Circuit br.,3p motor protection

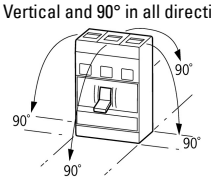
Part no. NZMH2-M80

Article no. 281305

Program

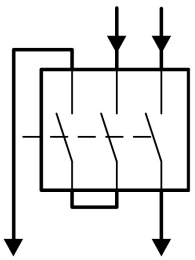
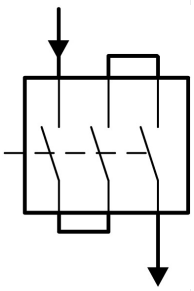
Range			Circuit-breaker
Protective function			Motor protection
Standard/Approval			IEC
Installation type			Fixed
Release system			Thermomagnetic release
Construction size			NZM2
Description			Tripping class 10 A IEC/EN 60947-4-1, IEC/EN 60947-2 The circuit-breaker fulfills all requirements for AC-3 switching category.
Number of poles			3 pole
Standard equipment			Screw connection
Switching capacity			
400/415 V 50/60 Hz	I_{cu}	kA	150
Rated current = rated uninterrupted current	$I_n = I_u$	A	80
Setting range			
Overload trip			
	I_r	A	63 - 80
Short-circuit releases			
Non-delayed	$I_i = I_n$ x …		8 - 14
Motor rating AC-3 50/60 Hz			
400 V	P	kW	37
Rated operational current AC-3 50/60 Hz			
400 V	I_e	A	68

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		°C	
Ambient temperature, storage		°C	- 40 - + 80
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 VDE 0106 Part 101 and Part 101/A1			
Between auxiliary contacts and main contacts		V AC	500
between the auxiliary contacts		V AC	300
Weight		kg	2.345
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 current = rated uninterrupted current	$I_n = I_u$	A	80
Rated surge voltage invariability	U_{imp}		
Main contacts		V	8000
Auxiliary contacts		V	6000
Rated operational voltage	U_e	V AC	690
Rated operational voltage	U_e	V DC	750
			1) Details apply for 3 pole system protection circuit-breaker with thermomagnetic release NZMN(H)1(2)(3)-A... to 500 A. For rated operating voltage switching via 3 contacts: DC correction factor for instantaneous release response value: NZM1: 1.25, NZM2: 1.35, NZM3: 1.45 Set value for I_i at DC = set value I_i AC/correction factor DC **Switching of one pole via two series contacts**  **Switching of one pole via three series contacts** 
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U_i	V	1000
For use in IT electrical power networks		V	690

Switching capacity

Rated short-circuit making capacity	I_{cm}		
240 V	I_{cm}	kA	330
400/415 V	I_{cm}	kA	330
440 V 50/60 Hz	I_{cm}	kA	286
525 V 50/60 Hz	I_{cm}	kA	105
690 V 50/60 H	Ic	kA	40
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	150
400/415 V 50/60 Hz	I_{cu}	kA	150
440 V 50/60 Hz	I_{cu}	kA	130
525 V 50/60 Hz	I_{cu}	kA	50
690 V 50/60 Hz	I_{cu}	kA	20
500 V DC	I_{cu}	kA	60
750 V DC	I_{cu}	kA	60
Ics to IEC/EN 60947 test cycle O-t-CO-t-CO	Ics	kA	

