







**Circuit-breaker, 3p, 1600A 1000V**

**Part no. NZMH4-VE1600-S1**  
**Catalog No. 290379**

**EL-Nummer (Norway) 0004359053**

Similar to illustration

## Delivery program

Product range			Circuit-breaker
Protective function			Systems, cable, selectivity and generator protection
Standard/Approval			IEC
Installation type			Fixed
Release system			Electronic release
Construction size			NZM4
Description			R.m.s. value measurement and "thermal memory" adjustable time delay setting to overcome current peaks tr: 2 – 20 s at 6 x I <sub>r</sub> also infinity (without overload releases) Adjustable delay time tsd: Steps: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms i <sup>2</sup> t constant function: switchable NZM...S1 terminal type: NZM...XKSA cover required
Number of poles			3 pole
Standard equipment			Screw connection
Rated current = rated uninterrupted current	I <sub>n</sub> = I <sub>u</sub>	A	1600
<b>Switching capacity</b>			
1000 V 50/60 Hz	I <sub>cu</sub>	kA	20
<b>Setting range</b>			
Overload trip			
	I <sub>r</sub>	A	800 - 1600
Short-circuit releases			
			
Non-delayed	I <sub>i</sub> = I <sub>n</sub> x ...		2 - 12
			
Delayed	I <sub>sd</sub> = I <sub>r</sub> x ...		2 - 10
			

## Technical data

### Circuit-breakers

Rated surge voltage invariability	U <sub>imp</sub>		
Main contacts		V	8000
Auxiliary contacts		V	6000
Rated operational voltage	U <sub>e</sub>	V AC	1000
Rated current = rated uninterrupted current	I <sub>n</sub> = I <sub>u</sub>	A	1600
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U <sub>i</sub>	V	1000
Utilization category			B
Ambient temperature			
Ambient temperature, storage		°C	- 40 - + 70
Operation		°C	-25 - +70

### Rated short-circuit making capacity

240 V 50/60 Hz	I <sub>cm</sub>	kA	275
400/415 V 50/60 Hz	I <sub>cm</sub>	kA	187
440 V 50/60 Hz	I <sub>cm</sub>	kA	187
525 V 50/60 Hz	I <sub>cm</sub>	kA	143
690 V 50/60 H	I <sub>c</sub>	kA	100
1000 V 50/60 Hz	I <sub>cm</sub>	kA	40

### Rated short-circuit breaking capacity I<sub>cn</sub>

I <sub>cu</sub> to IEC/EN 60947 test cycle O-t-CO	I <sub>cu</sub>	kA	
240 V 50/60 Hz	I <sub>cu</sub>	kA	125
400/415 V 50 Hz	I <sub>cu</sub>	kA	85
440 V 50/60 Hz	I <sub>cu</sub>	kA	85
525 V 50/60 Hz	I <sub>cu</sub>	kA	65
690 V 50/60 Hz	I <sub>cu</sub>	kA	50
1000 V 50/60 Hz	I <sub>cu</sub>	kA	20
I <sub>cs</sub> to IEC/EN 60947 test cycle O-t-CO-t-CO	I <sub>cs</sub>	kA	
230 V 50/60 Hz	I <sub>cs</sub>	kA	63
400/415 V 50/60 Hz	I <sub>cs</sub>	kA	50
440 V 50/60 Hz	I <sub>cs</sub>	kA	50
525 V 50/60 Hz	I <sub>cs</sub>	kA	50
690 V 50/60 Hz	I <sub>cs</sub>	kA	37
1000 V AC	I <sub>cs</sub>	kA	15

### Rated short-time withstand current

t = 0.3 s	I <sub>cw</sub>	kA	19.2
t = 1 s	I <sub>cw</sub>	kA	19.2
Lifespan, mechanical	Operations		10000
Max. operating frequency		Ops/h	60
			Lifespan, mechanical: of which max. 50 % trip by shunt/undervoltage release

