

Overload relay, 2.4 - 4 A, 1N/O+1N/C

Part no.

Article no.

Catalog No.

ZB12-4 278438 XTOB004BC1



Delivery programme

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	2.4 - 4
Contact sequence			$\begin{array}{c c} & & & & & & & \\ \hline \\ \hline \\ 2 & 4 & 6 & & & & \\ 2 & 4 & 6 & & & & \\ 2 & 4 & 6 & & & & \\ 2 & 4 & 6 & & & & & \\ \end{array} \begin{array}{c} & & & & & & \\ 98 & & 96 & A2 & & 14/\\ & & & & & \\ 22 \end{array}$
Auxiliary contacts			
N/O = Normally open			1 N/0
N/C = Normally closed			1 N/C
For use with			DILM7, DILM9, DILM12, DILM15, DIULM7, DIULM9, DIULM12, SDAINLM12, SDAINLM16, SDAINLM22 DS7-34SX004
Short-circuit protection			
Type "1" coordination	gG/gL	A	25
Type "2" coordination	gG/gL	A	16

Notes

Overload release: tripping class 10 A

Short-circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting.

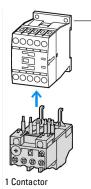
Suitable for protection of Ex e-motors.



PTB 10 ATEX 3010

Observe manual MN03407004Z-DE/EN.

