

Z, ZW and ZEV Overload Relays

Technical Data

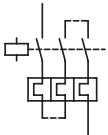
Features

	ZE	Z00 Z1	Z5	ZW7	ZEV	PTB certificate no.
Phase-failure sensitivity	●	●	●	●	●	ZE 3.53/380.793
Temperature compensation	●	●	●	●	●	Z00 3.53-12759/96
Auxiliary contacts 1 N.O. + 1 N.C.	●	●	●	●	●	Z1 3.53-12757/96
Test-/Off button	●	●	●	●	●	Z5 3.53-23022/94
Reset button Hand/Auto	●	●	●	●	●	ZEV Please enquire
Separate mounting	-	●	●	●	●	EMT6 3.53-14606/96
Protection of EEx e motors (PTB)	●	●	●	●	Please inquire	
Protection during severe starting duty	-	-	-	●	●	
Trip-free release	●	●	●	●	●	
Trip indication	-	●	●	●	●	

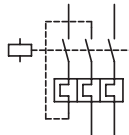
● Standard feature

Protection of DC motors:

1-pole

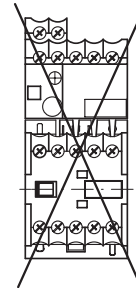
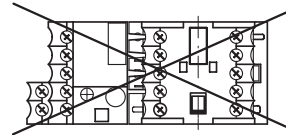


2-pole

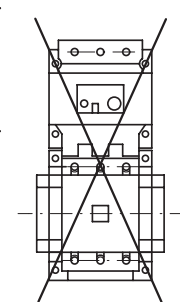


Mounting position:

ZE



Z00
Z1
Z5



Z Thermal Overload Relays

Technical Data

			ZE	Z00	Z1 (Z1-75)	Z5-.../K3	Z5-.../K4	
General technical data								
Standards			UL, CSA, IEC/EN 60 947, VDE 0660					
Climatic proofing			Damp heat, constant, to IEC 60 068-2-3 Damp heat, cyclical, to IEC 60 068-2-30					
Ambient temperature	Open	Min./Max.	°C	-25/50 ¹⁾	-25/50 ¹⁾	-25/50 ¹⁾	-25/50 ¹⁾	-25/50 ¹⁾
	Enclosed			-25/40 ¹⁾	-25/40 ¹⁾	-25/40 ¹⁾	-25/40 ¹⁾	-25/40 ¹⁾
Storage temperature			°C	-	-	-	-	-
Temperature compensation				Continuous				
Dimensions			Page	04/024	04/024	04/024	04/024	04/024
Mounting position			Page	04/019	04/019	04/019	04/019	04/019
Weight			kg	0.07	0.13	0.21	1.3 (/SK3)	1.41 (/SK4)
			kg	-	-	(0.34)	1.44 (/KK3)	1.64 (/KK4)
Mechanical shock resistance (half-sinusoidal shock)			g/ms	10/10	10/10	10/10	10/10	10/10
Degree of protection				IP20	IP00	IP00	IP00	IP00
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)				Finger and back-of-hand proof				
Main power paths								
Rated impulse withstand voltage U_{imp}			V	6000	6000	6000	8000	8000
Overvoltage category/pollution degree				III/3	III/3	III/3	III/3	III/3
Rated insulation voltage U_i			V AC	690	690	690	1000	1000
Rated operational voltage $U_e / (IEC)/(UL/CSA)$			V AC	690/600	690/600	690/600	1000/600	1000/600
Safe isolation to IEC 536								
Between the main contacts and the auxiliary contacts as well as between the main contacts			V AC	300	440	440	440	440
Current setting			A	0.1 – 12	0.1 – 24	6 – 75	25 – 100	35 – 142
Short-circuit protection								
Max. fuse			Page	04/004	04/004	04/006	04/006	04/006
Current heat loss (3 current paths)								
Lower value of the setting range			W	2.5	2.5	3 (7)	< 16	< 16
Maximum setting			W	6	6	7.5 (10)	< 28	< 28
Terminal capacity								
Solid			mm ²	2 × (0.75 – 2.5)	2 × (1 – 6)	2 × (1 – 16) ²⁾	16	16
Flexible without ferrule			mm ²	-	-	-	50	70
Flexible with ferrule			mm ²	2 × (0.5 – 1.5)	2 × (1 – 6)	1 × 25 2 × (1 – 10) ²⁾	50	70
Stranded			mm ²	-	-	-	50	70
Flexible with cable lug			mm ²	-	-	-	-	-
Stranded with cable lug			mm ²	-	-	-	-	-
Solid or stranded			AWG	18 – 14	14 – 8	14 – 2	2	2/0
Flat conductor ³⁾			mm	-	-	-	6 × 9 × 0.8	6 × 16 × 0.8
Busbar			mm	-	-	-	-	-
Terminal screws				M3.5	M4	M6	M8	M10
Pozidriv screwdriver			Size	2	2	2	-	-
Standard screwdriver			mm	0.8 × 5.5	1 × 6	1 × 6	-	-
Hexagon socket head wrench			SW	mm	-	-	4	5
Hexagon head wrench			SW	mm	-	-	-	-
Tightening torque			Nm	1.2	1.8	3.5	6	10

