DATASHEET - Z5-220/FF250



Overload relay, Ir= 160 - 220 A, 1 N/O, 1 N/C, For use with: DILM250, DILM300A



Part no. Z5-220/FF250 Catalog No. 210074 Alternate Catalog XTOB220LC1 No. EL-Nummer 4134171 (Norway)

Delivery program

Product range			Overload relay Z5
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 Separate mounting
Setting range			
Overload releases	l _r	A	160 - 220
Contact sequence			$\begin{array}{c} 1 & 3 & 5 & 97 & 95 \\ \hline \\ 2 & 4 & 6 & 98 & 96 \end{array}$
Auxiliary contacts			
N/O = Normally open			1 N/O
N/C = Normally closed			1 N/C
For use with			DILM250 DILM300A
Short-circuit protection			
Type "1" coordination	gG/gL	A	400 500
Type "2" coordination	gG/gL	A	315 400
Notes			

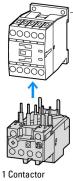
Overload release: tripping class 10 A

1

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

Notes

Fitted directly to the contactor



Technical data General

Standards

Aniset may region (a bit of the subset, special of t	Climatic proofing			Damp heat, constant, to IEC 60068-2-78
OpenCS0FindedC-20Temperature componationC-20WeightLS	Ambient temperature			
Enclosed** </td <td></td> <td></td> <td>٥C</td> <td>-25 - +60</td>			٥C	-25 - +60
Imperature compensationImperature com				
WightInInInInInWe basis all chock resistanceInInsaided all chock resistanceInInsaided all chock resistancePortectionInInInternal coverenceInInternal coverencePortection capital direct contact when actuated from fort (EN S072)InInInInRate direct contact when actuated from fort (EN S072)InInInInInPortection capital direct contact when actuated from fort (EN S072)In<			U	
Abscheiniel shock ersistencea a a ansaid direction 10 msDegree of ProtectionImage: Sine shock derston 10 msDegree of ProtectionImage: Sine shock derston 10 msProtection again direct contact when actuated from from EKS02014Image: Sine shock derston 10 msAtter implexent dore to actuated from from EKS02014Image: Sine shock derston 10 msRetar implexent dore to actuated from from EKS02014Image: Sine shock derston 10 msRetar implexent dore to actuated from from EKS02014Image: Sine shock derston 10 msRetar implexent dore to actuate do			l. e	
Image: set of ProtectionImage: set of Protection (build in the Shock duration	-			
Production against direct contact twhen actuated from from (EN 88224) Normal actual act	Mechanical shock resistance		g	Sinusoidal
AltherenMax 2000Bailed conclucting patternVanue000Overvolage actegory/pollution degreeVanueVanueRated operational voltageVanueVanueRated operational voltageVanueVanueBetween auxiliary contacts and main contactsVanueVanueBetween auxiliary contactsManueVanueBetween auxiliary contactsManueVanueStander StanderVanueVanueBetween auxiliary contactsVanueVanueStander StanderVanueVanueStander StanderVanueVanueStander StanderVanueVanueIphenish GroupVanueVanueIphenish GroupVanueVanueIphenish GroupV	Degree of Protection			IP00
