Similar to illustration

Circuit-breaker, 3p, 1000A

Part no. NZMH4-VE1000-NA
Article no. 271158

Powering Business Worldwide

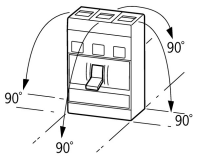
Delivery program

Product range			Circuit-breaker
Protective function			Systems, cable, selectivity and generator protection
Standard/Approval			UL/CSA, IEC
Release system			Electronic release
Installation type			Fixed
Description			Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate. Adjustable overload releases Ir R.m.s. value measurement and “thermal memory” adjustable time delay setting to overcome current peaks tr: 2 – 20 s at 6 x Ir Adjustable delay time tsd: Steps: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms i^2t constant function: switchable
Frame size			NZM4
Number of poles			3 pole
Standard equipment			Screw connection
Switching capacity			
SCCR 480Y/277 V 60 Hz	I_{cu}	kA	85
SCCR 480 V 60 Hz	I_{cu}	kA	85
SCCR 600Y/347 V 60 Hz	I_{cu}	kA	50
SCCR 600 V 60 Hz	I_{cu}	kA	50
Rated current = rated uninterrupted current			
Rated current = rated uninterrupted current	$I_n = I_u$	A	1000
Setting range			
Overload trip			
	I_r	A	500 - 1000
Short-circuit releases 			
Non-delayed 	$I_i = I_n$ x …		2 - 12
Delayed 	$I_{sd} = I_r$ x …		2 - 10

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	15 (half-sinusoidal shock 11 ms)
Safe isolation to EN 61140			
Between auxiliary contacts and main contacts		V AC	500
between the auxiliary contacts		V AC	300
Weight		kg	21
Mounting position			
Mounting position			Vertical and 90° in all directions  With residual-current release XFI: - NZM1, N1, NZM2, N2: vertical and 90° in all directions with plug-in adapter elements - NZM1, N1, NZM2, N2: vertical, 90° right/left with withdrawable unit: - NZM3, N3: vertical, 90 ° 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
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)			Weight Temperature dependency, Derating Effective power loss

Circuit-breakers

Rated surge voltage invariability	U_{imp}		
Main contacts		V	8000
Auxiliary contacts		V	6000
Rated operational voltage	U_e	V AC	690
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	275
400/415 V	I_{cm}	kA	187
440 V 50/60 Hz	I_{cm}	kA	187
525 V 50/60 Hz	I_{cm}	kA	143
690 V 50/60 H	Ic	kA	105
Rated short-circuit breaking capacity I_{cn}	I_{cn}		
Icu to IEC/EN 60947 test cycle O-t-CO	Icu	kA	
240 V 50/60 Hz	I_{cu}	kA	125
400/415 V 50/60 Hz	I_{cu}	kA	85
440 V 50/60 Hz	I_{cu}	kA	85
525 V 50/60 Hz	I_{cu}	kA	65
690 V 50/60 Hz	I_{cu}	kA	50
Ics to IEC/EN 60947 test cycle O-t-CO-t-CO	Ics	kA	
240 V 50/60 Hz	I_{cs}	kA	63
400/415 V 50/60 Hz	I_{cs}	kA	43
440 V 50/60 Hz	I_{cs}	kA	43
525 V 50/60 Hz	I_{cs}	kA	49
690 V 50/60 Hz	I_{cs}	kA	37
Maximum low-voltage h.b.c. fuse		A gG/gL	2 x 630

			Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.
Technical data that diverge from products for the IEC market Switching capacity of NA switches (UL489, CSA 22.2 No. 5.1) Short-circuit current rating SCCR			
SCCR 240 V 60 Hz	I_{cu}	kA	125
SCCR 480Y/277 V 60 Hz	I_{cu}	kA	85
SCCR 480 V 60 Hz	I_{cu}	kA	85
SCCR 600Y/347 V 60 Hz	I_{cu}	kA	50
SCCR 600 V 60 Hz	I_{cu}	kA	50
Rated short-time withstand current			
t = 0.3 s	I_{cw}	kA	19.2
t = 1 s	I_{cw}	kA	19.2
Utilization category to IEC/EN 60947-2			A
Rated making and breaking capacity			
Rated operational current	I_e	A	
AC-1			
400/415 V 50/60 Hz	I_e	A	2000
415 V	I_e	A	1600
690 V 50/60 Hz	I_e	A	1000
AC--3			
400/415 V 50/60 Hz	I_e	A	1000
690 V 50/60 Hz	I_e	A	1000
			For AC--3 rated operational current with NZM4 the following applies: 400 V: max. 650 kW; 690 V: max. 600 kW
Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release)	Operations		10000
Lifespan, electrical			
AC-1			
400 V 50/60 Hz	Operations		3000
690 V 50/60 Hz	Operations		2000
AC--3			
400 V 50/60 Hz	Operations		2000
415 V 50/60 Hz	Operations		2000
690 V 50/60 Hz	Operations		1000
Max. operating frequency		Ops/h	60
Total downtime in a short-circuit		ms	< 25 ≦ 415 V; < 35 > 415 V

Terminal capacity

Standard equipment			Screw connection
Round copper conductor			
Tunnel terminal			
Stranded		mm^2	
4-hole		mm^2	4 x (1/0 - 500)
Bolt terminal and rear-side connection			
Direct on the switch			
Stranded		mm^2	1 x (250 … 350) 4 x (0 … 350)
Module plate			
Single hole	min.	mm^2	1 x (250 - 600)
Single hole	max.	mm^2	2 x (3/0 - 600)
Module plate			
Double hole	min.	mm^2	2 x (3/0 - 350)
Double hole	max.	mm^2	4 x (2 - 350)
Connection width extension		mm^2	
Connection width extension		mm^2	4 x 600 6 x (3/0 - 500)

Al conductors, Cu cable			
Stranded		mm^2	
4-hole		mm^2	4 x (50 - 240)
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
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^2	1 x (18 … 14) 2 x (18 … 16)

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	1000
Equipment heat dissipation, current-dependent	P_{vid}	W	111
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 6.0

