

Section 5 Dedicated Timers

Single Function



Delay on Make (ON Delay)	
Relay Output	5.2
Delay on Make, Normally Closed	
Solid State Output	5.34
Delay on Break (OFF Delay)	
Relay Output	5.42
Solid State Output	5.54
Single Shot (Pulse Former)	
Relay Output	5.70
Solid State Output	5.84

Single Shot, Retriggerable (Watchdog, Zero Speed)	
Relay Output	5.96
Interval (Impulse ON)	
Relay Output	5.100
Solid State Output	5.108
Recycling & Percentage	
Relay Output	5.126
Solid State Output	5.138

5

Sequencer



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

Dual Function



Delay on Make/Delay on Break	
TDMB -- Plug-In	5.156
Delay on Make/Interval	
ESD5 -- Solid State	5.158

HVAC Timers



Solid State Output	
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

Dedicated
timers

Delay On Make/Delay On Break TDMB Digi-Set Time Delay Relay

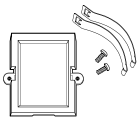


5

- 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:

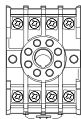
Accessories



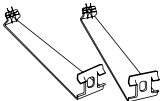
Panel mount kit
P/N: **BZ1**



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)

See accessory pages for specifications.

Description

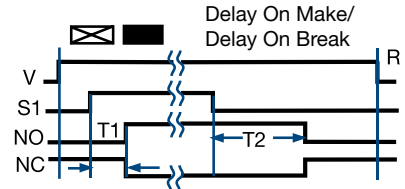
The TDMB combines both delay on make and delay on break functions into one plug-in package. Selection of the time period is accomplished with dual switches, one for the ON delay and the other for the OFF delay. SPDT or DPDT output options provide isolated, 10 A switching capability.

Operation

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

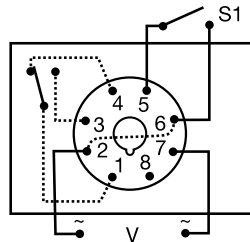
Reset: Removing input voltage resets time delay and output. Opening the initiate switch during the delay on make delay, resets T1. Closing the initiate switch during the delay on break delay, resets T2.

Function



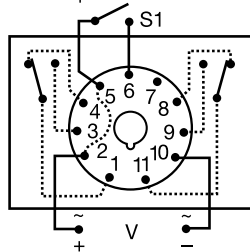
V = Voltage S1 = Switch Initiate R = Reset
NO = Normally Open NC = Normally Closed
T1 = Delay On Make Time T2 = Delay On Break Time
— = Undefined time

Connection



8 Pin Octal SPDT

Relay contacts are isolated. Dashed lines are internal connections.



11 Pin DPDT
(P/N ends with D)

Available Models-

- | | | |
|----------|-----------|----------|
| •TDMB411 | •TDMB411D | TDMB413D |
| •TDMB422 | •TDMB422D | TDMB423 |
| TDMB622 | | |

Don't see what you need? Call us for a minimum quantity and price quote!

Ordering Table

TDMB	X	X	X	X
Series	Input	Delay On Make	Delay On Break	Type Plug/Output Form
-A	24... 240 V AC/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
-D	12... 48 V DC	-2 - 1...1023 s in 1 s increments	-2 - 1...1023 s in 1 s increments	-Blank - Octal Plug (8 Pin) SPDT
-1	12 V DC	-3 - 10...10230 s in 10 s increments	-3 - 10...10230 s in 10 s increments	
-2	24 V AC			
-3	24 V DC			
-4	120 V AC			
-5	110 V DC			
-6	230 V AC			

NOTE: Options A & D qualify for Quickship delivery; grayed options require standard lead time.

Example P/N: **TDMBA12** = 24-240 V, 0.1 to 102.3 s DOM; 1 to 1023 s DOB, 8 pin connection base
TDMBD21D = 12-48V DC, 1 to 1023 s DOM; 0.1 to 102.3 s DOB, 11 pin connection base

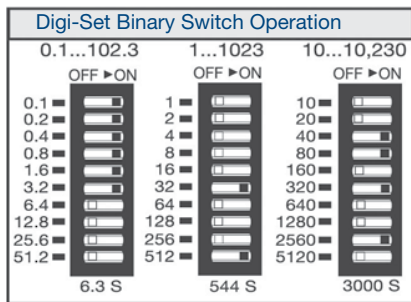
Delay On Make/Delay On Break TDMB Digi-Set Time Delay Relay

