Technical Data

Original Instructions

Allen-Bradley by ROCKWELL AUTOMATION

Relay and Timer Specifications

Bulletin 700

Rockwell Automation

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated 700-CF Control Module Information	195

General Information

Contact Data Tables

	Relay Type	Contact Arrangement	Contact Style	Contact Material	NEMA Pilot Duty(1)	AC and DC Switching Capability (1 mA, 20 mA, 50 mA, 100 mA, 1 A, 3 A, 5 A, 10 A, 20 A, 25 A, 30 A, 35 A)
IEC Relays	700-CF	Up to 8 form X or 8 form Y	cross stamped	Ag	A600 P600	24V AC DC
IEC Relays	700S-CF	Up to 8 form X or 8 form Y	cross stamped	Ag	A600 P600	24 V AC DC
IEC Relays	700-K	Up to 8 form X or 8 form Y	bifurcated	AgCu	A300 Q300	17V AC DC
NEMA Relays	700-P	Up to 12 form X or 8 form Y	bifurcated	NiAg	A600 P600	10V AC DC
NEMA Relays	700-PK	Up to 12 form X or 8 form Y	single	AgCdO	2X A600 2X P600	10V AC (20 A Lighting Load) DC
NEMA Relays	700-PH	Up to 6 form X or 4 form Y	tandem	AgCdO	A600 P600	10V AC DC (35 A Lighting Load)
NEMA Relays	700-R	Up to 8 form A or form B	sealed sw.	W	B300 C600 P300	5V AC DC
NEMA Relays	700-RTC	Up to 4 form A or form B	sealed sw.	W	B600 P300	5V AC DC
NEMA Relays	700S-P	Up to 12 form X or 8 form Y	bifurcated	NiAg	A600 P600	10V AC

(1) See NEMA Ratings and Test Values on page 5

Contact Data Tables

	Relay Type	Contact Arrangement	Contact Style	Contact Material	NEMA Pilot Duty	AC and DC Switching Capability (1 mA, 10 mA, 50 mA, 100 mA, 1 A, 3 A, 5 A, 10 A, 20 A, 25 A, 30 A, 35 A)
Timing Relays	700-FE	1 N.O.	single	AgCdO	D300	10V; AC; DC (24V Max.)
Timing Relays	700-FS	1, 2 form C	single	AgCdO	B300	10V; AC; DC (24V Max.)
General Purpose Relays	700-HA	2, 3 form C	single	AgNi	B300	10V; AC; DC (24V Max)
General Purpose Relays	700-HAX	2, 3 form C	bifurcated	Au/AgNi	B300	6V; AC; DC (24V Max)
General Purpose Relays	700-HB	2, 3 form C	single	AgNi	B300	10V; AC; DC (24VMax.)
General Purpose Relays	700-HC14	4 form C	single	Ag/Au	C300 Q300	10V; AC; DC (30V Max.)
General Purpose Relays	700-HC22	2 form C	single	AgNi	B300 Q300	10V; AC; DC
General Purpose Relays	700-HC24	4 form C	single	AgNi	C300 Q300	10V; AC; DC (30V Max.)
General Purpose Relays	700-HD	2, 3 form C	single	AgCdO	B300	10V; AC; DC (24V Max)
General Purpose Relays	700-HF	2, 3, 4 form C	single	AgCdO	B300	10V; AC; DC (30V Max)
General Purpose Relays	700-HG	1 form X, 1 form C, 2 form A, 2 form C	single	AgNi	A600	10V; AC; DC (28V Max)
General Purpose Relays	700-HHF45	1 form X	single	AgNi	A600	10V; AC; DC (28V Max)
General Purpose Relays	700-HHF62	2 form C	single	AgNi	B600	10V; AC; DC (28V Max)
General Purpose Relays	700-HHF73	3 form C	single	AgNi	B300	10V; AC; DC (28V Max)
General Purpose Relays	700-HJ	1, 2 form C	single	AgCdO	—	10V; AC; DC (24V Max.)
General Purpose Relays	700-HK36	1 form C	single	AgNi	B300	10V; AC; DC (30V Max)
General Purpose Relays	700-	1 form C	single	Au/AgNi	B300	
General Purpose Relays	700-HK32	2 form C	single	AgNi	B300	5V; AC; DC (30V Max)
General Purpose Relays	700-	2 form C	single	Au/AgNi	B300	

Contact Data Tables

	Relay Type	Contact Arrangement	Contact Style	Contact Material	NEMA Pilot Duty	AC and DC Switching Capability (1 mA, 10 mA, 50 mA, 100 mA, 1 A, 3 A, 5 A, 10 A, 20 A, 25 A, 30 A, 35 A)
General Purpose Relays (continued)	700-HLS	Solid-State 1 N.O.	—	—	—	3V AC/DC
	700-HLT	1 Form C	single	AgSnO	B300 R300	12V 6 A AC/DC
	700-HLT_ _X	1 Form C	single	AgSnO	B300 R300	8V 6 A AC/DC
	700-HP	2 Form C	single	AgNi	B300 Q300	5V (300 mW) 8 A AC/DC
	700-HPX	2 Form C	single	AgNi + Gold	B300 Q300	5V (50 mW) 8 A AC/DC
	700-HS	2 Form C	single	AgCdO	B300	10V AC DC (30V Max)
	700-HT	2 form C	single	AgNi	B300	10V AC DC (30V Max)

NEMA Ratings and Test Values

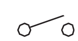
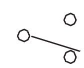
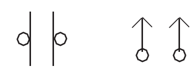
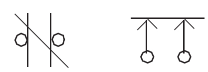
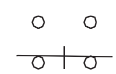
NEMA Ratings and Test Values for AC Control Circuit Contacts at 50 or 60 Hz

Maximum Current [A]											
NEMA Contact Rating Designation	Thermal Continuous Test Current [A]	120V		240V		480V		600V		VA	
		Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A150	10	60	6.00	—	—	—	—	—	—	7200	720
A300	10	60	6.00	30	3.00	—	—	—	—	7200	720
A600	10	60	6.00	30	3.00	15	1.50	12	1.20	7200	720
B150	5	30	3.00	—	—	—	—	—	—	3600	360
B300	5	30	3.00	15	1.50	—	—	—	—	3600	360
B600	5	30	3.00	15	1.50	7.5	0.75	6	0.60	3600	360
C150	2.5	15	1.50	—	—	—	—	—	—	1800	180
C300	2.5	15	1.50	7.5	0.75	—	—	—	—	1800	180
C600	2.5	15	1.50	7.5	0.75	3.75	0.375	3	0.30	1800	180
D150	1.0	3.60	0.60	—	—	—	—	—	—	432	72
D300	1.0	3.60	0.60	1.8	0.30	—	—	—	—	432	72
D600	0.5	1.80	0.30	—	—	—	—	—	—	216	36
2X A300	20	120	12	60	6.00	—	—	—	—	14400	1440
2X A600	20	120	12	60	6.00	30	3.00	24	2.40	14400	1440

NEMA Ratings and Test Values for DC Control Circuit Contacts

Maximum Current [A]						
NEMA Contact Rating Designation	**Thermal Continuous Test Current [A]**	**5…28V**	**125V**	**250V**	**301…600V**	**Make or Break at 300V or less [VA]**
N150	10	10	2.2	—	—	275
N300	10	10	2.2	1.1	—	275
N600	10	10	2.2	1.1	0.40	275
P150	5.0	5.0	1.1	—	—	138
P300	5.0	5.0	1.1	0.55	—	138
P600	5.0	5.0	1.1	0.55	0.20	138
Q300	2.5	2.5	0.55	0.27	0.11	69
Q600	2.5	2.5	0.55	0.27	0.11	69
2X P600	10	10	2.2	1.1	0.40	275

NEMA Definitions for Contact Arrangements

Contact Arrangement	Description	Diagram
Form A	A Form A contact arrangement is one that has single-pole, single-throw, normally open contacts. The function of this arrangement is to close a circuit when actuated.	
Form B	A Form B contact arrangement is one that has single-pole, single-throw, normally closed contacts. The function of this arrangement is to open a circuit when actuated.	
Form C	A Form C contact arrangement is one that has single-pole, double-throw contacts with three terminals - one for normally open, one for normally closed, and one common. The function of this arrangement is to transfer a circuit when actuated.	
Form X	A Form X contact arrangement is one that has single-pole, single-throw, normally open double-make contacts. The function of this arrangement is to close a circuit when actuated.	
Form Y	A Form Y contact arrangement is one that has single-pole single-throw normally closed double-break contacts. The function of this arrangement is to open a circuit when actuated.	
Form Z	A Form Z contact arrangement is one that has single-pole, double-throw, contacts with four terminals — two for normally open and two for normally closed. The function of this arrangement is to open one circuit and close the other.	

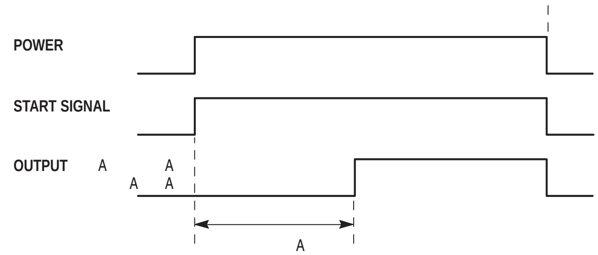
Timing Relay Selection Criteria

Single Function Timers: Timers that have only 1 timing mode (for example, ON-Delay or OFF-Delay).

Multi-Function Timers: Timers that have 4…8 timing modes that are selected by turning the mode selection switch.

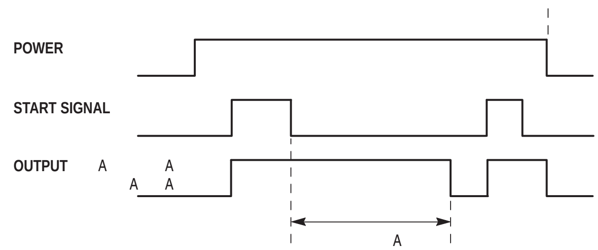
ON-Delay or (Delay on Operate)

When power is applied continuously (or when power and a start signal are applied), the timing cycle begins. The output contacts change state after the time delay is completed. The contacts will return to their normal state when a reset signal is applied or power is removed.



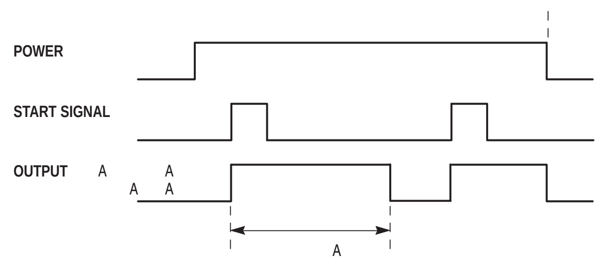
OFF-Delay or (Delay on Release)

Power is applied continuously. When a start signal is applied, the output contacts change state immediately. When the start signal is removed, the timing cycle begins. The output contacts will return to their normal state once the time delay is completed. Reset will occur when a reset signal is applied or power is removed.



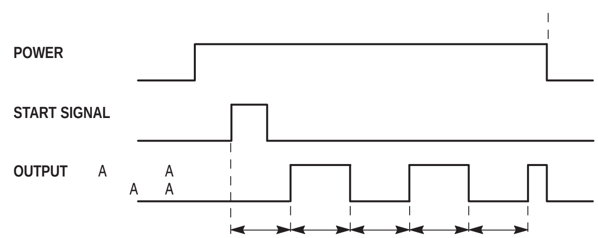
One Shot or (Repeat Cycle)

Power is applied continuously. When a start signal is applied, the output contacts change state immediately and the timing cycle begins. The output contacts will return to their normal state once the time delay is completed. Reset will occur when a reset signal is applied or power is removed.



Repeat Cycle or (Flicker)

Power is applied continuously. When a start signal is applied, the timing cycle begins. When the time delay is completed, the output contacts change state and the next timing cycle begins. This cycle will repeat until a reset signal is applied or power is removed.



Flexibility

Mounting — Timing relays are available in several different models. They can be plugged into the same socket as the relay, or use a separate plug-in socket mounting.

Contacts — The contacts are of various types and ratings. See the appropriate specification pages for more details.

Functionality — Timing relays with multi-range and multi-function capability are available. Allowing you to stock one relay to cover a wide variety of applications.

