



# Overload relay

Motor protection is a central task of electrical equipment for machinery. From cost-effective bimetal solutions to demanding full motor protection with cross-linkage - we offer the right solution for each application.



## Bimetal relay - overload relay up to 630 A

Direct mounting on contactor saves mounting time +++ ATEX approval for the protection of EEx e motors up to 250 A +++ Comprehensive motor protection through phase failure sensitivity +++ Integrated test pushbutton facilitates high safety → Page 6/6

## ZEB electronic overload relay - overload relay up to 1500 A

ATEX approval for protection of EEx e motors up to 1500 A +++ Adjustable tripping classes +++ Phase failure and unbalance protection +++ Optional earth fault detection +++ Additional current setting range (5:1) → Page 6/14

## ZEV electronic overload relay - overload relay up to 820 A

Flexible mounting with Rogowski transformer +++ Simple parameterization reduces commissioning time +++ ATEX approval for protection of EEx e motors up to 820 A +++ Error messages in display shorten downtime +++ Adjustable tripping classes +++ Optional earth fault detection +++ Full motor protection through additional thermistor evaluation → Page 6/19

## EMT6 thermistor overload relay for machine protection

Overload protection through direct evaluation of winding temperature +++ Quick detection of operating state through LED display +++ Suitable for overload monitoring of motors in EEx e range +++ Wide range power supply reduces amount of types → Page 6/24



## Technical overview

Bimetal relay ZE, ZB, Z5	6/2
Overload relay ZW7	6/2
Electronic overload relays ZEB, ZEV	6/4
EMT6 thermistor overload relay for machine protection	6/4

## Ordering

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Bimetal relays up to 150A	6/8
Bimetal relay greater than 150 A	6/12
Overload relays	6/12
Bimetal relay accessories	6/26
ZEB Electronic overload relay	6/14

## Description

ZEV electronic overload relay	6/19
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## Ordering

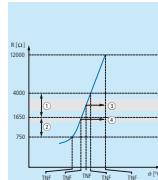
ZEV electronic overload relay	6/20
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## Engineering

ZEV, ZEB electronic overload relays	6/22
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## Ordering

EMT6 thermistor overload relay for machine protection	6/24
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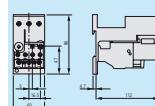


## Engineering

EMT6 thermistor overload relay for machine protection	6/25
Selection criteria ZE, ZB, Z5, ZW7	6/28
Characteristic curve ZB, Z5, ZW7	6/28
UL/CSA short-circuit strength ZE, ZB, Z5, ZEV	6/29

## Technical data

Bimetal relay for mini-contactor relays	6/30
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Overload relays greater than 150 A	6/31
Overload relays	6/31
ZEB electronic overload relay	6/33
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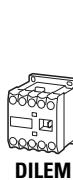
## Dimensions

Bimetal relays for mini-contactor relays	6/37
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Overload relay	6/39
ZEB electronic overload relay	6/40
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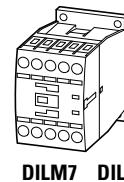
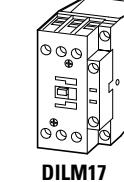
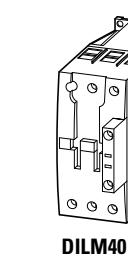
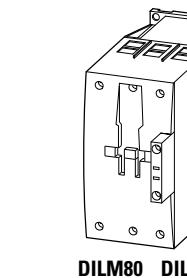
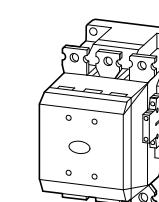
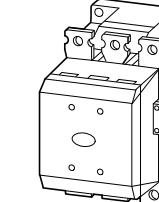
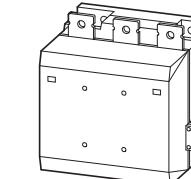
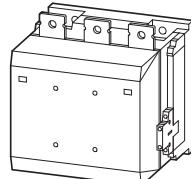


**Technical overview**

Setting ranges (A)  
(note max. current of the contactor)



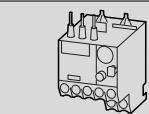
DILEM

DILM7 DILM12  
DILM9 DILM15DILM17 DILM32  
DILM25 DILM38DILM40 DILM65  
DILM50 DILM72DILM80 DILM150  
DILM95 DILM170  
DILM115DILM185A  
DILM225ADILM250  
DILM300DILM400 DILM580  
DILM500

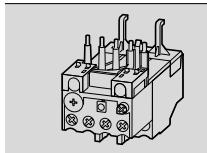
DILM650

**Overload relays**

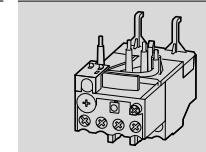
ZE  
0.1-12



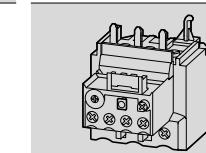
ZB12  
0.1-16



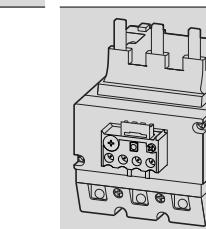
ZB32  
0.1-38



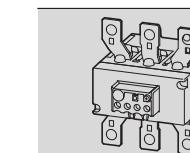
ZB65  
6-75



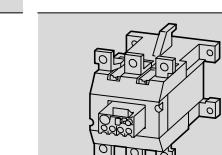
ZB150  
35-175



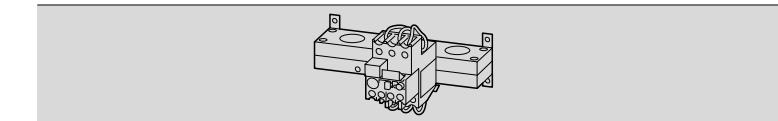
Z5.../FF225A  
70-250



Z5.../FF250  
50-300

**Current transformer-operated overload relay**

ZW7...  
42-630



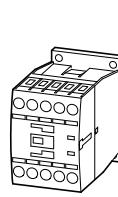
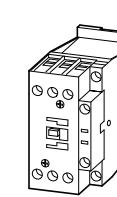
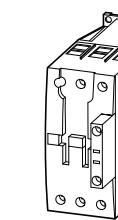
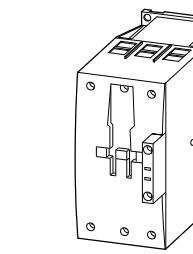
## Overload Relays

Electronic overload relays, thermistor overload relay for machine protection

Setting ranges (A)  
(note max. current of the contactor)

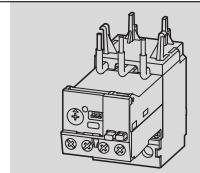


DILEM

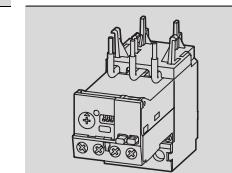
DILM7 DILM12  
DILM9 DILM15DILM17 DILM32  
DILM25 DILM38DILM40 DILM65  
DILM50 DILM72DILM80 DILM150  
DILM95 DILM170  
DILM115

### Electronic overload relays

ZEB12  
0.33-20



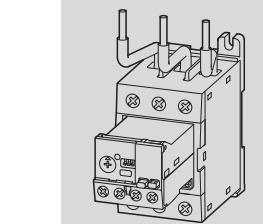
ZEB32  
0.33-45



ZEB65  
9-100

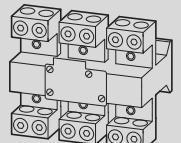


ZEB150  
20-100

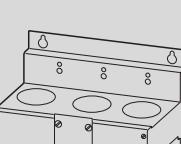


### ZEB32-5 (GF)/KK combined with

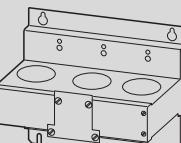
ZEB-XCT300  
60-300



ZEB-XCT600  
120-600



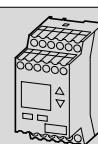
ZEB-XCT1000  
200-1000



ZEB-XCT1500  
300-1500

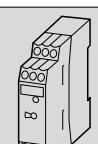


ZEV  
1-820



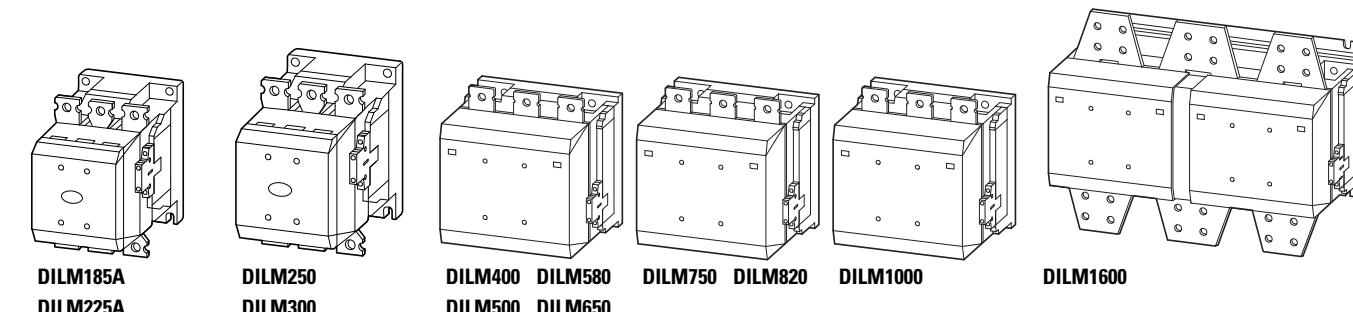
### Thermistor overload relay for machine protection

EMT6((DB)K)



## Overload Relays

Electronic overload relays, thermistor overload relay for machine protection



**Ordering**

Setting range of overload releases	Circuit symbol	Auxiliary contact	For use with	Short-circuit protection
		N/O = normally open contact NC = normally closed contact		Type "1" coordination gG/gL A
				Type "2" coordination gG/gL A
I <sub>r</sub>	A			

**ZE overload relays for mini contactor relays**

- Phase failure sensitivity to IEC/EN 60947, VDE 0660 Part 102
- Test/off pushbutton
- Reset pushbutton manual/auto
- Trip-free release
- Direct mounting

	0.1 – 0.16		1 N/O	1 NC	DILEM DIULEM/21/MV SDAINLEM	20	0.5
	0.16 – 0.24						1
	0.24 – 0.4						2
	0.4 – 0.6						2
	0.6 – 1						4
	1 – 1.6						6
	1.6 – 2.4						6
	2.4 – 4						10
	4 – 6						
	6 – 9						
	9 – 12						

## Information relevant for export to North America

	Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking
	UL File No.	E29184
	UL CCN	NKCR
	CSA File No.	12528
	CSA Class No.	3211-03
	NA Certification	UL Listed, CSA certified
	Suitable for	Branch circuits
	Max. Voltage Rating	600 V AC
	Degree of Protection	IEC: IP20, UL/CSA Type: -
	See also	→ Page 6/29

HPL06006EN

HPL06007EN

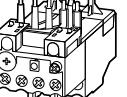
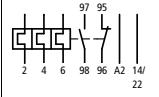
Part no. Article no.	Price See price list	Std. pack	Notes
<b>ZE-0.16</b> 014263		1 Off	Overload release: tripping class 10 A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor.
<b>ZE-0.24</b> 014285			Suitable for protection of EEx e motors PTB 01 ATEX 3331
<b>ZE-0.4</b> 014300			Observe manual AWB2300-1425D/GB.
<b>ZE-0.6</b> 014333			
<b>ZE-1.0</b> 014376			
<b>ZE-1.6</b> 014432			
<b>ZE-2.4</b> 014479			
<b>ZE-4</b> 014518			
<b>ZE-6</b> 014565			
<b>ZE-9</b> 014708			
<b>ZE-12</b> 014752			

With side-by-side mounting, there must be a minimum clearance of 5 mm between overload relays.

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Accessories → Page 6/26  
Manual → Page 6/26

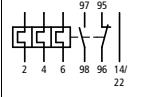
Setting range of overload releases	Circuit symbol	Auxiliary contact	For use with	Short-circuit protection	
			Contactors Soft starters	Type "1" coordination gG/gL A	Type "2" coordination gG/gL A
I <sub>r</sub> A					

## ZB12 overload relay

	0.1 – 0.16		1 N/O	1 NC	DILM7, DILM9, DILM12, DILM15, DIULM7, DIULM9, DIULM12, SDAINLM12, SDAINLM16, SDAINLM22	–	25	0.5	1
	0.16 – 0.24								2
	0.24 – 0.4								4
	0.4 – 0.6								4
	0.6 – 1								6
	1 – 1.6								10
	1.6 – 2.4								16
	2.4 – 4								20
	4 – 6								
	6 – 10								
	9 – 12								
	12 – 16								

DS7-34...SX004...  
DS7-34...SX005...  
DS7-34...SX007...  
DS7-34...SX009...  
DS7-34...SX012...  
–

## ZB32 overload relay

	0.1 – 0.16		1 N/O	1 NC	DILM17, DILM25, DILM32, DILM38, DILMF8, DILMF11, DILMF14, DILMF17, DILMF25, DILMF32, DIULM17, DIULM25, DIULM32, SDAINLM30, SDAINLM45, SDAINLM55	–	25	0.5	1
	0.16 – 0.24								2
	0.24 – 0.4								4
	0.4 – 0.6								4
	0.6 – 1								6
	1 – 1.6								10
	1.6 – 2.4								16
	2.4 – 4								20
	4 – 6								
	6 – 10								
	10 – 16								
	16 – 24								
	24 – 32								
	32 – 38								

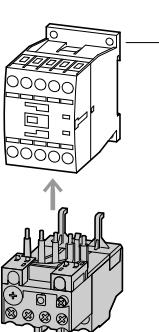
DS7-34...SX016...  
DS7-34...SX024...  
DS7-34...SX032...  
–

## Information relevant for export to North America

	Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking	NA Certification	UL Listed, CSA certified
UL File No.	E29184	Suitable for	Branch circuits	
UL CCN	NKCR	Max. voltage R		
CSA File No.	12528	Rating	600 V AC	
CSA Class No.	3211-03	Degree of Protection	IEC: IP20, UL/CSA Type: -	
		See also	→ Page 6/29	

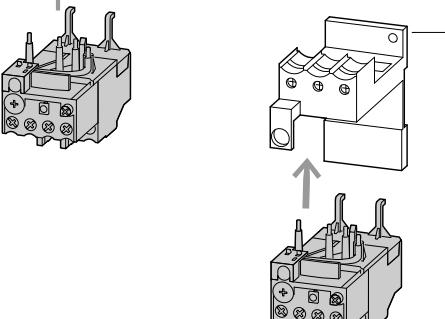
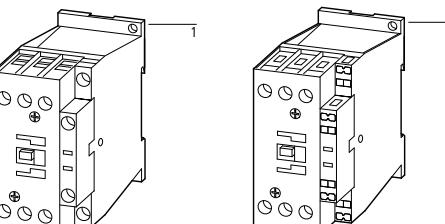
Part no. Article no.	Price See price list	Std. pack	Notes
ZB12-0,16 278431	1 Off		Overload release: tripping class 10 A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor. Suitable for protection of EEx e motors. Ex II (2) GD PTB 04 ATEX 3022 Observe manual AWB2300-1527D/GB. <ul style="list-style-type: none"><li>Phase failure sensitivity to IEC/EN 60947, VDE 0660 Part 102</li><li>Test/off pushbutton</li><li>Reset pushbutton manual/auto</li><li>Trip-free release</li><li>Direct mounting</li></ul>
ZB12-0,24 278432			
ZB12-0,4 278433			
ZB12-0,6 278434			
ZB12-1 278435			
ZB12-1,6 278436			
ZB12-2,4 278437			
ZB12-4 278438			
ZB12-6 278439			
ZB12-10 278440			
ZB12-12 278441			
ZB12-16 290168			