Mait conducting pathsRated inpulse withstand voltageVangVAC800Derevoltage category/pollutind degreeVaVa100Rated operational voltageVaVa00Rated operational voltageVaVa00Sate isolation to NB 140VAC5000Between main circuitsVAC5000Between main circuitsVAC5000Imperature compensation residual error > 40°CVAC500Imperature compensation residual error > 40°C	Protection against direct contact when actuated from front (EN 50274)			With terminal cover
Reted implays withstand voltageVanueVa			m	Max. 2000
Quencialized category/pollution degreeuuuuRead operational voltageUV00Read operational voltageUVA00Sete common directivesVVA00Between auxiliary contacts and main contactsVVA00Between main directivesVA0000Tomperature compensation residual error > 40°CVA0000Euver value of the setting rangeVAVA00Maximum settingVAVA0000Between han directivesVAVA00Standard with cable lugVAVA00Standard with cable lugVAVA00Standard with cable lugVA0000BushorVAVA00Tominal cargeVAVA00Standard with cable lugVAVA00BushorVAVA00Tominal cargeVAVA00Automational cargeVAVA00Automational cargeVAVA00Automational cargeVAVAVAAutomational cargeVAVAVAAutomational cargeVAVAVAAutomational cargeVAVAVAAutomational cargeVAVAVAAutomational cargeVAVAVAAutomational cargeVAVAVAAutomational cargeVAVAVA<				
Reteinsulation voltageV,V000Reted operational voltageVacVac000Sele solation to R 01140Vac500Between nusinary contacts and main contactsVac500Between nusinary contacts and main contactsVac500Current heat loss (3 conductors)Vac500Current heat loss (3 conductors)VacMainAwxinum settingMaxinum settingVac500Maxinum setting angeMaxinum settingMaxinum settingVacBetwee heat loss (3 conductors)Maxinum settingMaxinum setting1000Betwee heat loss (3 conductors)Maxinum settingMaxinum setting1000Betwee heat loss (3 conductors)Maxinum settingMaxinum setting1000Betwee heat loss (3 conductors)Maxinum setting10001000BusharMaxinum settingMaxinum setting10001000BusharMaxinum settingMaxinum setting10001000Torinal corport (1 conductors)Maxinum setting10001000Bushar Mathematic Homan loss (1 conductors)Maxinum setting10001000Bushar Mathematic Homan loss (1 conductors)Maxinum setting1000010000Bushar Mathematic Homan los	Rated impulse withstand voltage	U _{imp}	V AC	8000
Rated operational voltage Vac VAC 000 Safe isolation to EN 61140 VAC 500 Between auxiliary contacts and main contacts VAC 500 Between naixiliary contacts and main contacts VAC 500 Between naixiliary contacts and main contacts VAC 500 Temperature compensation residual error > 40°C VAC 500 Current heat loss (3 conductors) VAC 500 Lower value of the setting range VAC 60 Maximum setting VAC 60 Stranded with cable lug mar 100 Stranded vith cable lug mar 100 Stranded of stranded VAC 700 Busbar Wath mar 100 Terminal capacities Mark 100 100 Tegetheing torque VAC NID 100 Tegetheing torque SVA mar 100 Tegetheing torge				111/3
