Multifunctional Timer

Twin Timer

ON-Delay Timer

Star-Delta Timer

True OFF-delay Timer

Bulletin 700-HR

- **Dial Timing Relays**
- **5 A Contact Rating**
- **Multiple Programmable Timing Ranges**
- **Tube Base Pin Style Terminals**
- **Multi-Voltage Inputs**
- **Timed Contacts and Instantaneous Contacts**
- **Transistor Outputs**
- **Single Function and Multi-Function**
- **Up to 10 Different Operating Modes**
- **0.05 s…300 h Timing Range**

TABLE OF CONTENTS

Description

The Bulletin 700-HR Multi-Function, Multi-Range Timing Relays are available with 16 programmable timing ranges with calibrated scales. They have seven programmable timing modes: ON-Delay, OFF-Delay, Repeat Cycle ON, Repeat Cycle OFF, Signal ON/OFF, ON-Delay One Shot, and One Shot. They are tube based relays with 8 and 11 pin style terminations.

The Bulletin 700-HRC/HRM Multi-Range Timing Relays are ON-Delay only, and are available with multiple timing ranges with calibrated scales. They are tube based relays with pin style terminations and timed and instantaneous SPDT contact.

The Bulletin 700-HRF Twin Timers are Repeat Cycle -ON and -OFF delay only. They are tube based relays with pin style terminations with DPDT timed contacts.

The Bulletin 700-HRY Star-Delta Timers are Multi-Function, Multi-Range Timing Relays with SPST timed and instantaneous contacts. They are tube based relays with 8-pin style terminations.

The Bulletin 700-HRQ True OFF-Delay Timing Relay are available with DPDT outputs. They are tube-based relays with 8- and 11- pin style terminations and provide a reset option.

Your order must include:

- Cat. No. of the timing relay plus suffixes of selection options.
- Cat. No. of socket required.
- If required, Cat. No. of any accessories.

Conformity to Standards:

EN 60947-5-1, EN 50081-2, EN 50082-2, IEC 947, VDE 0435, CSA 22.2,UL 508

Approvals:

CSA Certified, File LR60859, UL Recognized, File E14840, Guide NKCR 2
CE Marked (per EU Low Voltage Directive 73/23 EEC 93/68 EEC: per Electromagnetic Compatibility Directive 89/336 EEC 92/31 EEC 93/681 EEC), ACA

Bulletin 700 Multi-Function, Multi-Range Dial Timing Relays with Pin Style Terminations

	Timing Mode	Timing Range	Sockets	Pins	Input Voltage	Contact Outputs	Cat. No.	Factory-stocked Item
Multifunction Timer  ***Cat. No. 700-HR, -HRP, -HRS, -HRT, -HRV***	**A,D,E, B,B2,C**	0.05 s….300 h	700-HN101 700-HN126 700-HN129	11	24…48V AC 12…48V DC	DPDT	700-HR52TU24	✔
							700-HRV52TU24 ❶	
						Transistor	700-HRT6TTU24	
					100…240V AC 100…125V DC	DPDT	700-HR52TA17	✔
							700-HRV52TA17 ❶	
	A, E,B2,J		700-HN100 700-HN125 700-HN108	8	24…48V AC 12…48V DC	DPDT	700-HRS42TU24	✔
						Transistor	700-HRT4TTU24 ❶	
					24…48V AC/DC	SPDT Timed + Instantaneous Contact	700-HRP42TU24 ❶	✔
					100…240V AC 100…125V DC	SPDT Timed + Instantaneous Contact	700-HRP42TA17	✔
						DPDT	700-HRS42TA17	✔
ON-Delay Timer  ***Cat. No. 700-HRM, -HRC***	**A**	0.05 s….300 h	700-HN100 700-HN125 700-HN108	8	24…48V AC/DC	SPDT Timed +Instantaneous Contact	700-HRC12TU24	✔
					24…48V AC 12…48V DC	DPDT	700-HRM12TU24	✔
					100…240V AC	DPDT	700-HRM12TA17	✔
						SPDT Timed + Instantaneous Contact	700-HRC12TA17	✔
Twin Timer  ***Cat. No. 700-HRF…***	**B**	0.05 s….30 h	700-HN100 700-HN125 700-HN108	8	12V DC	DPDT	700-HRF72DZ12	
		0.05 s….30 h	700-HN100 700-HN125 700-HN108	8	24V AC/DC	DPDT	700-HRF72DU25	✔
		0.05 s….30 h	700-HN100 700-HN125 700-HN108	8	48…125V DC	DPDT	700-HRF72DZ45	
		0.05 s….30 h	700-HN100 700-HN125 700-HN108	8	100…240V AC	DPDT	700-HRF72DA18	✔

