

Part no. ZB12-2,4 Catalog No. 278437 Eaton Catalog No. XTOB2P4BC1



## **Delivery program**

N			
Product range			Overload relay ZB up to 150 A
rame size			ZB12
Phase-failure sensitivity			IEC/EN 60947, VDE 0660 Part 102
Description			Test/off button Reset pushbutton manual/auto Trip-free release
Nounting type			Direct mounting
<u></u>	l <sub>r</sub>	A	1.6 - 2.4
Contact sequence			$\begin{bmatrix} 1 & 1 & 1 & 1 \\ 2 & 4 & 6 & 98 & 96 & A2 & 14/\\ 2 & 2 & 4 & 6 & 98 & 96 & A2 & 14/\\ 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 \\ 2 & 2 &$
Auxiliary contacts			
N/O = Normally open			1 N/O
N/C = Normally closed			1 N/C
or use with			DILM7, DILM9, DILM12, DILM15, DIULM7, DIULM9, DIULM12, SDAINLM12, SDAINLM16, SDAINLM22
Short-circuit protection			
Type "1" coordination	gG/gL	A	25
Type "2" coordination	gG/gL	A	10
Votes			

#### Notes

Overload release: tripping class 10 A

short-circuit protective device: Observe the maximum permissible fuse of the contactor with direct device mounting.

Suitable for protection of EEx°e-motors.



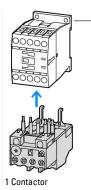
II(2)G [Ex d] [Ex e] [Ex px], II(2)D [Ex p] [Ex t]

PTB 04 ATEX 3022

Observe manual AWB2300-1527D/GB.