External Trigger Switch — OFF-Delay, One-Shot, and other timer functions require an external trigger switch (from a relay or push button) to control the timing function. The external trigger switch will cause the timing function to start. In OFF-Delay, the trigger switch closes to energize the output and when the trigger switch opens the OFF-Delay starts to time out. At the end of the time delay, the output is de-energized and the output contacts return to their shelf state

Surge Suppression Information

Photo	Cat. No.	For use with	Suppression Technique	Max. Relay Contact Dropout Time	Max. Transient Voltage Relative to System Voltage
	700-ADR	700-HA, -HB,-HK, -HP (6…220V DC)	Diode	3X	—
	700-ADL1	700-HC (6…24V DC)	Diode + LED	3X	—
	700-ADL1R	700-HB, -HA, -HK, -HP (6…24V DC)	Diode + LED	3X	—
	700-ADL2	700-HC (28…60V DC)	Diode + LED	3X	—
	700-ADL2R	700-HB, -HA, -HK, -HP (28…60V DC)	Diode + LED	3X	—
	700-ADL3	700-HC (110…220V DC)	Diode + LED	3X	—
	700-ADL3R	700-HB, -HA, -HK, -HP (110…220V DC)	Diode + LED	3X	—
	700-AR1	700-HB, -HA, -HC,-HK, -HP (6…24V AC/DC)	RC	No Effect	3
	700-AR2	700-HB,-HA, -HC,-HK, -HP (110…240V AC/DC)	RC	No Effect	—
	700-AV1R	700-HB,-HA, -HC,-HK, -HP (6…24V AC)	Varistor + LED	No Effect	—
	700-AV3R	700-HB, -HA, -HC, -HK, -HP (110…240V AC)	Varistor + LED	No Effect	—
700-CF Relay	700-CF built-in	—	Diode	—	6…10X
	100-FSC	100C, 700-CF	R-C Ckt	No Effect	3X
	100-FSV	100C, 700-CF	MOV	No Effect	—
	100-FSD	100C, 700-CF	Diode	70…95 ms	6…10X
	100-JE	100C, 700-CF	Diode	5X	6…10X
	700-N5	700-P, 700-N	RC	No effect	3X
	700-N24	700-P, 700-N	RC	No effect	3X
700-R Relay	700-R built-in	—	Diode	—	6…10X
	199-FSMA1, FSMA2	700-P, 700-H, 700-CF, 700DC-R	RC	No effect	3X
	199-FSMA9, 10, 11	700-P, 700-H, 700-CF, 700DC-R	MOV	No effect	—
	199-FSMZ	700-P, 700-H, 700-CF, 700DC-R	Diode	5X	—

General Purpose Relays

Product Overview

				
Bulletin No.	**700-HA**	**700-HB**	**700-HD**	**700-HF**
Type	**General-purpose Relay**	**General-purpose Relay**	**General-purpose Relay**	**General-purpose Relay**
Features	• Pin-style terminals • Standard ON/OFF flag indicator • Electrical schematic on face • Clear cover for visual inspection • Optional push-to-test and manual override • Optional LED	• Blade-style quick connect terminals • Standard ON/OFF flag indicator • Electrical schematic on face • Clear cover for visual inspection • Optional push-to-test and manual override • Optional LED	• Flange-mounted • Blade-style quick connect terminals • Clear cover for visual inspection	• Square-base • Plug-in quick connect solder terminals • Optional push-to-test • Optional LED
Contact Ratings				
Contact Form	DPDT, 3PDT	DPDT, 3PDT	DPDT, 3PDT	DPDT, 4 PDT
Contact Type	Single	Single	Single	Single
Contact Material	AgNi, AgNi + Gold	AgCdO	AgCdO	AgCdO
Operating Current, Under Resistant Load, Max	700-HA: 10 A 700-HAX: 6 A	15 A	15 A	10 A
Permissible Load, min	700-HA: 10V, 5 mA 700-HAX: 6V 1 mA	10V, 10 mA	10V, 10 mA	5V, 100 mA
Coil Ratings				
Coil Voltage	AC: 6, 12, 24, 48, 110, 120, 230, 240, 277V DC: 6, 12, 24, 36, 48, 60, 80, 110, 125, 140, 220V	AC: 6, 12, 24, 120, 240V DC: 6, 12, 24, 48, 110V	AC: 6, 12, 24, 120, 208, 240V DC: 6, 12, 24, 48, 110V	AC: 6, 12, 24, 120, 240V DC: 6, 12, 24, 48, 110V
Permissible Coil Voltage Variation	80…110% of nom voltage at 50 Hz 80…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC			85…110% of nom voltage at 50 Hz 85…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC
Electrical Ratings				
Dielectric Withstand Voltage	Pole-to-pole: 2000V Contact-to-coil: 2000V Contact-to-frame: 2000V	Pole-to-pole: 2500V Contact-to-coil: 4000V Contact-to-frame: 2500V	Pole-to-pole: 2500V Contact-to-coil: 4000V Contact-to-frame: 2500V	Pole-to-pole: 1500V Contact-to-coil: 1500V Contact-to-frame: 1500V
Electrical Service Life (Cycles)	100,000 min	100,000 min	100,000 min	200,000 min 500,000 min (DPDT)
Reference				
Certifications	CE, cULus, cURus, CSA, Lloyds	CE, cULus, cURus, CSA, Lloyds	CE, UR, CSA, Lloyds	CE, UR, CSA
Socket Catalog Numbers	700-HN100, 700-HN101, 700-HN125, 700-HN126, 700-HN204, 700-HN205	700-HN153, 700-HN154	—	700-HN262, 700-HN264
Page	12	22	28	32

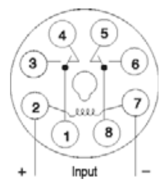
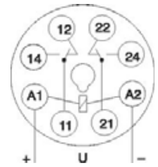
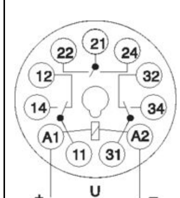
				
Bulletin Number	**700-HC**	**700-HK**	**700-HL**	**700-HP**
Type	Interposing/Isolation Relay	Interposing/Isolation Relay	Interposing/Isolation Relay	Interposing/Isolation Relay
Features	• Blade-style terminals • Standard ON/OFF flag indicator • Electrical schematic on face • Clear cover for visual inspection • Optional push-to-test and manual override • Optional LED	• Optional pilot light • Retainer clip (comes with socket) • Low switching capacity • Push-to-test and manual override	• Ideal for PLC Interfaces • Built-in Coil Surge Protection • Fully Assembled Relay/Sockets • Standard LED • Relay or Solid-state Output • Optional: Leakage Current • Suppression Solution	• PCB "Pin Style" mounting • 5 mm pin spacing
Contact Ratings				
Contact Form	DPDT, 4PDT	SPDT, DPDT	SPDT 1 N.O. (SSR)	DPDT
Contact Type	Single	Single	Single	Single
Contact Material	AgNi, AgNi + Gold	AgNi, AgNi + Gold	AgSnO	AgNi, AgNi + Gold
Operating Current, Under Resistant Load, Max	10 A (DPDT) 7 A (4PDT)	8 A (DPDT), 16 A (SPDT)	6 A (SPDT), 2 A (SSR DC output), 2 A (SSR AC output)	8 A
Permissible Load, min	10V, 10 mA (Gold), 5V, 10 mA or 25V, 2 mA (Silver)	5V 60 mA (Silver), 5V 10 mA (Gold)	12V 6 mA (72 mW) Silver 8V, 2.5 mA (20 mW) Gold	5V 5 mA (50 mW) Gold, 5V 5 mA (300 mW) Silver
Coil Ratings				
Coil Voltage	**AC:** 6, 12, 24, 120, 240V **DC:** 6, 12, 24, 48, 110V	**AC:** 6, 12, 24, 120, 240V **DC:** 6, 12, 24, 48, 110V	**AC:** 12, 24, 48, 110, 120, 230, 240V **DC:** 12, 24, 48, 125, 230, 240V	**AC:** 6, 12, 24, 120, 240V **DC:** 6, 12, 24, 48, 110V
Permissible Coil Voltage Variation	80…110% of nom voltage at 50 Hz 80…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC	80…110% of nom voltage at 50 Hz 80…110% of nom voltage at 60 Hz 73…110% of nom voltage at DC	85…110% of nom voltage at 50 Hz 85…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC	80…110% of nom voltage at 50 Hz 80…110% of nom voltage at 60 Hz 73…150% of nom voltage at DC
Electrical Ratings				
Dielectric Withstand Voltage	Pole-to-pole: 1000V Contact-to-coil: 2000V Contact-to-frame: 2000V	Pole-to-pole: 1500V Contact-to-coil: 1500V Contact-to-frame: 1500V	Pole-to-pole: 1000V Contact-to-coil: 4000V Contact-to-frame: 1500V	Pole-to-pole: 2000V Contact-to-coil: 5000V
Electrical Service Life (Cycles)	100,000 min	100,000 min	100,000 min	100,000 min
Reference				
Certifications	CE, cULus, cURus, CSA, Lloyds	CE, UL, UR, CSA	CE, cURus, cULus, ABS	CE, cULus, cURus, CSA, Lloyds
Socket Catalog Numbers	700-HN103, 700-HN128, 700-HN104	700-HN121, 700-HN221, 700-HN122, 700-HN222, 700-HN223, 700-HN224	—	700-HN123, 700-HN230
Page Number	39	44	50	64

			
Bulletin Number	**700-HJ**	**700-HG**	**700-HHF**
Type	Magnetic Latching Relay	Power Relay	Power Relay
Features	• Socket mounted • Ideal for lighting applications	• Panel mount with screw terminals • Optional magnetic blowouts for switching DC loads • Optional snap action switch	• Flange mounted • Optional LED
Contact Ratings			
Contact Form	SPDT, DPDT (Single or Dual Coil)	SPST-N.O.-DM, SPDT, DPST-N.O., DPDT	SPST-NO-DM, DPDT, 3PDT
Contact Type	Single	Single	Single
Contact Material	AgCdO	AgNi	AgNi
Operating Current, Under Resistant Load, Max	10 A	40 A	20 A (3PDT), 25 A (DPDT), 30 A (SPDT)
Permissible Load, min	10V 50 mA	10V 50 mA	10V 50 mA 10V 100 mA (3PDT)
Coil Ratings			
Coil Voltage	**AC:** 24V, 120V, 240V **DC:** 12V, 24V	**AC:** 24V, 120V, 240V, 277V, 480V **DC:** 12V, 24V, 48V, 110V, 220V, 250V	**AC:** 24V, 120V, 240V **DC:** 6V,12V, 24V
Permissible Coil Voltage Variation	85…110% of nom voltage at 50 Hz 85…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC	85…110% of nom voltage at 50 Hz 85…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC	85…110% of nom voltage at 50 Hz 85…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC
Electrical Ratings			
Dielectric Withstand Voltage	Pole-to-pole: 1500V AC Contact-to-coil: 1500V AC Contact-to-frame: 1500V AC	Pole-to-pole: 2200V AC Contact-to-coil: 2200V AC Contact-to-frame: 2200V AC	Pole-to-pole: 2200V AC Contact-to-coil: 2200V AC Contact-to-frame: 2200V AC
Electrical Service Life (Cycles)	100,000 minimum	100,000 minimum	100,000 minimum
Reference			
Certifications	CE, UR, CSA	CE, UL, CSA	CE, UR, CSA
Socket Catalog Numbers	700-HN153, 700-HN154	—	—
Page Number	71	75	80

700-HA General-purpose Relay

- 10 A contact rating
- DPDT, 3PDT
- Pin-style terminals
- Standard ON/OFF flag indicator
- Options: LED, push-to-test and manual override, socket-mounted surge suppressor module, or multi-function timer
- Contact choices: standard silver nickel, or bifurcated silver nickel with gold plating

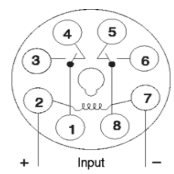
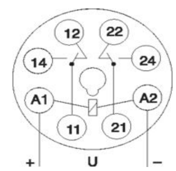
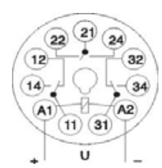
Tube Base Relay with PIN Terminals (Single Contact) — Mechanical ON/OFF Indicator Included(1)

Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No.(1)
		U.S./Canada	International		
DPDT 2-pole 2 Form C Single AgNi Contact	10 A B300			6V AC	700-HA32A06
				12V AC	700-HA32A12
				24V AC	700-HA32A24
				120V AC	700-HA32A1
				240V AC	700-HA32A2
				277V AC	700-HA32A27
				6V DC	700-HA32Z06
				12V DC	700-HA32Z12
				24V DC	700-HA32Z24
				36V DC	700-HA32Z36
				48V DC	700-HA32Z48
				60V DC	700-HA32Z60
				80V DC	700-HA32Z80
				110V DC	700-HA32Z1
				125V DC	700-HA32Z01
Sockets		700-HN125	700-HN100 700-HN204	140V DC	700-HA32Z3
				220V DC	700-HA32Z2
3PDT 3-pole 3 Form C Single AgNi Contact	10 A B300			6V AC	700-HA33A06
				12V AC	700-HA33A12
				24V AC	700-HA33A24
				120V AC	700-HA33A1
				240V AC	700-HA33A2
				6V DC	700-HA33Z06
				12V DC	700-HA33Z12
				24V DC	700-HA33Z24
				48V DC	700-HA33Z48
				60V DC	700-HA33Z60
				80V DC	700-HA33Z80
				110V DC	700-HA33Z1
				125V DC	700-HA33Z01
Sockets		700-HN126	700-HN101 700-HN205	140V DC	700-HA33Z3
				220V DC	700-HA33Z2

(1) LED Option: Add suffix (-4) to the selected 700-HA Relay Cat. No., except for the 240V AC Units, add (-4L). Push-to-test, Manual Override, and LED Option: Add suffix (-3-4) to the selected 700-HA Relay Cat. No., except for the 240V AC units, add (-3-4L). Push-to-test and Manual Override option: Add suffix (-3) to the selected 700-HA relay.
LED not available for 220V DC and 277V AC coils.

