DATASHEET - ZB12-2,4



Overload relay, ZB12, Ir= 1.6 - 2.4 A, 1 N/O, 1 N/C, Direct mounting, IP20



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11 11	Part no.	ZB12-2,4
	Catalog No.	278437
	Alternate Catalog	XTOB2P4BC1
	No.	
	EL-Nummer	4131832
	(Norway)	

Delivery program

Similar to illustration

Derivery 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
द	l _r	A	1.6 - 2.4
Contact sequence			$\begin{array}{c c} & & & & & & \\ \hline \\ \hline \\ \hline \\ 2 & 4 & 6 & 98 & 96 & A2 \\ & & & & & 14/ \\ & & & & & 22 \end{array}$
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
Short-circuit protection			
Type "1" coordination	gG/gL	A	25
Type "2" coordination	gG/gL	А	10

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.

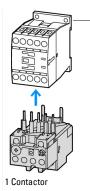


II(2)G [Ex d] [Ex e] [Ex px], II(2)D [Ex p] [Ex t]

PTB 10 ATEX 3010

Observe manual MN03407005Z-DE/EN.

Notes Fitted directly to the contactor



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Technical data

Rated impulse withstand voltage Uimp V 400 Overvoltage category/pollution degree III/3 III/3 Terminal capacities mm ² III/3	General			
Ambient memory and endMember typelie, bic BC0008-2.30Ambient memory and endMember typelie, bic BC0008-2.30Ambient memory and endBernaring memory BC0008-2.30Bornaring memory BC000000000000000000000000000000000000	Standards			IEC/EN 60947, VDE 0660, UL, CSA
Image: Provide para to Exc Protection Sec -	Climatic proofing			
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Neight Is Is< Is Is <t< td=""><td>Enclosed</td><td></td><td>°C</td><td>- 25 - 40</td></t<>	Enclosed		°C	- 25 - 40
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Image: set of the	Weight		kg	0.142
Production against direct contact when actuated from from t(EN 50274) Image: Imag	Mechanical shock resistance		g	Sinusoidal
Altide n Max 200 Haide Kaide Kaide Attain ballow withstand votage Va 600 Overvlage category/pollution degree Va 600 Reted insultion votage Va 80 Reted insultion votage Va 80 State day persional votage Va 80 State shalton to EN 61140 Va 600 Between auxilary contacts and main contacts Va 40 Between auxilary contacts and main contacts Va 6205 K/K Between main circuits Va 525 K/K Current heat loss Gaoductors) Va 525 K/K Between auxilary contacts Ma 525 K/K State for stating range Ma 525 K/K Maximum setting Ya 525 K/K Stating ange Ma 525 K/K Stating ange Ma 525 K/K Stating ange Ma 525 K/K Maximum setting Ya 52 Stating ange Ma 52 Stating ange <td< td=""><td>Degree of Protection</td><td></td><td></td><td>IP20</td></td<>	Degree of Protection			IP20
Main conducting pathsRated impulse withstand voltageJumpVac600Deroviding category/follution degreeIIIIIIIRated impulse withstand voltageVaVac600Rated operational voltageVac600Rated operational voltageVacVac600Between axailiary contacts and main contactsVac400Between axin circuitsVac400Corrent compansation residual error > 40°CVac500Maximum StraigVac500Inderstraing rangeVac500Maximum StraingVac500SolidVac121Inderstraing rangeVac121Solid or strandedVac121Inderstraing rangeVac121Solid or strandedVac121Inderstraing rangeVac121Solid or strandedVac121Solid or strandedVac121Solid or strandedVac121Solid stranded resordiverVac121Provintion screwritiverVac121Solid stranded screwritiverVac121Solid or stranded resordiverVac121Solid or stranded screwritiverVac121Provintion screwritiverVac121So	Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
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Between auxiliary contacts and main contactsI YAC40Between main circuitsVAC40Temperatur compensation residual error > 40 °CVAC40Current heat loss (3 conductors)VV5.Lower value of the setting rangeVW5.Maximum settingVW5.Terminal capacitiesVM5.SolidVM5.Solid or strandedVM5.Terminal screwVM5.Solid or strandedVM5.Tightening torqueVM16.Stripping lengthVM16.TotalYM16.Auxiliary and control circuitsYM16.Auxiliary and control circuitsMM16.Auxiliary and control circuitsMM16.Auxiliary and contr	Rated operational voltage	Ue	V AC	690
Between main circuits VAC 40 Temperatur compensation residual error > 40 °C 52 %/K Current heat loss (3 conductors) VM 5. Current heat loss (3 conductors) VM 5. Maximum setting range VM 5. Terminal capacities ma ² \$. Solid ma ² \$. Betwine ferrule MM \$. Solid or stranded MM \$. Terminal screw MM \$. Terminal screw MM \$. Totage screwdriver Size MM Pozidriv screwdriver Size Ma Terminal capacities Mm \$. Totage screwdriver Size Ma Totage screwdriver Size \$. Pozidriv screwdriver Size \$. Retaingulse withstand voltage Mm \$. Overvoltage category/pollution degree Ym \$. Terminal capacities Ym \$.	Safe isolation to EN 61140			
