

# Schneider Electric Time Delay and Sensor Relays

Catalog  
**2021**



# SE Time Delay and Sensor Relays

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# Series Overview

# SE Time Delay and Sensor Relays

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



| Series                            | Style                                     | Contact Configuration | Rated Current Load (A) | Timing Range      | Number of Functions | Function Type                         | Input Voltage Range          | Page |
|-----------------------------------|---|-----------------------|------------------------|-------------------|---------------------|---------------------------------------|------------------------------|------|
| <b>DIN Mounting</b>               |   |                       |                        |                   |                     |                                       |                              |      |
| <b>820 Relays</b>                 | Time delay relay                          | SPST                  | 15                     | 100 ms to 10 days | 10                  | All                                   | 12–240 Vac/Vdc               | 4    |
|                                   |   | DPDT                  |                        |                   |                     |                                       |                              |      |
|                                   |   |                       |                        |                   |                     |                                       |                              |      |
| <b>831 Voltage Sensing Relays</b> | Voltage sensing relay                     | SPDT                  | 15                     | 100 ms to 10 s    | 1                   | On-Delay                              | 120, 240 Vac; 24 Vdc         | 7    |
|                                   |   |                       |                        |                   |                     |                                       |                              |      |
| <b>841 Current Sensing Relays</b> | Current sensing relay                     | SPDT                  | 15                     | 100 ms to 10 s    | 1                   | On-Delay                              | 24–240 Vac                   | 10   |
| <b>Plug-in Mounting</b>           |   |                       |                        |                   |                     |                                       |                              |      |
| <b>TDR782 Relays</b>              | Time delay relay with dial                | DPDT                  | 5                      | 100 ms to 100 hr  | 1                   | On-Delay                              | 12, 24 Vdc; 24, 110, 230 Vac | 14   |
|                                   |   | 4PDT                  | 3                      |                   |                     |                                       |                              |      |
| <b>TDRPRO Relays</b>              | Time delay relay with 5-digit thumb-wheel | SPDT                  | 12                     | 100 ms to 9990 hr | 10                  | All                                   | 12–240 Vac/Vdc               | 22   |
|                                   |   | DPDT                  | 12                     | 100 ms to 9990 hr | 3                   | On-Delay / Repeat Cycle / On Interval |                              |      |

## Description

# SE Time Delay and Sensor Relays

820 Series

SPDT, 15 A; DPDT, 15 A



## Description

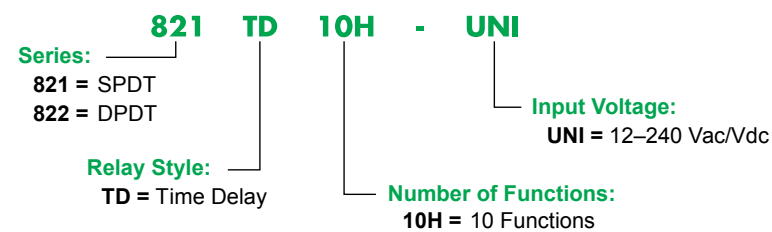
The 820 Series time delay relays are 35-mm DIN-rail mountable products offering ten different timing functions, ultra-wide timing range (10 ms to 10 days), and a universal voltage input (12–240 Vac/Vdc), all in a slim 17.5 mm (0.69 in.) modular package.

| Feature                      | Benefit  |
|------------------------------|--|
| Up to 10 functions           | <ul style="list-style-type: none"> <li>5 timing functions controlled via supply voltage</li> <li>4 timing functions controlled via trigger input</li> <li>1 memory latching function</li> </ul> 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   |
| Only 17.5 mm (0.69 in.) wide | Ideal for tight spaces   |
| DIN-rail mountable           | Easy installation (screwdriver required)   |
| RoHS compliant               | Environmentally friendly   |

| Input Voltage  | Functions Available (1) | Timing Range     | Contact Configuration | Rated Current              | Standard Part Number |
|----------------|-------------------------|------------------|-----------------------|----------------------------|----------------------|
| 12–240 Vac/Vdc | A,B,C,D,E,F,G,H,I,J     | 10 ms to 10 days | SPDT                  | 15 A                       | 821TD10H-UNI         |
|                |                         |                  | DPDT                  | 15 A (2 pairs of contacts) | 822TD10H-UNI         |

(1) For function descriptions, see page 31.

## Part Number Explanation



## Specifications

# SE Time Delay and Sensor Relays

820 Series

SPDT, 15 A; DPDT, 15 A

## Specifications

| Part Number   | 821TD10H-UNI   | 822TD10H-UNI   |
|---|--|--|
| <b>Input Characteristics</b>                          |  |  |
| Input Voltage Range                                   | 12–240 Vac/Vdc   | 12–240 Vac/Vdc   |
| Operating Voltage (% of Nominal)                      | 85% of 12 V to 110% of 240 V   | 85% of 12 V to 110% of 240 V   |
| Maximum Power Consumption                             | 3 VA<br>1.7 W  | 3 VA<br>1.7 W  |
| <b>Output Characteristics</b>                         |  |  |
| Contact Configuration                                 | SPDT   | DPDT   |
| Output Current Rating                                 | 15 A   | 15 A   |
| Contact Material                                      | Silver alloy   | Silver alloy   |
| Switching Capability                                  | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300  | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300  |
| Minimum Switching Requirement                         | 100 mA   | 100 mA   |
| <b>Timing Characteristics</b>                         |  |  |
| Functions Available (1)                               | Multifunction  | Multifunction  |
| Time Scales   | 8  | 8  |
| Time Ranges   | 100 ms to 1 s<br>1 s to 10 s<br>0.1 min to 1 min<br>1 min to 10 min<br>0.1 hr to 1 hr<br>1 hr to 10 hr<br>0.1 day to 1 day<br>1 day to 10 days | 100 ms to 1 s<br>1 s to 10 s<br>0.1 min to 1 min<br>1 min to 10 min<br>0.1 hr to 1 hr<br>1 hr to 10 hr<br>0.1 day to 1 day<br>1 day to 10 days |
| Tolerance   | 5% of mechanical setting   | 5% of mechanical setting   |
| Repeatability at Constant Voltage and Temperature     | 0.2%   | 0.2%   |
| Reset Time  | 150 ms maximum   | 150 ms maximum   |
| Trigger Pulse Length                                  | 50 ms minimum  | 50 ms minimum  |
| <b>General Characteristics</b>                        |  |  |
| Electrical Life (Operations at Rated Current) (2)     | 70,000 operations  | 70,000 operations  |
| Mechanical Life (Unpowered) (2)                       | 10,000,000 operations  | 10,000,000 operations  |
| Dielectric Strength (Input to Contacts)               | 2500 Vac   | 2500 Vac   |
| Dielectric Strength (Between Open Contacts)           | 1600 Vac   | 1600 Vac   |
| Storage Temperature Range                             | –30 to +70 °C (–22 to +158 °F)   | –30 to +70 °C (–22 to +158 °F)   |
| Operating Temperature Range                           | –20 to +55 °C (–4 to +131 °F)  | –20 to +55 °C (–4 to +131 °F)  |
| Terminal Wire Capacity (Input and Output)             | 14 AWG (2.1 mm <sup>2</sup> ) maximum  | 14 AWG (2.1 mm <sup>2</sup> ) maximum  |
| Terminal Screw Torque                                 | 7.1 lb-in (0.8 N•m) maximum  | 7.1 lb-in (0.8 N•m) maximum  |
| Weight  | 55 g (1.9 oz)  | 70 g (2.5 oz)  |
| Input Indication                                      | Green LED  | Green LED  |
| Output Indication (Blinking = Timing; On = Energized) | Red LED  | Red LED  |
| Enclosure Rating (according to IEC 60529 IP rating)   | IP20   | IP20   |
| Approvals   | cULus (File: E234203, CCN: NKCR, NKCR7), CE 61810-1, RoHS  | cULus (File: E234203, CCN: NKCR, NKCR7), CE 61810-1, RoHS  |

(1) For function descriptions, see page 31.

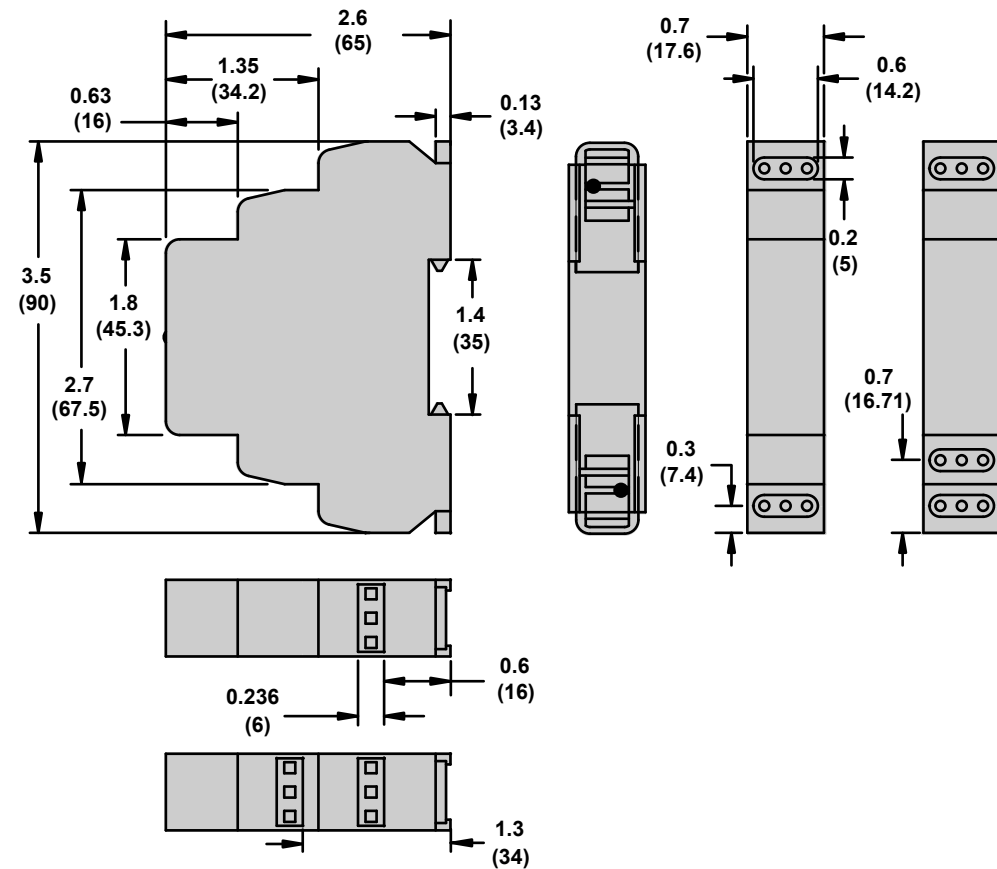
(2) Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.

## SE Time Delay and Sensor Relays

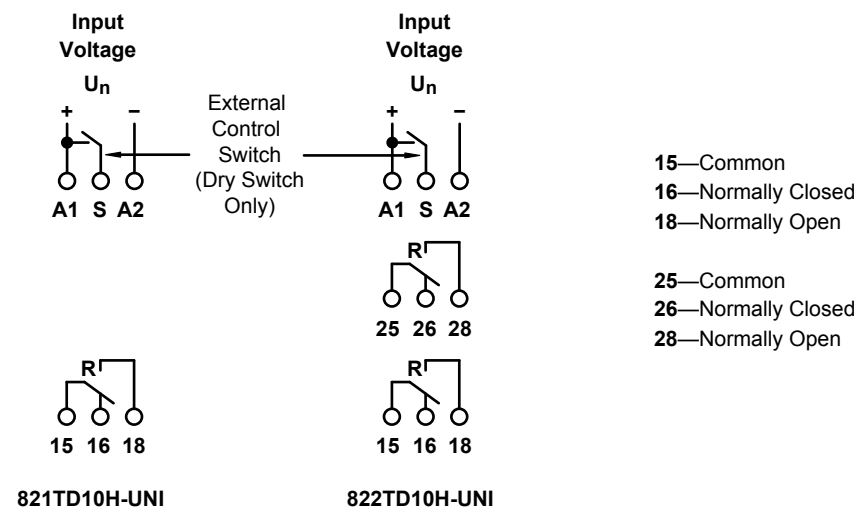
### 820 Series

SPDT, 15 A; DPDT, 15 A

#### Dimensions—in. (mm)



#### Wiring Diagram



## SE Time Delay and Sensor Relays

### 831 Series

SPDT, 15 A



#### Description

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.