Notes

Fitted directly to the contactor



### Technical data General

Barls increation in IEC SIRPS-278 bamp best; quick, is IEC SOBR-278 bamp best; quick, is IEC SOBR-278 band all substitued based durations band duration what substitued from front IEV SOURCE For and back or hand proof Hard is advantant values best catagonizations durations best catagonizations best catagonizat	General			
Aniset response in Constraints         Bank hash cyclic infl C 50008-2-30           Aniset response in Constraints         Bank hash cyclic infl C 50008-2-30           Aniset response in Constraints         Bank hash cyclic infl C 50008-2-30           Tamperature companisation         Constraint response in CONStraints           Tamperature companisation         Constraints           Weich         Constraints           Marken ford for Constraints         Constraints           Barbone main constraints         Constraints           Barbone ma	Standards			IEC/EN 60947, VDE 0660, UL, CSA
Image: section of the sectin of the section of the section of the	Climatic proofing			
Gupun         P18.5°C - 45°C           Gupun         P18.5°C - 45°C           Enclosed         P2         25-03           Mainter compensation         P2         25-03           Weight         P2         25-04           Depried Protection         P2         20           Protection againstand voltage         P2         20           Normalization status         P2         20           Read classific voltage         P4         20           Read classific voltage         P4         20           Betwee status         P2         25-34/C           Betwee status         <	Ambient temperature			
LabasiImageC2-5 dWeighImageImageImageImageWeighImageImageImageImageWeighImageImageImageImageDepres of ProtectionImageImageImageImageDepres of ProtectionImageImageImageImageDepres of ProtectionImageImageImageImageDepres of ProtectionImageImageImageImageDepres of ProtectionImageImageImageImageDemonstration statusImageImageImageImageDemonstration statusImageImageImageImageDemonstration statusImageImageImageImageDemonstration statusImageImageImageImageBetween main circlesImageImageImageImageDemonstration statusImageImag				
Temperature componsition         Image: set and set of the set and set	Open		°C	-25 - +55
Waight         Image is a state in the set is a state in	Enclosed		°C	- 25 - 40
Mechanical shock resistance         Image and back of hand proof           Dagree of Protection         Protection genes         Protection genes           Protection genes         Protection genes         Proof           Attai conducting paths         Proof         Proof           Develops category/polition degree         Umage         Vac         Proof           Based insulation voltage         Umage         Vac         Proof           Based shall no voltage         Umage         Vac         Proof           Based pertainal voltage         Umage         Vac         Proof           Base main first context with stand voltage         Vac         Adord         Proof           Base main in circuits         Vac         Vac         Adord         Proof           Base main in circuits         Vac         Vac         Sold         Proof         Proof           Base main in circuits         Vac         Vac         Sold         Proof         Proof           Base went main circuits         Sold wordstore         Vac         Sold         So	Temperature compensation			Continuous
bit         bit<         bit<         bit<         bit	Weight		kg	0.15
Protection against direct contact type and back-of-hand proof         Finge and back-of-hand proof           Main contracting paths         Value         Value <td< td=""><td>Mechanical shock resistance</td><td></td><td>g</td><td>Sinusoidal</td></td<>	Mechanical shock resistance		g	Sinusoidal
Mana mulae withstand voltage         Vmm	Degree of Protection			IP20
Rated inpulse withstand voltage         Vare         600           Deervoltage category/pollution degree         Vi         Vi/3           Rated insulation voltage         Vi         90           Rated insulation voltage         Vi         90           Rated insulation voltage         Vi         90           Sate isolation to EN 61140         Vi         40           Between audiary contacts and main contacts         Vi         40           Course the staft and main contacts         Vi         40           Between audiary contacts and main contacts         Vi         50           Course that loss (3 conductors)         Vi         50           Current heat loss (3 conductors)         Vi         50           Current heat loss (3 conductors)         Vi         50           Solid or stranded         Vi         70           Solid or stranded         Vi         10           Solid or stranded         Vi         10           Solid or stranded         Vi         10	Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
Deventage category/pollution degreeIIIIIIIRated operational voltageV80Rated operational voltageVAC80Safe isolation te Ki Si Addition te Ki Si Addition te Si Si Addition te Si Si Addition te Si Si Additione Si Si Conductors)VAC40Between auxiliary contacts and main contactsVAC4040Between auxiliary contacts and main contactsVAC4040Between auxiliary contacts and main contactsVAC4040Between auxiliary contacts and main contactsVAC4040International expansion residual error > 40°CVAC4040Rater and the setting rangeVAC404040Current heat loss (S conductors)VAC505050SolidSidi Current heat loss (S conductors)VAC5050Solid or strandedMaximum settingMaximum settingMaximum settingMaximum settingSolid or strandedVACMaximum settingMaximum settingMaximum settingSolid or strandedVACMaximum settingNam8Solid or strandedVACMaximum settingNam8<	Main conducting paths			
Rated insulation voltage         U,         V         90           Rated operational voltage         U_B         VAC         90           Safe isolation to EN 61140         VAC         40           Between auxiliary contacts and main contacts         VAC         40           Between main circuits         VAC         40           Temperatur compensation residual error >40 °C         VAC         40           Current heat loss G conductors)         VAC         50           Current heat loss G conductors)         VAC         50           Maximum setting         VAC         50           Maximum setting range         VAC         50           Solid         range         range           Solid or stranded         VMC         51           Ferminal screw         VMC         8-8           Toping length         VMC         8-8           Forbing for screwdriver         VMC         8-8           Solid or stranded         VMC         8-8           Toping length         VMC         8-8           Toping length         VMC         8-16           Toping length         VMC         8-16           Toping length         VMC         8-16      <	Rated impulse withstand voltage	U <sub>imp</sub>	V AC	6000
Act of operational voltage         Ue         VAC         60           Set isolation to EN 61140         VAC         40           Between auxiliary contacts and main contacts         VAC         40           Between auxiliary contacts and main contacts         VAC         40           Temperatur compensation residual error > 40 °C         VAC         40           Corrent heat loss (3 conductors)         VAC         50           Corrent heat loss (3 conductors)         VAC         50           Maximum satting         VAC         50           Review of the setting range         VAC         50           Solid         VAC         50           Solid         VAC         50           Solid or strandad         VAC         50           Solid or strandad         VAC         84           Solid or strandad         VAC         80           Solid or strandad         VAC         10           Tabeling forgue         VAC         80           Solid or strandad         VAC         10           Tabeling forgue         VAC         10           Tabeling forgue         VAC         10           Solid or strandad         VAP         10	Overvoltage category/pollution degree			111/3
Seleiolation to EN 61140         Image: Selection to EN 611400         Image: Selection to EN 611400 <td< td=""><td>Rated insulation voltage</td><td>Ui</td><td>V</td><td>690</td></td<>	Rated insulation voltage	Ui	V	690