❶ Voltage Input

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	ON-delay One Shot

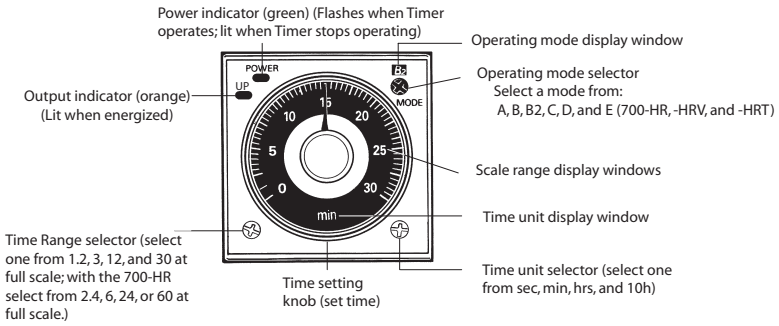
	Timing Mode	Timing Range	Sockets	Pins	Input Voltage	Contact Outputs	Cat. No.	Factory-stocked Item
Twin Timer  ***Cat. No. 700-HRF…***	**B2**	0.05 s.…30 h	700-HN100 700-HN125 700-HN108	8	12V DC	DPDT	700-HRF82DZ12	
		0.05 s.…30 h	700-HN100 700-HN125 700-HN108	8	24V AC/DC	DPDT	700-HRF82DU25	
		0.05 s.…30 h	700-HN100 700-HN125 700-HN108	8	48…125V DC	DPDT	700-HRF82DZ45	
		0.05 s.…30 h	700-HN100 700-HN125 700-HN108	8	100…240V AC	DPDT	700-HRF82DA18	✔
Star-Delta Timer  ***Cat. No. 700-HRY…***	**Star-Delta**	0.5 s.…120 s	700-HN100 700-HN125 700-HN108	8	100…120V AC	SPDT Timed + Instantaneous Contact	700-HRYY6FA12	✔
					200…240V AC		700-HRYY6FA22	✔
True OFF-Delay Timer  ***Cat. No. 700-HRQ…***	**True OFF-Delay**	.05 s…12 s	700-HN100 700-HN125 700-HN108	8	100…120V AC	DPDT	700-HRQN2GA12	✔
					200…240V AC	DPDT	700-HRQN2GA22	
			700-HN101 700-HN126 700-HN129	11	100…120V AC	DPDT	700-HRQR2GA12 ❶	
					200…240V AC	DPDT	700-HRQR2GA22 ❶	
		.05 min… 12 min.	700-HN100 700-HN125 700-HN108	8	100…120V AC	DPDT	700-HRQN2HA12	✔
					200…240V AC	DPDT	700-HRQN2HA22	
			700-HN101 700-HN126 700-HN129	11	100…120V AC	DPDT	700-HRQR2HA12 ❶	
					200…240V AC	DPDT	700-HRQR2HA22 ❶	
		.05 s…12 s	700-HN100 700-HN125 700-HN108	8	24V AC/DC	DPDT	700-HRQN2GU25	
			700-HN101 700-HN126 700-HN129	11	24V AC/DC	DPDT	700-HRQR2GU25 ❶	

❶ Indicates True OFF-delay timer with reset

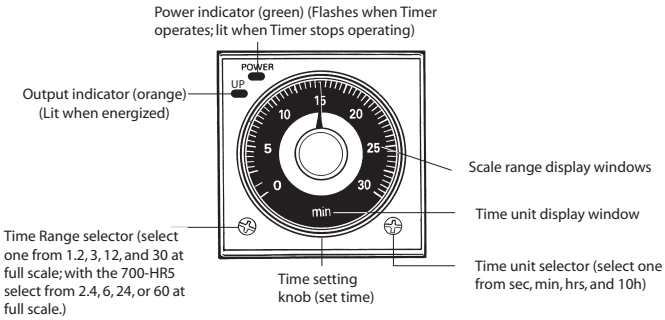
	Timing Mode	Timing Range	Sockets	Pins	Input Voltage	Contact Outputs	Cat. No.	Factory-stocked Item
True OFF-Delay Timer  ***Cat. No. 700-HRQ...***	**True OFF-Delay**	.05 min.…12 min.	700-HN100 700-HN125 700-HN108	8	24V AC/DC	DPDT	700-HRQN2HU25	
			700-HN101 700-HN126 700-HN129	11	24V AC/DC	DPDT	700-HRQR2HU25 ❶	
		.05 s…12 s	700-HN100 700-HN125 700-HN108	8	48V DC	DPDT	700-HRQN2GZ48	
			700-HN101 700-HN126 700-HN129	11	48V DC	DPDT	700-HRQR2GZ48 ❶	
		.05 min.…12 min.	700-HN100 700-HN125 700-HN108	8	48V DC	DPDT	700-HRQN2HZ48	
			700-HN101 700-HN126 700-HN129	11	48V DC	DPDT	700-HRQR2HZ48 ❶	
		.05 s…12 s	700-HN100 700-HN125 700-HN108	8	100…125V DC	DPDT	700-HRQN2GZ11	
			700-HN101 700-HN126 700-HN129	11	100…125V DC	DPDT	700-HRQR2GZ11 ❶	
		.05 min.…12 min.	700-HN100 700-HN125 700-HN108	8	100…125V DC	DPDT	700-HRQN2HZ11	
			700-HN101 700-HN126 700-HN129	11	100…125V DC	DPDT	700-HRQRHZ11 ❶	

