







Circuit-breaker, 3p, 90A, box terminals

Part no. **NZMN2-ME90-BT-NA**  
 Catalog No. **142421**

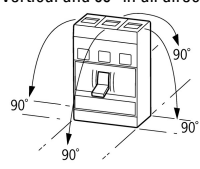
Similar to illustration

## Delivery program

Product range			Circuit-breaker
Protective function			Motor protection
			
Standard/Approval			UL/CSA, IEC
Installation type			Fixed
Release system			Electronic release
Construction size			NZM2
Description			Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate. 100% rated For use in motor circuits with contactor. Additional motor protective characteristics (calibration) to UL508, CSA-C22.2 No. 14-05. Adjustable overload releases I <sub>r</sub> adjustable time delay setting to overcome current peaks tr: 2 – 20 s at 6 x I <sub>r</sub>
Number of poles			3 pole
Standard equipment			Box terminal
Rated current = rated uninterrupted current	I <sub>n</sub> = I <sub>u</sub>	A	90
<b>Switching capacity</b>			
SCCR 480 V 60 Hz	I <sub>cu</sub>	kA	35
<b>Setting range</b>			
Overload trip			
	I <sub>r</sub>	A	45 - 90
Short-circuit releases			
			
Non-delayed	I <sub>i</sub> = I <sub>n</sub> x ...		2 - 14
			
Motor power	460 V 480 V	HP	60

## Technical data

<b>General</b>			
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	20 (half-sinusoidal shock 20 ms)
Safe isolation to EN 61140			

Between auxiliary contacts and main contacts	V AC	500
between the auxiliary contacts	V AC	300
Weight	kg	2.345
Mounting position		
Mounting position		<p>Vertical and 90° in all directions</p>  <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  - NZM4, N4: vertical  with remote operator:  - NZM2, N(S)2, NZM3, N(S)3, NZM4, N(S)4: vertical and 90° in all directions</p>
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	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	53
690 V 50/60 Hz	$I_c$	kA	40
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	$I_{cu}$	kA	35
525 V 50/60 Hz	$I_{cu}$	kA	25
690 V 50/60 Hz	$I_{cu}$	kA	20
$I_{cs}$ to IEC/EN 60947 test cycle O-t-CO-t-CO	$I_{cs}$	kA	
240 V 50/60 Hz	$I_{cs}$	kA	85
400/415 V 50/60 Hz	$I_{cs}$	kA	50
440 V 50/60 Hz	$I_{cs}$	kA	35
525 V 50/60 Hz	$I_{cs}$	kA	25
690 V 50/60 Hz	$I_{cs}$	kA	5
Maximum low-voltage h.b.c. fuse	A gG/gL		355
			Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.
<b>Technical data that diverge from products for the IEC market</b> Switching capacity of NA switches (UL489, CSA 22.2 No. 5.1) Short-circuit current rating SCCR			

SCCR 240 V 60 Hz	I <sub>cu</sub>	kA	85
SCCR 480 V 60 Hz	I <sub>cu</sub>	kA	35
Rated short-time withstand current			
t = 0.3 s	I <sub>cw</sub>	kA	1.9
t = 1 s	I <sub>cw</sub>	kA	1.9
Utilization category to IEC/EN 60947-2			A
Lifespan, mechanical(of which max. 50 % trip by shunt/undervoltage release)	Operations		20000
Lifespan, electrical			
AC-1			
400 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
Total break time at short-circuit		ms	< 10

### Terminal capacity

Standard equipment			Box terminal
Round copper conductor			
Tunnel terminal			
Solid		mm <sup>2</sup>	1 x 16
Al conductors, Cu cable			
Tunnel terminal			
Solid		mm <sup>2</sup>	1 x 16
Copper busbar (width x thickness)			
Bolt terminal and rear-side connection	mm		
Screw connection			M8

### Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I <sub>n</sub>	A	90
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	6.68
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			
10.2.2.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.2.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.2.3 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.