Fitted directly to the contactor

1 Contactor → Chapter 5  
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Manual → Page 6/26

ZB32-0,16 278442	1 Off		Overload release: tripping class 10 A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor. Suitable for protection of EEx e motors. Ex II (2) GD PTB 04 ATEX 3022 Observe manual AWB2300-1527D/GB. <ul style="list-style-type: none"><li>Phase failure sensitivity to IEC/EN 60947, VDE 0660 Part 102</li><li>Test/off pushbutton</li><li>Reset pushbutton manual/auto</li><li>Trip-free release</li><li>Direct mounting</li></ul>
ZB32-0,24 278443			
ZB32-0,4 278444			
ZB32-0,6 278445			
ZB32-1 278446			
ZB32-1,6 278447			
ZB32-2,4 278448			
ZB32-4 278449			
ZB32-6 278450			
ZB32-10 278451			
ZB32-16 278452			
ZB32-24 278453			
ZB32-32 278454			
ZB32-38 112474			

Fitted directly to the contactor Separate mounting

1 Contactor → Chapter 5  
2 Base → Page 6/26  
Manual → Page 6/26

## ZB65, ZB150

HPL06010EN

Setting range of overload releases	Circuit symbol	Auxiliary contact	For use with	Short-circuit protection
		N/O = normally open contact NC = normally closed contact		Type "1" coordination gG/gL A

I<sub>r</sub>  
A

## ZB65 overload relay

- Phase failure sensitivity to IEC/EN 60947, VDE 0660 Part 102
- Test/off pushbutton
- Reset pushbutton manual/auto
- Trip-free release
- Direct mounting

	6 – 10		1 N/O	1 NC	DILM40, DILM50, DILM65, DILM72, DILMF40, DILMF50, DILMF65, DIULM40, DIULM50, DIULM65, SDAINLM70, SDAINLM90, SDAINLM115	50	25
	10 – 16				63	35	
	16 – 24				63	50	
	24 – 40				125	63	
	40 – 57				160	80	
	50 – 65				160	100	
	65 – 75				250	160	

## ZB150 overload relay

- Phase failure sensitivity to IEC/EN 60947, VDE 0660 Part 102
- Test/off pushbutton
- Reset pushbutton manual/auto
- Trip-free release
- Direct mounting

	35 – 50		1 N/O	1 NC	DILM80, DILM95, DILM115, DILM150, DILM170 DILMF80, DILMF95, DILMF115, DILMF150, DIULM80, DIULM95, DIULM115, DIULM150, SDAINLM140, SDAINLM165, SDAINLM200, SDAINLM260	160	125
	50 – 70				250	160	
	70 – 100				315	200	
	95 – 125				315	250	
	120 – 150				315	250	
	145 – 175				315	250	

## ZB150 overload relay

- Phase failure sensitivity to IEC/EN 60947, VDE 0660 Part 102
- Test/off pushbutton
- Reset pushbutton manual/auto
- Trip-free release
- Separate mounting

	35 – 50		1 N/O	1 NC	DILM80, DILM95, DILM115, DILM150, DILM170 DILMF80, DILMF95, DILMF115, DILMF150, DIULM80, DIULM95, DIULM115, DIULM150, SDAINLM140, SDAINLM165, SDAINLM200, SDAINLM260	160	125
	50 – 70				250	160	
	70 – 100				315	200	
	95 – 125				315	250	
	120 – 150				315	250	
	145 – 175				400	315	

## Information relevant for export to North America



Product Standards

UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking

UL File No.

E29184

UL CCN

NKCR

CSA File No.

12528

CSA Class No.

3211-03

NA Certification

UL Listed, CSA certified

Suitable for

Branch circuits

Max. Voltage Rating

600 V AC

Degree of Protection

IEC: IP00, UL/CSA Type: -

See also

→ Page 6/29

HPL06011EN

Part no. Article no.	Price See price list	Std. pack	Notes
ZB65-10 278455	1 Off 		

ZB65-16 278456	1 Off 		Overload release: tripping class 10 A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor. Suitable for protection of EEx e motors. Ex II (2) GD PTB 04 ATEX 3022 Observe manual AWB2300-1545D/GB.
ZB65-24 278457			
ZB65-40 278458			
ZB65-57 278459			
ZB65-65 278460			
ZB65-75 108792			

ZB150-50 278462	1 Off 		Overload release: tripping class 10 A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor. Suitable for protection of EEx e motors. Ex II (2) GD PTB 04 ATEX 3022 Observe manual AWB2300-1545D/GB.
ZB150-70 278463			
ZB150-100 278464			
ZB150-125 278465			
ZB150-150 278466			
ZB150-175 107316			

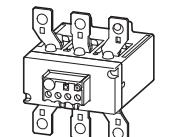
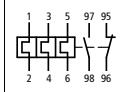
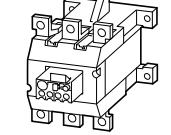
ZB150-50/KK 278468	1 Off 		Overload release: tripping class 10 A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor. Suitable for protection of EEx e motors. Ex II (2) GD PTB 04 ATEX 3022 Observe manual AWB2300-1545D/GB.
ZB150-70/KK 278469			
ZB150-100/KK 278470			
ZB150-125/KK 278471			
ZB150-150/KK 278472			
ZB150-175/KK 107317			

Setting range of of overload releases	Circuit symbol	Auxiliary contacts	For use with	Short-circuit protection
		N/O = normally open contact NC = normally closed contact		Type "1" coordination gG/gL Type "2" coordination gG/gL
		I <sub>r</sub> A		A      A

## Z5 overload relays greater than 150A

- Phase failure sensitivity to IEC/EN 60947, VDE 0660 Part 102
- Test/off pushbutton
- Reset pushbutton manual/auto
- Trip-free release

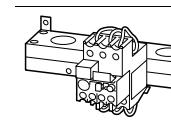
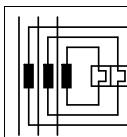
Direct mounting  
Separate mounting

	50 - 70		1 N/O	1 NC	DILM185A DILM25A	250 250 315 315 315 315 400 400 400 400 400 500 500 500 500	160 160 200 200 250 250 250 315 400 315 400 315 400
	50 - 70				DILM250	250 250 315 315 315 315 400 400 400 400 400 500 500 500 500	160 160 200 200 250 250 250 315 400 315 400 315 400
	70 - 100						
	95 - 125						
	120 - 160						
	160 - 220						
	200 - 250						
	250 - 300						
					DILM300A	500 500	400 400

## ZW7 current transformer-operated overload relays

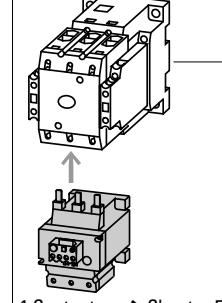
- Test/off button
- Reset pushbutton manual/auto
- Trip-free release
- Protection with heavy starting duty

Separate mounting

	42 - 63		1 N/O	1 NC	-	-	-
	60 - 90				-	-	-
	85 - 125				-	-	-
	110 - 160				-	-	-
	160 - 240				-	-	-
	190 - 290				-	-	-
	270 - 400				-	-	-
	360 - 540				-	-	-
	420 - 630				-	-	-

Part no. Article no.	Price See price list	Std. pack	Notes	Information relevant for export to North America
				 

Z5-70/FF225A 139572	1 Off	Overload release: tripping class 10 A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor.	Product Standards UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking NA Certification Suitable for Max. Voltage Rating Degree of Protection See also	Request filed for UL and CSA Branch circuits 600 V AC IEC: IP00, UL/CSA Type: - → Page 6/29
Z5-100/FF225A 139573		Z5.../FF225A for protecting EEx electric motors in preparation.		
Z5-125/FF225A 139574		Fitted directly to the contactor		

Z5-160/FF225A 139575	1 Off	 1 Contactor → Chapter 5 Accessories → Page 6/27	Product Standards UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking UL File No. UL CCN CSA File No. CSA Class No. NA Certification Suitable for Max. Voltage Rating Degree of Protection See also	Request filed for UL and CSA Branch circuits 600 V AC IEC: IP00, UL/CSA Type: - → Page 6/29
Z5-220/FF225A 139576				
Z5-250/FF225A 139577				

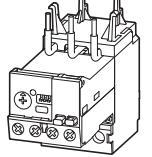
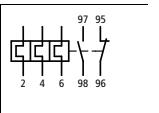
Z5-70/FF250 210070	1 Off	The main current characteristic values are defined by the main current wiring being used. Adjustment for smaller rated motor currents → Page 6/28	Product Standards UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking UL File No. UL CCN CSA File No. CSA Class No. NA Certification Suitable for Max. Voltage Rating Degree of Protection	Request filed for UL and CSA Branch circuits 600 V AC IEC: IP00, UL/CSA Type: -
Z5-100/FF250 210071				
Z5-125/FF250 210072				

Ground fault detection	Setting range of overload releases I <sub>r</sub> A	Circuit symbol	Auxiliary contact	For use with
N/O = normally open contact NC = normally closed contact				

## ZEB12 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)

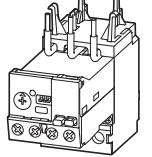
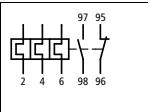
## Direct mounting

	Without	0.33 – 1.65		1 N/O	1 NC	DILM7 DILM9 DILM12 DILM15 DIULM7 DIULM9 DIULM12 SDAINLM12 SDAINLM16 SDAINLM22
	Without	1 – 5				
	Without	4 – 20				
	With	0.33 – 1.65				
	With	1 – 5				
	With	4 – 20				

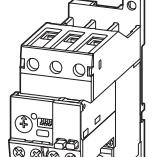
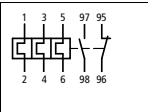
## ZEB32 electronic overload relay

- Phase-failure sensitivity
- Test/off pushbutton
- Reset button
- Manual/Auto reset selectable
- Protection with heavy starting duty (Class 5-30)

## Direct mounting

	Without	0.33 – 1.65		1 N/O	1 NC	DILM17 DILM25 DILM32 DILM38 DIULM17 DIULM25 DIULM32 SDAINLM30 SDAINLM45 SDAINLM55
	Without	1 – 5				
	Without	4 – 20				
	Without	9 – 45				
	With	0.33 – 1.65				
	With	1 – 5				
	With	4 – 20				
	With	9 – 45				

## Separate mounting

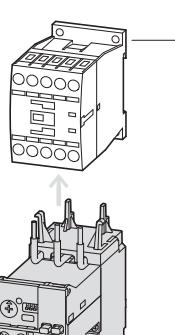
	Without	0.33 – 1.65		1 N/O	1 NC	DILM17 DILM25 DILM32 DILM38 DIULM17 DIULM25 DIULM32 SDAINLM30 SDAINLM45 SDAINLM55
	Without	1 – 5				
	Without	4 – 20				
	Without	9 – 45				
	With	0.33 – 1.65				
	With	1 – 5				
	With	4 – 20				
	With	9 – 45				

## Information relevant for export to North America

	Product Standards NA Certification Suitable for Max. Voltage Rating Degree of Protection	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking Request filed for UL and CSA Branch circuits 600 V AC IEC: IP20, UL/CSA Type: -
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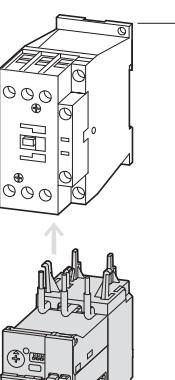
Part no. Article no.	Price See price list	Std. pack	Notes
ZEB12-1,65 136480		1 Off	Suitable for protection of EEx e motors.  PTB ATEX starting 08/2010
ZEB12-5 136481			Observe manual AWB2320-1633D/GB.
ZEB12-20 136482			Switchgear and cable dimensioning according to CLASS → Page 6/22
ZEB12-1,65-GF 136483			
ZEB12-5-GF 136484			
ZEB12-20-GF 136485			

Fitted directly to the contactor

1 Contactor → Chapter 5  
Accessories → Page 6/18

ZEB32-1,65 136486		1 Off	Suitable for protection of EEx e motors.
ZEB32-5 136487			 PTB ATEX starting 08/2010
ZEB32-20 136488			Observe manual AWB2320-1633D/GB.
ZEB32-45 136489			Switchgear and cable dimensioning according to CLASS → Page 6/22
ZEB32-1,65-GF 136490			
ZEB32-5-GF 136491			
ZEB32-20-GF 136492			
ZEB32-45-GF 136493			

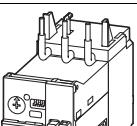
Fitted directly to the contactor

1 Contactor → Chapter 5  
Accessories → Page 6/18

ZEB32-1,65/KK 136494		1 Off	Suitable for protection of EEx e motors.
ZEB32-5/KK 136495			 PTB ATEX starting 08/2010
ZEB32-20/KK 136496			Observe manual AWB2320-1633D/GB.
ZEB32-45/KK 136497			Switchgear and cable dimensioning according to CLASS → Page 6/22
ZEB32-1,65-GF/KK 136498			
ZEB32-5-GF/KK 136499			
ZEB32-20-GF/KK 136500			
ZEB32-45-GF/KK 136501			

Fitted directly to the contactor

1 Contactor → Chapter 5  
Accessories → Page 6/18

Ground fault detection	Setting range of overload releases $I_r$ A	Circuit symbol	Auxiliary contact	For use with
			N/O = normally open contact NC = normally closed contact	
<b>ZEB65 electronic overload relay</b>				
<ul style="list-style-type: none"> <li>• Phase-failure sensitivity</li> <li>• Test/off pushbutton</li> <li>• Reset button</li> <li>• Manual/Auto reset selectable</li> <li>• Protection with heavy starting duty (Class 5-30)</li> </ul>				
<b>Direct mounting</b>				
	Without	9 – 45		DILM40 DILM50 DILM65 DILM72 DIULM40 DIULM50 DIULM65 SDAINLM70 SDAINLM90 SDAINLM115
	With	9 – 45		
	Without	20 – 100		
	With	20 – 100		

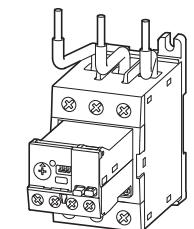
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ZEB150 electronic overload relay

- Phase-failure sensitivity
  - Test/off pushbutton
  - Reset button
  - Manual/Auto reset selectable
  - Protection with heavy starting duty (Class 5-30)

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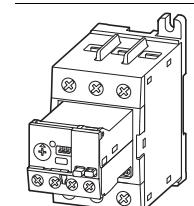
## Direct mounting



Without	20 – 100		1 N/O	1 NC	DILM80 DILM95 DILM115 DILM150 DIULM80 DIULM95 DIULM115 DIULM150 SDAINLM140 SDAINLM165 SDAINLM200 SDAINLM260
With	20 – 100		1 N/O	1 NC	

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### Separate mounting



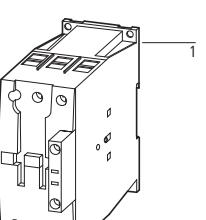
Without	20 – 100		1 N/O	1 NC	DILM80 DILM95 DILM115 DILM150 DIULM80 DIULM95 DIULM115 DIULM150 SDAINLM140 SDAINLM165 SDAINLM200 SDAINI M260
With	20 – 100		1 N/O	1 NC	

