DATASHEET - ZB12-10



Overload relay, ZB12, Ir= 6 - 10 A, 1 N/O, 1 N/C, Direct mounting, IP20



Part no.	ZB12-10
Catalog No.	278440
Alternate Catalog	XTOB010BC1
No.	
EL-Nummer	0004131835
(Norway)	

Similar to illustration

Delivery program

Product range			Overload relay ZB up to 150 A
Product range			Accessories
Accessories			Overload relays
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 _r	A	6 - 10
Contact sequence			$\begin{array}{c c} & 97 & 95 \\ \hline \\ \hline \\ 2 & 4 & 6 & 98 & 96 & A2 \\ 2 & 2 & 4 & 6 \end{array} \begin{array}{c} & 98 & 96 & A2 \\ & 14/ \\ & 22 \end{array}$
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 DS7-34SX007 DS7-34SX009
Short-circuit protection			
Type "1" coordination	gG/gL	A	50
Type "2" coordination	gG/gL	A	25

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 Ex e-motors.

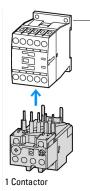


II(2)G [Ex d] [Ex e] [Ex px], II(2)D [Ex p] [Ex t]

PTB 10 ATEX 3010

Observe manual MN03407005Z-DE/EN.

Notes Fitted directly to the contactor



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Technical data

ShandsFirst problemFirst problem	General			
Ambient Ampositor Ambient Ampositor Ambient Ampositor Ambient Ampositor Ambient Margonshire Impaint Ampositor ECREM 60447 Press - 5 - 6 - 65 - 6 - 65 - 6 - 65 - 6 - 65	Standards			IEC/EN 60947, VDE 0660, UL, CSA
Image: Note: Section of Sectin of Section of Section of Section of Section of Section o	Climatic proofing			
Open File. 5 ⁴ C ² - 5 ⁴ C ² Biclead File. 5 ⁴ C ² - 5 ⁴ C ² Temperature compensation File. 5 ⁴ C ² Wight Controus Wight Controus More file. 5 ¹ C ² Controus Degree of Protection File. 5 ¹ C ² Degree of Protection	Ambient temperature			
Enclosed "C 3c - 4 Continuous Tampersture compensation K K Continuous Weight K K Sinal Additional Sinal Additional Sinal Additional Since Currents I use Sin				
Tenperature compensation initial second se	Open		°C	-25 - +55
WeightIsIsIsIsIsMechanical shock resistanceIsIsIsIsIsDerare of ProtectionIsIsIsIsIsProtection against first contact when actuated from from (FM 1922)Is	Enclosed		°C	- 25 - 40
Muchanical abok resistance Note of Matching Information Informatio Information Information Information Informatin Informat	Temperature compensation			Continuous
initial strain strai	Weight		kg	0.145
Protection against direct contact when actualted from from t(EM 50274)Image of an an actual stand sta	Mechanical shock resistance		g	Sinusoidal
Altide n Max 200 Handem Control trip parts 500 Read involtors degree 600 Sete involtors degree 600 Read involtors degree 600 Sete involtors degree 600 Sete involtors and main contects 600 Between main fircuits and main contects 740 Between main incluits and main contects 740 Between main incluits and main contects 740 Current heat loss f3 conductors) 740 Current heat loss f3 conductors) 740 Solid 740 Solid 740 Solid 740 Solid or stranded 740 Solid or strande	Degree of Protection			IP20
Anic onducting pathsVame Vame Name Name 	Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
Rated impulse withstand voltageVac600Qerorlage category/pollution degreeIIIIIIIRated operational voltageVacVacSoldRated operational voltageVacVacSoldBetween autin contacts and main contactsVacVac400Between autin circuitsVacVac400Tumperstur compensation residual error > 40 °CVac202 %/KGetween autin circuitsVac202 %/KTumperstur compensation residual error > 40 °CVac202 %/KGetween autin circuitsVac202 %/KCurrent heat loss (3 conductors)Vac300Maximum settingVac300Maximum settingVac100SolidNac121 °CSolidNac121 °CFacilite with ferruleVac121 °CSolid or strandedVac121 °CTuminal careawVac121 °CPadriv scrowdriverVac121 °CSolid or strandedVac121 °CSolid or			m	Max. 2000
Devolution degreeImage: solution volution outsideImage: solution volution				
