

Micro power relay F



Features

- Limiting continuous current 20/15 A at the NO contact/NC contact
- Dimensional characteristics and functional allocation of the plug-in terminals to ISO 7588
- Compact dimensions

Typical applications

- Heaters (seat, front/rear windows)
- Motors (fan, pump, wiper)
- Valves, lifting magnets, interlocks
- Headlight, lighting systems



73_3d01 / 73_3d02 / 73_3d03

Design

Dustproof; protection class IP 54 to IEC 529 (EN 60 529)

Weight

Approx. 0.5 oz. (14 g) quick connect terminals;
approx. 0.48 oz. (13 g) PCB terminals

Nominal voltage

12 V or 24 V

Terminals

- Quick connect terminal similar to ISO 8092-1:
Coil 4.8 mm x 0.8 mm,
break contact 4.8 x 0.8 mm, load
6.3 x 0.8 mm surfaces tin-plated
or
- PCB terminals for assembling in printed circuit boards

Accessories

Connectors see page 520

Special models on request

- One integrated component parallel to the coil:
resistor, diode, varistor
- Special labels
- Special cover shapes

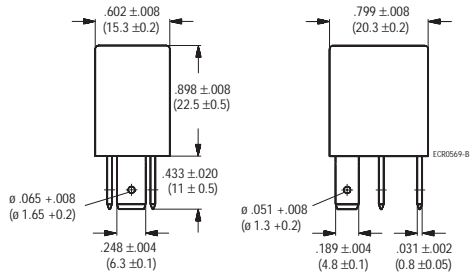
Conditions

All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:
23 °C ambient temperature,
20-50% RH, 29.5 ± 1.0" Hg
(998.9 ± 33.9 hPa).

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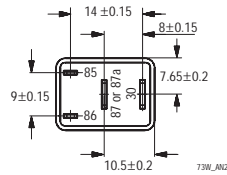
Dimensional drawing

Version with quick connect terminals

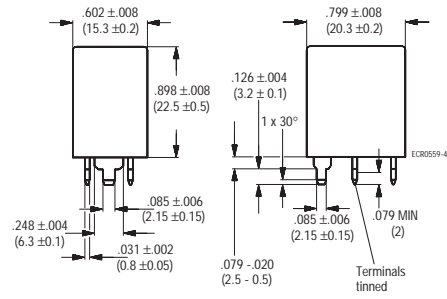


Quick connect terminal similar to ISO 8092-1

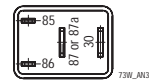
View of the terminals (bottom view)



Version with PCB terminals

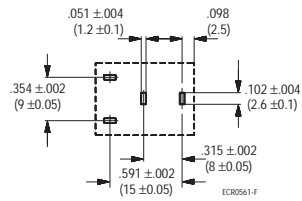


View of the terminals (bottom view)



Mounting holes

View of the terminals (bottom view)



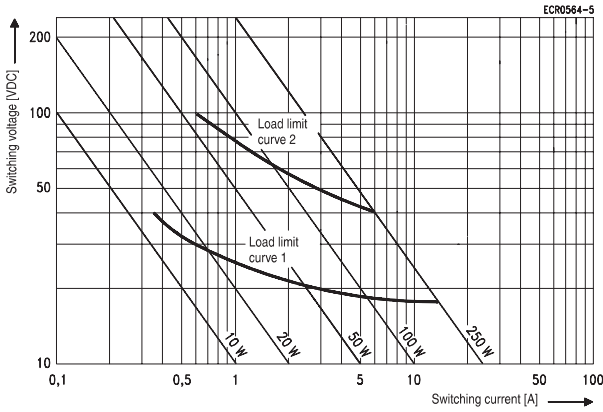
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Contact data		
Contact configuration	Make contact/ Form A	Break contact/ Form B
Contact material	AgNi0.15	
Circuit symbol (see also Pin assignment)		
Max. switching voltage	See load limit curve	
Max. switching power	See load limit curve	
Max. switching current ¹⁾		
On ²⁾	90 A	20 A
Off	30 A	15 A
Limiting continuous current at 23 °C	20 A	15 A
at 85 °C	15 A	10 A
Voltage drop (initial) at 10 A	Typ. 20 mV	Typ. 40 mV
Increase in coil temperature at 10 A load	Typ. 15 °C	
Mechanical endurance (without load)	> 10 ⁷ operations	
Electrical endurance with 10 A load current ¹⁾	> 5 x 10 ⁵ operations	> 2 x 10 ⁵ operations

¹⁾ The values apply to a resistive load or inductive load with suitable spark suppression.

²⁾ This current may flow for a maximum of 3 sec for a make/break ratio of 1 : 10.

Load limit curve

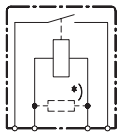


Load limit curve 1 $\hat{=}$ arc extinguishes during transit time

Load limit curve 2 $\hat{=}$ safe shutdown, no stationary arc

Pin assignment

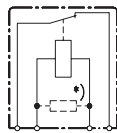
1 make contact/
1 form A



30 85 86 87
ECR1100-E

*) Models with resistor or diode in parallel to the coil on request.