### Lifespan, electrical

1000 V 50/60 Hz	Operations		500
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### Terminal capacity

Standard equipment			Screw connection
Round copper conductor			
Tunnel terminal			
Stranded			
4-hole		mm <sup>2</sup>	4 x (50 - 240)
Bolt terminal and rear-side connection			
Module plate			
Single hole	min.	mm <sup>2</sup>	1 x (185 - 240)
Single hole	max.	mm <sup>2</sup>	2 x (70 - 185)
Module plate			
Double hole	min.	mm <sup>2</sup>	4 x 50
Double hole	max.	mm <sup>2</sup>	4 x (35 - 185)
Connection width extension		mm <sup>2</sup>	
Connection width extension		mm <sup>2</sup>	2 x 240 6 x (70 - 240)
Al conductors, Cu cable			
Tunnel terminal			
Stranded			
4-hole		mm <sup>2</sup>	4 x (50 - 240)
Cu strip (number of segments x width x segment thickness)			
Flat conductor terminal			
	min.	mm	6 x 16 x 0.8
	max.	mm	(2 x) 10 x 32 x 1.0

Module plate			
Single hole		mm	(2 x) 10 x 50 x 1.0
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	(2 x) 10 x 50 x 1.0
Flat copper strip, with holes	max.	mm	(2 x) 10 x 50 x 1.0
Connection width extension		mm	(2 x) 10 x 80 x 1.0
Copper busbar (width x thickness)		mm	
Bolt terminal and rear-side connection			
Screw connection			M10
Direct on the switch			
	min.	mm	25 x 5
	max.	mm	2 x (50 x 10) 2 x (80 x 10)
Module plate			
Single hole	min.	mm	25 x 5
Single hole	max.	mm	2 x (50 x 10)
Module plate			
Double hole		mm	2 x (50 x 10)
Connection width extension		mm	
Connection width extension	min.	mm	60 x 10
Connection width extension	max.	mm	2 x (80 x 10)
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	1600
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	284
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.