(1) For Time Modules and Surge Suppressor Modules, see Accessories.

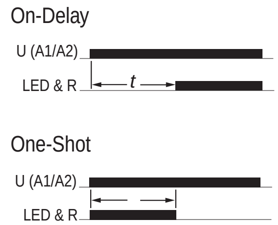
Tube Base Relay with PIN Terminals (Bifurcated Contacts with Gold Overlay) — Mechanical ON/OFF Indicator Included

Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No
		U.S./Canada	International		
DPDT 2-Pole 2 Form C Bifurcated AgNi Contacts with Gold Plating	6 A			6V AC	700-HAX2A06
				12V AC	700-HAX2A12
				24V AC	700-HAX2A24
				120V AC	700-HAX2A1
				240V AC	700-HAX2A2
				277V AC	700-HAX2A27Δ
				6V DC	700-HAX2Z06
				12V DC	700-HAX2Z12
				24V DC	700-HAX2Z24
				36V DC	700-HAX2Z36
				48V DC	700-HAX2Z48
				110V DC	700-HAX2Z1
Sockets		700-HN125	700-HN100 700-HN204	125V DC	700-HAX2Z01
				140V DC	700-HAX2Z3
3PDT 3-Pole 3 Form C Bifurcated AgNi Contacts with Gold Plating	6 A			6V AC	700-HAX3A06
				12V AC	700-HAX3A12
				24V AC	700-HAX3A24
				120V AC	700-HAX3A1
				240V AC	700-HAX3A2
				6V DC	700-HAX3Z06
				12V DC	700-HAX3Z12
				24V DC	700-HAX3Z24
				48V DC	700-HAX3Z48
				110V DC	700-HAX3Z1
Sockets		700-HN126	700-HN101 700-HN205	125V DC	700-HAX3Z01
				140V DC	700-HAX3Z3

Accessories - 700-HA Relays

Photo	Description	Pkg. Qty.	Cat. No.
	**Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction.** 8-Pin for use with DPDT 700-HA Relays, -HX Timing Relays, -HT (On-Delay), and -HRM, -HRC and -HV (Repeat Cycle) Timing Relays.	10	700-HN100
	**Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Open Style Construction.** 8-Pin for use with DPDT 700-HA Relays, -HT (On-Delay) and -HRM, -HRC, and -HV (Repeat Cycle) Timing Relays. No retainer clip required.	10	700-HN125
	**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
	**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
	**8-Pin Socket — Can Be Used With or Without Timing Attachment or Surge Suppressor** Screw Terminal Tube Base Sockets — panel or DIN Rail mounting. Guarded terminal construction. Used with DPDT 700-HA Relays.	10	700-HN204
	11-Pin Socket — Can Be Used With or Without Timing Module or Surge Suppressor. Screw Terminal Tube Base Sockets — panel or DIN Rail mounting. Guarded terminal construction. Used with 3PDT 700-HA relays.	10	700-HN205
	**DIN (#3) symmetrical hat rail** 35 x 7.5 x 1 m	10	199-DR1

Photo	Description	Pkg. Qty.	Cat. No.
	Diode Surge Suppressor Voltage Range: 6…220V DC used with 700-HN204 and 700-HN205 socket	10	700-ADR
	Diode with LED Surge Suppressor Voltage Range: 6…24V DC used with 700-HN204 and 700-HN205 socket	10	700-ADL1R
	Diode with LED Surge Suppressor Voltage Range: 28…60V DC used with 700-HN204 and 700-HN205 socket	10	700-ADL2R
	Diode with LED Surge Suppressor Voltage Range: 110…220V DC used with 700-HN204 and 700-HN205 socket	10	700-ADL3R
	Varistor with LED Surge Suppressor Voltage Range: 6…24V AC used with 700-HN204 and 700-HN205 socket	10	700-AV1R
	Varistor with LED Surge Suppressor Voltage Range: 110…240V AC used with 700-HN204 and 700-HN205 socket	10	700-AV3R
	RC Surge Suppressor Voltage Range: 6…24V AC/DC used with 700-HN204 and 700-HN205 socket	10	700-AR1
	RC Surge Suppressor Voltage Range: 110…240V AC/DC used with 700-HN204 and 700-HN205 socket	10	700-AR2

Photo	Description			Pkg. Qty.	Cat. No.
	Timing Module On-Delay or One-Shot selectable voltage range: 12…24V AC/DC used with sockets that accept plug-in accessory modules.			1	700-AT3
	Timing Module On-Delay or One-Shot selectable voltage range: 110…125V AC used with sockets that accept plug-in accessory modules.			1	700-AT3A1
	Timing Module On-Delay or One-Shot selectable voltage range: 230…240V AC used with sockets that accept plug-in accessory modules.			1	700-AT3A2
	1. 1 s	0.05…1 s		1	700-HT3
	2. 10 s	0.5…10 s			
	3. 100 s	5…100 s			
	4. 10 min	0.5…10 min			
	5. 100 min	5…100 min			
	6. 10 hours	0.5…10 h			
	7. 100 hours	5…100 h			
	8. LED Indicator				

Socket and Retainer Clip Reference

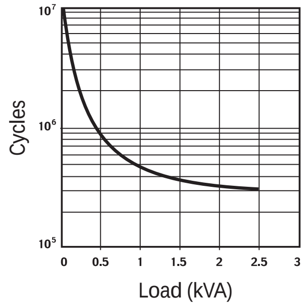
Relay Type	Socket	Retainer Clip
700-HA32 700-HAX2	700-HN100 700-HN125 700-HN204	700-HN157 Not Required 700-HN157
700-HA33 700-HAX3	700-HN101 700-HN126 700-HN205	700-HN157 Not Required 700-HN157

Specifications - 700-HA Relays

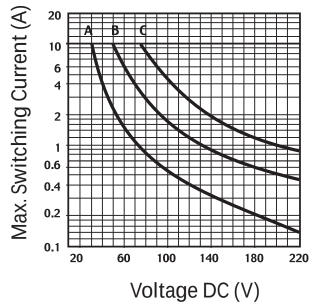
Attribute		700-HA		
Electrical Ratings				
Pilot Duty Rating (1)		NEMA B300		
Rated Thermal Current (I_{th})		HA = 10 A – 120V, 240V; HAX = 6 A – 120V, 240V		
Rated Insulation Voltage (U_i)		250V IEC – 300V UL/CSA		
Contacts	**Inductive**	Make	Break	Hp
		▶][◀	◀][▶	
	120V AC	30 A	3 A	1/3
	240V AC	15 A	1.5 A	1
	General-purpose	10 A, 240V AC		
	Resistive	10 A, 30V DC		
Min. Low Energy Permissible Load		HA = 10V, 5 mA HAX = 5V, 2 mA		
Permissible Coil Voltage Variation		Pickup: 80…110% of nom voltage at 50 Hz, 80…110% of nom voltage at 60 Hz, 80…110% of nom voltage at DC		
Coil Consumption ±10%	**AC Coils**	50 Hz	60 Hz	
	Inrush	3.3VA	2.85VA	
	Sealed	2.2VA	1.9VA	
	DC Coils	1.3 W		
Must Dropout Voltage		20% of nom V AC; 10% of nom V DC		
Max. Contact Resistance		50 MΩ (700-HA), 30 MΩ (700-HAX)		
Design Specification/Test Requirements				
Electrical				
Pole-to-Pole		2000V		
Contact to Coil		2000V		
Electrical Life (Operating)		100,000 min.		
Mechanical				
Degree of Protection (Open Type) IEC 529		IP 40		
Mechanical Lifecycles (AC/DC)		> 20 x 10^6/ 50 x 10^6		
Switching Frequency Operations		3600/HR		
Coil Voltages		See Product Selection		
Operating Time	**Pickup**	12 ms		
	Dropout	12 ms		
Maximum Operating Rate		4 Ops/s		
Vibration	**Endurance**	5 G		
	Operational	2.5 G		
Shock	**Endurance**	50 G		
	Operational	9 G		
Environmental				
Temperature	**Operating**	AC/DC	–40…+70 °C (–40…+158 °F)	
	Storage	AC/DC	–40…+100 °C (–40…+212 °F)	
Altitude		2000 m (6560 ft)		
Construction				
Insulating Material		Molded High-Dielectric Material		
Enclosure		Transparent Dust Cover		
Contact Material		700-HA:	10 A – AgNi	
		700-HAX:	6 A – Bifurcated/Gold Plating AgNi	
Terminal Markings on Socket		In accordance with EN50 0005		
Sockets		8-Pin Socket — 700-HN100, -HN125, -HN204, 11-Pin Socket — 700-HN101, -HN126, -HN205		
Certifications		cURus Recognized (File No. E3125, Guide NLDX2/NLDX8), cULus Listed when used with 700-HN sockets noted (File No. E3125, Guide NLDX/NLDX7), CE Marked, CSA Certified, UR Certified (File 229473)		
Standards		UL508, CSA C22.2 No. 14, EN 61810-1		

(1) See NEMA Ratings and Test Values on page 5

Relay Performance Graphs

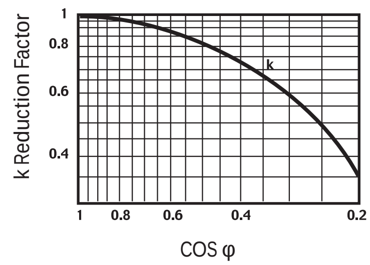


Contact life vs. AC1 load at 1,800 cycles/h



Breaking capacity for DC1 load at 1,800 cycles/h

A = load applied to one contact
B = load applied to two contacts in series
C = load applied to three contacts in series



Load reduction factor vs. cos φ

Specifications - 700-HT3 Time Module

Attribute		700-HT3
Electrical Ratings		
Operating Voltage Range		12…240V AC (50/60 Hz) 12…240V DC
Power Consumption		0.1 W (12V) 1.0 W (230V)
Mechanical		
Degree of Protection of Input (B1) Terminal		IP 20 (Guarded Terminal)
Input Terminal Wire Range		1.0 x 0.2 mm^2…2.5 mm^2 (24 …14 AWG) 2.0 x 0.2 mm^2…1.5 mm^2 (24…16 AWG)
Input Terminal Torque Range		0.45…0.8 N•m (4…7 lb•in)
Status Indicator		Red
Repeat Accuracy (1)		±1%
Recovery Time		<50 ms
Selectable Timing Ranges		Three DIP switches, seven ranges (set from 5…100% of range): 1 s, 10 s, 100 s, 10 min, 100 min, 10 h, 100 h
Selectable Timing Modes		Three DIP switches, eight modes: 1. PowerOn–Delay 2. Power On One-Shot 3. Power On Repeat Cycle, On Start 4. Signal On-Delay and Signal Off-Delay 5. Signal Off-Delay 6. Signal On-One-Shot 7. Signal Off-One-Shot 8. Signal On and Signal Off Watchdog Monitor
Adjustable Trimmer Scale Accuracy		±5% of Time Range
Environmental		
Temperature	**Operating**	−20…+50 °C (−4 …+122 °F)
	Storage	−55…+85 °C (−67…+185 °F)
Altitude		2000 m (6560 ft)
Construction		
Enclosure		Gray Plastic Housing
Mounting with Socket Only		8- or 11-Pin Socket with Module Plug
Sockets		700-HN204 (8-Pin with Plug), 700-HN205 (11-Pin with Plug)
Certifications		cURus Recognized (File No. E14843, Guide NRNT2/NRNT8), CE Marked
Standards		UL508, CSA C22.2 No. 14, EN 61810-1

(1) At constant voltage and temperature.