❶ Indicates True OFF-delay timer with reset

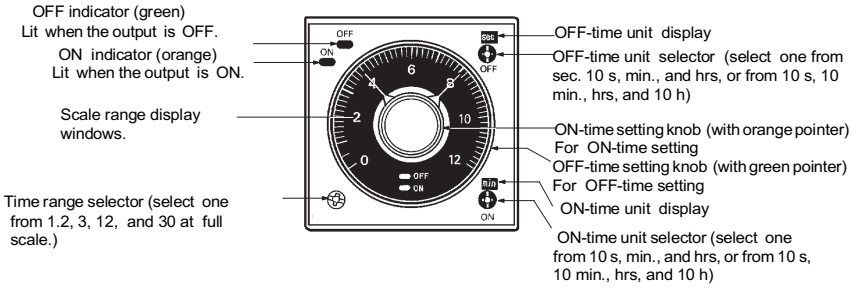
700-HR Multifunction Timer



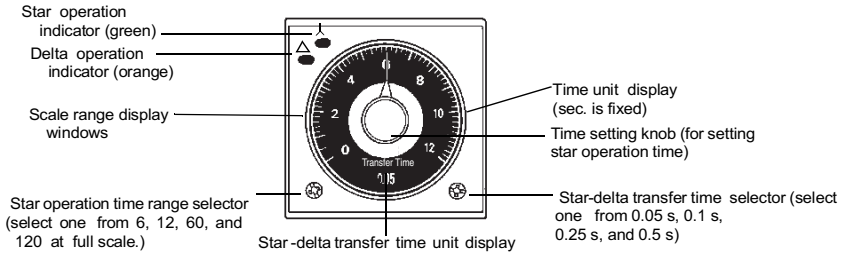
700-HRC -HRM ON-Delay Timer



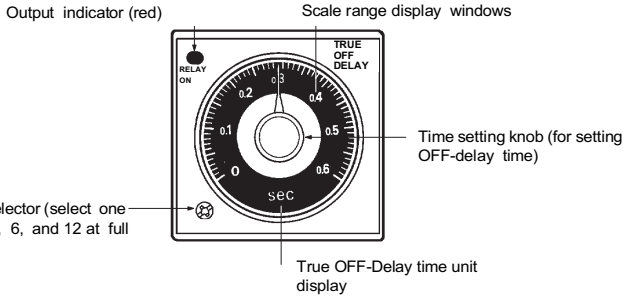
700-HRF Twin Timer



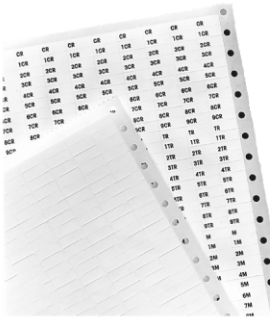
700-HRY Star-Delta Timer



700-HRQ True OFF-Delay Timer



	Description	Pkg. Qty.	Cat. No.	Factory Stock Item
 *Cat. No. 700-HN100*	**Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting Guarded Terminal Construction** 8-pin for use with Bulletin 700-HR and 700-HX timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN100	✔
 *Cat. No. 700-HN125*	**Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting Open Style Construction** 8-pin for use with Bulletin 700-HRM, and -HRC timing relays. Order must be for 10 sockets or multiples of 10. 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 Bulletin 700-HR timing relays. Order must be for 10 sockets or multiples of 10. No retainer clip required.	10	700-HN101	✔
 *Cat. No. 700-HN126*	**Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting Guarded Terminal Construction** 11-pin for use with Bulletin 700-HR timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN126	✔
 *Cat. No. 199-DR1*	**DIN Rail Mounting Pack** Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✔
 *Cat. No. 700-HN108*	**Specialty Socket** 8-pin backwired socket with solder terminals for use with Bulletin 700-HR timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN108	✔
 *Cat. No 700-HN129*	**Specialty Socket** 11-pin backwired socket with solder terminals for use with Bulletin 700-HR timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN129	✔

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 *Cat. No. 700-HN130*	**Frame Adapter** For flush or door mounting of all Bulletin 700-HR 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. Order must be for 10 clips or multiples of 10. 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-HR, HRQR2, HRV HRT6	700-HN101 ❷ 700-HN126 ❷ 700-HN129 ❷	700-HN131 Not Required ❶ Not Applicable
700-HRC/HRF/HR5, HRT4, HRM, HRP	700-HN100 ❸ 700-HN108 ❸ 700-HN125 ❸	700-HN131(See note above) Not Applicable Not Required ❶