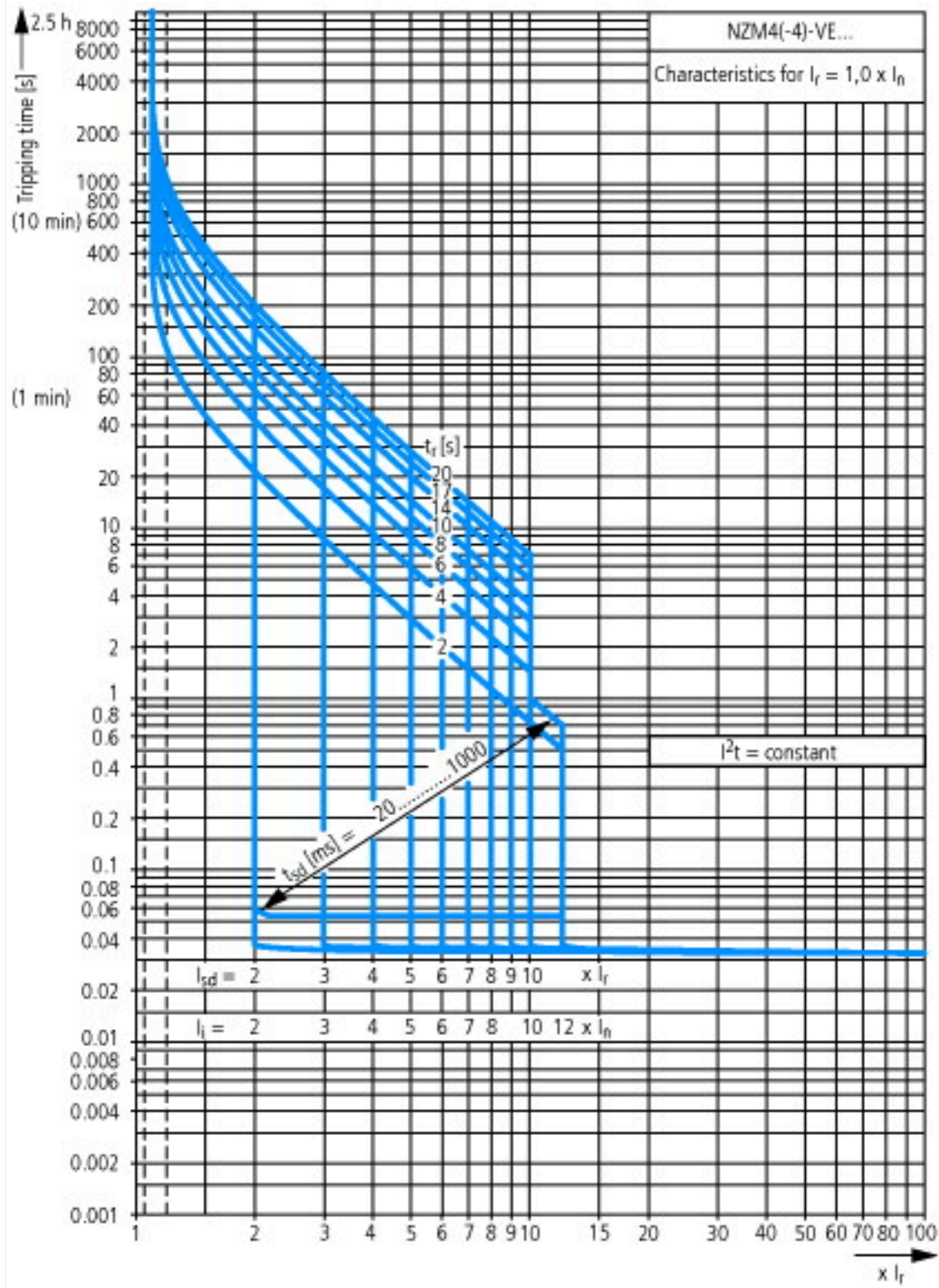
## Technical data ETIM 7.0

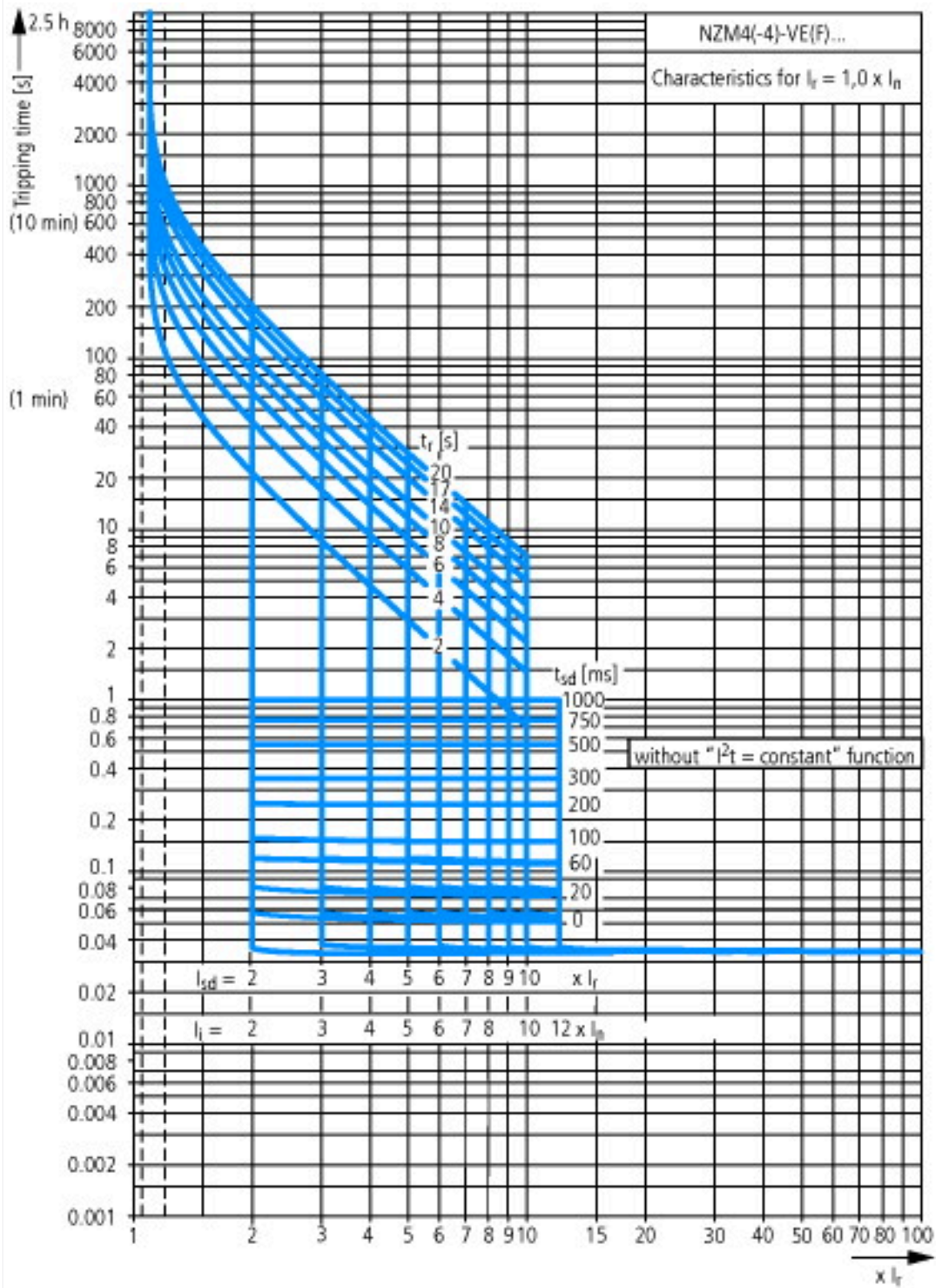
Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)

