

Part no.

Article no.

Catalog No.

ZB12-2,4 278437 XTOB2P4BC1



### **Delivery program**

Product range			Overload relay ZB up to 150 A
Frame size			ZB12
Phase-failure sensitivity			IEC/EN 60947, VDE 0660 Part 102
Description			Test/off button Reset pushbutton manual/auto Trip-free release
Mounting type			Direct mounting
с‡	I <sub>r</sub>	A	1.6 - 2.4
Contact sequence			$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Auxiliary contacts			
N/O = Normally open			1 N/O
N/C = Normally closed			1 N/C
For 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
Notos			

#### 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.



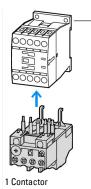
II(2)G [Ex d] [Ex e] [Ex px], II(2)D [Ex p] [Ex t]

PTB 04 ATEX 3022

Observe manual AWB2300-1527D/GB.

Notes

Fitted directly to the contactor



1

# Technical data

Rated impulse withstand voltage     Ump     VAC     600       Overvoltage category/pollution degree     III/3     III/3       Rated oneration voltage     V     V     Sed       Rated operational voltage     V     V     Sed       Safe isolation to EN 61140     V     VAC     VAC       Between auxiliary contacts and main contacts     VAC     VAC     VAC       Between auxiliary contacts and main contacts     VAC     VAC     VAC       Between auxiliary contacts and main contacts     VAC     VAC     VAC       Tomperatur compensation residual error > 40 °C     VAC     VAC     Sed       Current heat loss (3 conductors)     VAC     VAC     Sed       Maximum setting range     VAC     VAC     Sed       Solid     Solid     Mar     Sed       Solid or stranded     Mar     Mar     Sed       Solid or strande     Mar     Sed     Sed       Tominia screwdriver     Mar     Sed     Sed       Fativity Strande     Mar     Sed     Sed       To	General			
Anisotie constructionAnisotie constructio	Standards			IEC/EN 60947, VDE 0660, UL, CSA
Image: state of the state of	Climatic proofing			
Image:	Ambient temperature			
Enclosed     Constraints       Enclosed     Constraints       Weight     Constraints       Weight     Sint Conductions       Protection     Sint Conductions       Protection     Protection       Protection     Protection       Protection     Protection       Read insulator votage     Prote				
Temperature compensationImage: set of the	Open		°C	-25 - +55
Weight     Is     Is       Mechanical shock resistance     Invasidad Sinus addation to main Sinus addation to main sector against direct contextwhen sector from (FM 9222) and Protection against direct contextwhen sector from (	Enclosed		°C	- 25 - 40
Machanical abook resistance     Namidad Shack Auration 10 ms       Degree of Protection     Protection 10 ms       Protection appliant direct catact when actuated from from (EN 9227)     Protection 10 ms       Main controlled protection     Protection 10 ms       Main controlled protection     Protection 10 ms       Overvoltage catagory/sellution degree     Num     Self and back-schand protection       Reted perational voltage     Van     Self and Self an	Temperature compensation			Continuous
Image: sear of Protection     Im	Weight		kg	0.15
Producting paths     Image: Second	Mechanical shock resistance		g	Sinusoidal
Marcing paths     Vane     Vane     Vane     Mode     Mod     Mode     Mode	Degree of Protection			IP20
Rated insulation voltage     Value     Va	-			Finger and back-of-hand proof
Nevolage actegory/polution degreeIndexIndexBated operational voltageValue90Bated operational voltageValue80Safe solation te M S1140Value80Between auxiliary contacts and main contactsValue40Between main circuitusValue40Imperatur compensation residual error > 40°CValue50Between main circuitusValue50Imperatur compensation residual error > 40°CValue50Inversitue for solation te for solation error solati	Main conducting paths			
Retinuitation voltage     V,I     VI     Bit Mathematical Strength Strengt Strengt Strength Strength Strength Strength Strengt Strength Str	Rated impulse withstand voltage	U <sub>imp</sub>	V AC	6000
Ret operational voltage     Let     VAC     Bio       Selectionation EX STATA     VAC	Overvoltage category/pollution degree			111/3
