

Description

The combination of mechanical relay and customer-specific software extends E-T-A's relay portfolio by the multifunctional relay product group.

The MFR10 multifunctional relay combines the well-proven mechanical contact system with a customer-specific software. In addition, it features a range of terminal-pin-combinations. The MFR10 multifunctional relay is suitable for standard automotive relay sockets to ISO 7588 (ISO MINI).

This data sheet concentrates on the description of the hardware. Software and specification of requirements are set up in direct co-operation with our customers.

Applications

The MFR10 multifunctional relay is available for DC 12 V and DC 24 V applications.

Scope of applications:

- passenger cars
- trucks
- buses
- construction machinery and emergency cars

Typical applications:

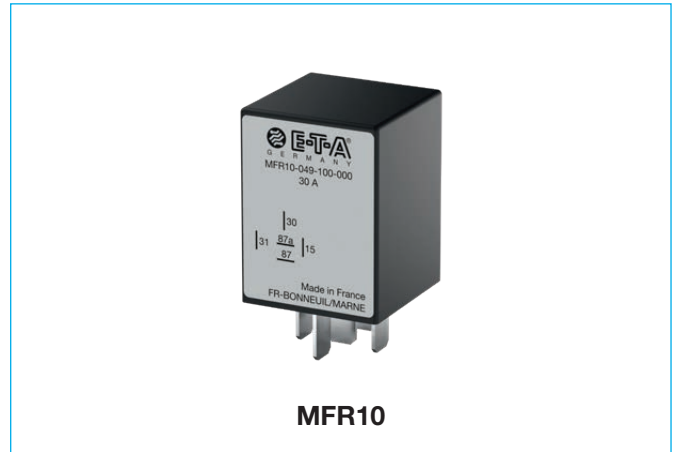
- Monitoring frequencies or voltages as and as the corresponding switching of loads such as heaters, fans etc.
- Co-ordinated, sequential switch-on of loads to avoid load peaks.
- In addition, these relays can include functions which otherwise would have to be implemented by controlgear.

Benefits

- Due to the customer-specific software, the MFR10 offers quick and reliable resolution of many problems that can occur during design, retrofit or adjustment of vehicles.
- Relay functions that have been tailored to the customer's application allow the remaining system to be planned less complex and less costly.
- The MFR10 is delivered in a programmed condition and ready for installation and allows immediate mounting during vehicle production.
- Intelligent additional functionalities can easily be included without any extra efforts because the MFR10 replace any standard automotive relays
- The circuitry versions C and D allow additional energy savings because there is no quiescent current when the relay is in inactive condition.

Qualifications

Degree of protection	IP50
Noise immunity	2006/28 EG DIN40839
E1 number	upon request



MFR10

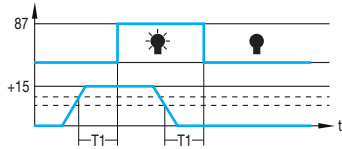
Technical data

Voltage ratings	12 V	24 V
Operating voltage	9 V...15 V	18 V...32 V
Closed current	< 10 mA	
Test voltage	12 V	24 V
Tolerance	5 %	
Input	0 V ... 15 V	0 V ... 32 V
Response time	< 100 ms	
Switching time ON	typically 10 ms	
Switching time OFF	typically 5 ms	
Total wattage	720 W	
Contact voltage drop	typically 1.2 V	
Operating temperature	-40 °C...+85 °C	
Endurance, electrical	100,000 cycles	
Mass	30 g	
Dimensions (lxwxh)	30 mm x 30mm x 40 mm	
Materials		
blade terminals	DIN 46244 – A9.5 x1.2 CuZn 37 F37	
Housing material	PA66 -GF30	
Output	make contact AgSnO ₂	
Power output at 25 °C	120 W (12 V, 10 A) 360 W (12 V, 30 A) 240 W (24 V, 10 A) 720 W (24 V, 30 A)	

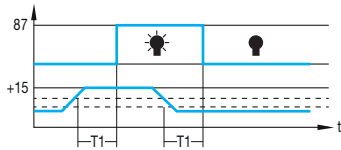
Examples for customer-specific software functionalities

Voltage monitoring

Higher than threshold
Available diagrams: Type A, C, D

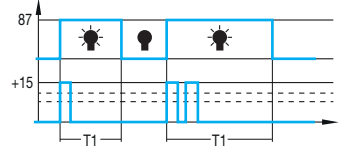


Lower than threshold
Available diagrams: Type A, C, D



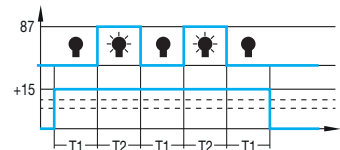
Special pulse output

Impulse (activated) delay with self holding and reset
Available diagrams: Type A, B, D



Flasher functionality

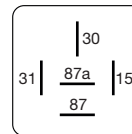
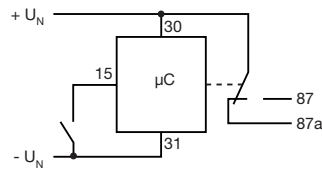
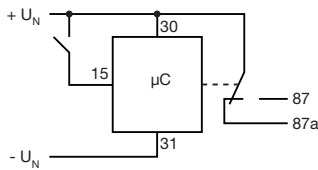
Negative flip-flop
Available diagrams: Type A, C



