English translation – Errors and technical changes reserved

Datasheet



Features

- Two force guided changeover contacts
- Suitable for safety applications up to PL c / SIL 1
- Switching power 6 A at 250 VAC
- Status LED green
- Integrated freewheeling diode
- Push-In connectors

Ordering

Type	ZSCoupling F C2
Order No. Kit	456040
Order No. Relay	456043
Order No. Marking plate	456042
Order No. Jumper	456041
PU	1 piece

ZSCoupling F C2 is a coupling relay with forcibly guided contacts according to EN 61810-3, which can be used in safety-related applications according to EN ISO 13849-1 and EN 62061 / EN 61508 up to PL c or SIL 1.

Application

The safe coupling relay ZSCoupling F C2 is used for the galvanically isolated coupling of signals, such as PLC outputs, to the periphery. The relay coil is controlled via terminals A1/A2, which switches both force guided changeover contacts. The integrated freewheeling diode provides optimal protection for connected input elements, such as PLC outputs. An integrated green LED indicates the switching status of the coupling relay.

Technical data

Contact data			
Contact type	2 changeover contacts	Contact assembly	Force guided according to EN 61810-3 type B
Contact gap	≥ 0,8 mm	Contact material	AgNi 90/10
Rated switching voltage	250 VAC	Max. switching voltage	400 VAC
Max. Breaking capacity	1500 VA		
Min. contact load	5 V / 10 mA / 50mW	Min. contact load	15 V / 3 mA / 45 mW
Max. continuous current at 70°C ambient temp.	1 contact loaded 6 A, all other 1 A	Max. continuous current at 85°C ambient temp. (10 mm spacing)	2 A 55% Unom for UL 508
Overload capacity – Non switching	1682 A^2s I^2t up to 290 A for 20 ms	Limiting making current	15 A for 4 s max.
Rated fuse link current	6 A		
Utilization category AC	AC-15 3 A / 250 VAC	Utilization category DC	DC-13 3 A / 24 VDC
Switching cycles UL B300	1xNO AC-15: 6000x	Switching cycles UL B300	1xNO DC-13: 6000x
Electrical endurance +70°C, 6A / 250 VAC	100.000 cycles	UL 508 general purpose 277 VAC / 2 A 85°C	10.000 cycles
Contact resistance Last ≥1 A / 24 V	≤100 mΩ (100 mV)	Contact resistance Last ≥10 mA / 5 V	≤20 Ω (200 mV)
Contact resistance Last ≥3 mA / 15 V	≤66.7 Ω (200 mV)		

B10d-Values			
AC-1 250 VAC		**AC-15 250 VAC**	
6 A 1NO	600.000 cycles	3 A 1NO	180.000 cycles
3 A 1NO	900.000 cycles	2 A 1NO	560.000 cycles
1,5 A 1NO	1.800.000 cycles	0,75 A 1NO	4.600.000 cycles
DC-13 24 VDC			
3 A 1NO	360.000 cycles		
1,5 A 1NO	740.000 cycles		
0,75 A 1NO	4.200.000 cycles		

B10d values based on estimated B10 values of the Weibull distribution of type tests with RTIII tight relays

Coil data			
Magnet system type	DC, neutral, monostable		
Nominal coil voltage	24 VDC	Nominal coil power	700 mW
Min. operate voltage +23°C ambient temp.	18 VDC	Min. operate voltage +70°C ambient temp.	20,4 VDC
Min. release voltage +23°C ambient temp.	2,4 VDC	Min. release voltage -40°C ambient temp.	1,2 VDC
Max. non release voltage +70°C ambient temp.	11,3 VDC	Holding current after pre-energizing with 24 VDC	15,2 mA
Max. coil voltage +70°C ambient temp.	26,4 VDC at max. current	Max. coil voltage +70°C ambient temp.	30 VDC at ≤ 0,5 A load
Recommended coil voltage range	21,6 – 24 VDC		