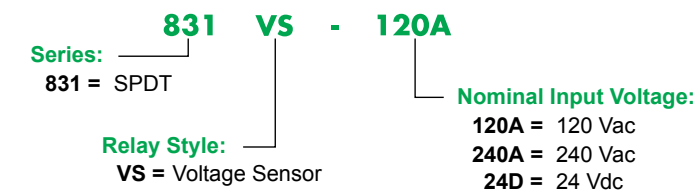
The two LED lamps indicate when the input voltage is present (green LED) and when the output is energized (red LED).

The  $U_{max}$  dial is used to set the upper trip-point for the voltage sensor. The  $U_{min}$  dial is a percentage of the  $U_{max}$  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.

| 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                                |

| Nominal Input Voltage | Sensing Voltage Range                        | Timing Range | Contact Configuration | Rated Current | Standard Part Number |
|-----------------------|--|--------------|-----------------------|---------------|----------------------|
| 120 Vac               | Upper: 85–150 Vac<br>Lower: 30–99% of upper  | 0–10 s       | SPDT                  | 15 A          | 831VS-120A           |
| 240 Vac               | Upper: 160–276 Vac<br>Lower: 30–99% of upper |              |                       |               | 831VS-240A           |
| 24 Vdc                | Upper: 18–30 V<br>Lower: 30–99% of upper     |              |                       |               | 831VS-24D            |

#### Part Number Explanation



# SE Time Delay and Sensor Relays

## 831 Series

### SPDT, 15 A

### Specifications

| Part Number   | 831VS-120A  | 831VS-240A  | 831VS-24D   |
|---|---|---|---|
| <b>Input Characteristics</b>                          |   |   |   |
| Nominal Input Voltage                                 | 120 Vac   | 240 Vac   | 24 Vdc  |
| Absolute Input Voltage Maximum                        | 200 Vac   | 280 Vac   | 35 Vdc  |
| Upper Supply Voltage Range                            | 85–150 Vac  | 160–276 Vac   | 18–30 Vdc   |
| Lower Supply Voltage Range                            | 30–99% of upper preset  | 30–99% of upper preset  | 30–99% of upper preset  |
| Maximum Power Consumption                             | 1.2 VA  | 1.2 VA  | 1.2 W   |
| Time Delay  | adjustable, 0–10 s  | adjustable, 0–10 s  | adjustable, 0–10 s  |
| <b>Accuracy</b>                                       |   |   |   |
| Mechanical Setting                                    | 5%  | 5%  | 5%  |
| Repeat Accuracy                                       | <1%   | <1%   | <1%   |
| Temperature Variation                                 | <1% / °C  | <1% / °C  | <1% / °C  |
| Hysteresis (from fault to normal)                     | 2–6% of adjusted value  | 2–6% of adjusted value  | 2–6% of adjusted value  |
| <b>Output Characteristics</b>                         |   |   |   |
| Contact Configuration                                 | SPDT  | SPDT  | SPDT  |
| Output Current Rating                                 | 15 A @ 120, 240 Vac, 24 Vdc   | 15 A @ 120, 240 Vac, 24 Vdc   | 15 A @ 120, 240 Vac, 24 Vdc   |
| Breaking Capacity                                     | 4000 VA/AC1, 384 W/DC   | 4000 VA/AC1, 384 W/DC   | 4000 VA/AC1, 384 W/DC   |
| Inrush Current  | 30 A / <3 s   | 30 A / <3 s   | 30 A / <3 s   |
| Maximum Switching Voltage                             | 250 Vac / 24 Vdc  | 250 Vac / 24 Vdc  | 250 Vac / 24 Vdc  |
| Minimum Breaking Capacity DC                          | 500 mW  | 500 mW  | 500 mW  |
| Mechanical Life (1)                                   | 10,000,000 operations   | 10,000,000 operations   | 10,000,000 operations   |
| Electrical Life (1)                                   | 70,000 operations   | 70,000 operations   | 70,000 operations   |
| Contact Material                                      | Silver alloy  | Silver alloy  | Silver alloy  |
| Switching Capability                                  | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300 | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300 | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300 |
| Minimum Switching Requirement                         | 100 mA at 5 Vac/Vdc   | 100 mA at 5 Vac/Vdc   | 100 mA at 5 Vac/Vdc   |
| <b>Timing/Sensing Characteristics</b>                 |   |   |   |
| Time Scales   | 1   | 1   | 1   |
| Time Ranges   | 0–10 s  | 0–10 s  | 0–10 s  |
| Tolerance   | 5% of mechanical setting  | 5% of mechanical setting  | 5% of mechanical setting  |
| Repeatability at Constant Voltage and Temperature     | 1%  | 1%  | 1%  |
| Upper Sensing Voltage Range                           | 85–150 Vac  | 160–276 Vac   | 18–30 Vdc   |
| Lower Sensing Voltage Range                           | 30–99% of upper preset  | 30–99% of upper preset  | 30–99% of upper preset  |
| <b>General Characteristics</b>                        |   |   |   |
| Dielectric Strength (Input to Contacts)               | 2500 Vac  | 2500 Vac  | 2500 Vac  |
| Dielectric Strength (Between Open Contacts)           | 1600 Vac  | 1600 Vac  | 1600 Vac  |
| Mounting Position                                     | Any, 35 mm DIN rail EN 50022  | Any, 35 mm DIN rail EN 50022  | Any, 35 mm DIN rail EN 50022  |
| Overvoltage Category                                  | III   | III   | III   |
| Pollution Degree                                      | 2   | 2   | 2   |
| Storage Temperature Range                             | –30 to +70 °C (–22 to +158 °F)  | –30 to +70 °C (–22 to +158 °F)  | –30 to +55 °C (–22 to +131 °F)  |
| Operating Temperature Range                           | –20 to +55 °C (–4 to +131 °F)   | –20 to +55 °C (–4 to +131 °F)   | –20 to +55 °C (–4 to +131 °F)   |
| Terminal Wire Capacity (Input and Output)             | 14 AWG (2.5 mm <sup>2</sup> ) maximum   | 14 AWG (2.5 mm <sup>2</sup> ) maximum   | 14 AWG (2.5 mm <sup>2</sup> ) maximum   |
| Terminal Screw Torque                                 | 7.1 lb-in (0.8 N·m) maximum   | 7.1 lb-in (0.8 N·m) maximum   | 7.1 lb-in (0.8 N·m) maximum   |
| Weight  | 62 g (2.19 oz)  | 62 g (2.19 oz)  | 88 g (3.10 oz)  |
| Input Indication                                      | Green LED   |   |   |
| Output Indication (Blinking = Timing; On = Energized) | Red LED   |   |   |
| Enclosure Rating (according to IEC 60529 IP rating)   | IP40  |   |   |
| Approvals   | UL (E234203, CCN: NKCR, NKCR7),<br>CE (IEC 60947-1, 61000-4),<br>RoHS                     |   |   |

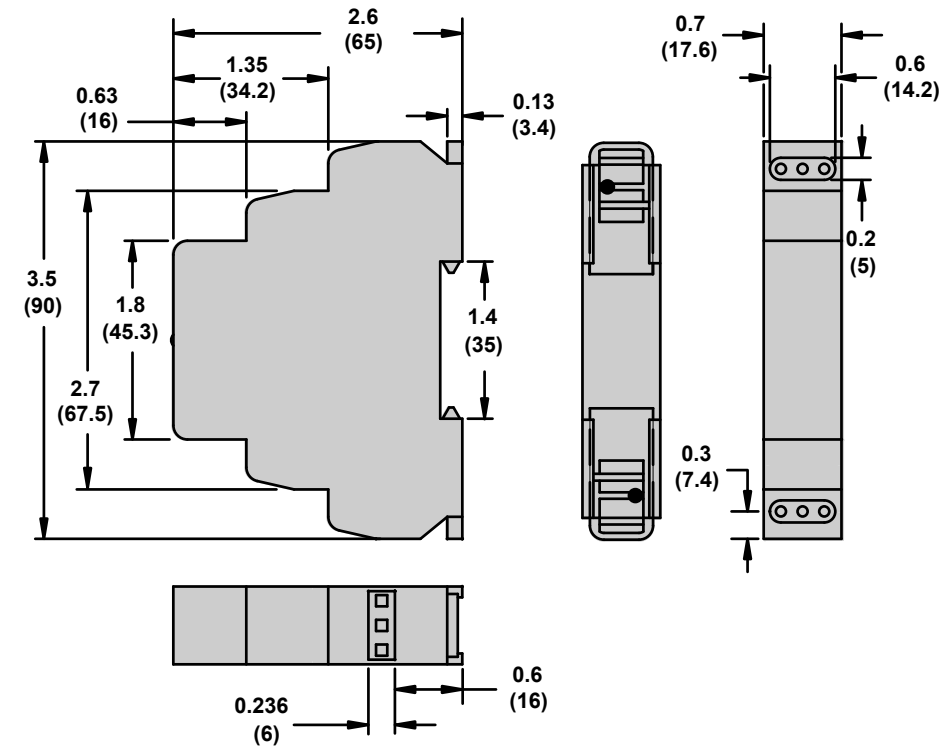
(1) Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.

# SE Time Delay and Sensor Relays

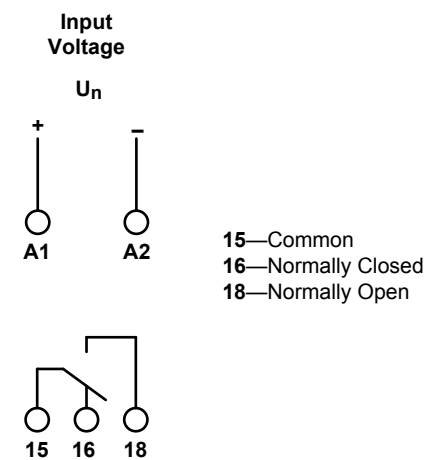
## 831 Series

### SPDT, 15 A

### Dimensions—in. (mm)



### Wiring Diagram



## Description

# SE Time Delay and Sensor Relays

841 Series  
SPDT, 15 A



841 Relay

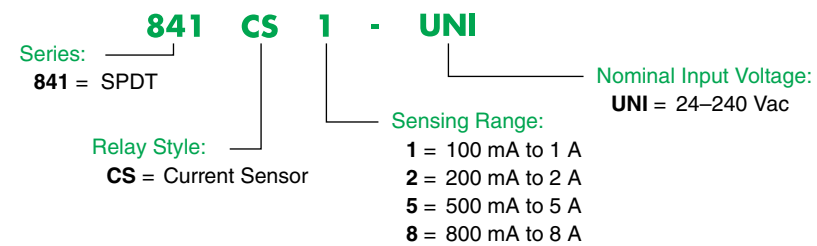
## Description

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).