Sel isolation to EN 61140 VAC 500 Between auxiliary contacts and main contacts VAC 500 Between main circuits VAC 500 Temparture compensation residual error > 40°C VAC 500 Current has los (3 conductors) 225 %/K 500 Lower value of the setting range VAC 50 Maximu setting VAC 6 Terminal capacities VAC 10 Fexible with cable lug mar 85 Standed with cable lug MAC 10 Solid or stranded VAC 10 Busbar VMCM MAC 10 Terminal screw VMCM 10 25 Tightening torque VMCM 10 36 Totage VMCM 10 36 Terminal screw VMCM 10 36 Tightening torque VMCM 10 36 Totage VMCM 10 36 Terminal screw VMCM 10 36 Totage VMCM 10 36 Terminal screw VMCM 10 36 Totage VMCM 10 36 Terminal capactities VMCM 10 <td>Rated insulation voltage</td> <td>Ui</td> <td>V</td> <td>1000</td>	Rated insulation voltage	Ui	V	1000
Between nuiliary contacts and main contactsIVAC50Between main circuitsVAC50Temperature compensation residual error > 40°C20 25 %/KCurrent heat loss (3 conductors)W5Lower value of the seting rangeW6Maximum settingW1Terminal capacitiesM1Flexible with cable lugM1Stranded vith cable lugM10Solid or strandedM20BusbarM20Terminal screwM20Hexagon head spannerM10Autorus etting rangeM10Autorus etting rangeM10Solid or strandedM10Terminal screwM10Resign head spannerM10Autorus etting rangeM10Autorus etting rangeM <t< td=""><td>Rated operational voltage</td><td>U_e</td><td>V AC</td><td>1000</td></t<>	Rated operational voltage	U _e	V AC	1000
Between main incruits VAC 500 Temperature compensation residual error > 40°C 525 %/K Curren heat loss (3 conductors) W 6 Lower value of the setting range W 6 Maximum satting W 1 Terminal capacities Mm2 1 Fexible with cable lug mm2 85 Stranded with cable lug MM4 mm2 Solid or stranded MW4 M Busbar MW4 M Terminal screw MW4 16 Terminal screw MW4 16 Terminal screw MW4 16 Terminal screw MW4 10 Terminal screw MM4 Mm2 Terminal screw Mm4 10 Solid or stranded for terminal screw Mm4 10 Solid or stranded screeger/polition degree Mm4 10 Solid or stranded Mm4 10 Solid or stranded Mm4 10 Solid or stranded Mm4 10 <td< td=""><td>Safe isolation to EN 61140</td><td></td><td></td><td></td></td<>	Safe isolation to EN 61140			
Imperature compensation residual error > 40°C Imperature residual error > 40°C Imperature error > 4	Between auxiliary contacts and main contacts		V AC	500
Current heat loss (S conductors) Image: Second conductors Image: Second cond conductors Image: Second conductors	Between main circuits		V AC	500
Lower value of the setting rangeVIMaximum settingV3Terminal capacitiesma ² 15Flexible with cable lugma ² 15Stranded with cable lugMatheMathe16Solid or strandedMatheMathe20BusbarMatheMathe2050Terminal screwMathe1035Taghtening torqueNu1610TotsNu1610Autiliary and control circuitsNu16Terminal capacitiesNu10SolidSolidma ² 100Torinial capacitiesma ² 100SolidSolid or strandedma ² 10(75 - 4) 2x (075 - 25) 2x (075 - 25) 2x (075 - 25) 2x (075 - 25) 2x (075 - 25)100Solid or strandedAutoAuto20Terminal screwAuto2x (18 - 14)Terminal screwAuto2x (18 - 14)	Temperature compensation residual error > 40°C			≦ 0.25 %/K
Maximum settingV3Terminal capacitiesma ² ma ² Flexible with cable lugma ² 15Stranded with cable lugma ² 15Solid or strandedVvma ² 16BusbarVvMo2Terminal screwMixthma16Terminal screwMo1616Terminal screwMo1616Terminal screwMo1616Terminal screwMo1616Terminal screwMo1616Terminal screwMo1616Terminal screwMo1616Terminal capacitiesMo1616SolidMag161616SolidMag161616SolidMag161616Solid or strandedMag1616Solid or strandedMa	Current heat loss (3 conductors)			
