







Circuit-breaker, 3p, 450A, motor protection, 1000 V

Part no. **NZMH3-ME450-S1**  
 Catalog No. **119366**

### Delivery program

Product range			Circuit-breaker
Protective function			Motor protection
			
Standard/Approval			IEC
Installation type			Fixed
Release system			Electronic release
Construction size			NZM3
Description			Phase-failure sensitivity IEC/EN 60947-4-1, IEC/EN 60947-2 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) NZM...S1 terminal type: NZM...XKSA cover required NZM4...S1 terminal type: Insulated busbar connection (NZM4-XKS screw connection)
Number of poles			3 pole
Standard equipment			Screw connection
Rated current = rated uninterrupted current	$I_n = I_u$	A	450
<b>Switching capacity</b>			
1000 V 50/60 Hz	$I_{cu}$	kA	15
<b>Setting range</b>			
Overload trip			
	$I_r$	A	225 - 450
Short-circuit releases			
			
Non-delayed	$I_i = I_r \times \dots$		2 - 14
			

### Technical data

#### Circuit-breakers

Rated surge voltage invariability	$U_{imp}$		
Main contacts		V	8000
Auxiliary contacts		V	6000
Rated operational voltage	$U_e$	V AC	1000
Rated current = rated uninterrupted current	$I_n = I_u$	A	450
Overvoltage category/pollution degree			III/3
Rated insulation voltage	$U_i$	V	1000
Utilization category			A
Ambient temperature			
Ambient temperature, storage		°C	- 40 - + 70
Operation		°C	-25 - +70

### Rated short-circuit making capacity

240 V 50/60 Hz	$I_{cm}$	kA	330
400/415 V 50/60 Hz	$I_{cm}$	kA	330
440 V 50/60 Hz	$I_{cm}$	kA	286
525 V 50/60 Hz	$I_{cm}$	kA	143
690 V 50/60 H	$I_c$	kA	74
1000 V 50/60 Hz	$I_{cm}$	kA	17

### Rated short-circuit breaking capacity $I_{cn}$

Icu to IEC/EN 60947 test cycle O-t-CO		$I_{cu}$	kA	
240 V 50/60 Hz		$I_{cu}$	kA	150
400/415 V 50 Hz		$I_{cu}$	kA	150
440 V 50/60 Hz		$I_{cu}$	kA	130
525 V 50/60 Hz		$I_{cu}$	kA	65
690 V 50/60 Hz		$I_{cu}$	kA	35
1000 V 50/60 Hz		$I_{cu}$	kA	15
Ics to IEC/EN 60947 test cycle O-t-CO-t-CO		$I_{cs}$	kA	
230 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	33
690 V 50/60 Hz		$I_{cs}$	kA	9
1000 V AC		$I_{cs}$	kA	10

### Rated short-time withstand current

t = 0.3 s	$I_{cw}$	kA	3.3
t = 1 s	$I_{cw}$	kA	3.3
Lifespan, mechanical	Operations		15000
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	1000
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### Terminal capacity

Standard equipment			Screw connection
Round copper conductor			
Box terminal			
Solid		mm <sup>2</sup>	2 x 16
Stranded		mm <sup>2</sup>	1 x (35 - 240) 2 x (25 - 120)
Tunnel terminal			
Stranded			
Stranded		mm <sup>2</sup>	1 x (25 - 185)
Double hole		mm <sup>2</sup>	1 x (50 - 240) 2 x (50 - 240)
Bolt terminal and rear-side connection			
Direct on the switch			
Solid		mm <sup>2</sup>	1 x 16 2 x (10 - 16)
Stranded		mm <sup>2</sup>	1 x (25 - 120) 2 x (25 - 120)
Al conductors, Cu cable			
Tunnel terminal			
Solid		mm <sup>2</sup>	1 x 16
Stranded			
Stranded		mm <sup>2</sup>	1 x (25 - 185) <sup>2)</sup>
<sup>2)</sup> Up to 240 mm <sup>2</sup> can be connected depending on the cable manufacturer.			
Double hole		mm <sup>2</sup>	1 x (50 - 240) 2 x (50 - 240)

