Bulletin 700 ON-Delay Timing Relays

- Socket or Panel Mounted
- Timing Range From 0.05 s…300 h
- 8-pin base for socket cat. nos. 700-HN100, -HN125, -HN108
- Trigger: Power on
- Reset: Power off

Timing Mode	Supply Voltage	Trigger Options	Reset Options	Outputs	Cat. No.
ON-Delay (A)	24…48V AC/DC	Power On	Power Off	SPDT Timed + Instantaneous Contact	**700-HRC12TU24**
	24…48V AC 12…48V DC			DPDT	**700-HRM12TU24**
	100…240V AC	Power On	Power Off	DPDT	**700-HRM12TA17**
				SPDT Timed + Instantaneous Contact	**700-HRC12TA17**

Timing mode description

A	D	E	B	B2	C	J
ON-Delay	OFF-Delay	One Shot	Repeat Cycle OFF-Start	Repeat Cycle ON-Start	Signal ON/OFF-Delay	One Shot

Bulletin 700-HRF Repeat Cycle Timing Relays

- Socket or Panel Mounted
- Independently adjustable on- and off-time
- 8-Pin base for socket cat. nos. 700-HN100, -HN125, and -HN108
- DPDT contact outputs
- Trigger: Power on
- Reset: Power off

Cat. No. Explanation

700 – HRF (*a*) 7 (*b*) 2 (*c*) D (*d*) Z12 (*e*)

a

Timer Type	
Code	Description
HRF	Repeat cycle with adjustable ON/OFF times

b

Function	
Code	Description
7	Repeat cycle with OFF start
8	Repeat cycle with ON start

c

Contact Output	
Code	Description
2	DPDT

d

Time Range	
Code	Description
D	0.05 s…30 hr

e

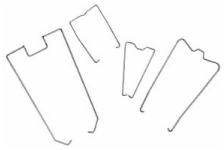
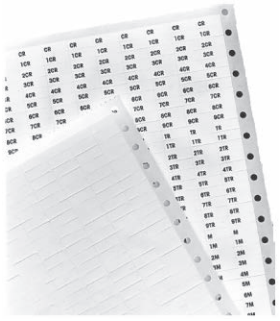
Supply Voltage	
Code	Description
A18	100…240V AC, 50/60 Hz
U25	24V AC, 50/60 Hz; 24V DC
Z12	12V DC
Z45	48…125V DC

Accessories

	Description	Pkg. Qty.	Cat. No.
 *Cat. No. 700-HN100*	**Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction.** 8-Pin for use with Bulletin 700-HR and -HX timing relays.	10	**700-HN100**
 *Cat. No. 700-HN125*	**Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Open Style Construction.** 8-Pin for use with Bulletin 700-HR and -HX timing relays. No retainer clip required.	10	**700-HN125**
 *Cat. No. 700-HN101*	**Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting; Guarded Terminal Construction.** 11-pin for use with 3PDT 700-HA relays.	10	**700-HN101**
 *Cat. No. 700-HN126*	**Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting; Open Style Terminal Construction.** 11-pin for use with 3PDT 700-HA relays. No retainer clip required.	10	**700-HN126**
 *Cat. No. 199-DR1*	**DIN (#3) symmetrical hat rail** 35 x 7.5 x 1 m	10	**199-DR1**
 *Cat. No. 700-HN108*	**Specialty Socket** 8-pin backwired socket with solder terminals for use with 700-HR timing relays. Order 10 or multiples of 10.	10	**700-HN108**
 *Cat. No. 700-HN129*	**Specialty Socket** 11-pin back-wired socket with solder terminals for use with Bulletin 700-HR timing relays.	10	**700-HN129**