Timing Charts - 700-HT3 Multi-function Time Module (t = Time Range 0.05 s…100 h)

Terms:

U is Power Input
R is Relay Output
S Signal, +A1 Socket, B1 Timer
t is the resulting Time Delay (Red light-emitting diode)

1. Power On-delay

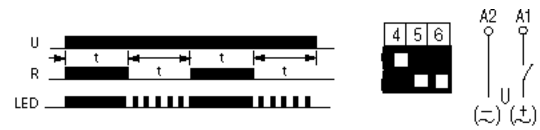
Apply power (U) to timer. Relay contacts (R) change state after time delay (t) is complete. Contacts return to their shelf state when power is removed. Terminal B1 is not used in this mode.

2. Power On One-shot

Apply power (U) to timer. Relay contacts (R) change state immediately and the time delay begins. When the time delay (t) is complete, contacts return to their shelf state. Contacts return to their shelf state when power is removed. Terminal B1 is not used in this mode.

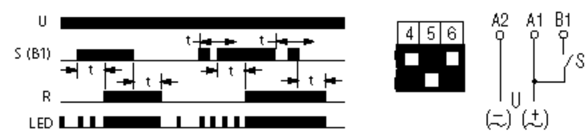
3. Power On Repeat Cycle, On Start

Apply power (U) to timer. Relay contacts (R) change state immediately and the time delay (t) begins. When the time delay is complete, the contacts return to their shelf state for time delay (t) (time on = time-off). This cycle repeats until the power is removed. Terminal B1 is not used in this mode.



4. Signal On-delay and Signal Off-delay

Apply power (U) to timer. When the signal (S) is closed the time delay (t) begins, after the time delay is completed the relay contacts (R) change state. Opening the signal starts the time delay, after the time delay is completed the contacts return to their shelf state. If the signal is closed or opened before the time delay is complete, the time delay is reset. Contacts return to their shelf state when power is removed.



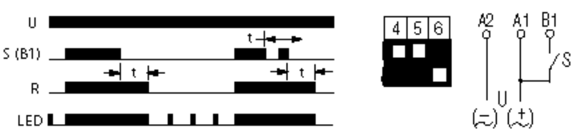
Timing Charts -Cat. No. 700-HT3 Timing Modes, Time Description, Timing Charts, and DIP Switch Selections

Terms:

U is Power Input
R is Relay Output
S Signal, +A1 Socket, B1 Timer
t is the resulting Time Delay (Red light-emitting diode)

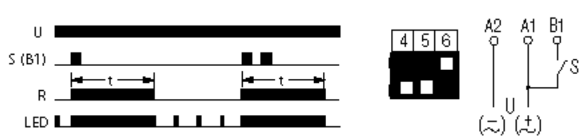
5. Signal Off-delay

Apply power (U) to timer. When the signal (S) is closed, the relay contacts (R) change state immediately. When the signal is opened, the time delay (t) begins. If the signal is closed before the time delay is complete, the time delay is reset and the relay remains energized. When the time delay is complete, the contacts return to their shelf state. Contacts return to their shelf state when power is removed.



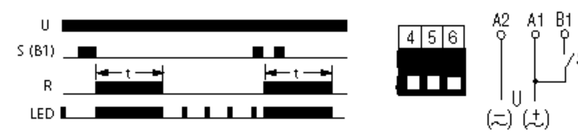
6. Signal On One-shot

Apply power (U) to timer. When the signal (S) is closed, the relay contacts (R) change state immediately and the time delay (t) begins. After the time delay begins, opening or closing the signal will not reset the time delay. When the time delay is complete, the contacts return to their shelf state. Contacts return to their shelf state when power is removed.



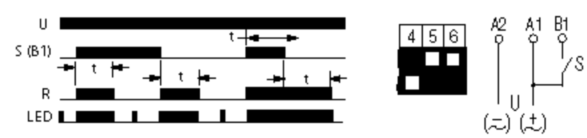
7. Signal Off One-shot

Apply power (U) to timer. When the signal (S) is closed and then opened, the relay contacts (R) change state immediately and the time delay (t) begins. After the time delay begins, opening or closing the signal will not reset the time delay. When the time delay is complete, the contacts return to their shelf state. Contacts return to their shelf state when power is removed.



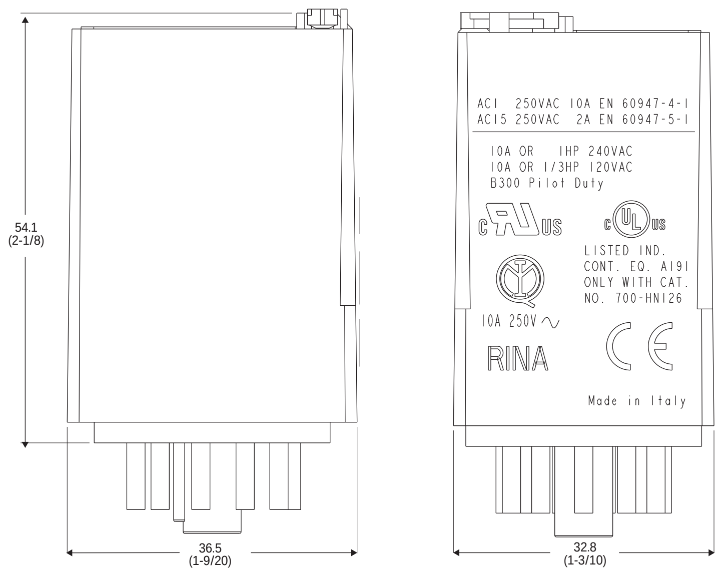
8. Signal On and Signal Off Watchdog Monitor

Apply power (U) to timer. When the signal (S) is closed, the relay contacts (R) energize immediately and the time delay (t) begins. If the signal is opened before the time delay is complete, the relay remains energized and the time delay is reset. When the time delay is completed, the contacts return to their shelf state. If the signal is opened after the time delay is complete, the relay contacts energize immediately and the same time delay begins. Continuous cycling of the signal at a rate that is faster than the time delay causes the relay contacts to remain energized. Contacts return to their shelf state when power is removed.

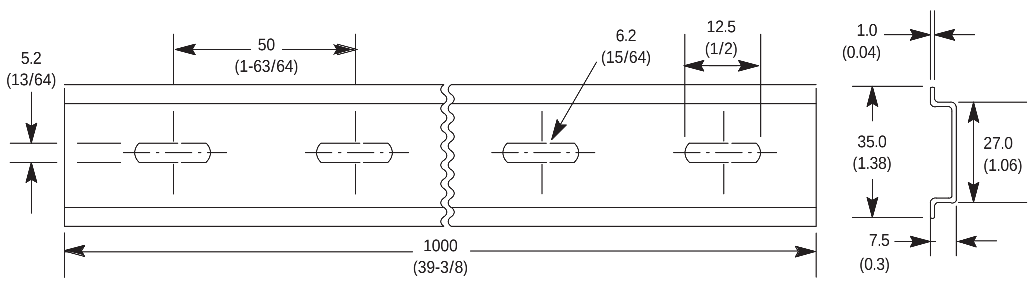


Dimensions -700-HA Relays

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



700-HA Relay

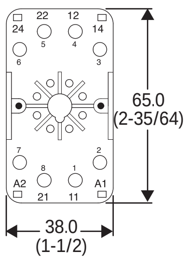


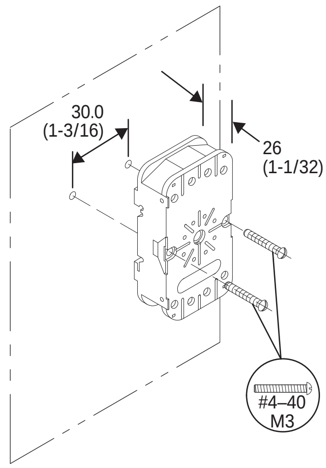
Cat. No. 199-DR1 DIN Mounting Rail Series B

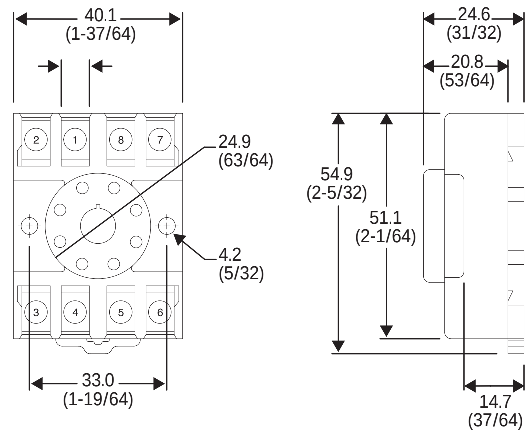
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

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 lb) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lb) (5/pkg)

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







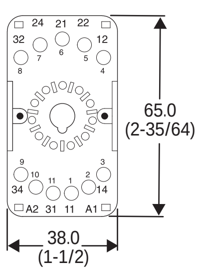
Cat. No. 700-HN100

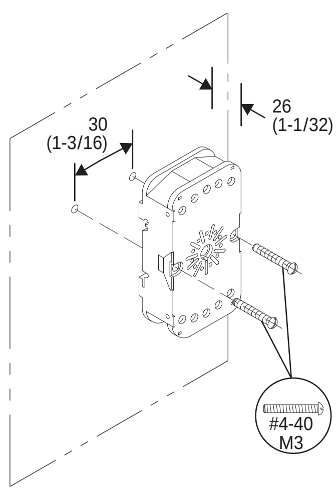
Panel Mounting

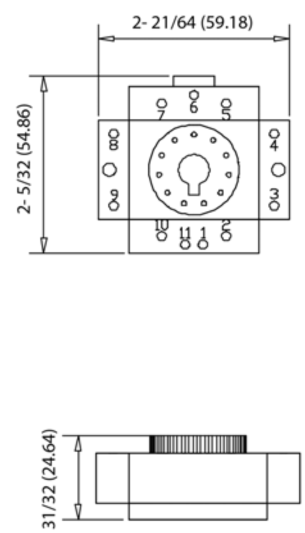
Cat. No. 700-HN125

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

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







Cat. No. 700-HN101

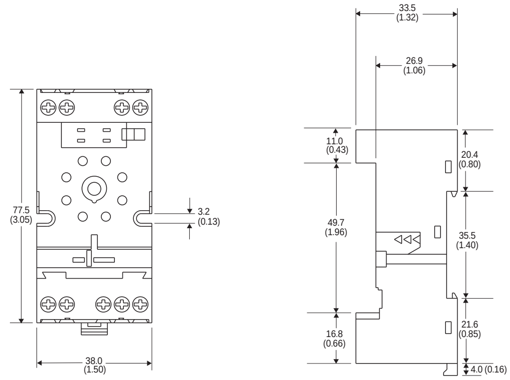
Panel Mounting

Cat. No. 700-HN126

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

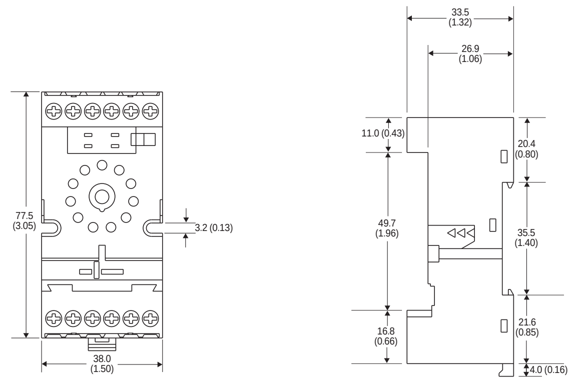
Wire Size: 2 x 2.5 mm^2
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm^2 (#2–14 AWG…#2–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)

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



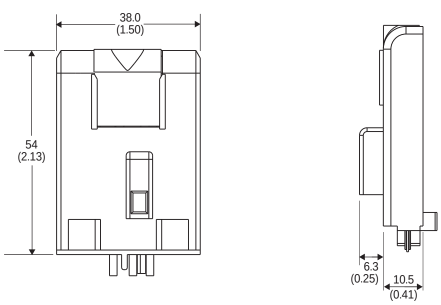
Cat. No. 700-HN204

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



Cat. No. 700-HN205

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

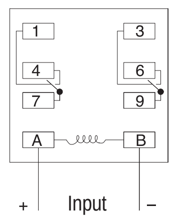
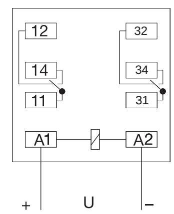
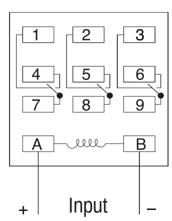
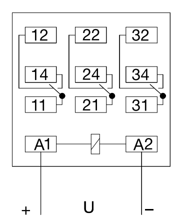


