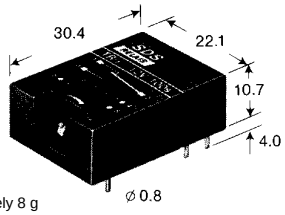
Discontinued



Panasonic
ideas for life

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

# TR-RELAYS

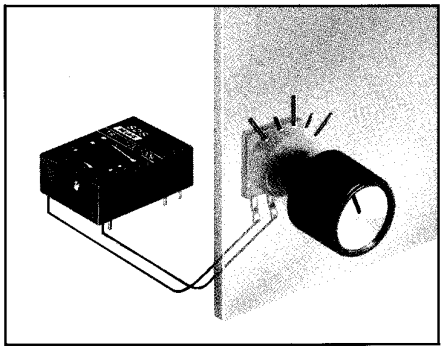



Approximately 8 g
Housing material: CRASTIN SK-615 FR
Basic grid 2.54 mm
PCB hole dia. ∅ 1.0 mm ± 0.1 mm
Housing tolerance ± 0.3 mm

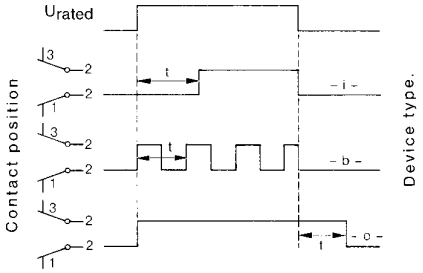
- **Not susceptable to external disturbance.**
- **Increase in timing range by using an external capacitor with time-off delay device – o –.**
- **No „first cycle effect“, with the time-on delay device. The first and following operations are of the same duration.**

## 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) | 240 V using only |
| Power switching range | W (VA) | $10^{-4}$-20 (30) | 1 circuit |
| Contact material | | AuCo | See also the R relay data sheet |
| Volumetric/contact resistance (at 5 V, 10 mA) | mΩΩ | 50 / 30 | |
| Operat. life [1] 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 | $V_{eff}$ | 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 / IP50 | |
| 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 | |



## Operation




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

## Operating characteristics

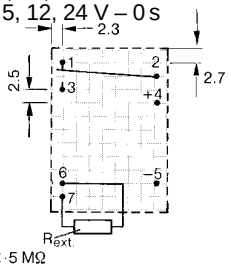
| Type: – i – "on" delay – b – pulse relay | Operating voltage V | Current Consumpt. mA | Type: – o – "off" delay | Operating voltage V | Current Consumpt. mA |
|---|---|---|---|---|---|
| TR – i – 5 V/TR – b – 5 V | 4.0 – 9.0 | 30 | TR – o – 5 V | 4.5 – 9.0 | 65 |
| TR – i – 12 V/TR – b – 12 V | 8.5 – 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 |
|---|---|---|---|---|
| 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 | 100 s |
|---|---|---|---|
| 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 |

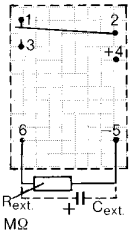
## Connection diagram (bottom view) Warning! No revers battery protection

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



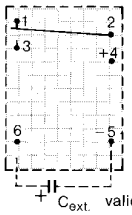

0 < $R_{ext}$ < 5 MΩ

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




valid only for – o –

## Ordering example

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