240 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	37.5
690 V 50/60 Hz	Ics	kA	5
			Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.
Rated short-time withstand current			
t = 0.3 s	I_{cw}	kA	1.9
t = 1 s	I_{cw}	kA	1.9
Utilization category to IEC/EN 60947-2			A
Rated making and breaking capacity			
Rated operational current	I_e	A	
AC-1			
400 V	I_e	A	300
415 V	I_e	A	300
690 V	I_e	A	300
AC--3			
400 V	I_e	A	80
415 V	I_e	A	80
690 V	I_e	A	80
Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release)	Operations		20000
Lifespan, electrical			
AC-1			
400 V V 50/60 Hz	Operations		10000
415 V V 50/60 Hz	Operations		10000
690 V 50/60 Hz	Operations		7500
AC--3			
400 V 50/60 Hz	Operations		6500
415 V 50/60 Hz	Operations		6500
690 V 50/60 Hz	Operations		5000
Max. operating frequency		Ops/h	120
Current heat losses per pole at I_u are based on the maximum rated operational current of the frame size.		W	19
			For current heat loss per pole the specification refers to the maximum rated operational current of the frame size.
Total downtime in a short-circuit		ms	< 10

Terminal capacity

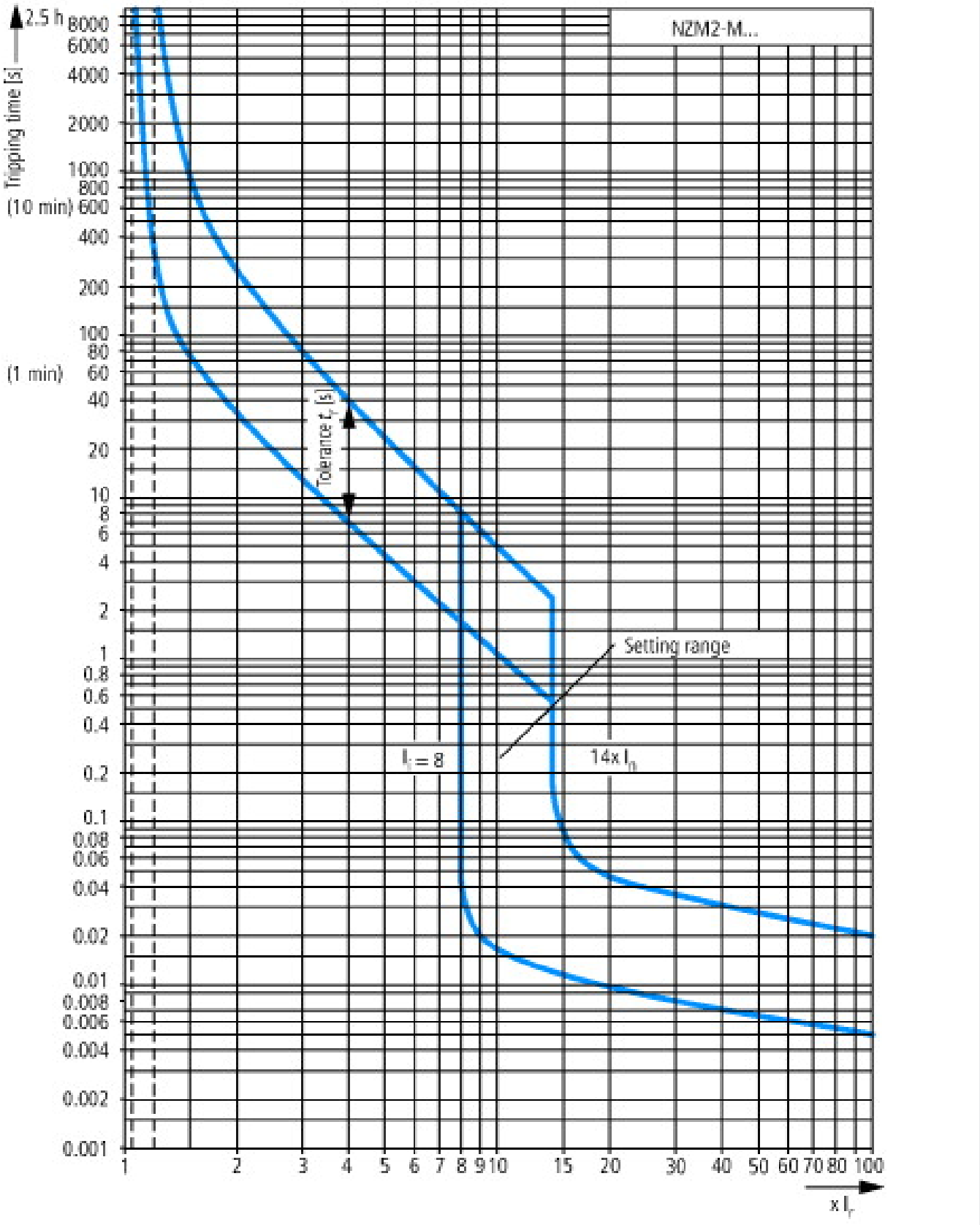
Standard equipment					Screw connection
Overview					Basic equipment Box terminal ● - - - Screw connection - ● ● ● Accessories Box terminal - ● ● - Screw connection ● - - ● Tunnel terminal ● ● ● ● Connection on rear ● ● ● ● Flat conductor terminal - - - ●
Round copper conductor					
Box terminal					
Solid		mm^2			1 x (4 - 16) 2 x (4 - 16)

