

## Section 5 Dedicated Timers

Note: DIN Rail Mounting Product pages are not included in this catalog.  
Go to: [www.ssac.com/sg5.pdf](http://www.ssac.com/sg5.pdf)  
Click on the Product Name  
(ie: CT-SDS) to open the catalog page.  
[Adobe Acrobat Reader is required]

### Single Function



<b>Delay on Make (ON Delay)</b>	
Relay Output .....	5.2
Solid State Output .....	5.16
DIN Rail Mounting .....	see Note above
<b>Delay on Make, Normally Closed</b>	
Solid State Output .....	5.34
<b>Delay on Break (OFF Delay)</b>	
Relay Output .....	5.42
Solid State Output .....	5.54
DIN Rail Mounting .....	see Note above
<b>True Delay on Break (without auxiliary voltage)</b>	
Relay Output .....	see Note above
Solid State Output .....	see Note above
<b>Single Shot (Pulse Former)</b>	
Relay Output .....	5.70
Solid State Output .....	5.84



<b>Single Shot, Retriggerable (Watchdog, Zero Speed)</b>	
Relay Output .....	5.96
DIN Rail Mounting .....	see Note Above
<b>Trailing Edge Interval</b>	
DIN Rail Mounting .....	see Note Above
<b>Interval (Impulse ON)</b>	
Relay Output .....	5.100
Solid State Output .....	5.108
DIN Rail Mounting .....	see Note above
<b>Recycling &amp; Percentage</b>	
Relay Output .....	5.126
Solid State Output .....	5.138
<b>Recycling Flashers</b>	
DIN Rail Mounting .....	see Note above

5

### Sequencer



SQ3 & 4 -- Solid State Output .....	5.154
-------------------------------------	-------

### Dual Function



<b>Delay on Make/Delay on Break</b>	
TDMB -- Plug-In .....	5.156
DIN Rail Mounting	
CT-MXS.xx .....	see Note above
<b>Delay on Make/Interval</b>	
ESD5 -- Solid State .....	5.158

### HVAC Timers



<b>Solid State Output</b>	
TAC1 -- Anti Short Cycle Random Start ..	5.160
T2D -- Anti Short Cycle, Random Start ...	5.162
TAC4 -- Bypass Timing .....	5.164
TA -- Anti Short Cycle (DOB) .....	5.166
TL -- Anti Short Cycle (DOB) .....	5.168
CT -- Fan Delay .....	5.170

### Vending Timers



HRV -- Relay Output .....	5.172
THC/THS -- Solid State Output .....	5.94
KSPU -- Solid State Output .....	5.176
NHPU -- Solid State Output .....	5.178

### Star Delta Motor Starting



<b>DIN Rail Mounting</b>	
CT-SDS .....	see Note above
CT-SDE .....	see Note above
CT-YDE .....	see Note above

# Delay On Make/Delay On Break

## TDMB Digi-Set

### Time Delay Relay



5

- Switch Settable Time Delays From 0.1 s ... 10,230 s in 3 Ranges
- +/-2% Setting Accuracy
- +/-0.1% Repeat Accuracy
- SPDT or DPDT Output Relay
- 10 A Output Contacts

Approvals:

#### Description

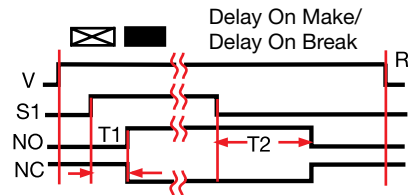
The TDMB combines both delay on make and delay on break functions into one plug-in package. Selection of the time period is accomplished with dual switches, one for the ON delay and the other for the OFF delay. SPDT or DPDT output options provide isolated, 10 A switching capability.

#### Operation

Input voltage must be applied at all times. The output relay is de-energized. Upon closure of the initiate switch, the delay on make time delay (T1) begins. At the end of T1, the output relay energizes. When the initiate switch opens the delay on break time delay (T2) begins. At the end of T2, the output relay de-energizes.