Red insultion voltageIV60Red operational voltageIVAC60Setisolation to EN 61140IIIBetween auxiliary contacts and main contactsVAC4040Between auxiliary contacts and main contactsVAC40205%/KBetween auxiliary contacts and main contactsIIIBetween auxiliary contacts and main contactsIVAC40Temperatur compensation residual error > 40 °CVAC40ICurrent backs (3 conductors)IIIIMaximum settingIIIIIMaximum settingIIIIISolidIIIIIISolid or strandedIIIIIISolid or strandedIIIIIIITerminal carcewII <td>Rated impulse withstand voltage</td> <td>U_{imp}</td> <td>V AC</td> <td>6000</td>	Rated impulse withstand voltage	U _{imp}	V AC	6000
Reted operational voltage U VAC 860 Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Between auxiliary contacts and main contacts VAC 40 Between main circuits VAC 40 Temperatur compensation residual error > 40 °C Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Current heat loss (3 conductors) Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Current heat loss (3 conductors) Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Current heat loss (3 conductors) Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Current heat loss (3 conductors) Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Maxware setting range Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Image: Safe isolation to EN 61140 Safe isolation to EN 61140 Image: Safe isolati	Overvoltage category/pollution degree			111/3
Safe isolation to EN 61140 Value 440 Between main circuits Value 440 Temparatur compensation residual error > 40 °C Value 400 Current heat loss (3 conductors) Value 400 Lower value of the satting range Value 2.25 %/K Maximum setting Value 6 Terminal capacities Value 7 Solid man 2.25 %/K Terminal capacities Maximum setting 8 Solid or stranded Maximum setting 8 Terminal capacities Maximum setting 8 Solid or stranded Maximum setting 8 Terminal capacities Maximum setting 8 Solid or stranded Maximum setting 8 Terminal carsew Maximum setting 8 Terminal screw Maximum setting 8 Terminal carsew Maximum setting 8 Terminal carsew Maximum setting 8 Terminal carsew Maximum setting 8 Terminal carsew/inver Solid or stranded Maximum setting Terminal carsew/inver Maximum setting 8 Pacidriw screwdriver Solid or stranded 10 Terminal capacities	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 VAC 40 Current heat loss (3 conductors) VAC 800 Lower value of the setting range VAC 800 Maximum setting VAC 800 Terminal capacities VAC 800 Solid VAC 800 Fexible with ferrule VAC 800 Solid or stranded VAC 800 Terminal capacitiver VAC 800 Solid or stranded VAC 800 Terminal screw VAC 800 Tightening torque VAC 800 Stripping length Vampet Size Terminal corewdriver Size Size Stripping length Vampet Yampet Pacidriv screwdriver Size Size Strander Screwdriver Yampet Yampet Read implies withstand voltage Yampet Yampet	Rated operational voltage	U _e	V AC	690
Between main circuits VAC 40 Temperatur compensation residual error > 40 °C 525 %/K Current heat loss (3 conductors) VM 52 Lower value of the setting range VM 52 Maximum setting VM 52 Terminal capacities Mm ² 52 Solid mm ² 52 Fexible with ferrule Mm ² 52 Solid or stranded Mm ² 1x (1 + 6) x(1 - 6) Solid or stranded MM 84 Terminal screw MM 84 Totage screwdriver Size Mm Pozidriv screwdriver Size Mm Totage screwdriver Size 1 Autiliary and control circuits Size 1 Autiliary and control circuits Size 1 Standard screwdriver Mma 1x (1 - 6) Overvoltage category/pollution degree Mm 1x (1 - 6) Green Standard screwdriver Size 1x (1 - 6) Autiliary and controt circuits Size 1x (Safe isolation to EN 61140			
Imperatur compensation residual error > 40 °C Imperature residual error > 40 °C Imperatureroror > 40 °C Imperatureror > 40 °C </td <td>Between auxiliary contacts and main contacts</td> <td></td> <td>V AC</td> <td>440</td>	Between auxiliary contacts and main contacts		V AC	440