Between auxiliary contacts and main contacts       VAC       40         Between main circuits       VAC       40         Temperatur compensation residual error > 40 °C       So 25 %/K         Current heat loss (3 conductors)       W       2         Current heat loss (3 conductors)       W       5         Maximum setting       MR       7         Maximum setting       MR       7         Solid       MR       1         Flexible with ferrule       MR       8         Solid or stranded       MR       8         Terminal carcew       MR       8         Solid or stranded       MR       8         Terminal screw       MR       8         Paddrin screwdriver       MR       8         Stripping length       MR       8         Tools       MR       10         Paddrin screwdriver       MR       10         Stripping length       MR       10         Poddrin screwdriver       MR       10         Rest       MR       10         Stripping length       MR       10         Tools       Interminal screw       Interminal screw       10         Rest       <	Rated operational voltage	Ue	V AC	690
Between main risuits     VAC     40       Temperatur compensation residual error > 40 °C     5     5       Current heat loss (3 conductors)     Maximum setting range     Maximum setting range     Maximum setting range     Maximum setting range       Maximum setting     Maximum setting range     Maximum setting range     Maximum setting range     Maximum setting range       Solid     Maximum setting     max     5     5       Flexible with ferrule     max     x11 - 6)     x11 - 4)       Solid or stranded     Max     8     8       Terminal capecities     Max     18     18       Solid or stranded     Max     18     18       Terminal capecities     Max     18     18       Solid or stranded     Max     18     18       Terminal capecities     Max     18     18       Terminal capecities     Max     18     18       Solid or stranded     Max     18     18       Terminal capecities     Max     18     18	Safe isolation to EN 61140			
Terminal capacities Termi	Between auxiliary contacts and main contacts		V AC	440
Current heat loss (3 conductors)         Maximum setting	Between main circuits		V AC	440
Lower value of the setting range       W       5         Maximum setting       W       5         Terminal capacities       ma <sup>2</sup> x1 = 0         Solid       ma <sup>2</sup> x1 = 0         Isble with ferrule       ma <sup>2</sup> x1 = 0         Solid or stranded       MM       1x = 1 = 0         Terminal screw       MM       18 = 0         Tightening torque       MM       18 = 0         Toget for stranded       MM       18 = 0         Toget for stranded moute for stranded       MM       18 = 0         Toget for stranded moute for stranded m	Temperatur compensation residual error > 40 $^{\circ}\mathrm{C}$			≦_0.25 %/K
Maximum setting       F       V       5.7         Terminal capacities       ma <sup>2</sup> 1x(1 - 6)         Solid       ma <sup>2</sup> 1x(1 - 6)         Flexible with ferrule       ma <sup>2</sup> 1x(1 - 4)         Solid or stranded       ma <sup>2</sup> 1x(1 - 4)         Solid or stranded       Maximum setting       Maximum setting         Terminal screw       Maximum setting       Maximum setting         Tightening torque       Maximum setting       Maximum setting         Stripping length       Nm       18         Tools       Nm       18         Pozidriv screwdriver       Nm       1x6         Auxiliary and control circuits       Nm       1x6         Auxiliary and control circuits       Nm       11/3         Terminal capacities       Nm       11/3         Solid       Nm       1x0				
Terminal capacities       ma <sup>2</sup> ×1(1-6)         Solid       ma <sup>2</sup> ×1(1-6)         Flexible with ferrule       ma <sup>2</sup> ×1(1-4)         Solid or stranded       AWG       8-8         Terminal screw       AWG       8-8         Terminal screw       Ma       8-8         Toping length       Ma       8-8         Tools       Ma       8-8         Pozidriv screwdriver       Ma       8-8         Autoret screwdriver <t< td=""><td></td><td></td><td>W</td><td>2.5</td></t<>			W	2.5
Solid     mm     x(1 - 6)       Flexible with ferrule     mm <sup>2</sup> x(1 - 4)       Solid or stranded     AWG     x(1 - 4)       Solid or stranded     AWG     8-8       Terminal screw     MM     8-8       Tightening torque     MM     8-8       Stripping length     MM     8-8       Tools     MM     8-8       Pozidriv screwdriver     MM     8-8       Standard screwdriver     MM     8-8       Auxiliary and control circuits     MM     8-8       Reterminal capacities     MM     8-8       Solid     MM     8-8				5.7
Flexible with ferrule     mm <sup>2</sup> x (1 - 6)       Solid or stranded     mm <sup>2</sup> 1 x (1 - 4)       Solid or stranded     MWG     18 - 8       Terminal screw     M4     M4       Tightening torque     Mm     1.8       Stripping length     Mm     1.8       Tools     Mm     1.8       Pozidriv screwdriver     Mm     1.8       Standard screwdriver     Mm     1.8       Auxiliary and control circuits     Mm     1.8       Rated impulse withstand voltage     Mm     1.8       Overvoltage category/pollution degree     Mm     1.8       Solid     Mm     1.8	Terminal capacities		mm <sup>2</sup>	
Solid or stranded       2x(1 - 4)         Solid or stranded       AWG         Terminal screw       M4         Tightening torque       Nm         Stripping length       mm         Tools       mm         Pozidriv screwdriver       Size         Standard screwdriver       mm         Standard screwdriver       mm         Rated impulse withstand voltage       Mmp         Overvoltage category/pollution degree       Mmp         Solid       mm²         Solid       mm²         Solid       mm²	Solid		mm <sup>2</sup>	
Terminal screw       Me       Ma         Tightening torque       Nm       1.8         Stripping length       mm       1.0         Tools       Nm       1.0         Pozidriv screwdriver       Size       2         Standard screwdriver       mm       1.6         Auxiliary and control circuits       mm       1.6         Overvoltage category/pollution degree       Ming       600         Solid       mm <sup>2</sup> 1.0.75 - 4)	Flexible with ferrule		mm <sup>2</sup>	
Tightening torque     Nm     1.8       Stripping length     mm     10       Tools     mm     10       Pozidriv screwdriver     Size     2       Standard screwdriver     mm     1 × 6       Auxiliary and control circuits     Imp     6000       Overvoltage category/pollution degree     Imp     6000       Solid     mm <sup>2</sup> 1 × (0.75 - 4)	Solid or stranded		AWG	18 - 8
Stripping length     mm     10       Tools     Tools     Tools     Tools       Pozidriv screwdriver     Size     2       Standard screwdriver     mm     1 x 6       Auxiliary and control circuits     Uimp     V     6000       Overvoltage category/pollution degree     III/3     III/3       Solid     mm²     1 x (0.75 - 4)	Terminal screw			M4
Tools     Size       Pozidriv screwdriver     Size       Standard screwdriver     mm       Auxiliary and control circuits     1 × 6       Auxiliary and control circuits     Imp       Overvoltage category/pollution degree     Imp       Solid     mm <sup>2</sup>	Tightening torque		Nm	1.8
Pozidriv screwdriver     Size       Standard screwdriver     mm     1 × 6       Auxiliary and control circuits     Imp     6000       Auxiliary actegory/pollution degree     Imp     Imp       Solid     mm2     1 × (0.75 - 4)	Stripping length		mm	10
Standard screwdriver     mm     1 x 6       Auxiliary and control circuits     Imm     1 x 6       Rated impulse withstand voltage     Uimp     V     6000       Overvoltage category/pollution degree     III/3     III/3       Terminal capacities     mm <sup>2</sup> 1 x (0.75 - 4)	Tools			
Auxiliary and control circuits       Rated impulse withstand voltage     Vimp       Overvoltage category/pollution degree     III/3       Terminal capacities     mm <sup>2</sup> 1 x (0.75 - 4)	Pozidriv screwdriver		Size	2
Rated impulse withstand voltage     Uimp     V     6000       Overvoltage category/pollution degree     III/3       Terminal capacities     mm <sup>2</sup> 1 × (0.75 - 4)			mm	1 x 6
Overvoltage category/pollution degree     III/3       Terminal capacities     mm <sup>2</sup> Solid     mm <sup>2</sup>	Auxiliary and control circuits			
Terminal capacities mm <sup>2</sup> Solid mm <sup>2</sup> 1 x (0.75 - 4)		U <sub>imp</sub>	V	6000
Solid mm <sup>2</sup> 1 × (0.75 - 4)	Overvoltage category/pollution degree			111/3
	Terminal capacities		mm <sup>2</sup>	
	Solid		mm <sup>2</sup>	