| Feature                          | Benefit   |
|----------------------------------|---|
| Current-sensing adjustment knob  | Sense from 10–100% of the rated sensing current |
| Input/output terminals           | Accepts wire up to 14 AWG                       |
| Solid-state circuitry            | Used for precise sensing and timing control     |
| Input/output indication          | Shows status at a glance                        |
| DIN rail mounting capability     | Mounts directly on a DIN Rail                   |
| Narrow width: 17.5 mm (0.69 in.) | Ideal for tight spaces                          |
| Wide input range                 | Works with common AC voltages                   |

| Input Voltage | Timing Range   | Contact Configuration | Output (A) | Sensing Current Range (AC) | Standard Part Number |
|---------------|----------------|-----------------------|------------|----------------------------|----------------------|
| 24–240 Vac    | 100 ms to 10 s | SPDT                  | 15         | 100 mA to 1 A              | 841CS1-UNI           |
|               |                |                       |            | 200 mA to 2 A              | 841CS2-UNI           |
|               |                |                       |            | 500 mA to 5 A              | 841CS5-UNI           |
|               |                |                       |            | 800 mA to 8 A              | 841CS8-UNI           |

## Part Number Explanation



## Specifications

# SE Time Delay and Sensor Relays

841 Series  
SPDT, 15 A

## Specifications

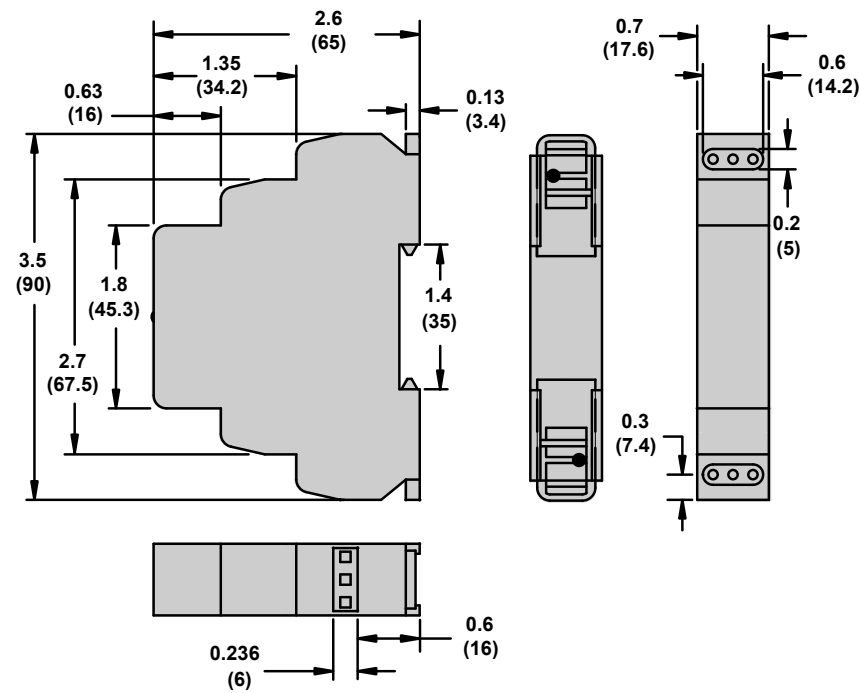
| Part Number   | 841CS1-UNI  | 841CS2-UNI  | 841CS5-UNI  | 841CS8-UNI  |
|---|---|---|---|---|
| <b>Input Characteristics</b>                          |   |   |   |   |
| Input Voltage Range                                   | 24–240 Vac  | 24–240 Vac  | 24–240 Vac  | 24–240 Vac  |
| Maximum Power Consumption                             | 1.2 VA  | 1.2 VA  | 1.2 VA  | 1.2 VA  |
| <b>Output Characteristics</b>                         |   |   |   |   |
| Contact Configuration                                 | SPDT  | SPDT  | SPDT  | SPDT  |
| Output Current Rating                                 | 15 A  | 15 A  | 15 A  | 15 A  |
| Contact Material                                      | Silver alloy  | Silver alloy  | Silver alloy  | Silver alloy  |
| Switching Capability                                  | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300 | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300 | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300 | 15 A @ 240 Vac, 50/60 Hz, 24 Vdc<br>1/2 hp @ 120 Vac<br>1 hp @ 240 Vac<br>Pilot duty B300 |
| Minimum Switching Requirement                         | 100 mA at 5 Vac/Vdc   | 100 mA at 5 Vac/Vdc   | 100 mA at 5 Vac/Vdc   | 100 mA at 5 Vac/Vdc   |
| <b>Timing/Sensing Characteristics</b>                 |   |   |   |   |
| Time Scales   | 1   | 1   | 1   | 1   |
| Time Ranges   | 0–10 s  | 0–10 s  | 0–10 s  | 0–10 s  |
| Tolerance   | 5% of mechanical setting  | 5% of mechanical setting  | 5% of mechanical setting  | 5% of mechanical setting  |
| Repeatability at Constant Voltage and Temperature     | 1%  | 1%  | 1%  | 1%  |
| Sensing Range   | 100 mA to 1 A   | 200 mA to 2 A   | 500 mA to 5 A   | 800 mA to 8 A   |
| <b>General Characteristics</b>                        |   |   |   |   |
| Electrical Life (Operations at Rated Current) (1)     | 70,000 operations   |   |   |   |
| Mechanical Life (Unpowered) (1)                       | 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 +55 °C (–4 to +131 °F)   |   |   |   |
| Terminal Wire Capacity (Input and Output)             | 14 AWG (2.1 mm <sup>2</sup> ) maximum   |   |   |   |
| Terminal Screw Torque                                 | 7.1 lb-in (0.8 N•m) maximum   |   |   |   |
| Weight  | 60 g (2.12 oz)  |   |   |   |
| Input Indication                                      | Green LED   |   |   |   |
| Output Indication (Blinking = Timing; On = Energized) | Red LED   |   |   |   |
| Enclosure Rating (according to IEC 60529 IP rating)   | IP20  |   |   |   |
| Approvals   | cULus (File: E234203, CCN: NKCR, NKCR7), CE 61810-1, RoHS                                 |   |   |   |

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

# SE Time Delay and Sensor Relays

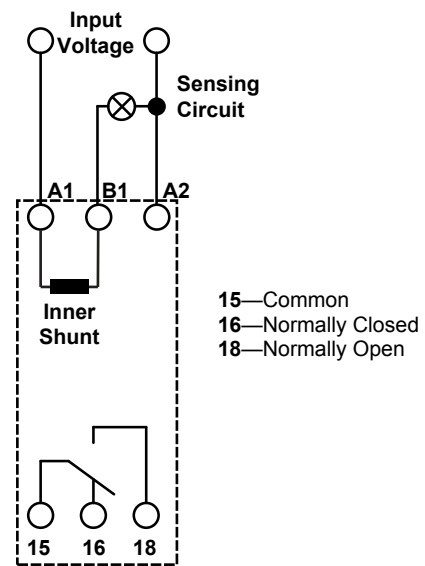
841 Series  
SPDT, 15 A

## Dimensions—in. (mm)

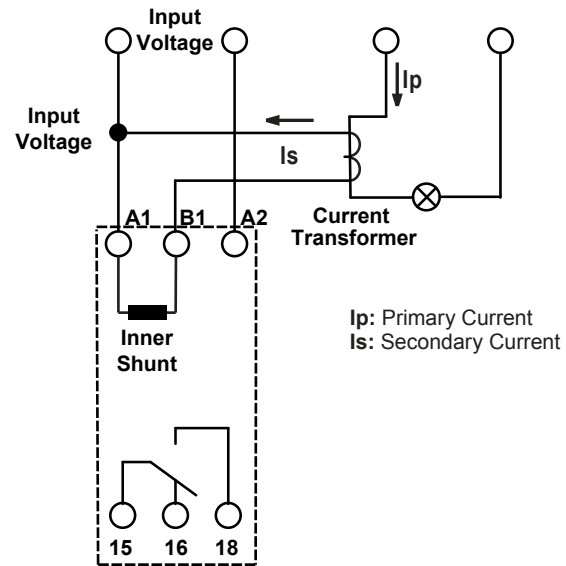


## Wiring Diagram

### Direct current sensing



### Current sensing through a current transformer



# SE Time Delay and Sensor Relays

800 Series Accessories

## 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.

16-700DIN DIN Rail,  
16-DCLIP-1 DIN Rail  
End Clip



Shown with an 821 Relay



16-788C1 Panel Adapter

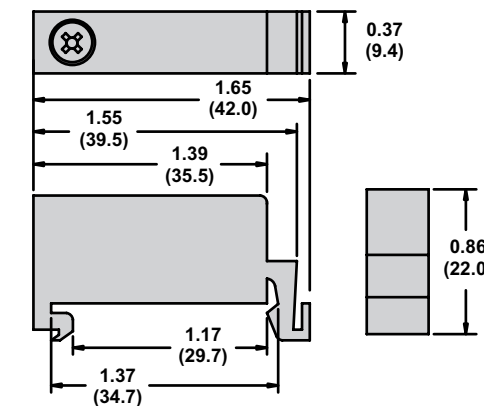
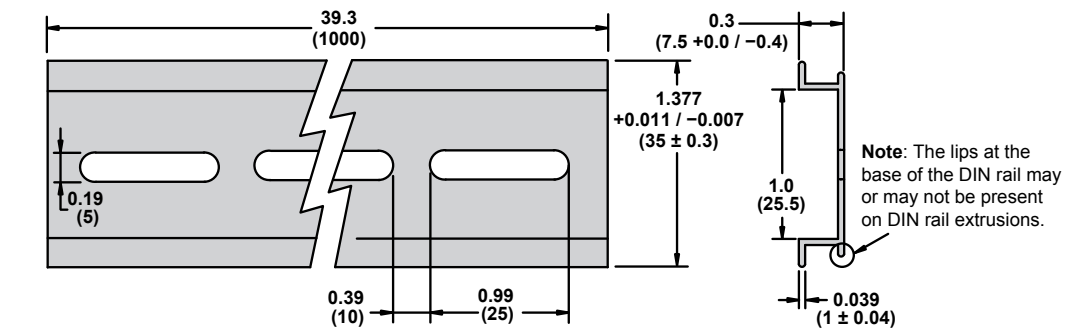


Shown with an 831 Relay

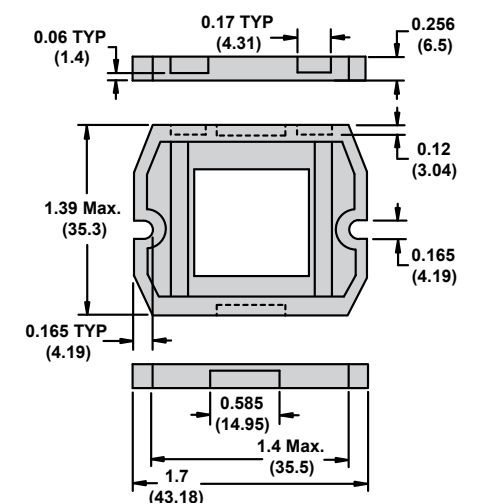
| Description                       | Function                                      | For Use With Relays | Packaging Quantities | Standard Part Number |
|-----------------------------------|---|---------------------|----------------------|----------------------|
| Metal DIN Rail<br>39.3 in. (1 m). | Quick installation and removal                | 821, 822, 831, 841  | 10                   | 16-700DIN            |
| DIN Rail End Clip                 | Holds sockets firmly in place on the DIN rail | —                   |                      | 16-DCLIP-1           |
| Panel Adapter                     | Provides additional panel mounting option     | 821, 822, 831, 841  |                      | 16-788C1             |

## Dimensions—in. (mm)

### 16-700DIN Metal DIN Rail



### 16-788C1 Panel Adapter



## Description

# SE Time Delay and Sensor Relays

TDR782 Series  
DPDT, 5 A; 4PDT, 3 A



TDR782 Relay

## Description

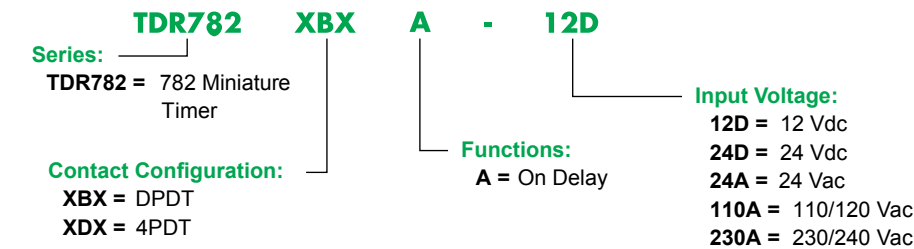
Miniature time delay relay that is single-function, single-voltage, and socket-compatible. Ideal for tight spaces.

