

Universal TR Series



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Universal TR Series

Product Description

Eaton's Universal TR Series timers are our most flexible and cost-effective timing relays available. Products are available with up to seven user-selectable functions and seven user-selectable time ranges. Each unit is DIN rail mountable with a direct connection, eliminating the need for additional sockets. The Universal TR Series timers are available in SPDT and DPDT contact configurations, and have a compact IEC-style footprint and a universal input voltage range for AC and DC applications.

Application Description

A timing relay is a simple form of time-based control, allowing the user to open or close the contacts based on a specified timing function. The Universal TR Series timers are equipped with a set of selector switches, which can easily be set to a specific function and time, thereby reducing the number of product variations required. The universal input voltage (either 12–240 Vac/Vdc or 24–240 Vac/Vdc, depending on the model) further reduces the number of product variations.

The Universal TR Series timers are ideal for high-variability operations, such as systems integrators, distributors, and small equipment manufacturers. The compact design saves panel space, and the low cost and high flexibility of the units reduce inventory requirements.

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Features

- Multiple user-selectable timing functions and timing ranges in a single unit reduce product variations and stock keeping units (SKUs)
- Universal input voltages from 12 or 24 to 240 Vac or Vdc eliminate the need to order and stock separate coil voltages
- Compact, DIN rail mountable case reduces panel size
- Advanced LED indication makes troubleshooting easy
- Staggered terminal locations allow access to lower-level terminals after wiring
- SPDT or DPDT contacts with 8 A ratings

Standards and Certifications

- cULus listed
- CE marked
- RoHS compliant
- IEC/EN 61812



Product Selection

Single-Pole Model

Universal TR Timing Relays



| Supply Voltage | Description | Catalog Number |
|-------------------|------------------------------------|----------------|
| 4-Function | | |
| 24–240 Vac/Vdc | Compact DIN rail mount, SPDT | TRL04 |
| 7-Function | | |
| 24–240 Vac/Vdc | Compact DIN rail mount, SPDT | TRL07 |
| 12–240 Vac/Vdc | Compact DIN rail mount, DPDT | TRL27 |
| | Asymmetrical pulse generator, DPDT | TRW27 |

Technical Data and Specifications

Universal TR Timing Relays

| Description | TRL04 | TRL07 | TRL27 | TRW27 |
|------------------------------|--|--|--|--|
| Functions ^① | E, R, Wu, Bp | E, R, Wu, Bp, Ws, Wa, Es | E, R, Wu, Bp, Ws, Wa, Es | Ii, Ip, ER, Ewu, Ews, WsWa, Wt |
| Time range | 0.05 sec to 100 hours |
| Input | | | | |
| Supply voltage | 24–240 Vac/Vdc | 24–240 Vac/Vdc | 12–240 Vac/Vdc | 12–240 Vac/Vdc |
| Rated supply frequency | +10% /–15% | +10% /–15% | ±10% | ±10% |
| Rated consumption | 4 VA (1.5 W) | 4 VA (1.5 W) | 6 VA (2 W) | 6 VA (2 W) |
| Duty cycle | 100% | 100% | 100% | 100% |
| Reset time | 100 ms | 100 ms | 100 ms | 100 ms |
| Residual ripple for DC | 10% | 10% | 10% | 10% |
| dropout voltage | >30% of rated supply voltage | >30% of rated supply voltage | >30% of rated supply voltage | >30% of rated supply voltage |
| Overvoltage category | III (in accordance with IEC 60664-1) |
| Rated surge voltage | 4 kV | 4 kV | 4 kV | 4 kV |
| Output | | | | |
| Contact configuration | SPDT (one changeover contact) | SPDT (one changeover contact) | DPDT (two changeover contacts) | DPDT (two changeover contacts) |
| Rated voltage | 250 Vac | 250 Vac | 250 Vac | 250 Vac |
| Switching capacity | 2000 VA (8 A/250 V) |
| Fusing | 8 A fast acting |
| Mechanical life | 20 x 10 ⁶ operations |
| Electrical life | 2 x 10 ⁵ operations at 1000 VA load, resistive | 2 x 10 ⁵ operations at 1000 VA load, resistive | 2 x 10 ⁵ operations at 1000 VA load, resistive | 2 x 10 ⁵ operations at 1000 VA load, resistive |
| Switching frequency | Max. 6/min. at 1000 VA resistive load (in accordance with IEC 60947-5-1) | Max. 6/min. at 1000 VA resistive load (in accordance with IEC 60947-5-1) | Max. 6/min. at 1000 VA resistive load (in accordance with IEC 60947-5-1) | Max. 6/min. at 1000 VA resistive load (in accordance with IEC 60947-5-1) |
| Overvoltage category | III (in accordance with IEC 60664-1) |
| Rated surge voltage | 4 kV | 4 kV | 4 kV | 4 kV |
| Control Signal | | | | |
| Loadable | Yes | Yes | Yes | Yes |
| Maximum cable length | 10m | 10m | 10m | 10m |
| Trigger level (sensitivity) | Automatic adaption to supply voltage |
| Minimum control pulse length | DC 50 ms/AC 100 ms |

Note

^① Refer to Function Code Cross-Reference Guide on **Page V7-T3-167** for function details.