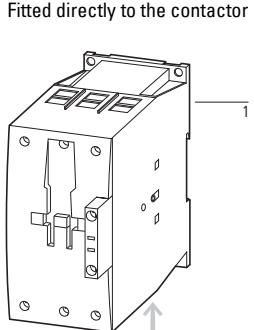
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**Information relevant for export to North America**

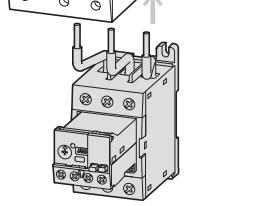


Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking
NA Certification	Request filed for UL and CSA
Suitable for	Branch circuits
Max. Voltage Rating	600 V AC
Degree of Protection	IEC: IP20, UL/CSA Type: -

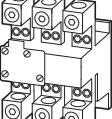
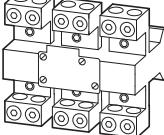
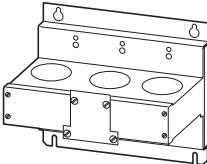
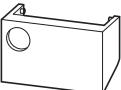
<b>Part no.</b> Article no.	<b>Price</b> See price list	Std. pack	<b>Notes</b>
<b>ZEB65-45</b> 136502			
<b>ZEB65-45-GF</b> 136503		1 Off 	Suitable for protection of EEx e motors.   II (2) GD PTB ATEX starting 08/2010  Observe manual AWB2320-1633D/GB.  Switchgear and cable dimensioning according to CLASS → Page 6/22
<b>ZEB65-100</b> 136504			Fitted directly to the contactor
<b>ZEB65-100-GF</b> 136505			 1 Contactor → Chapter 5 Accessories → Page 6/18



<b>ZEB150-100</b> 136506	1 Off	Suitable for protection of Ex e motors.
<b>ZEB150-100-GF</b> 136507		II (2) GD PTB ATEX starting 08/2010  Observe manual AWB2320-1633D/GB.  Switchgear and cable dimensioning according to CLASS → Page 6/22



ZEB150-100/KK 136508	1 Off	Suitable for protection of EEx e motors.  PTB ATEX starting 08/2010 Observe manual AWB2320-1633D/GB. Switchgear and cable dimensioning according to CLASS → Page 6/22
ZEB150-100-GF/KK 136509	 	

	Setting range of overload releases $I_r$ A	Language	Can be used with	Part no. Article no.	Price See price list	Std. pack
<b>Current sensors</b>						
	60 – 300	–	ZEB32-5-GF/KK ZEB32-5/KK	<b>ZEB-XCT300<sup>1)</sup></b> 136511		1 off 
	120 – 600	–		<b>ZEB-XCT600<sup>1)</sup></b> 136512		
	200 – 1000	–		<b>ZEB-XCT1000<sup>1)</sup></b> 136517		
	300 – 1500	–		<b>ZEB-XCT1500<sup>1)</sup></b> 136513		
<b>Sealable shroud</b>						
Cover to prevent adjustment of motor current (tamper-proof) 	–	–	–	<b>ZEB-XSC<sup>2)</sup></b> 136514	1 off	
<b>Reset adapter</b>						
Cover to prevent adjustment of motor current (tamper-proof) 	–	–	–	<b>ZEB-XRB<sup>2)</sup></b> 136515	1 off	
<b>Documentation</b>						
ZEB electronic overload relay Overload monitoring of EEx e motors	–	Deutsch English	ZEB12 ZEB32 ZEB65 ZEB150	<b>AWB2320-1633DE/EN</b> 136516	1 off	

1)

**Information relevant for export to North America**

Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking
NA Certification	Request filed for UL and CSA
Suitable for	Branch circuits
Max. Voltage Rating	600 V AC
Degree of Protection	IEC: IP00, UL/CSA Type: -

2)

**Information relevant for export to North America**

Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking
NA Certification	Request filed for UL and CSA
Max. Voltage Rating	600 V AC
Degree of Protection	IEC: IP20, UL/CSA Type: -

## Description

ZEV – electronic overload relay for motor currents from 1 – 820 A



### General

Technological advances require completely new approaches: the application of newly developed sensor systems and tripping units has made motor protection considerably simpler and more cost-effective. All Z overload relays perform the expected standard functions: protection in the event of a phase failure, overload or current imbalance. In addition to these tasks, the innovative ZEV motor protection system can do much more today:

### Application

Even the most severe starting situations can be dealt with by the ZEV motor-protective system. The enhanced tripping classes (up to CLASS40) provide reliable protection for motors with starting times of up to 1 second. Protection for any motor starting situation can be optimally set by preselecting one of the eight tripping classes between 5 and 40 seconds. Ground faults are quickly detected with the external core-balance transformer. The integrated thermistor connection makes it possible to expand the relay into a motor protection system.

### Handling

The LCD display guides users through setting menus and ensures easy, user-friendly operation. In the event of an error, the display shows the cause of the error and allows for quick fault detection. The 05-06 and 07-08 parameterizable auxiliary switches make it possible to implement additional signalling indications. They can each be assigned one of the following functions:

- Early warning of overload
- Ground fault
- Thermistor tripping
- Internal fault

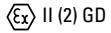
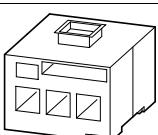
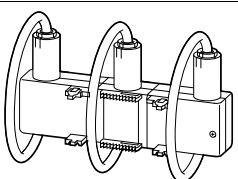
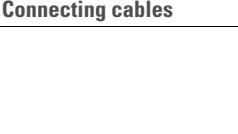
### Engineering

The multi-voltage module adapts automatically to different voltages of 24 - 240 V, 50/60 Hz and 24 - 240 VDC, enabling its flexible use with all popular control voltages.

### Mounting

Current sensors enable the innovative ZEV motor protection system to be used also for small motors. With large motor currents and cable cross-sections, the sensor cables are simply wound round the feeder cables. This eliminates the need for main current wiring requiring the time-consuming adaption of cables to an additional device, as well as mounting plate drilling. Instead of this, the sensor is simply attached with a Velcro fastener. This saves mounting time and expense. The volume of 58 times less than conventional transformers enables the saving of valuable mounting space in the control panel.

**Ordering**

Length ∅ mm	Diameter I <sub>r</sub> A 	Overload release	For use with	Part no. Article no.	Price See price list	Std. pack	Notes
<b>ZEV electronic motor-protective relay</b>							
• Protection in the event of a phase failure • Test/off button • Reset button manual/auto • Protection with heavy starting duty • Trip-free release	- -	1 - 820	DILEM...DILM820	ZEV <sup>1)</sup> 209634	1 off 	Suitable for protection of EEx e motors.  PTB 01 ATEX 3233 Observe manual AWB2300-1433.	
<b>Current sensors</b>							
	- 6	1 - 25	DILEM DILM7...DILM25	ZEV-XSW-25 <sup>2)</sup> 209635	1 off 	-	
	- 13	3 - 65	DILM7...DILM65	ZEV-XSW-65 <sup>2)</sup> 209636			
	- 21	10 - 145	DILM12...DILM150	ZEV-XSW-145 <sup>2)</sup> 209637			
	- 110	40 - 820	DILM40...DILM820	ZEV-XSW-820 <sup>2)</sup> 209641			
<b>Connecting cables</b>							
200	-	-	ZEV-XSW-25 ZEV-XSW-65 ZEV-XSW-145 ZEV-XSW-820	ZEV-XVK-20 <sup>1)</sup> 209643	1 off 	-	
400	-	-	ZEV-XSW-25 ZEV-XSW-65 ZEV-XSW-145 ZEV-XSW-820	ZEV-XVK-40 <sup>1)</sup> 209644			
800	-	-	ZEV-XSW-25 ZEV-XSW-65 ZEV-XSW-145 ZEV-XSW-820	ZEV-XVK-80 <sup>1)</sup> 209645			

1)

2)

**Information relevant for export to North America**

	Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking
UL File No.	E29184	
UL CCN	NKCR	
CSA File No.	12528	
CSA Class No.	3211-03	
NA Certification	UL Listed, CSA certified	NA Certification
Suitable for	Branch circuits	Suitable for
Max. Voltage Rating	600 V AC	Max. Voltage Rating
Degree of Protection	IEC: IP20, UL/CSA Type: -	Degree of Protection See also

**Information relevant for export to North America**

	Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking
UL File No.	E29184	UL File No.
UL CCN	NKCR	UL CCN
CSA File No.	12528	CSA File No.
CSA Class No.	3211-03	CSA Class No.
NA Certification	UL Listed, CSA certified	NA Certification
Suitable for	Branch circuits	Suitable for
Max. Voltage Rating	600 V AC	Max. Voltage Rating
Degree of Protection	IEC: IP20, UL/CSA Type: -	Degree of Protection See also

→ Page 6/29

HPL06021EN

	Length mm	Diameter ∅ mm	Overload release I <sub>r</sub> A	For use with	Part no. Article no.	Price See price list	Std. pack	Notes
<b>SSW core-balance transformer</b>								
For ground fault monitoring								
	-	40	-	-	<b>SSW40-0,3<sup>1)</sup></b> 028286		1 off	
	-	40	-	-	<b>SSW40-0,5<sup>1)</sup></b> 028305			
	-	40	-	-	<b>SSW40-1<sup>1)</sup></b> 028306			
	-	65	-	-	<b>SSW65-0,5<sup>1)</sup></b> 028307			
	-	65	-	-	<b>SSW65-1<sup>1)</sup></b> 028316			
	-	120	-	-	<b>SSW120-0,5<sup>1)</sup></b> 028319			
	-	120	-	-	<b>SSW120-1<sup>1)</sup></b> 028321			
<b>Mounting foot</b>								
	-	-	-	ZEV ZEV-XSW-25 ZEV-XSW-65 ZEV-XSW-145	<b>ZB4-101-GF1<sup>2)</sup></b> 061360		9 off	
<b>Documentation</b>								
ZEV motor protection system Overload monitoring of EEx e motors								
German	-	-	-	-	<b>AWB2300-1433D</b> 259711		1 off	
English	-	-	-	-	<b>AWB2300-1433GB</b> 267430		1 off	

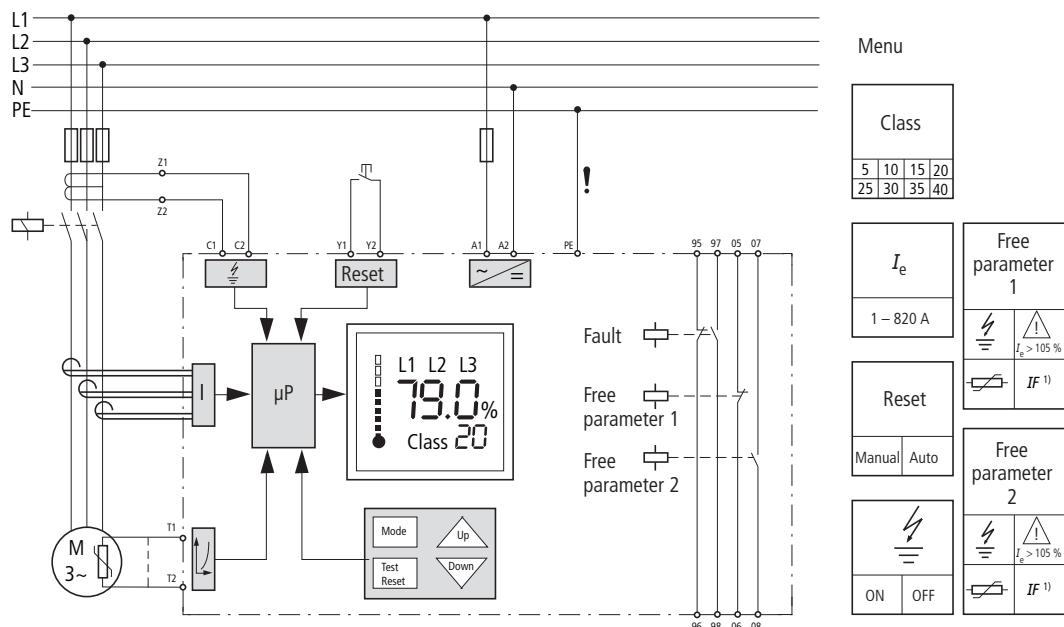
1)

2)

**Information relevant for export to North America****Information relevant for export to North America**

Product Standards    UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1;  
CE marking  
UL File No.        E29184  
UL CCN            NKC  
CSA File No.      12528  
CSA Class No.     3211-03  
NA Certification    UL Listed, CSA certified  
Suitable for       Branch circuits  
Max. Voltage Rating    600 V AC  
Degree of Protection    IEC: IP20, UL/CSA Type: -

UL/CSA certification not required



1) IF: Internal fault

Inputs	Outputs
A 1/A 2	Rated control voltage
T 1/T 2	Thermistor sensor
C 1/C 2	SSW core-balance transformer
Y 1/Y 2	Remote reset
	NC overload/thermistor
	N/O overload/thermistor
	NC contact freely assignable
	N/O contact freely assignable

#### Switchgear and cable sizing corresponding to the respective starting inertia (CLASS) for ZEV and ZEB

Switchgear is designed according to "CLASS 10" requirements for both normal and overload operation conditions. In order for the switchgear (circuit-breaker and contactor) and the cables not to be overloaded with long tripping times, they must be overdimensioned accordingly. The rated operational current,  $I_e$ , for switchgear and cables can be calculated with the following current factor taking the tripping class into account:

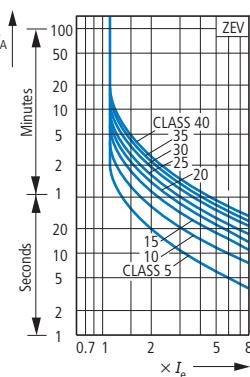
Tripping class	Class 5	Class 10	Class 15	Class 20	Class 25	Class 30	Class 35	Class 40
Current factor of rated operational current $I_e$	1.00	1.00	1.22	1.41	1.58	1.73	1.89	2.00

#### Rated motor currents < 1 A

When working with the ZEV-XSW-25 to ZEV-XSW-145 push-through sensors, the motor feeder cables for each phase are pushed through the corresponding-push-through openings. For motor currents smaller than 1 A, the motor feeder cables are placed in loops with the ZEV-XSW-25 unit. The specific number of loops depends on the rated motor current.

Number of loops n	4	3	2	
Rated motor current $I_N$	A	0.25...0.32	0.33...0.49	0.5...0.99
Set current on the relay $I_E$ between the lowest and highest values	A	1.00...1.28	1.00...1.47	1.00...1.98

The device's set current,  $I_E$ , is calculated as follows:  $I_E = n \times I_N$

**Tripping characteristics**

With a phase failure or imbalance  
> 50 %, the ZEV will trip within  
2.5 seconds.