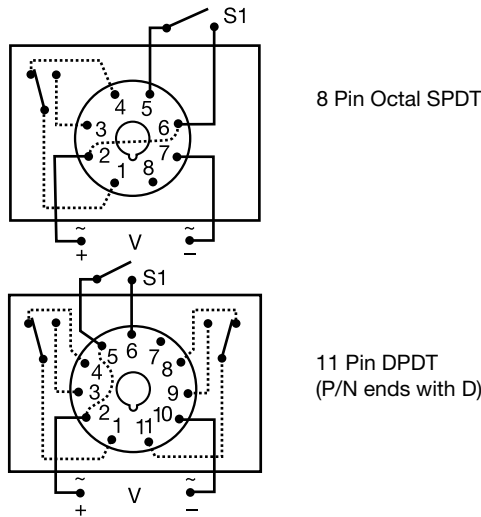
**Reset:** Removing input voltage resets time delay and output. Opening the initiate switch during the delay on make delay, resets T1. Closing the initiate switch during the delay on break delay, resets T2.

#### Function



V = Voltage S1 = Switch Initiate R = Reset  
 NO = Normally Open NC = Normally Closed  
 T1 = Delay On Make Time T2 = Delay On Break Time  
 = Undefined time

#### Connection

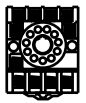


Relay contacts are isolated. Dashed lines are internal connections.

#### Accessories



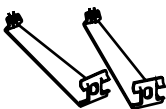
Panel mount kit  
P/N: BZ1



11 pin socket  
P/N: NDS-11



Octal  
8 pin socket  
P/N: NDS-8



Hold down clips  
P/Ns:  
PSC8 (NDS-8)  
PSC11 (NDS-11)

#### Ordering Table

TDMB Series	X Input	X Delay On Make	X Delay On Break	X Type Plug/Output Form
	-1 - 12 V DC *	-1 - 0.1...102.3 s in 0.1 s increments	-1 - 0.1...102.3 s in 0.1 s increments	-D - 11 Pin Plug DPDT Blank - Octal Plug (8 Pin) SPDT
	-2 - 24 V AC	-2 - 1...1023 s in 1 s increments	-2 - 1...1023 s in 1 s increments	
	-3 - 24 V DC	-3 - 10...10230 s in 10 s increments	-3 - 10...10230 s in 10 s increments	
	-4 - 120 V AC			
	-5 - 110 V DC			
	-6 - 230 V AC			

Example P/N: **TDMB423, TDMB631D**

\* No control status LED for 12 V DC

# Delay On Make/Delay On Break

## TDMB Digi-Set

### Time Delay Relay

Digi  
timers

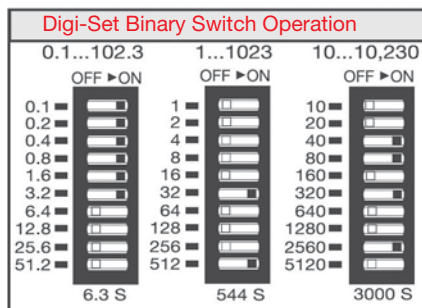
#### Technical Data

<b>Time Delay</b>		
Type		Digital integrated circuitry
Range**		0.1 ... 102.3 s in 0.1 s increments 1 ... 1023 s in 1 s increments 10 ... 10,230 s in 10 s increments
Repeat Accuracy		+/-0.1% or 20 ms, whichever is greater
Setting Accuracy		≤ +/-2% or 50 ms, whichever is greater
Reset Time		≤ 150 ms
Recycle Time		≤ 500 ms
Time Delay vs. Temperature & Voltage		≤ +/-5%
Control LED Indicator		Red; ON when the initiate switch is closed
<b>Input</b>		
Voltage		12, 24, 110 V DC; 24, 120, 230 V AC
Tolerance	12 V DC & 24 V DC/AC 110 ... 230 V AC/DC	-15% ... +20% -20% ... +10%
Line Frequency		50 ... 60 Hz
<b>Output</b>		
Type		Electromechanical relay
Form		SPDT or DPDT
Rating		10 A resistive at 120/240 V AC & 28 V DC; 1/3 hp at 120/240 V AC
Life		Mechanical -- 1 x 10 <sup>7</sup> ; Electrical -- 1 x 10 <sup>6</sup>
Relay LED Indicator		Red; ON when output relay energizes (not included on 12 V DC units)
<b>Protection</b>		
Isolation Voltage		≥ 1500 V RMS input to output
<b>Mechanical</b>		
Mounting		Plug-in socket
Package		3.2 x 2.4 x 1.8 in. (81.3 x 60.7 x 45.2 mm)
Termination		Octal plug (8 Pin), magnal plug (11 Pin)
<b>Environmental</b>		
Operating Temperature		-20°C ... +60°C
Storage Temperature		-30°C ... +85°C
Weight		≅ 6 oz (170 g)

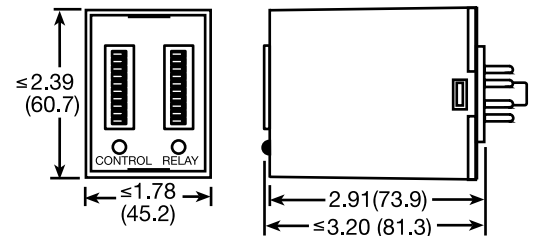
\*\*For CE approved applications, power must be removed from the unit when a switch position is changed.