Terminal capacities mm ² Flexible with cable lug mm ² Flexible with cable lug mm ² Stranded with cable lug mm ² Solid or stranded MM ² Busbar AWG Terminal screw MM ² Tghtening torque MM Tots MM Hexagon head spanner SW mm Autign patheter withstand voltage MM 16 Overvoltage category/pollution degree Mm ² 1/3 Solid mm ² mm ² 1/3 Solid or stranded Mm ² 1/3 Solid or strande Mm ² 1/3 Terminal capacities mm ² 1/3 Solid or stranded Mm ² 1/3 Solid or stranded Mm ² 1/3 Fexible with ferrule Mm ² 1/3 Solid or stranded Mm ² 1/3 Furminal screw Mm ² 1/3	Lower value of the setting range		W	16
Flexible with cable lug nm film Stranded with cable lug nm film Solid or stranded NM film Solid or stranded Vidth nm 25 Terminal screw MI0 x 35 MI0 x 35 Tightening torque NM film 6 Heagon head spanner SW nm 6 Attiliary and control circuits NM film 10 Reade impulse withstand voltage Vimp M0 10 Overvoltage category/pollution degree Imm 10/2 10/2 Solid Solid or stranded mm ² 10/2 10/2 Solid Solid or stranded mm ² 10/2 10/2 Terminal screw Ming 6 10/2 10/2 Solid or stranded Ming 10/2 10/2 10/2 Terminal screw Ming 10/2 10/2 10/2 Solid or stranded Ming 10/2 10/2 10/2 Terminal screw Solid or stranded Solid Solid 10/2 10/2 <tr< td=""><td>Maximum setting</td><td></td><td>W</td><td>31</td></tr<>	Maximum setting		W	31
Fexible with cable lugnm285Stranded with cable lugnm215Solid or strandedVVG20 - 500 MCMBusbarWithnm5Terminal screwMin x 3516Tightening torqueSWnm6Hexagon head spannerSWnm6Autiliary and control circuitsMine16Autiliary and control circuitsMine100Perminal capacitiesMine100SolidSolidnm2SolidSolidmm2SolidSolid or strandedV100Fexible with ferruleMine11/3Solid or strandedY12/3Ferrinal screwInfo12/3Solid or strandedYYSolid or s	Terminal capacities		mm ²	
Stranded with cable lug nm ² 185 Solid or stranded AWG 20-500 MCM Busbar MM 25 Terminal screw MM 18 Tightening torque Nm 18 Tools Nm 16 Hexagon head spanner SW nm 16 Autiliary and control circuits Nm 16 Overvoltage category/pollution degree Vinp MO 103 Terminal capacities nm ² 103 103 Solid Solid or stranded Nm 113 113 Terminal capacities nm ² 100 113 113 Terminal capacities nm ² 100 113 113 Solid or stranded nm ² 100,75 - 43, 20,75 - 43, 113 Solid or stranded nm ² 10,075 - 25, 22,075 - 43, 12,075 - 25, 22,075 - 25, Solid or stranded AVG 21,075 - 25, 22,075 - 25, 22,075 - 25, Solid or stranded AVG 21,075 - 25, 22,075 - 25, 22,075 - 25, 22,075 - 25, 22,075 - 25, 22,075 - 25, <td>Flexible with cable lug</td> <td></td> <td></td> <td>185</td>	Flexible with cable lug			185
Solid or stranded AWG 20 - 500 MCM Busbar Width mm 25 Terminal screw Mu x 35 Mu x 35 Tightening torque Nm 18 Tools Nm 16 Hexagon head spanner SW mm 16 Autiliary and control circuits Min x 16 Terminal capacities Vimp 100 100 Solid or stranded Vimp 4000 100 Solid or stranded Mm 100 100 Terminal capacities Mm 100 100 Solid or stranded Mm 100 100 Solid or stranded Mm 100 100 Terminal capacities Mm 100 100 Solid or stranded Mm <td>-</td> <td></td> <td></td> <td></td>	-			