Seleisation to EN 61140 Image: Contracts and main contacts VAC 40   Between main circuits VAC VAC Sold   Between main circuits VAC Sold Sold   Temperatur compansation residual error > 40°C VAC Sold Sold   Current heat loss (3 conductors) VAC Sold Sold   Maximum setting VAC Sold Sold   Maximum setting VAC Sold Sold   Solid or stranded VAC Maria Sold   Betweine wirking company VAC Sold Sold   Solid or stranded VAC Maria Sold   Terminal screw VAC Maria Sold   Tople VAC Name Sold   Tople VAC Sold Sold   Sold or stranded VAC Sold Sold   Tople VAC Sold Sold Sold   Tople VAC Sold Sold Sold   Sold or stranded VAC Sold Sold Sold   Tople VAC Sold Sold Sold   Sold or stranded screwdriver VAC Sold Sold   Sold or stranded screwdriver <t< td=""><td>Rated insulation voltage</td><td>Ui</td><td>V</td><td>690</td></t<>	Rated insulation voltage	Ui	V	690
Between audiary contacts and main contactsVAC40Between main circuitsVAC50Temperatur compensation residual error > 40 °CVAC50Lower value of the setting rangeVAC50Maximus ettingVAC70Terminal capacitiesMax70SolidMax70Terminal capacitiesMax70Solid or strandedMax70Terminal caractMax70Pozich resortierMax80Terminal caractMax80Terminal caractMax70Pozich resortierMax81Terminal caractifierMax81Terminal caractifierMax81Terminal caractifierMax16Terminal caractifierMax16Termi	Rated operational voltage	U <sub>e</sub>	V AC	690
Between main circuitsKAC40Temperatur compensation residual error > 40 °C55Lower value of the setting rangeKK5Maximum settingKK5Maximum settingKK5Terminal capacitiesMaximum settingKKSolidMaximum settingKKKSolid or strandedMaximum settingKKKTerminal capacitiesMaximum settingKKKTerminal caracutKMaximum settingKKTerminal caracutKMaximum settingKKPozidriv screwdriverKKKKPozidriv screwdriverKKKKAuthility and control circuitsKKKKAuthility and control circuitsKKKKSolidKKKKKAuthility and control circuitsKKKKFirminal capacitiesKKKKSolidKKKKKSolidKKKKKSolidKKKKKSolidKKKKKSolidKKKKKSolidKKKKKSolidKKKKKSolidKKKKKSolid	Safe isolation to EN 61140			
Important compensation residual error > 40 °C     Important error > 40 °C <t< td=""><td>Between auxiliary contacts and main contacts</td><td></td><td>V AC</td><td>440</td></t<>	Between auxiliary contacts and main contacts		V AC	440
Current heat loss (3 conductors)Membrane	Between main circuits		V AC	440
Lower value of the setting rangeMSMaximum settingW5Maximum settingW5Terminal capacitiesMmVSolidmmVVSolidMmVVFexible with furuleMmVVSolid or strandedMmVVSolid or strandedMMSVTerminal screwMNSTerminal screwMmSizeNPoldriv screwdriverNSizeSizeSolid viscrewdriverMmSizeSizePoldriv screwdriverMmSizeSizeAustilargand control circuitsMmSizeSizeReting log with furuleMmSizeSizeSolidMmSizeSizeSolid catage with schedingMmSizeSolid schedingMmSizeSolidMmSizeSolidMmSizeSolidMmSizeSolidMmSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSizeSizeSolidSize	Temperatur compensation residual error > 40 °C			≦ <sub>0.25 %/K</sub>
Maximum settingMaximum settingMaximum settingSolid <t< td=""><td>Current heat loss (3 conductors)</td><td></td><td></td><td></td></t<>	Current heat loss (3 conductors)			
Terminal capacities   pm2     Solid   pm2     Solid or stranded   pm2     Solid or stranded   pm2     Solid or stranded   pm2     Solid or stranded   pm2     Terminal screw   AWG     Topice   Ma     Topice   ma     Pozichrix screwdriver   ma     Pozichrix screwdriver   ma     Auxiliary and control circuits   ma     Retei mpulse withstand voltage   Mag     Porindic capacities   ma     Solid   ma     Solid   screwdriver     Retei mpulse withstand voltage   ma     Solid   ma     Solid   ma     Solid   screwdriver     Ferminal capacities   ma     Solid   ma	Lower value of the setting range		W	2.5
Solid nm   Solid nm <sup>2</sup> Flexible with ferrule nm <sup>2</sup> Solid or stranded AWG   Solid or stranded AWG   Terrinal screw Nm   Totle Nm   Pozidriv screwdriver Nm   Standard screwdriver Nm   Standard screwdriver Nm   Autiliary and control circuits Nm   Rete impulse withstand voltage Mm   Overvoltage category/pollution degree Nm   Solid Nm   Solid Solid   Solid Nm   Solid Solid   Solid Solid   Solid Solid   Solid Solid   Solid Solid   Solid Solid	Maximum setting		W	5.7
