



# Series 319

## Plug-In Adjustable AC/DC TDR



### PRODUCT HIGHLIGHTS

#### WIDE CHOICE OF RANGES

In addition to the short ranges expected of an electronic TDR, the 319 is also available with ranges as long as 100 minutes, for AC or DC operation. An unusually versatile model, the 319D five ranger has five dial-selected ranges—from 0.3 sec to 30 min--and provides any dial-adjustable timing period between 0.02 seconds and 30 minutes; a lower priced option (model 319D three ranger) has three dial-selected ranges in two models (1, 10 and 100 sec and 1, 10, and 100 min). A single 319D model thus accommodates the needs of a wide range of applications, allowing the user to select—easily and precisely—an appropriate range to permit optimum setting accuracy. The dial face automatically displays the selected range. The 319B offers a choice of five dial-adjustable fixed ranges between 1 sec and 30 sec.

#### CYCLE PROGRESS INDICATION

##### MODEL 319D

All options incorporate a light-emitting diode (LED) which is **on** during the time cycle, **off** at the end of timing. The 5-range option also includes a second LED which separately indicates the status of the output relay: **on** when energized, **off** when de-energized.

##### Model 319B.

A pilot light clearly indicates the control action: it is **on** during the time cycle, **off** at the end of timing.

#### APPROVALS

See Agency Listing on inside back cover of catalog

#### HIGH ACCURACY

The 319's timing circuit is not subject to the large *plus* error that plagues many electronic TDRs after long periods of down-time: it maintains rated accuracy regardless of reset time variations, provided that there is at least 0.1 sec between cycles for Model 319D; or at least 10 sec between cycles for Model 319B. All models hold unusually high repeat accuracy in the face of wide voltage and temperature swings.

*An economical solid-state TDR with octal plug-in base, the ATC 319 maintains excellent repeat accuracy despite wide voltage and temperature variations, even after long periods of down-time. One model has five dial-selected adjustable ranges and provides any timing period between 0.02 SEC and 30 MIN; Lower-cost models incorporate three dial-selected ranges or a single adjustable range.*

**OPERATION**

**Model 319D**

Timing begins when the *start* switch is closed. At the same time, the *Timing* LED goes **on** and a relaxation oscillator starts to run at a rate determined by the dial adjustment. The 319D times out--and the *Timing* LED turns **off**--when the oscillator count is equal to the level set by the range switch.

At time-out, the load relay is energized, transferring its contacts, and the timing circuit is automatically de-energized. Reset occurs when the *start* switch is opened or when power is interrupted.

With Model 319D-016, a second LED (labeled *Timed Out*) turns **on** when the load relay is energized at time-out; and **off** when the *start* switch is opened or power is interrupted.

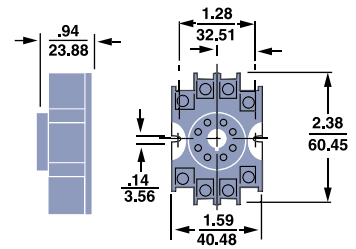
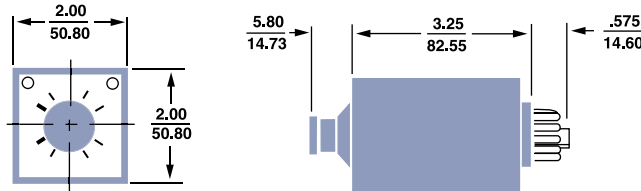
**Model 319B**

Timing begins when the *start* switch is closed, and a capacitor immediately begins to accumulate a charge through a fixed resistor.

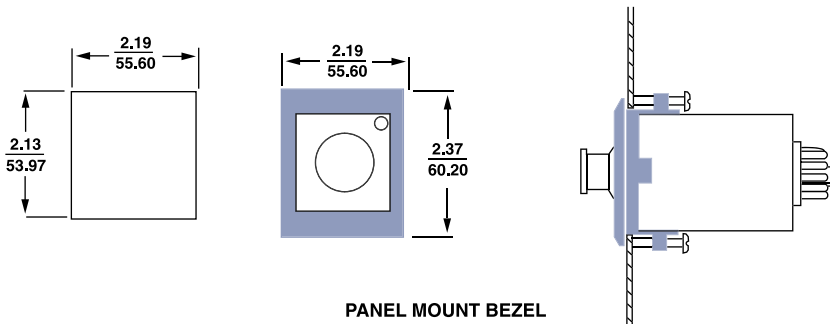
The 319B times out when the capacitor reaches a voltage level which is determined by the position of the dial adjustment. At time-out, the relay is energized, transferring its contacts, and the timing circuit is automatically de-energized. Reset occurs when the *start* switch is opened, or power is interrupted.