Cu strip (number of segments x width x segment thickness)			
Box terminal			
	min.	mm	6 x 16 x 0.8
	max.	mm	10 x 24 x 1.0 + 5 x 24 x 1.0 (2 x) 8 x 24 x 1.0
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	6 x 16 x 0.8
Flat copper strip, with holes	max.	mm	10 x 32 x 1.0 + 5 x 32 x 1.0
Connection width extension		mm	(2 x) 10 x 50 x 1.0
Copper busbar (width x thickness)		mm	
Bolt terminal and rear-side connection			
Screw connection			M10
Direct on the switch			
	min.	mm	20 x 5
	max.	mm	30 x 10 + 30 x 5
Connection width extension		mm	
Connection width extension	max.	mm	2 x (10 x 50)
Control cables			
		mm <sup>2</sup>	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)

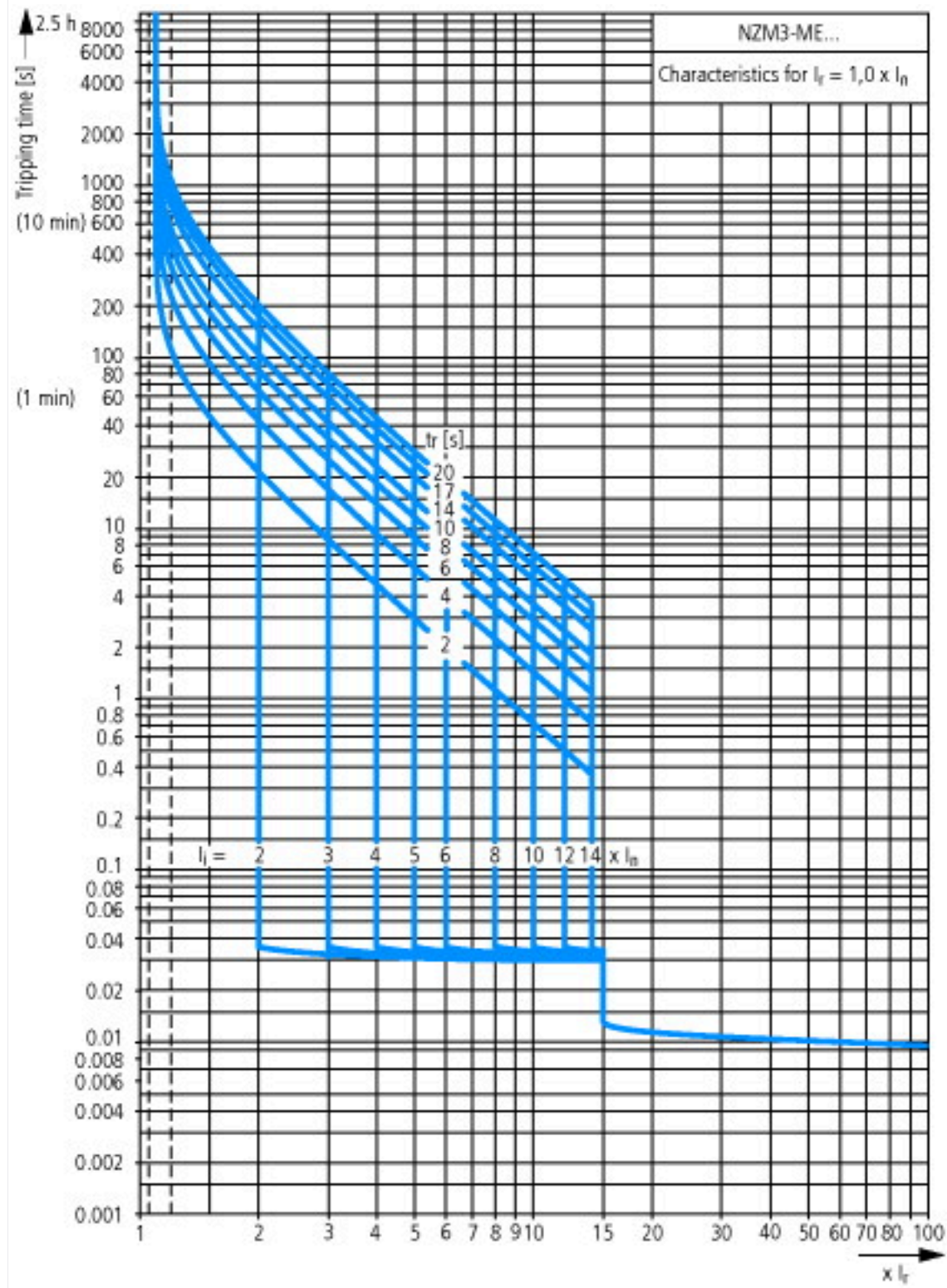
## Design verification as per IEC/EN 61439