Plug-in Timing Relays

Accessories

	Description	Pkg. Quantity	Cat. No.
 *Cat. No. 700-HN130*	**Frame Adapter** For flush or door mounting of all Bulletin 700-HR and -HX timers.	1	**700-HN130**
 *Sample Retainer Clips*	**Retainer Clip for Cat. Nos. 700-HN100 and -HN101 Sockets with all 700-HR Timing Relays** Secures timer in socket. Note: Not required for installation	10	**700-HN131**
 *Cat. No. 700-HN132*	**Protective Cover** Helps prevent tampering of timing and mode settings. Provides a degree of protection against water and dirt from entering the front of the relay. For use with all Bulletin 700-HRs and -HX timing relays.	1	**700-HN132**
	**Pre-Printed Identification Tags —** contains 10 sheets of pre-printed and blank tags. Each sheet contains 13 sets of the markings CR…9CR, TR…9TR, M…9M, F, R, 1S, and 117 blank tags. Tags are peel-off with sticky backing for easy placement on relays.	10	700-N40
	Blank Identification Tags — contains 10 sheets of blank identification tags for customer specialized printing. Each sheet contains 546 blank tags. Tags are peel-off with sticky backing for easy placement on relays.	10	700-N41

Bulletin 700-HR Multi-function, Multi-Range Dial Timing Relay, Socket, Retainer Clip Reference Chart

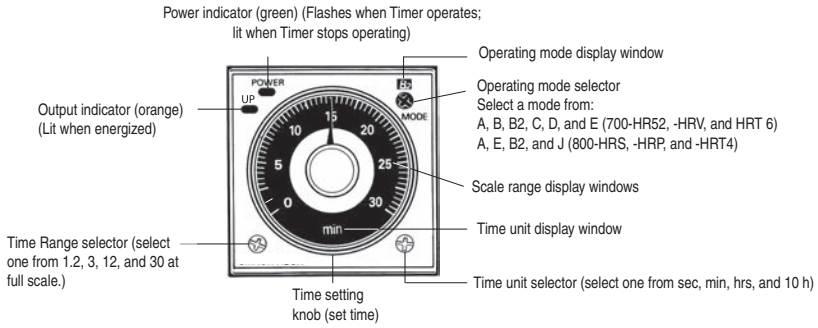
Timer Type	Socket Cat. No.		Retainer Clip Cat. No.
700-HR52, -HRT6, -HRV, -HRQR	❄	700-HN101	700-HN131
	❄	700-HN126	Not Required∗
	❄	700-HN129	Not Applicable
700-HRS, -HRT4, -HRP, -HRC, -HRM, -HRF, -HRY, -HRQN	‡	700-HN100	700-HN131(See note above)
	‡	700-HN108	Not Applicable
	‡	700-HN125	Not Required∗

∗ Design of these sockets holds the timing relays securely and does not require retainer clips.
❄ 11 pins.
‡ 8 + pins.

