Schneider Electric
Time Delay and Sensor Relays

Catalog 2021
Schneider Electric™ time delay and sensor relays provide cost effective solutions for your industrial timing and sensing needs. Available in a wide array of forms, fits, and functions, these timers offer the ultimate in flexibility and performance. Accurate adjustments, legible wiring diagrams, and an interactive timer demo make selection quick and easy.

Key Features
- Multiple timing functions
- Wide input voltage range
- Wide timing range
- DIN, panel, or plug-in mounting styles
- Conforms to international standards including UL, CSA, RoHS, and CE IEC

<table>
<thead>
<tr>
<th>Series</th>
<th>Style</th>
<th>Contact Configuration</th>
<th>Rated Current Load (A)</th>
<th>Timing Range</th>
<th>Number of Functions</th>
<th>Function Type</th>
<th>Input Voltage Range</th>
<th>Page</th>
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</thead>
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<td>DIN Mounting</td>
<td></td>
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</tr>
<tr>
<td>820 Relays</td>
<td>Time delay relay</td>
<td>SPDT, DPDT</td>
<td>15</td>
<td>100 ms to 10 days</td>
<td>10</td>
<td>All</td>
<td>12–240 Vac/Vdc</td>
<td>4</td>
</tr>
<tr>
<td>831 Voltage</td>
<td>Voltage sensing relay</td>
<td>SPDT</td>
<td>15</td>
<td>100 ms to 10 s</td>
<td>1</td>
<td>On-Delay</td>
<td>120, 240 Vac; 24 Vdc</td>
<td>7</td>
</tr>
<tr>
<td>841 Current</td>
<td>Current sensing relay</td>
<td>SPDT</td>
<td>15</td>
<td>100 ms to 10 s</td>
<td>1</td>
<td>On-Delay</td>
<td>24–240 Vac</td>
<td>10</td>
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<td>Plug-in Mounting</td>
<td></td>
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</tr>
<tr>
<td>TDR782 Relays</td>
<td>Time delay relay with</td>
<td>DPDT</td>
<td>5</td>
<td>100 ms to 100 hr</td>
<td>1</td>
<td>On-Delay</td>
<td>12, 24 Vdc; 24, 110, 230 Vac</td>
<td>14</td>
</tr>
<tr>
<td>TDR782 Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TDRPRO Relays</td>
<td>Time delay relay with 5-digit thumb-wheel</td>
<td>SPDT</td>
<td>12</td>
<td>100 ms to 9990 hr</td>
<td>10</td>
<td>All</td>
<td>12–240 Vac/Vdc</td>
<td>22</td>
</tr>
<tr>
<td>TDRPRO Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Schneider Electric™ time delay and sensor relays provide cost effective solutions for your industrial timing and sensing needs. Available in a wide array of forms, fits, and functions, these timers offer the ultimate in flexibility and performance. Accurate adjustments, legible wiring diagrams, and an interactive timer demo make selection quick and easy.

Key Features
- Multiple timing functions
- Wide input voltage range
- Wide timing range
- DIN, panel, or plug-in mounting styles
- Conforms to international standards including UL, CSA, RoHS, and CE IEC
The 820 Series time delay relays are 35-mm DIN-rail mountable products offering ten different timing functions, ultra-wide timing range (10 ms to 10 days), and a universal voltage input (12–240 Vac/Vdc), all in a slim 17.5 mm (0.69 in.) modular package.

### Input Voltage Functions

<table>
<thead>
<tr>
<th>Available</th>
<th>Timing Range</th>
<th>Contact Configuration</th>
<th>Rated Current</th>
<th>Standard Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A,B,C,D,E,F,G,H,I,J</td>
<td>10 ms to 10 days</td>
<td>SPDT</td>
<td>15 A</td>
<td>821TD10H-UNI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DPDT (2 pairs of contacts)</td>
<td>15 A</td>
<td>822TD10H-UNI</td>
</tr>
</tbody>
</table>

(1) For function descriptions, see page 31.

### Specifications

#### Part Number Explanation

- **821** = SPDT
- **822** = DPDT
- **UNI** = 12–240 Vac/Vdc
- **1H** = 10 Functions
- **TD** = Time Delay

#### Feature Benefit

- **Up to 10 functions**
  - 5 timing functions controlled via supply voltage
  - 4 timing functions controlled via trigger input
  - 1 memory latching function
  - Meets most timing requirements
- **Contact configuration**
  - SPDT or DPDT
- **Universal power supply**
  - 12–240 Vac/Vdc
- **2 LED status indicators**
  - Shows status at a glance
  - Ideal for tight spaces
- **DIN-rail mountable**
  - Easy installation (screwdriver required)
- **RoHS compliant**
  - Environmentally friendly

#### Input Indication

- Green LED

#### Output Indication

- Red LED
  - Blinking = Timing
  - On = Energized

#### Enclosure Rating (according to IEC 60529 IP rating)

- IP20

#### Approvals

- UL, CE, RoHS
- cULus (File: E234203, CCN: NKCR, NKCR7), CE 61810-1, RoHS

### Input Characteristics

<table>
<thead>
<tr>
<th>Input Voltage Range</th>
<th>Operating Voltage (% of Nominal)</th>
<th>Maximum Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>12–240 Vac/Vdc</td>
<td>85% of 12 V to 110% of 240 V</td>
<td>3 VA</td>
</tr>
<tr>
<td></td>
<td>85% of 12 V to 110% of 240 V</td>
<td>1.7 W</td>
</tr>
</tbody>
</table>

#### Time Range

- 100 ms to 1 s
- 1 s to 10 s
- 0.1 min to 1 min
- 1 min to 10 min
- 0.1 hr to 1 hr
- 1 hr to 10 hr
- 0.1 day to 1 day
- 1 day to 10 days
- 100 ms to 1 s
- 1 s to 10 s
- 0.1 min to 1 min
- 1 min to 10 min
- 0.1 hr to 1 hr
- 1 hr to 10 hr
- 0.1 day to 1 day
- 1 day to 10 days

#### General Characteristics

- **Electrical Life (Operations at Rated Current) (2)**
  - 70,000 operations
- **Mechanical Life (Unpowered) (2)**
  - 10,000,000 operations
- **Dielectric Strength (Input to Contacts)**
  - 2500 Vac
- **Dielectric Strength (Between Open Contacts)**
  - 1600 Vac
- **Storage Temperature Range**
  - -30 to +70 °C (-22 to +158 °F)
- **Operating Temperature Range**
  - -20 to +150 °C (-4 to +302 °F)
- **Terminal Wire Capacity (Input and Output)**
  - 14 AWG (2.1 mm²) maximum
  - 18 AWG (1.0 mm²) maximum
- **Weight**
  - 18.5 g (0.6 oz)
  - 27 g (0.9 oz)