5

#### Mechanical View

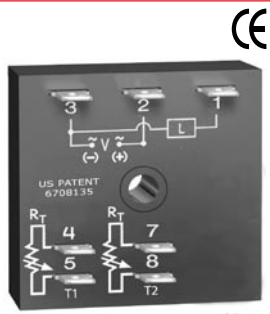


Add value of switches in ON position for total time delay.



Inches (Millimeters)

# Delayed Interval ESD5 Series Timing Module



5

- Delay on Make with Interval Output
- 0.1 s ... 1000 m in 6 Ranges
- +/-0.1% Repeat Accuracy
- +/-5% Factory Calibration
- Factory Fixed; Onboard or External Adjust Time Delay
- Totally Solid State & Encapsulated
- 24, 120 or 230 V AC
- 1 A Solid State Output

Approvals:

### Accessories

- External adjust potentiometer  
P/Ns:  
**P1004-95** (fig A)  
**P1004-95-X** (fig B)
- Mounting bracket  
P/N: **P1023-6**
- Female quick connect P/N:  
**P1015-64** (AWG 14/16)
- Versa-knob  
P/N: **P0700-7**
- Quick connect to screw adaptor  
P/N: **P1015-18**
- DIN rail adaptor P/N: **P1023-20**
- DIN rail P/Ns:  
**C103PM** (Al)  
**017322005** (Steel)

See accessory pages for specifications.

### Description

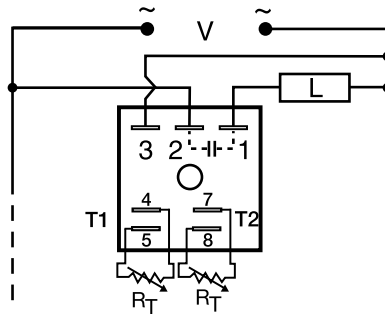
The ESD5 Series is an accurate solid state delayed interval timer. It offers a 1A steady/10A inrush output and is available with an adjustable or fixed time delays of 0.1 seconds to 1000 minutes in six ranges. Input voltages of 24, 120, or 230 V AC are available. Encapsulation offers protection against shock and vibration. Adjustment options are externally adjustable or factory fixed. The repeat accuracy, under stable conditions, is 0.1%. The factory calibration of the time delay is +/- 5%.

### Operation

Upon application of input voltage, the T1 delay on make time delay begins and the output remains de-energized. At the end of this delay, the output energizes and the T2 interval delay begins. At the end of the interval delay period, the output de-energizes.

**Reset:** Removing input voltage resets the output and the time delays, and returns the sequence to the first delay.

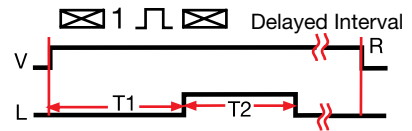
### Connection



Note: Terminals 4, 5 and/or 7, 8 are included when external adjustment is ordered. A knob is included when onboard adjust is ordered.

$R_T$  is the external adjustment component. Dashed lines are internal connections.

### Function



V = Voltage L = Load  
T1 = OFF Time (Delay on Make)  
T2 = ON Time (Interval) R = Reset  
— = Undefined time

### Ordering Table

ESD5 Series	X Input	X Adjustment	X T1 Delay On Make *	X T2 Interval *
	-2 - 24 V AC	-1 - Both Times Fixed	-0 - 0.1 ... 10 s	-0 - 0.1 ... 10 s
	-4 - 120 V AC	-2 - Both Times External Adj.	-1 - 1 ... 100 s	-1 - 1 ... 100 s
	-6 - 230 V AC	-3 - T2 External Adj., T1 Fixed	-2 - 10 ... 1000 s	-2 - 10 ... 1000 s
		-4 - T1 External Adj., T2 Fixed	-3 - 0.1 ... 10 m	-3 - 0.1 ... 10 m
		-5 - Both Times Onboard Adj.	-4 - 1 ... 100 m	-4 - 1 ... 100 m
		-6 - T2 Onboard Adj., T1 Fixed	-5 - 10 ... 1000 m	-5 - 10 ... 1000 m
		-7 - T2 Onboard Adj., T1 External Adj.		
		-8 - T1 Onboard Adj., T2 Fixed		
		-9 - T1 Onboard Adj., T2 External Adj.		