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])

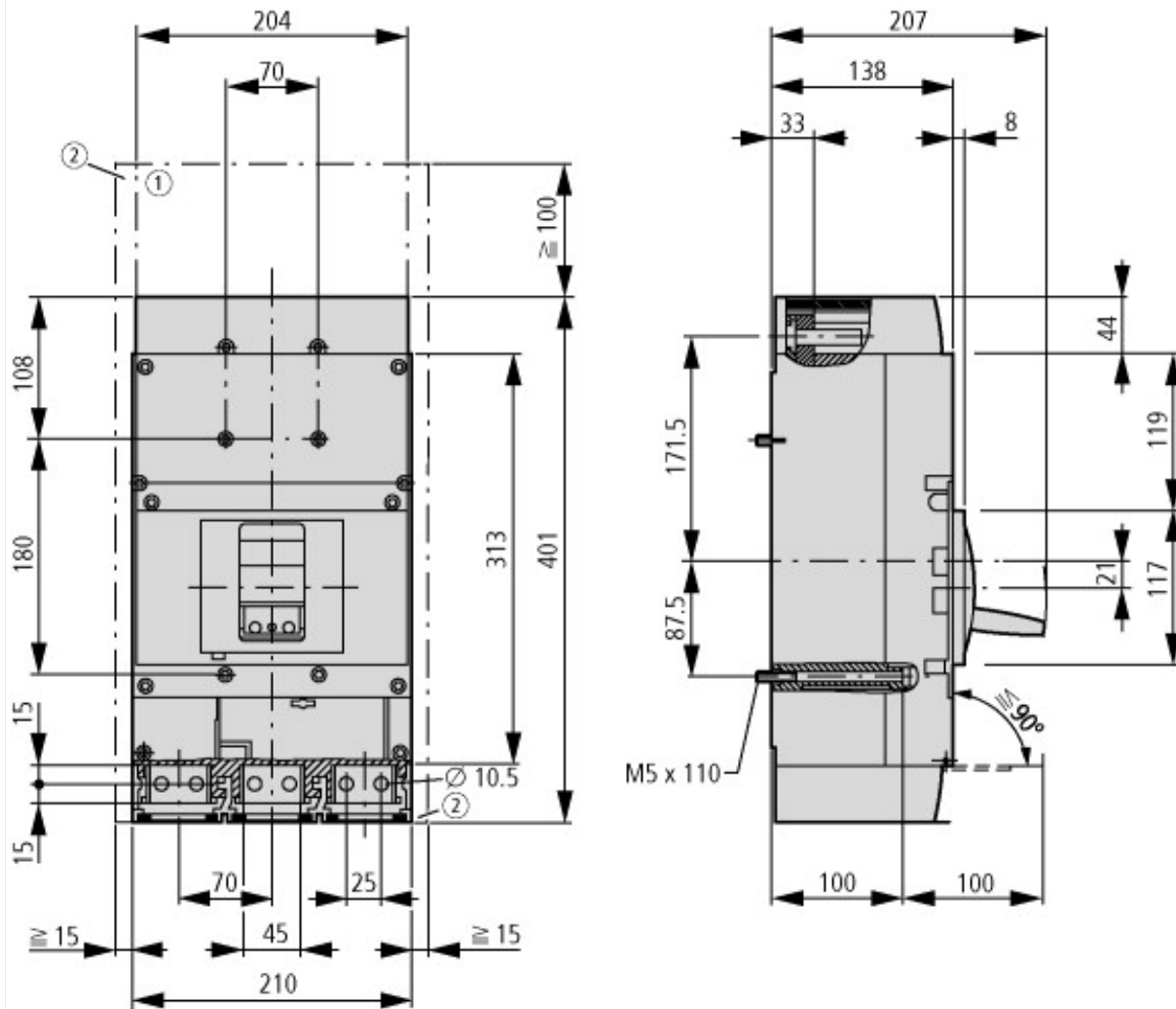
Rated permanent current I <sub>u</sub>	A	1600
Rated voltage	V	1000 - 1000
Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, 50 Hz	kA	85
Overload release current setting	A	800 - 1600
Adjustment range short-term delayed short-circuit release	A	1600 - 16000
Adjustment range undelayed short-circuit release	A	3200 - 19200
Integrated earth fault protection		No
Type of electrical connection of main circuit		Screw connection
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		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		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		Yes
Degree of protection (IP)		IP20