#### Part Number

<table>
<thead>
<tr>
<th>Part Number</th>
<th>821TD10H-UNI</th>
<th>822TD10H-UNI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Voltage</strong></td>
<td>12–240 Vac/Vdc</td>
<td>12–240 Vac/Vdc</td>
</tr>
<tr>
<td><strong>Rated Current</strong></td>
<td>15 A</td>
<td>15 A</td>
</tr>
<tr>
<td><strong>Operating Voltage</strong></td>
<td>85% of 12 V to 110% of 240 V</td>
<td>85% of 12 V to 110% of 240 V</td>
</tr>
<tr>
<td><strong>Maximum Power Consumption</strong></td>
<td>3 VA</td>
<td>1.7 W</td>
</tr>
</tbody>
</table>

### Notes

1. For function descriptions, see page 31.
2. Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.
The 831 voltage sensor is a single-phase AC voltage sensing device capable of monitoring and reacting to overvoltage and undervoltage conditions. This product is designed to be wired across terminals A1 and A2 with the voltage being monitored.

The two LED lamps indicate when the input voltage is present (green LED) and when the output is energized (red LED).

The Umax dial is used to set the upper trip-point for the voltage sensor. The Umin dial is a percentage of the Umax dial and is used to set the lower trip-point for the voltage sensor. The timing dial is used to delay the transfer of the contacts, from 0–10 s, when a set point has been violated.

### Part Number Explanation

<table>
<thead>
<tr>
<th>Series</th>
<th>VS</th>
<th>831</th>
<th>120A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Input Voltage:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 Vac</td>
<td>Upper: 85–150 Vac</td>
<td>Lower: 30–99% of upper</td>
<td></td>
</tr>
<tr>
<td>240 Vac</td>
<td>Upper: 160–276 Vac</td>
<td>Lower: 30–99% of upper</td>
<td></td>
</tr>
<tr>
<td>24 Vdc</td>
<td>Upper: 18–30 V</td>
<td>Lower: 30–99% of upper</td>
<td></td>
</tr>
</tbody>
</table>

### Nominal Input Voltage

- **831VS-120A**
- **831VS-240A**
- **831VS-24D**

### Standards

- UL Listed
- CE Marked

### Feature Benefit

- **Three-state indication LEDs**: Indicate normal state and two types of faulted states
- **Timing dial**: Adjustable delay 0–10 s
- **DIN mounting capability**: Mounts directly on a 35 mm DIN rail
- **Current rating: 15 A @ 240 Vac, 24 Vdc**: High switching capacity
- **Narrow width: 17.5 mm (0.69 in.)**: Ideal for tight spaces
### Specifications

**Part Number**

<table>
<thead>
<tr>
<th>831VS-120A</th>
<th>831VS-240A</th>
<th>831VS-24D</th>
</tr>
</thead>
</table>

#### Input Characteristics

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Absolute Input Voltage Maximum</th>
<th>Upper Supply Voltage Range</th>
<th>Lower Supply Voltage Range</th>
<th>Maximum Power Consumption</th>
<th>Time Delay</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 Vac</td>
<td>240 Vac</td>
<td>24 Vac</td>
<td>30–99% of upper preset</td>
<td>7.2 VA</td>
<td>adjustable, 0–10 s</td>
<td>±1%</td>
</tr>
<tr>
<td>240 Vac</td>
<td>480 Vac</td>
<td>48 Vac</td>
<td>30–99% of upper preset</td>
<td>14.4 VA</td>
<td>adjustable, 0–10 s</td>
<td>±1%</td>
</tr>
<tr>
<td>24 Vdc</td>
<td></td>
<td></td>
<td></td>
<td>2.8 W</td>
<td>adjustable, 0–10 s</td>
<td>±1%</td>
</tr>
</tbody>
</table>

#### Output Characteristics

<table>
<thead>
<tr>
<th>Contact Configuration</th>
<th>SPDT</th>
<th>SPDT</th>
<th>SPDT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Current Rating</td>
<td>15 A @ 120 Vac, 240 Vac, 24 Vac</td>
<td>15 A @ 120, 240 Vac, 24 Vac</td>
<td>15 A @ 120, 240 Vac, 24 Vac</td>
</tr>
<tr>
<td>Breaking Capacity</td>
<td>400 VA/AC, 384 WDC</td>
<td>400 VA/AC, 384 WDC</td>
<td>400 VA/AC, 384 WDC</td>
</tr>
<tr>
<td>Inrush Current</td>
<td>30 A / &lt;3 s</td>
<td>30 A / &lt;3 s</td>
<td>30 A / &lt;3 s</td>
</tr>
<tr>
<td>Maximum Switching Voltage</td>
<td>250 Vac / 24 Vdc</td>
<td>250 Vac / 24 Vdc</td>
<td>250 Vac / 24 Vdc</td>
</tr>
<tr>
<td>Minimum Breaking Capacity DC</td>
<td>500 mW</td>
<td>500 mW</td>
<td>500 mW</td>
</tr>
<tr>
<td>Electrical Life (1)</td>
<td>70,000 operations</td>
<td>70,000 operations</td>
<td>70,000 operations</td>
</tr>
<tr>
<td>Mechanical Life (1)</td>
<td>10,000,000 operations</td>
<td>10,000,000 operations</td>
<td>10,000,000 operations</td>
</tr>
<tr>
<td>Switching Capability</td>
<td>15 A @ 240 Vac, 50 Hz, 24 Vdc</td>
<td>15 A @ 240 Vac, 50 Hz, 24 Vdc</td>
<td>15 A @ 240 Vac, 50 Hz, 24 Vdc</td>
</tr>
<tr>
<td>Minimum Switching Requirement</td>
<td>100 mA at 5 Vac/Vdc</td>
<td>100 mA at 5 Vac/Vdc</td>
<td>100 mA at 5 Vac/Vdc</td>
</tr>
</tbody>
</table>

#### Timing/Sensing Characteristics

<table>
<thead>
<tr>
<th>Time Scales</th>
<th>1</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Ranges</td>
<td>0–10 s</td>
<td>0–10 s</td>
<td>0–10 s</td>
</tr>
<tr>
<td>Tolerance</td>
<td>±5% of mechanical setting</td>
<td>±5% of mechanical setting</td>
<td>±5% of mechanical setting</td>
</tr>
<tr>
<td>Repeatability at Constant Voltage and Temperature</td>
<td>±1%</td>
<td>±1%</td>
<td>±1%</td>
</tr>
<tr>
<td>Upper Sensing Voltage Range</td>
<td>85–150 Vac</td>
<td>160–276 Vac</td>
<td>18–30 Vac</td>
</tr>
<tr>
<td>Lower Sensing Voltage Range</td>
<td>30–99% of upper preset</td>
<td>30–99% of upper preset</td>
<td>30–99% of upper preset</td>
</tr>
</tbody>
</table>