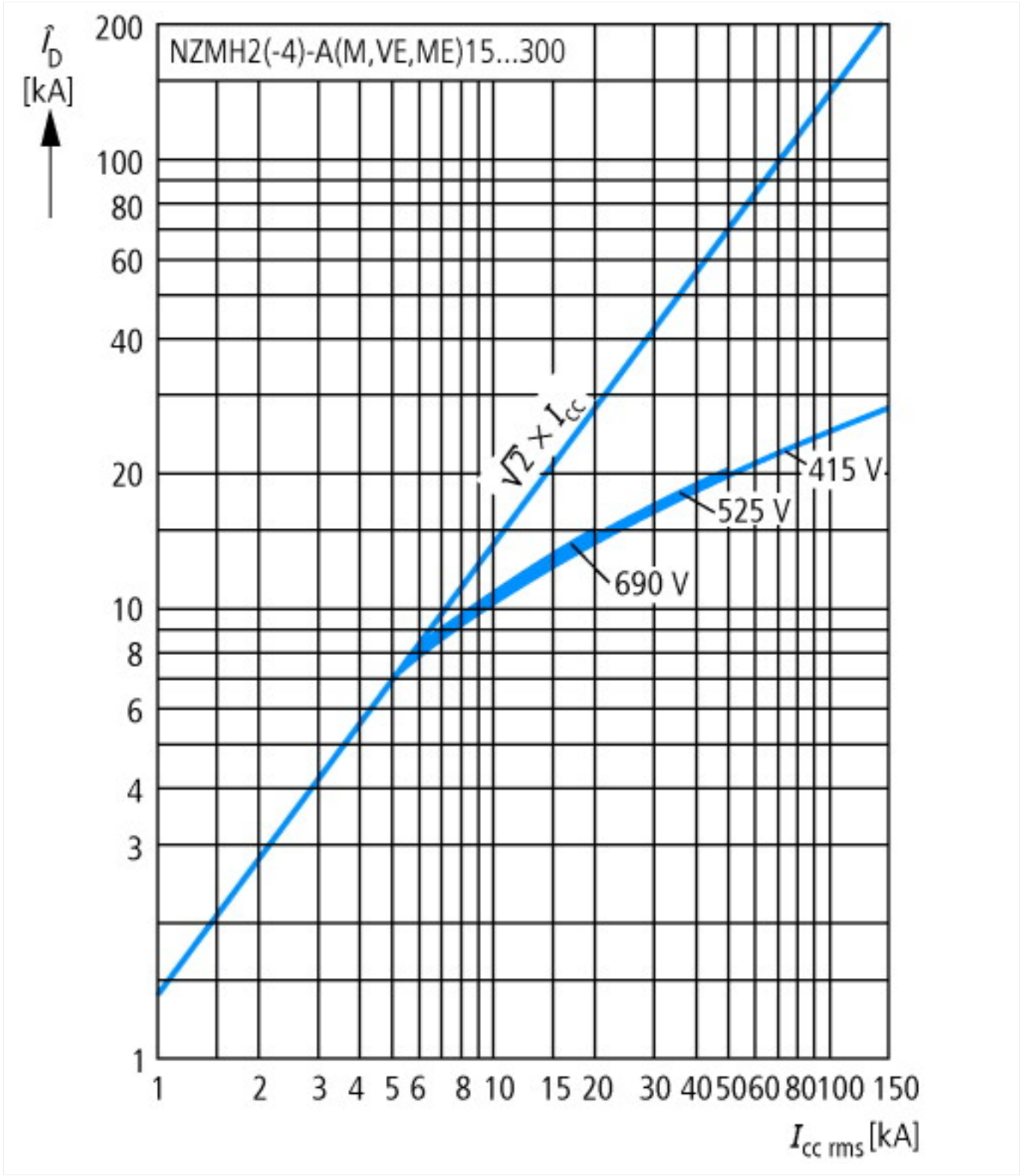
Stranded		mm^2	1 x (25 - 185) 2 x (25 - 70)
Tunnel terminal			
Solid		mm^2	1 x 16
Stranded		mm^2	
Stranded		mm^2	1 x (25 - 185)
Bolt terminal and rear-side connection			
Direct on the switch			
Solid		mm^2	1 x (4 - 16) 2 x (4 - 16)
Stranded		mm^2	1 x (25 - 185) 2 x (25 - 70)
Al conductors, Cu cable			
Solid		mm^2	1 x 16
Stranded		mm^2	
Stranded		mm^2	1 x (25 - 185) je nach Kabelhersteller bis zu 240 mm^2 anschließbar
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	2 x 16 x 0.8
Flat copper strip, with holes	max.	mm	10 x 16 x 0.8
Cu strip (number of segments x width x segment thickness)			
Box terminal			
	min.	mm^2	2 x 9 x 0.8
	max.	mm^2	10 x 16 x 0.8
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	2 x 16 x 0.8
Flat copper strip, with holes	max.	mm	10 x 16 x 0.8
Copper busbar (width x thickness)	mm		
Bolt terminal and rear-side connection			
Screw connection			M8
Direct on the switch			
	min.	mm^2	16 x 5
	max.	mm^2	20 x 5
Control cables			
		mm^2	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)