❶ Design of these sockets holds the timing relays securely and does not require retainer clips.
❷ 11 pins.
❸ 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
►][◄ Make 120V AC	30 A							—
►][◄ Make 240V AC	15 A							—
◄][► Break 120V AC	3 A							—
◄][► Break 240V AC	1.5 A							—
Hp at 120V	1/6 Hp	1/4 Hp		1/6 Hp		1/4 Hp	1/6 Hp	—
Hp at 240V	1/3 Hp							—
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, D, or G mode signal of the 700-HRVs are OFF.)							
Reset time	Min. power-opening time: 0.1 s max. Min. pulse width: 0.05 s (cat nos. 700-HR52TA17, 700-HR52TU24, 700-HRT6TTU24)							
Reset voltage	10% max. of rated voltage							
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)							
Design Specifications								
Dielectric strength	2,000V AC (1,000 VAC for 700-HRT), 50/60 Hz for 1 min. (between current-carrying metal parts and exposed non-current-carrying metal parts) 2,000V AC (1,000 VAC for 700-HRT), 50/60 Hz for 1 min. (between control output terminals and operating circuit) 2,000V AC, 50/60 Hz for 1 min. (between contacts of different polarities) 1,000V AC, 50/60 Hz for 1 min. (between contacts not located next to each other) 2,000V AC, 50/60 Hz for 1 min. (between input and control output terminals and operation circuit)							
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 ±600 V 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 expectancy (operations min.)	Mechanical:20,000,000. (under no load at 1,800 operations/h Electrical: 100,000 (5 A at 250V AC, resistive load at 1,800 operations/h)						Mech: 10^7 Electrical: 10^4	Mech: 20^7 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: EN61000-4-5 2 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							

Multifunction and ON-Delay Timer

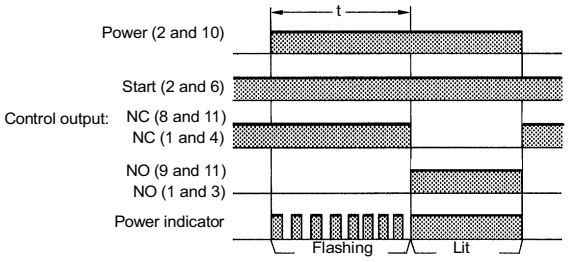
Application Examples

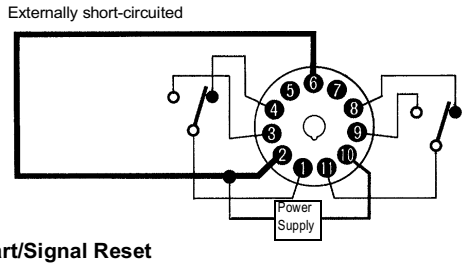
A Mode: Signal ON-Delay

ON-delay operation (A mode) is a basic mode.

1. Power-ON Start/Power-OFF Reset

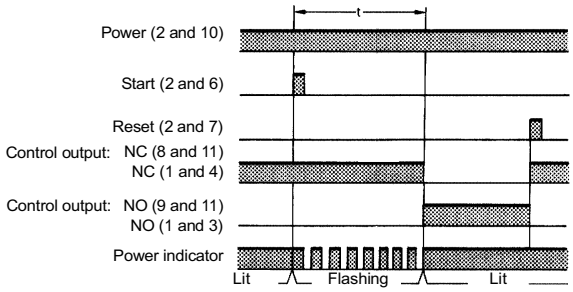
The Power-ON start/Power-OFF reset operation is a standard operating method.

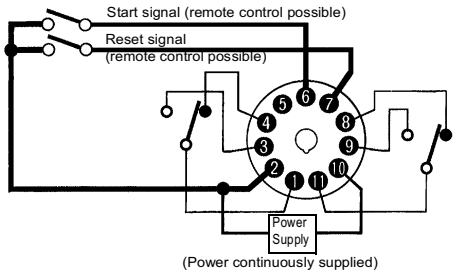




2. Signal Start/Signal Reset

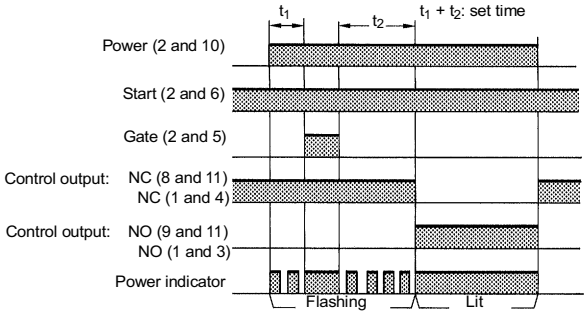
The Signal start/Signal reset operation is useful for remote control of the Timer.

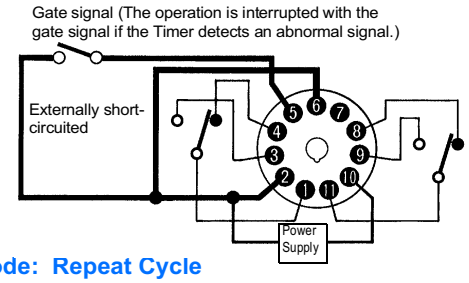




3. Control of Integrated Time with Gate Signal

With a gate signal, the Power-ON start operation and Signal start operation can be controlled (the operation can be interrupted).

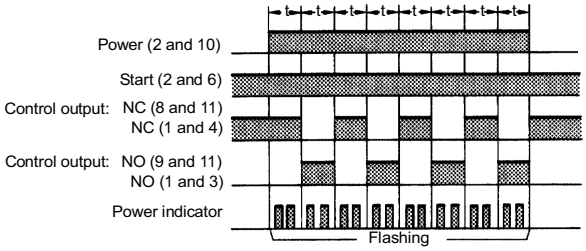


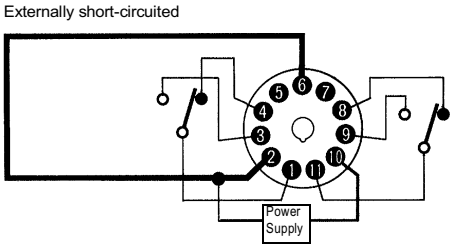


B/B2 Mode: Repeat Cycle

The Repeat Cycle operation in the B and B2 modes can be effectively applied to lamp or buzzer (ON and OFF) alarms or the monitoring of an intermittent operation with a display.