Notes Fitted directly to the contactor



1

Technical data

StandardFor the standard of the stand	General			
Ambient megnature Main Here yreline, til EC 8008 2-30 Ambient megnature Main Here yreline, til EC 8008 2-30 Gipen Derming megnature EC 8008 2-30 Gipen Solar -	Standards			IEC/EN 60947, VDE 0660, UL, CSA
Image: section of the sectin of the section of the section	Climatic proofing			
Image: ContractionPTS - 5° - 5° - 5° - 5° - 5° - 5° - 5° - 5	Ambient temperature			
Enclosed 25-49 Tampersture compensation 26-10 Weight 10 Weight 10 Machenical shock resistance 26-20 Protection 26-20 Protection 26-20 Protection applicat direct contact when actuated from top [5N 5027] 26-20 Main conducting on this 26-20 Reter insults on top application degree 26-20 Reter insults on tractication main contracts 26-20 Reter insults on tractication and incontracts 26-20 Reter insults on tractication main contracts 26-20 Reter insults on tractication and incontracts 26-20 Reter insults on tractication and incontracts 26-20 Reter insults on tractication main contracts 26-20 Reter insults on tractication main contracts 26-20 Reter insults on tractication main contracts 26-20				
Temperature compensation Image: set of the set o	Open		°C	-25 - +55
WeightIsIsIsIsIsMechanical shock resistanceIsIsIsIsIsDerace for retretcomIsIsIsIsIsPrace for retretcomIsIsIsIsIsIsDerace for retretcomIs <t< td=""><td>Enclosed</td><td></td><td>°C</td><td>- 25 - 40</td></t<>	Enclosed		°C	- 25 - 40
Markanical abok resistance Namidad Sinus def Manual Sinus def Manual Sinus def Sinus d	Temperature compensation			Continuous
initial state is a state in the state in the state is a state in the state in the state is a state in the state in	Weight		kg	0.15
Production gainst direct contact when actuated from from (EN 50274) Image: Second Sec	Mechanical shock resistance		g	Sinusoidal
Main conducting pathsRated ampulse withstand voltageVangoVacg600Devroltage category/follution degreeVacgVacg800Rated operational voltageVacg800800Rated operational voltageVacg800800Rated operational voltageVacg800800Sate isolation to EN 81140Vacg800800Between auxilary contacts and main contactsVacg800800Between auxilary contacts and main contactsVacg800800Between main circuitsVacg800800Correntage as field and circuitsVacg800800Correntage as field and circuitsVacg800800Maximum SafeVacg800800800Safed operational setting rangeVacg800800Safed and setting rangeVacg800800Safed operational setting rangeVacg800800Parting setting rangeVacg800800Safed operational setting rangeVacg800800Parting rangeVacg800800Parting rangeVacg800800Parting rangeVacg800800Parti	Degree of Protection			IP20
Reted insulation voltageVare relation voltageVare relation voltageOrIIIIReted insulation voltageUV90Reted insulation voltageUV90Between availian contactsUV90Between availian contactsV4040Important contactsV4090Important contactsV9090Important contactsVV90Important contactsVV90 <td>-</td> <td></td> <td></td> <td>Finger and back-of-hand proof</td>	-			Finger and back-of-hand proof
Develoage category/polution degreeIndIndBated insulation voltageVia90Rated operational voltageVac90Safe station to N 91140Vac90Between auxiliary contacts and main contactsVac40Between main circuitsVac40Temperatur comparation residual error > 40 °CVac40Temperatur comparation residual error > 40 °CVac40Temperatur comparation residual error > 40 °CVac50Maximu settingVac5050Termel capacitiesVac5050SolidMarcNac50Solid or standedMarcNac50Termel capacitiesVac5050Solid or standedMarcNac50Termel capacitiesMarcNac50Solid or standedMarcNac50Termel capacitiesMarcNac50Solid or standedMarcNac50Termel capacitiesMarcNac50Solid or standedMarcNac50Termel capacitiesNac1050Solid or standedMarc1050Termel capacitiesNac1050Solid or standedMarc1050Termel capacitiesNac1050Termel capacitiesNac1050Termel capacitiesNac1050Termel capacitiesNac10				
Red insultion voltage Ui Vi 60 Red operational voltage Ui 60 Setional voltage Vi 60 Setional voltage Vi 40 Between auxiliary contacts and main contacts Vi 40 Between main circuits Vi 40 Temperatur compensation residual error >40°C Vi 50 Current heat loss (3 conductors) Vi 50 Current heat loss (3 conductors) Vi 70 Maximum setting range Vi 70 Maximum setting range Vi 70 Solid Rational for the setting range Vi 70 Solid or stranded Vi 70 71 Solid or stranded Vi 71 71 Solid or stranded Vi 71 71 Terminal capacitive for duritor Vi 71 71 Solid or stranded Vi 71 71 Terminal capacitive for duritor Time 71 71 Terminal capacitive f		U _{imp}	V AC	6000