Busbar Width mm 2 Terminal screw Image: Screw S	-			
Terminal screw MID x 35 Tightening torque Nm Nm Tightening torque Nm Nm Tools Nm Nm Hexagon head spanner SW Nm Auxiliary and control circuits Nmp V Rated impulse withstand voltage Mmp Ym Overvoltage category/pollution degree Mm Mo Solid Solid or stranded Mm2 Solid or stranded Terminal screw Mm2 Solid or stranded Solid or stranded				
Tightening torque Nm Ba Tools Nm B Tools SW mm B Auxiliary and control circuits SW mm B Auxiliary and control circuits Ump V 4000 Overvoltage category/pollution degree III/3 III/3 Terminal capacities mm² 1 2 Solid Solid or stranded mn² 1 2 Solid or stranded Mm² 1 1 2 Terminal screw With ferrule MM² 1 1		Width	mm	
Tools Image: Image				
Hexagon head spanner SW mm 16 Auxiliary and control circuits Materian Materian Materian Rated impulse withstand voltage Ump V 4000 Overvoltage category/pollution degree III/3 Terminal capacities mm² Solid mm² x (0.75 - 4) Flexible with ferrule mm² x (0.75 - 4) Solid or stranded AWG x (0.75 - 2.5) Solid or stranded AWG x (0.75 - 2.5) Terminal screw IMG X (0.75 - 2.5)			Nm	18
Auxiliary and control circuits Rated impulse withstand voltage Uimp 4000 Overvoltage category/pollution degree III/3 Terminal capacities mm ² Solid nm ² Flexible with ferrule mm ² Solid or stranded IX (0.75 - 4) Terminal screw AWG				
Rated impulse withstand voltage Ump V 400 Overvoltage category/pollution degree III/3 Terminal capacities mm ² Imm ² Solid mm ² Ix (0.75 - 4) x (0.75 - 4) Flexible with ferrule mm ² Ix (0.75 - 2.5) x (0.75 - 2.5) Solid or stranded Flexible with ferrule Ix (0.75 - 2.5) x (0.75 - 2.5) Terminal screw Imm ² Ix (0.75 - 2.5) x (0.75 - 2.5)		SW	mm	16
Overvoltage category/pollution degree III/3 Terminal capacities mm ² Solid mm ² Flexible with ferrule mm ² Solid or stranded mm ² Terminal screw Imm ²		11.	V	4000
Terminal capacitiesmm2Solidmm2Flexible with ferrulemm2Solid or strandedmm2Terminal screwImm2Solid or strandedImm2Solid or strandedI		Uimp	v	
Solid mm ² 1 × (0.75 - 4) Flexible with ferrule mm ² 1 × (0.75 - 2.5) Solid or stranded AWG 2 × (18 - 14) Terminal screw M3.5				111/3
Flexible with ferrule AWG 2 x (0.75 - 2.5) Solid or stranded AWG 2 x (0.75 - 2.5) Terminal screw MB 3.5				
Flexible with ferrule mm ² 1 × (0.75 - 2.5) Solid or stranded AWG 2 × (18 - 14) Terminal screw M3.5	Solid		mm ²	
Solid or stranded AWG 2 x (18 - 14) Terminal screw M3.5	Flexible with ferrule		mm ²	1 x (0.75 - 2.5)
Terminal screw M3.5	Solid or strandod		A)A/C	
			AVVG	
Tightoping torque			Nm	
Tightening torque Nm 1.2				
Stripping length 8				U
Tools Size 2			Size	2
Pozidriv screwdriver Size 2				
Standard screwdriver mm 1 x 6				
Rated insulation voltage Ui V AC 500				
Rated operational voltage Ue VAC 500		U _e	V AC	500
Safe isolation to EN 61140				
between the auxiliary contacts VAC 240	between the auxiliary contacts		V AC	240
Conventional thermal current I _{th} A 6	Conventional thermal current	I _{th}	А	6
Rated operational current Ie A	Rated operational current	l _e	А	
AC-15	AC 15			