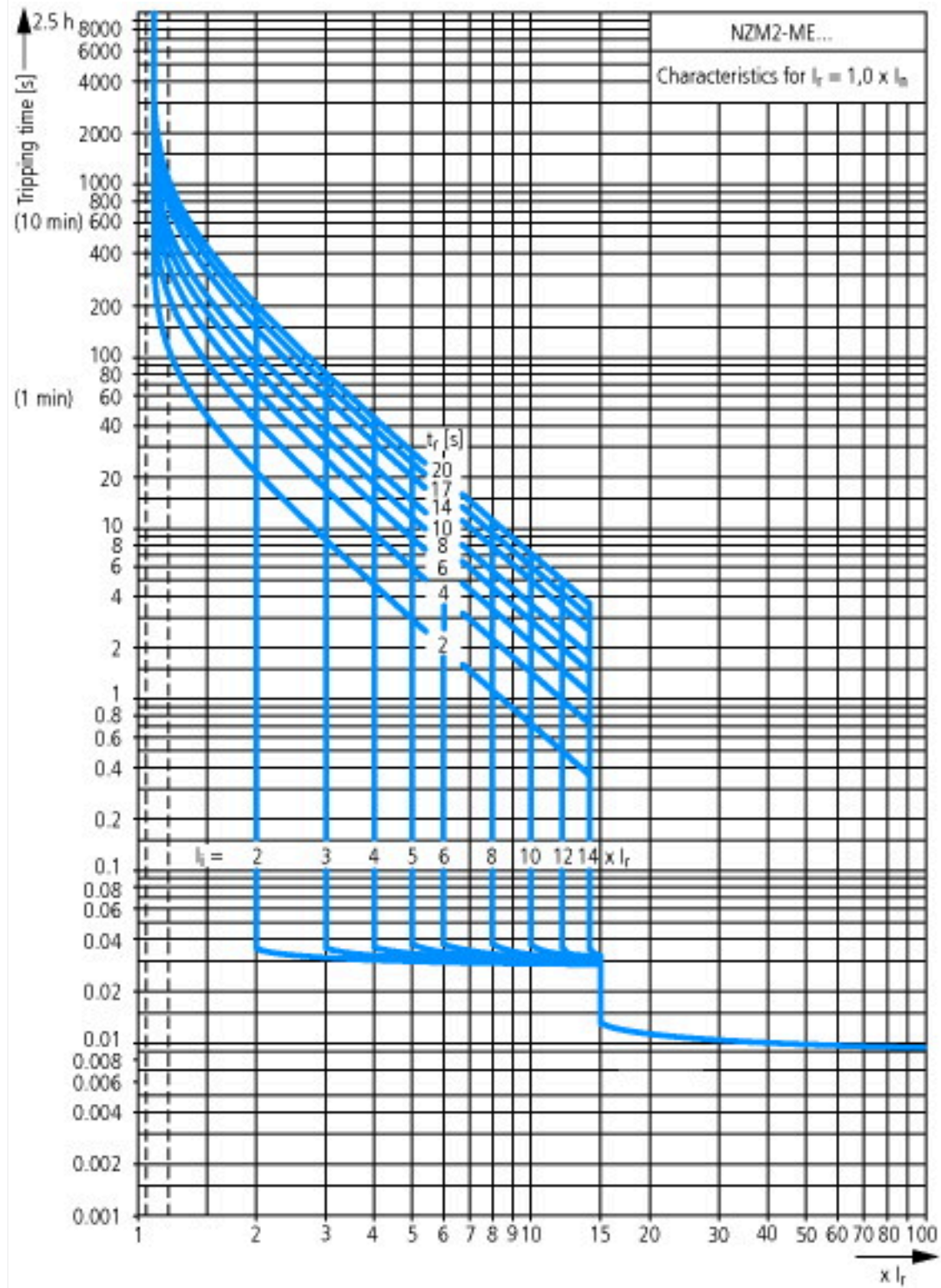
## Technical data ETIM 8.0

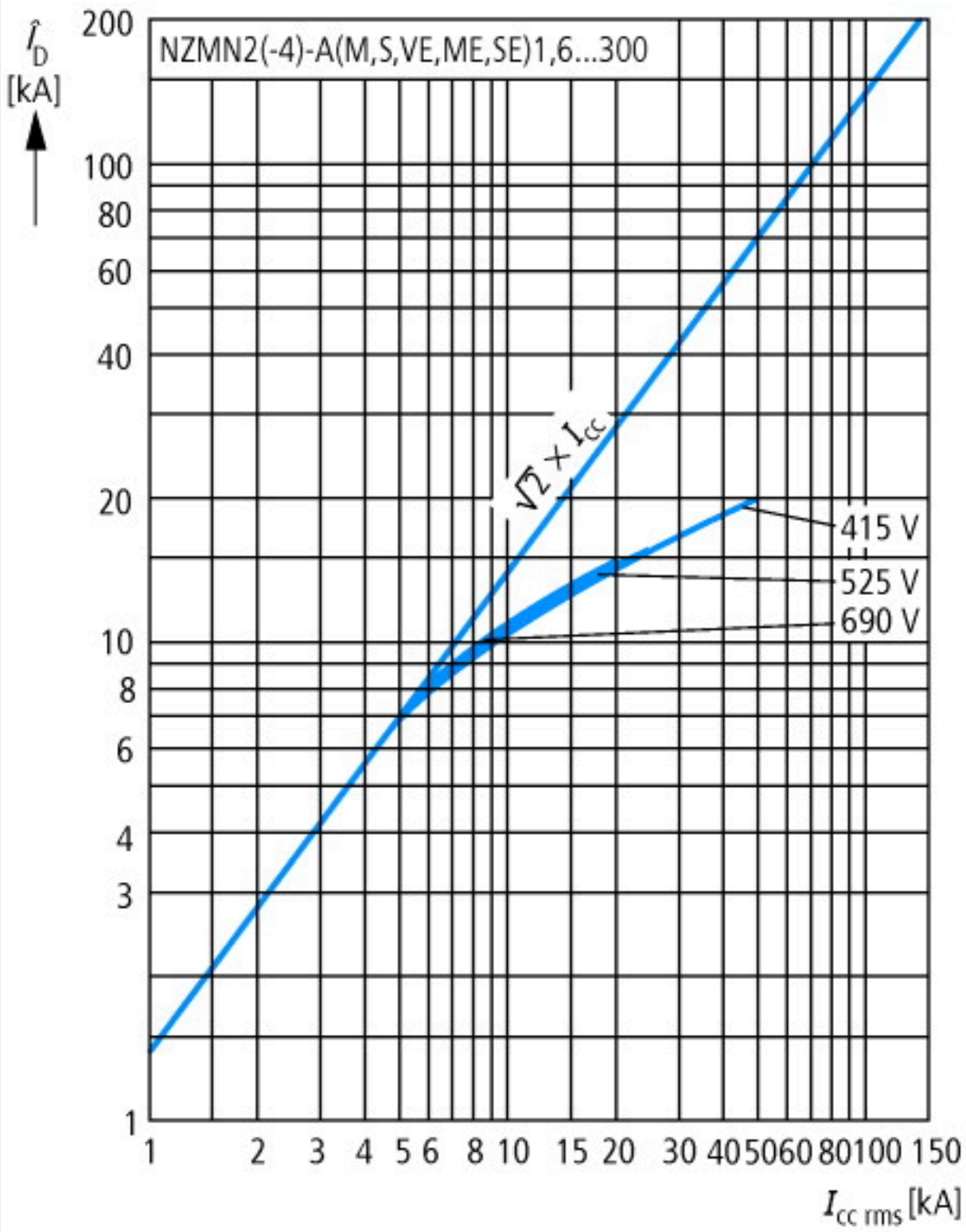
Low-voltage industrial components (EG000017) / Motor protection circuit-breaker (EC000074)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecl@ss10.0.1-27-37-04-01 [AGZ529016])		
Overload release current setting	A	45 - 90
Adjustment range undelayed short-circuit release	A	180 - 1260
With thermal protection		Yes
Phase failure sensitive		Yes
Switch off technique		Electronic
Rated operating voltage	V	690 - 690
Rated permanent current I <sub>u</sub>	A	90
Rated operation power at AC-3, 230 V	kW	22
Rated operation power at AC-3, 400 V	kW	45
Type of electrical connection of main circuit		Other
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	35
Degree of protection (IP)		IP20
Height	mm	195
Width	mm	105
Depth	mm	149