#### General Characteristics

<table>
<thead>
<tr>
<th>Dielectric Strength (Input to Contacts)</th>
<th>2500 Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dielectric Strength (Between Open Contacts)</td>
<td>1600 Vac</td>
</tr>
<tr>
<td>Mounting Position</td>
<td>Any, 35 mm DIN rail EN 50022</td>
</tr>
<tr>
<td>Overvoltage Category</td>
<td>III</td>
</tr>
<tr>
<td>Pollution Degree</td>
<td>2</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>-20 to +70 °C</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-20 to +75 °C</td>
</tr>
<tr>
<td>Terminal Wire Capacity (Input and Output)</td>
<td>14 AWG (2.5 mm²) maximum</td>
</tr>
<tr>
<td>Terminal Screw Torque</td>
<td>7.1 lb-in (0.8 mm) maximum</td>
</tr>
<tr>
<td>Weight</td>
<td>62 g (2.5 oz)</td>
</tr>
</tbody>
</table>

#### Approvals

- UL (E234203, CCN: NKCR, NKCR7), CE (IEC 60947-1, 61000-4), RoHS

**Dimensions, Wiring Diagram**

- **Dimensions—(mm)**
  - Dimensions—(mm)
  - **Wire Diagram**
  - **Input Voltage**
  - **Output Indication**
  - **Enclosure Rating (according to IEC 60529 IP rating)**
  - **Approvals**

(1) Actual product Nk series based on electrical load, duty cycle, application, and environmental conditions.

---

**Specifications**

**SE Time Delay and Sensor Relays**

**831 Series**

**SPDT, 15 A**

**Dimensions—(mm)**

- **Input Voltage**
  - 15—Common
  - 16—Normally Closed
  - 18—Normally Open

**Wiring Diagram**

- **Input Indication**
  - Green LED
- **Output Indication**
  - Blinking = Timing On; Energized
- **Enclosure Rating (according to IEC 60529 IP rating)**
  - IP60
- **Approvals**
  - UL (E234203, CCN: NKCR, NKCR7), CE (IEC 60947-1, 61000-4), RoHS

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**Specifications**

**SE Time Delay and Sensor Relays**

**831 Series**

**SPDT, 15 A**

**Dimensions, Wiring Diagram**

- **Dimensions—(mm)**
- **Wire Diagram**
- **Input Voltage**
- **Output Indication**
- **Enclosure Rating (according to IEC 60529 IP rating)**
- **Approvals**

(1) Actual product Nk series based on electrical load, duty cycle, application, and environmental conditions.
**SE Time Delay and Sensor Relays**

**841 Series**

**SPDT, 15 A**

---

**Description**

This current sensing relay allows you to monitor the current of one circuit (1–8 A) and switch another circuit in case of an overcurrent condition. The relays are modular and finger protected (according to IEC 60529 IP rating).

---

**Specifications**

**Input Voltage Timing Range**

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Timing Range</th>
<th>Contact Configuration</th>
<th>Output (A)</th>
<th>Sensing Current Range (AC)</th>
<th>Standard Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-240 Vac</td>
<td>100 ms to 10 s</td>
<td>SPDT</td>
<td>15</td>
<td>100 mA to 1 A</td>
<td>841CS1-UNI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>200 mA to 2 A</td>
<td>841CS2-UNI</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>500 mA to 5 A</td>
<td>841CS5-UNI</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>800 mA to 8 A</td>
<td>841CS8-UNI</td>
<td></td>
</tr>
</tbody>
</table>

**Part Number Explanation**

<table>
<thead>
<tr>
<th>Series:</th>
<th>841</th>
<th>CS</th>
<th>1</th>
<th>UNI</th>
</tr>
</thead>
</table>

| Nominal Input Voltage: | UNI = 24-240 Vac |

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**Feature**

Current-sensing adjustment knob

**Benefit**

Sense from 10–100% of the rated sensing current

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**Solid-state circuitry**

Used for precise sensing and timing control

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**DIN rail mounting capability**

Mounts directly on a DIN Rail

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**Width input range**

Works with common AC voltages

---

**Input Indication**

Green LED

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**Output Indication** (Blinking = Timing; On = Energized)

Red LED

---

**Enclosure Rating** (according to IEC 60529 IP rating)

IP20

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**Approvals**

cULus (File: E234203, CCN: NKCR, NKCR7), CE 61810-1, RoHS

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**(1) Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.
**SE Time Delay and Sensor Relays**

**841 Series**

**SPDT, 15 A**

---

**Dimensions—in. (mm)**

- A1 A2
- Input Voltage
- Sensing Circuit
- B1 B2
- Current Transformer
- Inner Shunt
- Binker Shunt
- 15—Common
- 16—Normally Closed
- 18—Normally Open

---

**Description**

The 16-700DIN DIN rail provides for quick removal and installation of most sockets, while the 16-788C1 panel adapter provides a panel mounting option.

---

**Wiring Diagram**

Direct current sensing

Current sensing through a current transformer

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**Accessories**

**SE Time Delay and Sensor Relays**

**800 Series Accessories**

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**Dimensions—in. (mm)**

**Description**

**Function**

**For Use With Relays**

**Packaging Quantities**

**Standard Part Number**

---

**Note**

The lips at the base of the DIN rail may or may not be present on DIN rail extrusions.
**SE Time Delay and Sensor Relays**

**TDR782 Series**

DPDT, 5 A; 4PDT, 3 A

### Description

Miniature time delay relay that is single-function, single-voltage, and socket-compatible. Ideal for tight spaces.

### Specifications

**Part Number**

<table>
<thead>
<tr>
<th>TDR782XBX</th>
<th>TDR782XDX</th>
</tr>
</thead>
</table>

#### Input Characteristics

- **Input Voltage Range**
  - 100 ms to 1 s
  - A (On-Delay)
- **Output Current Rating**
  - 10 A @ < 100 ms
  - 10 A @ < 100 ms
- **Contact Material**
  - Silver alloy
  - Silver alloy
- **Maximum Inrush Current**
  - 10 A @ < 100 ms
  - 10 A @ < 100 ms
- **Minimum Switching Requirement**
  - 100 mA at 5 Vac/Vdc
  - 100 mA at 5 Vac/Vdc

#### Timing Characteristics

- **Time Ranges**
  - 0.05 % / °C
  - 0.05 % / °C
- **Reset Time**
  - 30 ms maximum
  - 50 ms maximum
- **Temperature Drift**
  - 0.05 % / °C
  - 0.05 % / °C

#### General Characteristics

- **Electrical Life (Operations at Rated Current)**
  - 100,000 operations
  - 10,000,000 operations
- **Dielectric Strength (Input to Contacts)**
  - 2000 Vrms
- **Storage Temperature Range**
  - -40°C to +70°C (-40°F to +158°F)
- **Operating Temperature Range**
  - -20°C to +85°C (-4°F to +185°F)
- **Weight**
  - 43 g (1.52 oz)

#### Approvals

- UL/cURus (File: E159122, CCN: NRNT2, NRNT8), CSA (File No. 254373), CE 61810-1, RoHS

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(1) For function descriptions, see page 31.