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

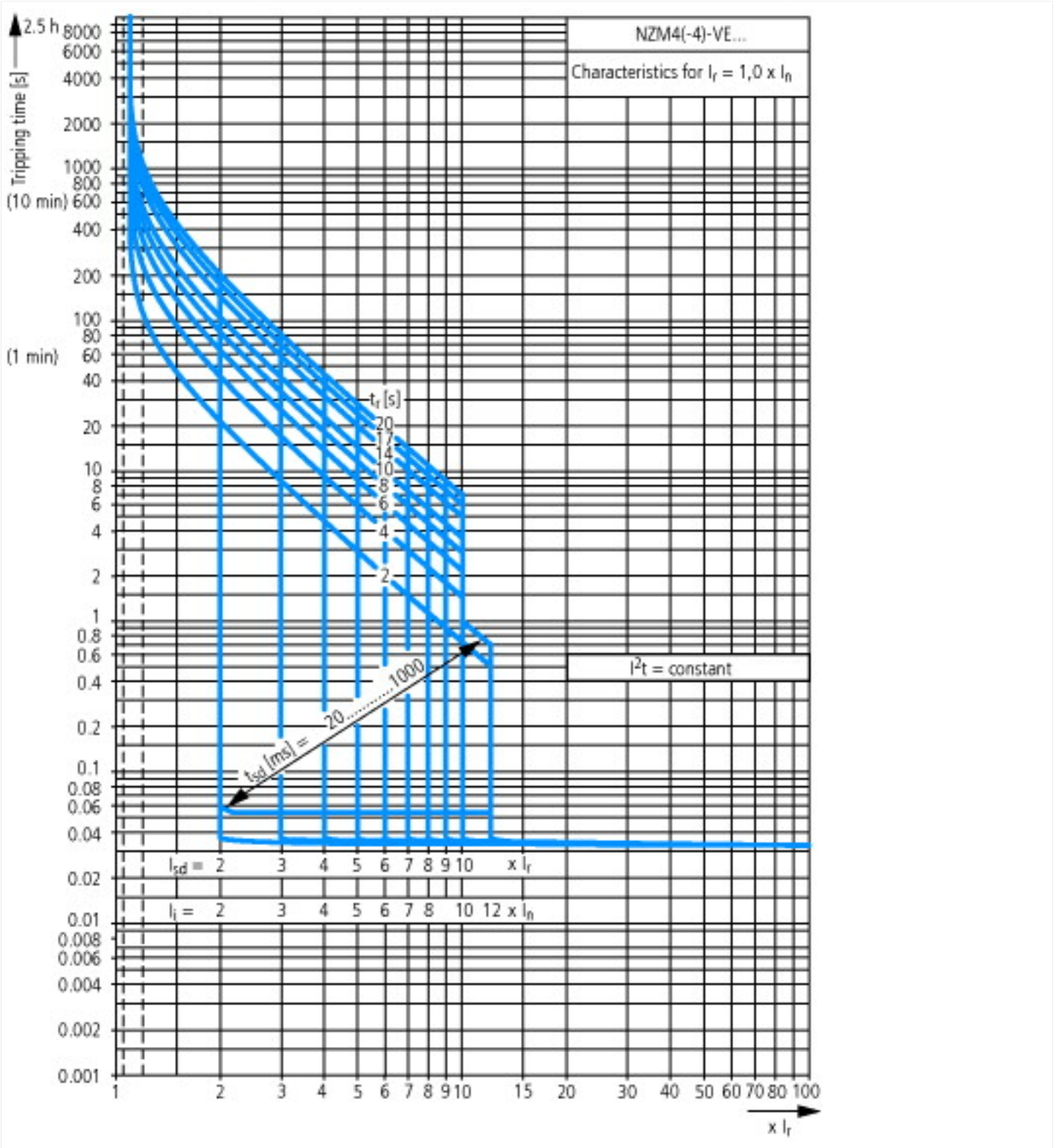
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Circuit breaker for power transformer, generator and system protection (ecl@ss8.1-27-37-04-09 [AJZ716010])

