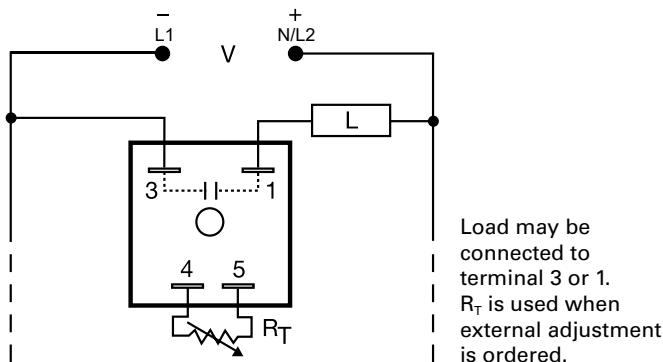


## TS1 SERIES

### Delay-on-Make Timer



### Wiring Diagram



### Description

The TS1 Series offers proven reliability and performance with years of use in OEM equipment and commercial applications. This encapsulated general use timing module is capable of controlling load currents ranging from 5mA to 1A. May be connected in series with contactors, relays, valves, solenoids, small motors, and lamps.

#### Operation (Delay-on-Make)

Upon application of input voltage, the time delay begins. The output is de-energized before and during the time delay. At the end of the time delay, the output energizes and remains energized until input voltage is removed.

**Reset:** Removing input voltage resets the time delay and output.

### Features & Benefits

FEATURES	BENEFITS
<b>Analog circuitry</b>	Repeat Accuracy +/- 2%
<b>Fixed or external adjustable time delay</b>	External time delay settings are adjustable from 0.05s - 10m in 8 ranges for added flexibility
<b>5mA to 1A load current range</b>	Minimum holding current of 5mA ensures proper operation with the lightest of loads
<b>Totally solid state and encapsulated</b>	No moving parts to arc and wear out over time and encapsulated to protect against shock, vibration, and humidity
<b>Two terminal series load connections</b>	Allows connection in series with contactors, relays, valves, solenoids, small motors and lamps. Provides quick and easy installation for new or existing systems

### Ordering Information

MODEL	INPUT VOLTAGE	ADJUSTMENT	TIME DELAY	MODEL	INPUT VOLTAGE	ADJUSTMENT	TIME DELAY
TS1211.5	24VAC	Fixed	1.5s	TS1412	120VAC	Fixed	2s
TS121150	24VAC	Fixed	150s	TS14120	120VAC	Fixed	20s
TS12130	24VAC	Fixed	30s	TS14130	120VAC	Fixed	30s
TS1214	24VAC	Fixed	4s	TS1415	120VAC	Fixed	5s
TS12190	24VAC	Fixed	90s	TS1416	120VAC	Fixed	6s
TS1221	24VAC	External	0.05 - 3s	TS1421	120VAC	External	0.05 - 3s
TS1222	24VAC	External	0.5 - 60s	TS1422	120VAC	External	0.5 - 60s
TS1224	24VAC	External	5 - 600S	TS1423	120VAC	External	2 - 180s
TS13115	24VDC	Fixed	15s	TS1424	120VAC	External	5 - 600s
TS1321	24VDC	External	0.05 - 3s	TS1612	230VAC	Fixed	2s
TS1410.25	120VAC	Fixed	0.25s	TS1615	230VAC	Fixed	5s
TS14110	120VAC	Fixed	10s	TS1621	230VAC	External	0.05 - 3s
TS141180	120VAC	Fixed	180s	TS1622	230VAC	External	0.5 - 60s

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## TS1 SERIES

### Accessories



**P1004-XX, P1004-XX-X Versa-Pot**  
Panel mountable, industrial potentiometer recommended for remote time delay adjustment.



**P1023-6 Mounting bracket**  
The 90° orientation of mounting slots makes installation/removal of modules quick and easy.



**P0700-7 Versa-Knob**  
Designed for 0.25 in. (6.35 mm) shaft of Versa-Pot. Semi-gloss industrial black finish.



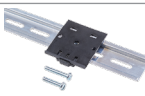
**P1015-64 (AWG 14/16) Female Quick Connect**  
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.