(2) Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.
SE Time Delay and Sensor Relays
TDR782 Series
DPDT, 5 A; 4PDT, 3 A

Dimensions—in. (mm)

0.8
(21)
1.0
(27)
0.02
(0.48)
0.02
(0.48)
2.3
(59.4)
2.57
(65.28)
0.14
(3.5)

SE Time Delay and Sensor Relays
TDR782 Series Accessories

Description
The TDR782 accessories create a complete system solution for all your application needs.
- The 70-782EL socket offers an alternate installation option for plug-in models.
- The 16-TDR782SC retention clip holds the relay securely in place while allowing quick and efficient installation and maintenance.

Relay Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
<th>For Use With Relays</th>
<th>Packaging Quantities</th>
<th>Standard Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounts directly to the DIN rail or panel</td>
<td>TDR782X9X</td>
<td>10</td>
<td>70-782E8-1</td>
<td></td>
</tr>
<tr>
<td>DIN or panel mounting with rising elevator box terminals</td>
<td>TDR782X9X</td>
<td>10</td>
<td>70-782E14-1</td>
<td></td>
</tr>
<tr>
<td>DIN or panel mounting with screw terminals and clamping plates</td>
<td>TDR782X9X</td>
<td>10</td>
<td>70-782D14-1</td>
<td></td>
</tr>
<tr>
<td>Solder terminals for chassis mounting</td>
<td>TDR782X9X</td>
<td>10</td>
<td>70-378-1</td>
<td></td>
</tr>
<tr>
<td>Printed circuit terminals</td>
<td>TDR782X9X</td>
<td>10</td>
<td>70-379-1</td>
<td></td>
</tr>
<tr>
<td>Metal Retention Clip</td>
<td>Helps secure the relay in the socket</td>
<td>TDR782●●</td>
<td>10</td>
<td>16-TDR782SC</td>
</tr>
</tbody>
</table>

(1) Replace the bullets (●●) with the part number suffix. See page 14.

Socket Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
<th>For Use With Sockets</th>
<th>Packaging Quantities</th>
<th>Standard Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal DIN Rail, 1 m (39.3 in.)</td>
<td>Quick installation and removal of sockets</td>
<td>See table above</td>
<td>10</td>
<td>16-702DIN</td>
</tr>
<tr>
<td>DIN Rail End Clip</td>
<td>Holds sockets firmly in place on the DIN rail</td>
<td>10</td>
<td>16-DCLIP-1</td>
<td></td>
</tr>
<tr>
<td>ID Tags</td>
<td>Allows for identification of circuits in multi-relay applications</td>
<td>70-782EL1-1</td>
<td>10</td>
<td>16-782FT-1</td>
</tr>
</tbody>
</table>

Socket

1 4
5
8
9
12
13
14
15

1 4
5
8
9
12
13
14
15
SPOT
NEMA

DPOT
NEMA

70-782EL8-1 Socket
70-782E14-1 Socket
16-TDR782SC Retention Clip
## Specifications

### SE Time Delay and Sensor Relays

<table>
<thead>
<tr>
<th>Specifications</th>
<th>70-782EL8-1</th>
<th>70-782EL14-1</th>
<th>70-782E14-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact Configuration</strong></td>
<td>DPDT</td>
<td>DPDT</td>
<td>DPDT</td>
</tr>
<tr>
<td><strong>Number of Terminals</strong></td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td><strong>Mounting Style</strong></td>
<td>PCB</td>
<td>PCB</td>
<td>PCB</td>
</tr>
<tr>
<td><strong>Nominal Voltage Rating</strong></td>
<td>300 V</td>
<td>300 V</td>
<td>300 V</td>
</tr>
<tr>
<td><strong>Storage Temperature Range</strong></td>
<td>40 to +105 °C (40 to +221 °F)</td>
<td>40 to +105 °C (40 to +221 °F)</td>
<td>40 to +105 °C (40 to +221 °F)</td>
</tr>
<tr>
<td><strong>Protection Category</strong></td>
<td>IP20 (Finger Protection)</td>
<td>IP20 (Finger Protection)</td>
<td>IP20 (Finger Protection)</td>
</tr>
<tr>
<td><strong>Wire Size Capacity</strong></td>
<td>Solid or Stranded Cu: 14–16 AWG (1.5–2.5 mm²)</td>
<td>Solid or Stranded Cu: 14–16 AWG (1.5–2.5 mm²)</td>
<td>Solid or Stranded Cu: 14–16 AWG (1.5–2.5 mm²)</td>
</tr>
<tr>
<td><strong>Body Color</strong></td>
<td>Light Gray</td>
<td>Light Gray</td>
<td>Light Gray</td>
</tr>
<tr>
<td><strong>Flammability Rating</strong></td>
<td>UL94 Class V-0</td>
<td>UL94 Class V-0</td>
<td>UL94 Class V-0</td>
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<tr>
<td><strong>Nominal Voltage Rating</strong></td>
<td>300 V</td>
<td>300 V</td>
<td>300 V</td>
</tr>
<tr>
<td><strong>Current Rating</strong></td>
<td>5 A</td>
<td>5 A</td>
<td>10 A</td>
</tr>
<tr>
<td><strong>Mounting Style</strong></td>
<td>DIN or Panel Mounting with Rising Elevator Box Terminals</td>
<td>DIN or Panel Mounting with Rising Elevator Box Terminals</td>
<td>DIN or Panel Mounting with Rising Elevator Box Terminals</td>
</tr>
<tr>
<td><strong>Number of Terminals</strong></td>
<td>8</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td><strong>Terminal Connection</strong></td>
<td>Elevator Elevator Elevator</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Screw Terminals</strong></td>
<td>Steel, Zinc Plated Steel, Zinc Plated Steel, Zinc Plated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal Metal Tracks</strong></td>
<td>Copper Alloy, Zinc Plated Copper Alloy, Zinc Plated Copper Alloy, Zinc Plated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Protection Category</strong></td>
<td>IP20 (Finger Protection)</td>
<td>IP20 (Finger Protection)</td>
<td>IP20 (Finger Protection)</td>
</tr>
<tr>
<td><strong>Storage Temperature Range</strong></td>
<td>−40 to +105 °C (−40 to +221 °F)</td>
<td>−40 to +105 °C (−40 to +221 °F)</td>
<td>−40 to +105 °C (−40 to +221 °F)</td>
</tr>
<tr>
<td><strong>Nominal Voltage Rating</strong></td>
<td>300 V</td>
<td>300 V</td>
<td>300 V</td>
</tr>
<tr>
<td><strong>Current Rating</strong></td>
<td>12 A</td>
<td>10 A</td>
<td>10 A</td>
</tr>
<tr>
<td><strong>Mounting Style</strong></td>
<td>Panel or DIN Rail Panel or DIN Rail Panel or DIN Rail</td>
<td></td>
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</tr>
<tr>
<td><strong>Number of Terminals</strong></td>
<td>7</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td><strong>Terminal Connection</strong></td>
<td>Elevator Elevator Elevator</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Screw Terminals</strong></td>
<td>Steel, Zinc Plated Steel, Zinc Plated Steel, Zinc Plated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal Metal Tracks</strong></td>
<td>Copper Alloy, Zinc Plated Copper Alloy, Zinc Plated Copper Alloy, Zinc Plated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Protection Category</strong></td>
<td>IP20 (Finger Protection)</td>
<td>IP20 (Finger Protection)</td>
<td>IP20 (Finger Protection)</td>
</tr>
</tbody>
</table>

