

# Recycling (Pulse Generator)

## ESDR Series Timing Module



10 YEAR WARRANTY

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- ON/OFF Recycling with Independent Adjustment of Both the ON and OFF Periods
- Onboard Adjust, External Adjust, or Fixed Time Delays
- 0.1 s to 1000 m in 6 Ranges
- +/-0.1% Repeat Accuracy
- +/- 5% Factory Calibration
- Available in AC or DC Voltages

Approvals:

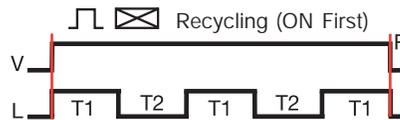
### Description

The ESDR Series offers independent time adjustment of both delay periods. Adjustment options include onboard adjust, external adjust or factory fixed. The ESDR is recommended for air drying, automatic oiling, life testing, chemical metering and automatic duty cycling. This series is designed for general purpose commercial and industrial applications where a small cost effective, reliable solid state timer is required. The factory calibration for fixed time delays is  $\leq \pm 5\%$ . The repeat accuracy, under stable conditions, is 0.1% of the selected time delay. This series is designed for input voltages of 12 V DC to 230 V AC in five ranges. Time delays of 0.1 seconds to 1000 minutes are available in six ranges. The output is rated 1 A steady and 10 A inrush. The modules are totally solid state and encapsulated to protect the electronic circuitry.

### Operation (ON Time First)

Upon application of input voltage, the output energizes and the T1, ON time begins. At the end of the ON time, the output de-energizes and the T2, OFF time begins. At the end of the OFF time, the output energizes and the cycle repeats as long as input voltage is applied. **Reset:** Removing input voltage resets the output and time delays, and returns the sequence to the first delay.

### Function



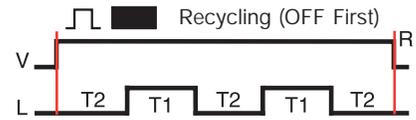
V = Voltage L = Load R = Reset  
T1 = ON Time T2 = OFF Time

### Operation (OFF Time First)

Upon application of input voltage, the T2 OFF time begins. At the end of the OFF time, the output energizes and the T1 ON time begins. At the end of the ON time, the output de-energizes and the cycle repeats as long as input voltage is applied.

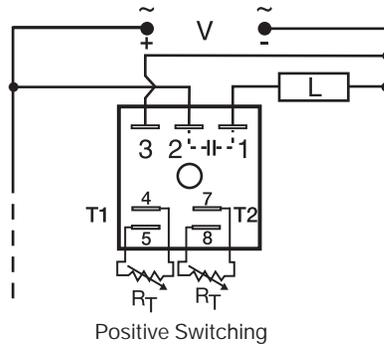
**Reset:** Removing input voltage resets the output and time delays, and returns the sequence to the first delay.

### Function



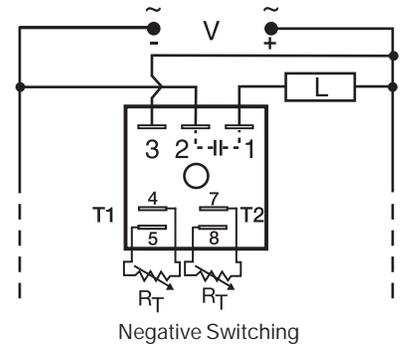
V = Voltage L = Load R = Reset  
T1 = ON Time T2 = OFF Time

### Connection



Positive Switching

V = Voltage  
L = Load  
T1 = ON Time  
T2 = OFF Time



Negative Switching

$R_T$  is used when external adjustment is ordered.

Dashed lines are internal connections.

A knob is supplied for adjustment on the unit; terminals for external adjustment.

### Ordering Table

ESDR Series	X Input
	1 - 12 V DC
	2 - 24 V AC
	3 - 24 V DC
	4 - 120 V AC
	6 - 230 V AC

Example P/N:

**ESDR623B1**

Fixed - **ESDR310.1SB50MN**

X Adjustment
1 - Both Times Fixed
2 - Both Times Onboard Adj.
3 - ON Time Onboard Adj. OFF Time Fixed
4 - ON Time Fixed OFF Time Onboard Adj.
5 - Both Times External Adj.
6 - ON Time External Adj. OFF Time Fixed
7 - ON Time Fixed, OFF Time External Adj.
8 - ON Time Onboard Adj., OFF Time External Adj.
9 - ON Time External Adj., OFF Time Onboard Adj.