**Tripping times for ZEV electronic motor-protective relay**

Tripping class, adjustable	CLASS	5	10	15	20	25	30	35	40
Tripping times in s ( $\pm 20\%$ )	With 3-pole symmetric loading from cold state								
Current setting $I_E$	x 3	11.3	22.6	34	45.3	56.6	67.9	79.2	90.5
	x 4	8	15.9	23.9	31.8	39.8	47.7	55.7	63.6
	x 5	6.1	12.3	18.4	24.6	30.7	36.8	43	49.1
	x 6	5	10	15	20	25	30	35	40
	x 7.2	4.1	8.2	12.3	16.4	20.5	24.5	28.6	32.7
	x 8	3.6	7.3	10.9	14.6	18.2	21.9	25.5	29.2
	x 10	2.9	5.7	8.6	11.5	14.4	17.2	20.1	23

**Reset time after overload trip**

Overview of the reset time	CLASS	5	10	15	20	25	30	35	40
$t_{\text{reset}}$	min	5	6	7	8	9	10	11	12

**Thermistor tripping**

Rated trip resistance  $R = 3200 \Omega \pm 15\%$

Reset resistance  $R = 1500 \Omega + 10\%$

Total PTC thermistor resistance  $\sum R_K \leq 1500 \Omega$

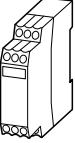
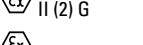
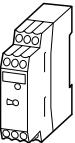
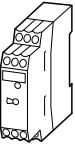
at  $R_K \leq 250 \Omega$  per sensor: 6 sensors

at  $R_K \leq 100 \Omega$  per sensor: 9 sensors

Ready to respond after trip at 5 K under response temperature

Test button tripping time: 5 s

**Ordering**

Function	Rated operational current AC-15 240 V	AC-14 400 V	Conventional thermal current	Rated control voltage	Part no. Article no.	Price See price list	Std. pack	Notes
	I <sub>e</sub> A	I <sub>e</sub> A	I <sub>th</sub> A	U <sub>s</sub> V				
<b>EMT6 thermistor machine protection overload relays</b>								
	Without automatic reset Mains and fault LED display	3	3	6	24 - 240 V 50/60 Hz, 24 - 240 V DC 230 V 50/60 Hz	<b>EMT6<sup>1) 2)</sup></b> 066166	1 off	 
	Without automatic reset Mains and fault LED display Tripped in the event of a short-circuit in the sensor-cable				24 - 240 V 50/60 Hz, 24 - 240 V DC	<b>EMT6(230V)<sup>1) 2)</sup></b> 066400		PTB 02 ATEX 3162
	Selector switch with/without automatic reset For manual or remote resetting Test button Mains and fault LED display				24 - 240 V 50/60 Hz, 24 - 240 V DC 230 V 50/60 Hz	<b>EMT6-K<sup>2)</sup></b> 269470		Observe the manual AWB 2327-1446 → Page 6/24 Can be snap fitted on a top-hat rail to IEC/EN 60715. Device clearance ≥ 3 mm.
	Selector switch with/without automatic reset For manual or remote resetting Test button Mains and fault LED display Trip with short-circuit in the sensor cable				24 - 240 V 50/60 Hz, 24 - 240 V DC 230 V 50/60 Hz	<b>EMT6-DB<sup>1) 2)</sup></b> 066167		
	All-in-one device Selector switch with/without automatic reset Trip with short-circuit in the sensor cable Zero-voltage safe For manual or remote resetting Test button Short-circuit detection and retention can be deactivated Mains and fault LED display				24 - 240 V 50/60 Hz, 24 - 240 V DC	<b>EMT6-DB(230V)<sup>1) 2)</sup></b> 066401		
					24 - 240 V 50/60 Hz, 24 - 240 V DC	<b>EMT6-KDB<sup>2)</sup></b> 269471		
					24 - 240 V 50/60 Hz, 24 - 240 V DC	<b>EMT6-DBK<sup>2)</sup></b> 066168		
<b>Accessories</b>								
Screw adapters for screw fixing								
						<b>CS-TE<sup>3)</sup></b> 095853	10 off	-
<b>Documentation</b>								
EMT6 thermistor overload relay Overload monitoring of machines in the EEx e area								
German								
<b>AWB2327-1446D</b> 264853								
English								
<b>AWB2327-1446GB</b> 267010								

<sup>1)</sup> For EMT6, EMT6(230V), EMT6-DB and EMT6-DB(230V) applies:  
Provide additional short-circuit protection in the sensor circuit with a current monitoring relay.

2)

3)

**Information relevant for export to North America**

Product Standards	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking
UL File No.	E29184
UL CCN	NKCR
CSA File No.	12528
CSA Class No.	3211-03
NA Certification	UL Listed, CSA certified
Max. Voltage Rating	600 V AC
Degree of Protection	IEC: IP20, UL/CSA Type: -

**Information relevant for export to North America**

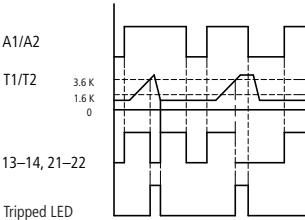
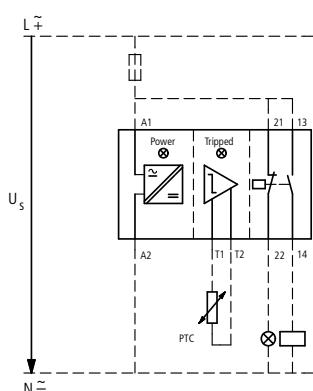
UL/CSA certification not required

## Engineering

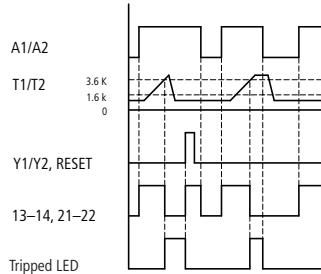
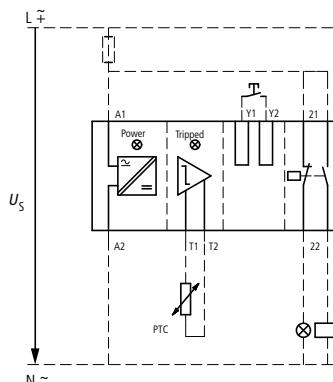
Terminal marking according to EN 50005

EMT6-(K), EMT6-(K)DB, EMT6-DBK

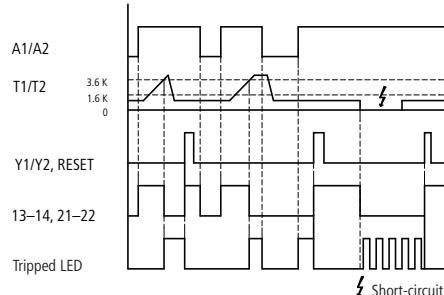
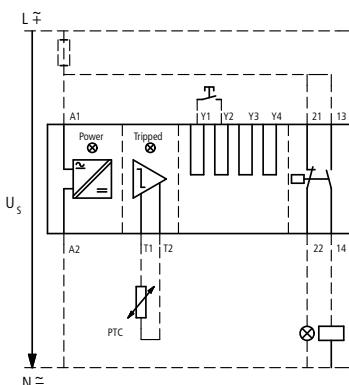
Auto



EMT6-(K)DB, EMT6-DBK  
Manual



### EMT6-DBK Zero-voltage safe operation



### LED display

- Supply voltage present
- Device has tripped
- Device has tripped/short-circuit in the sensor circuit

### Sensor circuit

At  $R_K \leq 250 \Omega$  per sensor: 6 sensors, at  $R_K \leq 100 \Omega$  per sensor: 9 sensors in the winding (provided by user), max. cable length to sensor 250 m (not shielded);

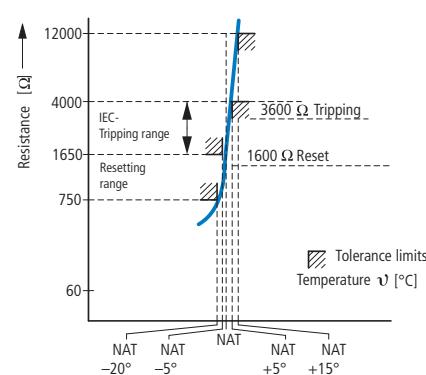
Total PTC thermistor resistance  $\sum R_K \leq 1500 \Omega$

Sensor circuit characteristic values at  $U_s$  and  $+20^\circ C$

$R_{T1-T2}$	EMT6...	$U_{T1-T2}$ V DC max.	$I_{T1-T2}$ mA max.
T1, T2 short-circuited	-	1.9	
4 k $\Omega$	3	0.8	
T1-T2 open	5.1		-

Functions that can be disconnected on the EMT6-DBK:

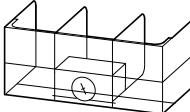
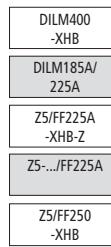
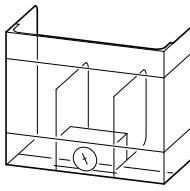
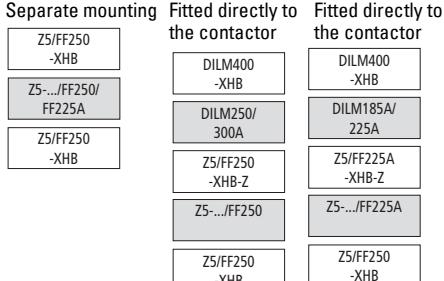
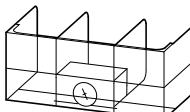
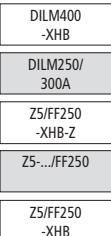
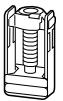
Function	Disconnection by link
Short-circuit monitoring	$Y_1 - Y_3$
Zero-voltage safety	$Y_1 - Y_4$



Tolerance limits  
Temperature  $\theta$  [°C]

**Ordering**

For use with	Part no. Article no.	Price See price list	Std. pack	Notes		Information relevant for export to North America
<b>Documentation</b>						
Overload relays Overload monitoring of EEx e motors						
ZE...	<b>AWB2300-1425D</b> 258704		1 off	German		
ZB12... ZB32...	<b>AWB2300-1527D/GB</b> 284910			German/English		
ZB65... ZB150...	<b>AWB2300-1545D/GB</b> 102065			German/English		
<b>Bases</b>						
For separate mounting						
	ZB32	<b>ZB32-XEZ</b> 278473	5 off	Can be snap fitted on a top-hat rail to IEC/EN 60715 or can be screw fitted. For ZB32-38, use BK25/3-PKZ0 additionally.	Product Standards UL File No. UL CCN CSA File No. CSA Class No. NA Certification Max. Voltage Rating Degree of Protection	UL 508; CSA-C22.2 No. 14; IEC/EN 60947-4-1; CE marking E29184 NKCR 12528 3211-03 UL Listed, CSA certified 600 V AC IEC: IP20, UL/CSA Type: -
	ZB65	<b>ZB65-XEZ</b> 278474	2 off			
<b>Pushbuttons</b>						
For enclosed Overload relay Mounting diameter: 22.3 mm						
External reset button, IP65						
	ZW7... ZE Z5 ZB12 ZB32 ZB65 ZB150	<b>M22-DZ-B</b> 254833	10 off	Button plate, blue	Product Standards UL File No. UL CCN CSA File No. CSA Class No. NA Certification	UL 508; CSA-C22.2 No. 14; IEC/EN 60947; CE marking E29184 NKCR 012528 3211-03 UL Listed, CSA certified
	ZW7... ZE Z5 ZB12 ZB32 ZB65 ZB150	<b>M22-DZ-B-GB14</b> 254834	10 off	Button plate, blue RESET		
Off button, IP65						
	ZW7... ZE Z5 ZB12 ZB32 ZB65 ZB150	<b>M22-DZ-X</b> 254835	10 off	Without button plate, add button plate.	Product Standards UL File No. UL CCN CSA File No. CSA Class No. NA Certification	UL 508; CSA-C22.2 No. 14; IEC/EN 60947; CE marking E29184 NKCR 012528 3211-03 UL Listed, CSA certified
<b>Button plates</b>						
	M22-DZ-X	<b>M22-XD-R</b> 216423	10 off	Button plate, red	UL/CSA certification not required	
	M22-DZ-X	<b>M22-XD-R-X0</b> 218153		Red button plate with white circle		
	M22-DZ-X	<b>M22-XD-R-GB0</b> 218194		Button plate red STOP		

For use with	Part no. Article no.	Price See price list	Std. pack	Notes
<b>Covers</b>				
	Direct mounting Z5-.../FF225 to DILM185A DILM225A	<b>Z5/FF225A-XHB-Z</b> 139579	1 off	Fitted directly to the contactor   DILM400-XHB DILM185A/225A Z5/FF225A-XHB-Z Z5-.../FF225A Z5/FF250-XHB
	Z5-.../FF225A Z5-.../FF250	<b>Z5/FF250-XHB</b> 215217	1 off	Separate mounting Fitted directly to the contactor Fitted directly to the contactor   Z5/FF250-XHB DILM400-XHB DILM250/300A Z5/FF250-XHB Z5-.../FF250 Z5/FF250-XHB DILM400-XHB DILM185A/225A Z5/FF225A-XHB-Z Z5-.../FF225A Z5/FF250-XHB
	Direct mounting Z5-.../FF250 to DILM250 DILM300A	<b>Z5/FF250-XHB-Z</b> 215218	1 off	Fitted directly to the contactor   DILM400-XHB DILM250/300A Z5/FF250-XHB-Z Z5-.../FF250 Z5/FF250-XHB
<b>Box terminals kit</b> Consisting of 3 individual clamps	For connection of copper flat strip max. W x H mm			
<b>With protective cover</b> 	Z5-.../FF250	24 x 26	<b>K-B-DIL6AM</b> 064062	1 off When using box terminals the protective covers must be used.
<b>With control circuit terminal and protective cover</b> 	Z5-.../FF250	24 x 26	<b>KS-B-DIL6AM</b> 064063	1 off When using box terminals the protective covers must be used.