| Feature                         | Benefit                                 |
|---------------------------------|---|
| Time setting                    | Selects between 7 different time scales |
| Socket compatible               | Mounts directly to DIN rail or panel    |
| Input/output indication         | Shows status at a glance                |
| Time adjustment dial            | Fine-tunes the time setting             |
| IEC and NEMA terminal numbering | Allows numbering compatibility          |

| Input Voltage | Functions Available (1) | Timing Range     | Contact Configuration | Rated Current | Standard Part Number |
|---------------|-------------------------|------------------|-----------------------|---------------|----------------------|
| <b>AC</b>     |                         |                  |                       |               |                      |
| 24 Vac        | A (On-Delay)            | 100 ms to 100 hr | 4PDT                  | 3 A           | TDR782XDXA-24A       |
|               |                         |                  | DPDT                  | 5 A           | TDR782XBXA-24A       |
| 110 Vac       | A (On-Delay)            | 100 ms to 100 hr | 4PDT                  | 3 A           | TDR782XDXA-110A      |
|               |                         |                  | DPDT                  | 5 A           | TDR782XBXA-110A      |
| 230 Vac       | A (On-Delay)            | 100 ms to 100 hr | 4PDT                  | 3 A           | TDR782XDXA-230A      |
| <b>DC</b>     |                         |                  |                       |               |                      |
| 12 Vdc        | A (On-Delay)            | 100 ms to 100 hr | 4PDT                  | 3 A           | TDR782XDXA-12D       |
| 24 Vdc        | A (On-Delay)            | 100 ms to 100 hr | 4PDT                  | 3 A           | TDR782XDXA-24D       |
|               |                         |                  | DPDT                  | 5 A           | TDR782XBXA-24D       |

(1) For function descriptions, see page 31.

## Part Number Explanation



## Specifications

# SE Time Delay and Sensor Relays

TDR782 Series  
DPDT, 5 A; 4PDT, 3 A

## Specifications

| Part Number   | TDR782XBX   | TDR782XDX                              |
|---|---|--|
| <b>Input Characteristics</b>                        |   |  |
| Input Voltage Range                                 | 24, 110/120, 230/240 Vac<br>12, 24 Vdc  | 24, 110/120, 230/240 Vac<br>12, 24 Vdc |
| Operating Voltage                                   | Vac   | 85–115% of nominal                     |
|   | Vdc   | 90–110% of nominal                     |
| Maximum Power Consumption                           | 1.7 VA @ 24 Vac   | 1.7 VA @ 24 Vac                        |
|   | 2.6 VA @ 120 Vac  | 2.6 VA @ 120 Vac                       |
|   | 3 VA @ 230 Vac  | 3 VA @ 230 Vac                         |
|   | 1.5 W @ 12 Vdc  | 1.5 W @ 12 Vdc                         |
|   | 1.2 W @ 24 Vdc  | 1.2 W @ 24 Vdc                         |
| <b>Output Characteristics</b>                       |   |  |
| Contact Configuration                               | DPDT  | 4PDT                                   |
| Output Current Rating                               | 5 A   | 3 A                                    |
| 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                    |
| <b>Timing Characteristics</b>                       |   |  |
| Functions Available (1)                             | A (On-Delay)  | A (On-Delay)                           |
| Time Scales   | 7   | 7                                      |
| Time Ranges   | 100 ms to 1 s   | 100 ms to 1 s                          |
|   | 1 s to 10 s   | 1 s to 10 s                            |
|   | 0.1 min to 1 min  | 0.1 min to 1 min                       |
|   | 1 min to 10 min   | 1 min to 10 min                        |
|   | 0.1 hr to 1 hr  | 0.1 hr to 1 hr                         |
|   | 1 hr to 10 hr   | 1 hr to 10 hr                          |
|   | 10 hr to 100 hr   | 10 hr to 100 hr                        |
| Tolerance   | 5% of mechanical setting  | 5% of mechanical setting               |
| Repeatability at Constant Voltage and Temperature   | 0.5%  | 0.5%                                   |
| Reset Time  | 50 ms maximum   | 50 ms maximum                          |
| Temperature Drift                                   | 0.05% / °C  | 0.05% / °C                             |
| <b>General Characteristics</b>                      |   |  |
| Electrical Life (Operations at Rated Current) (2)   | 100,000 operations  |  |
| Mechanical Life (Unpowered) (2)                     | 10,000,000 operations   |  |
| Dielectric Strength (Input to Contacts)             | 2000 Vrms   |  |
| Storage Temperature Range                           | -40 to +70 °C (-40 to +158 °F)  |  |
| Operating Temperature Range                         | -20 to +60 °C (-4 to +140 °F)   |  |
| Weight  | 43 g (1.52 oz)  |  |
| Input Indication                                    | Green LED   |  |
| Output Indication (On = Energized)                  | Amber LED   |  |
| Enclosure Rating (According to IEC 60529 IP Rating) | IP50  |  |
| Approvals   | cURus (File: E191122, CCN: NRNT2, NRNT8),<br>CSA (File No. 254373),<br>CE 61810-1, RoHS |  |

(1) For function descriptions, see page 31.

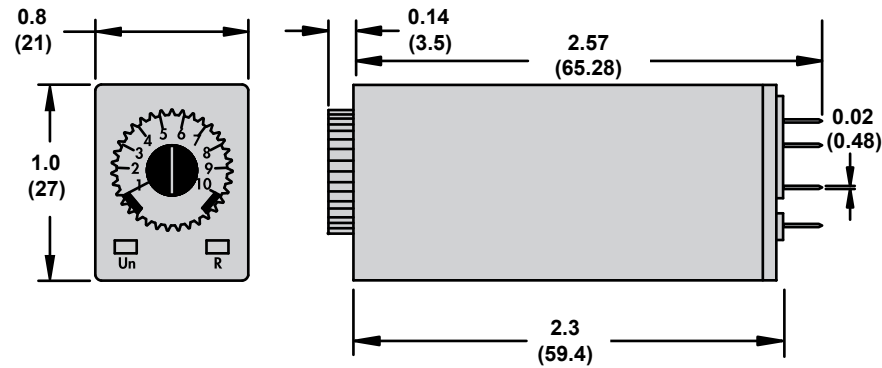
(2) Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.



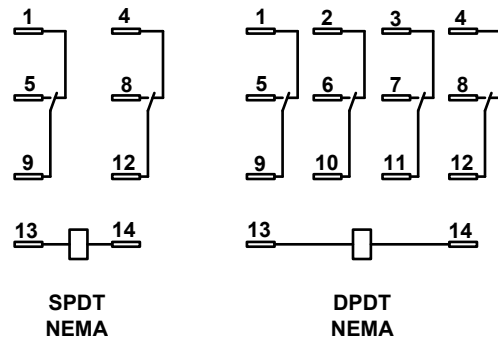
## SE Time Delay and Sensor Relays

TDR782 Series  
DPDT, 5 A; 4PDT, 3 A

### Dimensions—in. (mm)



### Wiring Diagram



## SE Time Delay and Sensor Relays

TDR782 Series Accessories



### Description

The TDR782 accessories create a complete system solution for all your application needs.

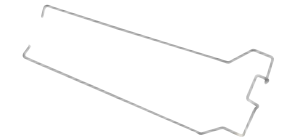
- The 70-782EL socket offers an alternate installation option for plug-in models.
- The 16-TDR782SC retention clip holds the relay securely in place while allowing quick and efficient installation and maintenance.



70-782EL8-1 Socket



70-782E14-1 Socket



16-TDR782SC Retention Clip

### Relay Accessories

| Description                           | Function   | For Use With Relays    | Packaging Quantities | Standard Part Number |
|---------------------------------------|--|------------------------|----------------------|----------------------|
| Socket                                | Mounts directly to the DIN rail or panel                       | TDR782XBX              | 10                   | 70-782EL8-1          |
|                                       |  | TDR782XBX<br>TDR782XDX | 10                   | 70-782EL14-1         |
|                                       | DIN or panel mounting with rising elevator box terminals       | TDR782XBX<br>TDR782XDX | 10                   | 70-782E14-1          |
|                                       |  | TDR782XBX<br>TDR782XDX | 10                   | 70-782D14-1          |
|                                       | DIN or panel mounting with screw terminals and clamping plates | TDR782XBX<br>TDR782XDX | 10                   | 70-461-1             |
|                                       |  | TDR782XBX<br>TDR782XDX | 10                   | 70-378-1             |
| Solder terminals for chassis mounting | TDR782XBX<br>TDR782XDX   | 10                     | 70-378-1             |                      |
|                                       | TDR782XBX<br>TDR782XDX   | 10                     | 70-379-1             |                      |
| Printed circuit terminals             | TDR782XBX<br>TDR782XDX   | 10                     | 70-379-1             |                      |
| Metal Retention Clip                  | Helps secure the relay in the socket                           | TDR782●● (1)           | 10                   | 16-TDR782SC          |

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

### Socket Accessories

| Description                    | Function  | For Use With Sockets                       | Packaging Quantities | Standard Part Number |
|--------------------------------|---|--|----------------------|----------------------|
| Metal DIN Rail, 1 m (39.3 in.) | Quick installation and removal of sockets                         | See table above                            | 10                   | 16-700DIN            |
| DIN Rail End Clip              | Holds sockets firmly in place on the DIN rail                     | —  | 10                   | 16-DCLIP-1           |
| ID Tags                        | Allows for identification of circuits in multi-relay applications | 70-782EL8-1<br>70-782EL14-1<br>70-782E14-1 | 10                   | 16-782FT-1           |

# SE Time Delay and Sensor Relays

## TDR782 Series Accessories

### Specifications

| Part Number                 | 70-782EL8-1  | 70-782EL14-1  | 70-782E14-1   |
|-----------------------------|--|---|---|
| Contact Configuration       | DPDT   | 4PDT  | 4PDT  |
| Number of Terminals         | 8  | 14  | 14  |
| Mounting Style              | Panel or DIN Rail  | Panel or DIN Rail   | Panel or DIN Rail   |
| Current Rating              | 12 A   | 10 A  | 10 A  |
| Nominal Voltage Rating      | 300 V  | 300 V   | 300 V   |
| Storage Temperature Range   | -40 to +105 °C (-40 to +221 °F)  | -40 to +105 °C (-40 to +221 °F)                                   | -40 to +105 °C (-40 to +221 °F)                                   |
| Protection Category         | IP20 (Finger Protection)   |   |   |
| Internal Metal Tracks       | Copper Alloy, Zinc Plated  | Copper Alloy, Zinc Plated   | Copper Alloy, Zinc Plated   |
| Screw Terminals             | Steel, Zinc Plated   | Steel, Zinc Plated  | Steel, Zinc Plated  |
| Screw Style                 | Combination Head   | Combination Head  | Combination Head  |
| Screw Size                  | M3   | M3  | M3  |
| Terminal Connection         | Elevator   | Elevator  | Elevator  |
| Terminal Layout             | Logic  | Logic   | Non-Logic   |
| Wire Size Capacity          | Solid or Stranded Cu:<br>Two 14–16 AWG (1.5–2.5 mm <sup>2</sup> )                                  | Solid or Stranded Cu:<br>Two 14–16 AWG (1.5–2.5 mm <sup>2</sup> ) | Solid or Stranded Cu:<br>Two 14–16 AWG (1.5–2.5 mm <sup>2</sup> ) |
| DIN Rail Mounting, EN 60715 | 35 mm (1.38 in)  | 35 mm (1.38 in)   | 35 mm (1.38 in)   |
| Maximum Screw Torque        | 7 lb-in (0.8 N·m)  | 7 lb-in (0.8 N·m)   | 7 lb-in (0.8 N·m)   |
| Flammability Rating         | UL94 Class V-0   | UL94 Class V-0  | UL94 Class V-0  |
| Body Color                  | Light Gray   | Light Gray  | Light Gray  |
| DIN Locking Method          | Red Plastic Locking Clip   | Red Plastic Locking Clip  | Metal Compression Spring  |
| Product Certifications      | cURus (File: E70550, CCN: SWIV2, SWIV8),<br>CSA (File: 40787, Class: 3211 07),<br>CE 60947-1, RoHS |   |   |

