







## Circuit-breaker, 3p, 40A

**Part no.** NZMN1-A40  
**Catalog No.** 259081

**EL-Nummer (Norway)** 4358706

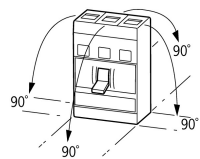
Similar to illustration

## 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
Number of poles			3 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	40
<b>Setting range</b>			
Overload trip			
	$I_r$	A	32 - 40
<b>Short-circuit releases</b>			
			
Non-delayed	$I_i = I_n \times \dots$		8 - 10
			
Short-circuit releases	$I_{rm}$	A	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
<b>Ambient temperature</b>			
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)
<b>Safe isolation to EN 61140</b>			
Between auxiliary contacts and main contacts		V AC	500
between the auxiliary contacts		V AC	300
<b>Mounting position</b>			
			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</p>

- 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

Rated current = rated uninterrupted current	$I_n = I_u$	A	40
Rated surge voltage invariability	$U_{imp}$		
Main contacts		V	6000
Auxiliary contacts		V	6000
Rated operational voltage	$U_e$	V AC	690
Rated operational voltage	$U_e$	V DC	500

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:

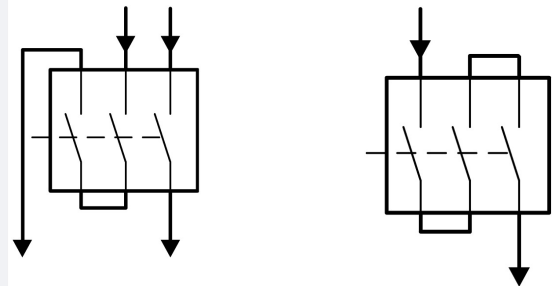
- o NZM1: 1.25
- o NZM2: 1.35
- o NZM3: 1.45


Example: NZM3  $I_e = 500A$ . Desired DC tripping current:  $10 * I_e = 5000A$ .

Calculation:

- Desired DC value / correction factor = AC setting on trip block
- $5000A / 1.45 = 3448 A \sim 7 * I_e =$  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	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 H	$I_c$	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 <sub>CU</sub>	kA	35
525 V 50/60 Hz	I <sub>CU</sub>	kA	20
690 V 50/60 Hz	I <sub>CU</sub>	kA	10
500 V DC	I <sub>CU</sub>	kA	15
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
500 V DC	I <sub>CS</sub>	kA	15
			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	40
415 V	I <sub>e</sub>	A	40
690 V	I <sub>e</sub>	A	40
AC--3			
380 V 400 V	I <sub>e</sub>	A	40
415 V	I <sub>e</sub>	A	40
660 V 690 V	I <sub>e</sub>	A	40
DC-1			
500 V DC	I <sub>e</sub>	A	40
DC - 3			
500 V DC	I <sub>e</sub>	A	40
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
DC-1			
500 V DC	Operations		10000
DC - 3			
500 V DC	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			
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

