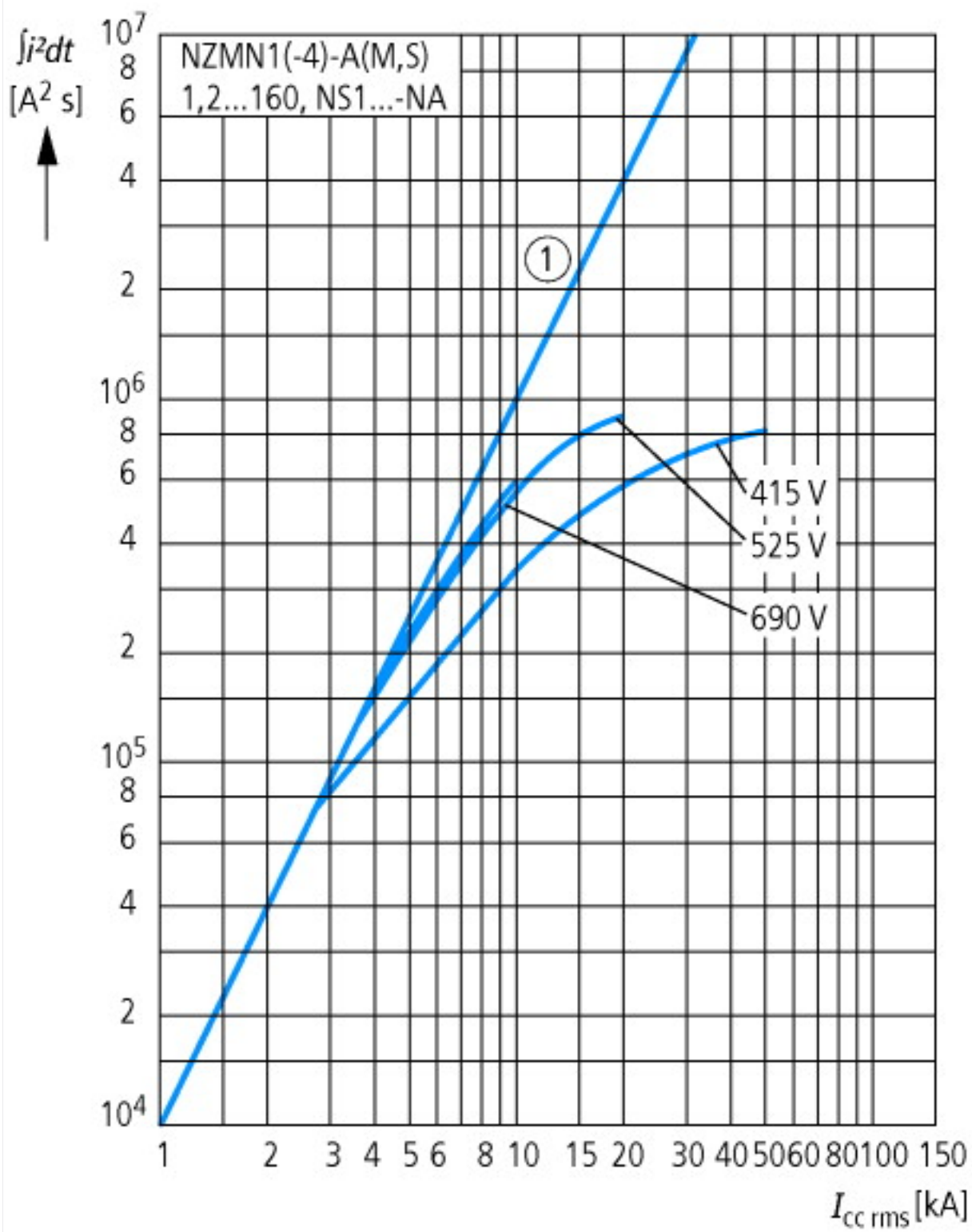
Rated permanent current I <sub>u</sub>	A	160
Rated voltage	V	690 - 690
Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, 50 Hz	kA	50
Overload release current setting	A	125 - 160
Adjustment range short-term delayed short-circuit release	A	0 - 0
Adjustment range undelayed short-circuit release	A	960 - 1600
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		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		No
Degree of protection (IP)		IP20

