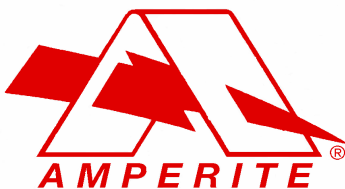


## Solving Your Relay Requirements Since 1922



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### DET1 - Series

### Digital Time Delay Relays



**Wide Timing Range**

**High Timing Accuracy**

**Backlit LCD Display**

**Standard 8 Pin Octal Termination**

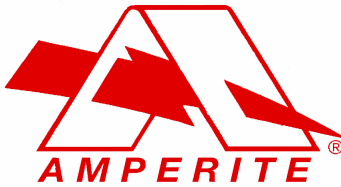
**Programable Contact Configuration**

## SPECIFICATIONS

Type	On-Delay / Interval with Signal, Reset		
Timing Range	0.02 - 9999 Seconds		
	0.02 - 9999 Minutes		
	0.02 - 99 Hours 99 Minutes		
Timing Error	0.05% + 50 Milliseconds		
Reset Time	1 Second		
Min. Signal Input Time	20 Milliseconds		
Contact Type	SPDT		
Vibration Resistance	Functional	10 to 55 Hz Double Amplitude of 1.5 mm	
	Destruction	10 to 55 Hz Double Amplitude of 1.5 mm	
Shock Resistance	Functional	20 G's Minimum	
	Destruction	100 G's Minimum	
Life (Minimum Operations)	Mechanical	At 180 CPM	10,000,000
	Electrical	At 20 CPM	100,000
Ambient Temperature	-40° C to +85° C		
Operating Humidity	98% RH @ 40° C		
Unit Weight	193 Grams		



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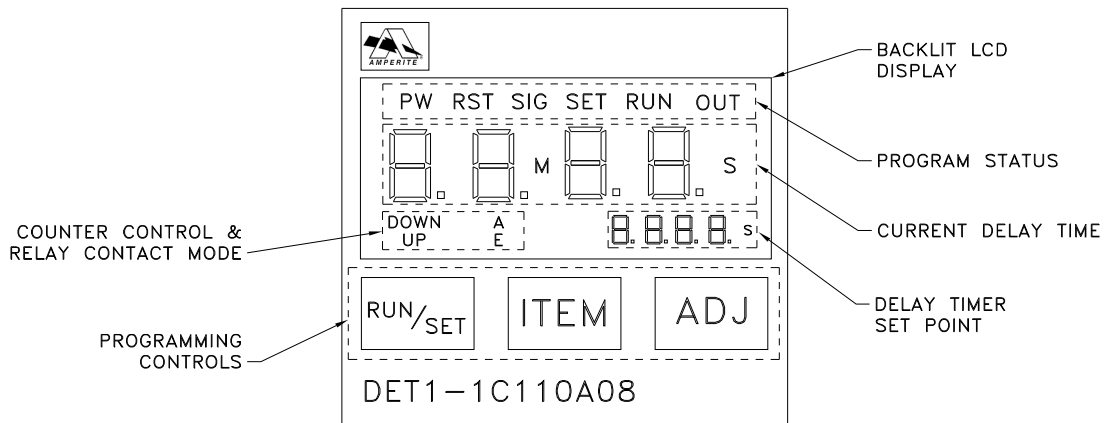


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## Operating Instructions

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### Front Panel Indicators and Controls



#### Backlit LCD Display

The 1.4 x 0.8 inch LCD Display contains all of the information about the status of the Digital Time Delay Relay. The display can be broken down into 5 unique sections. Each section has specific information about the functionality of the device. The LCD screen is backlit and has two levels of brightness. The backlight dims when the output relay energizes and returns to full brightness when it turns off.

#### Program Status

The Program Status portion of the display informs the user as to the current state of the Time Delay Relay. Each of the six indicators functions independently and show which function is actively working.

PW - When power is applied to Pins 2 & 7, this indicator turns on

RST - When the Reset switch connected between pins 3 & 1 is closed this indicator turns on.

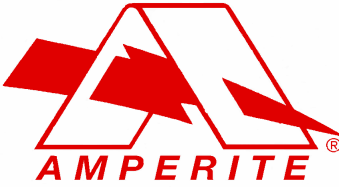
SIG - When the Signal switch connected between pins 4 & 1 is closed this indicator turns on.