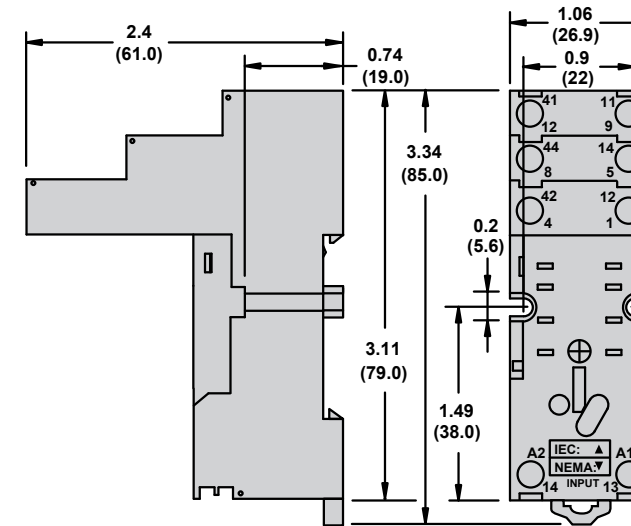
| Part Number                 | 70-379-1  | 70-378-1  | 70-461-1, 70-782D14-1  |
|-----------------------------|---|---|--|
| Contact Configuration       | 4PDT  | 4PDT  | 4PDT   |
| Number of Terminals         | 14  | 14  | 14   |
| Mounting Style              | PCB   | Chassis   | Panel or DIN Rail  |
| Current Rating              | 5 A   | 5 A   | 10 A   |
| Nominal Voltage Rating      | 300 V   | 300 V   | 300 V  |
| Storage Temperature Range   | -40 to +105 °C (-40 to +221 °F)   | -40 to +105 °C (-40 to +221 °F)                                   | -40 to +105 °C (-40 to +221 °F)  |
| Protection Category         | -   | -   | <b>70-782D14-1:</b> IP20 (Finger Protection)   |
| Internal Metal Tracks       | Copper Alloy, Zinc Plated   | Copper Alloy, Zinc Plated   | Copper Alloy, Zinc Plated  |
| Screw Terminals             | Copper Alloy, Zinc Plated   | Copper Alloy, Zinc Plated   | Steel, Zinc Plated   |
| Screw Style                 | -   | -   | Combination Head   |
| Screw Size                  | -   | -   | M3 mm  |
| Terminal Connection         | PCB   | Solder  | Screw Clamping   |
| Terminal Layout             | Non-Logic   | Non-Logic   | Non-Logic  |
| Wire Size Capacity          | -   | Solid or Stranded Cu:<br>Two 14–16 AWG (1.5–2.5 mm <sup>2</sup> ) | Solid or Stranded Cu:<br>Two 14–16 AWG (1.5–2.5 mm <sup>2</sup> )  |
| DIN Rail Mounting, EN 60715 | -   | -   | 35 mm (1.38 in)  |
| Maximum Screw Torque        | -   | -   | 7 lb-in (0.8 N·m)  |
| Flammability Rating         | UL94 Class V-0  | UL94 Class V-0  | UL94 Class V-0   |
| Body Color                  | Light Gray  | Light Gray  | Light Gray   |
| DIN Locking Method          | -   | -   | Red Plastic Locking Clip   |
| Product Certifications      | cURus (File: E70550, CCN: SWIV2, SWIV8),<br>CSA (File: 40787 Class: 3211 07),<br>CE 60947-1, RoHS |   | <b>70-461-1:</b> cURus (File: E70550, CCN: SWIV2, SWIV8),<br>CSA (File: 40787 Class: 3211 07),<br>CE 60947-1, RoHS<br><b>70-782D14-1:</b> cURus (File: E70550),<br>CSA (File: 40787 Class: 3211 07),<br>CE 60947-1, RoHS |

# SE Time Delay and Sensor Relays

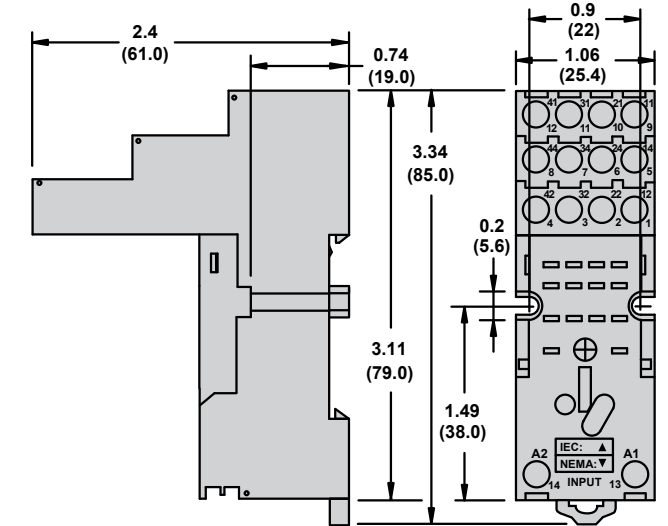
## TDR782 Series Accessories

### Dimensions—in. (mm)

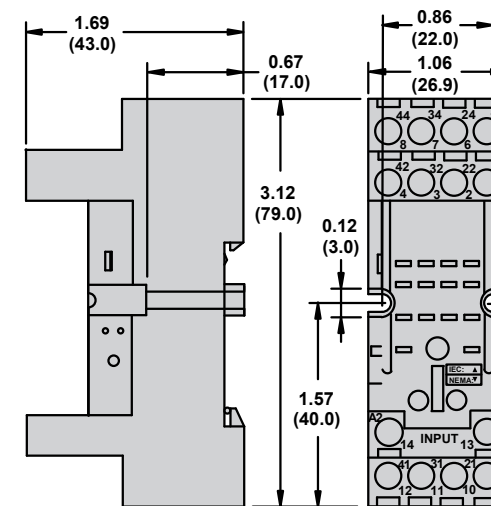
**70-782EL8-1**  
Mounts Directly to the DIN Rail or Panel



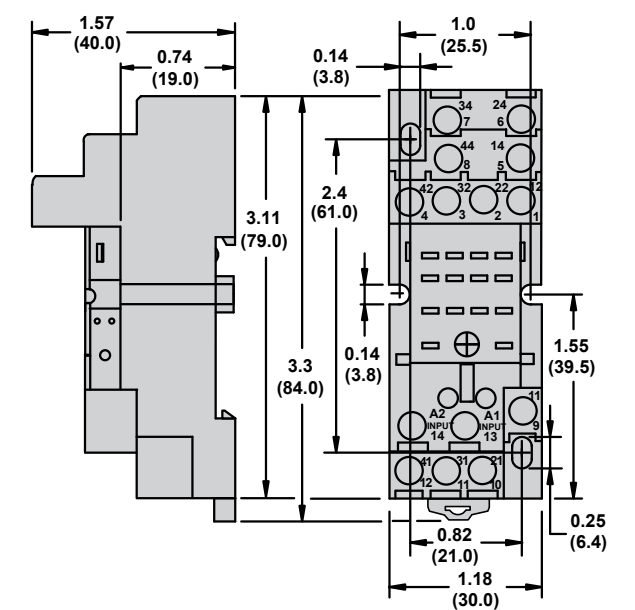
**70-782EL14-1**  
Mounts Directly to the DIN Rail or Panel



**70-782E14-1**  
DIN or Panel Mounting with Rising Elevator Box Terminals



**70-782D14-1**  
DIN or Panel Mounting with Screw Terminals and Clamping Plates

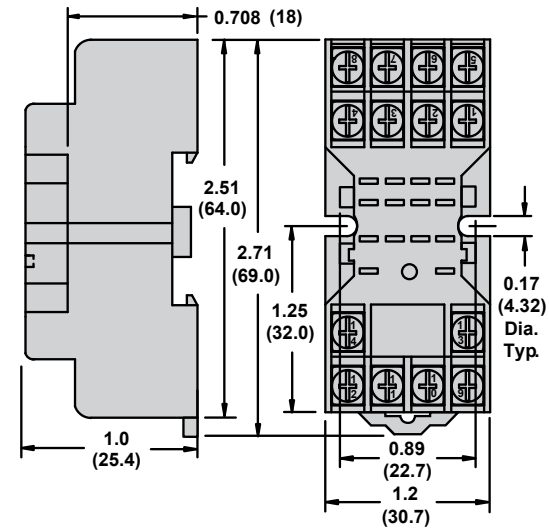


# SE Time Delay and Sensor Relays

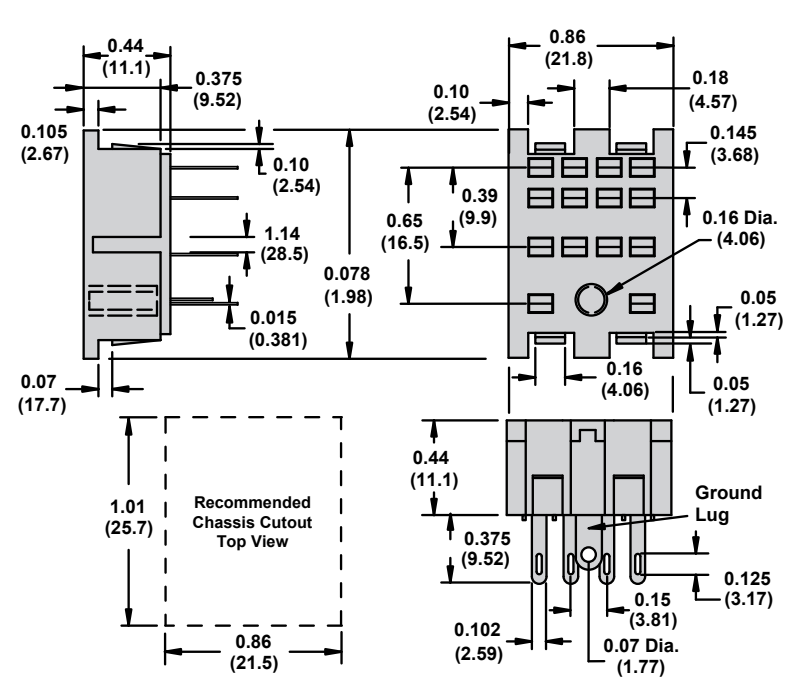
## TDR782 Series Accessories

### Dimensions—in. (mm)

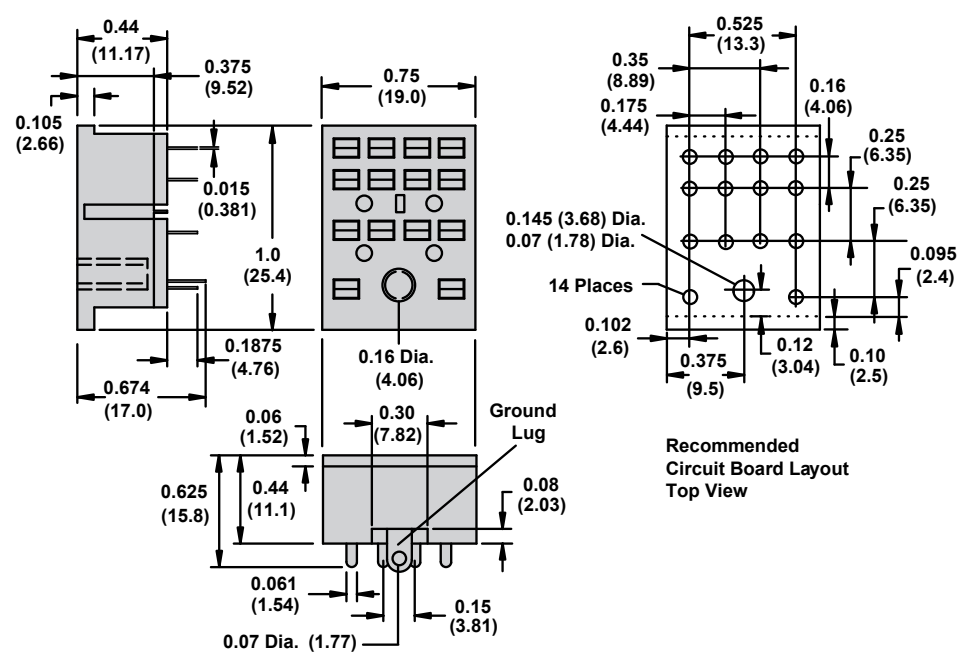
**70-461-1**  
DIN or Panel Mounting with Screw Terminals and Clamping Plates