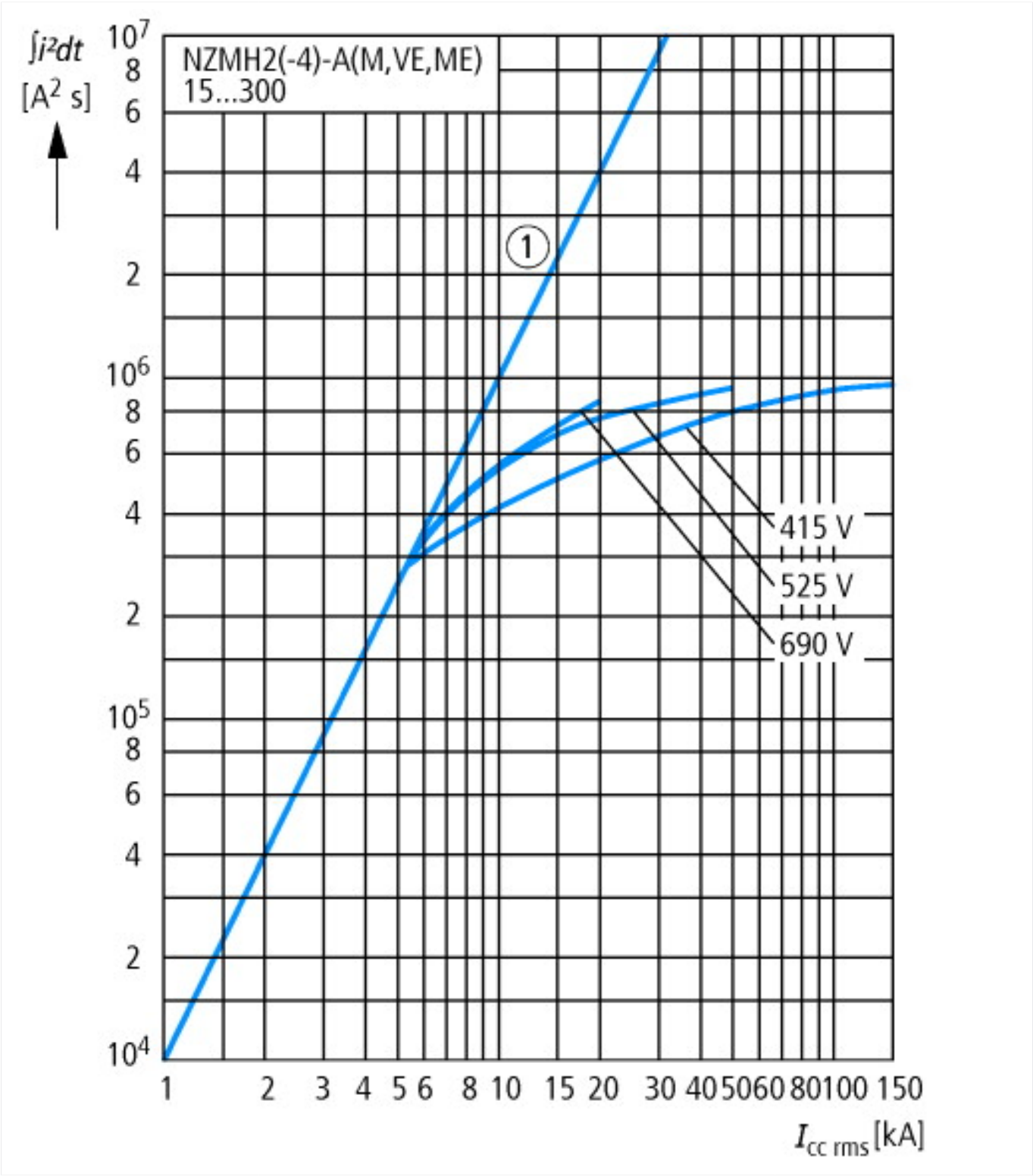
Technical data according to ETIM 4.0

Rated operation power at AC-3, 400 V	kWh	37
With integrated auxiliary switch		No
Rated permanent current Iu	A	80
With integrated under voltage release		No
Number of poles		3
Degree of protection (IP)		IP20
Connection type main current circuit		Screw connection