SET - This indicates that the Time Delay Relay is in programming mode

RUN - This indicates that the Time Delay Relay is in the Run Mode.

OUT - Indicates that the Digital Counter has completed counting up or down.

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### Current Delay Time

This shows the current time left in the time delay cycle. The minute and seconds indicator will illuminate as required by the program settings.

### Delay Timer Set Point

This is the amount of time the User has programmed into the Digital Time Delay Relay. There are eight defined time ranges that can be programmed. The minimum setting can be programmatically set to 0.000 however the mechanical response is 0.02 seconds typically.

RANGE 1	9.999 SECONDS	9 9 9 9.
RANGE 2	99.99 SECONDS	9 9 9 9.
RANGE 3	999.9 SECONDS	9 9 9 9.
RANGE 4	9999 SECONDS	9 9 9 9.
RANGE 5	9999 MINUTES	9 9 9 9.
RANGE 6	9999 HOURS	9 9 9 9.
RANGE 7	99 MINS 99 SECS	9 9.9 9 9.
RANGE 8	99 HRS 99 MINS	9 9.9 9 9.

### Programming Controls

**RUN / SET** - This function places the Digital Time Delay Relay in the Programming Mode or Run Mode. The Program Status display will indicate the current mode either "RUN" for Run Mode or "SET" for Programming Mode.

**ITEM** - This function is only active during the Programming Mode and is used to single step through each of the User changeable items in the program.

**ADJ** - This function is used during the programming cycle in conjunction with the ITEM button. ADJ allow the User to increment values or scroll through programming options.

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## Operating Instructions

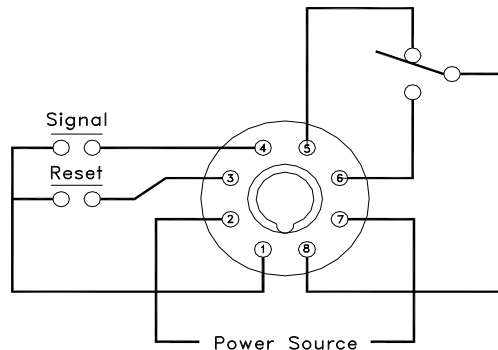
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### Counter Control & Relay Contact Mode

Counter Control - UP / DOWN - This function defines if the counter starts at zero and counts up or from the programmed number and counts down.

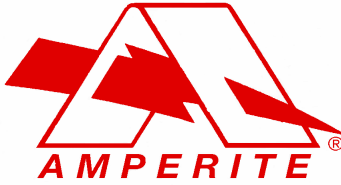
Relay Contract Mode - A / E - The Digital Time Delay Relay has a SPDT Single Pole, Double Throw set of contacts. During the programming, the User sets the contact configuration. Setting the Relay Contact Mode to A, configures the contacts to it's unenergized normally open / normally closed condition during the counting process. Upon completion, the relay energizes and connects the pole connection pin 8 to the normally open relay connection, Pin 6 of the Octal connector. It will remain in this condition until either the RESET or SIGNAL input is energized. Once this RESET input is energized, the relay will return to the relaxed or unenergized state and the display will return to all zeros. If the Signal input is energized, the counting process will begin and the function will repeat. Setting the Relay Contact Mode to E, energizes the relay. The relay contact arrangement will reverse during the counting process. Upon completion of the count, the relay will unenergize and return to the relaxed or unenergized state.

### Back Panel Controls and Wiring Diagram



DET1 Back Panel Controls and Wiring Diagram  
(Back View)

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Pin 1 - The Digital Time Delay Relay has a built in 5 VDC reference. It is intended to provide voltage for the RESET and SIGNAL function.

SIGNAL - This input is rising edge triggered and requires a minimum of 20 millisecond pulse before the delay count is started. Each time the Signal input is applied, the count renews and begins again.

RESET - This input is rising edge triggered and requires a minimum of a 20 millisecond pulse before the relay de-energizes and clears the CURRENT DELAY TIME display to all zeros. A RESET command during the count cycle will return the relay to the unenergized state and set the counter to all zeros.