**P1015-18 Quick Connect to Screw Adapter**  
Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.



**C103PM (AL) DIN Rail**  
35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.



**P1023-20 DIN Rail Adapter**  
Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.

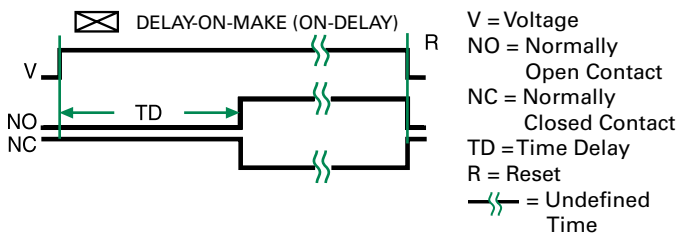


**VTP(X)(X) Plug-on Adjustment Module**  
Mounts on modules with in-line adjustment terminals. Rated at 0.25W at 55°C. Available in resistance values from 5KΩ to 5MΩ.

Selection Table for VTP Plug-on Adjustment Accessory

All Other Voltages		12VDC	
Time Delay	VTP P/N	Time Delay	VTP P/N
1 - 0.05-3s	VTP4B	1 - 0.05-1s	VTP2A
2 - 0.5-60s	VTP4F	2 - 0.5-20s	VTP2E
3 - 2-180s	VTP4J	3 - 2-60s	VTP2F
4 - 5-600s	VTP5N	4 - 5-120s	VTP2H

### Function Diagram



### Specifications

#### Time Delay

**Type**  
**Range**  
**12VDC**

Analog circuitry

0.05 - 120s in 4 adjustable ranges or fixed (1 MΩ max. RT)

**Other Voltages**  
**Repeat Accuracy**  
**Tolerance**

0.05 - 600s in 4 adjustable ranges or fixed ±2% or 20ms, whichever is greater

**(Factory Calibration)**  
**Recycle Time**

≤ ±10%  
After timing – ≤ 16ms  
During timing – 0.1% of time delay or 75ms, whichever is greater

#### Time Delay vs. Temperature & Voltage

≤ ±10%

#### Input

**Voltage**

12, 24 or 120VDC; 24, 120, or 230VAC

**Tolerance**

±20%

**AC Line Frequency**

50/60 Hz

#### Output

**Type**

Solid state

**Form**

NO, open during timing

**Maximum Load Current**

1A steady state, 10A inrush at 60°C

**Minimum Holding Current**

5mA

**Voltage Drop**

≈ 2.5V @ 1A

#### Protection

**Circuitry**

Encapsulated

**Dielectric Breakdown**

≥ 2000V RMS terminals to mounting surface

**Insulation Resistance**

≥ 100 MΩ

**Polarity**

DC units are reverse polarity protected

#### Mechanical

**Mounting**

Surface mount with one #10 (M5 x 0.8) screw

**Dimensions**

**H** 50.8 mm (2"); **W** 50.8 mm (2");

**D** 30.7 mm (1.21")

0.25 in. (6.35 mm) male quick connect terminals

**Termination**

**Environmental**

**Operating/Storage**

**Temperature**

-40° to 80°C / -40° to 85°C

**Humidity**

95% relative, non-condensing

**Weight**

≈ 2.4 oz (68 g)

### Selection Chart

RT Selection Chart					
Desired Time Delay*					RT Megohm
Seconds					
1	2	3	4		
0.05	0.5	2	5		0.0
0.5	10	30	60		0.5
1.0	20	60	120		1.0
▼ 24VDC or AC ONLY† ▼					
1.5	30	90	180		1.5
2.0	40	120	240		2.0
2.5	50	150	300		2.5
3.0	60	180	360		3.0
			420		3.5
			480		4.0
			540		4.5
			600		5.0

\* When selecting an external RT add at least 20% for tolerance of unit and the RT.  
† 1 Megohm max for 12 VDC Units

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