Operate times			
Switch on time, 24 VDC +23°C ambient temp.	≤ 25 ms	Switch off time, 24 VDC -40°C ambient temp.	≤ 50 ms
Max. switching rate at min. load	18.000h^{-1}	Max. switching rate at rated load	360 h^{-1}

General and environment data			
Ambient temperature	-40°C – +70°C*	Protection class according to IEC 61810-1	RT II
Mechanical endurance	10.000.000 cycles	Weight	75 g
Vibration resistance 10µs criterion according to IEC 60068-2-6	≥ 10 g 15 … 200 Hz	Shock 10µs criterion according to IEC 60068-2-27	≥ 20 g half sinus, 11 ms
Flammability			
Socket	UL94-V0	Relay base	UL94-V0
Relay actuator	UL94-V0	Relay cover	UL94-V2
Relay bobbin	UL94-HB		

* For use at – 40°C ... –25°C do not exceed the max. operating voltage of 120 % Unom; 28,8 VDC.

Insulation data according to IEC 61810-1			
Rated voltage system	230 / 400 V	Rated insulation voltage	250 V
Pollution degree	2	Overvoltage category	III
Rated surge test voltage Coil - Contact	6.000 V	Rated surge test voltage Contact - Contact	6.000 V
Type of insulation			
Coil – Contact	Reinforced	Open contacts	Functional
Adjacent contacts	Reinforced		
Dielectric test voltage Coil – Contact	4000 V RMS	Dielectric test voltage adjacent contacts	3000 V RMS
Dielectric test voltage Open contacts	1500 V RMS		
Insulation resistance EN 61810-1, Coil – Contact	≥ 100 MΩ at 500 VDC	Tracking resistance of the relay base according to IEC 60112	CTI 250
Clearance / creepage distances			
Coil – Contact	≥ 8.0 mm	adjacent contacts	≥ 5.5 mm

