



## Bulletin 700 Type RTC Fixed Time Solid-State Timing Relays

### Instruction Sheet



**Important:** Save these instructions for future reference.

### Description

Bulletin 700 Type RTC Fixed Time timing relays are designed for applications where a specific time delay is required and inadvertent timing changes must be avoided. They offer the reliability and accuracy of solid-state timing along with the contact isolation of conventional electromechanical relays. The contacts are hermetically sealed in glass for reliability.

The time delay is factory set at the value stated on the nameplate. The operating mode is either On-Delay or Off-Delay, not convertible. Relays are supplied with up to two timed contacts and two instantaneous contacts.

The Normally Open (N.O.) and Normally Closed (N.C.) contacts are designed to be changed or added in the field. A relay can be easily modified to have any combination of N.O. and N.C. contacts, limited to two timed and two instantaneous contacts maximum.

### UL Listed

Bulletin 700 Type RTC relays are listed by Underwriters' Laboratories, Inc. for use in Class I, Division 2, Groups A, B, C, and D hazardous locations as defined by the National Electric Code.

## Adding or Changing Contact Cartridges

Timers are supplied with various combinations of N.O. and N.C. contact cartridges. “Dummy” cartridges are placed in any unused cartridge slots to guard against entrance of foreign material.

Contact Cartridges		
Type	Color	Catalog Number
Normally Open	Gray	700-CRT5
Normally Closed	Orange	700-CRT6
Dummy	Black	700-CR9

The N.O. cartridges, N.C. cartridges, and dummy cartridges are removable and interchangeable using the same cartridges for both timed and instantaneous slots. Use the following procedure:



**ATTENTION:**

The glass envelopes in the N.O. and N.C. cartridges can be damaged by dropping or mishandling. Damaged cartridges must be replaced.

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1. Disconnect all power from timer or timer panel.
2. Loosen the two front housing screws (see Figure 1 on page 3) until the housing slides back along the screws for approximately one inch. The screws are captive and will restrain the front housing to protect the circuit cable which connects to the timer base.
3. Remove the N.O. or N.C. contact or the dummy cartridge by lifting it out of the slot. A screwdriver is required to pry out the dummy cartridge.



**ATTENTION:**

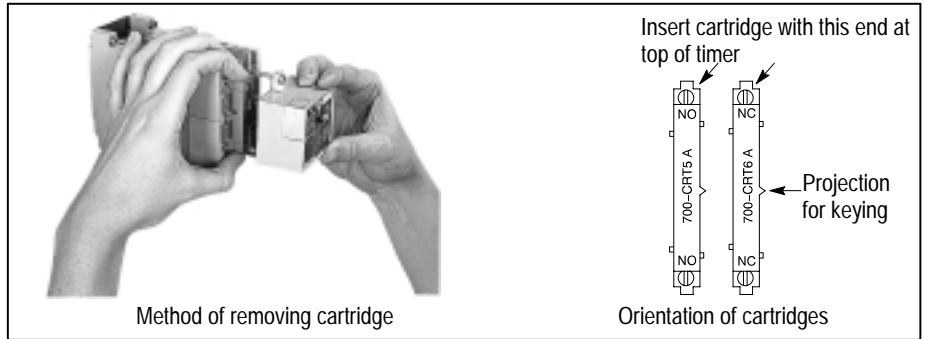
Be careful not to damage circuit cable.

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4. Insert the desired cartridge. The cartridges are keyed and must be inserted with correct orientation (See Figure 1).
5. Slide front housing back down carefully to avoid cable damage. Tighten screws.

## Adding or Changing Contact Cartridges (continued)

**Figure 1**  
 Removing and Orientation of Cartridges



## Operation

Table 1 below outlines timer operation in both the On-Delay and Off-Delay modes. The red LED indicator on the front housing of the timer gives visual indication of timing, timed out, and reset or stable timer conditions. Refer to “Red LED Indicator” column in Table 1.