**70-378-1**  
Solder Terminals for Chassis Mount



**70-379-1**  
Printed Circuit Terminals

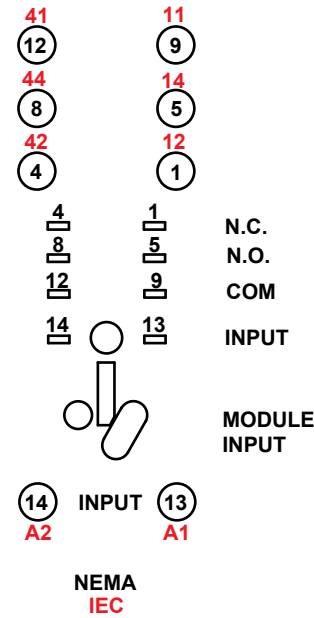


# SE Time Delay and Sensor Relays

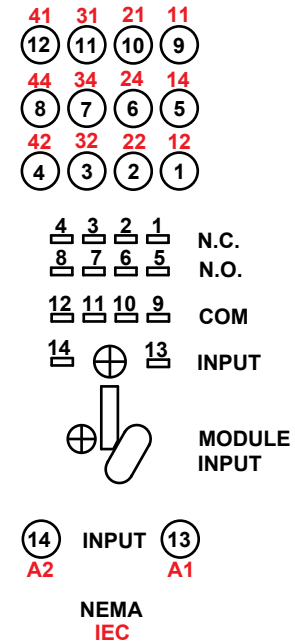
## TDR782 Series Accessories

### Wiring Diagrams

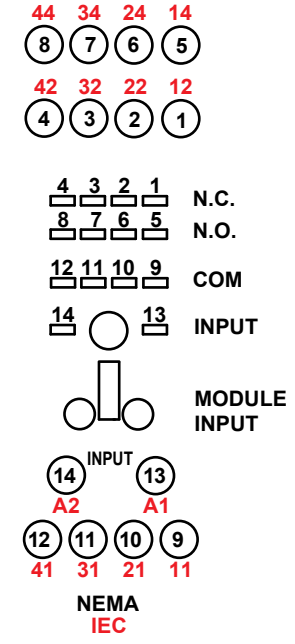
**70-782EL8-1**



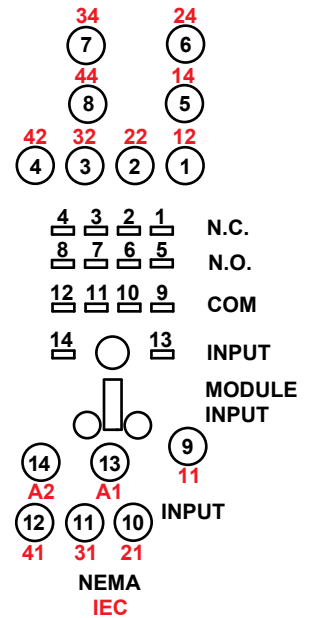
**70-782EL14-1**



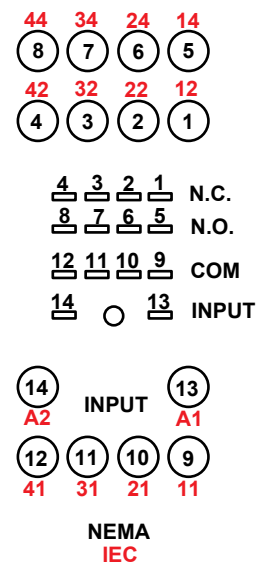
**70-782E14-1**



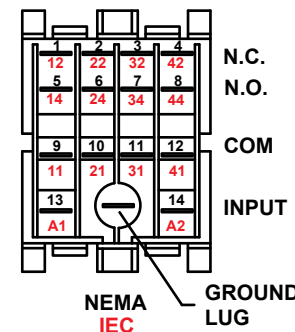
**70-782D14-1**



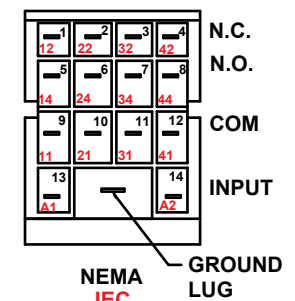
**70-461-1**



**70-378-1**



**70-379-1**



## Description

# SE Time Delay and Sensor Relays

TDRPRO Series  
SPDT, 12 A; DPDT, 12 A



## 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.



TDRPRO Relay

| Feature                                      | Benefit   |
|--|---|
| Up to 10 functions                           | 5 timing functions controlled via supply voltage<br>4 timing functions controlled via trigger input<br>1 memory latching function |
| Broad timing range                           | 0.1 s to 9990 hr  |
| Panel-mounting adapter                       | Panel mountable   |
| Dust cover                                   | Retains settings and keeps dust out   |
| Universal power supply                       | 12–240 Vac/Vdc  |
| Thumb-wheel adjustment for function / timing | Helps ensure accuracy and reduces timing deviations   |
| 2 LED status indicators                      | Indicate coil power, timing out, and output state   |
| RoHS compliant                               | Environmentally friendly  |

| Input Voltage  | Timing Range      | Functions Available (1) | Contact Configuration | Rated Current | Standard Part Number |
|----------------|-------------------|-------------------------|-----------------------|---------------|----------------------|
| 12–240 Vac/Vdc | 100 ms to 9990 hr | A,B,C,D,E,F,G,H,I,J     | DPDT                  | 12 A          | TDRPRO-5100          |
|                |                   | A,B,C,D,E,F,G,H,I,J     | SPDT                  | 12 A          | TDRPRO-5101          |
|                |                   | A,B,C                   | DPDT                  | 12 A          | TDRPRO-5102          |

(1) For function descriptions, see page 31.

## Part Number Explanation

**TDRPRO** - **5100**  
Series: **TDRPRO** = 48 x 48 mm Time Delay Relay

**Contact Configuration and Number of Functions:**  
**5100** = DPDT, 10 Functions  
**5101** = SPDT, 10 Functions  
**5102** = DPDT, 3 Functions

## Specifications

# SE Time Delay and Sensor Relays

TDRPRO Series  
SPDT, 12 A; DPDT, 12 A

## Specifications

| Part Number   | TDRPRO-5100   | TDRPRO-5101   | TDRPRO-5102   |
|---|---|---|---|
| <b>Input Characteristics</b>  |   |   |   |
| 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 W   | 2 W   | 2 W   |
| <b>Output Characteristics</b>                                       |   |   |   |
| Contact Configuration   | DPDT  | SPDT  | 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<br>1/3 hp @ 120 Vac<br>1/2 hp @ 240 Vac<br>Pilot duty B300  | 12 A, 240 Vac, 50/60 Hz, 30 Vdc<br>1/3 hp @ 120 Vac<br>1/2 hp @ 240 Vac<br>Pilot duty B300  | 12 A, 240 Vac, 50/60 Hz, 30 Vdc<br>1/3 hp @ 120 Vac<br>1/2 hp @ 240 Vac<br>Pilot duty B300  |
| Minimum Switching Requirement                                       | 100 mA  | 100 mA  | 100 mA  |
| <b>Timing Characteristics</b>                                       |   |   |   |
| Functions Available (1)   | A,B,C,D,E,F,G,H,I,J   | A,B,C,D,E,F,G,H,I,J   | A,B,C   |
| Time Scales   | 7   | 7   | 7   |
| Time Ranges   | 0–999 by 0.1 s<br>0–999 by 1 s<br>0–999 by 0.1 min<br>0–999 by 1 min<br>0–999 by 0.1 hr<br>0–999 by 1 hr<br>0–999 by 10 hr                      | 0–999 by 0.1 s<br>0–999 by 1 s<br>0–999 by 0.1 min<br>0–999 by 1 min<br>0–999 by 0.1 hr<br>0–999 by 1 hr<br>0–999 by 10 hr                      | 0–999 by 0.1 s<br>0–999 by 1 s<br>0–999 by 0.1 min<br>0–999 by 1 min<br>0–999 by 0.1 hr<br>0–999 by 1 hr<br>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   |
| <b>General Characteristics</b>                                      |   |   |   |
| 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 +60 °C (–4 to +140 °F)   | –20 to +60 °C (–4 to +140 °F)   | –20 to +60 °C (–4 to +140 °F)   |
| Weight  | 133 g (4.69 oz)   | 133 g (4.69 oz)   | 133 g (4.69 oz)   |
| Input Indication  | Green LED   | Green LED   | Green 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   | cURus (File: E43641, CCN: NLDX2), CE 61810-1, RoHS, cULus (File: E43641, CCN: NLDX2, UL Listed when used with Schneider Electric socket 70-465) | cURus (File: E43641, CCN: NLDX2), CE 61810-1, RoHS, cULus (File: E43641, CCN: NLDX2, UL Listed when used with Schneider Electric socket 70-464) | cURus (File: E43641, CCN: NLDX2), CE 61810-1, RoHS, cULus (File: E43641, CCN: NLDX2, UL Listed when used with Schneider Electric socket 70-464) |

(1) For function descriptions, see page 31.

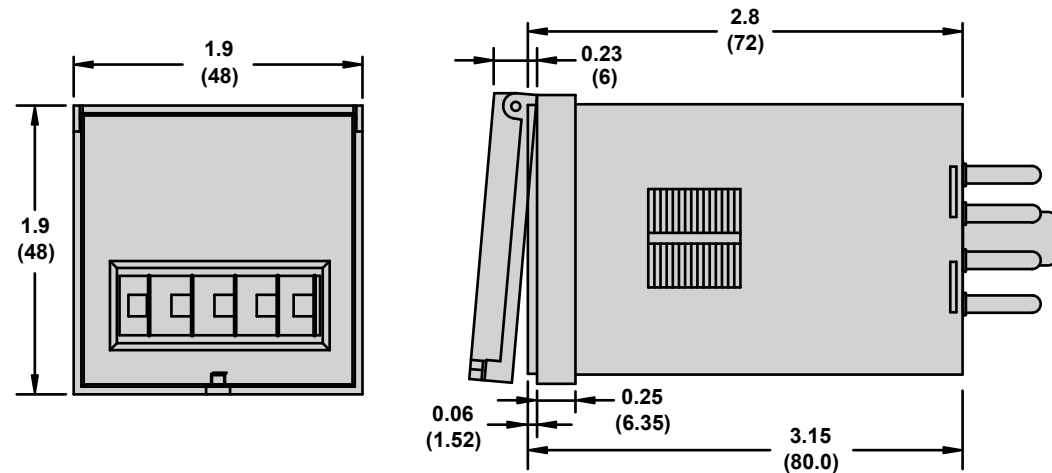
(2) Actual product life varies based on electrical load, duty cycle, application, and environmental conditions.