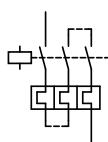


Selection criteria

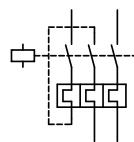
ZE, ZB, Z5, ZW7

**Engineering****Protection of single-phase and DC current motors:**

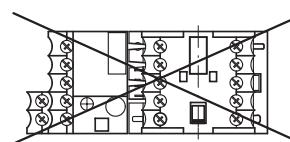
1 pole



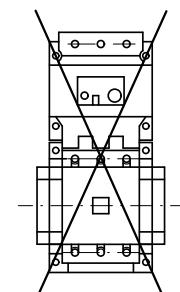
2 pole

**Mounting position:**

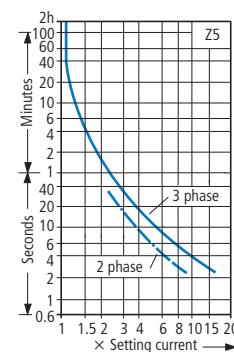
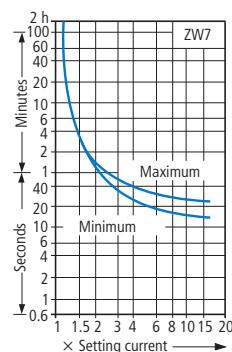
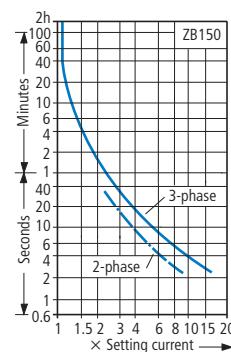
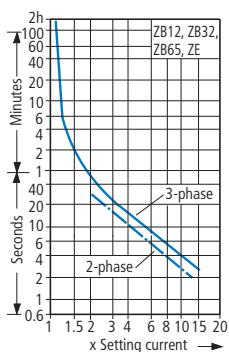
ZE



ZB12, ZB32, ZB65, ZB150, Z5

**Tripping characteristics**

These tripping characteristics are mean values of the spread at 20 °C ambient temperature in a cold state. They show the tripping times in relation to the response current. When the devices are at operational temperature the tripping time of the overload relay drops to approx. 25 % of the value shown. Specific characteristics for each individual setting range can be found in the manual on → Page 6/26

**Adaption of ZW7 to smaller rated motor currents**

Number of loops	ZW7 -63	-90	-125	-160	-240	-290	-400	-540	-630
	Rated motor current $I_N$ [A]								
1	42-63	60-90	85-125	110-160	160-240	190-290	270-400	360-540	420-630
2	21-31,5	30-45	42,5-62,5	55-80	80-120	95-145	135-200	180-270	210-315
3	14-21	20-30	28,3-41,7	36,7-53,3	53,3-80	63,3-96,7	90-133,3	120-180	140-210
4	10,5-15,8	15-22,5	21,3-31,3	27,5-40	40-60	47,5-72,5	67,5-100	90-135	105-157,5
5	8,4-12,6	12-18	17-25	22-32	32-48	38-58	54-80	72-108	84-126

## Overload relay short-circuit strength



UL508, CSA-C22.2 No. 14/SCCR values

	Fuse acc. to NEC, CEC		CB	
	A	kA	A	kA
600V AC				
ZE-0,16	1	5	15	5
ZE-0,24	1	5	15	5
ZE-0,4	1	5	15	5
ZE-0,6	1	5	15	5
ZE-1,0	3	5	15	5
ZE-1,6	6	5	15	5
ZE-2,4	6	5	15	5
ZE-4	15	5	15	5
ZE-6	20	5	15	5
ZE-9	35	5	15	5
ZE-12	45	5	-	-
600V AC				
ZB12(32)-0,16	1 CLASS J/CC	100	-	-
ZB12(32)-0,24	1 CLASS J/CC	100	-	-
ZB12(32)-0,4	1 CLASS J/CC	100	-	-
ZB12(32)-0,6	1 CLASS J/CC	100	-	-
ZB-12(32)-1,0	1 CLASS J/CC	100	-	-
ZB-12(32)-1,6	3 CLASS J/CC	100	-	-
ZB-12(32)-2,4	3 CLASS J/CC	100	-	-
ZB-12(32)-4	6 CLASS J/CC	100	-	-
ZB-12(32)-6	10 CLASS J/CC	100	-	-
ZB-12(32)-10	15 CLASS J/CC	100	-	-
ZB12-12	15 CLASS J/CC	100	-	-
ZB12-16	30 CLASS J/CC	100	-	-
ZB32-16	35 CLASS J	100	-	-
ZB32-24	45 CLASS J	100	-	-
ZB32-32	60 CLASS J	100	-	-
600V AC				
ZB65-10	15 CLASS J	100	40	5
ZB65-16	35 CLASS J	100	60	5
ZB65-24	45 CLASS J	100	90	5
ZB65-40	60 CLASS J	100	125	5
ZB65-57	110 CLASS J	100	150	10
ZB65-65	125 CLASS J	100	150	10
ZB65-75	125 CLASS J	100	150	10

	Fuse acc. to NEC, CEC		CB	
	A	kA	A	kA
600V AC				
ZB150-50	225	5	200	5
ZB150-70	250	10	250	10
ZB150-100	400 CLASS J	10	400	10
ZB150-125	500 CLASS J	10	500	10
ZB150-150	600 CLASS J	10	600	10
ZB150-175	600 CLASS J	10	600	10
ZB150-50(KK)	110 CLASS J	100	200	5
ZB150-70(KK)	125 CLASS J	100	250	10
ZB150-100(KK)	200 CLASS J	100	400	10
ZB150-125(KK)	250 CLASS J	100	500	10
ZB150-150(KK)	300 CLASS J	100	600	10
ZB150-175(KK)	300 CLASS J	100	600	10
600V AC				
Z5-70/...	250	10	250	10
Z5-100/...	400 CLASS J	10	400	10
Z5-125/...	500 CLASS J	10	500	10
Z5-160/...	600 CLASS J	10	600	10
Z5-220/...	800 CLASS J	10	800	10
Z5-250/...	700 CLASS J	10	600	10
Z5-70/...	125 CLASS J	100	-	-
Z5-100/...	200 CLASS J	100	-	-
Z5-125/...	250 CLASS J	100	-	-
Z5-160/...	300 CLASS J	100	-	-
600V AC				
ZEV-XSW-25	-	5	-	5
ZEV-XSW-64	-	10	-	10
ZEV-XSW-145	-	10	-	10
ZEV-XSW-820	-	42	-	42



**Technical data**

	<b>ZE</b>	<b>ZB12, ZB32</b>	<b>ZB65</b>	<b>ZB150(KK)</b>
<b>General</b>				
Standards	IEC/EN 60947, VDE 0660, UL, CSA			
Climatic proofing	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30			
Ambient temperature				
Open <sup>1)</sup>	-25...50 °C	-25...55	-25...55	-25...55
Enclosed <sup>1)</sup>	-25...40 °C	-25...40	-25...40	-25...40
Temperature compensation	Continuous			
Mounting position	→ Page 6/28			
Weight	0.07 kg	0.15	0.25	1.64
Mechanical shock resistance half-sinusoidal shock, 10 ms to IEC 60068-2-27	g	10	10	10
Protection type	IP20	IP20	IP00	IP00
Protection against direct contact when actuated from front (EN 50274)	Finger- and back-of-hand proof			
<b>Main contacts</b>				
Rated impulse withstand voltage	U <sub>imp</sub>	V AC	6000	6000
Overvoltage category/pollution degree			III/3	III/3
Rated insulation voltage				
AC	U <sub>i</sub>	V AC	690	690
Rated operating voltage	U <sub>e</sub>	V AC	690	690
Safe isolation according to EN 61140				
Between auxiliary contacts and main contacts		V AC	300	440
Between the main contacts		V AC	300	440
Overload relay setting range		A	0.1...12	0.1...38
Temperature compensation residual error > 40 °C		%/K	≤ 0.25	≤ 0.25
Short-circuit protection rating maximum fuse			→ Page 6/6	→ Page 6/8
Current heat loss (3 conductors)				→ Page 6/10
Lower value of setting range		W	2.5	2.5
Upper value of setting range		W	6	6
Terminal capacity				
Solid		mm <sup>2</sup>	2 x (0.75 - 2.5)	2 x (1 - 6) <sup>5)</sup>
Flexible with ferrule		mm <sup>2</sup>	2 x (0.5 - 1.5)	2 x (1 - 4) <sup>5)</sup> 2 x (1 - 6) <sup>3)</sup>
Stranded		mm <sup>2</sup>	–	–
Solid or stranded		AWG	18 - 14	14 - 8 <sup>5)</sup>
Busbar	Width	mm	–	–
Terminal screw			M3.5	M4
Tightening torque		Nm	1.2	1.8 <sup>5)</sup>
Tools				
Pozidriv screwdriver		Size	2	2
Flat-blade screwdriver		mm	0.8 x 5.5	1 x 6
Hexagon socket	SW	mm	–	–

**Notes**<sup>1)</sup> Ambient temperature: Operating range to IEC/EN 60947, PTB: -5°C to +55°C<sup>2)</sup> Use identical cross-section when using two conductors<sup>3)</sup> 6 mm flexible with ferrules to DIN 46228<sup>4)</sup> With ZB65-XEZ max 1 x (1... 16)<sup>5)</sup> ZB32-38: solid and flexible with ferrule, 2.5 - 25 mm<sup>2</sup>, 3 Nm tightening torque.

AWG10-b, 27 lb-in tightening torque for solid or stranded conductors.

	Z5-.../FF225A(250)	ZW7
<b>General</b>		
Standards	IEC/EN 60947, VDE 0660, UL, CSA	IEC/EN 60947, VDE 0660, UL, CSA
Climatic proofing	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30	
Ambient temperature		
Open <sup>1)</sup>	°C	-25...50
Enclosed <sup>1)</sup>	°C	-25...40
Temperature compensation	Continuous	Continuous
Mounting position	→ Page 6/28	Any
Weight	kg	1.55
Mechanical shock resistance half-sinusoidal shock, 10 ms to IEC 60068-2-27	g	10
Protection type		IP00
Protection against direct contact when actuated from front (EN 50274)		With terminal cover
<b>Main contacts</b>		
Rated impulse withstand voltage	U <sub>imp</sub>	V AC 8000
Oversupply category/pollution degree		III/3
Rated insulation voltage		
AC	U <sub>i</sub>	V AC 1000
Rated operating voltage	U <sub>e</sub>	V AC 1000
Safe isolation according to EN 61140		
Between auxiliary contacts and main contacts		V AC 440
Between the main contacts		V AC 440
Overload relay setting range	A	50...300
Temperature compensation residual error > 40 °C	%/K	≤ 0.25
Short-circuit protection rating maximum fuse		→ Page 6/12
Current heat loss (3 conductors)		
Lower value of setting range	W	16
Upper value of setting range	W	28
Terminal capacity		
Flexible with ferrule	mm <sup>2</sup>	95
Stranded with ferrule	mm <sup>2</sup>	120
Solid or stranded	AWG	250 MCM
Flat conductor.	Number of segments x width x thickness	mm 6 x 16 x 0.8 <sup>2)</sup>
Busbar	Width	mm 20 x 3
Push-through opening	Ø	mm –
Terminal screw		M8 x 25
Tightening torque	Nm	24
Tools		
Hexagonal socket	SW	mm 13

**Notes**<sup>1)</sup> Ambient temperature: Operating range to IEC/EN 60947, PTB: -5°C to +50°C<sup>2)</sup> Fixing with box terminals

	ZE	ZB12, ZB32	ZB65	ZB150(KK)	Z5.../FF225 Z5.../FF250	ZW7
<b>Auxiliary and control circuits</b>						
Rated impulse withstand voltage	U <sub>imp</sub> V	6000	6000	6000	6000	6000
Overvoltage category/Pollution degree		III/3	III/3	III/3	III/3	III/3
Terminal capacity						
Solid	mm <sup>2</sup>	2 x (0.75 - 2.5)	2 x (0.75 - 4)			
Flexible with ferrule	mm <sup>2</sup>	2 x (0.5 - 1.5)	2 x (0.75 - 2.5)			
Solid or stranded	AWG	2 x (18 - 12)	2 x (18 - 12)	2 x (18 - 12)	2 x (18 - 12)	2 x (18 - 12)
Terminal screw		M3.5	M3.5	M3.5	M3.5	M3.5
Tightening torque	Nm	0.8 - 1.2	0.8 - 1.2	0.8 - 1.2	0.8 - 1.2	0.8 - 1.2
Tools						
Pozidriv screwdriver	Size	2	2	2	2	2
Flat-blade screwdriver	mm	0.8 x 5.5	1 x 6	1 x 6	1 x 6	1 x 6
Auxiliary circuit rated insulation voltage	U <sub>i</sub> V AC	690	500	500	500	500
Rated operating voltage	U <sub>e</sub> V AC	500	500	500	500	500
Safe isolation according to EN 61140						
Between the auxiliary contacts	V AC	300	240	240	240	240
Conventional thermal current	I <sub>th</sub> A	6	6	6	6	6
Rated operational current						
AC-15						
N/O						
120 V	I <sub>e</sub> A	1.5	1.5	1.5	1.5	1.5
240 V	I <sub>e</sub> A	1.5	1.5	1.5	1.5	1.5
415 V	I <sub>e</sub> A	0.5	0.5	0.5	0.5	0.5
500 V	I <sub>e</sub> A	0.3	0.5	0.5	0.5	0.5
NC						
120 V	I <sub>e</sub> A	1.5	1.5	1.5	1.5	1.5
240 V	I <sub>e</sub> A	1.5	1.5	1.5	1.5	1.5
415 V	I <sub>e</sub> A	0.7	0.9	0.9	0.9	0.9
500 V	I <sub>e</sub> A	0.5	0.8	0.8	0.8	0.8
DC-13 L/R ≤ 15 ms <sup>1)</sup>						
24 V	I <sub>e</sub> A	0.9	0.9	0.9	0.9	0.9
60 V	I <sub>e</sub> A	0.75	0.75 <sup>3)</sup>	0.75 <sup>3)</sup>	0.75 <sup>3)</sup>	0.75 <sup>3)</sup>
110 V	I <sub>e</sub> A	0.4	0.4	0.4	0.4	0.4
220 V	I <sub>e</sub> A	0.2	0.2	0.2	0.2	0.2
General Use						
AC operated	V	240 600	—	—	—	—
AC operated	A	1.5 0.6	—	—	—	—
DC operated	V	—	—	—	—	—
DC operated	A	—	—	—	—	—
Pilot Duty						
AC operated		D300	B300 <sup>4)</sup> B600 <sup>5)</sup>	B300 <sup>4)</sup> B600 <sup>5)</sup>	B300 <sup>4)</sup> B600 <sup>5)</sup>	B300 <sup>4)</sup> B600 <sup>5)</sup>
DC operated		R300	R300	R300	R300	R300
Short-circuit rating without welding						
Max. fuse <sup>2)</sup>	A gG/gL	4	6	6	6	6

**Notes**<sup>1)</sup> Making and breaking conditions to DC-13, time constant as stated<sup>2)</sup> See transparent overlay "Fuses" for time/current characteristics (please enquire)<sup>3)</sup> Rated operational current DC-13, 60 V: N/O auxiliary contact 0.6 A<sup>4)</sup> With opposite polarity<sup>5)</sup> With same polarity