Cat. No. 700-HT3

Wire Size: 2 x 1.5 mm^2 (#2 – 16 AWG…#1–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)

700-HB Square Base Relay

- 15 A contact rating
- DPDT, 3PDT
- Blade-style quick connect /solder terminals (Faston 187 - 4.8 x 0.5 mm)
- Standard ON/OFF flag indicator
- Options: LED, push-to-rest, and manual override

Photo	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No.(1)
			U.S./Canada	International		
	DPDT 2-Pole 2 Form C Single AgCdO Contact	15 A B300			6V AC	700-HB32A06
					12V AC	700-HB32A12
					24V AC	700-HB32A24
					120V AC	700-HB32A1
					240V AC	700-HB32A2
					6V DC	700-HB32Z06
					12V DC	700-HB32Z12
					24V DC	700-HB32Z24
					48V DC	700-HB32Z48
	Sockets		700-HN154	700-HN153	110V DC	700-HB32Z1
	3PDT 3-Pole 3 Form C Single AgCdO Contact	15 A B300			6V AC	700-HB33A06
					12V AC	700-HB33A12
					24V AC	700-HB33A24
					120V AC	700-HB33A1
					240V AC	700-HB33A2
					6V DC	700-HB33Z06
					12V DC	700-HB33Z12
					24V DC	700-HB33Z24
					48V DC	700-HB33Z48
	Sockets		700-HN154	700-HN153	110V DC	700-HB33Z1

(1) LED Option: Add suffix (-4) to the selected 700-HB Relay Cat. No., except for the 240V AC Units, add (-4L).
Push-to-test, Manual Override, and LED Option: Add suffix (-3-4) to the selected 700-HB Relay Cat. No., except for the 240V AC units, add (-3-4L)
Push-to-test and Manual Override option: Add suffix (-3) to the selected 700-HB relay.

Accessories - 700-HB Relays

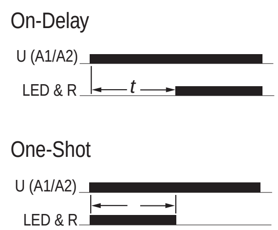
Photo	Description			Pkg. Qty.	Cat. No.
	Diode Surge Suppressor Voltage Range: 6…220V DC used with 700-HN204 and 700-HN205 socket			10	700-ADR
	Diode with LED Surge Suppressor Voltage Range: 6…24V DC used with 700-HN204 and 700-HN205 socket			10	700-ADL1R
	Diode with LED Surge Suppressor Voltage Range: 28…60V DC used with 700-HN204 and 700-HN205 socket			10	700-ADL2R
	Diode with LED Surge Suppressor Voltage Range: 110…220V DC used with 700-HN204 and 700-HN205 socket			10	700-ADL3R
	Varistor with LED Surge Suppressor Voltage Range: 6…24V AC used with 700-HN204 and 700-HN205 socket			10	700-AV1R
	Varistor with LED Surge Suppressor Voltage Range: 110…240V AC used with 700-HN204 and 700-HN205 socket			10	700-AV3R
	RC Surge Suppressor Voltage Range: 6…24V AC/DC used with 700-HN204 and 700-HN205 socket			10	700-AR1
	RC Surge Suppressor Voltage Range: 110…240V AC/DC used with 700-HN204 and 700-HN205 socket			10	700-AR2
	Timing Module On-Delay or One-Shot selectable voltage range: 12…24V AC/DC used with sockets that accept plug-in accessory modules.			1	700-AT3
	Timing Module On-Delay or One-Shot selectable voltage range: 110…125V AC used with sockets that accept plug-in accessory modules.			1	700-AT3A1
	Timing Module On-Delay or One-Shot selectable voltage range: 230…240V AC used with sockets that accept plug-in accessory modules.			1	700-AT3A2
	1. 1 s	0.05 s…1 s		1	700-HT3
	2. 10 s	0.5 s…10 s			
	3. 100 s	5 s…100 s			
	4. 10 min	0.5 min…10 min			
	5. 100 min	5 min…100 min			
	6. 10 hours	0.5 h…10 h			
	7. 100 hours	5 h…100 h			
	8. LED Indicator				

Photo	Description	Pkg. Qty.	Cat. No.
	Screw Terminal Socket — Panel or DIN Rail Mounting. Guarded Terminal Construction 11-blade socket for use with 700-HB relays. This socket has coil and contact separation as well as the ability to use optional plug-in modules (700-A__ accessories, LED, surge suppression, timing modules).	10	700-HN153
	**Screw Terminal Base Socket — Panel or DIN Rail Mounting. Open Style Construction** 11-blade for use with 700-HB relays.	10	700-HN154
	**DIN (#3) symmetrical hat rail** 35 x 7.5 x 1 m	10	199-DR1
	Retainer Clip **For Cat. Nos. 700-HN154 Sockets with 700-HB Relays** Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN156
	Retainer Clip **For Cat. Nos. 700-HN153 Sockets with 700-HB Relays** Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN158
	Relay Identification Snap-in Markers Snap-in markers fit on top of product covers. The following are blank cards. Squares slip into molded slot on top of product covers.	100	1492-MS5X12 1492-MS6X9 1492-MS6X12 1492-MS8X9 1492-MS8X12 1492-MP-Blank
	**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

Socket and Retainer Clip Reference

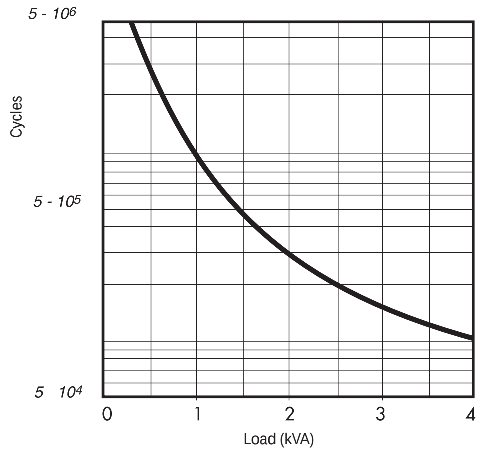
Relay Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HB	700-HN153 700-HN154	700-HN158 700-HN156

Specifications - 700-HB Relays

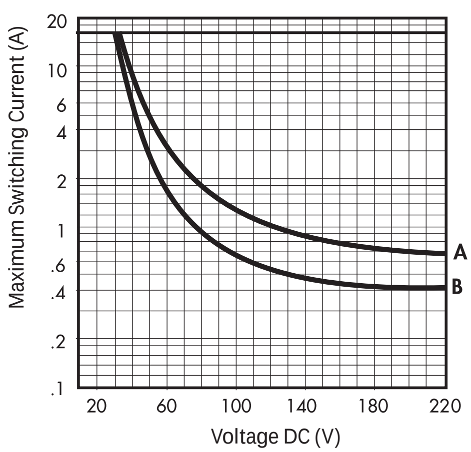
Attribute		700-HB				
Electrical Ratings						
Pilot Duty Rating [1]		NEMA B300				
Rated Thermal Current (I_{th})		15 A – 120V, 240V				
Rated Insulation Voltage (U_i)		250V IEC-300V UL/CSA				
Contacts	Inductive	**Make**		**Break**		**Hp**
		▶][◀		◀][▶		
		2 -Pole	3 -Pole	2 -Pole	3 -Pole	
	120V AC	60 A	30 A	6 A	3 A	3/4
	240V AC	30 A	15 A	3 A	1.5 A	2
	General-purpose	15 A, 240V AC				
	Resistive	15 A, 30V DC				
Min. Low Energy Permissible Load		1000 mW (10V, 10 mA)				
Permissible Coil Voltage Variation		80…110% of Nominal Voltage at 50 Hz				
		80…110% of Nominal Voltage at 60 Hz				
		80…110% of Nominal Voltage at DC				
Coil Consumption ±10%	AC Coils	**50 Hz**		**60 Hz**		
	Inrush	3.3VA		2.85VA		
	Sealed	2.2VA		1.9VA		
	DC Coils	1.3 W				
Max. Allowable Leakage		25% of VA				
		10% of W				
Max. Contact Resistance		50 MΩ				
Design Specification/Test Requirements						
Dielectric Withstand Voltage						
Pole-to-Pole		2500V				
Contact to Coil		4000V				
Mechanical						
Degree of Protection (Open Type) IEC 529		IP 40				
Mechanical lifecycles (AC/DC)		> $10 \times 10^6/30 \times 10^6$				
Switching Frequency Operations		3600/HR				
Coil Voltages		See Overview/Product Selection				
Operating Time (ms)	Pickup	20 ms				
	Dropout	4 ms				
Maximum Operating Rate		4 Ops/s				
Vibration	Endurance	5 G				
	Operational	1.5 G				
Shock	Endurance	50 G				
	Operational	15 G				
Environmental						
Temperature	Operating	AC/DC		−40…+70 °C (−40…+158 °F)		
	Storage	AC/DC		−40…+100 °C (−40…+212 °F)		
Altitude		2000 m (6560 ft)				
Construction						
Insulating Material		Molded High Dielectric Material				
Enclosure		Transparent Dust Cover				
Contact Material		AgCdO				
Terminal Markings on Socket		In accordance with EN50 0005				
Sockets		700-HN153, -HN154				
Certifications		cURus Recognized (File No. E3125, Guide NLDX2/NLDX8), cULus Listed when used with 700-HN sockets noted				
Standards		UL508, CSA C22.2 No. 14, EN 61810-1				

(1) See NEMA Ratings and Test Values on page 5

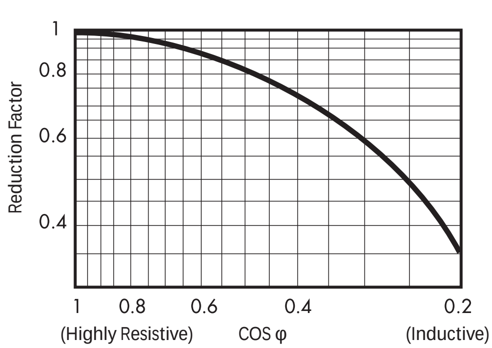
Technical Data - 700-HB Relays



Contact life versus AC1 load at 600 cycles/h.



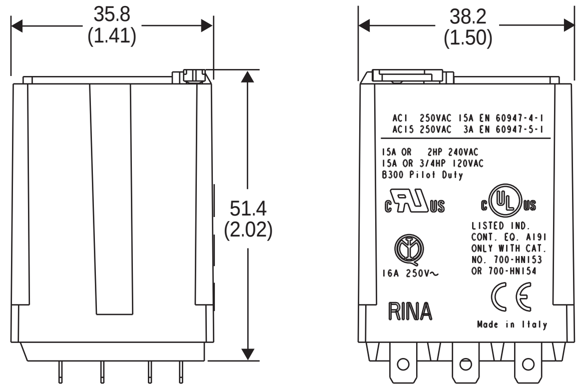
Breaking capacity for DC1 load at 600 cycles/h.
Load applied to one contact.
A = for N.O. types
B= other types



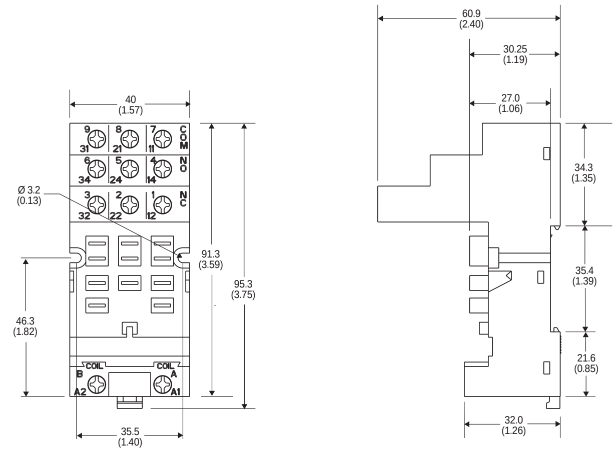
Load Reduction factor versus cos φ

Dimensions - 700-HB Relays

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

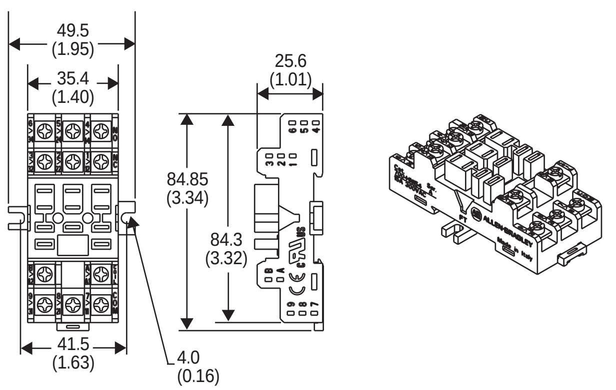


700-HB Relay



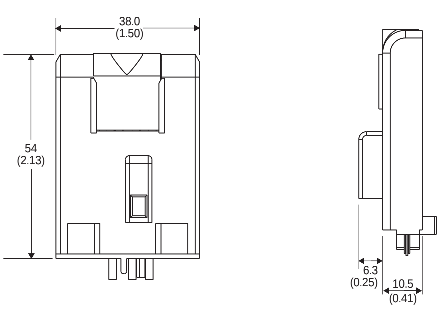
Cat. No. 700-HN153

Wire Size: 2 x 2.5 mm^2
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm^2 (14 AWG… 20 AWG), Qty. 2 wires
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN154