Dimensions and connection

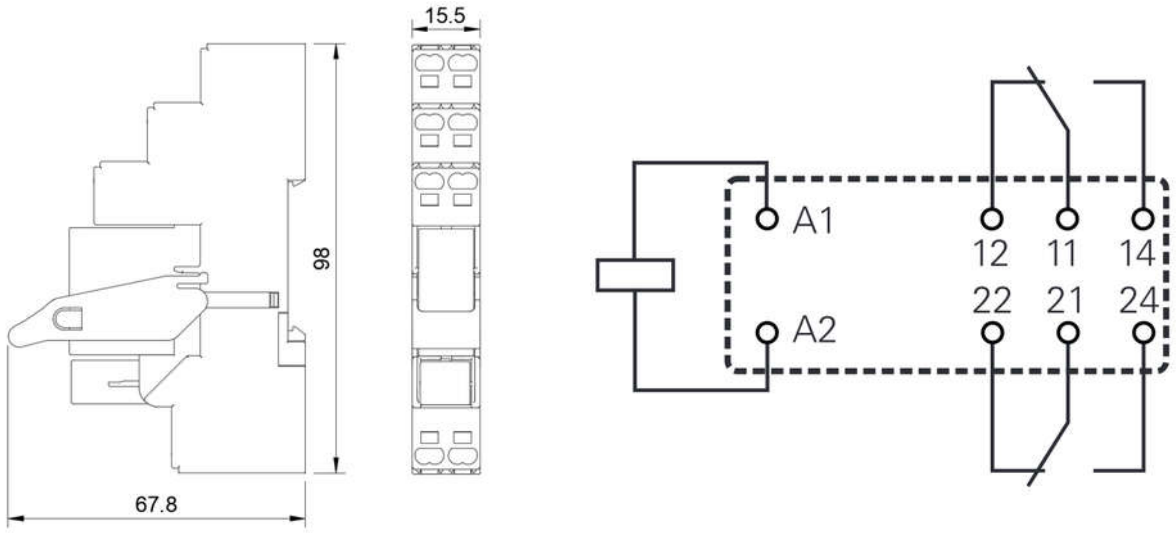


Figure 1: Dimensions and connection

Diagrams

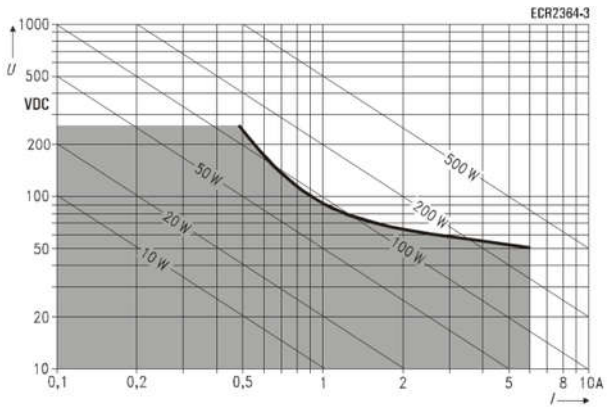


Figure 2: Maximum DC switching power, resistive load

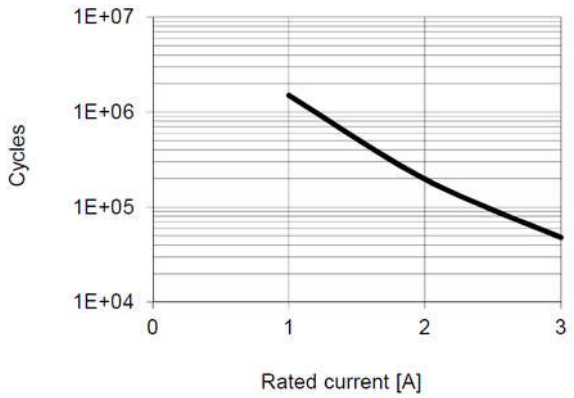


Figure 3: Electrical endurance, AC-15, 250 VAC

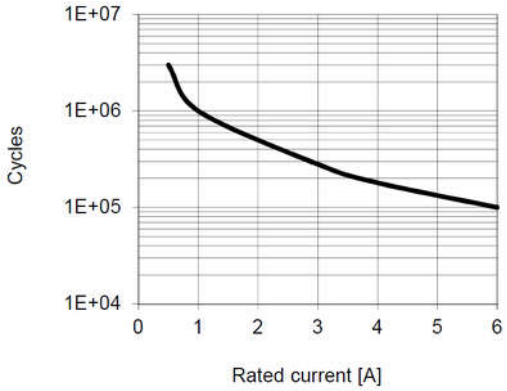


Figure 4: Electrical endurance, AC-1, 250 VAC

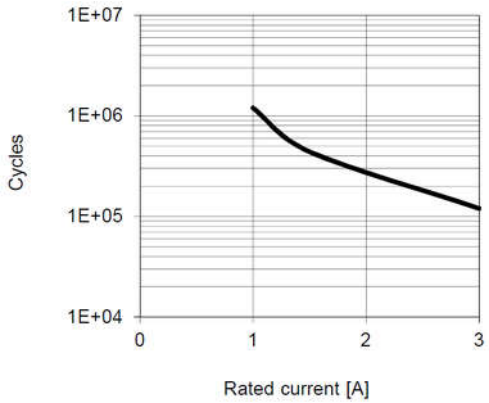


Figure 5: Electrical endurance, DC-13, 24 VDC

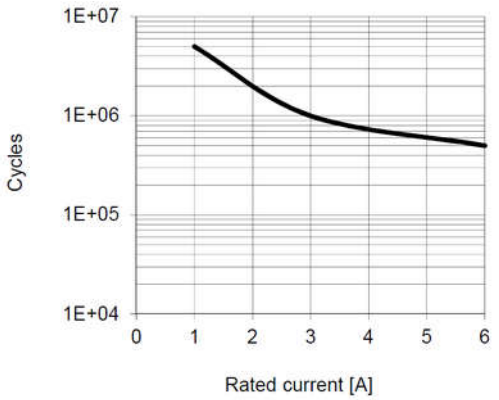


Figure 6: Electrical endurance, DC-1, 24 VDC