### Dimensions

#### Dimensions—in. (mm)

<table>
<thead>
<tr>
<th>70-782EL8-1</th>
<th>70-782EL14-1</th>
<th>70-782E14-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mounts Directly to the DIN Rail or Panel</strong></td>
<td><strong>Mounts Directly to the DIN Rail or Panel</strong></td>
<td><strong>Mounts Directly to the DIN Rail or Panel</strong></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>1.69 (42.5)</td>
<td>1.69 (42.5)</td>
</tr>
<tr>
<td>H</td>
<td>2.4 (61.0)</td>
<td>2.4 (61.0)</td>
</tr>
<tr>
<td>D</td>
<td>3.36 (85.5)</td>
<td>3.11 (79.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>70-782EL14-1</th>
<th>70-782D14-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIN or Panel Mounting with Rising Elevator Box Terminals</strong></td>
<td><strong>DIN or Panel Mounting with Screw Terminals and Clamping Plates</strong></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>1.69 (42.5)</td>
</tr>
<tr>
<td>H</td>
<td>2.4 (61.0)</td>
</tr>
<tr>
<td>D</td>
<td>3.36 (85.5)</td>
</tr>
</tbody>
</table>

---

**Part Number:** 70-379-1

**Contact Configuration:** DPDT

**Number of Terminals:** 14

**Mounting Style:** PCB

**Nominal Voltage Rating:** 300 V

**Storage Temperature Range:** 40 to +105 °C (40 to +221 °F)

**Protection Category:** IP20 (Finger Protection)

**Wire Size Capacity:** Solid or Stranded Cu: 14–16 AWG (1.5–2.5 mm²)

**Body Color:** Light Gray

**Flammability Rating:** UL94 Class V-0

**Nominal Voltage Rating:** 300 V

**Current Rating:** 5 A

**Mounting Style:** DIN or Panel Mounting with Screw Terminals and Clamping Plates

**Number of Terminals:** 14

**Terminal Connection:** Screw

**Screw Terminals:** Steel, Zinc Plated

**Internal Metal Tracks:** Copper Alloy, Zinc Plated

**Protection Category:** IP20 (Finger Protection)

| **Dimensions** | | |
| W | 1.69 (42.5) | 1.69 (42.5) |
| H | 2.4 (61.0) | 2.4 (61.0) |
| D | 3.36 (85.5) | 3.36 (85.5) |

---

**Part Number:** 70-379-1

**Contact Configuration:** DPDT

**Number of Terminals:** 14

**Mounting Style:** PCB

**Nominal Voltage Rating:** 300 V

**Storage Temperature Range:** 40 to +105 °C (40 to +221 °F)

**Protection Category:** IP20 (Finger Protection)

**Wire Size Capacity:** Solid or Stranded Cu: 14–16 AWG (1.5–2.5 mm²)

**Body Color:** Light Gray

**Flammability Rating:** UL94 Class V-0

**Nominal Voltage Rating:** 300 V

**Current Rating:** 5 A

**Mounting Style:** DIN or Panel Mounting with Screw Terminals and Clamping Plates

**Number of Terminals:** 14

**Terminal Connection:** Screw

**Screw Terminals:** Steel, Zinc Plated

**Internal Metal Tracks:** Copper Alloy, Zinc Plated

**Protection Category:** IP20 (Finger Protection)

| **Dimensions** | | |
| W | 1.69 (42.5) | 1.69 (42.5) |
| H | 2.4 (61.0) | 2.4 (61.0) |
| D | 3.36 (85.5) | 3.36 (85.5) |

---

**Part Number:** 70-379-1

**Contact Configuration:** DPDT

**Number of Terminals:** 14

**Mounting Style:** PCB

**Nominal Voltage Rating:** 300 V

**Storage Temperature Range:** 40 to +105 °C (40 to +221 °F)

**Protection Category:** IP20 (Finger Protection)

**Wire Size Capacity:** Solid or Stranded Cu: 14–16 AWG (1.5–2.5 mm²)

**Body Color:** Light Gray

**Flammability Rating:** UL94 Class V-0

**Nominal Voltage Rating:** 300 V

**Current Rating:** 5 A

**Mounting Style:** DIN or Panel Mounting with Screw Terminals and Clamping Plates

**Number of Terminals:** 14

**Terminal Connection:** Screw

**Screw Terminals:** Steel, Zinc Plated

**Internal Metal Tracks:** Copper Alloy, Zinc Plated

**Protection Category:** IP20 (Finger Protection)

| **Dimensions** | | |
| W | 1.69 (42.5) | 1.69 (42.5) |
| H | 2.4 (61.0) | 2.4 (61.0) |
| D | 3.36 (85.5) | 3.36 (85.5) |
Description

Time delay relays that are programmable, multifunction, multi-voltage, and socket-compatible—offering the ultimate in design flexibility. The thumb-wheel adjustment dials result in no mechanical deviation for supreme accuracy.