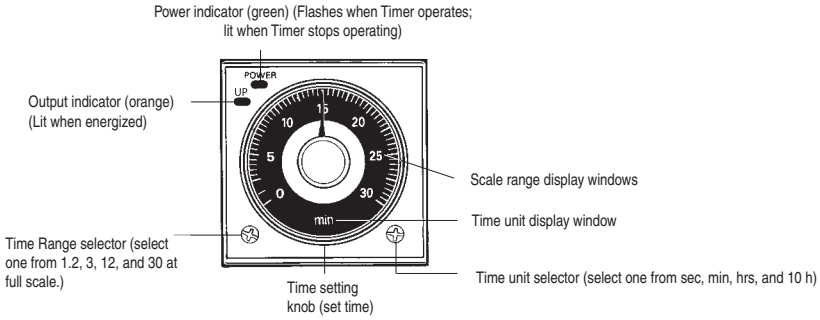
		700-HR, -HRS, -HRV	700-HRP	700-HRC	700-HRM	700-HRF	700-HRY	700-HRQ	700-HRT (Transistor Outputs)
Electrical Ratings									
Pilot Duty Rating		NEMA B300							—
Thermal Current (I_{th})		5 A							100 mA @ 30V DC max.
►][◄	120V AC	30 A							—
Make	240V AC	15 A							—
◄][►	120V AC	3 A							—
Break	240V AC	1.5 A							—
Hp at 120V		1/6 Hp (0.12 kW)	1/4 Hp (0.18 kW)		1/6 Hp (0.12 kW)		1/4 Hp (0.18 kW)	1/6 Hp (0.12 kW)	—
Hp at 240V		1/3 Hp (0.25 kW)							—
Resistive Load		5 A at 250V AC/30V DC							
Inductive Load		AC-15 @ 250V AC, 3 A/DC-13 @ 30V DC, 0.5 A							
Accuracy of Operating Time		±0.2 % FS max. (±0.2 % ±10 ms max. in a range of 1.2 s)							
Setting Error		±5 % FS ±50 ms (The value is ±5 % FS +100 ms to -0 ms max. when the C or D mode signal of the 700-HRVs are OFF.)							
Influence of Voltage		±0.2 % FS max. (±0.2 % ±10 ms max. in a range of 1.2 s)							
Influence of Temperature		±1 % FS max. (±1 % ±10 ms max. in a range of 1.2 s)							
Permissible Leakage Current									
Power Consumption		**-HR52, -HRS**	**-HRV**	**-HRP, -HRC**	**-HRM**	**-HRF**	**-HRY**	**-HRQ**	**-HRT**
240V AC, Output ON		2.1 VA	2.5 VA	2.0 VA	2.1 VA	10 VA	12 VA	0.4 VA	—
240V AC, Output OFF		1.3 VA	1.8 VA	2.0 VA	1.3 VA	10 VA	12 VA	0.4 VA	—
24V DC, Output ON		0.8 W	0.9 W	0.9 W	0.8 W	1.0 W	—	0.2 W	0.3 W
24V DC, Output OFF		0.2 W	0.3 W	0.9 W	0.2 W	1.0 W	—	0.2 W	0.2 W
Design Specifications									
Dielectric Strength		2000V AC (1000V AC for 700-HRT), 50/60 Hz for 1 min (contact to frame) 2000V AC (1000V AC for 700-HRT), 50/60 Hz for 1 min (between control output terminals and operating circuit) 2000V AC, 50/60 Hz for 1 min (pole-to-pole) 1000V AC, 50/60 Hz for 1 min (between contacts not located next to each other) 2000V AC, 50/60 Hz for 1 min (contact to coil)							
Mechanical									
Vibration Resistance		Malfunction: 10…55 Hz with 0.5 mm double amplitude each in three directions for ten minutes each							
Shock Resistance		Malfunction: 100 m/s² (10 G)				98 m/s² (10 G)	294 m/s² (10 G)	98 m/s² (10 G)	100 m/s² (10 G)
Environmental									
Noise Immunity		±1.5 kV for ±600V DC				±400V for 12V DC		±1kV for 48V DC	±1.5 kV for ±600V DC
Static Immunity		Malfunction: 8 kV							
Ambient Temperature		Operating: -10…55 °C (with no icing) Storage: -25…65 °C (with no icing)							
Ambient Humidity		Operating: 35…85 %							
Construction									
Life Rxpectancy (Min. Operations)		Mechanical:20 000 000. (under no load at 1800 operations/h) Electrical: 100 000 (5 A at 250V AC, resistive load at 1800 operations/h)						Mech: 10^7 Electrical: 10^4	
EMC		(EMI) EN50081-2 Emission Enclosure:EN55011 Group 1 class A Emission AC Mains: EN55011 Group 1 class A (EMS) EN50082-2 Immunity ESD:EN61000-4-2:4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference from AM Radio Waves: ENV50140:10 V/m (80 MHz…1 GHz) (level 3) Immunity RF-interference from Pulse-modulated Radio Waves:ENV50204:10 V/m (900 ±5 MHz) (level 3) Immunity Conducted Disturbance:ENV50141:10 V (0.15…80 MHz) (level 3) Immunity Burst:EN61000-4-4:2 kV power-line (level 3) Immunity Surge:EN61000-4-52 kV I/O signal-line (level 4) 1 kV line to line 2 kV line to ground (level 3)							
Degree of Protection		IP40 (panel surface)							
Weight		Approx. 90 g							
Certifications		CSA Certified (File No. 70751), UL Recognized (File No. E14843 Guide No. NRNT2), CE Marked, C-Tick Marked							
Standards		UL 508, CSA C22.2 No. 14, EN 61812-1, EN 61000-6-2, -6-4							

