NAiS

PROVEN PCB TIME DELAY RELAY WITH ADJUSTABLE TIME-ON OR TIME-OFF DELAY OR PULSE RELAY
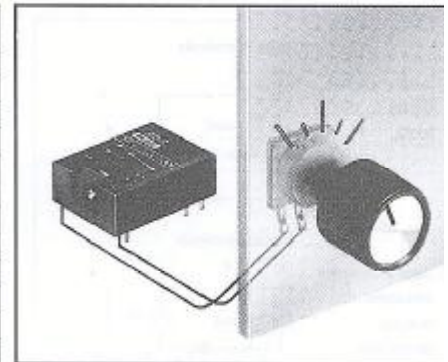
TR-RELAYS
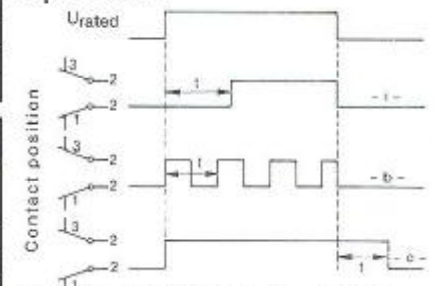
30.4 | 22.1 | 10.7 | 4.0 | ⌀0.8

- Not susceptable to external disturbance.
- Increase in timing range by using an external capacitor with time-off delay device –
- No „first cycle effect", with the time-on delay device. The first and following operations are of the same duration.
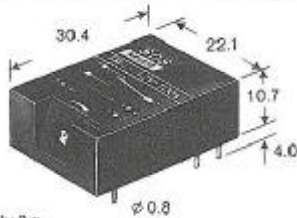
Approximately 8 g
Housing material: CRASTIN SK-615 FR
Basic grid 2.54 mm
PCB hole dia. ⌀ 1.0 mm ± 0.1 mm
Housing tolerance ± 0.3 mm

Characteristics

Characteristics			Remarks
Type of contacts (CO = changeover)		1CO	
Max. make/rated/break current	A	3 / 1 / 1	
Voltage switching range	VDC (VAC)	10^{-5} – 110 (240)	240 V using only
Power switching range	W (VA)	10^{-4} – 20 (30)	1 circuit
Contact material		AuCo	
Volumetric/contact resistance (at 5 V, 10 mA)	mΩ	50/30	
Operat. life [1] mech. with contact loading switching ops.		10^9	See also the R relay data sheet
0.5 A, 10 W / 1 A, 1 W switching ops.		$10^7 / 10^6$	
0.2 A, 12 V / 1 mA, 1 mV switching ops.		$10^8 / 10^9$	
Voltage withstand: cont./cont.-control circuitry	V_{eff}	500 / 750	
Insulation resistance: cont./cont.-control circuitry	Ω	$10^9 / 10^{10}$	
Shock and vibration resistance	g-g/Hz	50–20 / 2000	Independant of position
Life of trimmer		~100 operations	typically 1000 ops.
Type of protection		dust tight / IP 50	
Storage temperature	°C	–20/+85	
Permiss. ambient temp. at max. load	°C	–20/+65	Consequently, time tol.: ~4% with –i– devices ~30% 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
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	
Minimum timing range [s] at rated voltage	1-1000	0.1-10	1-100	8-800	
Time tolerance at U_{rated} ± 20%	< 2%				
Pulse relay „b"	pulse frequency	0.04 … 5 Hz.*			

Rated time: „off" delay „o"	0 s +)	10 s	100s
Minimum timing range [s] at rated voltage	0.3-100	0.1-10	1-100
Time tolerance at U_{rated} ± 20%	–	approx 5%	
Time delay increase with C_{ext} per μF	–	1.5 s	4.7 s

Operation

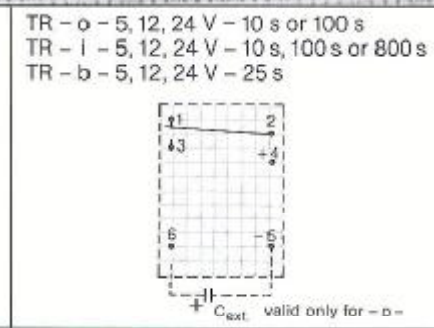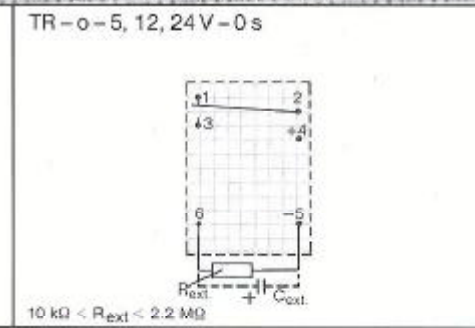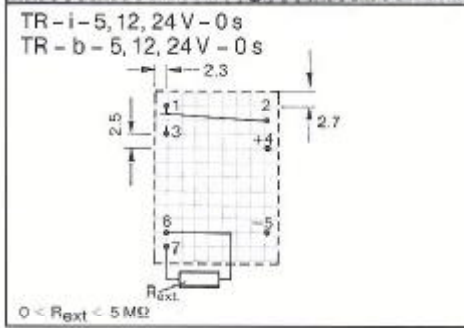U_{rated}

+ The trimmer is omitted on the –i/–o– 0s device. This must be replaced by an external potentiometer. The time delay thus achievable is 20 s per 100 kΩ with the –i– devices and approx 20 s per 1 MΩ with the – o – devices. The minimum time delays are 1 s (with –i–) and 0.1 s (with ...

* With the –o– 0 s device, the pulse frequency is 5 Hz. max and is inversely proportional to R_{ext} (e. g. at 20 kΩ the pulse frequency is 1 Hz.

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

TR – i – 5, 12, 24 V – 0 s
TR – b – 5, 12, 24 V – 0 s

0 < R_{ext} < 5 MΩ

TR – o – 5, 12, 24 V – 0 s

10 kΩ < R_{ext} < 2.2 MΩ

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

C_{ext} valid only for – o –

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°C.

TR-W Wiping function on request

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