Specifications

Part Number | TDRPRO-5100 | TDRPRO-5101 | TDRPRO-5102
--- | --- | --- | ---
Input Voltage Range | 12–240 Vac/Vdc | 12–240 Vac/Vdc | 12–240 Vac/Vdc
Operating Voltage | 95–110% of nominal | 95–110% of nominal | 95–110% of nominal
Maximum Power Consumption (AC) | 2 W | 2 W | 2 W
Maximum Power Consumption (DC) | 2 W | 2 W | 2 W
Contact Configuration | DPDT | DPDT | DPDT
Output Current Rating | 12 A | 12 A | 12 A
Contact Material | Silver alloy | Silver alloy | Silver alloy
Switching Capabilities | 12 A, 240 Vac, 50/60 Hz, 30 Vdc; 1/3 hp @ 120 Vac; 1/2 hp @ 240 Vac | 12 A, 240 Vac, 50/60 Hz, 30 Vdc; 1/3 hp @ 120 Vac; 1/2 hp @ 240 Vac | 12 A, 240 Vac, 50/60 Hz, 30 Vdc; 1/3 hp @ 120 Vac; 1/2 hp @ 240 Vac
Input Characteristics
--- | --- | --- | ---
Input Voltage Range | 12–240 Vac/Vdc | 12–240 Vac/Vdc | 12–240 Vac/Vdc
Operating Voltage | 85–115% of nominal | 85–115% of nominal | 85–115% of nominal
Maximum Power Consumption (AC) | 2.5 VA | 2.5 VA | 2.5 VA
Maximum Power Consumption (DC) | 2.5 VA | 2.5 VA | 2.5 VA
Contact Configuration | DPDT | DPDT | DPDT
Output Current Rating | 12 A | 12 A | 12 A
Contact Material | Silver alloy | Silver alloy | Silver alloy
Switching Capabilities | 12 A, 240 Vac, 50/60 Hz, 30 Vdc; 1/3 hp @ 120 Vac; 1/2 hp @ 240 Vac | 12 A, 240 Vac, 50/60 Hz, 30 Vdc; 1/3 hp @ 120 Vac; 1/2 hp @ 240 Vac | 12 A, 240 Vac, 50/60 Hz, 30 Vdc; 1/3 hp @ 120 Vac; 1/2 hp @ 240 Vac
Minimum Switching Requirement | 100 mA | 100 mA | 100 mA
Timing Characteristics
--- | --- | --- | ---
Time Scales | 7 | 7 | 7
Time Ranges | 0–999 by 0.1 s | 0–999 by 0.1 s | 0–999 by 0.1 s
| 0–999 by 0.1 min | 0–999 by 0.1 min | 0–999 by 0.1 min
| 0–999 by 1 hr | 0–999 by 1 hr | 0–999 by 1 hr
| 0–999 by 10 hr | 0–999 by 10 hr | 0–999 by 10 hr
Repeatability of the Time Delay at Constant Voltage and Temperature | 0.1% | 0.1% | 0.1%
Reset Time | 150 ms | 150 ms | 150 ms
Operate Time (3) | 25 ms maximum | 25 ms maximum | 25 ms maximum
Release Time (3) | 25 ms maximum | 25 ms maximum | 25 ms maximum
General Characteristics
--- | --- | --- | ---
Electrical Life (Operations at Rated Current) (2) | 100,000 operations | 100,000 operations | 100,000 operations
Mechanical Life (Unpowered) (2) | 10,000,000 operations | 10,000,000 operations | 10,000,000 operations
Dielectric Strength (Input to Contacts) | 2500 Vrms | 2500 Vrms | 2500 Vrms
Storage Temperature Range | −30 to +70 °C (−22 to +158 °F) | −30 to +70 °C (−22 to +158 °F) | −30 to +70 °C (−22 to +158 °F)
Operating Temperature Range | −20 to 110 °C (−4 to +140 °F) | −20 to 110 °C (−4 to +140 °F) | −20 to 110 °C (−4 to +140 °F)
Weight | 133 g (4.69 oz) | 133 g (4.69 oz) | 133 g (4.69 oz)
Input Indication (Lighted = On; Blinking = Energized) | Red LED | Red LED | Red LED
Output Indication (Blinking = Timing; On = Energized) | Red LED | Red LED | Red LED
Enclosure Rating (according to IEC 60529 [IP rating]) | IP40 | IP40 | IP40
Approvals | UL/cULus (File E43641, CCN: NLDX2), CE 61810-1, RoHS, cULus (File E40611, CCN: NLDrX) | UL/cULus (File E43641, CCN: NLDX2), CE 61810-1, RoHS, cULus (File E40611, CCN: NLDrX) | UL/cULus (File E43641, CCN: NLDX2), CE 61810-1, RoHS, cULus (File E40611, CCN: NLDrX)

(1) For function descriptions, see page 31.
(2) Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.
(3) After the time delay period expires, or upon application of the trigger signal (depending on the selected function).

Part Number Explanation

Series: TDR PRO - 5100
TDRPRO - 48 x 48 mm
Contact Configuration and Number of Functions:
- TDRPRO-5100 = DPDT, 10 Functions
- TDRPRO-5101 = SPDT, 10 Functions
- TDRPRO-5102 = DPDT, 3 Functions

(1) For function descriptions, see page 31.
Dimensions—i.n. (mm)

- 1.9 (48)
- 2.8 (72)
- 0.23 (6)
- 0.25 (6.5)
- 3.15 (80.0)

Wiring Diagrams

- TDRPRO-5100
- TDRPRO-5101
- TDRPRO-5102

Dimensions, Wiring Diagrams

SE Time Delay and Sensor Relays
TDRPRO Series
SPDT, 12 A; DPDT, 12 A

Description

SE Time Delay and Sensor Relays
TDRPRO Series Accessories

The TDRPRO accessories create a complete system solution for your application needs. The TDRPRO-5100, TDRPRO-5101, and TDRPRO-5102 are perfect for your application.

Relay Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
<th>For Use With Relays</th>
<th>Packaging Quantities</th>
<th>Standard Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting directly to DIN Rail or Panel</td>
<td>TDRPRO-5101</td>
<td>TDRPRO-5102</td>
<td>10</td>
<td>TDRPRO-5101-TDRPRO-5102</td>
</tr>
<tr>
<td>Panel Mounting with Screw Terminals and Clamping Plates</td>
<td>10</td>
<td>TDRPRO-5101-TDRPRO-5102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN or Panel Mounting with Elevator Terminals</td>
<td>10</td>
<td>TDRPRO-5101-TDRPRO-5102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN or Panel Mounting with Screw Terminals and Clamping Plates</td>
<td>10</td>
<td>TDRPRO-5101-TDRPRO-5102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting directly to DIN Rail or Panel</td>
<td>TDRPRO-5100</td>
<td>TDRPRO-5101</td>
<td>10</td>
<td>TDRPRO-5100-TDRPRO-5101</td>
</tr>
<tr>
<td>Panel Mounting with Screw Terminals and Clamping Plates</td>
<td>10</td>
<td>TDRPRO-5100-TDRPRO-5101</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Socket Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
<th>For Use With Sockets</th>
<th>Packaging Quantities</th>
<th>Standard Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal DIN Rail, 1 m (39.3 in.)</td>
<td>Quick installation and removal of sockets</td>
<td>Compatible with sockets listed in the table above.</td>
<td>10</td>
<td>TDRPRO-5100-TDRPRO-5101</td>
</tr>
<tr>
<td>DIN Rail End Clip</td>
<td>Holding sockets firmly in place on the DIN rail</td>
<td>10</td>
<td>TDRPRO-5100-TDRPRO-5101</td>
<td></td>
</tr>
<tr>
<td>ID Tags</td>
<td>Identification of circuits in multi-relay applications</td>
<td>10</td>
<td>TDRPRO-5100-TDRPRO-5101</td>
<td></td>
</tr>
<tr>
<td>Insulated Coil Bus Jumper System</td>
<td>Wireless socket connection</td>
<td>10</td>
<td>TDRPRO-5100-TDRPRO-5101</td>
<td></td>
</tr>
</tbody>
</table>

