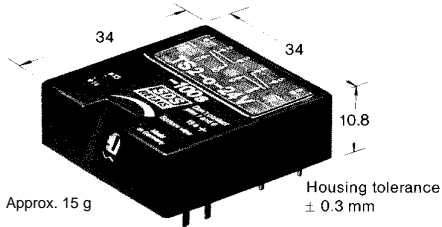


Discontinued

TS

Panasonic
 ideas for life

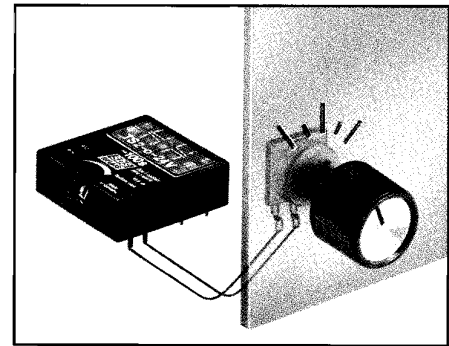
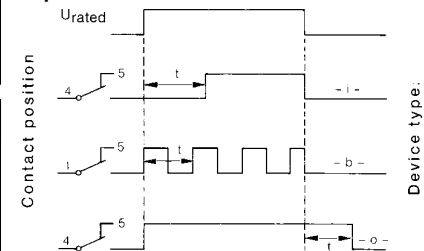
**NEW PCB TIME DELAY RELAY
 TIME-ON OR TIME-OFF DELAY
 OR PULSE RELAY**
TS-RELAYS


Approx. 15 g

 Housing material: CRAFTIN SK-615 FR Polycarbonate
 Basic grid 2.54 mm
 PCB hole dia. \varnothing 1.3 mm \pm 0.1 mm

- The elegant solution to time delay problems.
- High repeat accuracy and reliability.
- Not susceptible to external disturbance.
- Increase in timing delay by using an external capacitor with time-off delay device – o –.
- No auxiliary power supply required with time-off delay operation.
- No „first cycle effect“, with the time-on delay device. The first and following operations are of the same duration.

Characteristics		Remarks	
Contact arrangement	(NO = normally open, NC = normally closed, CO = changeover)	2NO2NC (2CO)/3NO1NC (2NO1CO)/4NO	
Max. make/rated/break current	A	20 / 5 / 5	
Voltage switching range	V	10^5 - 250	
Power switching range	W (VA)	10^{10} - 100 (1000)	
Contact material		AuAg10	
Volumetric/contact resistance	m Ω	30 / 10	
Operational life ¹⁾			See also the S relay data sheet
5 A, 1000 VA / 5 A, 100 W	switching ops.	$6 \cdot 10^4 / 3 \cdot 10^5$	
4 A, 1000 VA / 0.1 A, 1 W	switching ops.	$10^5 / 2 \cdot 10^8$	
Voltage withstand: cont./cont.- control circuitry	V _{eff}	750 / 1500	
Insulation resistance: cont./cont.- control circuitry	Ω	$10^{13} / 10^{10}$	
Shock-, vibration resistance	g, g/Hz	50, 20 / 1000	Independant of position
Life of trimmer		>100 operations	Typically 1000 ops.
Type of protection	Potentiometer/Contacts	dust tight / IP50	
Storage temperature	°C	-20 / +85	
Permiss. ambient temp. at max. load	°C	-20 / +65	Consequently, time tol.: < 4% with -i- devices 25 % with -o- devices
Min. control pulse duration at rated voltage.	ms	100	

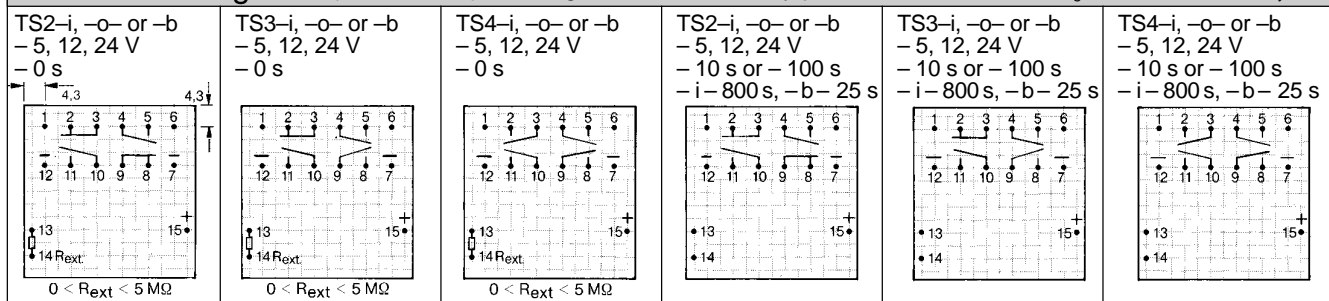

Operation


+ The trimmer is omitted on the -i/-o- devices. This must be replaced by an external potentiometer. The time delay thus achievable is 20s per 100 k Ω with the -i- devices and approx 20s per 1 M Ω with the -o- devices. The minimum time delays are 1s (with -i-) and 0.3 s (with -o-).
 * With the -o- device, the pulse frequency is 5 Hz. max. and is inversely proportional to R_{ext} (e.g. at 12 k Ω the pulse frequency is 1 Hz).
 ** Connect C_{ext} between pins 12 and 13!

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
TS2-/TS3-/TS4 -i/-b - 5 V	4.0 - 9.0	40	TS2-/TS3-/TS4 -o - 5 V	4.0 - 9.0	31
TS2-/TS3-/TS4 -i/-b - 12 V	8.5 - 18.0	20	TS2-/TS3-/TS4 -o - 12 V	8.5 - 18.0	23
TS2-/TS3-/TS4 -i/-b - 24 V	17.0 - 30.0	11	TS2-/TS3-/TS4 -o - 24 V	18.0 - 28.0	23
Rated time: „on“ delay „i“ 0 s +)	10 s	100 s	Rated time: „off“ delay „o“ 0 s +)	10 s	100 s
Minimum timing range [s] typical at rated voltage	1-1000	0.3-10	1-100	0.3-100	0.3-10
Time tolerance at U _{rated} \pm 10% < 1%			Time tolerance at U _{rated} \pm 10%	-	approx 20%
pulse relay „b“ pulse frequency	0.04 ... 5 Hz*		Time delay increase with C _{ext} per μ F**	-	1.5 s

Connection diagrams (bottom view) Warning! No reverse battery protection

 Warning! pins 1 and 6 may not be connected.
 Pins 7 and 12 are negative and connected internally

Ordering example

 TS 2 - i - 24 V - 10 s
 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°C.

TR-W Wiping function on request

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

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