## 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, additionally calibrated according to UL 508.
Suitable for		Feeder circuits, branch circuits
Current Limiting Circuit-Breaker		Yes
Max. Voltage Rating		480 V
Degree of Protection		IEC: IP20; UL/CSA Type: -

# Characteristics



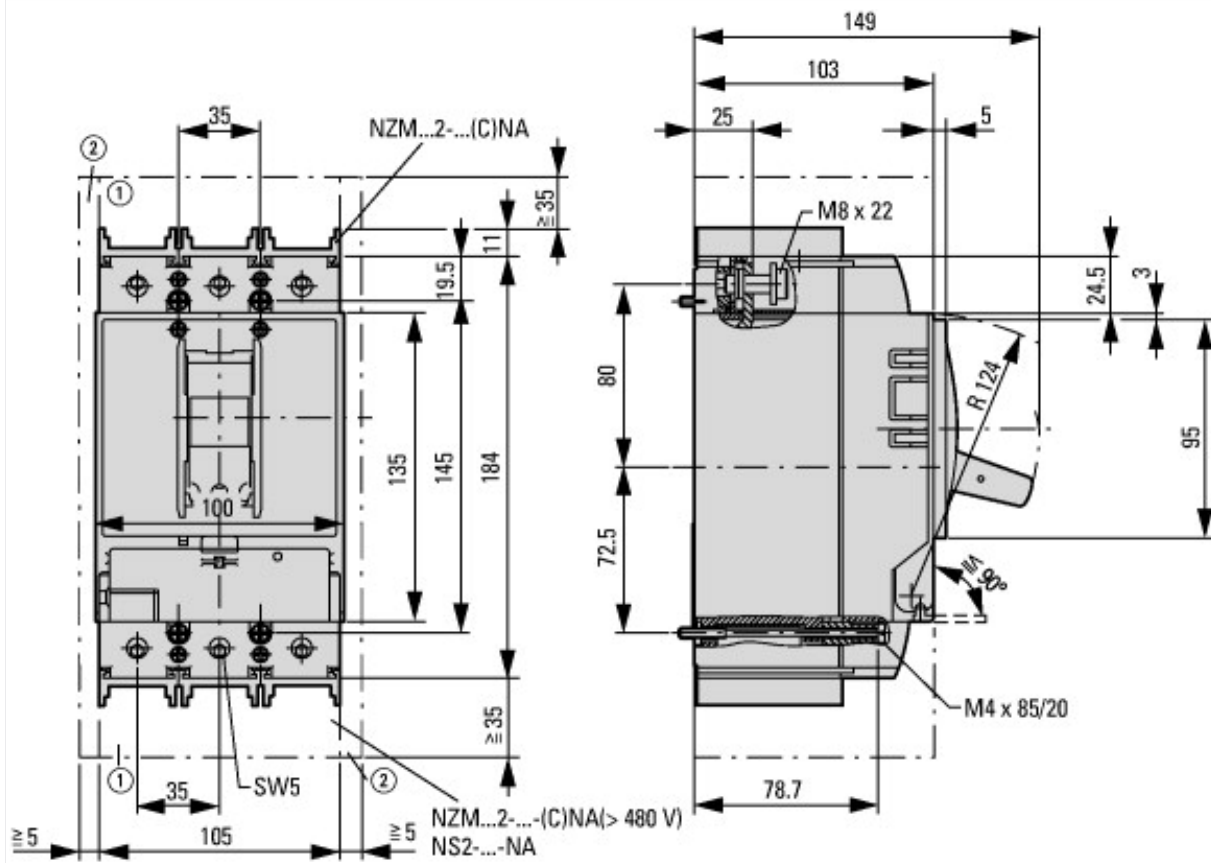


Let-through current



Let-through energy

## Dimensions



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





### Additional product information (links)

#### IL01206006Z (AWA1230-1916) Circuit-breaker, switch-disconnector

IL01206006Z (AWA1230-1916) Circuit-breaker, switch-disconnector	<a href="https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL01206006Z2015_11.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL01206006Z2015_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>
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>