Flexible with ferrule nmm 2 × 1 + 4   Solid or stranded 2 × 1 + 4   Solid or stranded AWG 18 - 8   Terminal screw M4 M4   Tothening torque Mmm 18 - 8   Auxiliary and control circuits Mmm 18 - 8   Auxiliary and control circuits Mmm 18 - 8   Terminal capacities Mmm 18 - 8   Tothening torque Mmm 18 - 8   Solid Mmm 18 - 8   Tothening torque Mmm 18 - 8   Overvoltage category/pollution degree Mmm 19 - 9   Solid Mmm Mmm 19 - 9   Solid Mmm Mmm 19 - 9   Solid Mmm 19 - 9 10 - 9   Ferbibewith ferrule Mmm 2 × 1075 - 4	Terminal capacities		mm <sup>2</sup>	
Solid or stranded AWG Ref   Terminal screw MWG 18-8   Terminal screw Mu 18-8   Toplating torque Mu 18   Pozidriv screwdriver Mu 18   Standard screwdriver Size 2   Standard screwdriver mu 1x   Auxiliary and control circuits Min 1x   Read impulse withstand voltage Min Min   Overvoltage category/pollution degree Min Min   Solid Solid man Solid   Solid Min Solid Solid   Flexible with ferrule Min Solid Solid	Solid		mm <sup>2</sup>	2 x (1 - 6)
Terminal screw Metal Metal Metal   Terminal screw Metal Metal Metal   Terminal screw Metal Metal Metal   Pozidriv screwdriver Size Size Size   Standard screwdriver Metal Metal Metal   Auxtinerration Metal Metal Metal   Auxtinerration Metal Metal Metal   Standard screwdriver Metal Metal Metal   Auxtinerration Metal Metal Metal   Auxtinerration Metal Metal Metal   Standard screwdriver Metal Metal Metal   Auxtinerration Metal Metal Metal   Auxtinerration Metal Metal Metal   Standard screwdriver Metal Metal Metal   Auxtinerration Metal Metal Metal   Auxtinerration Metal Metal Metal   Standard screwdriver Metal Metal Metal	Flexible with ferrule		mm <sup>2</sup>	2 x (1 - 4)
Tightening torque Nm Balance   Tools Forditives Size Size   Pozidriv screwdriver Size Size Size   Standard screwdriver mm 16   Auxiliary and control circuits mm 16   Reted implies withstand voltage Mm 900   Overvoltage category/pollution degree mm <sup>2</sup> 103   Solid mm <sup>2</sup> screwdriver   Flexible with ferrule mm <sup>2</sup> screwdriver	Solid or stranded		AWG	18 - 8
Tools Image: Marcine and	Terminal screw			M4
Pozidriv screwdriver Size Size   Standard screwdriver mm 1x6   Auxiliary and control circuits Wing Mag Mol   Red inpulse withstand voltage Ming Mol Mol   Overvoltage category/pollution degree Ming Ming Ming   Solid mm <sup>2</sup> Ming Ming   Flexible with ferrule Ming Ming Ming	Tightening torque		Nm	1.8
Standard screwdriver mm 1x 6   Auxiliary and control circuits Imp Imp Imp   Rated impulse withstand voltage Imp Imp Imp   Overvoltage category/pollution degree Imp Imp Imp   Solid mm <sup>2</sup> Imp Imp   Flexible with ferrule mm <sup>2</sup> Imp Imp	Tools			
Auxiliary and control circuits   Rated impulse withstand voltage Vimp Vimp 600   Overvoltage category/pollution degree In/3 In/3   Terminal capacities mm <sup>2</sup> x (0.5 - 4)   Solid mm <sup>2</sup> x (0.5 - 4)	Pozidriv screwdriver		Size	2
Rated impulse withstand voltage Ump V 600   Overvoltage category/pollution degree III/3 III/3   Terminal capacities mm <sup>2</sup> \$ x 0.75 - 4\$   Solid mm <sup>2</sup> \$ x 0.75 - 2\$	Standard screwdriver		mm	1 x 6
Overvoltage category/pollution degree Image: Comparison of the sector	Auxiliary and control circuits			
Terminal capacities mm <sup>2</sup> Solid mm <sup>2</sup> Flexible with ferrule mm <sup>2</sup>	Rated impulse withstand voltage	U <sub>imp</sub>	V	6000
Solid mm <sup>2</sup> 2 x (0.75 - 4)   Flexible with ferrule mm <sup>2</sup> 2 x (0.75 - 2.5)	Overvoltage category/pollution degree			111/3
Flexible with ferrule mm <sup>2</sup> 2 x (0.75 - 2.5)	Terminal capacities		mm <sup>2</sup>	
	Solid		mm <sup>2</sup>	2 × (0.75 - 4)
Solid or stranded AWG 2 x (18 - 14)	Flexible with ferrule		mm <sup>2</sup>	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
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	Ι <sub>e</sub>	А	
AC-15			
Make contact			
120 V	le	А	1.5
220 V 230 V 240 V	Ι <sub>e</sub>	А	1.5
380 V 400 V 415 V	I <sub>e</sub>	А	0.5
500 V	Ie	А	0.5
Break contact			
120 V	Ι <sub>e</sub>	А	1.5
220 V 230 V 240 V	le	А	1.5
380 V 400 V 415 V	Ι <sub>e</sub>	А	0.9
500 V	le	А	0.8
DC-13 L/R - 15 ms			
24 V	le	А	0.9
60 V	le	А	0.75
110 V	Ι <sub>e</sub>	А	0.4
220 V	le	А	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