Current heat los (3 conductors) Image:	Between main circuits		V AC	440
Lover value of the setting range Image: Setting range Image: Set im	Temperatur compensation residual error > 40 $^{\rm o}{\rm C}$			≦ 0.25 %/K
Maximum setting V 6 Terrinal capacities mm ² x11 - 6) Solid mm ² x11 - 6) Flexible with ferrule mm ² x11 - 4) Solid or stranded MM ² x11 - 4) Solid or stranded MM ² x11 - 4) Terrinal screw MM ² x11 - 4) Terrinal screw MM ² x11 - 4) Solid or stranded MM ² XIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Current heat loss (3 conductors)			
Terminal capacities Imma Terminal capacities Imma Solid Imma Solid Imma Flexible with ferrule Imma Solid or stranded Imma Solid or stranded Imma Terminal screw Imma Terminal screw Imma Stripping length Imma Tots Imma Pozidriv screwdriver Imma Standard screwdriver Imma Ret impulse withstand voltage Impa Overvoltage category/pollution degree Impa Imma Impa Imma Imma Imma Imma <td>Lower value of the setting range</td> <td></td> <td>W</td> <td>2.2</td>	Lower value of the setting range		W	2.2
Solid mm mm ² x (1 - 6) x (1 - 6) Flexible with ferrule mm ² x (1 - 4) x (1 - 4) x (1 - 4) x (1 - 4) Solid or stranded AWG 8 - 8 Terminal screw MM 8 - 8 Tightening torque MM 18 Stripping length Mm 10 Tools Mm 10 Pozidriv screwdriver Size 2 Standard screwdriver Mm 1x (1 - 4) Attalitary and control circuits mm 10 Attalitary and control circuits mm 1x (1 - 4) Overvoltage category/pollution degree Mm 8 Iterminal capacities Mm 1x (1 - 4)	Maximum setting		W	6
Image: Preside and the second seco	Terminal capacities		mm ²	
Solid or stranded AWG 3e 3 Terminal screw AWG 3e 3 Tightening torque Ma Ma Tightening torque Mm 18 Stripping length mm 10 Tools mm 10 Pozidriv screwdriver Size Size Standard screwdriver Jung Van AuxLilary and control circuits Vimp 400 Overvoltage category/pollution degree Man IIV3	Solid		mm ²	
Terminal screwMetMetTightening torqueNm1.8Stripping lengthmm0ToolsNm1.8Pozidriv screwdriverSize2Standard screwdrivermm1.46Auxiliary and control circuitsJimpMetVervoltage category/pollution degreeJimpMetTerminal capacitiesmm²III/3	Flexible with ferrule		mm ²	
Tightening torqueNm1.8Stripping lengthnm0Toolsnm10Pozidriv screwdriversizeSizeStandard screwdrivermm1x6Auxiliary and control circuitsRated impulse withstand voltageVimpVOvervoltage category/pollution degreeVimpNmTerminal capacitiesmm211/3	Solid or stranded		AWG	18 - 8
Stripping length Imm Imm Tools Mm Imm Pozidriv screwdriver Size Size Standard screwdriver mm 1x6 Auxiliary and control circuits Imm Imm Overvoltage category/pollution degree Imm Imm Terminal capacities Imm Imm	Terminal screw			M4
Tools Image: Marcine Size Size Size Size Size Size Size Siz	Tightening torque		Nm	1.8
Pozidriv screwdriver Size Size Standard screwdriver mm 1 × 6 Auxiliary and control circuits Vimp V 400 Overvoltage category/pollution degree III/3 III/3	Stripping length		mm	10
Standard screwdriver mm 1 x 6 Auxiliary and control circuits Rated impulse withstand voltage Vimp V 4000 Overvoltage category/pollution degree III/3 III/3	Tools			
Auxiliary and control circuits Rated impulse withstand voltage Uimp V 4000 Overvoltage category/pollution degree III/3 III/3 Terminal capacities mm ² III/3	Pozidriv screwdriver		Size	2
Rated impulse withstand voltage Uimp V 4000 Overvoltage category/pollution degree III/3 III/3 Terminal capacities mm ² III/3			mm	1 x 6
Overvoltage category/pollution degree III/3 Terminal capacities mm ²	Auxiliary and control circuits			
Terminal capacities mm ²	Rated impulse withstand voltage	U _{imp}	V	4000
	Overvoltage category/pollution degree			111/3
Solid mm ² 1 x (0.75 - 4)	Terminal capacities		mm ²	
	Solid		mm ²	1 x (0.75 - 4)