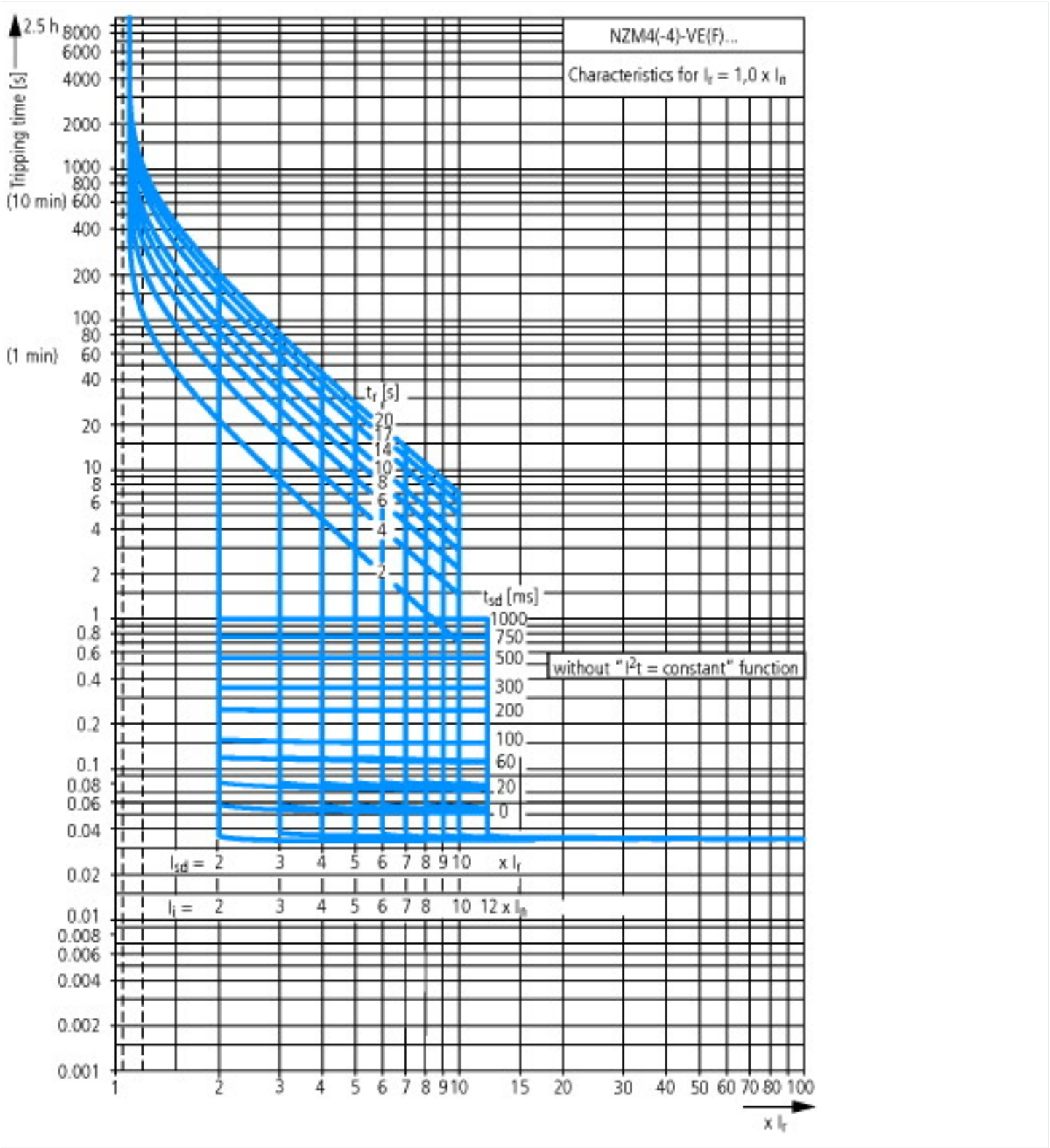
Rated permanent current Iu	A	1000
Rated voltage	V	690 - 690
Rated short-circuit breaking capacity Icu at 400 V, 50 Hz	kA	85
Overload release current setting	A	500 - 1000
Adjustment range short-term delayed short-circuit release	A	1000 - 10000
Adjustment range undelayed short-circuit release	A	2000 - 12000
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
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		Yes
Degree of protection (IP)		IP20