Universal TR Timing Relays, continued

| Description | TRL04 | TRL07 | TRL27 | TRW27 |
|-----------------------|---|---|---|---|
| Accuracy | | | | |
| Base accuracy | ±1% of maximum scale value |
| Adjustment accuracy | <5% of maximum scale value |
| Repetition accuracy | <0.5% or ±5 ms |
| Temperature influence | ≤0.01% / °C | ≤0.01% / °C | ≤0.01% / °C | ≤0.01% / °C |
| Physical | | | | |
| Ambient temperature | -25 to 55 °C |
| Storage temperature | -25 to 70 °C |
| Relative humidity | 15% to 85% (in accordance with IEC 60721-3-3 Class 3K3) | 15% to 85% (in accordance with IEC 60721-3-3 Class 3K3) | 15% to 85% (in accordance with IEC 60721-3-3 Class 3K3) | 15% to 85% (in accordance with IEC 60721-3-3 Class 3K3) |
| Pollution degree | 2, if built in 3 (in accordance with IEC 60664-1) | 2, if built in 3 (in accordance with IEC 60664-1) | 2, if built in 3 (in accordance with IEC 60664-1) | 2, if built in 3 (in accordance with IEC 60664-1) |
| Housing material | Self-extinguishing plastic housing, IP40 rating |
| Mounting | Mounted on DIN rail TS 35 according to EN 60715, any position | Mounted on DIN rail TS 35 according to EN 60715, any position | Mounted on DIN rail TS 35 according to EN 60715, any position | Mounted on DIN rail TS 35 according to EN 60715, any position |
| Terminal rating | Shockproof terminal connection according to VBG 4 (PZ1 required), IP20 rating | Shockproof terminal connection according to VBG 4 (PZ1 required), IP20 rating | Shockproof terminal connection according to VBG 4 (PZ1 required), IP20 rating | Shockproof terminal connection according to VBG 4 (PZ1 required), IP20 rating |
| Tightening torque | Max. 1 Nm | Max. 1 Nm | Max. 1 Nm | Max. 1 Nm |

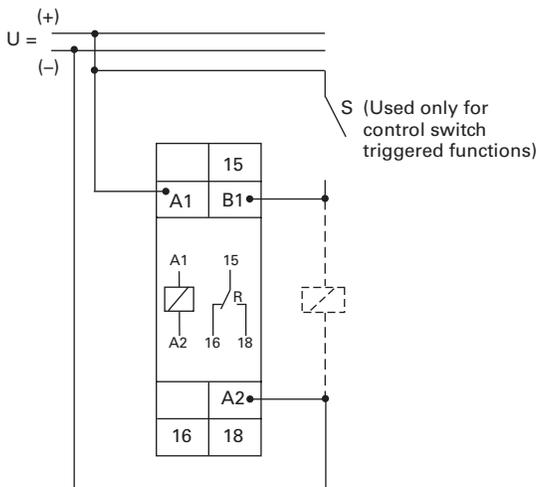
Terminal Capacity

Description

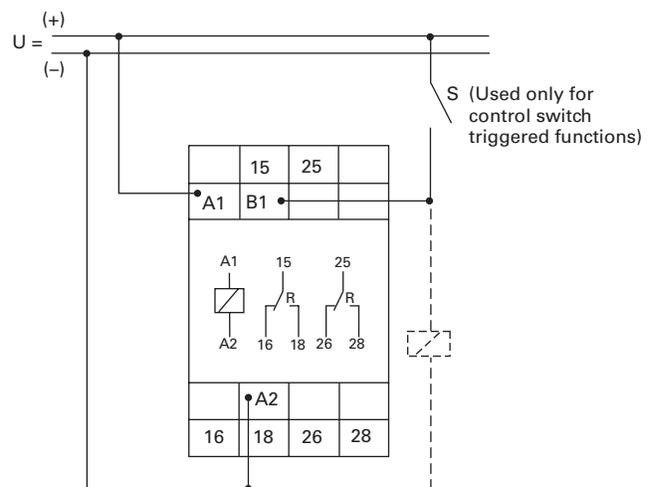
- 1 x 0.5 to 2.5 mm² with/without multicore cable end
- 1 x 4 mm² without multicore cable end
- 2 x 0.5 to 1.5 mm² with/without multicore cable end
- 2 x 2.5 mm² flexible without multicore cable end

Wiring Diagrams

Single-Pole, Double-Throw Units (SPDT)—TRL04 and TRL07



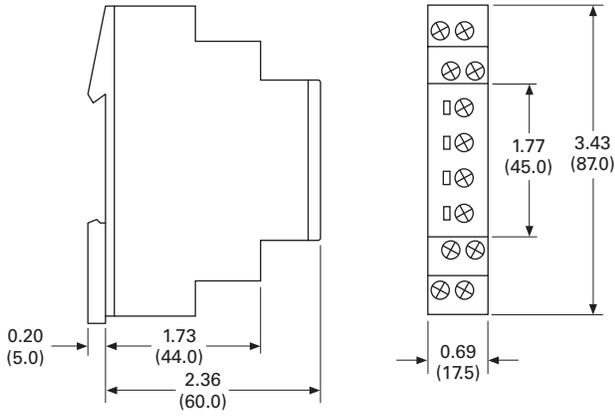
Double-Pole, Double-Throw Units (DPDT)—TRL27 and TRW27



Dimensions

Approximate Dimensions in Inches (mm)

17.5 mm (TRL04 and TRL07)



35 mm (TRL27 and TRW27)