Red operational voltage μ γ.Act 80 Seles isolation EN 61140 · <	Overvoltage category/pollution degree			111/3
Sele isolation to EN 61140 Image: Constraint of Constraints VAC 40 Between main circuits VAC 40 Temperatur compensation residual error > 40 °C Solo Solo Current heat loss (3 conductors) VAC Solo Lower value of the setting range VAC Solo Maximum setting VAC Solo Terminal capacities VAC Solo Solid mar2 X1-61 Fexible with ferrule MMP X1-61 Solid or stranded MMP X1-61 Terminal capacities MMP X1-61 Fexible with ferrule MMP X1-61 Solid or stranded MMP X1-61 Terminal capacities MMP X1-61 Terminal screw MMP X1-61 Terminal screw MMP X1-61 Terminal screw MMP X1-61 Terminal screw/fiver MMP X1-61 Terminal screw/fiver MMP X1-61 Terminal screw/fiver MMP X1-61 Terminal screw/fiver MMP X1-8 Terminal screw/fiver MMP X1-8 Terminal capacities MMP X1-8 Standerd screw/fiver <	Rated insulation voltage	Ui	V	690
Between auxiliary contacts and main contacts VAC 44 Between main circuits VAC 40 Temperatur compensation residual error >40 °C VAC 50 Current heat loss (3 conductors) VAC 50 Lower value of the setting range VAC 70 Maximum setting VAC 70 Terminal capacities Marc 71 Solid marc 71 Rexible with ferrule marc 71 Solid or stranded Marc 71 Terminal capacities marc 71 Solid or stranded Marc 71 Totaling screw marc 71 Patcing torque Marc 72 Totaling screw/driver Marc 14 Pozicitiv screw/driver Marc 14 Totality screw/driver Marc 14 Pozicitiv screw/driver Marc 14 Totality screw/driver Marc 14 Pozicitiv screw/driver Marc 14 Totali	Rated operational voltage	U _e	V AC	690
Between main circuits VAC 40 Temperatur compensation residual error > 40 °C 5 5 Current heat loss (3 conductors) - - Lower value of the setting range W 5 Maximum setting W 5 Terminal capacities ma ² 2 1 6 Solid ma ² 2 1 6 Solid or stranded ma ² 2 1 6 Terminal capacities ma ² 2 1 6 Solid or stranded M ma ² 2 1 6 Tominal screw ma ² 2 1 6 1 6 Totin's screw driver M M 8 1 1 1 1 Autorent circuits Mag Mag 1 1 1 1 1 1 Totin's screw driver M M 1 1 1 1 1 1 1 1 1 1 </td <td>Safe isolation to EN 61140</td> <td></td> <td></td> <td></td>	Safe isolation to EN 61140			
Imperatur compensation residual error > 40 °C Current heat loss (3 conductors) V 5 Lower value of the setting range V 8 Maximum setting mn2 2 Solid mn2 2 Solid or stranded mm2 2 Solid or stranded MMA 44.8 Terminal corgue MMA 8 Togetheing torque M 8 Pozidriv screwdriver Size 2 Standard screwdriver Terminal capacities Nm 8 Austraductor beignee Mm 18 18 Togetheing torque Nm 18 18 Pozidriv screwdriver Size 2 18 Austraductor beignee Mm 18 18 Austraductor beignee Imm 18 18 Austraductor beignee Imm 18 18 Austraductor beignee Imm	Between auxiliary contacts and main contacts		V AC	440
Current heat loss (3 conductors)NoNoLower value of the setting rangeNoSoldMaximum settingNoSoldTerminal capacitiesNoSoldSolidnm²X(1-6)Bekible with ferruleMaxX(1-6)Solid or strandedMaxX(1-4)Terminal screwMaxX(1-4)Tightening torqueNoX(1-4)Todriv screwdriverNoX(1-2)Natard screwdriverNoX(1-2)Standard screwdriverNoX(1-2)Natard screwdriverNoX(1-2)Natard screwdriverNoX(1-2)Natard screwdriverNoX(1-2)Standard screwdriverNoX(1-2)Neurold screwdriverNoX(1-2)Standar screwdriver <td>Between main circuits</td> <td></td> <td>V AC</td> <td>440</td>	Between main circuits		V AC	440
Lower value of the setting rangeN2Maximum settingN6Maximum settingN6Forminal capacitiesmn2Solidmn2Forkible with feruleM2Solid or strandedM4Terminal screwM4Terminal screwM4TotariM1Poidriv screwdriverM1Poidriv screwdriverM1Astandar ScrewdriverM1Astandar ScrewdriverM1Astandar ScrewdriverM1Poidriv screwdriverM1Astandar ScrewdriverM1Astandar ScrewdriverM1Astandar ScrewdriverM1Astandar ScrewdriverM1Solid on StrandelM1Astandar ScrewdriverM1Astandar ScrewdriverM1 </td <td>Temperatur compensation residual error > 40 °C</td> <td></td> <td></td> <td>≦_{0.25 %/K}</td>	Temperatur compensation residual error > 40 °C			≦ _{0.25 %/K}