(3) After the time delay period expires, or upon application of the trigger signal (depending on the selected function).

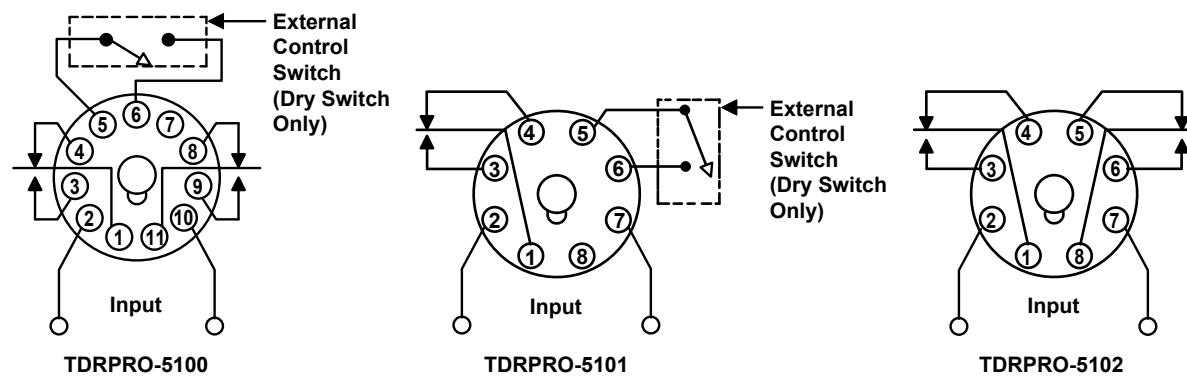
## SE Time Delay and Sensor Relays

TDRPRO Series  
SPDT, 12 A; DPDT, 12 A

### Dimensions—in. (mm)



### Wiring Diagrams



## SE Time Delay and Sensor Relays

TDRPRO Series Accessories



### Description

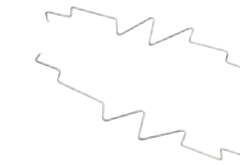
The TDRPRO accessories create a complete system solution for your application needs. The 70-750DL socket offers an alternative installation option for plug-in models. The 16-TDRPROSC retention clip holds the relay securely in place while allowing quick and efficient installation and maintenance.



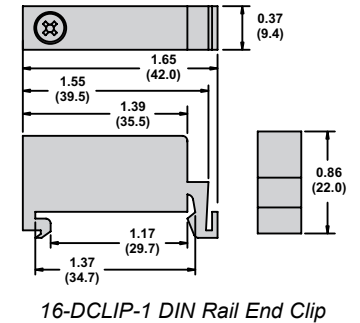
70-750DL8-1 Socket



70-750E8-1 Socket



16-TDRPROSC Retention Clip



16-DCLIP-1 DIN Rail End Clip

### Relay Accessories

| Description   | Function   | For Use With Relays      | Packaging Quantities | Standard Part Number |
|---|--|--------------------------|----------------------|----------------------|
| Socket  | Mounting directly to DIN Rail or Panel                         | TDRPRO-5101, TDRPRO-5102 | 10                   | 70-750DL8-1          |
|   | Panel Mounting with Screw Terminals and Clamping Plates        | TDRPRO-5102              | 10                   | 70-169-1             |
|   | DIN or Panel Mounting with Elevator Terminals                  | TDRPRO-5101              | 10                   | 70-750E8-1           |
|   | DIN or Panel Mounting with Screw Terminals and Clamping Plates | TDRPRO-5101              | 10                   | 70-464-1             |
|   | Mounting directly to DIN Rail or Panel                         | TDRPRO-5100              | 10                   | 70-750DL11-1         |
|   | DIN or Panel Mounting with Elevator Terminals                  | TDRPRO-5100              | 10                   | 70-750E11-1          |
|   | DIN or Panel Mounting with Screw Terminals and Clamping Plates | TDRPRO-5100              | 10                   | 70-465-1             |
| Metal Retention Clip                                    | Helping secure the relay in the socket                         | TDRPRO                   | 10                   | 16-TDRPROSC          |
| Panel Mounting with Screw Terminals and Clamping Plates |  |                          | 10                   | 70-170-1             |

### Socket Accessories

| Description                      | Function   | For Use With Sockets  | Packaging Quantities | Standard Part Number |
|----------------------------------|--|---|----------------------|----------------------|
| Metal DIN Rail, 1 m (39.3 in.)   | Quick installation and removal of sockets              | Compatible with all sockets listed in the table above.                      | 10                   | 16-700DIN            |
| DIN Rail End Clip                | Holding sockets firmly in place on the DIN rail        |   | 10                   | 16-DCLIP-1           |
| ID Tags                          | Identification of circuits in multi-relay applications | 70-750E8-1, 70-750EL8-1, 70-750DL8-1, 70-750E11-1, 70-750EL11, 70-750DL11-1 | 10                   | 16-750/782FT-1       |
| Insulated Coil Bus Jumper System | Wireless socket connection                             |   | 10                   | 16-750/788CBJ-1      |

# SE Time Delay and Sensor Relays

## TDRPRO Series Accessories

### Specifications

| Part Number  | 70-750DL8-1  | 70-750DL11-1   | 70-750E8-1   | 70-750E11-1  |
|--|--|--|--|--|
| Contact Configuration  | DPDT   | 3PDT   | DPDT   | 3PDT   |
| Number of Terminals  | 8  | 11   | 8  | 11   |
| Mounting Style   | Panel or DIN rail  | Panel or DIN rail  | Panel or DIN rail  | Panel or DIN rail  |
| Current Rating   | 16 A   | 5 A  | 12 A   | 12 A   |
| Nominal Voltage Rating   | 300 V  | 600 V  | 600 V  | 300 V  |
| Storage Temperature Range  | -40 to +105 °C (-40 to +221 °F)  | -40 to +105 °C (-40 to +221 °F)  | -40 to +105 °C (-40 to +221 °F)  | -40 to +105 °C (-40 to +221 °F)  |
| Protection Category according to IEC 60529 IP rating (finger protection) | IP20   | IP20   | IP20   | IP20   |
| Internal Metal Tracks  | Copper Alloy, Zinc Plated  | Copper Alloy, Zinc Plated  | Copper Alloy, Zinc Plated  | Copper Alloy, Zinc Plated  |
| Screw Terminals  | Steel, Zinc Plated   | Steel, Zinc Plated   | Steel, Zinc Plated   | Steel, Zinc Plated   |
| Screw Style  | Combination Head   | Combination Head   | Combination Head   | Combination Head   |
| Screw Size   | M3.5 mm  | M3.5 mm  | M3.5 mm  | M3.5 mm  |
| Maximum Screw Torque   | 9 lb-in (1.0 N•m)  | 9 lb-in (1.0 N•m)  | 9 lb-in (1.0 N•m)  | 9 lb-in (1.0 N•m)  |
| Terminal Connection  | Screw Clamping   | Screw Clamping   | Elevator   | Elevator   |
| Terminal Layout  | Logic  | Logic  | Non-Logic  | Non-Logic  |
| Maximum Wire Size  | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> )                                 | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> )                                 | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> )                                 | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> )                                 |
| DIN Rail Mounting, EN 60715  | 35 mm (1.38 in)  | 35 mm (1.38 in)  | 35 mm (1.38 in)  | 35 mm (1.38 in)  |
| Chassis Mounting Screw Torque  | 7 lb-in (0.8 N•m)  | 7 lb-in (0.8 N•m)  | 7 lb-in (0.8 N•m)  | 7 lb-in (0.8 N•m)  |
| Flammability Rating  | 94V-0 Class  | 94V-0 Class  | 94V-0 Class  | 94V-0 Class  |
| Body Color   | Light Gray   | Light Gray   | Light Gray   | Light Gray   |
| DIN Locking Method   | Red Plastic Locking Clip   | Red Plastic Locking Clip   | Red Plastic Locking Clip   | Red Plastic Locking Clip   |
| Agency Approvals   | cURus (File: E70550, CCN: SWIV2, SWIV8), CSA (File: 40787, Class: 3211 07), CE 60947-1, RoHS | cURus (File: E70550, CCN: SWIV2, SWIV8), CSA (File: 40787, Class: 3211 07), CE 60947-1, RoHS | cURus (File: E70550, CCN: SWIV2, SWIV8), CSA (File: 40787, Class: 3211 07), CE 60947-1, RoHS | cURus (File: E70550, CCN: SWIV2, SWIV8), CSA (File: 40787, Class: 3211 07), CE 60947-1, RoHS |

| Part Number                 | 70-169-1   | 70-170-1   | 70-464-1   | 70-465-1   |
|-----------------------------|--|--|--|--|
| Contact Configuration       | DPDT   | 3PDT   | DPDT   | 3PDT   |
| Number of Terminals         | 8  | 11   | 8  | 11   |
| Mounting Style              | Panel  | Panel  | Panel or DIN rail  | Panel or DIN rail  |
| Current Rating              | 15 A   | 15 A   | 15/10 A  | 15/5 A   |
| Nominal Voltage Rating      | 300 V  | 600 V  | 300/600 V  | 300/600 V  |
| Temperature Storage Range   | -40 to +105 °C (-40 to +221 °F)  | -40 to +105 °C (-40 to +221 °F)                              | -40 to +105 °C (-40 to +221 °F)                              | -40 to +105 °C (-40 to +221 °F)                              |
| Internal Metal Tracks       | Copper Alloy, Zinc Plated  | Copper Alloy, Zinc Plated                                    | Copper Alloy, Zinc Plated                                    | Copper Alloy, Zinc Plated                                    |
| Screw Terminals             | Steel, Zinc Plated   | Steel, Zinc Plated   | Steel, Zinc Plated   | Steel, Zinc Plated   |
| Screw Style                 | Combination Head   | Combination Head   | Combination Head   | Combination Head   |
| Screw Size                  | M3.5 mm  | M3.5 mm  | M3.5 mm  | M3.5 mm  |
| Maximum Screw Torque        | 9 lb-in (1.0 N•m)  | 9 lb-in (1.0 N•m)  | 9 lb-in (1.0 N•m)  | 9 lb-in (1.0 N•m)  |
| Terminal Connection         | Screw Clamping   | Screw Clamping   | Screw Clamping   | Screw Clamping   |
| Terminal Layout             | Non-Logic  | Non-Logic  | Non-Logic  | Non-Logic  |
| Maximum Wire Size           | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> )                                 | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> ) | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> ) | Solid or Stranded Cu: two 12–14 AWG (2.5–4 mm <sup>2</sup> ) |
| DIN Rail Mounting, EN 60715 | 35 mm (1.38 in)  | 35 mm (1.38 in)  | 35 mm (1.38 in)  | 35 mm (1.38 in)  |
| Chassis Mount Screw Torque  | 7 lb-in (0.8 N•m)  | 7 lb-in (0.8 N•m)  | 7 lb-in (0.8 N•m)  | 7 lb-in (0.8 N•m)  |
| Flammability Rating         | 94 V-0 Class   | 94 V-0 Class   | 94 V-0 Class   | 94 V-0 Class   |
| Body Color                  | Light Gray   | Light Gray   | Light Gray   | Light Gray   |
| DIN Locking Method          | –  | –  | Red Plastic Locking Clip                                     | Red Plastic Locking Clip                                     |
| Product Certifications      | cURus (File: E70550, CCN: SWIV2, SWIV8), CSA (File: 40787, Class: 3211 07), CE 60947-1, RoHS |  |  |  |