Flexible with ferrule		mm <sup>2</sup>	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)
Solid or stranded		AWG	2 x (18 - 14)
Terminal screw			M3.5
Tightening torque		Nm	0.8 - 1.2
Stripping length		mm	8
Tools			
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	1 x 6
Rated insulation voltage	Ui	V AC	500
Rated operational voltage	U <sub>e</sub>	V AC	500
Safe isolation to EN 61140			
between the auxiliary contacts		V AC	240
Conventional thermal current	I <sub>th</sub>	А	6
Rated operational current	l <sub>e</sub>	А	
AC-15			
Make contact			
120 V	le	А	6
220 V 230 V 240 V	le	А	1.5
380 V 400 V 415 V	l <sub>e</sub>	А	0.5
500 V	l <sub>e</sub>	A	0.5
Break contact			
120 V	le	A	1.5
220 V 230 V 240 V	l <sub>e</sub>	A	1.5
380 V 400 V 415 V	l <sub>e</sub>	A	0.9
500 V	l <sub>e</sub>	A	0.8
DC-13 L/R - 15 ms			
24 V	l <sub>e</sub>	A	0.9
60 V	l <sub>e</sub>	A	0.75
110 V	le	A	0.4
220 V	l <sub>e</sub>	A	0.2
Notes			Rated operational current DC-13, 60 V: N/O auxiliary contact 0.6 A
Short-circuit rating without welding			
max. fuse		A gG/gL	6

# Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	А	2.4
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	1.9
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	5.7
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	55
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.

10.0.7	Marta the module total and a structure of a
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**

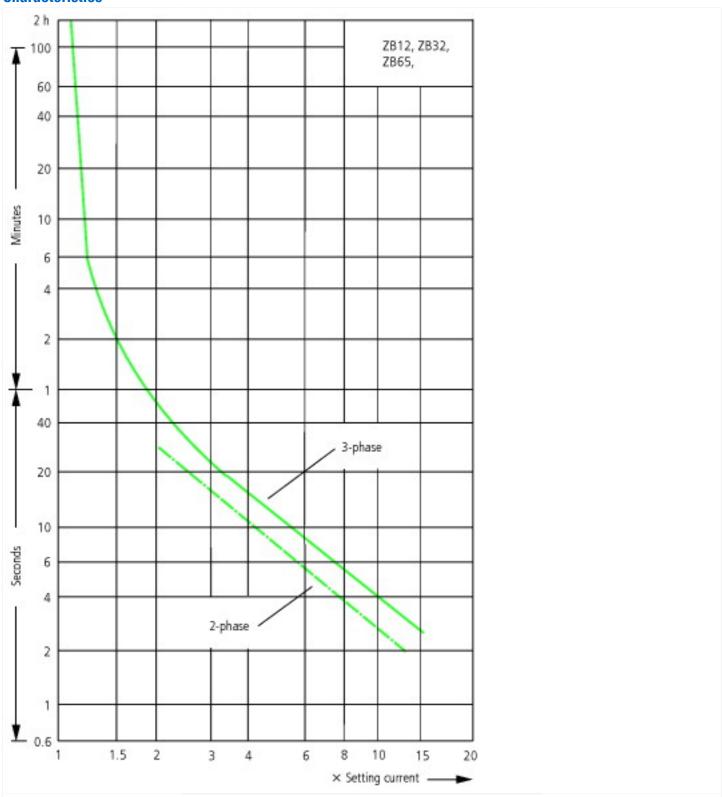
Low-voltage industrial components (EG000017) / Thermal overload relay (EC000106)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Overload protection device / Thermal overload relay (ecl@ss8.1-27-37-15-01 [AKF075011])			
Adjustable current range		А	1.6 - 2.4
Max. rated operation voltage Ue		V	690
Mounting method			Direct attachment
Type of electrical connection of main circuit			Screw connection
Number of auxiliary contacts as normally closed contact			1
Number of auxiliary contacts as normally open contact			1
Number of auxiliary contacts as change-over contact			0
Release class			CLASS 10