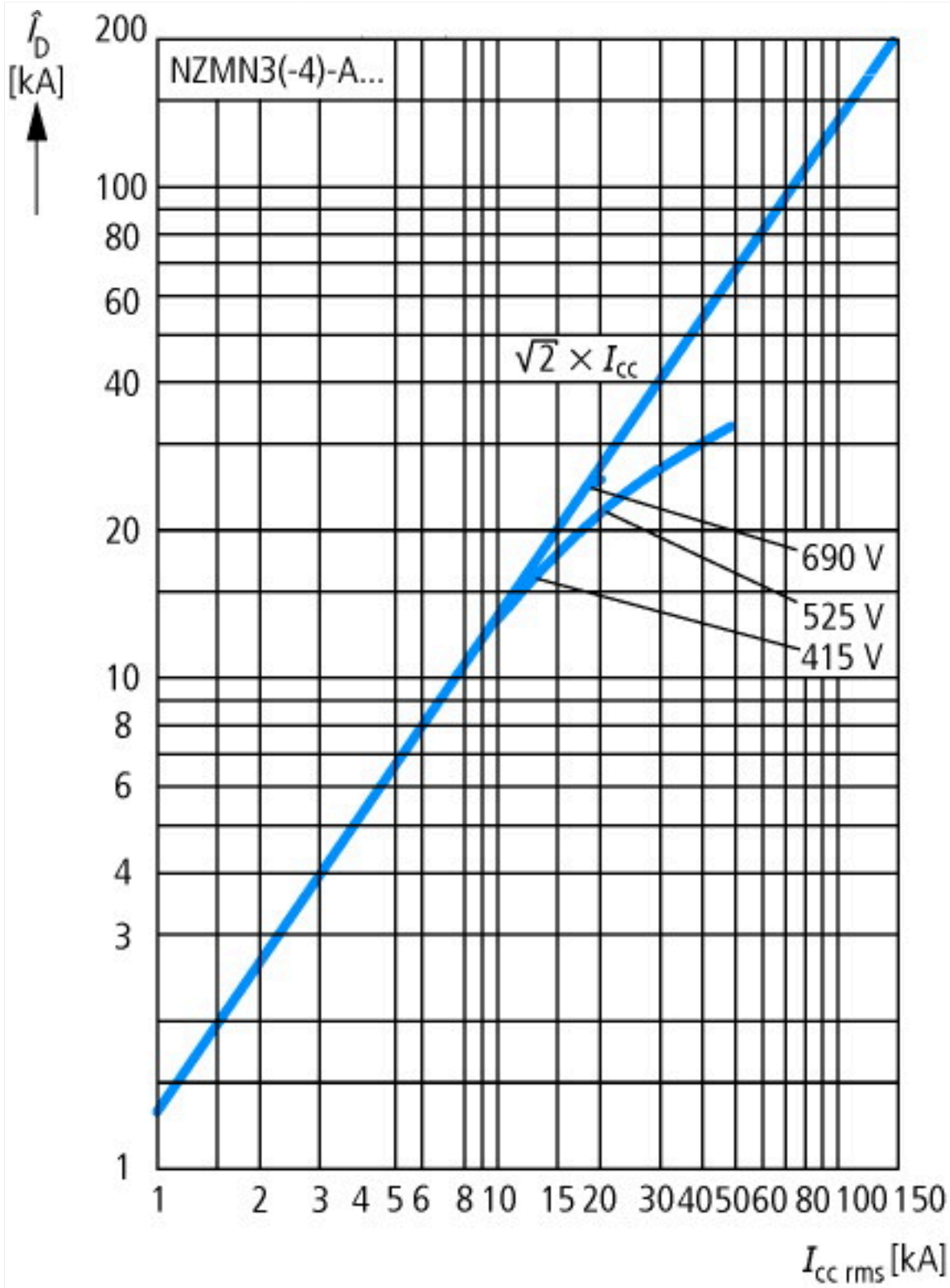
Technical data for design verification			
Rated operational current for specified heat dissipation	I <sub>n</sub>	A	450
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	60.75
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	70
IEC/EN 61439 design verification			
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