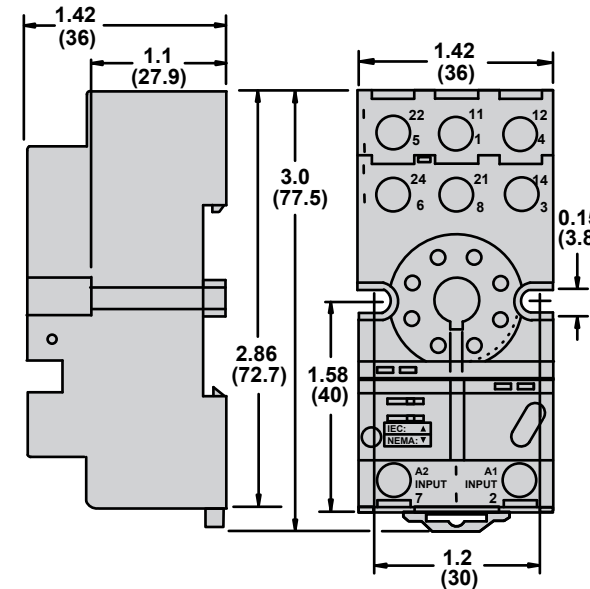
# SE Time Delay and Sensor Relays

## TDRPRO Series Accessories

### Dimensions—in. (mm)

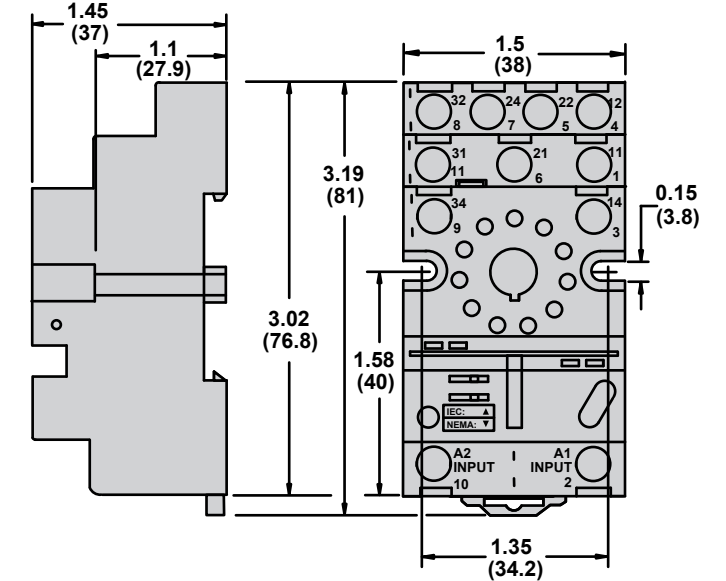
#### 70-750DL8-1

Mounts Directly to the DIN Rail or Panel



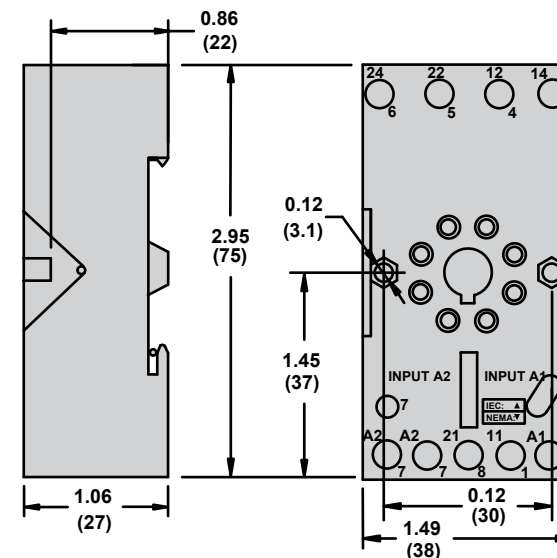
#### 70-750DL11-1

Mounts Directly to the DIN Rail or Panel



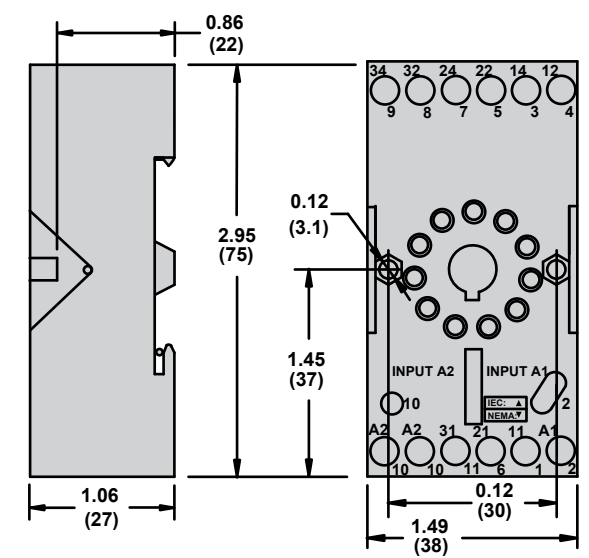
#### 70-750E8-1

DIN or Panel Mounting with Elevator Terminals



#### 70-750E11-1

DIN or Panel Mounting with Elevator Terminals





# 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- and 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, thumb-wheel switches, or a recessed potentiometer.

## Principle of Operation

Time delay relays are simply 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 readies 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.

# SE Time Delay and Sensor Relays

## Time Delay Relay Functions

| Function                                       | Description  | Timing Chart | Relays  |
|--|--|--------------|---|
| On-Delay (A)                                   | When the input voltage U is applied, time delay T begins. Relay contact(s) R change state after the time delay is complete. Contacts R return to their shelf state when input voltage U is removed. A trigger switch is not used in this function.   |              | 821, 822, TDR782, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102, 831, 841 |
| Repeat Cycle: Starting Open (B)                | When input voltage U is applied, time delay T begins. When time delay T is complete, relay contact(s) 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.   |              | 821, 822, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102                   |
| Interval (C)                                   | When input voltage U is applied, relay contact(s) R change state immediately and the timing cycle begins. When time delay T is complete, contacts return to shelf state. When input voltage U is removed, contacts also return to their shelf state. A trigger switch is not used in this function.  |              | 821, 822, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102                   |
| Off-Delay, with Switch Trigger (D)             | Input voltage U must be applied continuously. When trigger switch S is closed, relay contacts R change state. When trigger switch S is opened, 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 R remain in their energized state. If input voltage U is removed, then relay contacts R return to their shelf state.                       |              | 821, 822, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102                   |
| Retriggerable One-Shot with Switch Trigger (E) | Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of trigger signal S, relay contacts R transfer, and preset time T begins. At the end of preset time T, relay contacts R return to their normal condition—unless trigger switch S is opened and closed before preset time T elapses. Continuous cycling of trigger switch S at a rate faster than preset time T causes relay contacts R to remain closed. If input voltage U is removed, relay contacts R return to their shelf state. |              | 821, 822, TDRPRO-5100, TDRPRO-5101, TDRPRO-5102                   |
| Repeat Cycle: Starting Closed (F)              | 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.  |              | 821, 822, TDRPRO-5100, TDRPRO-5101                                |
| Pulse Generator (G)                            | Upon application of input voltage U, a single output pulse of 0.5 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.  |              | 821, 822, TDRPRO-5100, TDRPRO-5101                                |
| One-Shot with Switch Trigger (H)               | Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of trigger signal S, relay contacts R transfer, and preset time T begins. During time-out, trigger signal S is ignored. The relay is reset by applying trigger switch S when the relay is not energized.  |              | 821, 822, TDRPRO-5100, TDRPRO-5101                                |
| On- and Off-Delay with Switch Trigger (I)      | Input voltage U must be applied continuously. When trigger switch S is closed, time delay T begins. When time delay T is complete, relay contacts R change state and remain transferred until trigger switch S is opened. If input voltage U is removed, relay contacts R return to their shelf state.   |              | 821, 822, TDRPRO-5100, TDRPRO-5101                                |
| Memory Latch with Switch Trigger (J)           | Input voltage U must be applied continuously. The output changes state with every closure of trigger switch S. If input voltage U is removed, relay contacts R return to their shelf state.  |              | 821, 822, TDRPRO-5100, TDRPRO-5101                                |

**Note:** G = Gate. R = Relay contacts or outputs. S = Switch trigger. Y1 = Control contact. T = Time delay setting. U = Input voltage (power supply).



## SE Time Delay and Sensor Relays

### 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



#### Food & Beverage

Commercial/industrial cooking equipment, filtration systems, bottling, chillers, convection ovens



#### Packaging Machinery

Conveyor motors, food processors, product/shrink wrap, solenoid controls



#### Lighting Control

Traffic signal systems, motorway information systems, theatrical lighting, ballast lighting



#### Power Supplies

Universal power supplies, battery backup systems



#### Material Handling

Motor control, conveyor controls



#### HVAC & Refrigeration

Anti-condensation equipment, compressor controls, blower controls, motorized duct/vent controls



#### Appliances

Air conditioners, water heaters, portable heaters, spa controls, water pumps

## SE Time Delay and Sensor Relays

The Schneider Electric Relays website ([www.serelays.com](http://www.serelays.com)) helps you to easily find the proper relay to fit your design requirements, and to simplify and shorten workflow.

### 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

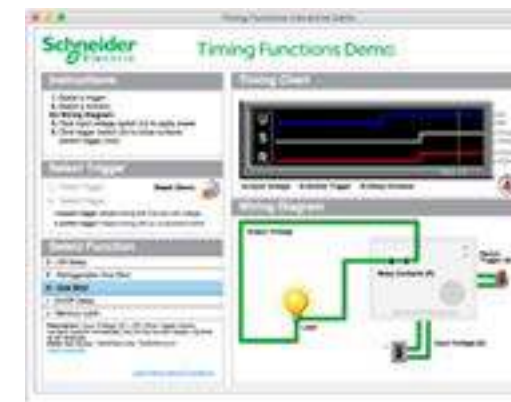
View, email, download, or insert a file directly into your open CAD software. You can choose from 18 different file formats.

#### ■ 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.



3D Models



Time Delay Relay Demo

### 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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|                |                   |
|----------------|-------------------|
| 16-700DIN      | <u>13, 17, 25</u> |
| 16-750/782FT-1 | <u>25</u>         |
| 16-782FT-1     | <u>17</u>         |
| 16-788C1       | <u>13</u>         |
| 16-DCLIP-1     | <u>13, 17, 25</u> |
| 16-TDR782SC    | <u>17</u>         |
| 16-TDRPROSC    | <u>25</u>         |
| 70-169-1       | <u>25, 26</u>     |
| 70-170-1       | <u>25, 26</u>     |
| 70-378-1       | <u>17, 18</u>     |
| 70-379-1       | <u>17, 18</u>     |
| 70-461-1       | <u>17, 18</u>     |
| 70-464-1       | <u>25, 26</u>     |
| 70-465-1       | <u>25, 26</u>     |
| 70-750DL8-1    | <u>25, 26</u>     |
| 70-750DL11-1   | <u>25, 26</u>     |
| 70-750E8-1     | <u>25, 26</u>     |
| 70-750E11-1    | <u>25, 26</u>     |
| 70-782D14-1    | <u>17, 18</u>     |
| 70-782E14-1    | <u>17, 18</u>     |
| 70-782EL8-1    | <u>17, 18</u>     |
| 70-782EL14-1   | <u>17, 18</u>     |
| 821TD10H-UNI   | <u>4, 5</u>       |
| 822TD10H-UNI   | <u>4, 5</u>       |
| 831VS-24D      | <u>7, 8</u>       |
| 831VS-120A     | <u>7, 8</u>       |
| 831VS-240A     | <u>7, 8</u>       |
| 841CS1-UNI     | <u>10, 11</u>     |
| 841CS2-UNI     | <u>10, 11</u>     |
| 841CS5-UNI     | <u>10, 11</u>     |
| 841CS8-UNI     | <u>10, 11</u>     |
| TDR782XBX      | <u>14, 15</u>     |
| TDR782XDX      | <u>14, 15</u>     |
| TDRPRO-5100    | <u>22, 23</u>     |
| TDRPRO-5101    | <u>22, 23</u>     |
| TDRPRO-5102    | <u>22, 23</u>     |

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Replaces 8501CT1104R01/17 dated 06/2017