# Characteristics



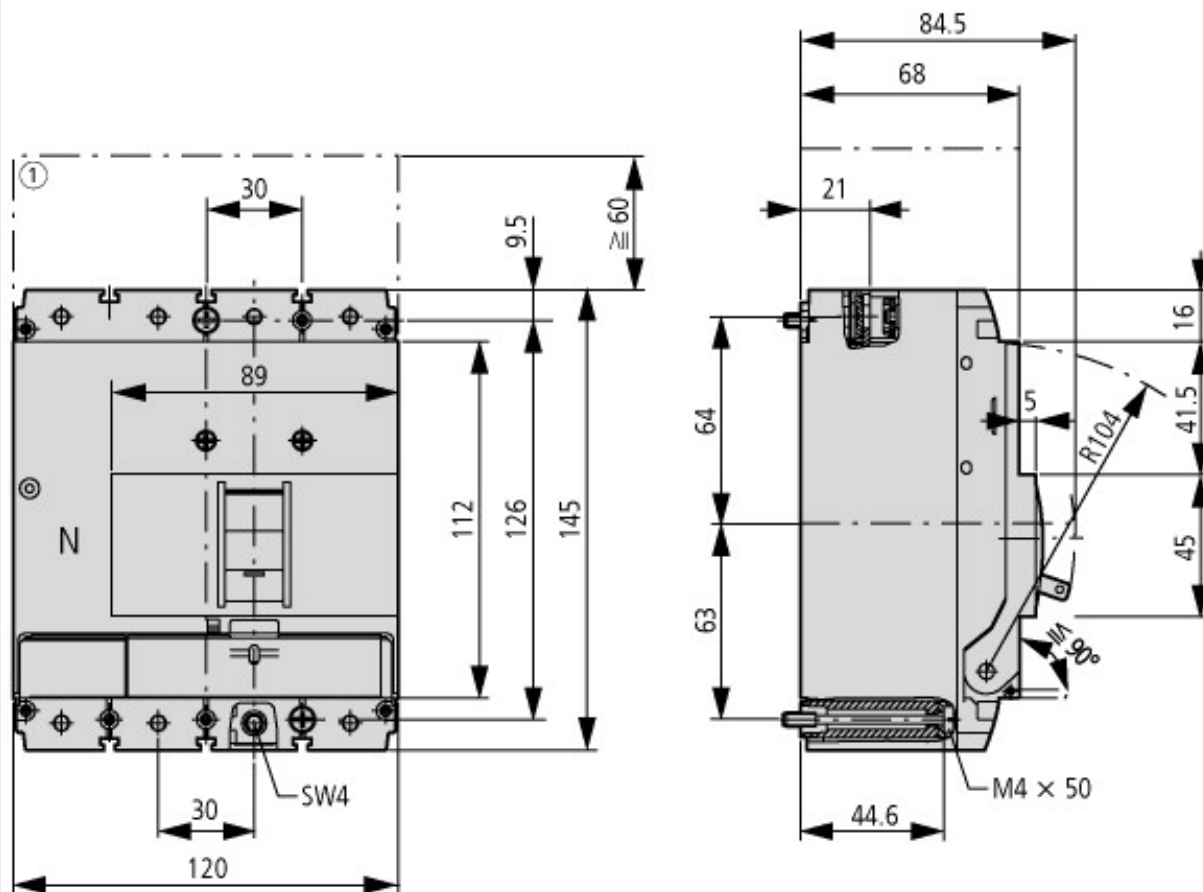


Let-through current

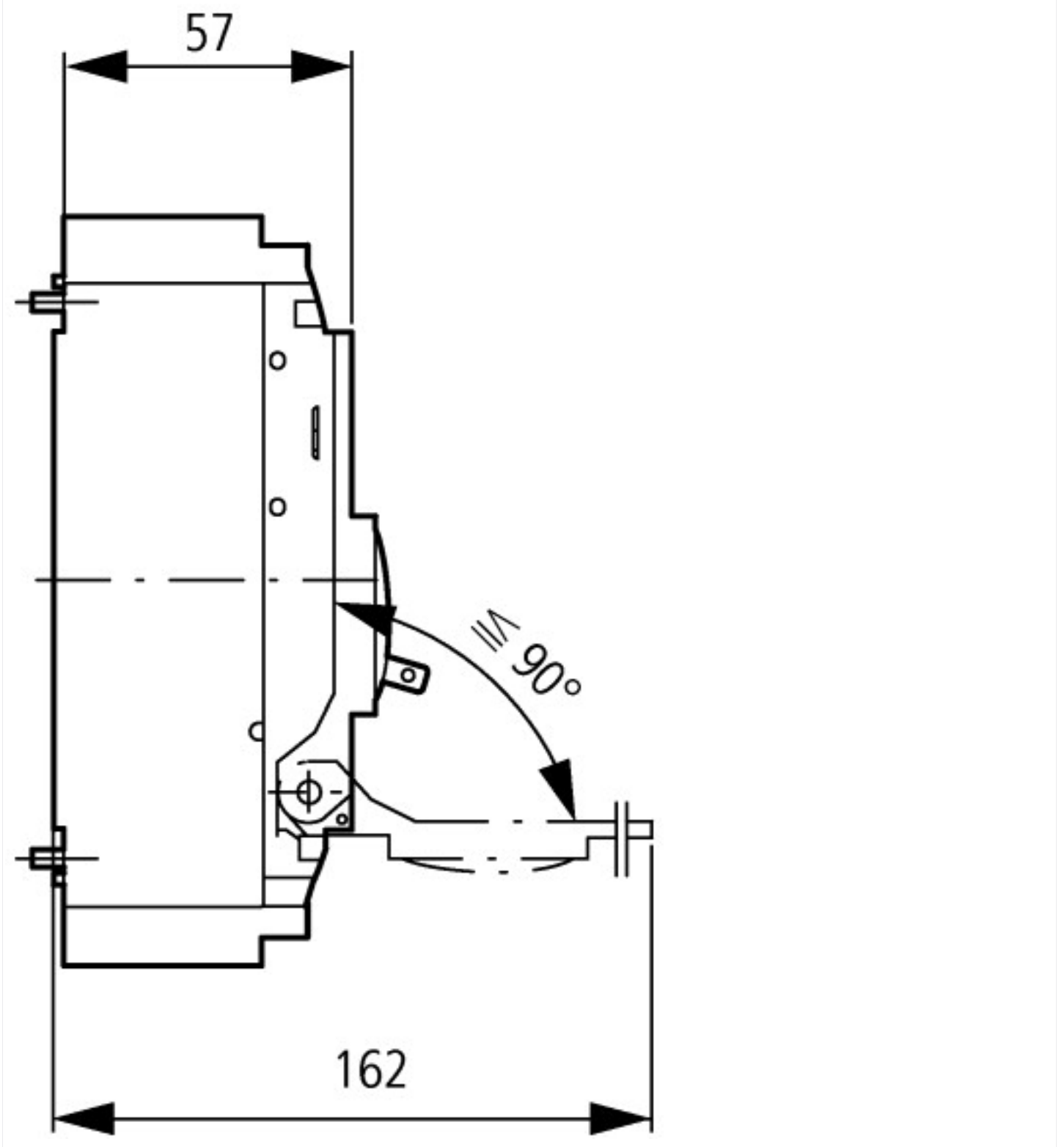


Let-through energy

## 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](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01203004Z2015_11.pdf)

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>