Make contact			
120 V	le	А	1.5
220 V 230 V 240 V	I _e	Α	1.5
380 V 400 V 415 V	I _e	А	0.5
500 V	le	А	0.5
Break 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	I _e	А	0.9
500 V	I _e	А	0.8
DC L/R ≦ 15 ms			
			Switch-on and switch-off conditions based on DC-13, time constant as specified.
24 V	le	Α	0.9
60 V	I _e	А	0.75
110 V	le	А	0.4
220 V	I _e	А	0.2
Short-circuit rating without welding			
max. fuse		A gG/gL	6

Notes

Notes Ambient air temperature: Operating range to IEC/EN 60947

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	
Basic Rating		
SCCR	kA	10
max. Fuse	А	800 Class L
max. CB	А	800

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	А	220
Heat dissipation per pole, current-dependent	P _{vid}	W	12.6
Equipment heat dissipation, current-dependent	P _{vid}	W	37.8
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	60
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

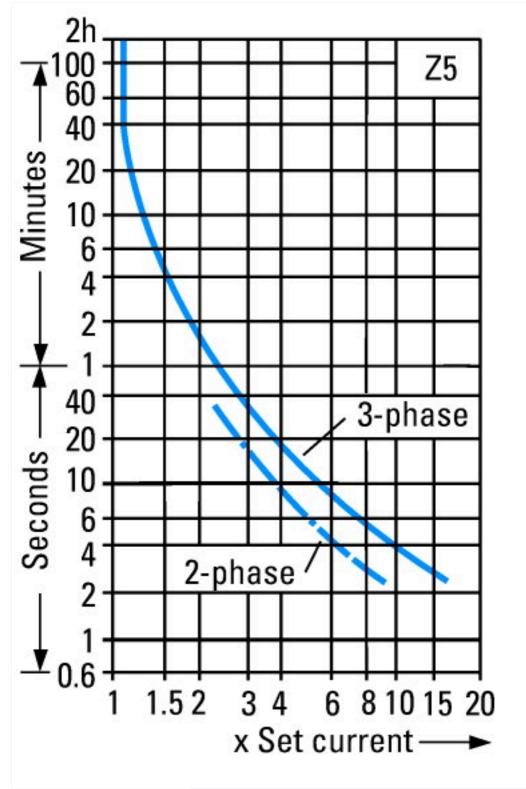
Low-voltage industrial components (EG000017) / Thermal overload relay (EC000106)

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	160 - 220		
Max. rated operation voltage Ue	V	1000		
Mounting method		Direct attachment/single positioning		
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: IP00, UL/CSA Type: -

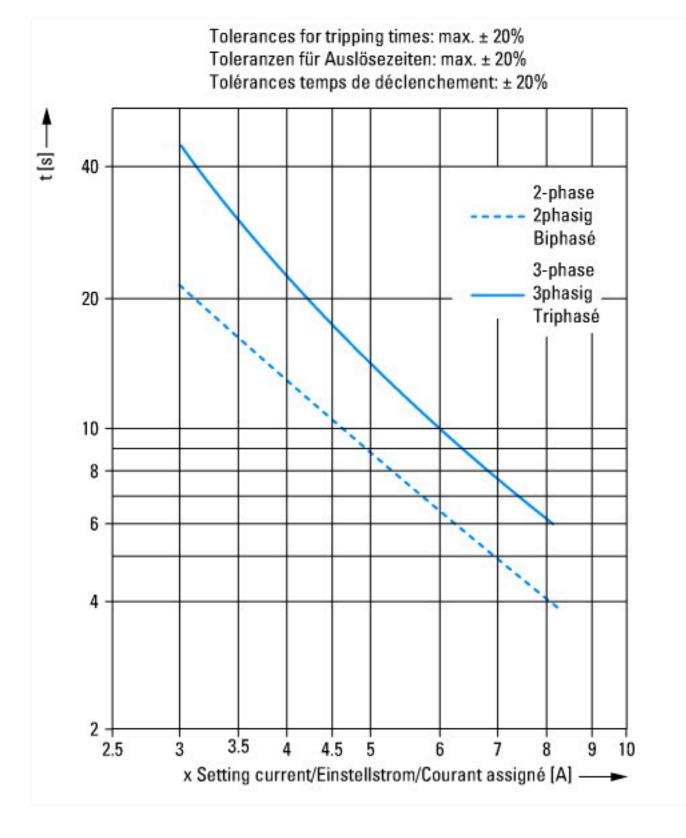




These tripping characteristics are mean values of the spreads at 20 °C ambient air temperature in a cold state.

Tripping time depends on response current.

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



Dimensions