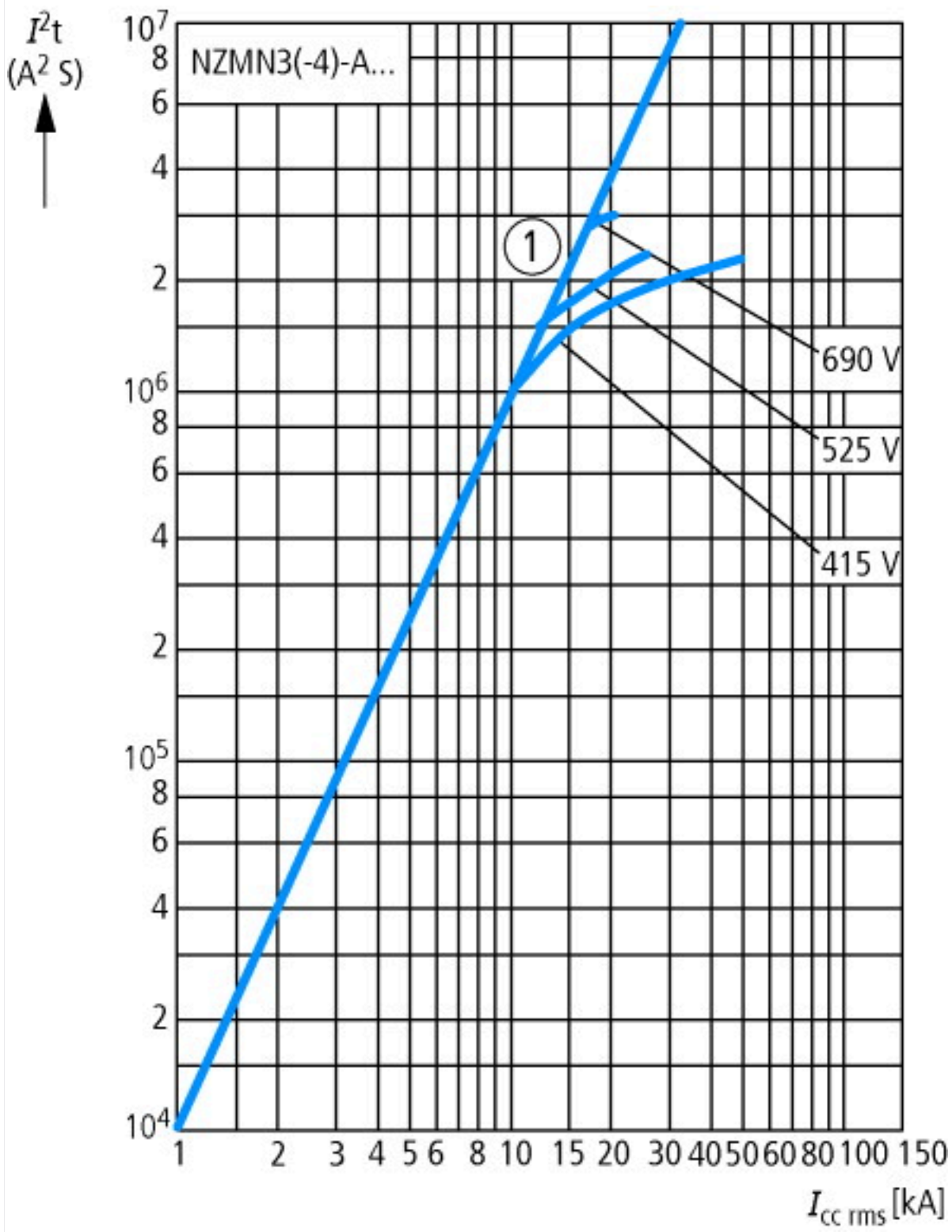
Low-voltage industrial components (EG000017) / Motor protection circuit-breaker (EC000074)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecl@ss10.0.1-27-37-04-01 [AGZ529016])		
Overload release current setting	A	225 - 450
Adjustment range undelayed short-circuit release	A	450 - 6300
With thermal protection		Yes
Phase failure sensitive		Yes
Switch off technique		Electronic
Rated operating voltage	V	1000 - 1000
Rated permanent current I <sub>u</sub>	A	450
Rated operation power at AC-3, 230 V	kW	132
Rated operation power at AC-3, 400 V	kW	250
Type of electrical connection of main circuit		Screw connection
Type of control element		Rocker lever
Device construction		Built-in device fixed built-in technique
With integrated auxiliary switch		No
With integrated under voltage release		No
Number of poles		3
Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, AC	kA	150
Degree of protection (IP)		IP20
Height	mm	275
Width	mm	140
Depth	mm	166