Imperatur compensation residual error > 40 °C Imperature = 40 °C	Between auxiliary contacts and main contacts		V AC	440
Current heat los (a conductors) Image: set interpret interpr	Between main circuits		V AC	440
Lover value of the setting range K % % Maximum setting % % % Torminal capacities max max % Solid max 1x1 - 6% % Solid max 1x1 - 6% % Solid max 1x1 - 6% % Solid or stranded Max 1x1 - 6% % Terminal screw K K K K Tothening torque K Max Max Max Max Tothening torque Max	Temperatur compensation residual error > 40 °C			≦ 0.25 %/K
Maximum setting V 5 Terminal capacities Image:	Current heat loss (3 conductors)			
Terminal capacities man ² Solid man ² Solid man ² Flexible with ferrule man ² Solid or stranded man ² Solid or stranded man ² Solid or stranded Man ² Terminal screw Man ² Tightening torque Man ² Stripping length Man Tots Man ² Poidriv screwdriver State Standard screwdriver State Retaingulse withstand voltage Man ² Overvoltage category/pollution degree Man ² Terminal capacities Man ²	Lower value of the setting range		W	2.5
Solid Mm ² x(1 - 6) Flexible with ferrule m ² x(1 - 4) x(1 - 4) Solid or stranded MW 8-8 MM Solid or stranded MW 8-8 MM Terminal screw MM 8-8 MM Tightening torque MM 8-8 MM Stripping length MM 8-8 MM Tords MM 8-8 MM Pozidriv screwdriver MM 8-8 MM Standard screwdriver MM 8-8 MM Pozidriv screwdriver MM 8-8 MM Standard screwdriver MM 8-8 MM Autiliary and control circuits MM 9-2 MM Autiliary and control circuits MM 1x 6 MM Overvoltage category/pollution degree Mm MM MM Marcel and moltage Mm MM MM	Maximum setting		W	5.7
Image: Provide a stranded Image: Provide a stranded Image: Provide a stranded Solid or stranded AWG Is 8 Terminal screw MM Is 8 Terminal screw MM Is 8 Tightening torque MM Is 8 Stripping length MM Is 8 Tools MM Is 8 Pozidriv screwdriver MM Is 8 Standard screwdriver MM Is 8 Atkliary and control circuits MM Is 8 Atkliary and control circuits MM Is 8 Atkliary and control circuits MM Is 6 Overvoltage category/pollution degree Minge: Provide a stranded strands with stand voltage Minge: Provide a strands strands with stand voltage Overvoltage category/pollution degree Mingee: Provide a strands strands with stand voltage Mingee: Provide a strands strands with stand voltage Overvoltage category/pollution degree Mingee: Provide a strands strands strands with stand voltage Mingee: Provide a strands strands with stand voltage Overvoltage category/pollution degree Mingee: Provide a strands strands with stand voltage Mingee: Provide a strands strands with stand voltage	Terminal capacities		mm ²	
Solid or stranded AWG 3-8 Terminal screw MWG 3-8 Tightening torque MM 3-8 Stripping length MM 3-8 Tols MM 3-8 Pozidriv screwdriver MM 3-8 Strandard screwdriver MM 3-8 Auxiliary and control circuits MM 3-8 Red impulse withstand voltage Vimp Vimp Overvoltage category/pollution degree Min 1/3 Terminal capacities Min Min	Solid		mm ²	
Terminal screw Mail Tightening torque Nm 1.8 Stripping length mm 1.0 Tools Nm 1.0 Pozidriv screwdriver Size 2 Standard screwdriver mm 1.6 Rated impulse withstand voltage Jimp Ymp Overvoltage category/pollution degree Jimp Mail Terminal capacities mm ² Intra	Flexible with ferrule		mm ²	
Tightening torque Nm 18 Stripping length nm 10 Tools Nm 10 Pozidriv screwdriver Size Nm 10 Standard screwdriver mm 14 Auxiliary and control circuits mm 14 Overvoltage category/pollution degree Vimp V 4000 Terminal capacities mm² 11/3	Solid or stranded		AWG	18 - 8
Stripping length mm 10 Tools Mm 10 Pozidriv screwdriver Size Size Standard screwdriver Mm 1x6 Auxiliary and control circuits Minp Y Overvoltage category/pollution degree Minp Minp Terminal capacities Mm Mm	Terminal screw			M4
Tools Image: Marcine stream of the stream	Tightening torque		Nm	1.8
Pozidriv screwdriver Size Size Standard screwdriver mm 1x6 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 Vimp 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 400 Overvoltage category/pollution degree III/3 III/3 Terminal capacities mm ² III/3	Standard screwdriver		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			III/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	3 Class J/CC