# Characteristics





## Dimensions



- ① Blow out area, minimum clearance to adjacent parts  
 $U_i \leq 690 \text{ V}$ : 100 mm  
 $U_i \leq 1500 \text{ V}$ : 200 mm
- ② Minimum clearance to adjacent parts  
 $U_i \leq 1000 \text{ V}$ : 15 mm  
 $U_i \leq 1500 \text{ V}$ : 70 mm

## Additional product information (links)

### IL01210010Z (AWA1230-2022) Circuit-Breaker, basic unit

IL01210010Z (AWA1230-2022) Circuit-Breaker, basic unit	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01210010Z2018_11.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01210010Z2018_11.pdf</a>
Weight	<a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.171">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.171</a>
Temperature dependency, Derating	<a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.172">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.172</a>
Effective power loss	<a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.174">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=17.174</a>
Selectivity, Back Up Protection and Coordination Guide	<a href="http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1198913.pdf">http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1198913.pdf</a>
Setting-Specific Representation of Tripping Characteristics and Competent Assessment of their Interaction	<a href="http://www.moeller.net/binary/ver_techpapers/ver943en.pdf">http://www.moeller.net/binary/ver_techpapers/ver943en.pdf</a>
Busbar Component Adapters for modern Industrial control panels	<a href="http://www.moeller.net/binary/ver_techpapers/ver960en.pdf">http://www.moeller.net/binary/ver_techpapers/ver960en.pdf</a>
CurveSelect characteristics program	<a href="http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/index.htm">http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/index.htm</a>
Eaton configurator	<a href="http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/ConfiguratorCircuitBreaker/index.htm">http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/ConfiguratorCircuitBreaker/index.htm</a>
additional technical information for NZM power switch	<a href="ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technic_de_en.pdf">ftp://ftp.moeller.net/DOCUMENTATION/PDF/nzm_technic_de_en.pdf</a>