1. Power-ON Start/Power-OFF Reset (in B Mode)

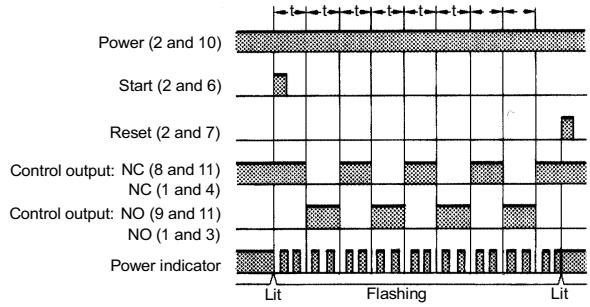


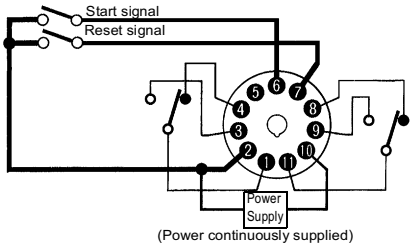


Multifunction and ON-Delay Timer, Continued

2. Signal Start/Signal Reset (in B Mode)

If there is an abnormal signal, flashing starts. When the abnormal condition is restored, a reset signal stops the display flashing.



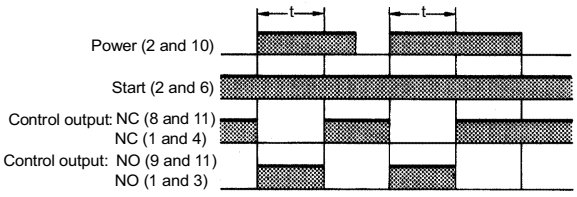


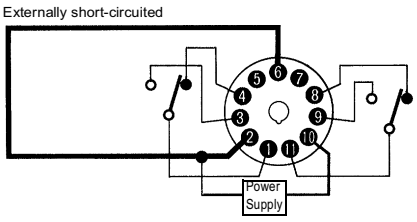
C Mode: Signal ON/OFF-Delay

The Signal ON-/OFF-delay operation (C mode) is useful for the control of distribution of products on a production line into boxes by the specified number or time.

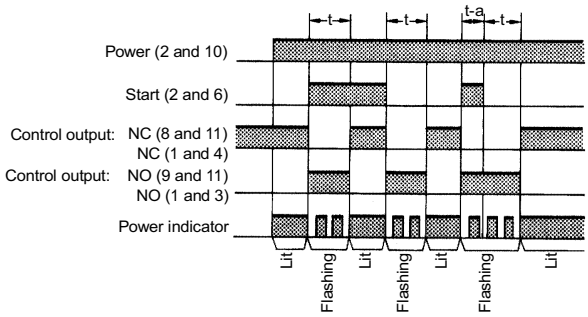
1. Power-ON Start/Instantaneous Operation/Time-Limit Reset

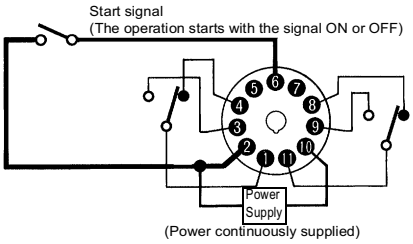
A set of these functions is useful for the operation of a machine for a specified period when power is ON.





2. Signal-ON-OFF Start/Instantaneous Operation/Time-Limit Reset

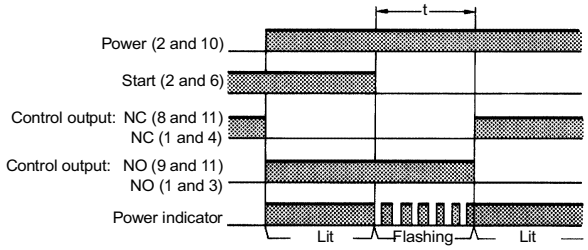


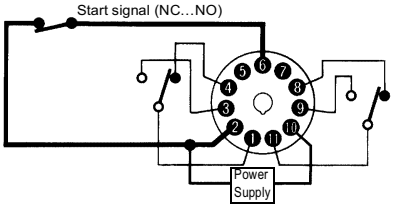


D Mode: Signal OFF-Delay

Signal OFF-delay operation (D mode) can be effectively used to keep a load operating for a certain period. For example, this function enables the cooling fan for a lamp or heater to operate for a certain period after the lamp or heater is switched OFF.