**Table 1**  
 Timer Operation

Operating Mode	Power (Terminals L1-L2)	Voltage (Applied to Initiate Terminal P)	Timer Status	Red LED Indicator	Contact Cartridge Status			
					Instantaneous		Timed	
					N.O.	N.C.	N.O.	N.C.
On-Delay	On	No	Reset	Off	Open	Closed	Open	Closed
		Yes	Timing	Flashing	Closed	Open	Open	Closed
		Yes	Timed Out	On	Closed	Open	Closed	Open
	Off	No	Stable	Off	Open	Closed	Open	Closed
		Yes	Stable	Off	Closed	Open	Open	Closed
Off-Delay	On	Yes	Reset	On	Closed	Open	Closed	Open
		No	Timing	Flashing	Open	Closed	Closed	Open
		No	Timed Out	Off	Open	Closed	Open	Closed
	Off	No	Stable	Off	Open	Closed	Open	Closed
		Yes	Stable	Off	Closed	Open	Open	Closed

**NOTE:** Because of inherent operating characteristics, a N.O. contact may close before a N.C. contact opens when the timer is energized or times out in the On-Delay mode. Similarly, a N.C. contact may close before a N.O. contact opens when the timer is de-energized or times out in the Off-Delay mode. Therefore, contact overlap or non-overlap cannot be ensured in the same device.

## Terminals

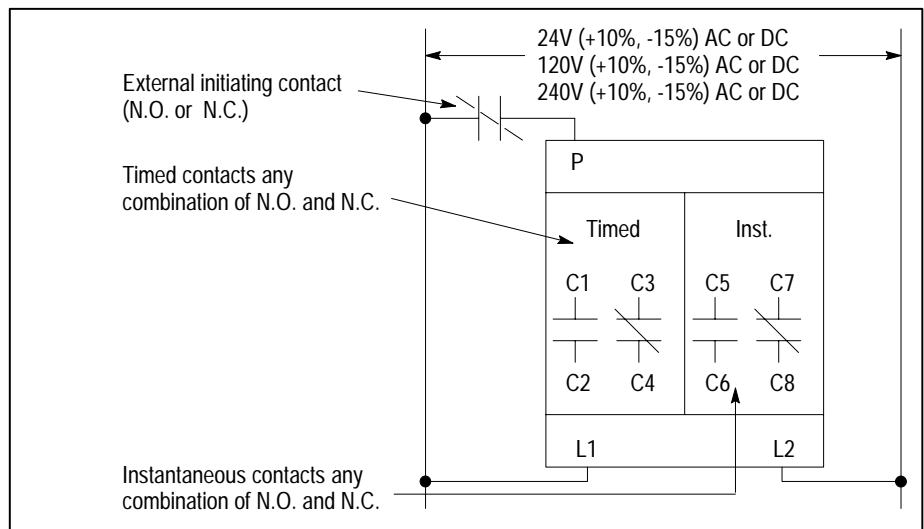
Terminal clamps are designed for solid or stranded copper wire (strip ends to 7.9mm [5/16"]). Use 7-8 lb.-in. of torque to tighten the terminal clamps. Wire size: (1) #18 AWG (.75mm<sup>2</sup>) minimum to (2) #12 AWG (14.0mm<sup>2</sup>) maximum.

## Wiring

Make connections as shown in Figure 2 below. Power is applied continuously to terminals L1 and L2. Voltage applied and removed at initiating terminal P will operate the instantaneous contacts and initiate timing as indicated in Table 1 on page 3.

Use insulated copper wire rated at 75°C (167°F) or higher.

**Figure 2**  
**Timer Power and Initiate Circuit Connections**



## Available Fixed Timers

Standard timers are for 5, 10, 20, or 40 minutes in the On-Delay or Off-Delay mode, and are supplied without contact cartridges. Timers with other time delay values are available upon request from the factory. Minimum time is 0.5 seconds. Maximum time is 64 minutes. To order a non-standard time contact your local Allen-Bradley Sales Office.

## Available Fixed Timers (continued)

To order timers with contact cartridges, modify the Catalog Number as follows:

**700-RTC00Y200U1**

**Timed Contacts**  
 This position represents any combination of two N.O. and N.C. contacts.

Catalog Number Digit	Number of Cartridges	
	N.O.	N.C.
0	0	0
1	1	0
2	0	1
3	1	1
4	2	0
5	0	2

**Instantaneous Contacts**  
 This position represents any combination of two N.O. and N.C. contacts, or no provision for instantaneous contacts.

Catalog Number Digit	Number of Cartridges	
	N.O.	N.C.
0	0	0
1	1	0
2	0	1
3	1	1
4	2	0
5	0	2
9	No Provision	

**Range of Delay**  
 This position represents the time delay range in minutes or seconds, in On-Delay or Off-Delay.

Catalog Number Digit	Range of Relay
S	Seconds – On-Delay
Z	Seconds – Off-Delay
Y	Minutes – On-Delay
I	Minutes – Off-Delay

**Duration of Fixed Delay**  
**Seconds** – Two digits indicate time delay in seconds. Three digits indicate time delay to hundredths of seconds. (Decimal point assumed after first digit.)