Notes

- 1) Operating range to IEC/EN 60 947, PTB: 5 °C to +50 °C
- 2) When using two conductors, use equal cross-sections
- 3) Z5-.../FF250: Secure using box terminal
- 4) Limited legibility of the LCD display at < -15 °C
- 5) Setting range dependent on current sensor
- 6) The power circuit data for these devices is defined by the type of power conductors being used.

Z Thermal Overload Relays

Technical Data

Z5-.../FF250	ZW7	ZEV	ZEV-XSW-25	ZEV-XSW-65	ZEV-XSW-145	ZEV-XSW-820
UL, CSA, IEC/EN 60 947, VDE 0660						
Damp heat, constant, to IEC 60 068-2-3						
Damp heat, cyclical, to IEC 60 068-2-30						
-25/50 ¹⁾	-25/50 ¹⁾	-25/60 ⁴⁾	-25/60 ¹⁾	-25/60 ¹⁾	-25/60 ¹⁾	-25/60 ¹⁾
-25/40 ¹⁾	-25/40 ¹⁾	-25/40 ⁴⁾	-25/40 ¹⁾	-25/40 ¹⁾	-25/40 ¹⁾	-25/40 ¹⁾
-	-	-40/80	-40/80	-40/80	-40/80	-40/80
Continuous						
04/027	04/027	04/026	04/026	04/026	04/026	04/026
04/019	As required	As required	As required	As required	As required	As required
1.55	0.8	0.25	0.2	0.4	0.5	0.3
-	-	-	-	-	-	-
10/10	10/10	15/10	-	-	-	-
IP00	IP00	IP20	-	-	-	-
With terminal cover	Finger and back-of-hand proof					
8000	6000	-	- 6)	- 6)	- 6)	8000
III/3	III/3	-	- 6)	- 6)	- 6)	III/3
1000	690	-	- 6)	- 6)	- 6)	1000
1000/600	690/600	-	- 6)	- 6)	- 6)	1000/600
440	440	-	- 6)	- 6)	- 6)	-
50 – 250	40 – 540	1 – 820 ⁵⁾	1 – 25	2–65	10 – 145	40 – 820
04/006	For overload relay in conjunction with transformers As required for contactor					
< 16	3	-	-	-	-	-
< 28	10	-	-	-	-	-
-	∅ 27 mm	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
95	-	-	-	-	-	-
120	-	-	-	-	-	-
250 MCM	-	-	-	-	-	-
6 × 16 × 0.8	-	-	-	-	-	-
20 × 3	-	-	-	-	-	-
M8 × 25	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
13	-	-	-	-	-	-
10 – 14	-	-	-	-	-	-

