

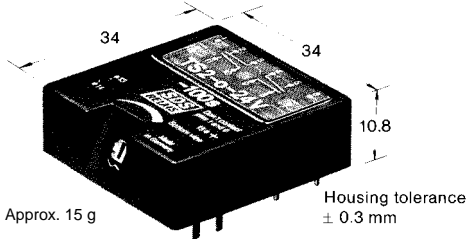
Discontinued

TS



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

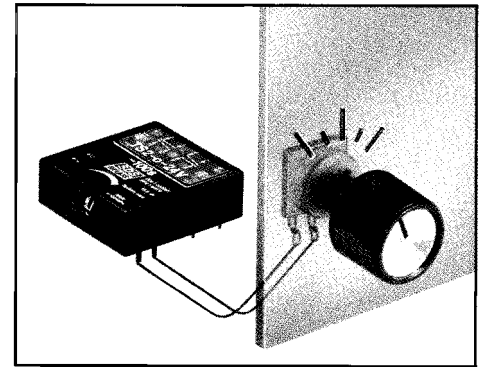
TS-RELAYS



Approx. 15 g
Housing material: CRASTIN 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.

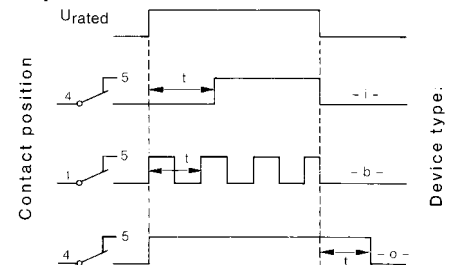
Characteristics		Remarks	
Contact arrangement	(NO = normally open, NC = normally closed, CO = changeover)	2NO2NC (2CO)/3NO1NC (2NO1CO)/4NO	
Max. make/rated/break current	A	20 / 5 / 5	
Voltage switching range	V	10 ⁵ -250	
Power switching range	W (VA)	10 ¹⁰ -100 (1000)	
Contact material		AuAg10	See also the S relay data sheet
Volumetric/contact resistance	m Ω	30/10	
Operational life ¹⁾			
5 A, 1000 VA/5 A, 100 W switching ops.		6 · 10 ⁴ /3 · 10 ⁵	
4 A, 1000 VA/0.1 A, 1 W switching ops.		10 ⁵ /2 · 10 ⁵	
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	



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 800 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 8-800		Minimum timing range [s] typical at rated voltage	0.3-100 0.3-10 1-100	
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 4.7 s

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!

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

<p>TS2-i, -o- or -b - 5, 12, 24 V - 0 s</p> <p>0 < R_{ext} < 5 MΩ</p>	<p>TS3-i, -o- or -b - 5, 12, 24 V - 0 s</p> <p>0 < R_{ext} < 5 MΩ</p>	<p>TS4-i, -o- or -b - 5, 12, 24 V - 0 s</p> <p>0 < R_{ext} < 5 MΩ</p>	<p>TS2-i, -o- or -b - 5, 12, 24 V - 10 s or - 100 s - i - 800 s, - b - 25 s</p>	<p>TS3-i, -o- or -b - 5, 12, 24 V - 10 s or - 100 s - i - 800 s, - b - 25 s</p>	<p>TS4-i, -o- or -b - 5, 12, 24 V - 10 s or - 100 s - i - 800 s, - b - 25 s</p>
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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.

Please initialise relays required state whenever power is turned on. The statements for latching relays in our General Application Guidelines are applicable.