

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 8A 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	0.05 sec to 100 hours	0.05 sec to 100 hours	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 (1.5W)	4 VA (1.5W)	6 VA (2W)	6 VA (2W)
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)	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)	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 (8A/250V)	2000 VA (8A/250V)	2000 VA (8A/250V)	2000 VA (8A/250V)
Fusing	8A fast acting	8A fast acting	8A fast acting	8A fast acting
Mechanical life	20 x 10 ⁶ operations	20 x 10 ⁶ operations	20 x 10 ⁶ operations	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)	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)	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	Automatic adaption to supply voltage	Automatic adaption to supply voltage	Automatic adaption to supply voltage
Minimum control pulse length	DC 50 ms/AC 100 ms	DC 50 ms/AC 100 ms	DC 50 ms/AC 100 ms	DC 50 ms/AC 100 ms

Note

^① Refer to Function Code Cross-Reference Guide on **Page V7-T3-171** for function details.

Universal TR Timing Relays, continued

Description	TRL04	TRL07	TRL27	TRW27
Accuracy				
Base accuracy	±1% of maximum scale value	±1% of maximum scale value	±1% of maximum scale value	±1% of maximum scale value
Adjustment accuracy	<5% of maximum scale value	<5% of maximum scale value	<5% of maximum scale value	<5% of maximum scale value
Repetition accuracy	<0.5% or ±5 ms	<0.5% or ±5 ms	<0.5% or ±5 ms	<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	-25 to 55°C	-25 to 55°C	-25 to 55°C
Storage temperature	-25 to 70°C	-25 to 70°C	-25 to 70°C	-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	Self-extinguishing plastic housing, IP40 rating	Self-extinguishing plastic housing, IP40 rating	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

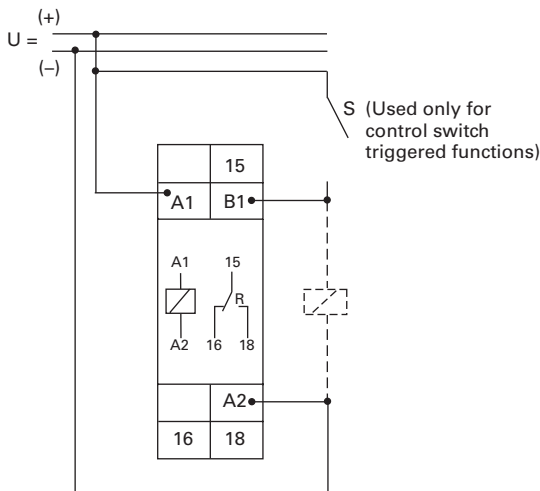
Terminal Capacity

Description

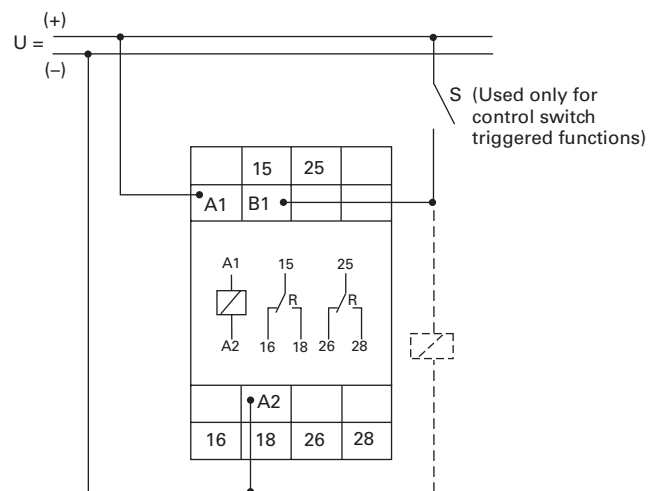
- 1 x 0.5 to 2.5 mm² with/without multicore cable end
- 1 x 4 mm² without multicore cable end
- 2 x 0.5 to 1.5 mm² with/without multicore cable end
- 2 x 2.5 mm² flexible without multicore cable end

Wiring Diagrams

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



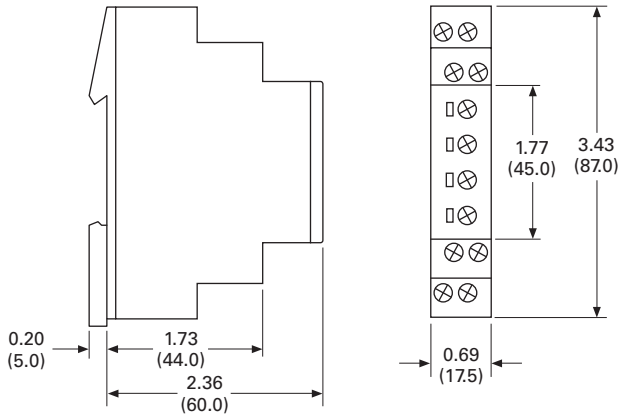
Double-Pole, Double-Throw Units (DPDT)—TRL27 and TRW27



Dimensions

Approximate Dimensions in Inches (mm)

17.5 mm (TRL04 and TRL07)



35 mm (TRL27 and TRW27)