# Characteristics



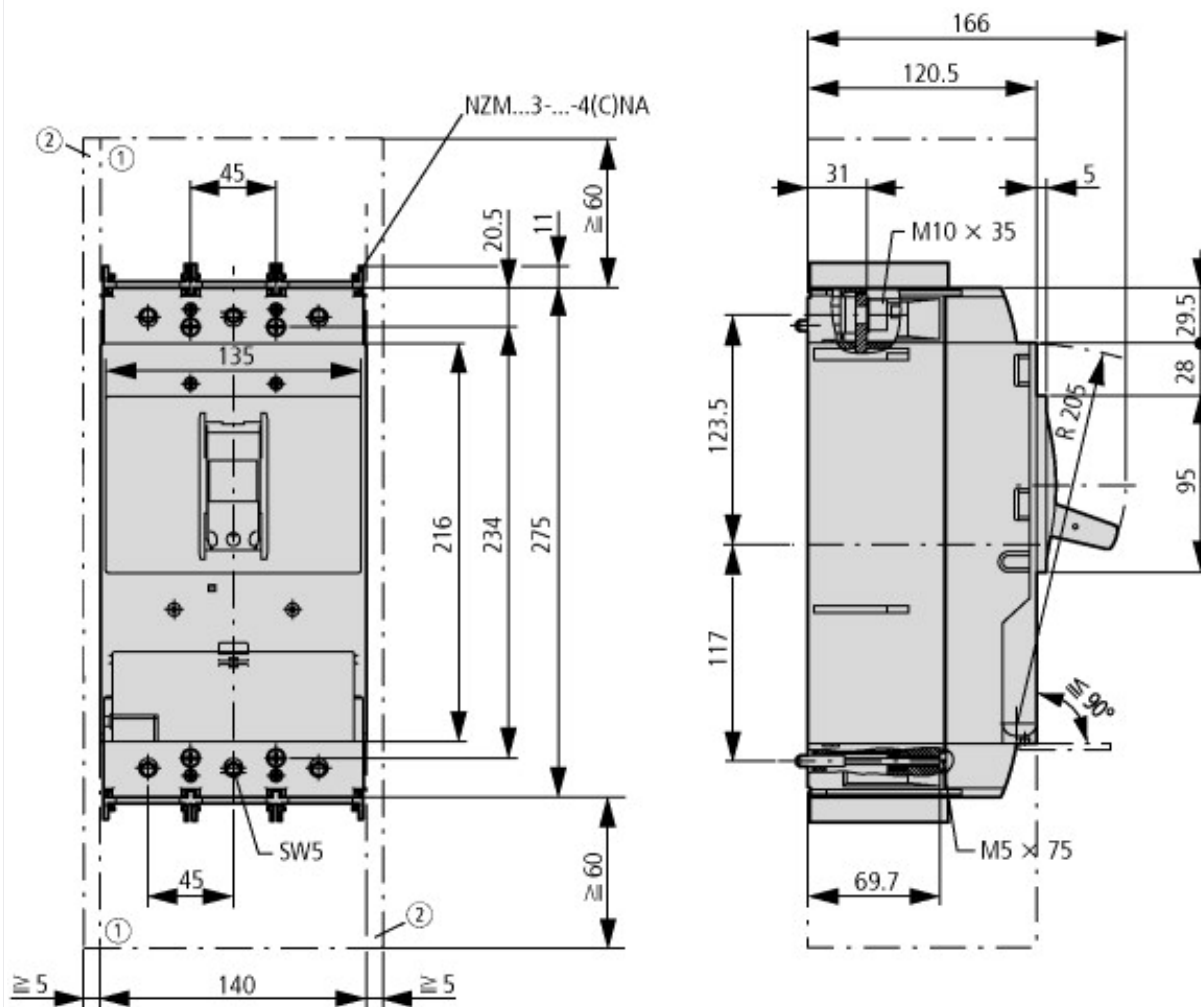


Let-through current



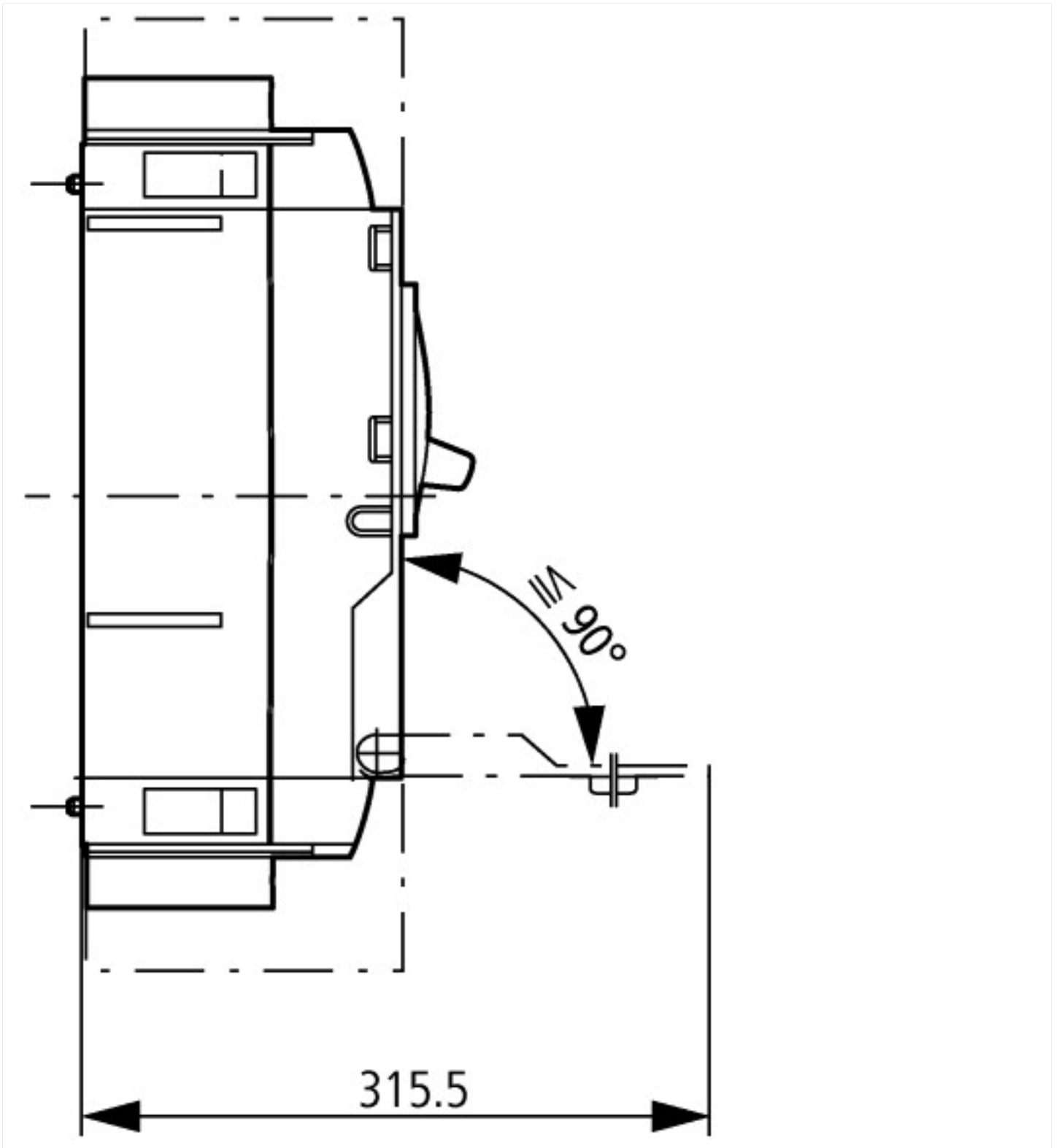
Let-through energy

## Dimensions



- ① Blow out area, minimum clearance to adjacent parts
- ② Minimum clearance to adjacent parts





## Additional product information (links)

### IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit

IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit	<a href="https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL01208009Z2018_11.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL01208009Z2018_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="https://es-assets.eaton.com/DOCUMENTATION/PDF/nzm_technic_de_en.pdf">https://es-assets.eaton.com/DOCUMENTATION/PDF/nzm_technic_de_en.pdf</a>