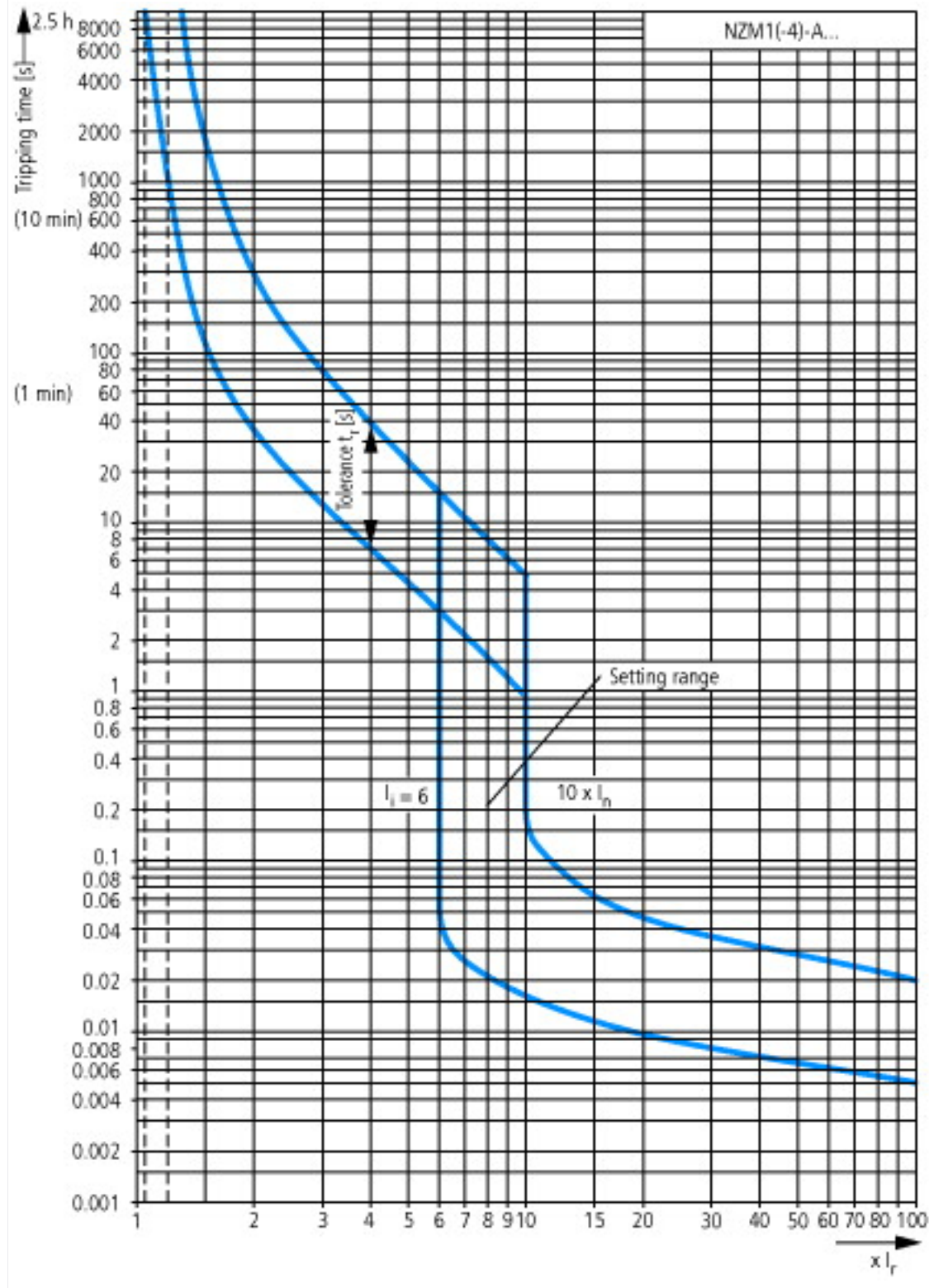
Technical data for design verification			
Rated operational current for specified heat dissipation	I <sub>n</sub>	A	40
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	10.66
Operating ambient temperature max.		°C	-25
Operating ambient temperature max.		°C	70
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			
10.2.2.1 Verification of thermal stability of enclosures			
10.2.2.2 Verification of resistance of insulating materials to normal heat			
10.2.2.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			
10.2.4 Resistance to ultra-violet (UV) radiation			
10.2.5 Lifting			
10.2.6 Mechanical impact			
10.2.7 Inscriptions			
10.3 Degree of protection of ASSEMBLIES			
10.4 Clearances and creepage distances			
10.5 Protection against electric shock			
10.6 Incorporation of switching devices and components			
10.7 Internal electrical circuits and connections			
10.8 Connections for external conductors			
10.9 Insulation properties			
10.9.2 Power-frequency electric strength			
			Meets the product standard's requirements.
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			Meets the product standard's requirements.
			Meets the product standard's requirements.
			Does not apply, since the entire switchgear needs to be evaluated.
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			Is the panel builder's responsibility.
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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)		
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@ss8.1-27-37-04-09 [AJZ716010])		
Rated permanent current I <sub>u</sub>	A	40
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	32 - 40
Adjustment range short-term delayed short-circuit release	A	0 - 0
Adjustment range undelayed short-circuit release	A	320 - 400
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		3
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



