

## Excellent Integrated System Limited

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[TR-O-24V-100S](#)

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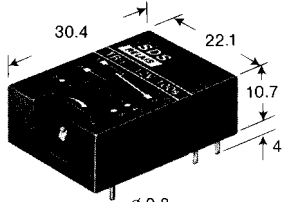
Discontinued

TR

**Panasonic**  
ideas for life

**PROVEN PCB TIME DELAY  
RELAY WITH ADJUSTABLE  
TIME-ON OR TIME-OFF  
DELAY OR PULSE RELAY**

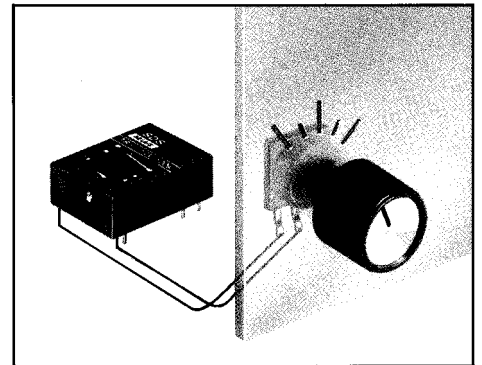
**TR-RELAYS**



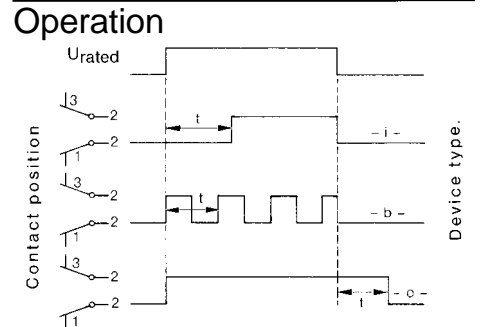
Approximately 8 g  
 Housing material: CRASTIN SK-615 FR  
 Basic grid 2.54 mm  
 PCB hole dia.  $\varnothing$  1.0 mm  $\pm$  0.1 mm  
 Housing tolerance  $\pm$  0.3 mm

- Not susceptible to external disturbance.
- Increase in timing range by using an external capacitor with time-off delay device – o –.
- No „first cycle effect“, with the time-on delay device. The first and following operations are of the same duration.

Characteristics		Remarks	
Type of contacts (CO = changeover)		1 CO	
Max. make/rated/break current	A	3 / 1 / 1	
Voltage switching range	VDC (VAC)	10 <sup>5</sup> -110 (240)	
Power switching range	W (VA)	10 <sup>-4</sup> -20 (30)	
Contact material		AuCo	
Volumetric/contact resistance (at 5 V, 10 mA)	m $\Omega$	50/30	
Operat. life <sup>1)</sup> mech. with contact loading	switching ops.	10 <sup>9</sup>	
	0.5 A, 10 W / 1 A, 1 W switching ops.	10 <sup>7</sup> / 10 <sup>8</sup>	
	0.2 A, 12 V / 1 mA, 1 mV switching ops.	10 <sup>8</sup> / 10 <sup>9</sup>	
Voltage withstand: cont./cont.-control circuitry	V <sub>eff</sub>	500/750	
Insulation resistance: cont./cont.-control circuitry		10 <sup>9</sup> /10 <sup>10</sup>	
Shock and vibration resistance	g-g/Hz	50-20/2000	
Life of trimmer		Independent of position	
Type of protection		typically 1000 ops.	
Storage temperature	°C	-20/+85	
Permiss. ambient temp. at max. load	°C	-20/+65	
Min. control pulse duration at rated voltage.	ms	100	

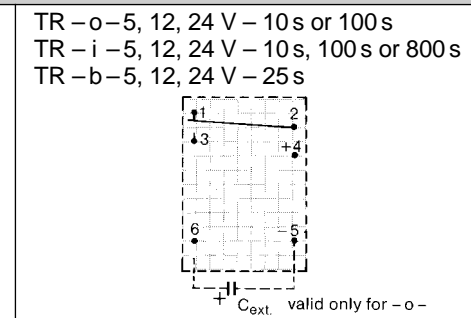
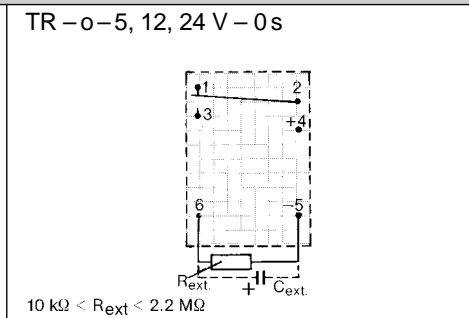
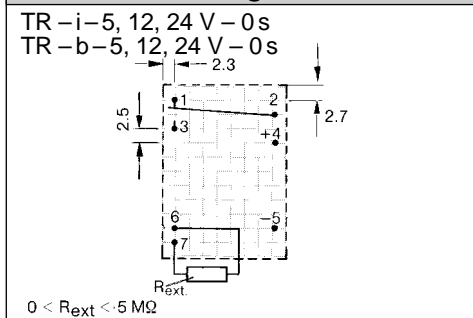


Operating characteristics								
Type: -i- "on" delay -b- pulse relay	Operating voltage V	Current Consumpt. mA	Type: -o- "off" delay	Operating voltage V	Current Consumpt. mA			
TR-i-5 V/TR-b-5 V	4.0-9.0	30	TR-o-5 V	4.5-9.0	65			
TR-i-12 V/TR-b-12 V	8.5-18.0	15	TR-o-12 V	8.5-18.0	35			
TR-i-24 V/TR-b-24 V	17.0-30.0	14	TR-o-24 V	18.0-28.0	25			
Rated time: „on“ delay „i“	0 s +)	10 s	100 s	800 s	Rated time: „off“ delay „o“	0 s +)	10 s	100 s
Minimum timing range [s] at rated voltage	1-1000	0.1-10	1-100	8-800	Minimum timing range [s] at rated voltage	0.3-100	0.1-10	1-100
Time tolerance at U <sub>rated</sub> $\pm$ 20% < 2%				Time tolerance at U <sub>rated</sub> $\pm$ 20%				
Pulse relay „b“ pulse frequency 0.04 ... 5 Hz*				Time delay increase with C <sub>ext</sub> per $\mu$ F				



+ The trimmer is omitted on the -i/-o- 0s device.  
 This must be replaced by an external potentiometer. The time delay thus achievable is 20s per 100 k $\Omega$  with the -i- devices and approx 20s per 1 M $\Omega$  with the -o- devices.  
 The minimum time delays are 1s (with -i-) and 0.1 s (with -o-).  
 \* With the -o- 0s device, the pulse frequency is 5 Hz. max., and is inversely proportional to R<sub>ext</sub> (e.g. at 20 k $\Omega$  the pulse frequency is 1 Hz).

**Connection diagram (bottom view) Warning! No revers battery protection**



**Ordering example**

TR - i - 24 V - 10s

Type \_\_\_\_\_  
 i = time „on“, o = time „off“ delay  
 b = pulse relay  
 Rated voltage \_\_\_\_\_  
 Rated time \_\_\_\_\_

Note:  
 Excitation voltage ripple should be maintained below 5% by use of appropriate smoothing.  
 Strong external magnetic fields influence relay data.

<sup>1)</sup> Data concerning operational life is based on resistive loads and ambient temperature of 20-30°C.

TR-W Wiping function on request

With surge voltages (1.2/50 $\mu$ sec) over DC 500V TR-i. b. w relays may not operate as intended.