Schematic diagrams / pin assignment

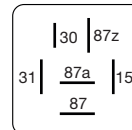
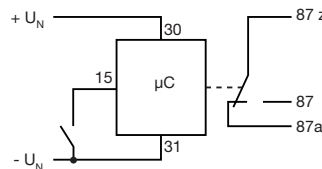
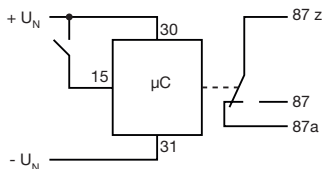
Type A

15, 30, 31, 87 and 87a: 6.3 x 0.8 mm



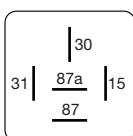
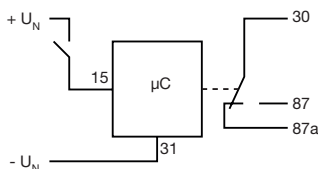
Type B

15, 31, 87, 87a and 87z: 6.3 x 0.8 mm
30: 2.8 x 0.6 mm



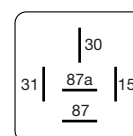
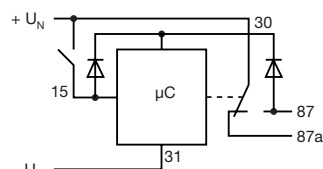
Type C

15, 30, 31, 87 and 87a: 6.3 x 0.8 mm



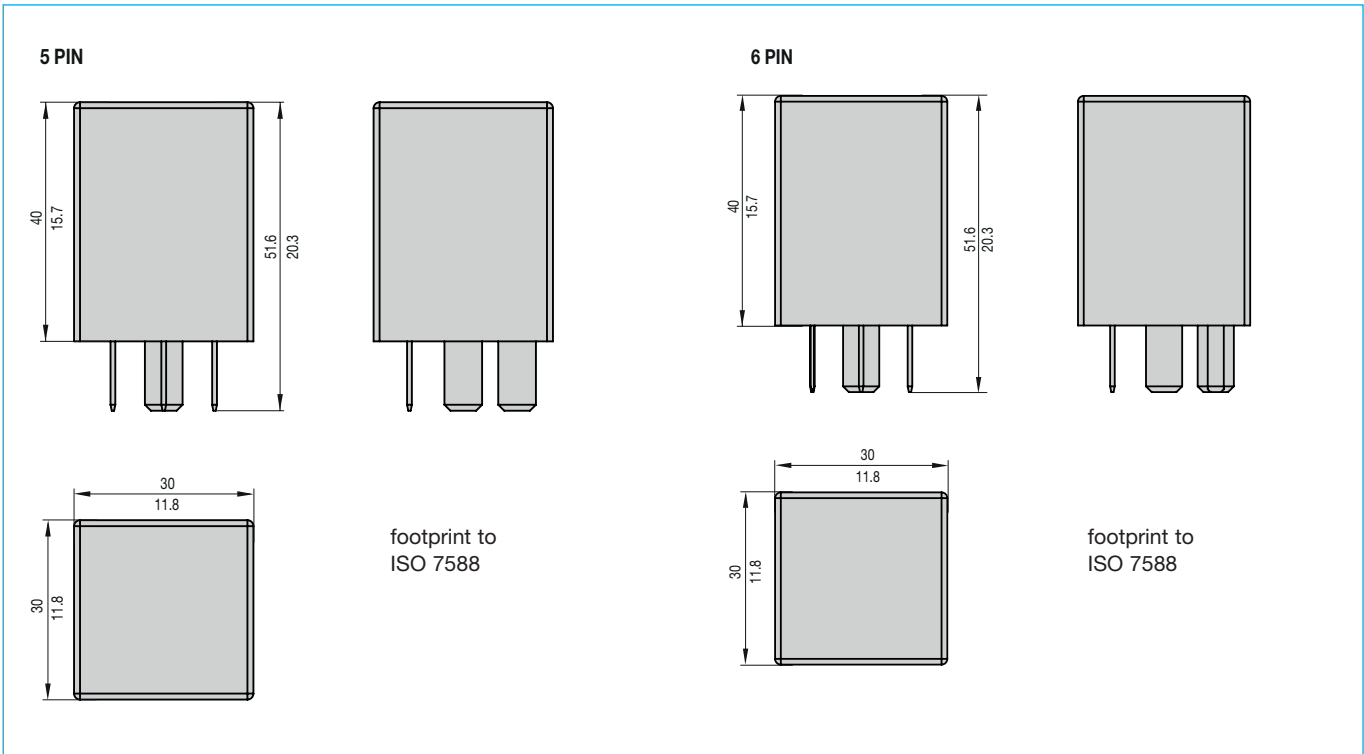
Type D

15, 30, 31, 87 and 87a: 6.3 x 0.8 mm



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Dimensions



Order numbering code

Type No.	
MFR10	multifunctional relay
Operating voltage	
1	12 V
2	24 V
Control	
1	type A
2	type B
3	type C
4	type D
Option 1	
0	without
Project number - part 1	
049	project index number according to region (international area code), e.g. Germany +49 = 049 France +33 = 033 Portugal +351 = 351 USA +1 = 001
Project number - part 2	
001	serial number
Current ratings	
10 A	
30 A	
MFR10 - 1	1 0 -049-001-10 A ordering example

All information and data given on our products are accurate and reliable to the best of our knowledge, but E-T-A does not accept any responsibility for the use in applications which are not in accordance with the present specification. E-T-A reserves the right to change specifications at any time in the interest of improved design, performance and cost effectiveness. Dimensions are subject to change without notice. Please enquire for the latest dimensional drawing with tolerances if required. All dimensions, data, pictures and descriptions are for information only and are not binding. Amendments, errors and omissions excepted. Ordering codes of the products may differ from their marking.