Thermal Overload Relays,
Thermistor Overload Relays

Z Thermal Overload Relays

Technical Data

		ZE	Z00 Z 1 Z 5	ZW7	ZEV
Auxiliary and control circuits					
Rated impulse withstand voltage U_{imp}	V	6000	6000	6000	4000
Overvoltage category/pollution degree		III/3	III/3	III/3	III/3
Terminal capacity					
Solid	mm ²	2 × (0.75 – 2.5)	2 × (0.75 – 4)	2 × (0.75 – 4)	1 × (0.5 – 2.5) 2 × (0.5 – 1.5) ²⁾
Flexible with ferrule	mm ²	2 × (0.5 – 1.5)	2 × (0.75 – 2.5)	2 × (0.75 – 2.5)	1 × (0.5 – 2.5) 2 × (0.5 – 1.5) ²⁾
Solid or stranded	AWG	2 × (18 – 12)	2 × (18 – 12)	2 × (18 – 12)	2 × (18 – 14)
Terminal screws					
Pozidriv screwdriver	Size	2	2	2	1
Standard screwdriver	mm	0.8 × 5.5	1 × 6	1 × 6	0.8 × 5.5
Tightening torque	Nm	0.8 – 1.2	0.8 – 1.2	0.8 – 1.2	0.8
Rated insulation voltage U_i	V AC	690	500	500	250
Rated operational voltage U_e	V AC	500	500	500	240
Conventional thermal current I_{th}	A	6	6	6	6
Rated operational current I_e					
AC-15 make/break contacts					
120 V	A	–	–	–	3 ³⁾ /3
220/240 V	A	1.5/1.5	1.5/1.5	1.5/1.5	3 ³⁾ /3
380/415 V	A	0.5/0.7	0.5/0.9	0.5/0.9	–
500 V	A	0.3/0.5	0.5/0.8	0.5/0.8	–
DC-13 ¹⁾ at L/R ≤ 15 ms make/break contacts					
24 V	A	0.9	0.9	0.9	1
60 V	A	0.75	0.75	0.75	–
110 V	A	0.4	0.4	0.4	–
220 V	A	0.2	0.2	0.2	–
Power consumption	W	–	–	–	2.5
Pick-up and drop-out values					
AC	x U_c	–	–	–	0.85 – 1.1
DC	x U_c	–	–	–	0.85 – 1.1
UL/CSA					
Rated voltage	V AC/DC	300/300	600/300	600/300	600/300
Pilot duty rating	AC	D300 ⁵⁾	B 600/B 300 same polarity / opposite polarity		
	DC	R 300	R 300	R 300	R 300
Thermistor protection					
Total resistance (cold)	Ω	–	–	–	1500
Response value	Ω	–	–	–	2700 – 3300
Reset range	Ω	–	–	–	1500 – 1650
Recovery time					
Overload		–	–	–	5 – 12 min ⁴⁾
Thermistor trip		–	–	–	5 K below response temperature
Ground fault protection					
					immediate

Notes

- ¹⁾ Making and breaking currents to DC-13, time constant as stated
- ²⁾ When connecting 2 conductors, only the following combinations are admissible:
0.5 and 0.75 mm²
0.75 and 1 mm²
1 and 1.5 mm²
- ³⁾ Contacts 95/96 and 97/98 (contactor control) 3 A
Contacts 05/06 and 07/08 (auxiliary contacts) 1.5 A
- ⁴⁾ Dependent on the setting of the tripping class
- ⁵⁾ Additional rating of .6A at 600 V AC and 1.5A at 240 V AC

EMT Thermistor Overload Relays

Technical Data

				EMT6	
General technical data					
Standards				UL, CSA, IEC/EN 60 947, VDE 0660, EN 55 011	
Climatic proofing				Damp heat, constant, to IEC 60 068-2-3 Damp heat, cyclical, to IEC 60 068-2-30	
Ambient temperature	Open	Min./Max.	° C	-25/+60	
	Enclosed	Min./Max.	° C	-25/+45	
	Storage	Min./Max.	° C	-45/+60	
Mounting position				As required	
Weight				kg 0.15	
Dimensions				→ Page 04/025	
Mechanical shock resistance (half-sinusoidal shock 10 ms)				g 10	
Degree of protection				IP 20	
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)				Finger and back-of-hand proof	
Safe isolation to IEC 536					
Between the contacts			V AC	250	
and between contacts and power supply			V AC	250	
Auxiliary and control circuit					
Rated impulse withstand voltage U_{imp}				V AC 6000	
Overvoltage category/pollution degree				III/3	
Terminal capacity: auxiliary and control circuit					
Solid			mm ²	2 × (0.5 – 1.5)	
			mm ²	1 × 2.5	
	Flexible with ferrule			mm ²	2 × (0.5 – 1.5)
				mm ²	1 × 2.5
Solid or stranded			AWG	16 – 14	
Terminal screw				M3.5	
Pozidriv screwdriver				2	
Standard screwdriver				1 × 6	
Tightening torque				Nm 1.2	
Auxiliary circuit					
Rated insulation voltage U_i				V 400	
Rated operational voltage U_e				V 400	
UL/CSA Pilot duty rating				AC B 300	
Rated operational current I_e					
AC-14 make and break contacts		380/415 V	A	3/3	
AC-15 make and break contacts		240V	A	3	
		380/415 V	A	1/1	
Short-circuit rating without welding, max. fuse				A gG/gL 6	
Control circuit					
Rated insulation voltage U_i				V 240	
Rated operational voltage U_e				V 240	
Pick-up and drop-out values,				× U_e 0.85 – 1.1	
Power consumption	AC		VA	3.5	
	DC		W	2	
Tripping at approx.				Ω ≅ 3600	
Recovery at approx.				Ω ≅ 1600	