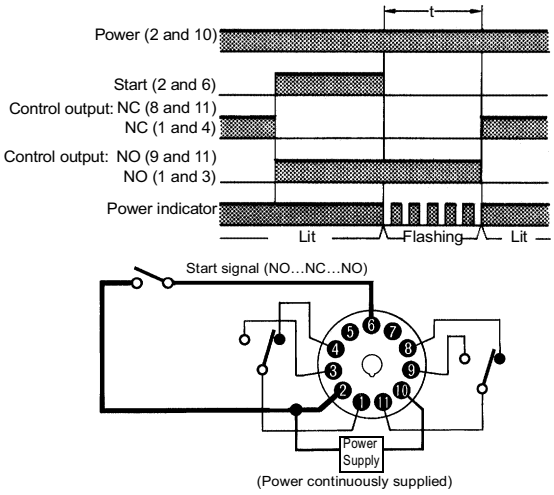
1. Power-ON Start/Instantaneous Operation/Time-Limit Reset





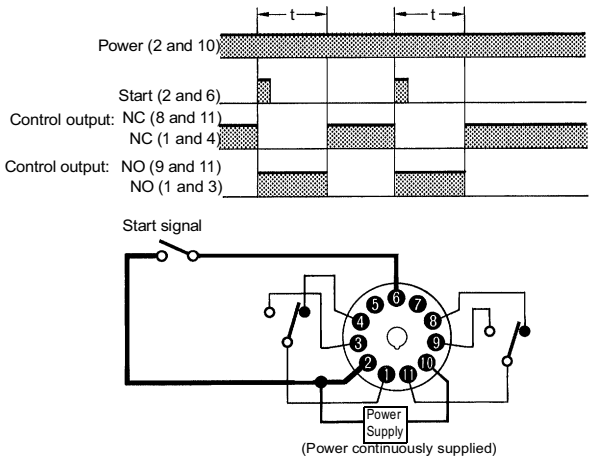
Multifunction and ON-Delay Timer, Continued

2. Signal Start/Instantaneous Operation/Time-Limit Reset



2. Signal Start/Instantaneous Operation/Time-Limit Reset

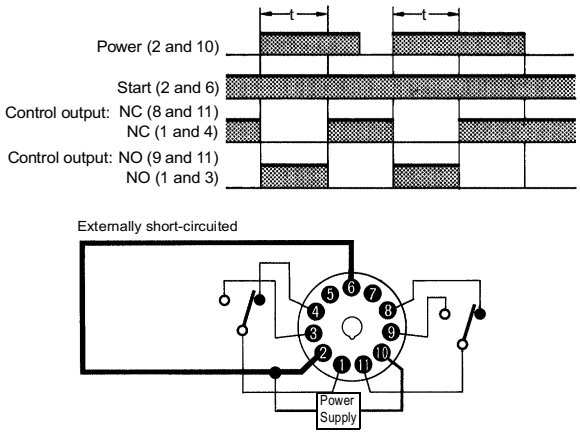
This function is useful for the repetitive control such as the filling of liquid for a specified period after each Signal start input.



E Mode: One Shot

1. Power-ON Start/Instantaneous Operation/Time-Limit Reset

This function is useful for the operation of a machine for a specified period after power is ON.

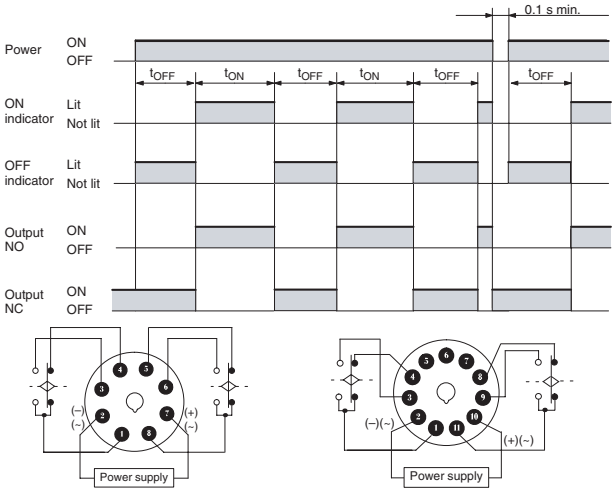


700-HRF Twin Timer, 700 -HRY Star-Delta Timer, and 700-HRQ Off-Delay Timer

B Mode: Repeat Cycle Off-start (700-HRF)

The Repeat Cycle operation in the B mode can be effectively applied to lamp or buzzer (ON and OFF) alarms or the monitoring of an intermittent operation with a display.

1. Power-ON Start/Power-OFF Reset (in B Mode)

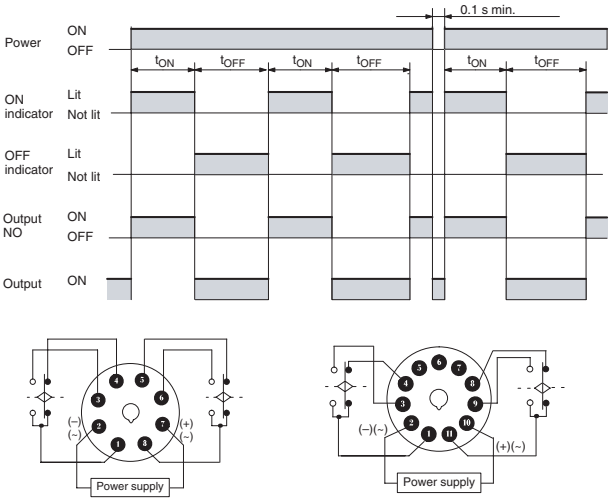


B2 Mode: Repeat Cycle On-start (700-HRF)