Socket Diagrams

- 70-750DL8-1 Socket
- 70-750EB8-1 Socket
- 16-TDRPROSC Retention Clip
Specifications

**SE Time Delay and Sensor Relays**

**TDRPRO Series Accessories**

### Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Contact Configuration</th>
<th>Number of Terminals</th>
<th>Mounting Style</th>
<th>Current Rating</th>
<th>Nominal Voltage Rating</th>
<th>Storage Temperature Range</th>
<th>Protection Category</th>
<th>Agency Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-750DL8-1</td>
<td>DPDT</td>
<td>8</td>
<td>Panel or DIN net</td>
<td>15 A</td>
<td>300 V</td>
<td>-40 to +125 °C (-40 to 257 °F)</td>
<td>cURus</td>
<td>CE 60947-1, RoHS</td>
</tr>
<tr>
<td>70-750DL11-1</td>
<td>DPDT</td>
<td>11</td>
<td>Panel or DIN net</td>
<td>15 A</td>
<td>600 V</td>
<td>-40 to +125 °C (-40 to 257 °F)</td>
<td>cURus</td>
<td>CE 60947-1, RoHS</td>
</tr>
<tr>
<td>70-796E8-1</td>
<td>DPDT</td>
<td>8</td>
<td>Panel or DIN net</td>
<td>15 A</td>
<td>300 V</td>
<td>-40 to +125 °C (-40 to 257 °F)</td>
<td>cURus</td>
<td>CE 60947-1, RoHS</td>
</tr>
<tr>
<td>70-796E11-1</td>
<td>DPDT</td>
<td>11</td>
<td>Panel or DIN net</td>
<td>15 A</td>
<td>600 V</td>
<td>-40 to +125 °C (-40 to 257 °F)</td>
<td>cURus</td>
<td>CE 60947-1, RoHS</td>
</tr>
</tbody>
</table>

### Dimensions

#### Dimensions— in. (mm)

**70-750DL8-1**

- Mounts Directly to the DIN Rail or Panel
- Dimensions: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)

**70-750DL11-1**

- Mounts Directly to the DIN Rail or Panel
- Dimensions: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)

### TDRPRO Series Accessories TDRPRO Series Accessories

**Sensor Relays**

- **Part Number**: 70-750DL8-1, 70-750DL11-1, 70-796E8-1, 70-796E11-1

---

**Contact Configuration**: DPDT

**Number of Terminals**: 8, 11

**Mounting Style**: Panel or DIN rail

**Current Rating**: 15 A

**Nominal Voltage Rating**: 300 V, 600 V

**Storage Temperature Range**: -40 to +125 °C (-40 to 257 °F)

**Protection Category**: cURus (File: E70550, CCN: SWIV2, SWIV8)

**Agency Approvals**: CE 60947-1, RoHS

---

**Dimensions**

- **70-750DL8-1**: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)
- **70-750DL11-1**: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)

---

**Part Number**: 70-169-1, 70-170-1, 70-464-1, 70-465-1

**Contact Configuration**: DPDT

**Number of Terminals**: 8, 11

**Mounting Style**: Panel or DIN rail

**Current Rating**: 15 A

**Nominal Voltage Rating**: 300 V, 600 V

**Storage Temperature Range**: -40 to +125 °C (-40 to 257 °F)

**Protection Category**: cURus (File: E70550, CCN: SWIV2, SWIV8), CSA

**Agency Approvals**: CE 60947-1, RoHS

---

**Dimensions**

- **70-750DL8-1**: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)
- **70-750DL11-1**: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)

---

**Part Number**: 70-169-1, 70-170-1, 70-464-1, 70-465-1

**Contact Configuration**: DPDT

**Number of Terminals**: 8, 11

**Mounting Style**: Panel or DIN rail

**Current Rating**: 15 A

**Nominal Voltage Rating**: 300 V, 600 V

**Storage Temperature Range**: -40 to +125 °C (-40 to 257 °F)

**Protection Category**: cURus (File: E70550, CCN: SWIV2, SWIV8), CSA

**Agency Approvals**: CE 60947-1, RoHS

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**Dimensions**

- **70-750DL8-1**: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)
- **70-750DL11-1**: 1.42 x 2.86 x 3.0 in (36 x 72.7 x 76.2 mm)
### SE Time Delay and Sensor Relays

**Definition**

A time delay is a controlled period between the functioning of two events. A time delay relay combines an electromechanical output relay and a control circuit. The control circuit is composed of solid-state components that control the operation of the relay and the timing range.

**Typical time delay functions include:**

- On-Delay
- Repeat Cycle (Starting Off)
- Interval
- Off-Delay
- Retriggerable One-Shot
- Repeat Cycle (Starting On)
- Pulse Generator
- One-Shot
- On-Off-Delay
- Memory Latch

Each function is explained in the table on page 31. Time delay relays offer a broad choice of timing ranges from less than one second to many days. There are many choices of timing adjustments from calibrated external knobs, DIP switches, thumbwheel switches, or a recessed potentiometer.

**Principle of Operation**

Time delay relays are simple control relays with a time delay built in. Their purpose is to control an event based on time. The difference between relays and time delay relays is when the output contacts open and close:

- on a control relay, contacts change state when voltage is applied and removed from the coil
- on time delay relays, contacts change state before or after a pre-selected, timed interval

Typically, time delay relays are initiated or triggered by one of two methods:

- application of input voltage (On-Delay, Interval On, Flasher, Repeat Cycle, Delayed Interval, and Interval/Flasher)
- opening or closing of a trigger signal (Off-Delay, Single Shot, and Watchdog)

These trigger signals can be one of two designs:

- a control switch (dry contact)—for example, limit switch, push button, float switch
- voltage (commonly known as a power trigger)

**Definitions:**

**Input Voltage:** Control voltage applied to the input terminals (see the wiring diagrams on page 31). Depending on the function, input voltage either initiates the unit or reads it to initiate when a trigger signal is applied.