### Programming

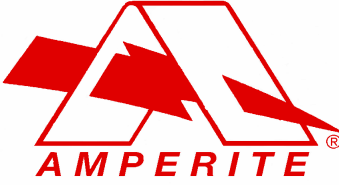
Step 1 - Connect the Digital Time Delay Relay as shown in the above wiring diagram. Amperite Octal Socket RS-81 or equiv. can be used for this purpose. Configure the output contacts in a fashion that will allow programming to occur without damaging equipment or machinery. Lamps or simple indicators are good for Step 2 - Apply power to the Unit and observe the front panel display. The Backlit feature should be illuminated and the LCD display should be visible. The PW indicator should be present. The general condition of the rest of the indicators on the initial power up is how the unit was programmed the last time power was supplied to the unit.

Step 3 - Press the RUN / SET button until the SET indicator illuminates. Observe the Delay Timer Set Point display, the S, M or H should be flashing. Use the ADJ button to select seconds, minutes or hours. Press the ITEM button again, the most significant or leftmost digit in the Delay Timer Set Point display should be flashing. Use the ADJ button to set the time. Use the ITEM button and repeat this step to set all of the numerical values for the Delay Time Set Point.

Step 4 - The counter control indicator, UP or Down should be flashing. If not, continue to press the ITEM button until it flashes. The counter mode can be set to count UP or DOWN by pressing the ADJ button. This only effects the counting method in the display, the amount of time is still the same.

Step 5 - Press the ITEM button until the Relay Contact Mode flashes, A or E. By pressing the ADJ button the user can select the contact configuration during the count and at the end of the cycle. The A mode is when the relay is in the relaxed unenergized state. The relay contacts are as shown in the wiring diagram. Upon completion of the count, the relay energizes and pole transfers from Normally Closed ( N.C.) to Normally Open ( N.O.). The Digital Time Delay Relay will stay in this state until the Reset input is energized. The removal of power will also cause the Digital Time Delay Relay contact to relax into the normally closed / normally open positions. With the Digital Time Delay Relay in the E mode, the relay energizes and transfers on the beginning of the count then relaxes upon the completion of the count.

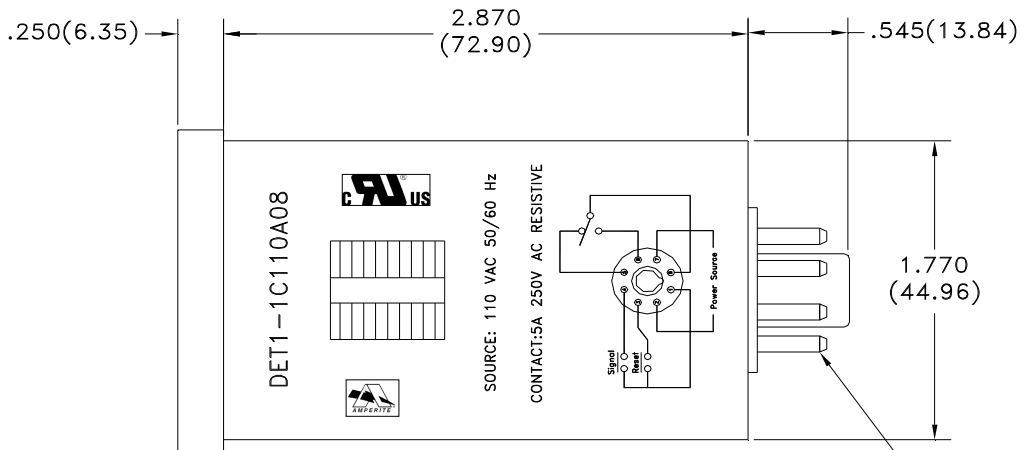
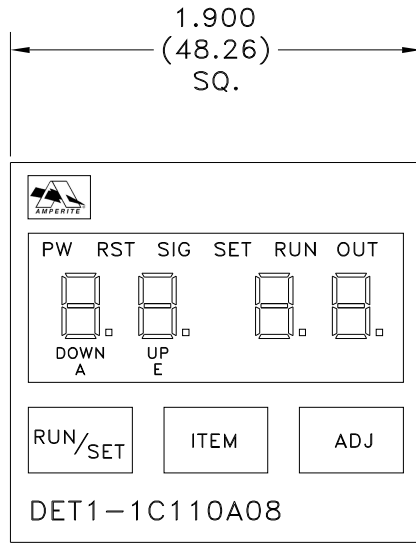
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STANDARD OCTAL 8 CONNECTOR  
 AMPERITE SOCKET P/N RS-81