## ZEB

	ZEB12, ZEB32	ZEB65-45	ZEB65-100	ZEB150
<b>General</b>				
Standards	IEC/EN 60947, VDE 0660, UL, CSA			
Climatic proofing	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30			
Ambient temperature				
Open	°C -25...65	-25...65	-25...65	-25...65
Enclosed	°C -25...65	-25...40	-25...40	-25...40
Temperature compensation	Continuous	Continuous	Continuous	Continuous
Mounting position	Any	Any	Any	Any
Mechanical shock resistance half-sinusoidal shock, 10 ms to IEC 60068-2-27	g 15	15	15	15
Protection type	IP20	IP20	IP20	IP20
Protection against direct contact when actuated from front (EN 50274)	Finger- and back-of-hand proof			
<b>Main contacts</b>				
Rated impulse withstand voltage	U <sub>imp</sub> V AC 6000	6000	6000	6000
Overvoltage category/pollution degree	III / 3	III / 3	III / 3	III / 3
Rated insulation voltage				
AC	U <sub>i</sub> V AC 690	690	690	690
Rated operating voltage	U <sub>e</sub> V AC 690	690	690	690
Safe isolation according to EN 61140				
Between auxiliary contacts and main contacts	V AC 600	600	600	600
Between the main contacts	V AC 600	600	600	600
Overload relay setting range	A 0.3...45	9...45	20...100	20...100
Terminal capacity				
Solid	mm <sup>2</sup> 1 x 2.5 - 16	1 x 2.5 - 16	1 x 6 - 50	1 x 6 - 50
Solid or stranded	AWG 1 x 14 - 4	1 x 14 - 4	1 x 10 - 1	1 x 10 - 1
<b>Auxiliary and control circuits</b>				
Rated impulse withstand voltage	U <sub>imp</sub> V 6000	6000	6000	6000
Overvoltage category/pollution degree	III / 3	III / 3	III / 3	III / 3
Terminal capacity				
Solid	mm <sup>2</sup> 2 x (0.75 - 4)	2 x (0.75 - 4)	2 x (0.75 - 4)	2 x (0.75 - 4)
Flexible with ferrule	mm <sup>2</sup> 2 x (0.75 - 2.5)	2 x (0.75 - 2.5)	2 x (0.75 - 2.5)	2 x (0.75 - 2.5)
Solid or stranded	AWG 2 x (18 - 12)	2 x (18 - 12)	2 x (18 - 12)	2 x (18 - 12)
Terminal screw		M3.5	M3.5	M3.5
Tightening torque		Nm 0.8 - 1.2	0.8 - 1.2	0.8 - 1.2
		lb-in 7 - 10.6	7 - 10.6	7 - 10.6
Tools				
Pozidriv screwdriver		Size 2	2	2
Flat-blade screwdriver		mm 1 x 6	1 x 6	1 x 6
Auxiliary circuit rated insulation voltage	U <sub>i</sub> V AC 500	500	500	500
Rated operating voltage	U <sub>e</sub> V AC 500	500	500	500
Safe isolation according to EN 61140				
Between the auxiliary contacts	V AC 240	240	240	240
Conventional thermal current	I <sub>th</sub> A 5	5	5	5
Rated operational current				
AC-15				
N/O				
120 V	I <sub>e</sub> A 1.5	1.5	1.5	1.5
240 V	I <sub>e</sub> A 1.5	1.5	1.5	1.5
415 V	I <sub>e</sub> A 0.5	0.5	0.5	0.5
500 V	I <sub>e</sub> A 0.5	0.5	0.5	0.5
NC				
120 V	I <sub>e</sub> A 1.5	1.5	1.5	1.5
240 V	I <sub>e</sub> A 1.5	1.5	1.5	1.5
415 V	I <sub>e</sub> A 0.9	0.9	0.9	0.9
500 V	I <sub>e</sub> A 0.8	0.8	0.8	0.8
DC-13 L/R ≤ 15 ms				
24 V	I <sub>e</sub> A 0.9	0.9	0.9	0.9
60 V	I <sub>e</sub> A 0.75	0.75	0.75	0.75
110 V	I <sub>e</sub> A 0	0.4	0.4	0.4
220 V	I <sub>e</sub> A 0.2	0.2	0.2	0.2
Short-circuit rating without welding				
Max. fuse	A gG/gL 6	6	6	6



## ZEV

ZEV			
<b>General</b>			
Standards			IEC/EN 60947, VDE 0660, UL, CSA
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature	Open <sup>1)</sup>	°C	-25...60 <sup>8)</sup>
	Enclosed <sup>1)</sup>	°C	-25...40 <sup>8)</sup>
	Storage	°C	-40 - 80
Temperature compensation			Continuous
Mounting position		kg	Any
Weight		g	0.257
Shock resistance half-sinusoidal shock 10 ms to IEC 60068-2-27		g	15
Protection type			IP20
Protection against direct contact when actuated from front (EN 50274)			Finger- and back-of-hand proof
<b>Main contacts</b>			
Overload relay setting range		A	1...820 <sup>7)</sup>
Temperature compensation residual error > 40 °C		%/K	-
Short-circuit protection rating maximum fuse <sup>3)</sup>			With overload relay in conjunction with a transformer as required for contactor
Tools	Pozidriv screwdriver	Size	1
	Flat-blade screwdriver	mm	0.8 x 5.5
<b>Auxiliary and control circuits</b>			
Rated impulse withstand voltage	$U_{imp}$	V	4000
Overvoltage category/pollution degree			III/3
Terminal capacities	Solid	mm <sup>2</sup>	1 x (0.5 - 2.5) 2 x (0.5 - 1.5) <sup>4)</sup>
	Flexible with ferrule	mm <sup>2</sup>	1 x (0.5 - 2.5) 2 x (0.5 - 1.5) <sup>4)</sup>
	Solid or stranded	AWG	1 x (18 - 14)
Terminal screw			M3.5
Tightening torque		Nm	0.8
Tools	Pozidriv screwdriver	Size	1
	Flat-blade screwdriver	mm	0.8 x 5.5
Auxiliary circuit rated insulation voltage	$U_i$	V AC	250
Rated operating voltage	$U_e$	V AC	240
Safe isolation according to EN 61140	Between the auxiliary contacts	V AC	240 <sup>5)</sup>
Conventional thermal current	$I_{th}$	A	6
Rated operational current			
AC-15 N/O	120 V	$I_e$	3 <sup>6)</sup>
	240 V	$I_e$	3 <sup>6)</sup>
	415 V	$I_e$	-
	500 V	$I_e$	-
NC	120 V	$I_e$	3
	240 V	$I_e$	3
	415 V	$I_e$	-
	500 V	$I_e$	-
DC-13 L/R ≤ 15 ms <sup>2)</sup>	24 V	$I_e$	1
	60 V	$I_e$	-
	110 V	$I_e$	-
	220 V	$I_e$	-
Power consumption	$P_{max.}$	W	2.5
Short-circuit rating without welding	Max. fuse <sup>3)</sup>	A gG/gL	6
Voltage tolerance	AC operated	$\times U_c$	0.85...1.1
	DC operated	$\times U_c$	0.85...1.1
<b>Thermistor protection</b>			
Total resistance (cold)		Ω	1500
Response value		Ω	2720...3680
Reset range		Ω	1500...1650
Reset time	Overload		→ Page 6/23
	Thermistor tripping		5 K under response temperature
	Ground fault protection		Immediate

**Notes**

- <sup>1)</sup> Ambient air temperature: open and enclosed operating range to IEC/EN 60947, PTB: -5°C to +50°C
- <sup>2)</sup> Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated
- <sup>3)</sup> See overlay "Fuses" for short-circuit rating time/current characteristic (please enquire)
- <sup>4)</sup> Terminal capacities auxiliary and control circuits, solid, flexible with ferrules: With connection of 2 conductors only the following combinations are permissible: 0.5 and 0.75 mm<sup>2</sup>, 0.75 and 1 mm<sup>2</sup>, 1 and 1.5 mm<sup>2</sup>
- <sup>5)</sup> Safe isolation: Up to 240 V depending on contact assignment between mains and outputs no potential isolation to thermistor and summation current transformer input and current sensor (neighbouring contacts:  $U_s = 127$  V)
- <sup>6)</sup> Rated operational current AC-15: contacts 95/96 and 97/98 3 A (contactor control), contacts 05/06 and 07/08 1.5 A (auxiliary contacts)
- <sup>7)</sup> Overload relay main contact setting range: setting range dependant on current sensor
- <sup>8)</sup> Main contacts terminal capacity solid and stranded conductors with ferrules: When using 2 conductors use identical cross-section  
Ambient temperature open and enclosed: limited readability of the LCD display at < -15°C

ZEV

	ZEV-XSW-25	ZEV-XSW-65	ZEV-XSW-145	ZEV-XSW-820
<b>General</b>				
Standards	IEC/EN 60947, VDE 0660, UL, CSA			
Climatic proofing	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30			
Ambient temperature <sup>1)</sup>				
Open	-25...60 °C	-25...60	-25...60	-25...60
Enclosed	-25...40 °C	-25...40	-25...40	-25...40
Storage	-40 - 80 °C	-40 - 80	-40 - 80	-40 - 80
Temperature compensation	Continuous	Continuous	Continuous	Continuous
Mounting position	Any	Any	Any	Any
Weight	0.23 kg	0.4	0.45	0.14
Mechanical shock resistance half-sinusoidal shock, 10 ms to IEC 60068-2-27	15 g	15	15	15
Protection type	IP20	IP20	IP20	IP20
Protection against direct contact when actuated from front (EN 50274)	Finger- and back-of-hand proof			
<b>Main contacts</b>				
Rated impulse withstand voltage	U <sub>imp</sub> V	2)	2)	2)
Overvoltage category/pollution degree		2)	2)	2)
Rated insulation voltage				
AC	U <sub>i</sub> V AC	2)	2)	2)
Rated operational voltage	U <sub>e</sub> V AC	2)	2)	2)
Safe isolation according to EN 61140				
Between busbar and sensor	V AC	–	–	–
Overload relay setting range				
Min. overload relay setting range	A	1	3	10
Max. overload relay setting range	A	25	65	145
Short-circuit protection rating maximum fuse		With overload relay in conjunction with a transformer as required for contactor		
Diameter	Ø mm	6	13	21
<b>Notes</b>	<sup>1)</sup> Operating range to IEC/EN 60947, PTB: -5°C to +50°C <sup>2)</sup> The main current parameters are defined by the main current wiring which is used.			



## EMT6

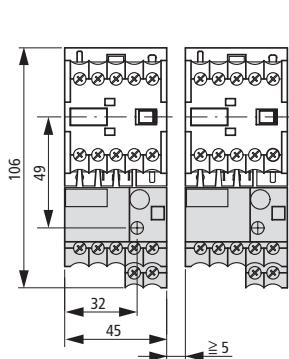
	EMT6		
<b>General</b>			
Standards	IEC/EN 60947, VDE 0660, EN 55011		
Climatic proofing	Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30		
Ambient temperature			
Open	°C		
Enclosed	°C		
Storage	°C		
Mounting position	Any		
Weight	kg		
Shock resistance half-sinusoidal shock 10 ms to IEC 60068-2-27	g		
Protection type	IP20		
Protection against direct contact when actuated from front (EN 50274)	Finger- and back-of-hand proof		
Safe isolation according to EN 61140			
Between the contacts	V AC	250	
Between contacts and supply voltage	V AC	250	
<b>Auxiliary and control circuits</b>			
Rated impulse withstand voltage	U <sub>imp</sub>	V AC	6000
Overvoltage category/pollution degree			III/3
Auxiliary and control circuit terminal capacity			
Solid		mm <sup>2</sup>	1 x 2.5 2 x (0.5 - 1.5)
Flexible with ferrule		mm <sup>2</sup>	1 x 2.5 2 x (0.5 - 1.5)
Solid or stranded		AWG	20 - 14
Terminal screw			M3.5
Tightening torque		Nm	1.2
Tools			
Pozidriv screwdriver		Size	2
Flat-blade screwdriver		mm	1 x 6
<b>Auxiliary circuit</b>			
Rated insulation voltage	U <sub>i</sub>	V	400
Rated operational current			
AC-14			
N/O			
415 V	I <sub>e</sub>	A	3
NC			
415 V	I <sub>e</sub>	A	3
AC-15			
N/O			
240 V	I <sub>e</sub>	A	3
415 V	I <sub>e</sub>	A	1
NC			
240 V	I <sub>e</sub>	A	3
415 V	I <sub>e</sub>	A	1
Max. short-circuit protective device		gG/gL	A
Fuse		gG/gL	6
<b>Control circuit</b>			
Rated insulation voltage	U <sub>i</sub>	V	240
Rated operational voltage	U <sub>e</sub>	V	240 <sup>1)</sup>
Voltage tolerance		x U <sub>e</sub>	0.85 - 1.1
Power consumption			
AC		VA	3.5
DC		W	2
Trip at approx.		Ω	≥3600
Reset at approx.		Ω	≤1600

**Notes**<sup>1)</sup> EMT6(-DB)230V: U<sub>e</sub> = 230 V

## Dimensions

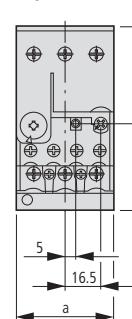
### Overload relays

ZE-...

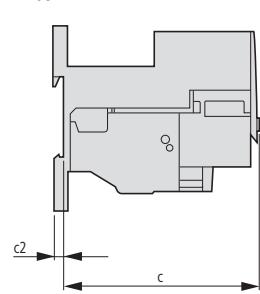


### Base

ZB32-XEZ

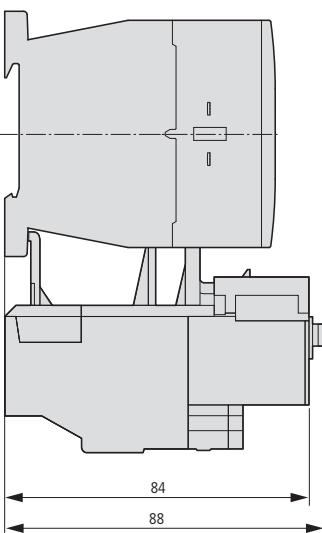
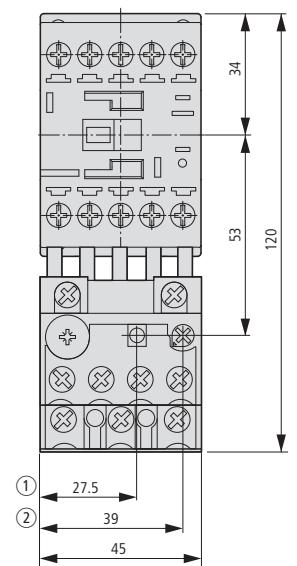


ZB65-XEZ

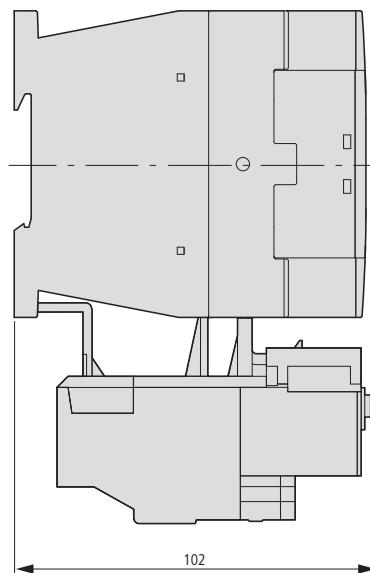
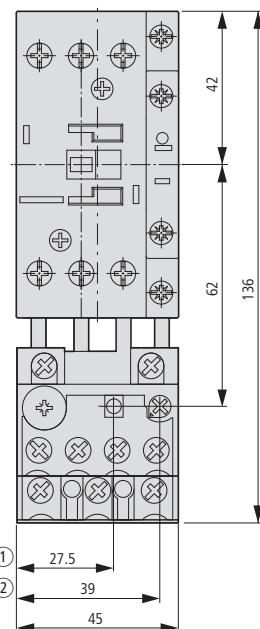


	ZB32	ZB65
a	45	60
b	85	86
c	90.5	112
c2	3.8	4.7
a1	35	50
b1	75	75
b2	40.5	47
d	M4	M5

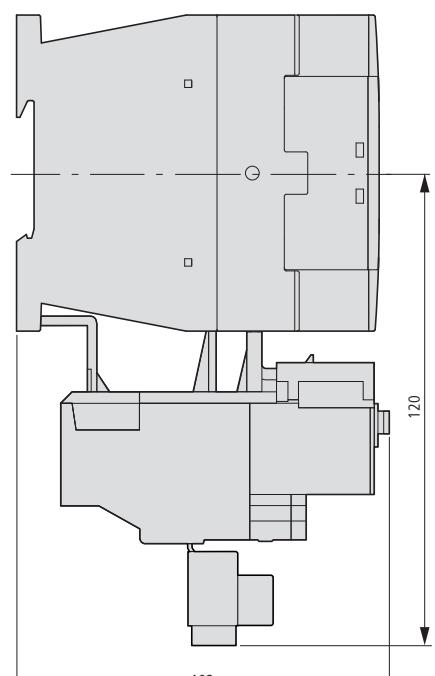
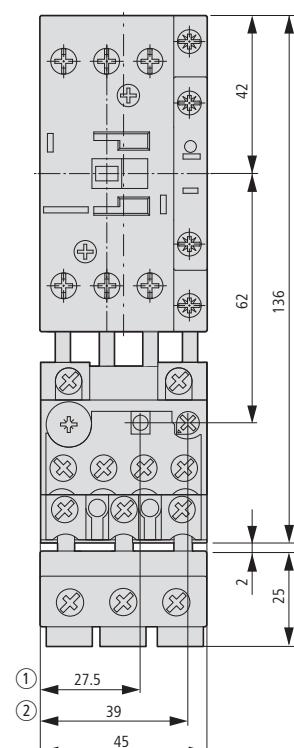
ZB2