Dedicated
timers

Technical Data

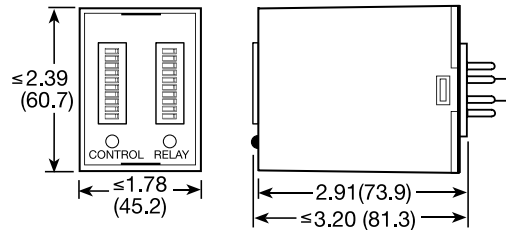
Time Delay Type Range** Repeat Accuracy Setting Accuracy Reset Time Time Delay vs. Temperature & Voltage Control LED Indicator	Microcontroller Circuitry 0.1 ... 102.3 s in 0.1 s increments 1 ... 1023 s in 1 s increments 10 ... 10,230 s in 10 s increments +/-0.1% or 20 ms, whichever is greater +/-2% or 50 ms, whichever is greater ≤ 150 ms ≤ +/-2% Green; ON when the initiate switch is closed	**For CE approved applications, power must be removed from the unit when a switch position is changed.
Input Voltage Tolerance 12 V DC & 24 V DC/AC 110 ... 230 V AC/DC Line Frequency / DC Ripple Power Consumption	12 or 24 V DC; 24, 120, or 230 V AC; 24... 240 V AC/DC; 12... 48 V DC -15% ... +20% -20% ... +10% 50 ... 60 Hz / ≤ 10% AC ≤ 2 VA; DC ≤ 2 W	
Output Type Form Rating Life Max. Switching Voltage Relay LED Indicator	Electromechanical relay SPDT or DPDT 10 A resistive at 120/240 V AC & 30 V DC; 1/3 hp at 230 V AC Mechanical -- 1 x 10 ⁷ ; Electrical -- 1 x 10 ⁵ 250 V AC Red; ON when output relay energizes	
Protection Insulation Resistance Polarity Isolation Voltage	≥ 100 M DC units are reverse polarity protected ≥ 1500 V RMS input to output	
Mechanical Mounting Package Termination	Plug-in socket 3.2 x 2.4 x 1.8 in. (81.3 x 60.7 x 45.2 mm) Octal plug (8 Pin), magnal plug (11 Pin)	
Environmental Operating Temperature Storage Temperature Weight	-20°C ... +60°C -30°C ... +85°C ≅ 6 oz (170 g)	

5



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

Mechanical View



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/Ns:
C103PM (Al)
- DIN rail adaptor P/N: **P1023-20**

See accessory pages for specifications.

Description

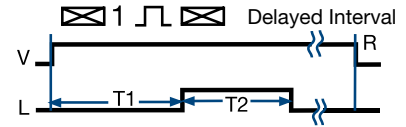
The ESD5 Series is an accurate solid state delayed interval timer. It offers a 1A steady/10A inrush output and is available with an adjustable or fixed time delays of 0.1 seconds to 1000 minutes in six ranges. Input voltages of 24, 120, or 230 V AC are available. Encapsulation offers protection against 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.

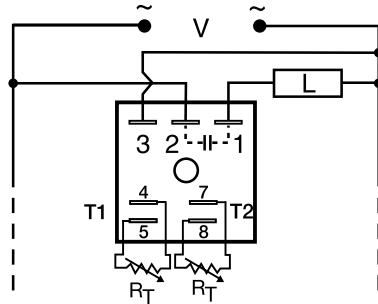
Reset: Removing input voltage resets the output and the time delays, and returns the sequence to the first delay.

Function



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

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.
RT is the external adjustment component.
Dashed lines are internal connections.

Available Models-

ESD52233

ESD54160S2S

ESD54630S1

Don't see what you need? Call us for a minimum quantity and price quote!

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.		

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

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

Delayed Interval ESD5 Series Timing Module

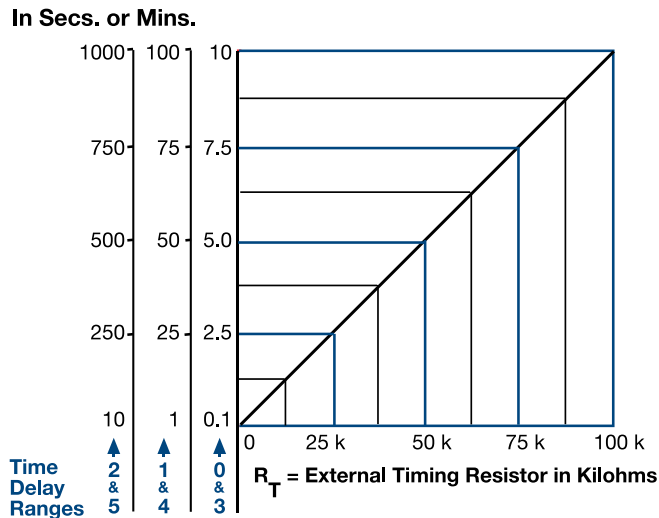
Dedicated
timers

Technical Data

Time Delay	
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%
Input	
Voltage	24, 120, or 230 V AC
Tolerance	+/-20%
Line Frequency	50 ... 60 Hz
Power Consumption	≤ 2 VA
Output	
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
Protection	
Circuitry	Encapsulated
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface
Insulation Resistance	≥ 100 MΩ
Mechanical	
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
Environmental	
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



This chart applies to externally adjustable part numbers.

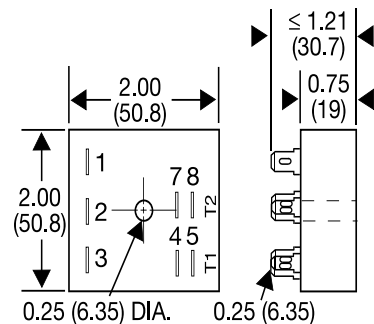
The time delay is adjustable over the time delay range selected by varying the resistance across the R_T terminals; as the resistance increases the time delay increases.

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

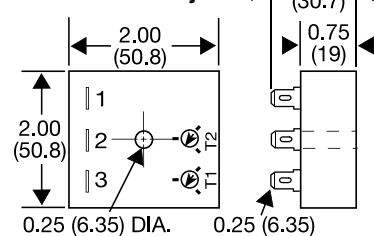
Examples: 1 to 50 S adjustable time delay, select time delay range 1 and a 50 K ohm R_T . For 1 to 100 S use a 100 K ohm R_T .

Mechanical View

Fixed & External Adjust



Onboard Adjust



Inches (Millimeters)