**DIMENSIONS:**

INCHES  
MILLIMETERS



8 PIN OPTIONAL OCTAL SOCKET



PANEL MOUNT BEZEL

8 PIN PANEL MOUNT SOCKET

## SPECIFICATIONS

### For All Models

#### MODELS

Choice of two:  
 (319D--AC or DC; 3 or 5 dial-selected adj. ranges)  
 (319B--AC; single adj. range)

All models operate in **on-delay** mode only

#### LOAD RELAY

TYPE: DPDT (2 Form C)

LIFE: AC: 50,000,000 operations  
 (no load)

DC: 100,000,000 operations  
 (no load)

#### CONTACT RATING:

**AC: 7A resistive at 120 or 240V**

**DC: 3A at 30V**

#### TEMPERATURE RATING

0° to 70°C (32° to 158°F)

#### WEIGHT

NET: 6 oz.

SHIPPING: 10 oz.

#### MOUNTING

Plug-in octal base; mounts in any position.

OPTIONAL: surface-mounting socket;

panel-mounting bezel kit and  
 plug-on socket kit for Model  
 319D.

#### HOUSING

Dust, moisture and impact-resistant  
 molded plastic case.

#### SETTING ACCURACY

10% at full scale

### For Model 319D

#### RANGES AND MINIMUM SETTING

Model 319D-016:

five dial-selected ranges:

0.02 sec — 0.3 sec

0.07 sec — 3.0 sec

0.6 sec — 30.0 sec

3.5 sec — 3.0 min

35.0 sec — 30.0 min

Model 319D-134:

three dial-selected ranges:

0.04 — 1.0 sec

0.2 — 10.0 sec

2.0 — 100.0 sec

Model 319D-360:

three dial-selected ranges:

2.5 sec. — 1 min.

23.0 sec. — 10 min.

3.0 min. — 100 min.

#### REPEAT ACCURACY

Varies as a function of line voltage  
 and temperature but not of reset time

(see Recycle Characteristics):

± 1% of range or 2.0 ms (whichever is  
 greater), when temperature is  
 constant and line voltage is constant  
 or varies within limits\*

± 4% of range or 2.0 ms (whichever  
 is greater), when line voltage is  
 constant and temperature varies  
 within limits\*

± 6% of range or 2.0 ms (whichever  
 is greater), when line voltage and  
 temperature vary within limits\*

\*Variations of line voltage must be within  
 95 and 132V; of temperature between  
 0° and 70°C (32° and 158°F)

#### RECYCLE CHARACTERISTICS

When 0.1 sec or longer of reset time is  
 allowed after time-out or after power  
 interruption, the next cycle is timed at full  
 repeat accuracy; when only 0.07 sec is  
 allowed, the next cycle is shortened by  
 as much as 1%.

#### RESET

5 ms if power is interrupted any time  
*after* time-out; 70 ms if power is  
 interrupted *during* timing.

#### POWER REQUIREMENTS

120 VAC: 95 to 132V, 50/60 Hz, 0.011A

240 VAC: 190 to 264V, 50/60 Hz, 0.011A

24 VAC: 21 to 28V, 50/60 Hz, 0.05A

24 VDC: 21 to 28V, 0.05A, 5% ripple  
 max.

### For Model 319B

#### RANGES AND MINIMUM SETTING

Choice of five ranges:

0.15 — 1 sec

0.2 — 3 sec

0.2 — 6 sec

0.3 — 10 sec

0.5 — 30 sec

#### REPEAT ACCURACY

Varies as a function of line voltage,  
 temperature and reset time\*;

± 1% of setting or 15ms, when all  
 three conditions are constant

± 4% of setting or ± 1% of range, when  
 one condition varies.

± 6% of setting or ± 3% of range, when  
 two operating conditions vary.

± 8% of setting or ± 3% of range,  
 when all three conditions vary.

\*Variations of line voltage must be  
 within 102 and 132V; of temperature  
 between 75° and 150°F; of reset time  
 between 10 sec and 10 min.