Maximum settingImage: Setting and the set of the set	Current heat loss (3 conductors)			
Terminal capacitiesnm ² nm ² Solidnm ² \$<16\$	Lower value of the setting range		W	2.5
Solid mm ² x(1 - 6) Flexible with ferrule mm ² x(1 - 6) Solid or stranded mm ² x(1 - 4) Solid or stranded AWG 14-8 Terminal screw MM 14-8 Topication stranded MM 14-8 Topication screwdriver MM 18-0 Pozidriv screwdriver MM 18-0 Standard screwdriver Mm 1x 6 Auxiliary and control circuits Mine 1x 6 Rete impulse withstand voltage Mine 1x 6 Overvoltage category/pollution degree Mm ² 1x 6 Solid mm ² 1x 6 Fexibe with ferrule Mine 1x 6	Maximum setting		W	6
Initial screw NM NM Solid or stranded AWG 2 x (1 - 4) Terninal screw M4 MM Tightening torque MM 14 - 8 Tools Ma MM Pozidriv screwdriver MM 18 Atualitary and control circuits MM 18 Atualitary and control circuits NM 1x 6 Pozidriv screwdriver Vimp Ym 000 Overvoltage category/pollution degree Mm² 11/3 Ferminal capacities mm² 2 x (0.754) Solid ma² 2 x (0.7525)	Terminal capacities		mm ²	
Solid or stranded AWG Id- B Terminal screw M4 M4 Tightening torque Mm 18 Tools Solid or stranded Mm 18 Pozidriv screwdriver Size 2 Standard screwdriver mm 1x 6 Atxiliary and control circuits Junp Yunp M0 Read impulse withstand voltage Yunp Yunp 6000 Overvoltage category/pollution degree Junp Mm² II/3 Solid Solid mm² 2x (0.754) Flexible with ferrule mm² 2x (0.75 - 2.5)	Solid		mm ²	2 x (1 - 6)
Terminal screwMeMeMeTightening torqueMe1.8ToolsPozidriv screwdriverSize2Pozidriv screwdriverSize1.4Autariary and control circuitsMin1.4Rated impulse withstand voltageVingV6000Overvoltage category/pollution degreeIma1.13SolidSolidma²2Fexible with ferrulema²22Intervoltagema²22Solidma²22Fexible with ferrulema²22Mether of the screw	Flexible with ferrule		mm ²	2 x (1 - 4)
Tightening torque Nm 1.8 Tools Food of the second of the s	Solid or stranded		AWG	14 - 8
Tools Image: Marking the served diver Image: Marking the served diver Size Size Size Standard screwdriver mm 1x6 Auxiliary and control circuits Rated impulse withstand voltage Image: Marking the served diver Marking the served diver Overvoltage category/pollution degree Image: Marking the served divert Marking the served divert Solid Solid mm ² 2x(0.754) Flexible with ferrule mm ² 2x(0.7525)	Terminal screw			M4
Pozidriv screwdriver Size Size Standard screwdriver mm 1x 6 Auxiliary and control circuits Minp Minp Mino Rated impulse withstand voltage Minp Mino 1//3 Overvoltage category/pollution degree mn ² Mino Solid mn ² x (0.75 - 2.5)	Tightening torque		Nm	1.8
Standard screwdriver mm 1 x 6 Auxiliary and control circuits mm 1 x 6 Rated impulse withstand voltage Vimp 6000 Overvoltage category/pollution degree III/3 Terminal capacities mm ² Solid mm ² Flexible with ferrule mm ²	Tools			
Auxiliary and control circuits Rated impulse withstand voltage Uimp V 6000 Overvoltage category/pollution degree III/3 III/3 Terminal capacities mm ² × (0.754) Solid mm ² × (0.754)	Pozidriv screwdriver		Size	2
Rated impulse withstand voltage Uimp V 6000 Overvoltage category/pollution degree III/3 Terminal capacities mm ² Solid mm ² Flexible with ferrule mm ²	Standard screwdriver		mm	1 x 6
Overvoltage category/pollution degree Image: Comparison of the sector	Auxiliary and control circuits			
Terminal capacities mm ² Solid mm ² Flexible with ferrule mm ²	Rated impulse withstand voltage	U _{imp}	V	6000
Solid mm ² 2 x (0.754) Flexible with ferrule mm ² 2 x (0.75 - 2.5)	Overvoltage category/pollution degree			111/3
Flexible with ferrule mm ² 2 x (0.75 - 2.5)	Terminal capacities		mm ²	
	Solid		mm ²	2 x (0.754)
Solid or stranded AWG 2 x (18 - 14)	Flexible with ferrule		mm ²	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 _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	I _e	А	
AC-15			
Make contact			
120 V	I _e	Α	1.5
220 V 230 V 240 V	I _e	А	1.5
380 V 400 V 415 V	le	А	0.5
500 V	I _e	Α	0.5
Break contact			
120 V	I _e	А	1.5
220 V 230 V 240 V	le	Α	1.5
380 V 400 V 415 V	I _e	Α	0.9
500 V	le	Α	0.8
DC-13 L/R - 15 ms			
24 V	I _e	Α	0.9
60 V	le	Α	0.75
110 V	I _e	А	0.4
220 V	le	A	0.2
Short-circuit rating without welding			
max. fuse		A gG/gL	6
Notes			