# **Approvals**

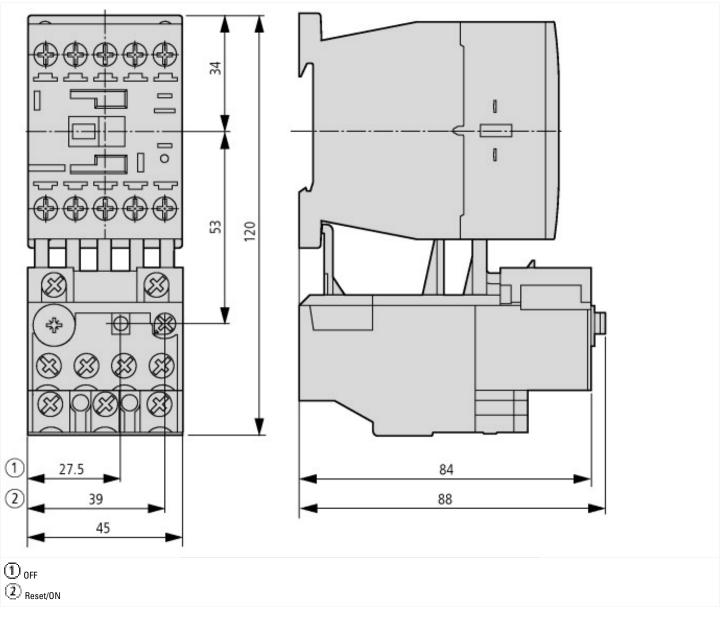
IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking
E29184
NKCR
12528
3211-03
UL listed, CSA certified
No
Branch circuits
600 V AC
IEC: IP20, UL/CSA Type: -





These tripping characteristics are mean values of the spread at 20 °C ambient temperature in a cold state. Tripping time depends on response current. On devices at operating temperature the tripping time of the overload relay drops to approx. 25 % of the read value. Specific characteristics for each individual setting range can be found in the manual.

## **Dimensions**



## Additional product information (links)

#### IL03407015Z (AWA2300-2114) Overload relay

IL03407015Z (AWA2300-2114) Overload relay ftp://ftp.moeller.net/DOCUMENTATION/AWA\_INSTRUCTIONS/IL03407015Z2017\_01.pdf

IL03407195Z Sealable shroud

IL03407195Z Sealable shroud

#### ftp://ftp.moeller.net/DOCUMENTATION/AWA\_INSTRUCTIONS/IL03407195Z2011\_06.pdf

#### MN03407004Z (AWB2300-1527D/GB) ZB12/XT0B...BC1 and ZB32/XT0B...CC1 overload relays, overload monitoring of Ex e motors

MN03407004Z (AWB2300-1527D/GB) ZB12/ XTOB...BC1 and ZB32/XTOB...CC1 overload relays, overload monitoring of Ex e motors -Deutsch / English ftp://ftp.moeller.net/DOCUMENTATION/AWB\_MANUALS/MN03407004Z\_DE\_EN.pdf