

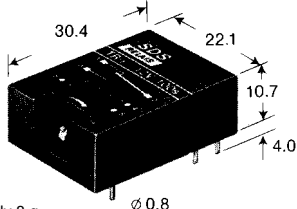
Discontinued

TR

**Panasonic**  
ideas for life

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

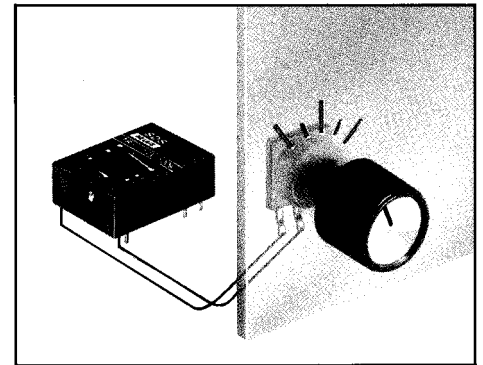
**TR-RELAYS**



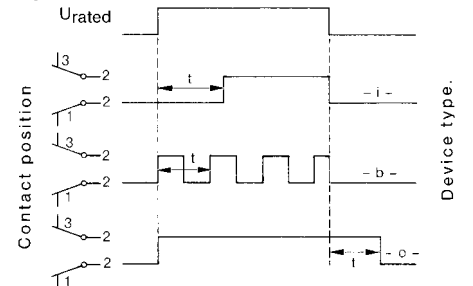
Approximately 8 g  
Housing material: CRASTIN SK-615 FR  
Basic grid 2.54 mm  
PCB hole dia.  $\varnothing$  1.0 mm  $\pm$  0.1 mm  
Housing tolerance  $\pm$  0.3 mm

- 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)	$10^5$ -110 (240)
Power switching range	W (VA)	$10^4$ -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.	$10^9$
	0.5 A, 10 W / 1 A, 1 W switching ops.	$10^7$ / $10^8$
	0.2 A, 12 V / 1 mA, 1 mV switching ops.	$10^8$ / $10^9$
Voltage withstand: cont./cont.-control circuitry	V <sub>eff</sub>	500/750
Insulation resistance: cont./cont.-control circuitry		$10^9$ / $10^{10}$
Shock and vibration resistance	g-g/Hz	50-20/2000
Life of trimmer		>100 operations
Type of protection		dust tight / IP50
Storage temperature	$^{\circ}$ C	-20/ +85
Permiss. ambient temp. at max. load	$^{\circ}$ C	-20/ +65
Min. control pulse duration at rated voltage.	ms	100



**Operation**



+ The trimmer is omitted on the -i/-o- 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- 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).

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				
				- 1.5s 4.7s				

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

<p>TR - i - 5, 12, 24 V - 0 s TR - b - 5, 12, 24 V - 0 s</p> <p><math>0 &lt; R_{ext} &lt; 5 \text{ M}\Omega</math></p>	<p>TR - o - 5, 12, 24 V - 0 s</p> <p><math>10 \text{ k}\Omega &lt; R_{ext} &lt; 2.2 \text{ M}\Omega</math></p>	<p>TR - o - 5, 12, 24 V - 10 s or 100 s TR - i - 5, 12, 24 V - 10 s, 100 s or 800 s TR - b - 5, 12, 24 V - 25 s</p> <p>C<sub>ext</sub> valid only for -o-</p>
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**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.  
1) Data concerning operational life is based on resistive loads and ambient temperature of 20-30 $^{\circ}$ C.

TR-W Wiping function on request

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