\*If Fixed Delay is selected, insert delay [0.1...1000] followed by (S) sec. or (M) min.

Example P/N: **ESD54200** Fixed – **ESD54430.1S**

# Delayed Interval ESD5 Series Timing Module

Di  
timers  
ad

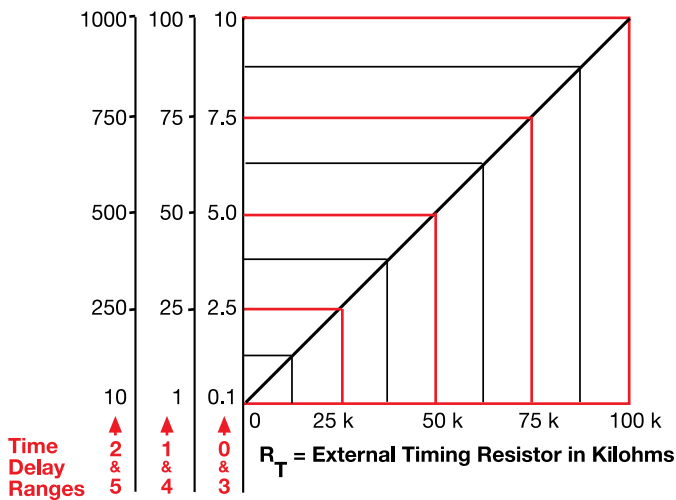
## Technical Data

<b>Time Delay</b>	
Range	100 ms ... 1000 m in 6 adjustable ranges or fixed
Repeat Accuracy	+/-0.1% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	≤ +/-5%
Reset Time	≤ 150 ms
Time Delay vs. Temperature & Voltage	≤ +/-2%
<b>Input</b>	
Voltage	24, 120, or 230 V AC
Tolerance	+/-20%
Line Frequency	50 ... 60 Hz
Power Consumption	≤ 2 VA
<b>Output</b>	
Type	Solid state
Rating	1 A steady state, 10 A inrush at 60°C
OFF State Leakage Current	≅ 5 mA at 230 V AC
Voltage Drop	≅ 2.5 V at 1 A
<b>Protection</b>	
Circuitry	Encapsulated
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface
Insulation Resistance	≥ 100 MΩ
<b>Mechanical</b>	
Mounting	Surface mount with one #10 (M5 x 0.8) screw
Package	2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)
Termination	0.25 in. (6.35 mm) male quick connect terminals
<b>Environmental</b>	
Operating Temperature	-40°C ... +75°C
Storage Temperature	-40°C ... +85°C
Humidity	95% relative, non-condensing
Weight	≅ 2.4 oz (68g)

5

## External Resistance vs Time Delay

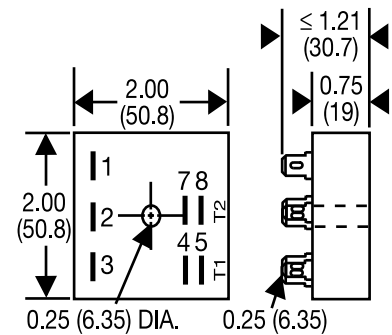
In Secs. or Mins.



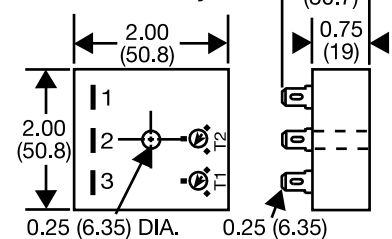
**This chart applies to externally adjustable part numbers.**  
 The time delay is adjustable over the time delay range selected by varying the resistance across the  $R_T$  terminals; as the resistance increases the time delay increases.  
 When selecting an external  $R_T$ , add the tolerances of the 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  $R_T$ .

## Mechanical View

Fixed & External Adjust



Onboard Adjust



Inches (Millimeters)