**Trigger Signal:** On certain timing functions, a trigger signal initiates the unit after input voltage has been applied. As noted above, this trigger signal can either be a control switch (dry contact switch) or a power trigger (voltage).

**Output (Load):** A time delay relay has an internal relay (usually mechanical) with contacts that open and close to control the load. The contacts are represented by the dotted lines in the wiring diagrams.

**NOTE:** For the time delay relay to operate properly, voltage must be applied to power the load being switched by the relay’s output contacts.

### Time Delay Relay Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Timing Chart</th>
<th>Relays</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Delay</td>
<td>When input voltage U is applied, time delay T begins. Relay contacts R change state after the time delay is complete. When input voltage U is removed, A trigger switch is not used in this function.</td>
<td><img src="image1" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
<tr>
<td>Off-Delay</td>
<td>When input voltage U is applied, time delay T begins. When time delay T is complete, relay contacts R change state for time delay T. This cycle repeats until input voltage U is removed. A trigger switch is not used in this function.</td>
<td><img src="image2" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
<tr>
<td>Interval</td>
<td>When input voltage U is applied, relay contacts R change state immediately and the timing cycle begins. When time delay T is complete, contacts return to their shelf state. When input voltage U is removed, contacts also return to their shelf state. A trigger switch is not used in this function.</td>
<td><img src="image3" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
<tr>
<td>One-Shot</td>
<td>When input voltage U must be applied continuously. When trigger switch S is closed, time delay T begins. When delay T is complete, contacts R return to their shelf state. If trigger switch S is closed before time delay T is complete, then time is reset. When trigger switch S is opened, the delay begins again, and relay contacts remain in their energized state. If input voltage U is removed, then relay contacts R return to their shelf state.</td>
<td><img src="image4" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
<tr>
<td>Repeat Cycle (On-Delay)</td>
<td>When input voltage U is applied, relay contacts R change state immediately and the timing cycle begins. When time delay T is complete, contacts return to their shelf state. If trigger switch S is closed before time delay T is complete, then time is reset. When trigger switch S is opened, the delay begins again, and relay contacts remain in their energized state. If input voltage U is removed, then relay contacts R return to their shelf state.</td>
<td><img src="image5" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
<tr>
<td>Retriggerable One-Shot</td>
<td>When input voltage U is applied, relay contacts R change state immediately and time delay T begins. When time delay T is complete, contacts return to their shelf state for time delay T. This cycle repeats until input voltage U is removed. A trigger switch is not used in this function.</td>
<td><img src="image6" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
<tr>
<td>Pulse Generator</td>
<td>When input voltage U is applied, a single output pulse of S is delivered to the relay after time delay T. Power must be removed and reapplied to repeat the pulse. A trigger switch is not used in this function.</td>
<td><img src="image7" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
<tr>
<td>One-Shot with Switch Trigger</td>
<td>When input voltage U is applied, relay contacts R change state immediately and time delay T begins. When time delay T is complete, contacts return to their shelf state for time delay T. This cycle repeats until input voltage U is removed. A trigger switch is not used in this function.</td>
<td><img src="image8" alt="Timing Chart" /></td>
<td>TDRPRO-5102, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102</td>
</tr>
</tbody>
</table>

**Definitions:**

- **Trigger Switch:** A switch that initiates the operation of the relay when closed.
- **On-Delay:** The delay begins when input voltage U is applied and remains closed until the delay time has elapsed.
- **Off-Delay:** The delay begins when input voltage U is applied and remains open until the delay time has elapsed.
- **Interval:** The delay begins when input voltage U is applied and remains closed or open until the delay time has elapsed.
- **Memory Latch:** The delay begins when input voltage U is applied and remains closed or open until the delay time has elapsed.

**Application Data (continued):**

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**Application Data**

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**SE Time Delay and Sensor Relays**

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**Definitions:**

- **Input Voltage:** Control voltage applied to the input terminals (see the wiring diagrams on page 31). Depending on the function, input voltage either initiates the unit or reads it to initiate when a trigger signal is applied.
- **Trigger Signal:** On certain timing functions, a trigger signal initiates the unit after input voltage has been applied. As noted above, this trigger signal can either be a control switch (dry contact switch) or a power trigger (voltage).
- **Output (Load):** A time delay relay has an internal relay (usually mechanical) with contacts that open and close to control the load. The contacts are represented by the dotted lines in the wiring diagrams.

**NOTE:** For the time delay relay to operate properly, voltage must be applied to power the load being switched by the relay’s output contacts.
Applications

Schneider Electric time delay and sensor relays provide cost-effective solutions for your industrial timing and sensing needs. Available in a wide array of forms, fits, and functions, these timers offer flexibility and performance for process control and industrial building applications.

Typical Examples of Timer Applications

**Automation Panels**
- Process controls, motor controls, emergency lighting

**Packaging Machinery**
- Conveyor motors, food processors, product/shrink wrap, solenoid controls

**Power Supplies**
- Universal power supplies, battery backup systems

**HVAC & Refrigeration**
- Anti-condensation equipment, compressor controls, blower controls, motorized duct/vent controls

**Food & Beverage**
- Commercial/industrial cooking equipment, filtration systems, bottling, chillers, convection ovens

**Lighting Control**
- Traffic signal systems, motorway information systems, theatrical lighting, ballast lighting

**Material Handling**
- Motor control, conveyor controls

**Appliances**
- Air conditioners, water heaters, portable heaters, spa controls, water pumps

Easily find the proper relay to fit your design requirements

- **Online Catalog**
  Find the right product by choosing specifications, compare products side-by-side, and view technical specifications, 2D and 3D drawings, and associated accessories.

- **Cross-Reference Search**
  Search our comprehensive database to identify products by manufacturer and part number, and link directly to part specifications.

- **3D CAD Library**
  View, email, download, or insert a file directly into your open CAD software. You can choose from 18 different file formats.

- **Order Free Samples**
  Schneider Electric offers free samples as a courtesy to individuals and companies evaluating our products for their designs and applications. Sample orders are subject to approval.

Simplify and shorten workflow

- **Interactive Tools**
  View interactive demonstrations, such as our Time Delay Relay Interactive Demo (left), which visually demonstrates the ten different timing functions offered on Schneider Electric time delay relays.

- **Distributor Inventory Search**
  Search authorized distributors’ current Schneider Electric inventory and buy online. (Buy online is not available for all distributors.)
### SE Time Delay and Sensor Relays

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