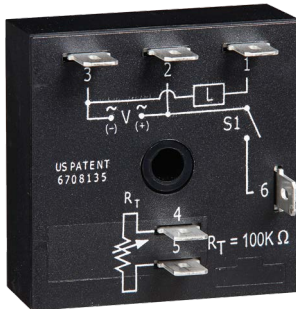
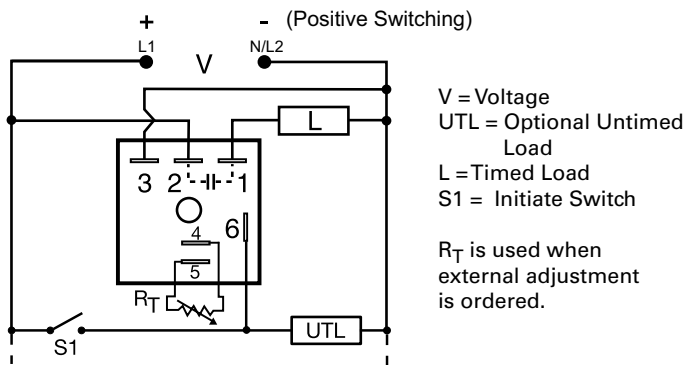


# TSDB SERIES



## Wiring Diagram



## Description

The TSDB Series is designed for more demanding commercial and industrial applications where small size, and accurate performance are required. The factory calibration for fixed time delays is within 1% of the target time delay. The repeat accuracy, under stable conditions, is 0.5% of the time delay. The TSDB Series is rated to operate over an extended temperature range. Time delays of 0.1 seconds to 1000 minutes are available. The output is rated 1A steady and 10A inrush. The modules are totally solid state and encapsulated to protect the electronic circuitry.

### Operation (Delay-on-Break)

Input voltage must be applied before and during timing. Upon closure of the initiate switch, the output energizes. The time delay begins when the initiate switch is opened. The output remains energized during timing. At the end of the time delay, the output de-energizes. The output will energize if the initiate switch is closed when input voltage is applied.

**Reset:** Reclosing the initiate switch during timing resets the time delay. Loss of input voltage resets the time delay and output.

## Features & Benefits

FEATURES	BENEFITS
<b>Microcontroller based</b>	Repeat accuracy +/- 0.5%, Factory calibration +/- 1%
<b>Compact design</b>	Allows flexibility for OEM applications
<b>1A Steady, 10A inrush solid-state output</b>	Provides 100 million operations in typical conditions.
<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>Wide temperature range: -40° to 75°C</b>	Reliable in demanding commercial and industrial applications

## Ordering Information

MODEL	INPUT VOLTAGE	ADJUSTMENT	TIME DELAY	SWITCHING MODE
TSDB320P	24VDC	External	0.1 - 10s	Positive
TSDB421	120VAC	External	1 - 100s	n/a
TSDB431	120VAC	Onboard	1 - 100s	n/a

If you don't find the part you need, call us for a custom product 800-843-8848

## Accessories

- P1004-13, P1004-13-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.

## TSDB SERIES

### Accessories



**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.

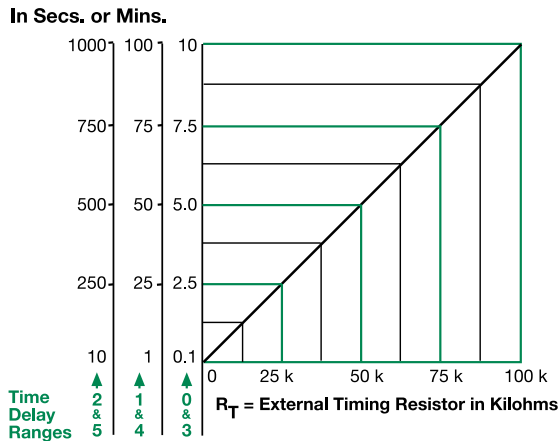


**C103PM (AL) DIN Rail**  
35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.



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

### External Resistance vs. Time Delay

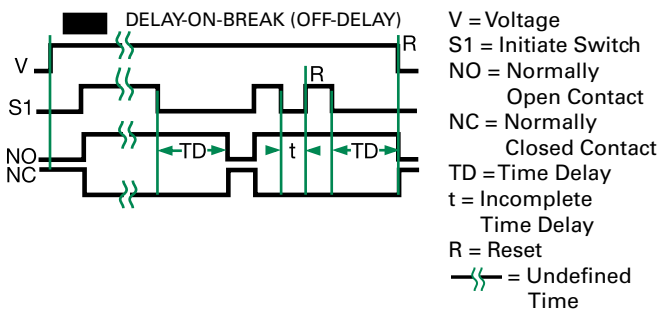


**This chart applies to externally adjustable part numbers.**  
The time delay is adjustable over the time delay range selected by varying the resistance across the  $R_T$  terminals; as the resistance increases the tie delay increases.

When selecting an external  $R_T$ , add the tolerances of the timer and the  $R_T$  for the full time range adjustment.

**Examples:** 1 to 50 S adjustable time delay, select time delay range 1 and a 50 K ohm  $R_T$ . For 1 to 100 S use a 100 K ohm  $R_T$ .

### Function Diagram



### Specifications

<b>Time Delay Range</b>	0.1s - 1000m in 6 adjustable ranges or fixed
<b>Repeat Accuracy</b>	$\pm 0.5\%$ or 20ms, whichever is greater
<b>Tolerance (Factory Calibration)</b>	$\leq \pm 1\%$
<b>Reset Time</b>	$\leq 150\text{ms}$
<b>Initiate Time</b>	$\leq 20\text{ms}$
<b>Time Delay vs Temp. &amp; Voltage</b>	$\leq \pm 2\%$
<b>Input Voltage</b>	12 or 24VDC; 24, 120, or 230VAC
<b>Tolerance</b>	$\pm 15\%$
<b>Power Consumption</b>	AC $\leq 2\text{VA}$ ; DC $\leq 1\text{W}$
<b>AC Line Frequency/DC Ripple</b>	50/60 Hz / $\leq 10\%$
<b>Output Type</b>	Solid state
<b>Form</b>	NO, closed before & during timing
<b>Maximum Load Current</b>	1A steady state, 10A inrush at 60°C
<b>Off State Leakage Current</b>	$\approx 5\text{mA}$ @ 230VAC; DC $\approx 1\text{mA}$
<b>Voltage Drop</b>	AC $\approx 2.5\text{V}$ @ 1A; DC $\approx 1\text{V}$ @ 1A
<b>DC Operation</b>	Positive or negative switching
<b>Protection</b>	
<b>Circuitry</b>	Encapsulated
<b>Dielectric Breakdown</b>	$\geq 2000\text{V RMS}$ terminals to mounting surface
<b>Insulation Resistance</b>	$\geq 100\text{M}\Omega$
<b>Polarity</b>	DC units are reverse polarity protected
<b>Mechanical</b>	
<b>Mounting</b>	Surface mount with one #10 (M5 x 0.8) screw
<b>Dimensions</b>	<b>H</b> 50.8 mm (2.0"); <b>W</b> 50.8 mm (2.0"); <b>D</b> 30.7 mm (1.21")
<b>Termination</b>	0.25 in. (6.35 mm) male quick connect terminals
<b>Environmental</b>	
<b>Operating/Storage Temperature</b>	-40° to 75°F / -40° to 85°F
<b>Humidity</b>	95% relative, non-condensing
<b>Weight</b>	$\approx 2.4\text{ oz}$ (68 g)