Design verification as per IEC/EN 61439

•				
Technical data for design verificat	ion			
Rated operational current for s	pecified heat dissipation	In	А	2.4
Heat dissipation per pole, curr	ent-dependent	P _{vid}	W	1.9
Equipment heat dissipation, cu	rrent-dependent	P _{vid}	W	5.7
Static heat dissipation, non-cu	rrent-dependent	P _{vs}	W	0

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)

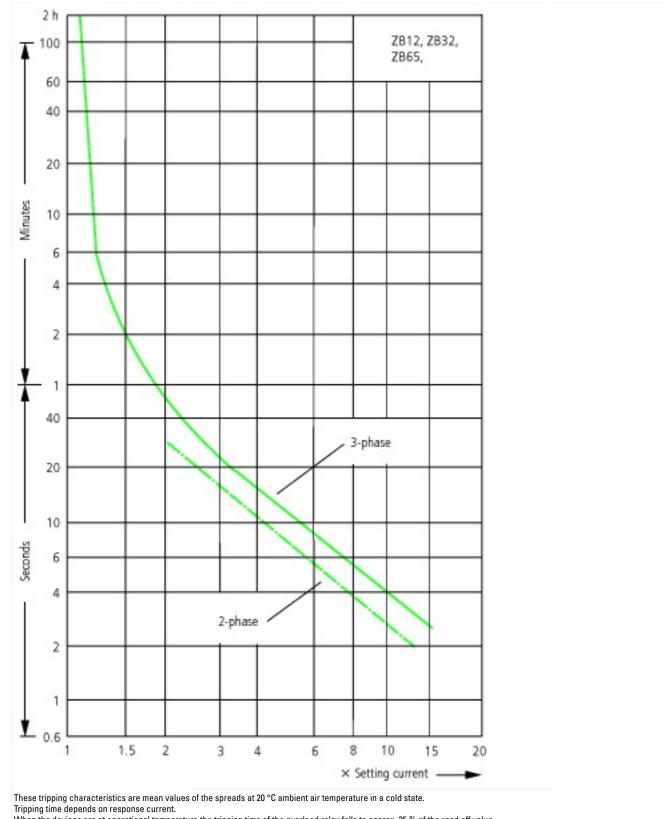
Electric engineering, automation, process control engineering / Low-voltage switch technology / Overload protection device / Thermal overload relay (ecl@ss10.0.1-27-37-15-01 [AKF075014])				
Adjustable current range		А	1.6 - 2.4	
Max. rated operation voltage Ue		V	690	
Mounting method			Direct attachment	
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	
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