Design vermeation as per 120/214 01455			
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.
10.2.7 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.

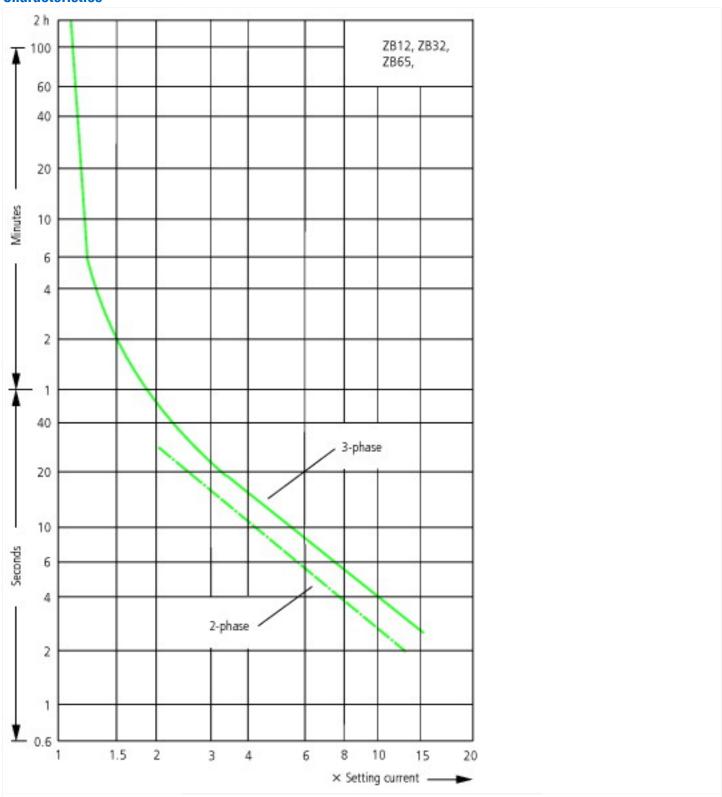
### **Technical data ETIM 6.0**

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**

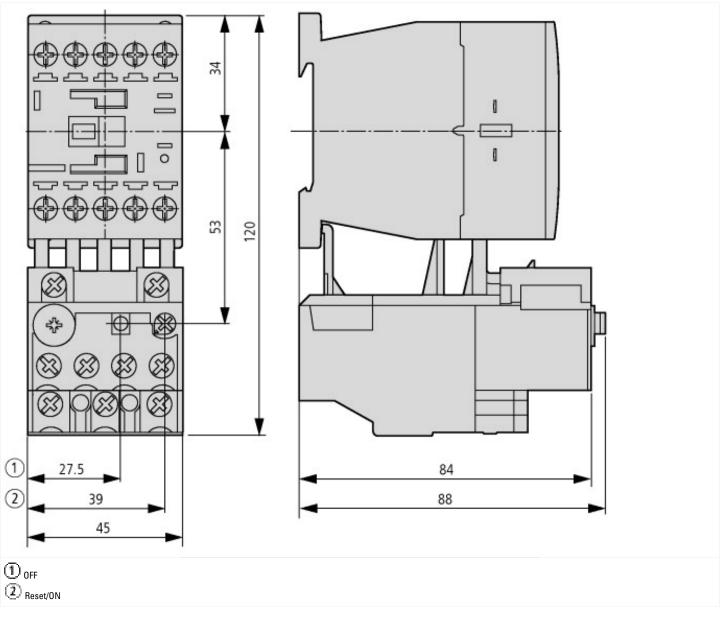
Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; IEC/EN 60947-5-1; CE marking
UL File No.	E29184
UL Category Control No.	NKCR
CSA File No.	12528
CSA Class No.	3211-03
North America Certification	UL listed, CSA certified
Specially designed for North America	No
Suitable for	Branch circuits
Max. Voltage Rating	600 V AC
Degree of Protection	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/IL03407015Z2014\_08.pdf

IL03407195Z Sealable shroud

IL03407195Z Sealable shroud

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

MN03407004Z (AWB2300-1527D/GB) ZB12/XTOB...BC1 and ZB32/XTOB...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