Timer Functions

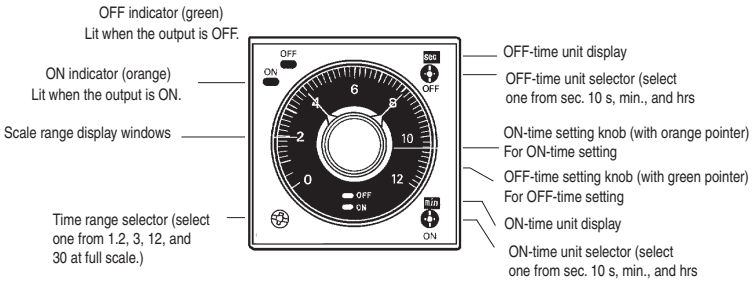
700-HR Multifunction Timer



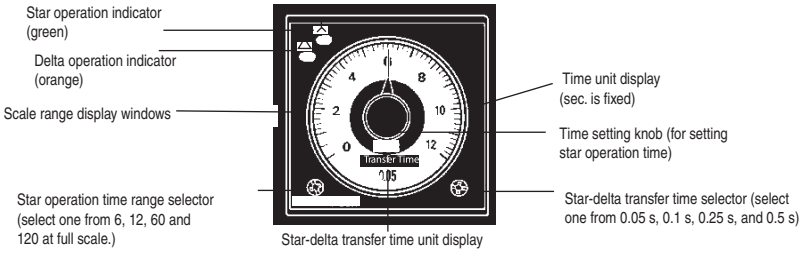
700-HRC -HRM On-Delay Timer



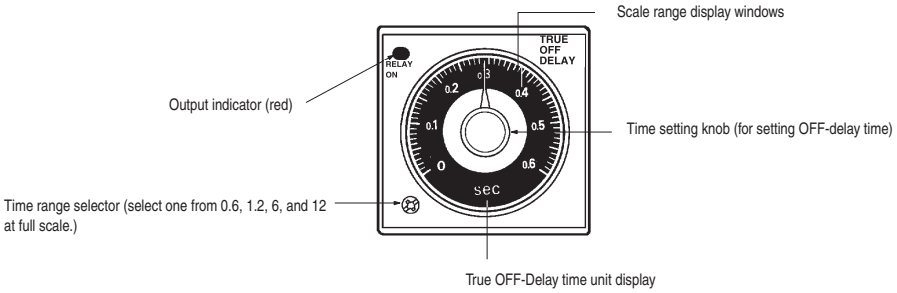
700-HRF Twin Timer



700-HRY Star-Delta Timer



700-HRQ True Off-Delay Timer

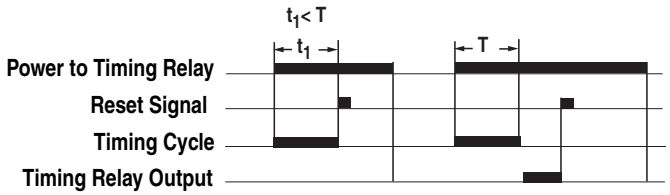


Specifications for Start, Gate, Reset Signal (Cat. Nos. 700-HR52, -HRT6, -HRV, -HRQR)

Start, Reset, and Gate signals are typically contact closures or signals from a solid-state sensor.

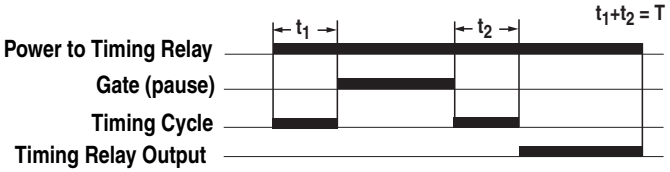
(R) Reset Signal

The reset signal is not required for normal operation. Reset can be accomplished by removing power from the timing relay. To reset the timer without removing power, a signal must be applied which resets the timing cycle and returns the output contacts to their shelf state. The reset signal will override both the start signal and gate signal. The reset signal can be either momentary or maintained.



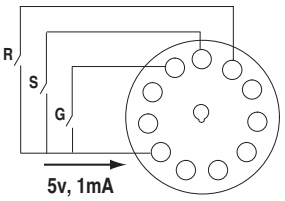
(G) Gate Signal

The gate signal is not required for normal operation. The gate signal provides a pause or retentive timing function. When the gate signal is applied the timing cycle is momentarily interrupted. When the signal is removed, the timing cycle resumes timing at the point the cycle was interrupted and will continue timing until the time delay is completed or the gate signal is re-applied.