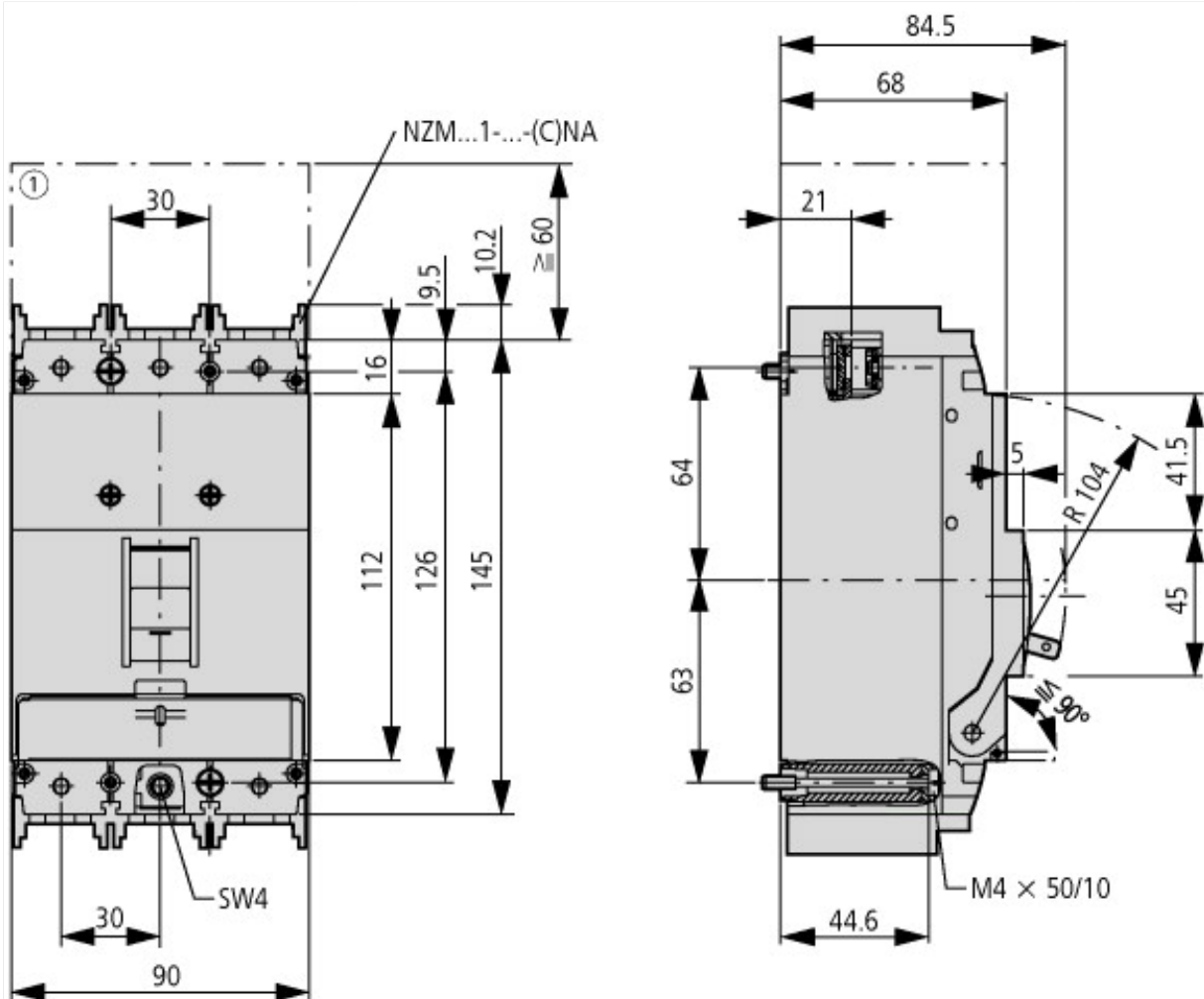


Let-through current

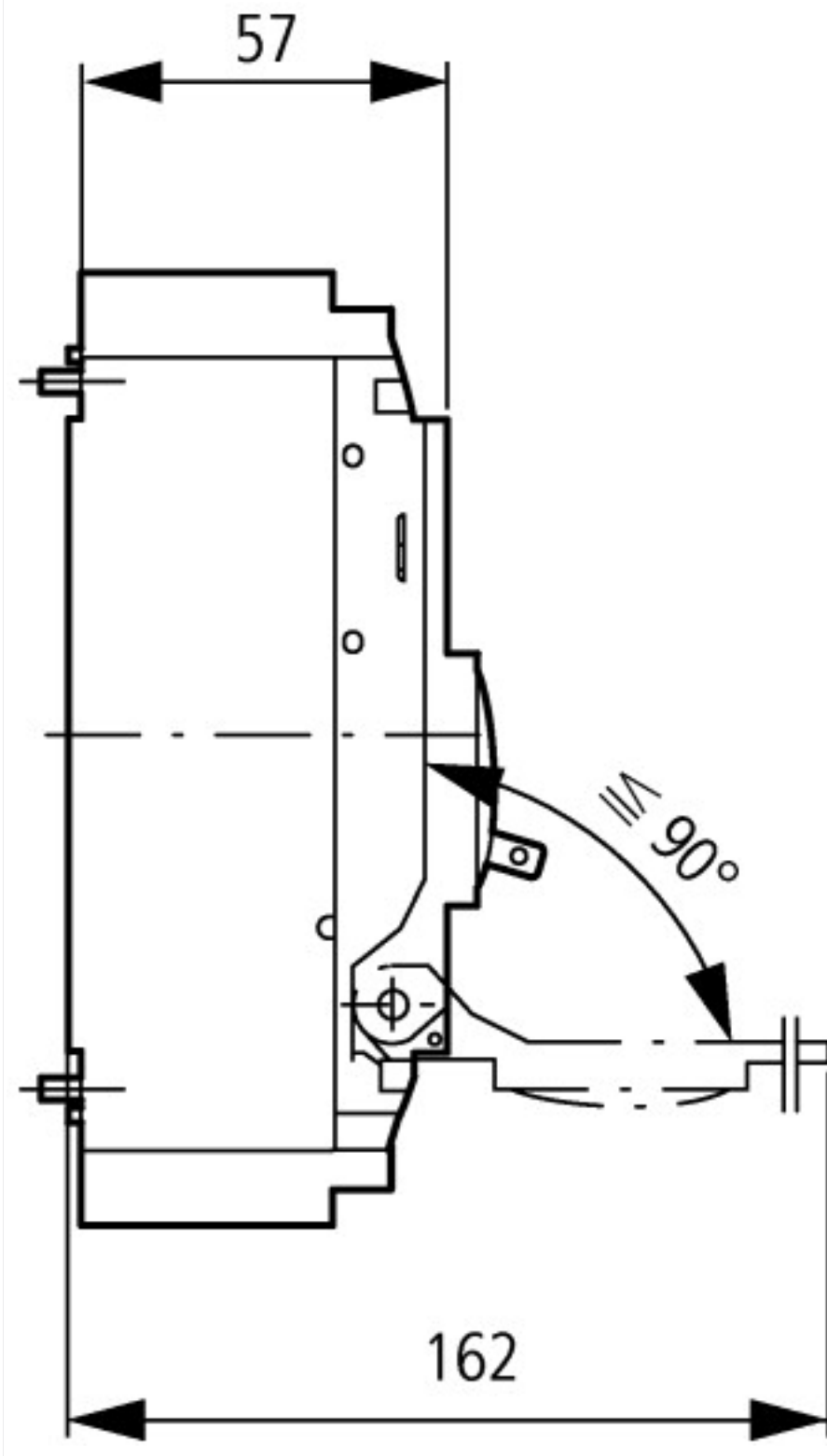


Let-through energy

## 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>