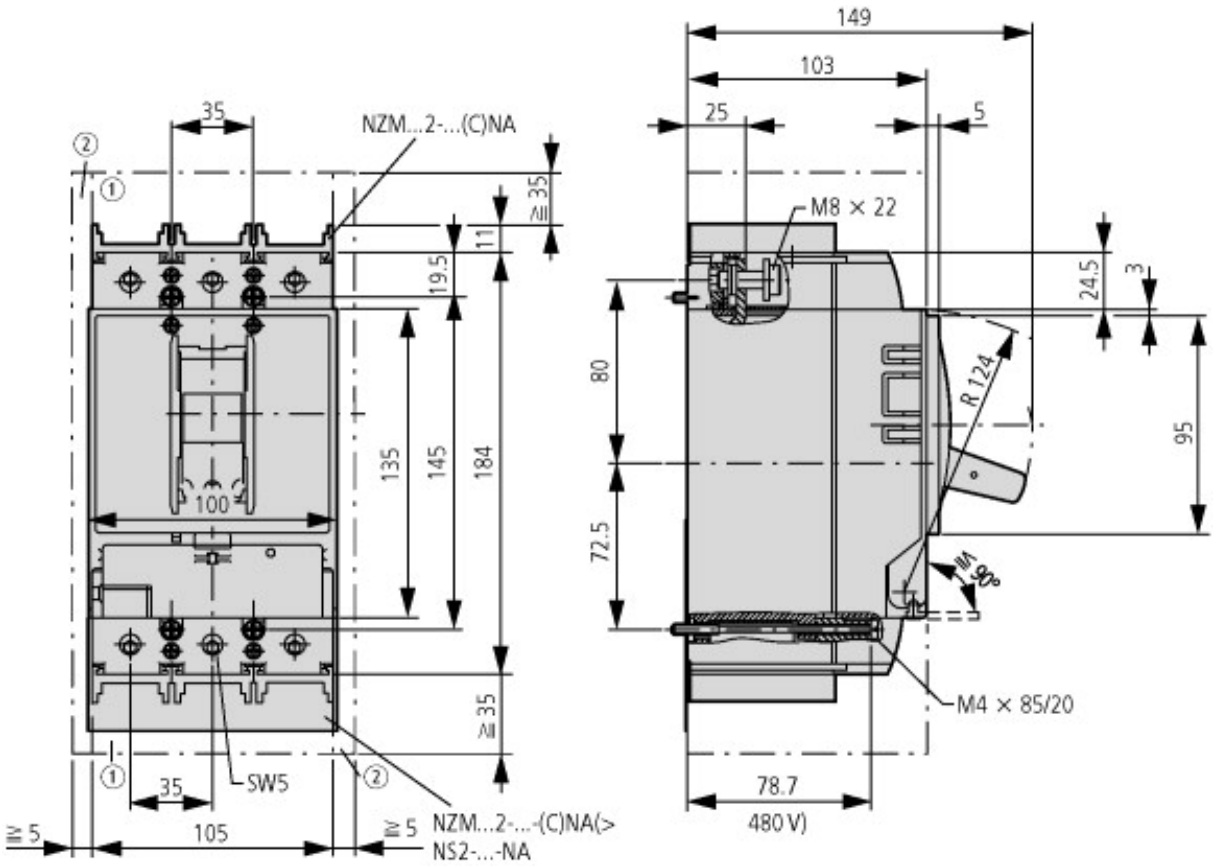
Characteristics


NZM2-M...
Tripping time [s]
2.5 h
(10 min)
(1 min)
8000
6000
4000
2000
1000
800
600
400
200
100
80
60
40
20
10
8
6
4
2
1
0.8
0.6
0.4
0.2
0.1
0.08
0.06
0.04
0.02
0.01
0.008
0.006
0.004
0.002
0.001
Tolerance t_r [s]
Setting range
$I_r = 8$
$14 \times I_n$
1
2
3
4
5
6
7
8
9
10
15
20
30
40
50
60
70
80
100
x I_r


NZMH2(-4)-A(M,VE,ME)15...300
$\hat{I}_D$ [kA]
200
100
80
60
40
20
10
8
6
4
3
1
√2 x I_{cc}
415 V
525 V
690 V
1 2 3 4 5 6 8 10 15 20 30 40 50 60 80 100 150
$I_{cc\ rms}$ [kA]