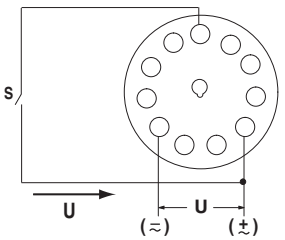
Contact Signal — Cat. Nos. 700-HR52, -HRT6, -HRQR

Contact closure provides signal to timer. A low energy signal is generated by the 700-HR timing relay. For optimum reliability, use contacts designed for low energy switching (5V, 1 mA) (Bul. 800F-X__V, 800T-X__V). No external voltage should be connected to the contact signal.



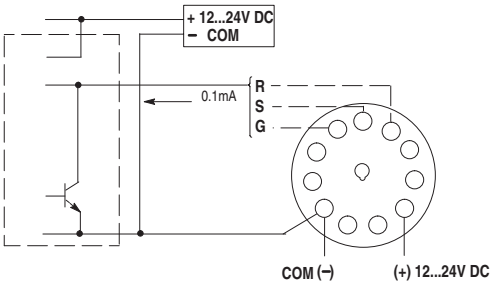
Contact Signal — Cat. No. 700-HRV

For use in applications where it is not possible to use contacts designed for low energy switching. Contact closure provides signal to timer. A signal is generated by the 700-HR timing relay, and is the same potential as the supply voltage of the timing relay. No external voltage should be connected to contact signal. 700-HRV52TU24 supply voltage: 24...48V AC, 12...48V DC / 700-HRV52TA17 supply voltage: 100...240V AC, 100...125V DC.



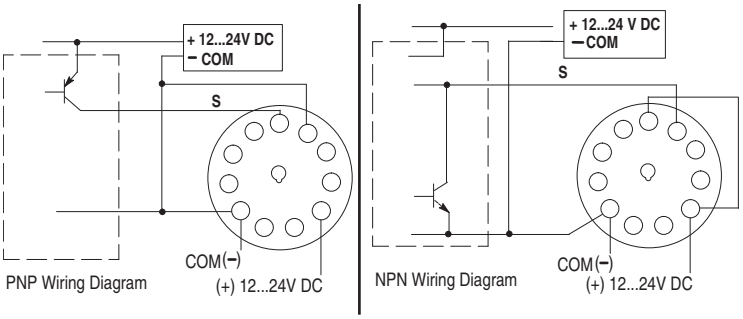
Solid-State Signal — Cat. Nos. 700-HR52, -HRT6

Timing relay is suitable for use with a 3-wire NPN 12...24V DC sensor. Supply voltage potential of sensor must be the same as the supply voltage potential of the timing relay. Permissible off-state leakage current from sensor: 0.01 mA max.



Solid-State Signal — Cat. No. 700-HRV

Timing relay is suitable for use with a 3-wire NPN or PNP 12...24V DC sensor. Supply voltage potential of sensor must be the same as the supply voltage potential of the timing relay. Permissible off-state leakage current from sensor: 0.01 mA max.



Signal Specifications					
Circuit Impedance	Circuit impedance can be used to calculate the maximum wiring distance from the signal switch to the timing relay, for example. Permissible signal-ON impedance: 1 kΩ max. Permissible signal-OFF impedance: 100 kΩ min.				
Power-OFF Reset	Min. power-off time: 0.1 s, Reset Voltage: 10% max. of rated voltage				
Signal Duration	Min. pulse width: 0.05 s				
Signal Options		700-HR52	700-HRT6	700-HRV5	700-HRQR
	Start	X	X	X	NA
	Reset	X	X	NA	X
	Gate	X	X	NA	NA

Nomenclature

Timing Charts

Mode A — ON-Delay

a. Needs continuous input power applied.

b. Timing is initiated by the leading edge of the start signal.

c. Contacts change state after timing is complete.

d. Additional start signals during timing don't reset timing or contacts.

e. When the input power is removed contacts return to shelf state.