Wire Size: 2 x 2.5 mm^2
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm^2 (14 AWG… 20 AWG), Qty. 2 wires
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)

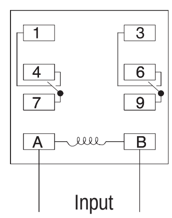
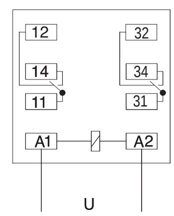
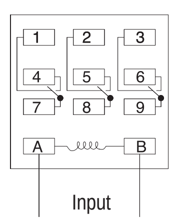
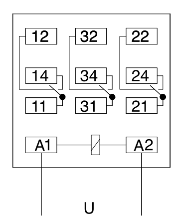


Cat. No. 700-HT3

Wire Size: 2 x 1.5 mm^2 (#2 – 16 AWG…#1–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)

700-HD Flange Mount Square Base Relay

- Flange-mounted/panel-mounted
- 15 A contact rating
- DPDT, 3PDT
- Blade-style quick connect terminals (0.187 x 0.020)
- Solder terminals (no socket required)

Photo	Contact Rating		Wiring Diagrams		Coil Voltage	Cat. No.
			U.S./Canada	International		
	DPDT 2-Pole 2 Form C AgCdO Contacts	15 A			6V AC	700-HD32A06
					12V AC	700-HD32A12
					24V AC	700-HD32A24
					120V AC	700-HD32A1
					208V AC	700-HD32A20
					240V AC	700-HD32A2
					6V DC	700-HD32Z06
					12V DC	700-HD32Z12
					24V DC	700-HD32Z24
					48V DC	700-HD32Z48
					110V DC	700-HD32Z1
	3PDT 3-Pole 3 Form C AgCdO Contacts	15 A			6V AC	700-HD33A06
					12V AC	700-HD33A12
					24V AC	700-HD33A24
					120V AC	700-HD33A1
					208V AC	700-HD33A20
					240V AC	700-HD33A2
					6V DC	700-HD33Z06
					12V DC	700-HD33Z12
					24V DC	700-HD33Z24
					48V DC	700-HD33Z48
					110V DC	700-HD33Z1

Accessories - 700-HD Relays

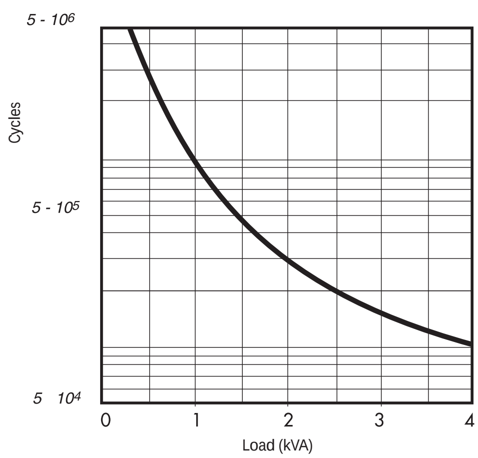
Photo	Description	Pkg. Qty.	Cat. No.
	Relay Identification Snap-in Markers Snap-in markers fit on top of product covers. The following are blank cards. Squares slip into molded slot on top of product covers.	100	1492-MS5X12
			1492-MS6X9
			1492-MS6X12
			1492-MS8X9
			1492-MS8X12
			1492-MP-Blank
	Pre-Printed 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

Specifications - 700-HD Relays

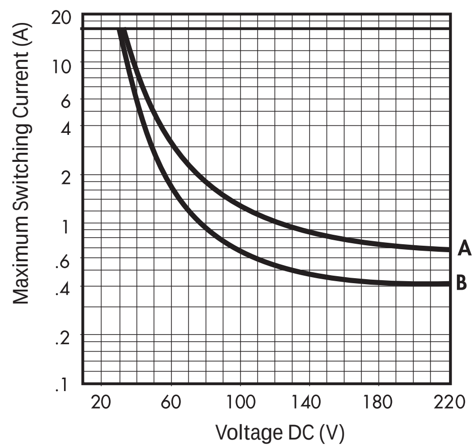
Attribute		700-HD				
Electrical Ratings						
Pilot Duty Rating [1]		NEMA B300				
Rated Thermal Current (I_{th})		15 A[2] – 120V 15 A [2] – 240V,				
Rated Insulation Voltage (U_i)		250V IEC-300V UL/CSA				
Contacts	Inductive	**Make** ►][◄		**Break** ◄][►		**Hp**
		2-Pole	3-Pole	2-Pole	3-Pole	
	120V AC	60 A	30 A	6 A	3 A	3/4
	240V AC	30 A	15 A	3 A	1.5 A	2
	General-purpose	15 A, 240V AC				
	Resistive	15 A, 30V DC				
Min. Low Energy Permissible Load		1000 mW (10V, 10 mA)				
Permissible Coil Voltage Variation		80…110% of Nominal Voltage at 50 Hz 80…110% of Nominal Voltage at 60 Hz 80…110% of Nominal Voltage at DC				
Coil Consumption ±10%	AC Coils	50 Hz		60 Hz		
	Inrush	3.3VA		2.85VA		
	Sealed	2.2VA		1.9VA		
	DC Coils	1.3 W				
Maximum Contact Resistance		50 MΩ				
Must Dropout Voltage		20% of Nominal V AC 10% of Nominal V DC				
Design Specification/Test Requirements						
Electrical						
Dielectric Withstand Voltage	Pole-to-Pole	2500V				
	Contact to Coil	4000V				
Mechanical						
Degree of Protection (Open Type) IEC 529		IP 40				
Mechanical lifecycles (AC/DC)		See Overview/Product Selection				
Switching Frequency Operations		3600/HR				
Coil Voltages		> 10×10^6 / 30×10^6				
Operating Time	Pickup	20 ms				
	Dropout	4 ms				
Maximum Operating Rate		4 Ops/s				
Minimum Low Energy Permissible Load		1000 mN (10V, 10 mA)				
Environmental						
Temperature	Operating	−40…+70 °C (−40…+158 °F)				
	Storage	−40…+100 °C (−40…+212 °F)				
Altitude		2000 m (6560 ft)				

Attribute	700-HD
Construction	
Insulating Material	Molded High Dielectric Material
Enclosure	Transparent Dust Cover
Contact Material	Silver Cad. Ox.
Terminal Markings	In accordance with EN50 0005
Certifications	cURs Recognized (File No. E3125, Guide NLDX2/NLDX8), CSA Certified (File No. 229473), CE Marked, UR Certified
Standards	UL 508, CSA C22.2 No. 14, EN 61810-1

(1) See NEMA Ratings and Test Values on page 5.
(2) 3-pole relays have a 20 A maximum total current rating for all three poles.

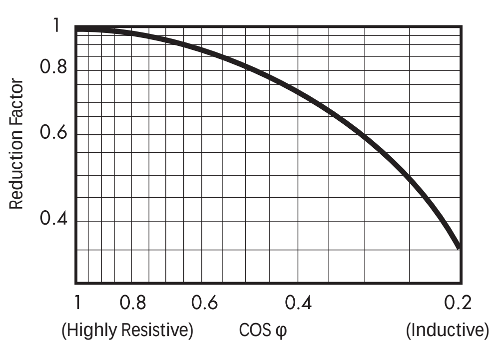


Contact life versus AC1 load at 600 cycles/h.



Breaking capacity for DC1 load at 600 cycles/h.

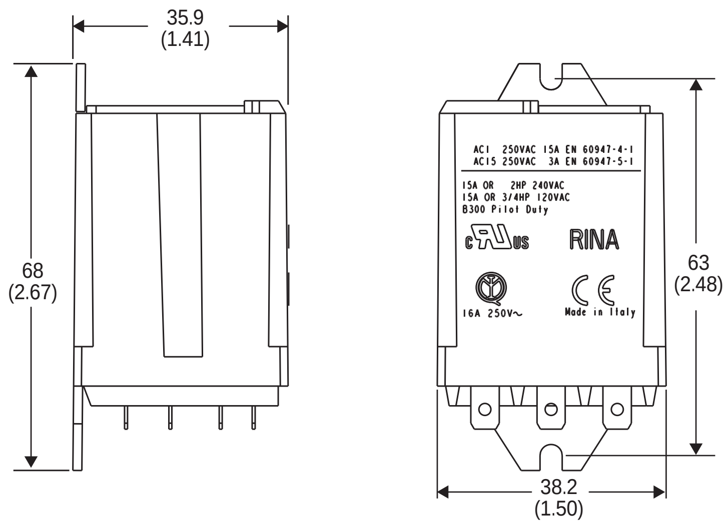
Load applied to one contact.
A = for N.O. types
B = other types



Load Reduction factor versus cos φ

Dimensions - 700-HD Relays

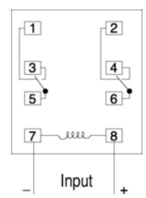
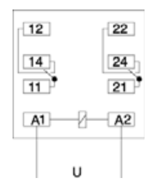
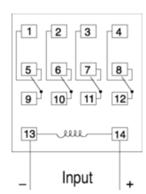
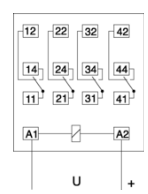
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



700-HD Relay

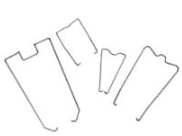
700-HF Square Base Relay

- 12 A contact rating
- DPDT, 4PDT
- Plug-in quick connect/solder terminals
- Options: LED, push-to-test manual override operator
- Blade size: 4.8 x 0.5 mm (0.19 x 0.02 in.)

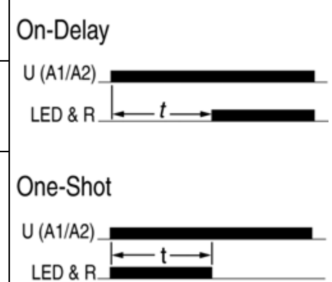
Photo	Description	Contact Rating	Wiring Diagrams U.S./Canada	Wiring Diagrams International	Coil Voltage	Cat. No.[1]
	DPDT 2-pole 2 Form C AgCdO Contacts	12 A			6V AC	700-HF32A06
					12V AC	700-HF32A12
					24V AC	700-HF32A24
					120V AC	700-HF32A1
					240V AC	700-HF32A2
					6V DC	700-HF32Z06
					12V DC	700-HF32Z12
					24V DC	700-HF32Z24
					48V DC	700-HF32Z48
	Socket		700-HN116 700-HN262	700-HN116 700-HN262	110V DC	700-HF32Z1
	4PDT 4-pole 4 Form C AgCdO Contact	12 A			6V AC	700-HF34A06
					12V AC	700-HF34A12
					24V AC	700-HF34A24
					120V AC	700-HF34A1
					240V AC	700-HF34A2
					6V DC	700-HF34Z06
					12V DC	700-HF34Z12
					24V DC	700-HF34Z24
					48V DC	700-HF34Z48
	Socket		700-HN139 700-HN264	700-HN139 700-HN264	110V DC	700-HF34Z1

(1) Pilot Light Option: Add suffix (-4) to the selected 700-HF Relay Cat. No. except for the 240V AC units, add (-4L).
Manual Operator and LED Option: Add suffix (-3-4) to the selected 700-HF Relay Cat. No., except for the 240V AC units, add (-3-4L).