The Repeat Cycle operation in the B2 mode can be effectively applied to lamp or buzzer (ON and OFF) alarms or the monitoring of an intermittent operation with a display

B2 Mode: Repeat Cycle On-start (700-HRF)

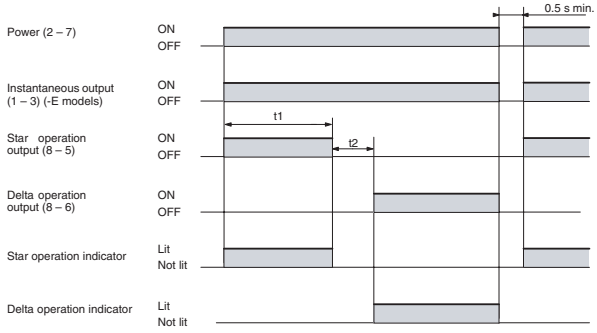
The Repeat Cycle operation in the B2 mode can be effectively applied to lamp or buzzer (ON and OFF) alarms or the monitoring of an intermittent operation with a display



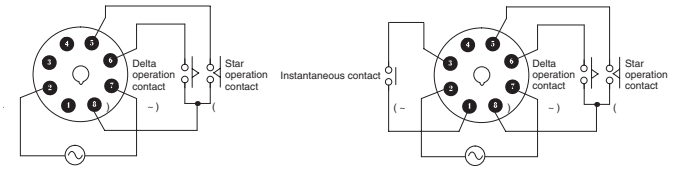
E Mode: One Shot (700-HRY)

1. Power-ON Start/Instantaneous Operation/Time-Limit Reset

This function is useful for the operation of a machine for a specified period after power is ON.



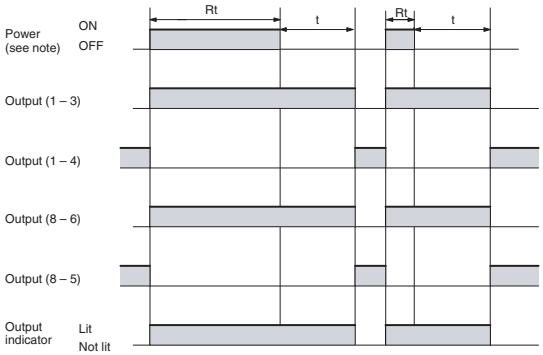
t1: Star operation time setting
t2: Star-delta transfer time



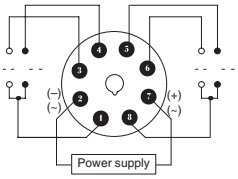
D Mode: True OFF-Delay (700-HRQ)

Signal OFF-delay operation (D mode) can be effectively used to keep a load operating for a certain period. For example, this function enables the cooling fan for a lamp or heater to operate for a certain period after the lamp or heater is switched OFF.

1. Power-ON Start/Instantaneous Operation/Time-Limit Reset

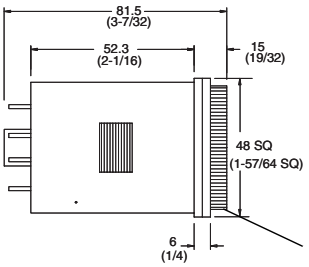


t: Set time
Rt: Minimum Power On

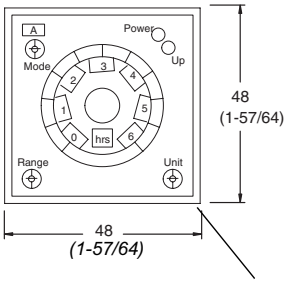


Without reset input

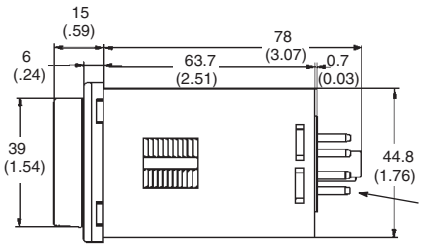
Approximate Dimensions



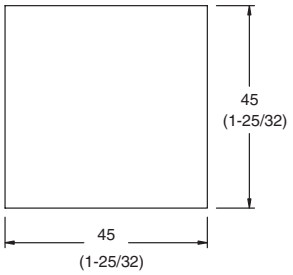
Cat. No. 700-HR, -HRM, -HRC, -HRF, -HRS, -HRV, -HRP
Timing Relay



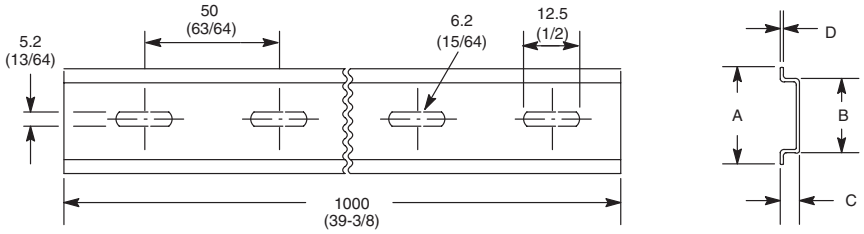
Cat. No. 700-HR…/-HRM…/-HRC…/-HRF…/-HRS…/-HRV…/-HRP…/-HRY…/-HRQ
Timing Relays