			2 x (0.75 - 4)
Flexible with ferrule		mm ²	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	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 _e	V AC	500
Safe isolation to EN 61140			
between the auxiliary contacts		V AC	240
Conventional thermal current	I _{th}	А	6
Rated operational current	le	А	
AC-15			
Make contact			
120 V	Ι _e	А	1.5
220 V 230 V 240 V	Ι _e	А	1.5
380 V 400 V 415 V	۱ _e	А	0.5
500 V	Ι _e	А	0.5
Break contact			
120 V	Ie	A	1.5
220 V 230 V 240 V	Ie	A	1.5
380 V 400 V 415 V	Ι _e	A	0.9
500 V	le	A	0.8
DC L/R ≦ 15 ms			
			Switch-on and switch-off conditions based on DC-13, time constant as specified.
24 V	۱ _e	A	0.9
60 V	Ι _e	A	0.75
110 V	I _e	A	0.4
220 V	Ι _e	А	0.2
Short-circuit rating without welding			
max. fuse		A gG/gL	6
Notes			

Notes

Notes Ambient air temperature: Operating range to IEC/EN 60947, PTB: -5°C to +55°C Main circuits terminal capacity solid and flexible conductors with ferrules: When using 2 conductors use equal cross-sections.

Rating data for approved types

Auxiliary contacts		
Pilot Duty		
AC operated		B300 at opposite polarity B600 at same polarity
DC operated		R300
Short Circuit Current Rating	SCCR	
600 V High Fault		
SCCR (fuse)	kA	100
max. Fuse	А	15 Class J/CC

Design verification as per IEC/EN 61439

Fechnical data for design verification			
Rated operational current for specified heat dissipation	In	А	10
Heat dissipation per pole, current-dependent	P _{vid}	W	2
Equipment heat dissipation, current-dependent	P _{vid}	W	6
Static heat dissipation, non-current-dependent	P _{vs}	W	0
	Heat dissipation per pole, current-dependent Equipment heat dissipation, current-dependent	Rated operational current for specified heat dissipation In Heat dissipation per pole, current-dependent Pvid Equipment heat dissipation, current-dependent Pvid Static heat dissipation per pole, current-dependent Pvid	Rated operational current for specified heat dissipation In A Heat dissipation per pole, current-dependent Pvid W Equipment heat dissipation, current-dependent Pvid W Static heat dissipation per pole Pvid W

Heat dissipation capacity	P _{diss}	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 7.0

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

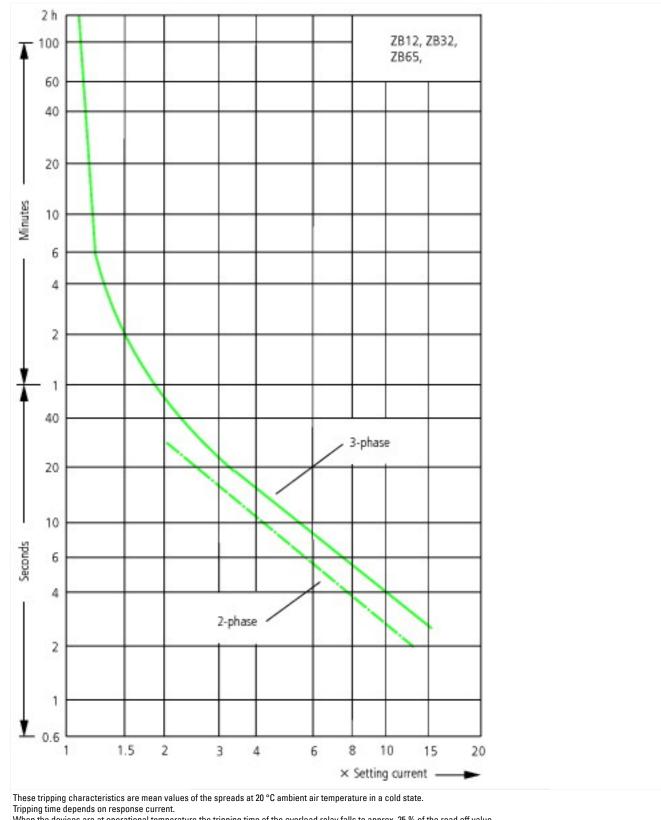
Electric engineering, automation, process control engineering / Low-voltage switch technology / Overload protection device / Thermal overload relay (ecl@ss10.0.1-27-37-15-01 [AKF075014])			
Adjustable current range		А	6 - 10
Max. rated operation voltage Ue		V	690
Mounting method			Direct attachment
Type 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
Reset function input			No
Reset function automatic			Yes
Reset function push-button			Yes

Approvals

Product Standards	IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; 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: -

Characteristics



When the devices are at operational temperature the tripping time of the overload relay falls to approx. 25 % of the read off value.

1: Minimum level, 3-phase

2: Maximum level, 3-phase

3: Minimum marker, 2-phase 4: Highest marker, 2-phase

Dimensions