Basic Operation

Mode B — Repeat Cycle, Off Start

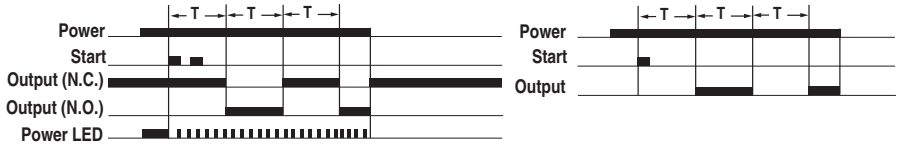
a. Need continuous input power applied.

b. Timing is initiated by the leading edge of the start signal. Additional start signals during timing do not reset timing or contacts.

c. For the first time period the contacts remain in their shelf state. When that time period is complete contacts change state for the same time period (time on = time off).

d. This cycle repeats itself until input power is removed or reset signal is applied. When the input power is removed or reset signal is applied contacts return to the shelf state.

Basic Operation



a. Need continuous input power applied.

b. Timing is initiated by the leading edge of the start signal. Additional start signals during timing do not reset timing or contacts.

c. For the first time period the contacts change state. When that time period is complete contacts return to the shelf state for the same time period (time on = time off).

d. This cycle repeats itself until input power is removed or reset signal is applied. When the input power is removed or reset signal is applied contacts return to the shelf state.

Basic Operation

Mode C — Watchdog monitor (Trigger = Signal On/Off)

a. Need continuous input power applied.

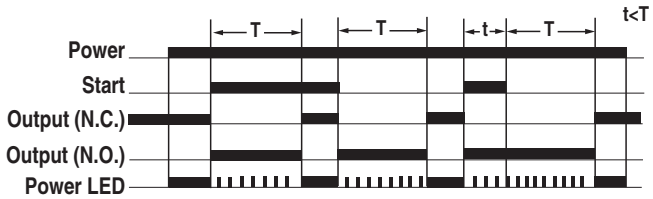
b. Contacts change state immediately when start signal is applied or when start signal is removed (only if timing cycle was complete).

c. Timing is initiated at the leading edge of the start signal. After the first timing cycle is complete, timing is initiated by the trailing edge of the start signal.

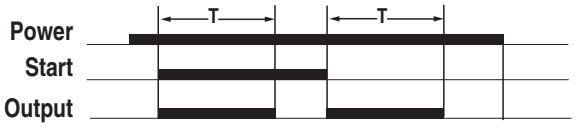
d. At the end of the time period contacts return to the shelf state.

e. Relay timing is reset when additional start signals are applied while the relay is timing. Contacts remain in energized state.

f. When the input power is removed contacts return to the shelf state.



Basic Operation



Mode D — Off-Delay (Trigger=Signal Off)

a. Need continuous input power applied.

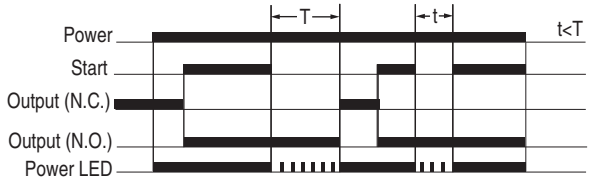
b. Contacts change state immediately when start signal is applied.

c. Timing is initiated by the trailing edge of the start signal.

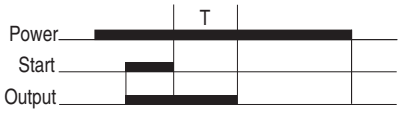
d. At the end of the time period contacts return to the shelf state.

e. Relay timing is reset when additional start signals are applied while the relay is timing. Contacts remain in energized state.

f. When the input power is removed contacts return to the shelf state.



Basic Operation



Mode E — One-Shot (Trigger=Signal On) 700-HR52, -HRV, and -HRT6

a. Need continuous input power applied.

b. Timing is initiated by the leading edge of the start signal.

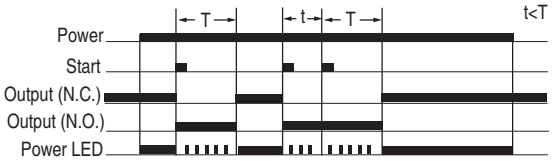
c. Contacts change state immediately when start signal is applied.

d. At the end of the time period contacts return to the shelf state.

e. Relay timing is reset when additional start signals are applied while the relay is timing. Contacts remain in energized state.

f. When the input power is removed contacts return to shelf state.