ZB32



ZB32-38

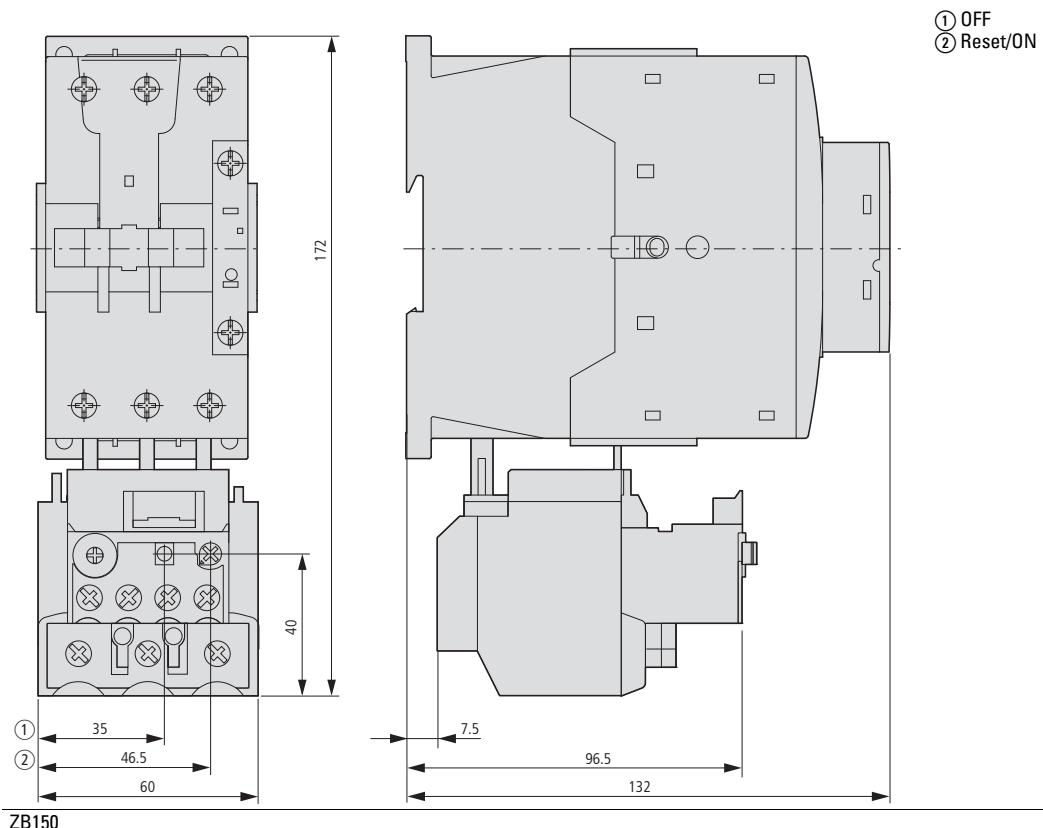


- (1) OFF  
(2) Reset/ON

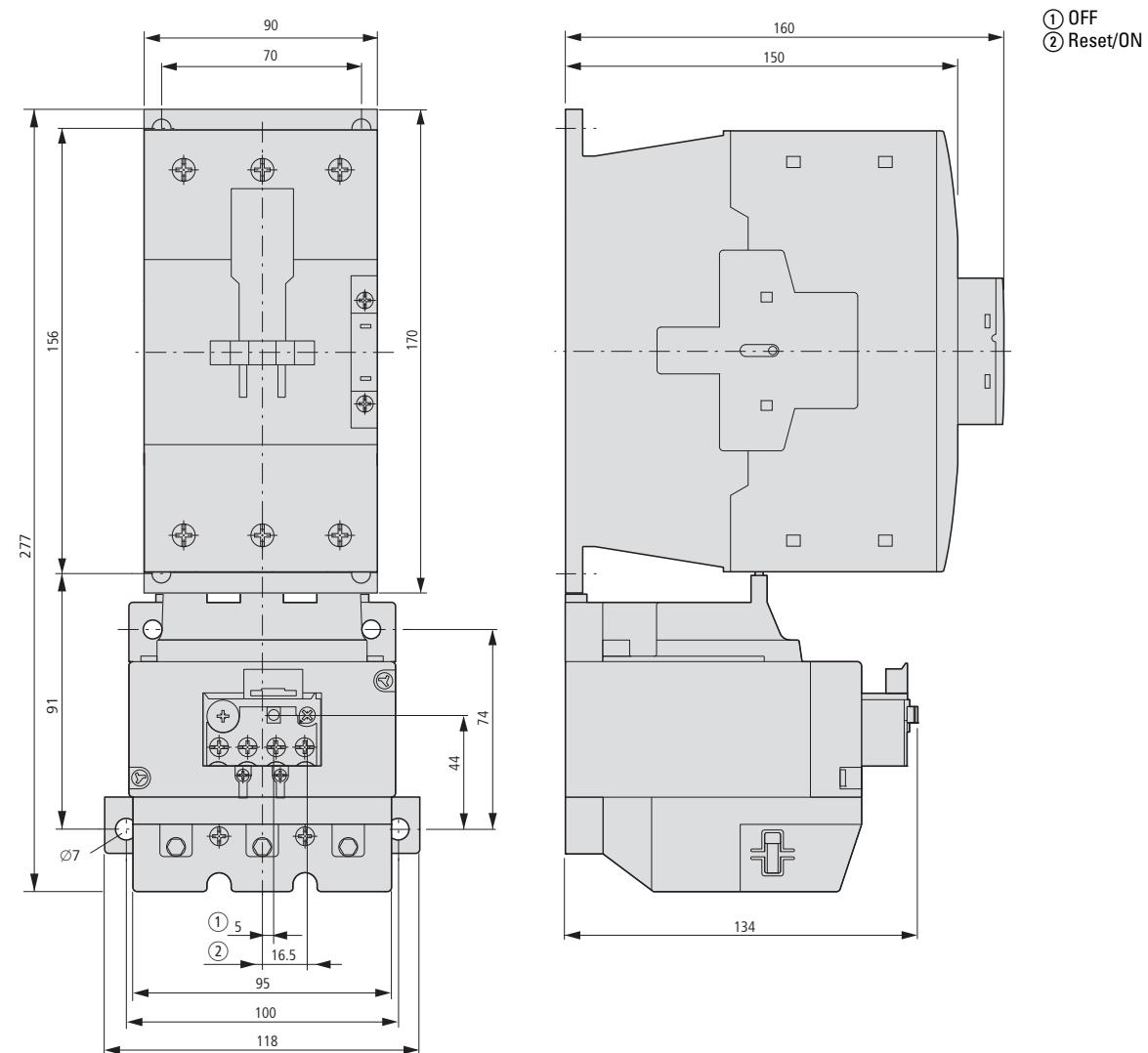


## Overload relays

ZB65

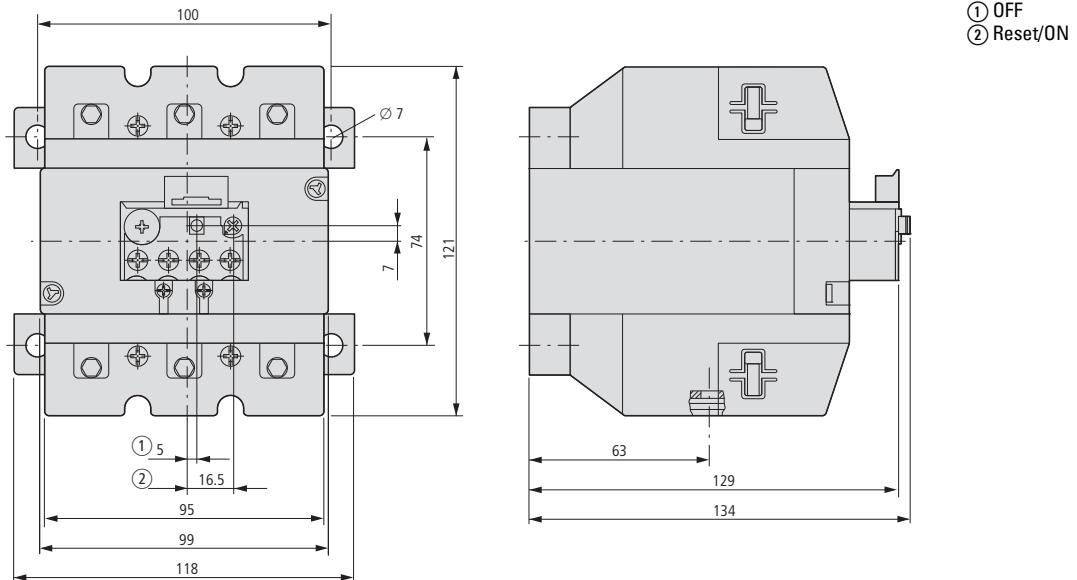


ZB150

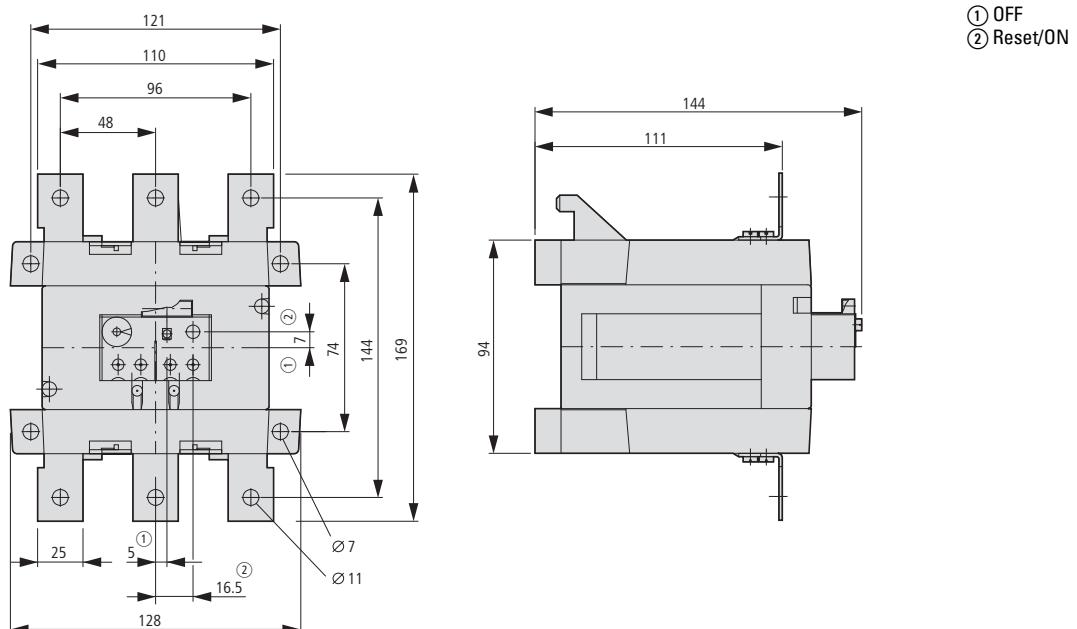


**Overload relays**

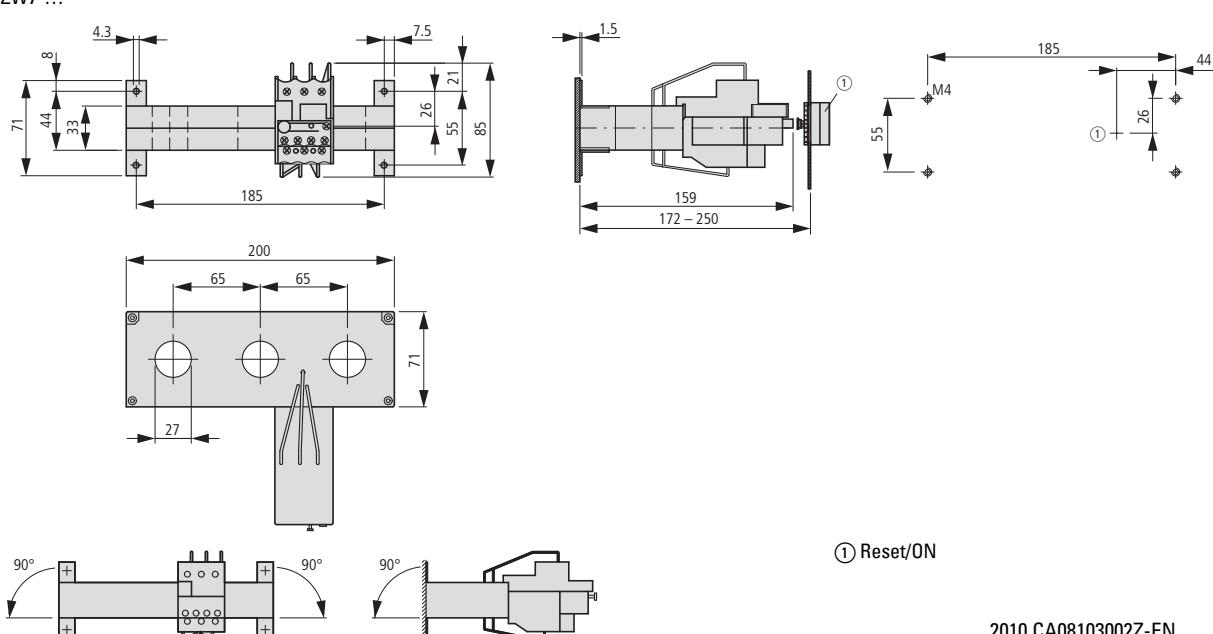
ZB150-50/KK

**Z5 overload relays greater than 150A**

Z5-.../FF250

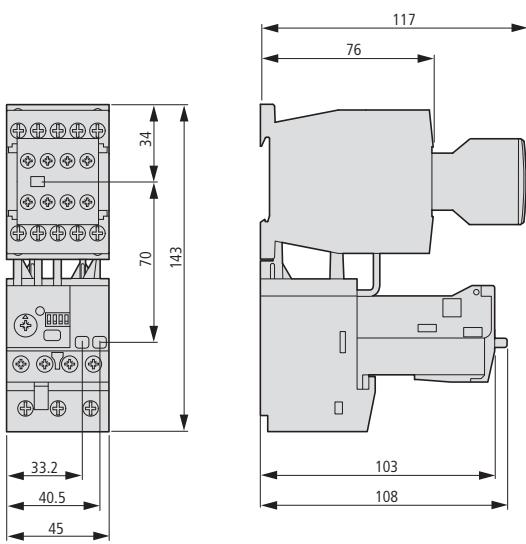
**Current transformer-operated overload relays**

ZW7...