Approvals

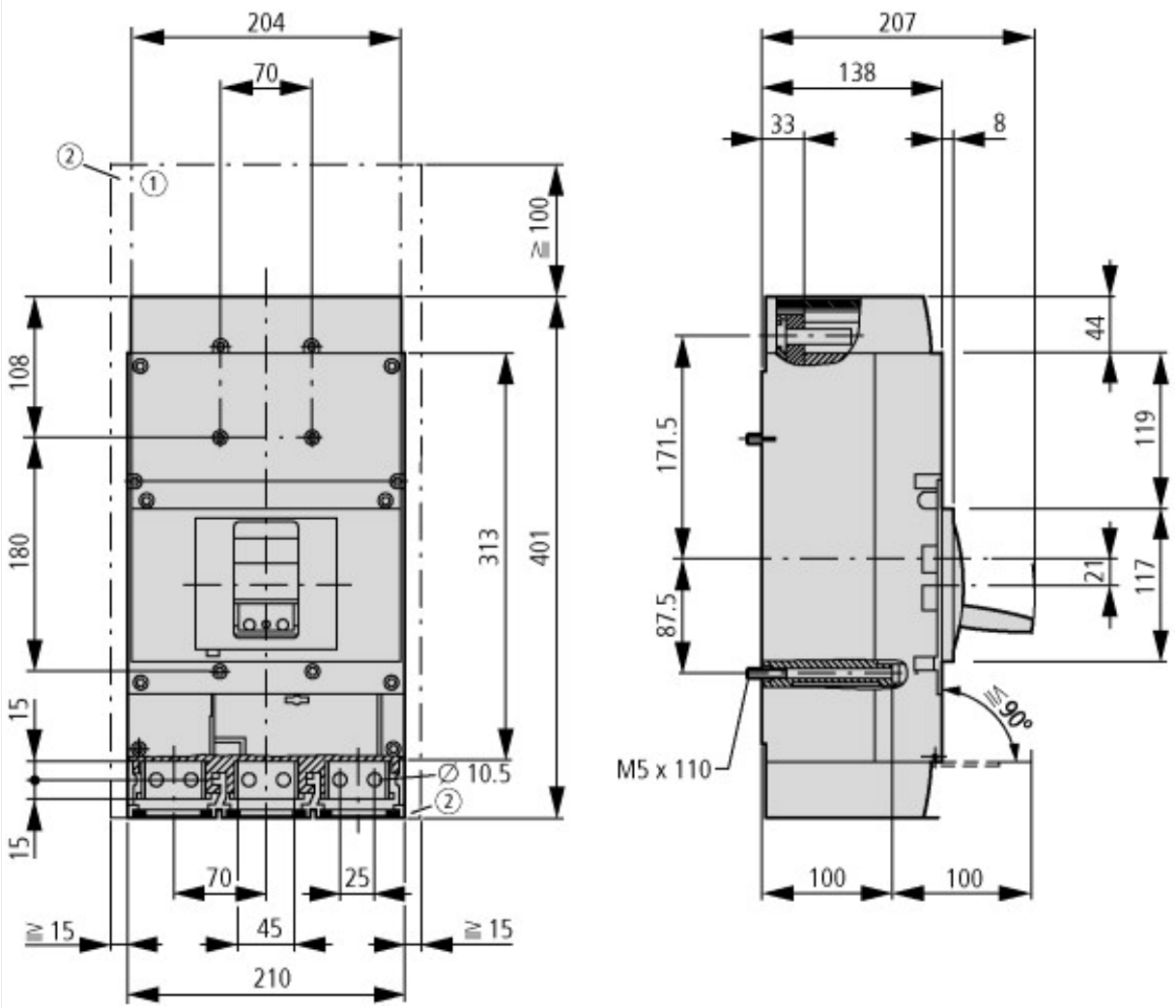
Product Standards	UL 489; CSA-C22.2 No. 5-09; IEC 60947-2; CE marking
UL File No.	E31593
UL Category Control No.	DIVQ
CSA File No.	022086
CSA Class No.	1432-01
North America Certification	UL listed, CSA certified
Specially designed for North America	Yes
Suitable for	Feeder circuits, branch circuits
Current Limiting Circuit-Breaker	No
Max. Voltage Rating	600 V
Degree of Protection	IEC: IP20; UL/CSA Type: -

Characteristics




NZM4(-4)-VE(F)...
Characteristics for I_r = 1,0 x I_n
Tripping time [s]
2.5 h
(10 min)
(1 min)
t_r [s]
t_{sd} [ms]
without "I^2t = constant" function
I_{sd} = 2 3 4 5 6 7 8 9 10 x I_r
I_i = 2 3 4 5 6 7 8 10 12 x I_n
x I_r

Dimensions



① Blow out area, minimum clearance to adjacent parts
Ui ≤ 690 V: 100 mm
Ui ≤ 1500 V: 200 mm

② Minimum clearance to adjacent parts
Ui ≤ 1000 V: 15 mm
Ui ≤ 1500 V: 70 mm

Additional product information (links)

IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit	
IL01208009Z (AWA1230-1992) Circuit-Breaker, basic unit	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01208009Z2015_11.pdf
Weight	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.171
Temperature dependency, Derating	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172
Effective power loss	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.174