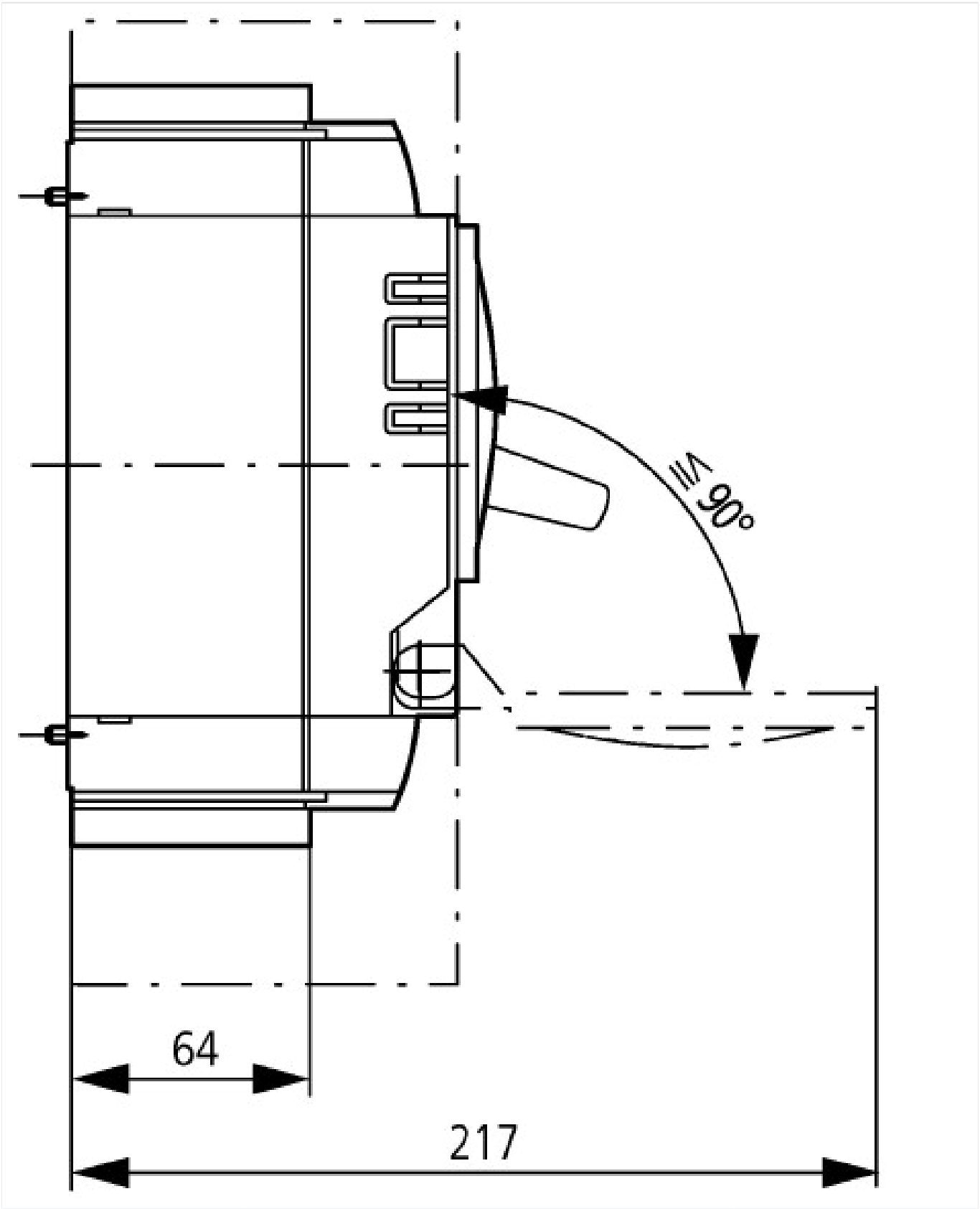


Dimensions



① Blow out area, minimum clearance to adjacent parts

② Minimum clearance to adjacent parts



Additional product information (links)

IL01206006Z (IL01206006Z) Circuit-Breaker, basic unit	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01206006Z2011_07.pdf
Engineering	
Motor protection	ftp://ftp.moeller.net/DOCUMENTATION/PDF/GB/CHA_NZM_M234_G.pdf
Busbar Component Adapters for modern Industrial control panels	http://www.moeller.net/binary/ver_techpapers/ver960en.pdf
Setting-Specific Representation of Tripping Characteristics and Competent Assessment of their Interaction	http://www.moeller.net/binary/ver_techpapers/ver943en.pdf