

## ESDR SERIES



### Wiring Diagram



### Accessories



**P1004-95, P1004-95-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.

### Description

The ESDR Series offers independent time adjustment of both delay periods. Adjustment options include fixed, onboard or external adjust. 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 12VDC to 230VAC in five ranges. Time delays of 0.1 seconds to 1000 minutes are available in six ranges. The output is rated 1A steady and 10A inrush. The modules are totally solid state and encapsulated to protect the electronic circuitry.

#### Operation (Recycling - 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.

#### Operation (Recycling - 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.

### Features & Benefits

| FEATURES   | BENEFITS   |
|--|--|
| <b>Microcontroller based</b>   | Repeat Accuracy + / - 0.1%,<br>Factory calibration + / - 5%  |
| <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>ON/OFF recycling with independent adjustment of both time periods</b> | Separate on and off timing settings are knob adjustable for added flexibility                                    |
| <b>Compact, low cost design measuring 2 in. (50.8mm) square</b>          | Allows flexibility for OEM applications  |

### Ordering Information

See next page.

# ESDR SERIES

## Ordering Information

| MODEL      | INPUT VOLTAGE | ADJUSTMENT | T1 ON TIME | FIRST DELAY | T2 OFF TIME | SWITCHING MODE |
|------------|---------------|------------|------------|-------------|-------------|----------------|
| ESDR120A0P | 12VDC         | Onboard    | 0.1 - 10s  | On time     | 0.1 - 10s   | Positive       |
| ESDR120B3P | 12VDC         | Onboard    | 0.1 - 10s  | Off time    | 0.1 - 10m   | Positive       |
| ESDR123B4P | 12VDC         | Onboard    | 0.1 - 10m  | Off time    | 1 - 100m    | Positive       |
| ESDR125A5P | 12VDC         | Onboard    | 10 - 1000m | On time     | 10 - 1000m  | Positive       |
| ESDR221A2  | 24VAC         | Onboard    | 1 - 100s   | On time     | 10 - 1000s  | n/a            |
| ESDR320A0P | 24VDC         | Onboard    | 0.1 - 10s  | On time     | 0.1 - 10s   | Positive       |
| ESDR320A3P | 24VDC         | Onboard    | 0.1 - 10s  | On time     | 0.1 - 10m   | Positive       |
| ESDR420A0  | 120VAC        | Onboard    | 0.1 - 10s  | On time     | 0.1 - 10s   | n/a            |
| ESDR420A1  | 120VAC        | Onboard    | 0.1 - 10s  | On time     | 1 - 100s    | n/a            |
| ESDR420A4  | 120VAC        | Onboard    | 0.1 - 10s  | On time     | 1 - 100m    | n/a            |
| ESDR420B1  | 120VAC        | Onboard    | 0.1 - 10s  | Off time    | 1 - 100s    | n/a            |
| ESDR420B4  | 120VAC        | Onboard    | 0.1 - 10s  | Off time    | 1 - 100m    | n/a            |
| ESDR421A1  | 120VAC        | Onboard    | 1 - 100s   | On time     | 1 - 100s    | n/a            |
| ESDR421A4  | 120VAC        | Onboard    | 1 - 100s   | On time     | 1 - 100m    | n/a            |
| ESDR423A3  | 120VAC        | Onboard    | 0.1 - 10m  | On time     | 0.1 - 10m   | n/a            |
| ESDR423A4  | 120VAC        | Onboard    | 0.1 - 10m  | On time     | 1 - 100m    | n/a            |
| ESDR424A1  | 120VAC        | Onboard    | 1 - 100m   | On time     | 1 - 100s    | n/a            |
| ESDR450A1  | 120VAC        | External   | 0.1 - 10s  | On time     | 1 - 100s    | n/a            |

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

## 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  $R_T$ .

## Function Diagrams



## ESDR SERIES

### Specifications

#### Time Delay

**Range** 0.1s - 1000m in 6 adjustable ranges or fixed

**Repeat Accuracy**  $\pm 0.1\%$  or 20ms, whichever is greater

**Tolerance**  
**(Factory Calibration)**  $\leq \pm 5\%$

**Time Delay vs Temp.**  
**& Voltage**  $\leq \pm 2\%$

**Reset Time**  $\leq 150\text{ms}$

#### Input

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

**Tolerance**  $\pm 20\%$

**Power Consumption** AC  $\leq 2\text{VA}$ ; DC  $\leq 1\text{W}$

**AC Line Frequency/DC Ripple** 50/60 Hz /  $\leq 10\%$

#### Output

**Type** Solid state

**Maximum Load Current** 1A steady state, 10A inrush at 60°C

**OFF State Leakage Current** AC  $\approx 5\text{mA}$  @ 230VAC; DC  $\approx 1\text{mA}$

**Voltage Drop** AC  $\approx 2.5\text{V}$  @ 1A; DC  $\approx 1\text{V}$  @ 1A

#### Protection

##### Circuitry

##### Dielectric Breakdown

##### Insulation Resistance

##### Polarity

#### Mechanical

##### Mounting

##### Dimensions

#### Termination

##### Operating/Storage

##### Temperature

##### Humidity

##### Weight

Encapsulated

$\geq 2000\text{V RMS}$  terminals to mounting surface

$\geq 100\text{ M}\Omega$

DC units are reverse polarity protected

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

**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

$-40^\circ$  to  $75^\circ\text{C}$  /  $-40^\circ$  to  $85^\circ\text{C}$

95% relative, non-condensing

$\approx 2.4\text{ oz}$  (68 g)

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