Notes

Notes Ambient temperature: Operating range to IEC/EN 60947, PTB: -5°C to +55°C Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated

Main contacts terminal capacity solid and stranded conductors with ferrules: When using 2 conductors use identical cross-section

See overlay "Fuses" for short-circuit rating time/current characteristic (please enquire)

6 mm flexible with ferrules to DIN 46228

Rated operational current DC-13, 60 V: N/O auxiliary contact 0.6 A at ZB65-XEZ max 1 x (1...16)

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	А	4
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 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.

10.0.7	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

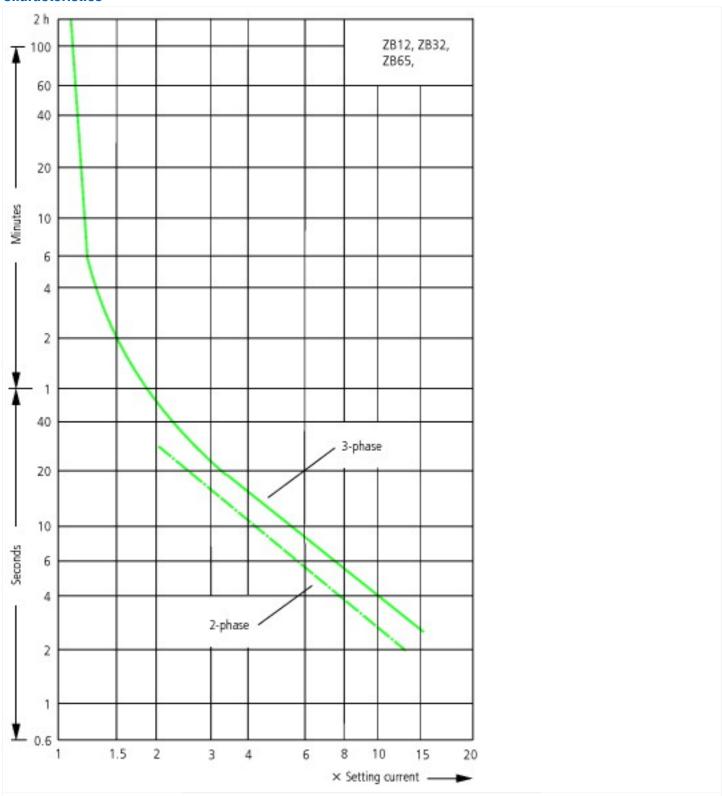
Low-voltage industrial components (EG000017) / Thermal overload relay (EC000106)

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	2.4 - 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

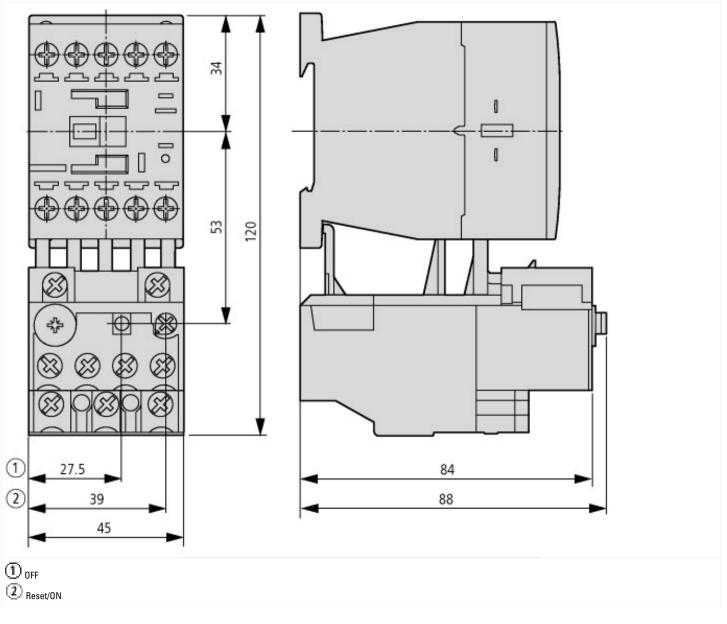
Product Standards UL 508; CSA-C22.2 No. 14; IEC/EN 6094 UL File No. E29184 UL Category Control No. NKCR	7-4-1; IEC/EN 60947-5-1; CE marking
UL Category Control No. NKCR	
CSA File No. 12528	
CSA Class No. 3211-03	
North America Certification UL listed, CSA certified	
Specially designed for North America 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