Cat. No. 700-HRY, 700-HRQ
Timing Relay



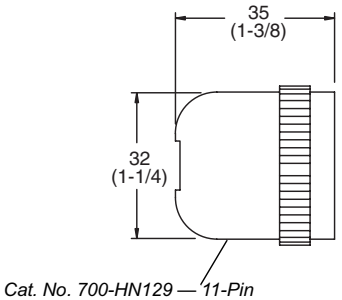
Cat. No. 700-HR…
Panel Cutout



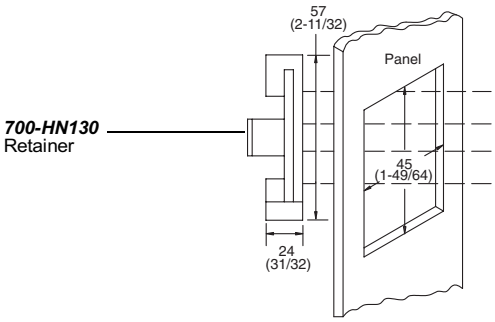
Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 ***DIN Mounting Rail Series B Has No Mounting Holes***

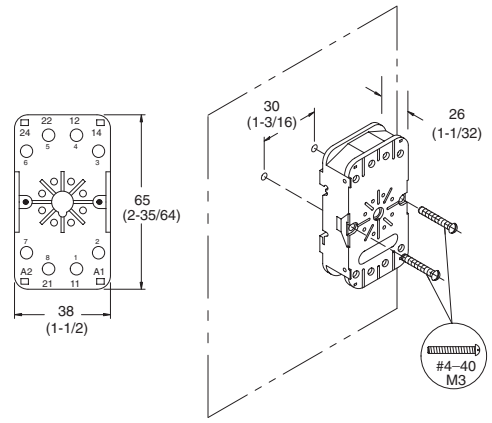
Cat. No.	A	B	C	D	Approx. Shipping Wt.
199-DR1	35 (1-3/8)	27 (1-1/16)	7.5 (19/64)	1.02 (1/64)	1.85 kg (4.07 lbs.) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lbs.) (5/pkg)

Dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



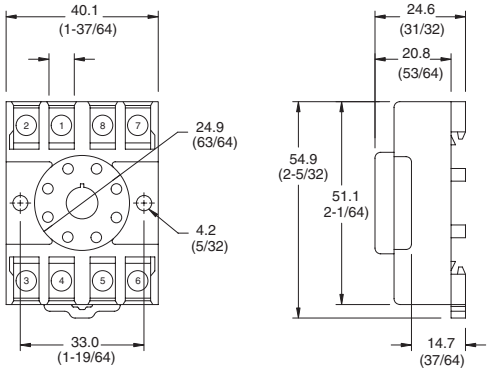
Cat. No. 700-HN129 — 11-Pin
Cat. No. 700-HN108 — 8-Pin
Socket





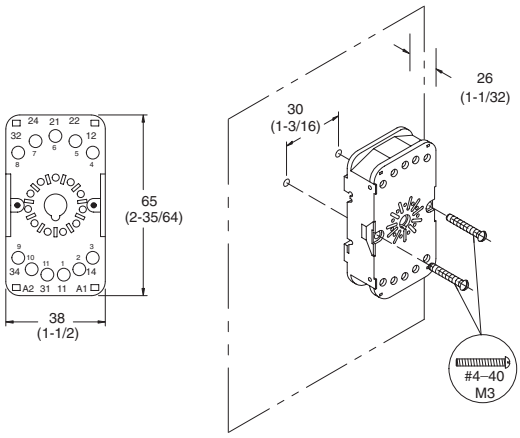
Cat. No. 700-HN100 *Panel Mounting*

Wire Size: 2 x 2.5 mm²
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm² (#2–14 AWG… #2–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



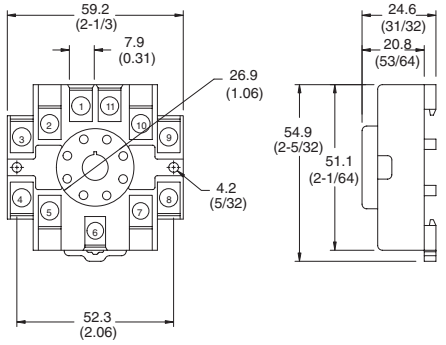
Cat. No. 700-HN125 ❶

Wire Size: 2 x 2.5 mm²
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm² (#2–14 AWG… #2–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Cat. No. 700-HN101 *Panel Mounting*

Wire Size: 2 x 2.5 mm²
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm² (#2–14 AWG… #2–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Cat. No. 700-HN126 ❶

Wire Size: 2 x 2.5 mm²
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm² (#2–14 AWG… #2–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)

❶ Cat. No. 199-FSM Surge Suppressors fit on the coil terminals. See page 195.