Accessories - 700-HF Relays

Photo	Description	Pkg. Qty.	Cat. No.
	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
	**Screw Terminal Socket — Panel or DIN Rail Mounting** 8-blade miniature socket for use with DPDT HF relays.	10	700-HN116
	**Screw Terminal Socket — Panel or DIN Rail Mounting, Guarded Terminal Construction** 8-blade socket for use with DPDT 700-HF relays. The socket has the ability to use optional plug-in modules (Cat. No. 700-A_ _ accessories, LED, surge suppression, timing modules).	10	700-HN262
	**Screw Terminal Socket — Panel or DIN Rail Mounting, Guarded Terminal Construction** 14-blade socket for use with 4PDT 700-HF relays.	10	700-HN139
	**Screw Terminal Socket — Panel or DIN Rail Mounting, Guarded Terminal Construction** 14-blade socket for use with 4PDT 700-HF relays. The socket has coil and contact separation and the ability to use optional plug-in modules (Cat. No. 700-A_ _ accessories, LED, surge suppression, timing modules).	10	700-HN264
	DIN (#3) symmetrical hat rail 35 x 7.5 x 1 m	10	199-DR1
	**Retainer Clip for Cat. Nos. 700-HN103, -HN104 and -HN128 Sockets with 700-HC Relays and Cat. Nos. 700-HN116, 700-HN262 Sockets with 700-HF DPDT Relays§** Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN114
	Retainer Clip for Cat. Nos. 700-HN139 and -HN264 Sockets with 700-HF 4PDT Relays§ Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN266

Accessories - 700-HF Relays

<table>
<tr><th>Photo</th><th colspan="2">Description</th><th>Pkg. Qty.</th><th>Cat. No.</th></tr>
<tr><td rowspan="7"></td><td colspan="2">Diode with LED Surge Suppressor
Voltage Range: 6…24V DC used with sockets that accept plug-in accessory modules.</td><td>10</td><td>700-ADL1</td></tr>
<tr><td colspan="2">Diode with LED Surge Suppressor
Voltage Range: 28…60V DC used with sockets that accept plug-in accessory modules.</td><td>10</td><td>700-ADL2</td></tr>
<tr><td colspan="2">Diode with LED Surge Suppressor
Voltage Range: 110…220V DC used with sockets that accept plug-in accessory modules.</td><td>10</td><td>700-ADL3</td></tr>
<tr><td colspan="2">Varistor with LED Surge Suppressor
Voltage Range: 6…24V AC used with sockets that accept plug-in accessory modules.</td><td>10</td><td>700-AV1R</td></tr>
<tr><td colspan="2">Varistor with LED Surge Suppressor
Voltage Range: 110…240V AC used
with sockets that accept plug-in accessory modules.</td><td>10</td><td>700-AV3R</td></tr>
<tr><td colspan="2">RC Surge Suppressor
Voltage Range: 6…24V AC/DC used
with sockets that accept plug-in accessory modules.</td><td>10</td><td>700-AR1</td></tr>
<tr><td colspan="2">RC Surge Suppressor
Voltage Range: 110…240V AC/DC used
with sockets that accept plug-in accessory modules.</td><td>10</td><td>700-AR2</td></tr>
<tr><td rowspan="3">
</td><td>Timing Module
On-Delay or One-Shot selectable voltage range: 12…24V AC/DC
used with sockets that accept plug-in accessory modules.</td><td rowspan="3">
</td><td rowspan="3">1</td><td>700-AT3</td></tr>
<tr><td>Timing Module
On-Delay or One-Shot selectable voltage range: 110…125V AC
used with sockets that accept plug-in accessory modules.</td><td>700-AT3A1</td></tr>
<tr><td>Timing Module
On-Delay or One-Shot selectable voltage range: 230…240V AC
used with sockets that accept plug-in accessory modules.</td><td>700-AT3A2</td></tr>
</table>

Socket, and Retainer Clip Reference

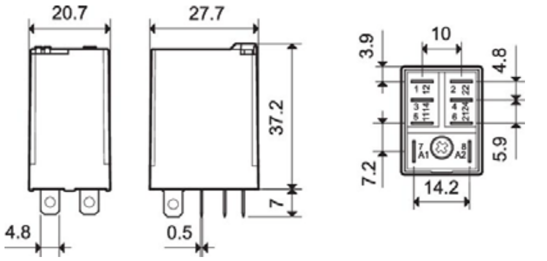
Relay Type	Cat. No. Socket	Cat. No. Retainer Clip
700-HF32	700-HN116 700-HN262	700-HN114
700-HF34	700-HN139 700-HN264	700-HN266

Specifications- 700-HF Relays

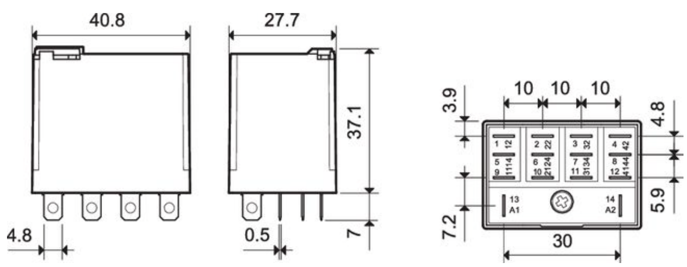
Electrical Ratings			700-HF 2 Pole	700-HF 4 Pole
Contacts	Inductive V AC	230V AC	AC 15 @ 700 VA	
			AC-1 @ 3000 VA	
			1 Hp @ 240V AC	
		120V AC	1/2 Hp @ 120V AC	
	VDC	DC-1	12 A @ 30V DC	
			0.5 A @ 110V DC	
			0.25 A @ 220V DC	
	Resistive	AC	12 A @ 250 V AC (per pole)	
		DC	12 A @ 30 V DC (per pole)	
Operating Range		AC	80…110% nom voltage	
		DC	80…110% nom voltage	85…110% nom voltage
Rated Power		AC (50 Hz)	1.5 VA	2 VA
		DC	1 W	1.3 W
Holding Voltage		AC	80% nom voltage	
		DC	60% nom voltage	
Must Drop Out Voltage		AC	20% nom voltage	
		DC	10% nom voltage	
Insulation Voltage			250V AC	
Design Specification/Test Requirements				
Dielectric Withstand Voltage		Pole-to-Pole	2500V AC	
		Contact to Pole	2500V AC	
Mechanical				
Degree of Protection			Open Type (Sockets)	
Mechanical Life Operations			20 x 10^6	
Switching Frequency Operations			3600/hr	
Coil Voltages			See Product Selection	
Operating Time at nom voltage at 20 °C		Pickup	8 ms	10 ms
		Dropout	3 ms	4 ms
Maximum Operating Rate			4 Ops/s	
Vibration			15 G	
Shock			15 G	
Environmental				
Temperature		Operating	–40…+70 °C (–40…+268 °F)	
		Storage	–50…+80 °C (–89…+176 °F)	
Altitude			2000 m (6560 ft)	
Construction				
Insulating Material			Molded High-Dielectric Material	
Enclosure			Transparent Dust Cover	
Contact Material			Silver Cad. Oxide	
Terminal Markings on Socket			In accordance with EN50 0005	
Sockets			8-Blade Socket (DPDT) Cat. No. 700-HN116 & 700-HN262, 14-Blade Socket (4PDT) Cat. No. 700-HN139 & 700-HN264	
Certifications			CSA Certified (File No. 229473), UL Recognized (File No. E3125, Guide NLDX2/NLDX8), CE Marked, UL Listed when used with sockets shown above, (File No. E3125, Guide NLDX/NLDX 7), LR Certified, RINA Certified, IMQ Certified	
Standards			UL 508, CSA 22.2 No. 14, EN-61810-1	

Dimensions -700-HF Relays

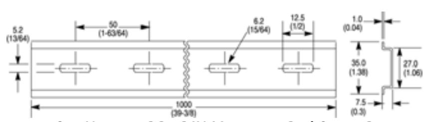
Approximate Dimensions are shown in millimeters (inches). Approximate Dimensions are not intended to be used for manufacturing purposes.



700-HF Relay (DPDT)



700-HF (4PDT)

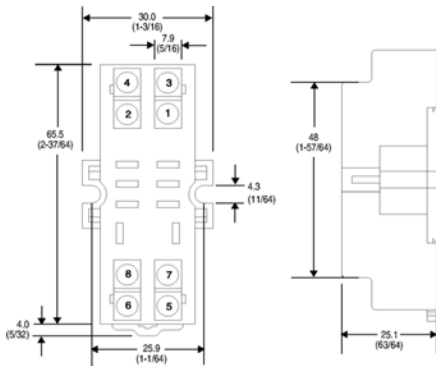


Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

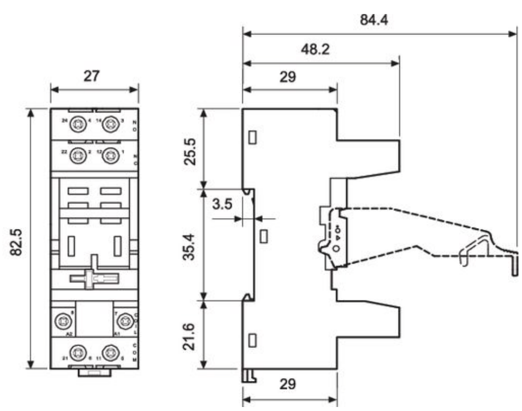
Cat. No.	A	B	C	D	Approx. Shipping Wt.
199-DR1	35 (1-3/8)	27 (1-1/16)	7.5 (19/64)	1.02 (1/64)	1.85 kg (4.07 lb) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lb) (5/pkg)

Dimensions - 700-HF Relays

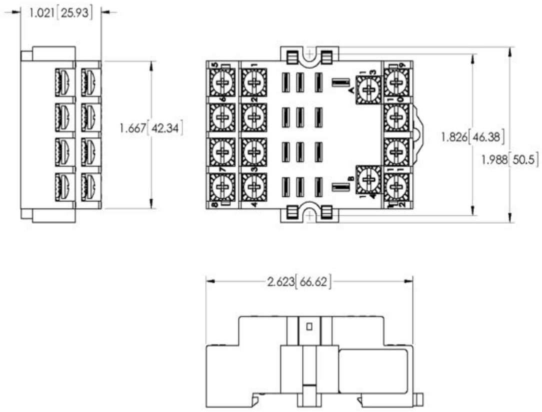
Approximate Dimensions are shown in millimeters (inches). Approximate Dimensions are not intended to be used for manufacturing purposes.



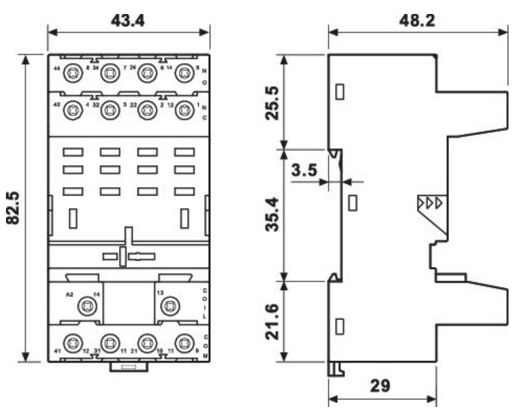
Cat. No. 700-HN116
Wire Size: 2 x 2.5 mm^{9}
Single Wire – Up to #12 AWG
Double Wire – 2.5 mm^{9} (14 … 20 AWG), Qty. 2 wires
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN262
Wire Size: Solid - 1x6/ 2 x 2.5 mm^{9}
1x10 / 2 x 14 AWG
Stranded - 1x4 / 2x2.5 mm^{9}
1x12 / 2x14 AWG
Length: 9 mm (3/8 in.) - Torque: 0.8 N•m (7 lb• in)
300V AC, 12 A, 50 °C



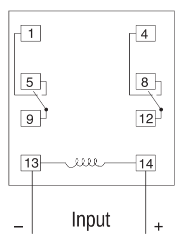
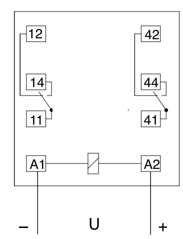
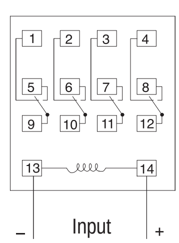
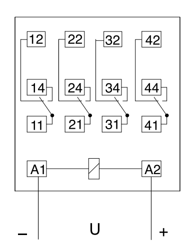
Cat. No. 700-HN139
Wire Size: 2 x 2.5 mm^9
Single Wire – Up to #12 AWG
Double Wire – 2.5 mm^9 (14 … 20 AWG), Qty. 2 wires
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN264
Wire Size: Solid - 1x6/ 2 x 2.5 mm^9
1x10 / 2x14 AWG
Stranded - 1x4 / 2x2.5 mm^9
1x12 / 2x14 AWG
Length: 9 mm (3/8 in.) - Torque: 0.8 N•m (7 lb•in)
300V AC, 10 A, 70 °C