Basic Operation



Mode E — One-Shot (Trigger = Power On) 700-HRS, -HRP, and -HRT4

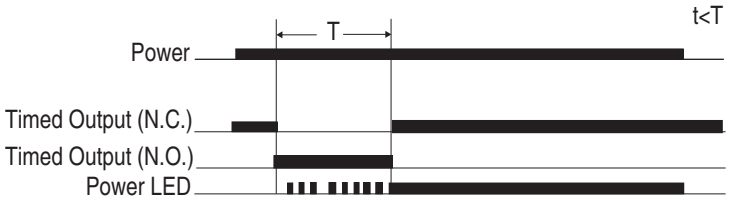
a. Need continuous input power applied.

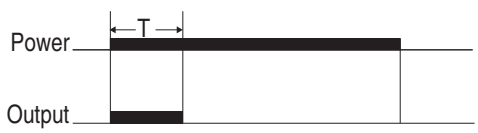
b. Timing is initiated when the input power is applied.

c. At the end of the time period contacts return to the shelf state.

d. Relay timing is reset when input power is removed.

Basic Operation





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Mode J — Delayed One-Shot (Trigger=Power On)

a. Need continuous input power applied.

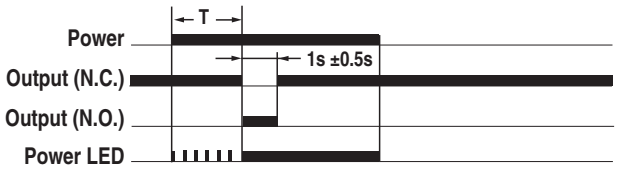
b. No start signal applied.

c. Timing is initiated when input power is applied.

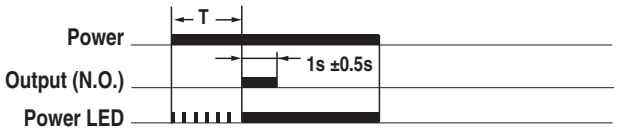
c. Contacts change state after the timing for a fixed time of 1s +/-0.5s

d. At the end of the 1 sec period the contacts return to the shelf state.

e. When the input power is removed contacts return to the shelf state.



Basic Operation



Mode Star-Delta

a. Need continuous input power applied.

b. No start signal required. Timing is initiated when input power is applied.

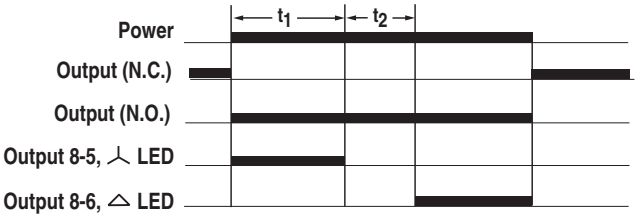
c. Star ouput contact changes state when input power is applied.

d. After timing is complete star output contact returns to the shelf state then both the star & delta contacts remain in shelf states until transfer time setting is complete.

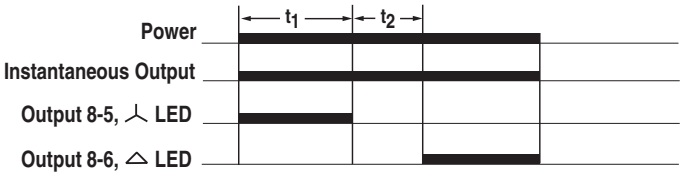
e. Delta output contact changes state after transfer time is complete.

f. Instantaneous contact changes state when input power is applied.

g. All contacts return to the shelf state when input power is removed.



Basic Operation



Mode True Off-Delay (Trigger=Power Off)

a. Continuous input power is NOT required.

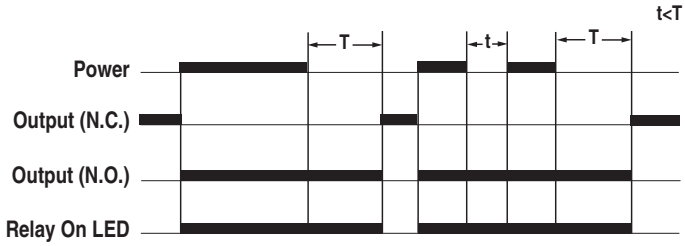
b. No start signal applied.

c. Contacts change state immediately when input power is applied.

d. Timing starts when input power is removed.

e. At the end of the time period contacts return to the shelf state.

f. Relay timing is reset when input power is reapplied while the relay is timing. Contacts remain in energized state.



Basic Operation