1 break contact/
1 form B



30 85 86 87a
ECR1105-K

*) Models with resistor or diode in parallel to the coil on request.

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Coil data

Available for nominal voltages	12, 24 VDC
Nominal power consumption of the unsuppressed coil at nominal voltage	1.16 W
Test voltage winding/contact	500 VAC _{rms}
Upper limit temperature for the coil	180 °C
Maximum ambient temperature range ¹⁾	- 40 to + 125 °C
Max. switching rate without contact loading	20 Hz
Operate time ²⁾	Typ. 6 msec
Release time ²⁾	Typ. 3 msec

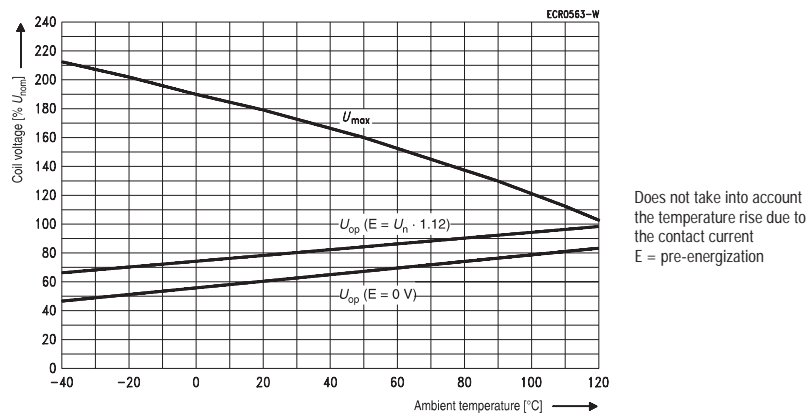
¹⁾ See also operating voltage range diagram

²⁾ Measured at nominal voltage without coil suppression unit

N.B.

A low resistive device in parallel to the relay coil slows the armature movement down and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding.

Operating voltage range



Mechanical data

Cover retention	
Pull	100 N (22.5 lbs)
Push	100 N (22.5 lbs)
Terminals	
Pull force	100 N (22.5 lbs)
Push force	100 N (22.5 lbs)
Resistance to bending, force applied to front	10 N (2.25 lbs) ¹⁾
Resistance to bending, force applied to side	10 N (2.25 lbs) ¹⁾
Torsion	0.3 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures.

¹⁾ Values apply 2 mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3 mm.

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Operating conditions				
Temperature range, storage	-40 °C to 155 °C			
Test	Relevant standard	Testing as per	Dimension	Comments
Climatic cycling with condensation	EN ISO 6988		6 cycles	Storage 8/16 h
Temperature cycling	IEC 68-2-14	Nb	10 cycles	- 40/+ 85 °C (5 °C per min.)
Damp heat				
cyclic	IEC 68-2-30	Db, Variant 1	6 cycles	Upper air temperature 55 °C
constant	IEC 68-2-3	Ca	10 days	
Corrosive gas	IEC 68-2-42	10 ± 2 cm ³ /m ³ SO ₂	10 days	
	IEC 68-2-43	1 ± 0.3 cm ³ /m ³ H ₂ S	10 days	
Vibration resistance	IEC 68-2-6 (sine pulse form)		20 - 200 Hz min. 5 g	No change in the switching state > 10 µsec
Shock resistance	IEC 68-2-27 (half-sine pulse form)		min. 10 g	No change in the switching state > 10 µsec
Solderability (PCB version)	IEC 68-2-20	Ta, Method 1		Aging 3 (4 h/155 °C), dewetting
Resistance to soldering heat	IEC 68-2-20	Tb, Method 1		10 sec ± 1 sec with shielding
Load dump	ISO 7637	DIN 40 839 Part 1		
Jump start	5 s 16 V 15 s 28 V 10 s 16 V		3 cycles	
Drop test	Capable of meeting specifications after 1.0 m (3.28 foot) drop onto concrete			
Flammability	UL94-HB or better			

Ordering information

Part number (Replace * with "Coil voltage designator")	Contact arrangement	Contact material	Enclosure	Terminals
V23073-B1*-A301	1 Form B	AgNi0.15	Dust cover	Quick connect, 4.8 mm and 6.3 mm
V23073-B1*-A302	1 Form A	AgNi0.15	Dust cover	Quick connect, 4.8 mm and 6.3 mm
V23073-C1005-A301	1 Form B	AgNi0.15	Dust cover	Printed circuit
V23073-C1005-A302	1 Form A	AgNi0.15	Dust cover	Printed circuit

Coil versions

Coil designator	Rated coil voltage (V)	Coil resistance +/- 10% (Ω)	Must operate voltage (VDC)	Must release voltage (VDC)	Allowable overdrive (VDC)	
					at 23 °C ¹⁾	at 85 °C ¹⁾
005	12	124	7.2	1.3	23	18
006	24	489	14.4	2.8	47	35

¹⁾ Allowable overdrive is stated with no load current flowing through the relay contacts and minimum coil resistance.

Standard delivery packs (orders in multiples of delivery pack)

Micro power relay F: 675 pieces