X T1 ON Time*
0 - 0.1 ... 10 s
1 - 1 ... 100 s
2 - 10 ... 1000 s
3 - 0.1 ... 10 m
4 - 1 ... 100 m
5 - 10 ... 1000 m

X Operating Sequence
A - ON Time First
B - OFF Time First

X T2 OFF Time*
0 - 0.1 ... 10 s
1 - 1 ... 100 s
2 - 10 ... 1000 s
3 - 0.1 ... 10 m
4 - 1 ... 100 m
5 - 10 ... 1000 m

X Switching Mode
(V DC Only)
P - Positive
N - Negative

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

# Recycling (Pulse Generator)

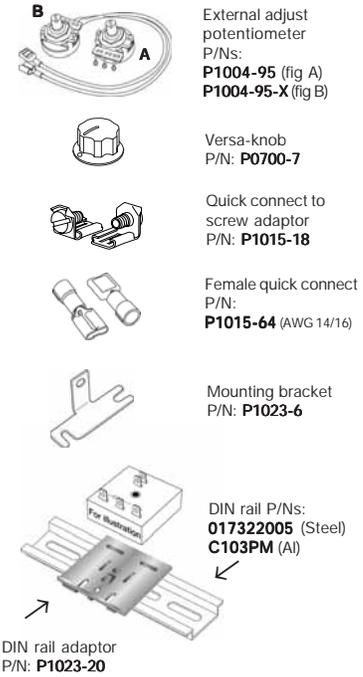
## ESDR Series

### Timing Module

#### Technical Data

<b>Time Delay</b>	
Range	100 ms ... 1000 ms in 6 adjustable ranges or fixed
Repeat Accuracy	+/-0.1% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	≤ +/- 5%
Time Delay vs. Temperature & Voltage	≤ +/-2%
Reset Time	≤ 150 ms
<b>Input</b>	
Voltage	12 or 24 V DC; 24, 120, or 230 V AC
Tolerance	+/-20%
Power Consumption	AC ≤ 2 VA; DC ≤ 1 W
Line Frequency	50 ... 60 Hz
DC Ripple	≤ 10%
<b>Output</b>	
Type	Solid state
Maximum Load Current	1 A steady state, 10 A inrush at 60°C
OFF State Leakage Current	AC ≅ 5 mA at 230 V AC; DC ≅ 1 mA
Voltage Drop	AC ≅ 2.5 V at 1 A; DC ≅ 1 V at 1 A
<b>Protection</b>	
Circuitry	Encapsulated
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface
Insulation Resistance	≥ 100 MΩ
Polarity	DC units are reverse polarity protected
<b>Mechanical</b>	
Mounting	Surface mount with one #10 (M5 x 0.8) screw
Termination	0.25 in. (6.35 mm) male quick connect terminals
Operating/Storage Temperature	-40°C ... +75°C / -40°C ... +85°C
Humidity	95% relative, non-condensing
Weight	≅ 2.4 oz (68 g)

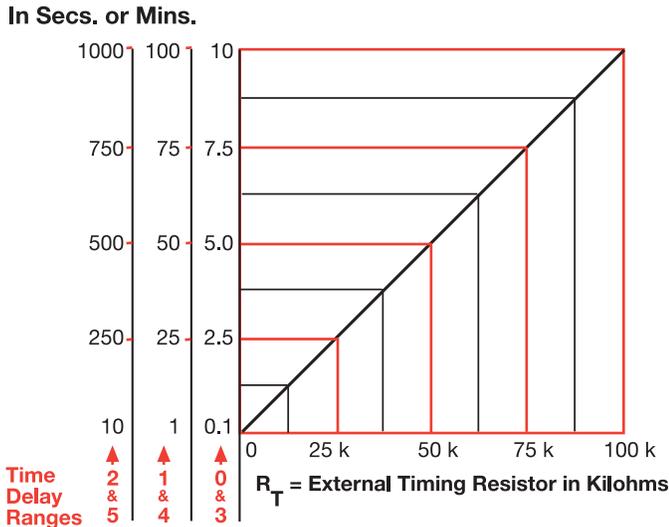
#### Accessories



See accessory pages for specifications.

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#### External Resistance vs Time Delay



This chart applies to externally adjustable part numbers.

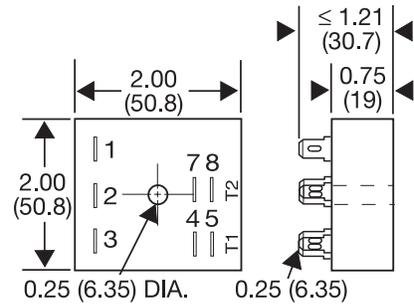
The time delay is adjustable over the time delay range selected by varying the resistance across the  $R_T$  terminals; as the resistance increases the time delay increases.

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

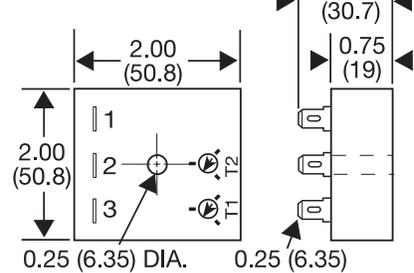
**Examples:** 1 to 50 S adjustable time delay, select time delay range 1 and a 50 K ohm  $R_T$ . For 1 to 100 S use a 100 K ohm  $R_T$ .

#### Mechanical View

##### Fixed & External Adjust



##### Onboard Adjust



Inches (Millimeters)