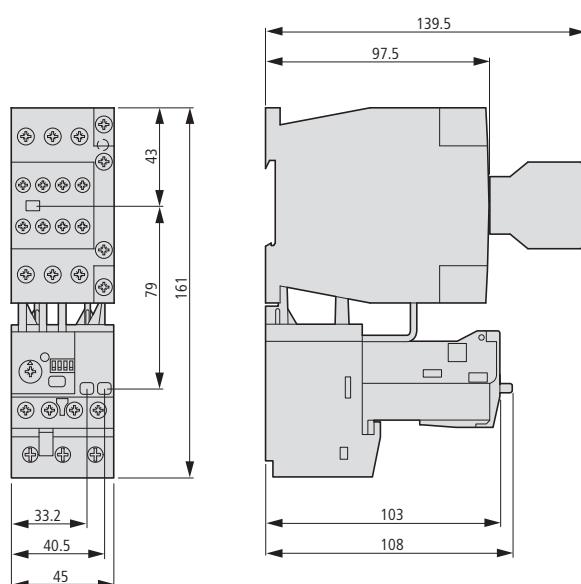


## Electronic overload relays

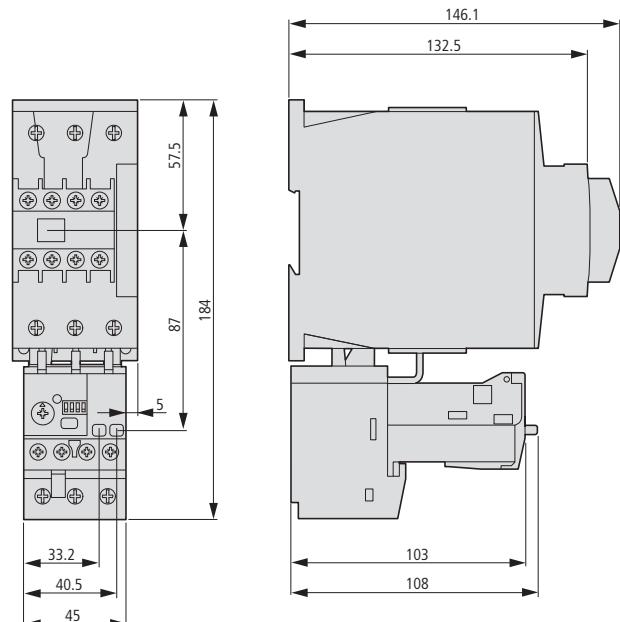
ZEB12



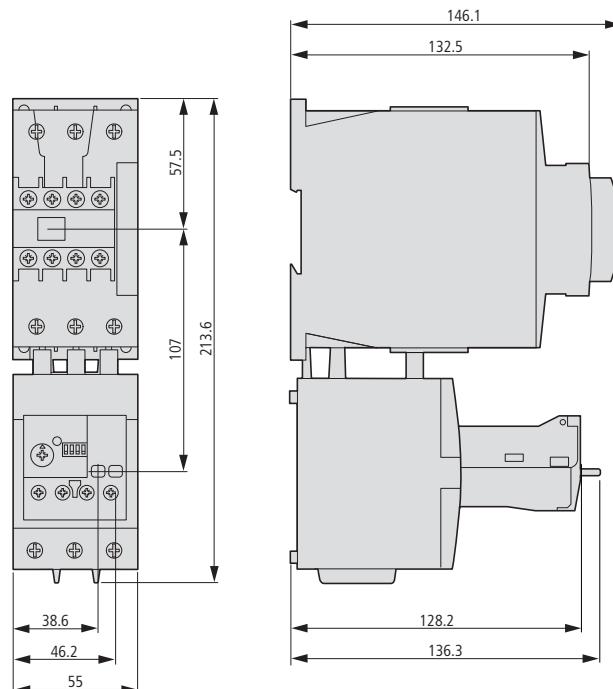
ZEB32



ZEB65-45

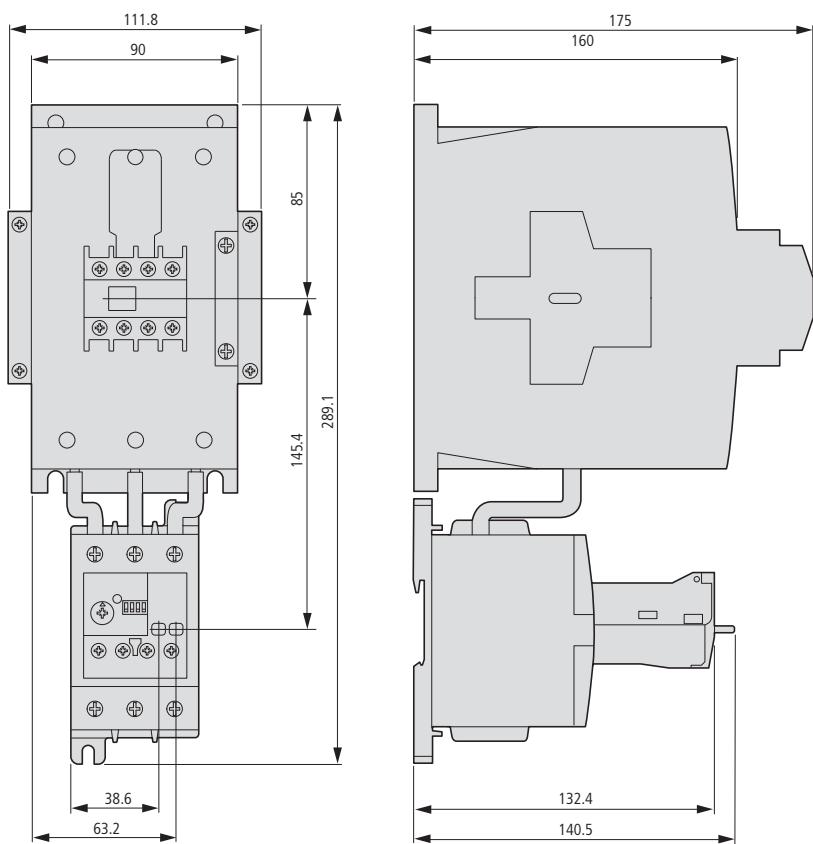


ZEB65-100

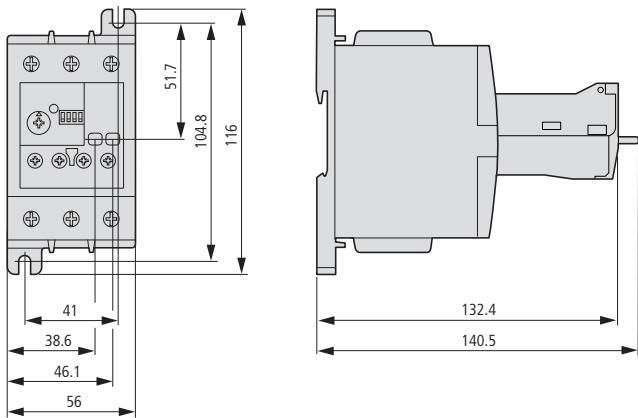


**Electronic overload relays**

ZEB150-100

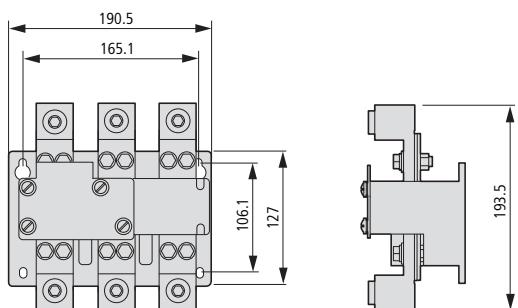


ZEB150-100/KK

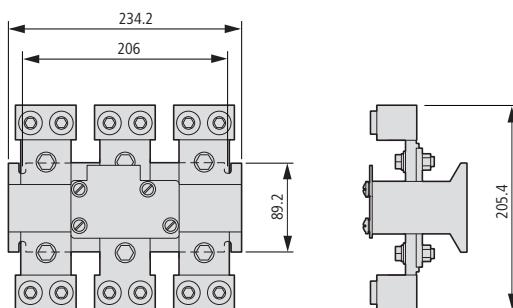


**Current sensors**

ZEB-XCT300

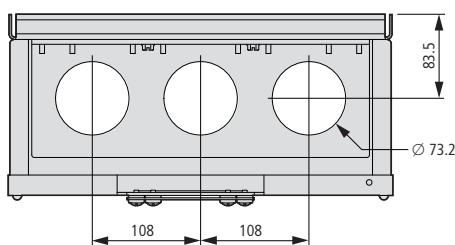
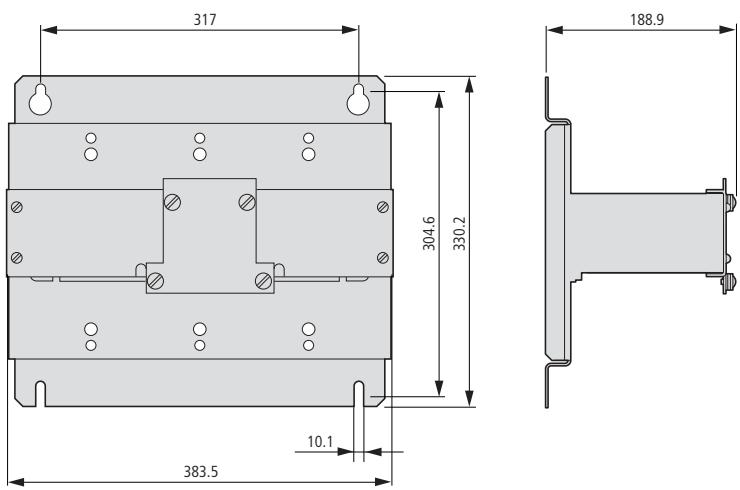


ZEB-XCT600

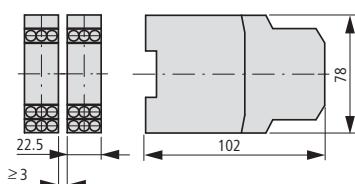


ZEB-XCT1000

ZEB-XCT1500

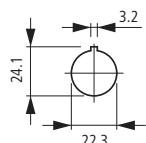
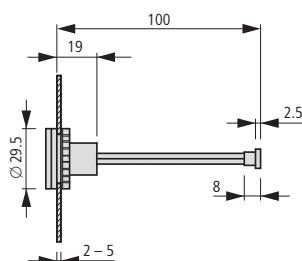
**EMT6 thermistor overload relays for machine protection**

EMT6...

**External reset button**

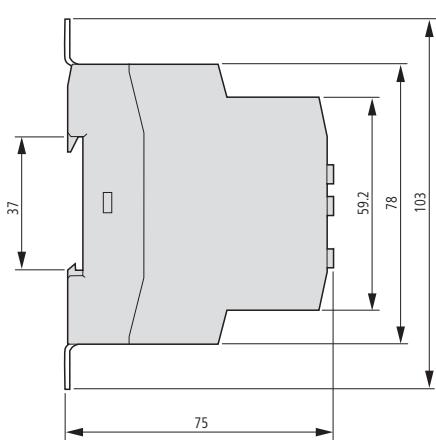
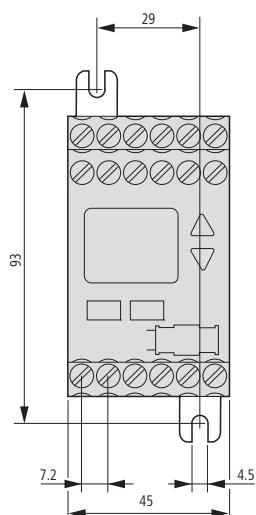
M22-DZ-B

M22-DZ-X

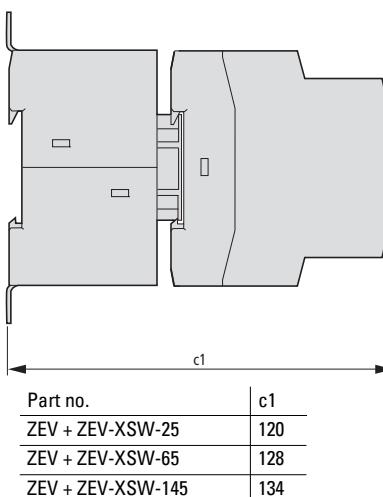


**Electronic overload relays**

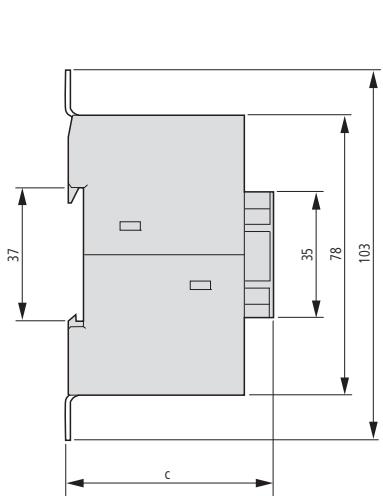
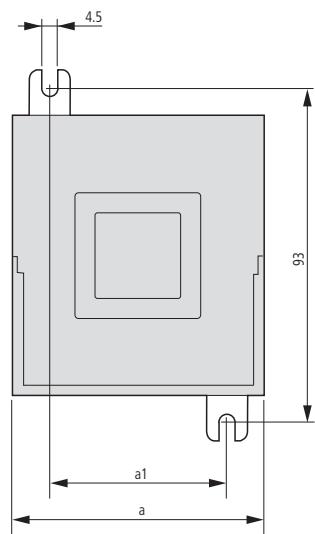
ZEV

**Electronic overload relays**

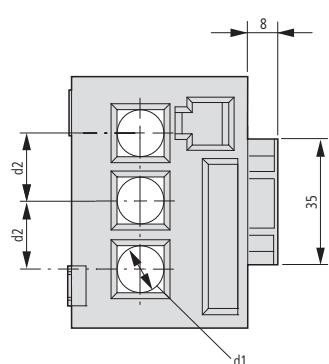
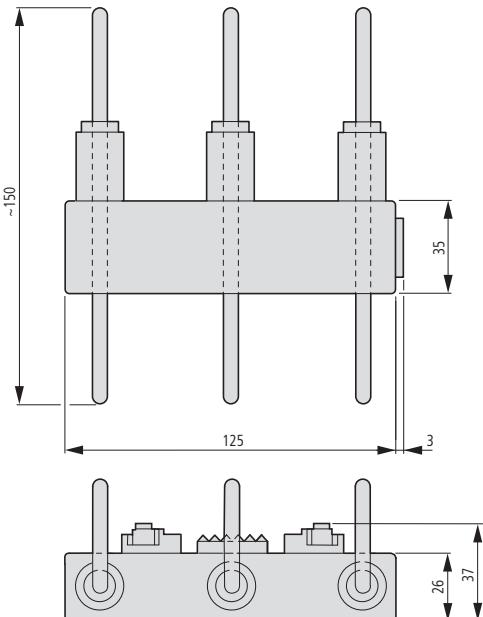
ZEV + ZEV-XSW...

**Current sensors**

ZEV-XSW...



ZEV-XSW-820



Part no.	a	a1	c	d1	d2
ZEV + ZEV-XSW-25	45	24	50	6	11.2
ZEV + ZEV-XSW-65	70	49	58	13	19
ZEV + ZEV-XSW-145	90	68	65	21	26

**Core-balance transformers**

SSW...

Part no.	a	a1	a2	b	b1	c	d	e
SSW40...	64	50	38	100	80	86	4.5	40
SSW65...	75	60	43	124	100	112	4.5	65
SSW120...	86.5	70	54.5	200	170	205	4.5	120