#### RECYCLE CHARACTERISTICS

When 10 seconds or more of reset time  
 is allowed after time-out or after power  
 interruption, the next cycle is timed at full  
 repeat accuracy; when only 5 seconds is  
 allowed, the next cycle is shortened by  
 as much as 1.5%; when only 0.5 sec, by  
 as much as 5.0%.

#### RESET

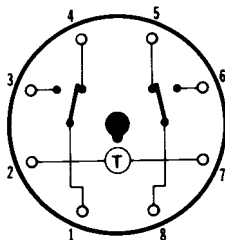
20 ms if power is interrupted at least 0.1  
 sec *after* timeout; 100 ms if power is  
 interrupted *during* timing.

#### POWER REQUIREMENTS;

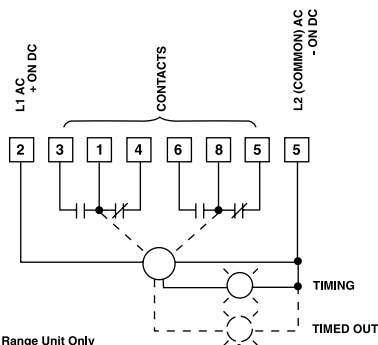
120V AC: 95 to 132V, 50/60 Hz, 0.01A

240V AC: 190 to 264V, 50/60 Hz, 0.005A

### TERMINAL WIRING



### WIRING



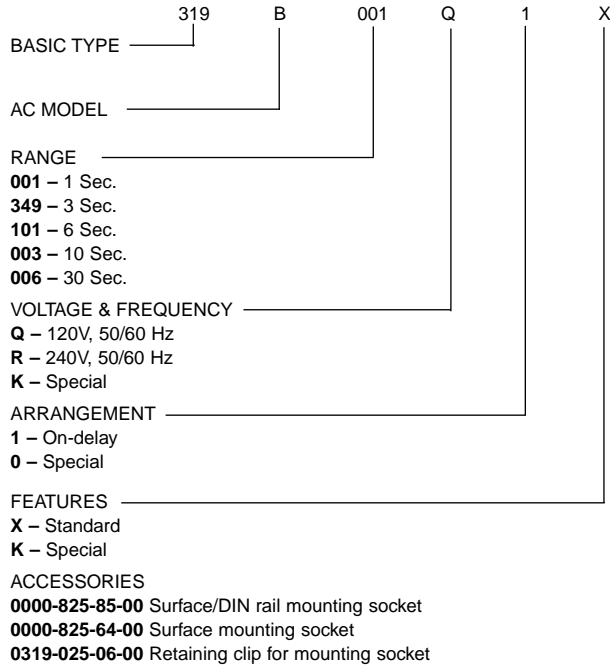
\* on 5 Range Unit Only  
 (319D-016)

\*\* Relay contacts to be wired with same polarity.

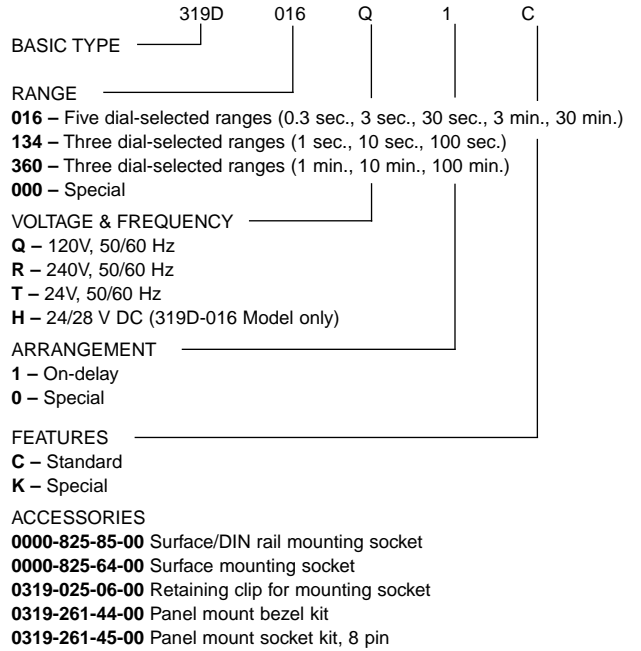
Before starting your design, read the safety statement  
 on the inside back cover of the ATC catalog.

**SERIES 319 PLUG-IN ADJUSTABLE AC/DC TDR**

ORDERING CODE



ORDERING CODE



Before starting your design, read the safety statement on the inside back cover of the ATC catalog.