**Minutes** – Two digits indicate time delay in minutes. Three digits indicate time delay to hundredths of minutes. (Decimal point assumed after first digit.)

**Examples:** Catalog Number **700-RTC34Y200A1** is for a 20 minute On-Delay timer with 1 N.O. and 1 N.C. cartridge in the timed position and 2 N.O. cartridges in the instantaneous position.

Catalog Number **700-RTC42S1500A1** is for a 1.50 second On-Delay timer with 2 N.O. cartridges in the timed position and 1 N.C. cartridge in the instantaneous position.

## Manual Actuator

A timer can be equipped with a manual actuator that is used to energize the initiate circuit (terminal P) manually using a separate voltage source, 24V and 120V AC/DC only. It can be easily installed in the field. Catalog Number **700-N7**.

## Specifications

### Voltage and Power Requirements

AC Voltage 50/60 Hz +10%, -15%	Total Power Required	Initiate Terminal P Power	Coil Code
24V AC	8VA	4VA	U24
110-120V AC	9VA	4VA	U1
220-240V AC	11VA	5VA	U2

DC Voltage +10%, -20%	Total Power Required	Initiate Terminal P Power	Coil Code
24V DC	10VA	5W	U24
120V DC	11VA	5W	U1
240V DC	12VA	5W	U2

**Time Delay:** Fixed. Factory set at a value within  $\pm 5\%$  of time stated on nameplate. Discrete times range from 0.1 seconds to 64 minutes, and can be specified by user. They are not field adjustable.

**Repeat Accuracy:**  $\pm 1\%$  or  $\pm 50\text{ms}$  at constant voltage and temperature.

**Reset Time:** 25 milliseconds required.

## Specifications (continued)

**Operating Mode:** On-Delay and Off-Delay, as stated on nameplate. Not field convertible.

**Temperature Range:** -20°C to +60°C (-4°F to +140°F)

For altitudes above 2000 meters (1.24 miles):  
 -20°C to +50°C (-4°F to +122°F)

For CONTINUOUS DUTY and units placed close or next to each other (3 in a row), use -20°C to 45°C (-4°F to +113°F) or circulate air around units.

### Contact Ratings – NEMA B600, P300

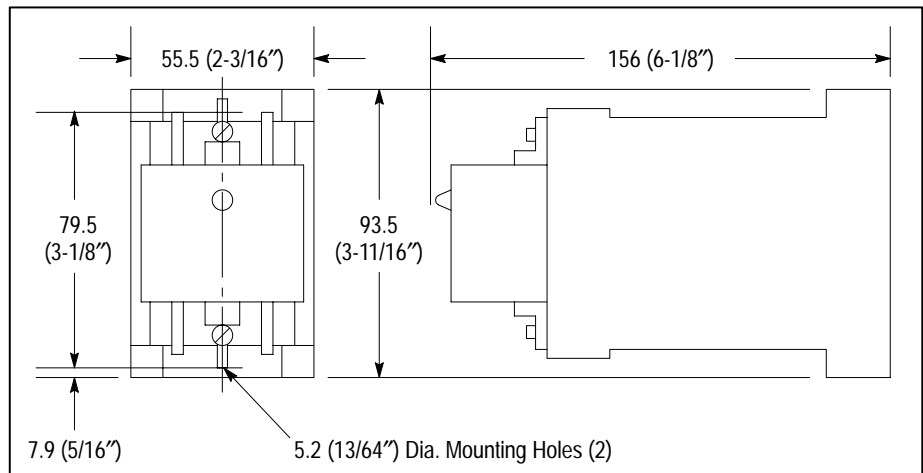
Maximum Volts	AC, 60/50 Hz - NEMA B600				DC - NEMA P300		
	Amperes		Voltamperes		Maximum Volts	Amperes	Voltamperes
	Make	Break	Make	Break			
120	30	3.00	3600	360	125	1.1	138
240	15	1.50					
480	7.5	0.75					
600	6	0.60					
Continuous Current Rating 5 Amps					Continuous Current Rating 5 Amps		

## Dimensions

These timing relays can be mounted directly on a panel, or installed on Bulletin 700 Type MP mounting strips. Dimensions are shown below.

### Mounting Dimensions

Dimensions in millimeters (inches). Dimensions are approximate and are not intended to be used for manufacturing purposes.



### Enclosure Dimensions

124mm (4.88") x 195mm (7.69") x 178mm (7") deep  
 (Catalog Number **700-N31**)