700-HC Miniature Ice Cube Relay

- 7 or 10 A contact ratings
- 2PDT or 4PDT
- Standard ON/OFF flag indicator
- Blade-style terminals (2.0 x 0.5 mm)
- Choice of standard silver nickel contacts, or silver nickel with gold-plated contacts for low-energy applications
- Options: LED, push-to-test with manual override option
- Tungsten UL Approvals
    - 4-Pole: 5A @ 24V DC
    - 2-Pole: 10A @ 24V DC

Photo	Contact Rating		Wiring Diagrams U.S./Canada	Wiring Diagrams International	Coil Voltage	Cat. No.[1]
	2PDT 2-Pole 2 Form C Contacts: 10 A = AgNi Contacts	10 A C300 R300 Low energy rating; (10V, 10 mA) 100 mW			12V DC	700-HC22Z12
					24V DC	700-HC22Z24
					24V AC	700-HC22A24
					120V AC	700-HC22A1
			700-HN128	700-HN103 700-HN104	240V AC	700-HC22A2
	4PDT 4-Pole 4 Form C Contacts: 7A = AgNiAu Gold Plated Contacts	7 A Low energy rating; (5V, 10 mA or 25V, 2 mA) 50 mW			6V AC	700-HC14A06
					12V AC	700-HC14A12
					24V AC	700-HC14A24
					120V AC	700-HC14A1
					240V AC	700-HC14A2
					6V DC	700-HC14Z06
					12V DC	700-HC14Z12
					24V DC	700-HC14Z24
					48V DC	700-HC14Z48
					110V DC	700-HC14Z1
	4PDT 4-Pole 4 Form C Contacts: 7A = AgNi Silver Contacts	7 A C300 R300 Low energy rating; (10V, 10 mA) 100 mW			6V AC	700-HC24A06
					12V AC	700-HC24A12
					24V AC	700-HC24A24
					120V AC	700-HC24A1
					240V AC	700-HC24A2
					6V DC	700-HC24Z06
					12V DC	700-HC24Z12
					24V DC	700-HC24Z24
				700-HN103	48V DC	700-HC24Z48
			700-HN128	700-HN104	110V DC	700-HC24Z1

(1) LED Option: Add suffix (-4) to the selected 700-HC Relay catalog number, except for the 240V AC units, add (-4L).
Push-to-test, Manual Override, and LED Option: Add suffix (-3-4) to the selected 700-HC catalog number, except for the 240V AC units, add (-3-4L).
Push-to-test and Manual Override option: Add suffix (-3) to the selected 700-HC relay catalog number.

Accessories - 700-HC Relays

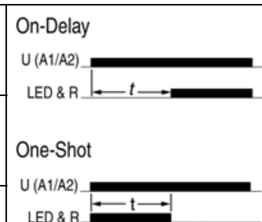
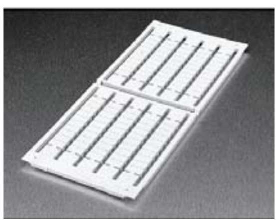
Photo	Description	Pkg. Qty.	Cat. No.
	**Diode with LED Surge Suppressor** Voltage Range: 6…24V DC used with 700-HN104 socket	10	700-ADL1
	Diode with LED Surge Suppressor Voltage Range: 28…60V DC used with 700-HN104 socket	10	700-ADL2
	Diode with LED Surge Suppressor Voltage Range: 110…220V DC used with 700-HN104 socket	10	700-ADL3
	Varistor with LED Surge Suppressor Voltage Range: 6…24V AC used with 700-HN104 socket	10	700-AV1R
	Varistor with LED Surge Suppressor Voltage Range: 110…240V AC used with 700-HN104 socket	10	700-AV3R
	RC Surge Suppressor Voltage Range: 6…24V AC/DC used with 700-HN104 socket	10	700-AR1
	RC Surge Suppressor Voltage Range: 110…240V AC/DC used with 700-HN104 socket	10	700-AR2
	**Timing Module** On-Delay or One-Shot selectable voltage range: 12…24V AC/DC used with sockets that accept plug-in accessory modules. 		700-AT3
	Timing Module On-Delay or One-Shot selectable voltage range: 110…125V AC used with sockets that accept plug-in accessory modules.	1	700-AT3A1
	Timing Module On-Delay or One-Shot selectable voltage range: 230…240V AC used with sockets that accept plug-in accessory modules.		700-AT3A2
	Screw Terminal Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction. $I_{th} = 10$ A per pole. 14-blade miniature socket for use with 700-SC Relays.	10	700-HN103
	Screw Terminal Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction $I_{th} = 10$ A per pole. 14-blade miniature socket for use with 700-HC relays. This socket has coil and contact separation as well as the ability to plug in optional plug in modules (700-A___ accessories: LED, Surge Suppression, Timing Modules)	10	700-HN104
	Screw Terminal Base Socket — Panel or DIN Rail Mounting; Open-Style Construction $I_{th} = 10$ A per pole. 14-blade miniature socket for use with 700-HC Relays.	10	700-HN128

Photo	Description	Pkg. Qty.	Cat. No.
	**DIN (#3) symmetrical hat rail** 35 x 7.5 x 1 m	10	199-DR1
	Retainer Clip for Cat. Nos. 700-HN103, -HN104 and -HN128 Sockets with 700-HC Relays. Secures relay in socket.(1)	10	700-HN114
	Plastic Retainer and Ejection Lever For use with the 700-HN104 Sockets for 700-HC relays. Built-in ability to accept 1492 Snap-in Markers	10	700-HN124

(1) See 700-HC Miniature Square Base Relay, Socket, and Retainer Clip Reference Chart.

Photo	Description	Pkg. Qty.	Cat. No.
	**Relay Identification Snap-in Markers** Snap-in markers fit on top of product covers. Squares slip into molded slot on top of product cover.	5	1492-MS5X12
		5	1492-MS6X9
		5	1492-MS6X12
		5	1492-MS8X9
		5	1492-MS8X12
		100	1492-MP-Blank
	**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
	Markers — Used for terminal identification	50	700-N41

Socket and Retainer Clip Reference

Relay Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HC	700-HN103	700-HN114
	700-HN128	700-HN114
	700-HN104	700-HN114 or 700-HN124

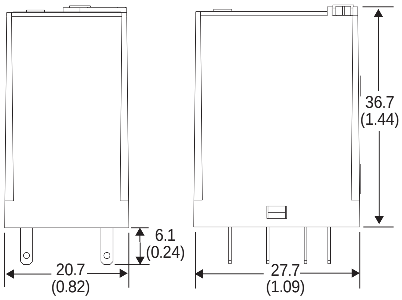
Specifications- 700-HC Relays

Attribute			700-HC					
Electrical Ratings								
Pilot Duty Rating (1)			NEMA C300, R300					
Rated Thermal Current (I_{th})			7 A and 10 A					
Rated Insulation Voltage (U_i)			250V IEC – 300V UL/CSA					
Contacts	**Inductive**		700-HC_4		Hp	700-HC22		Hp
			Make ►][◄	Break ◄][►		Make ►][◄	Break ◄][►	
	120V AC		15 A	1.5 A	1/8	15 A	1.5 A	1/3
	240V AC		7.5 A	0.75 A	1/3	7.5 A	0.75 A	3/4
	General-purpose		7 A, 277V AC			10 A, 277V AC		
	Resistive		7 A, 30V DC			10 A, 24V DC		
Min. Low Energy Permissible Load			100 mW (10V, 10 mA) - Silver Contacts 50 mW (5V, 10 mA, or 25V, 2 mA) - Gold Contacts					
Permissible Coil Voltage Variation			Pickup:	80…110% of nom voltage at 50 Hz 80…110% of nom voltage at 60 Hz 80…110% of nom voltage at DC		Must Dropout Voltage:	20% of nom voltage at AC 10% of nom voltage at DC	
			50 Hz			60 Hz		
Coil Consumption ±10%	**AC Coils**	**Inrush**	2.2VA			1.6VA		
		Sealed	1.3VA			1.1VA		
	DC Coils		1.0 W					
Max. Allowable Leakage			20% of VA (AC)					
			10% of W (DC)					
Design Specification/Test Requirements								
Electrical								
Dielectric Withstand Voltage	**Pole-to-Pole**		2000V					
	Contact to Coil		2000V					
Electrical Life (Cycles)			100,000 min					
Mechanical								
Degree of Protection (Open Type) IEC 529			IP 20 (Guarded Terminal Sockets)					
Mechanical lifecycles			20×10^6 (AC), 50×10^6 (DC)					
Switching Frequency Operations			1800/HR					
Coil Voltages			See Product Selection					
Operating Time	**Pickup**		10 ms					
	Dropout		3 ms					
Maximum Operating Rate			8 cycles/s					
Environmental								
Temperature	**Operating**		–30…+55 °C (–22…+131 °F)					
	Storage		–55…+85 °C (–67…+185 °F)					
Altitude			2000 m (6560 ft)					
Insulating Material			Molded High Dielectric Material					
Enclosure			Transparent Dust Cover					
Contact Material			AgNi (700-HC2), AgNi + 5 σm AII (700-HC1)					
Terminal Markings on Socket			In accordance with EN50 0005					
Sockets			700-HN103, -HN128, -HN104					
Certifications			cURus Recognized (File No. E14843, Guide NRNT2/NRNT8), cULus Listed when used with 700- HN103, -HN104, and -HN128 sockets (File No. E14843, Guide NRNT/NRNT7), CE Marked, LR Certified					
Standards			UL 508, CSA 22.2 No. 14, EN 61810-1					

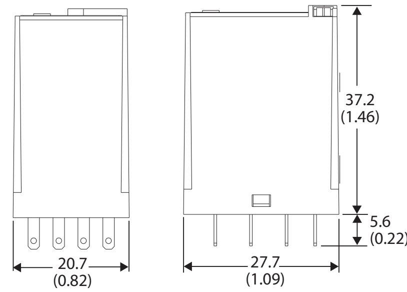
(1) See General Information on page 3.

Dimensions, 700-HC Relays

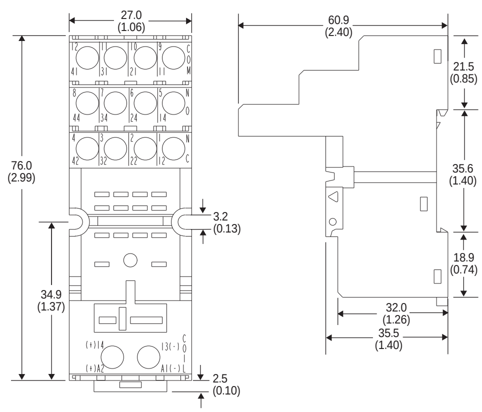
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



700-HC Relay (Two-Pole)

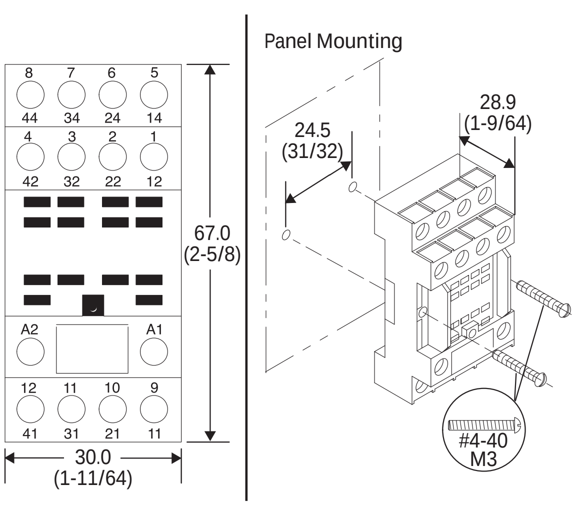


700-HC Relay (Four-Pole)



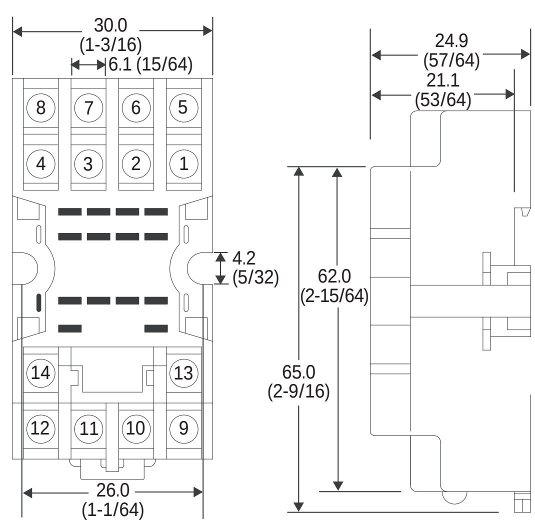
Cat. No. 700-HN104

Single Wire: 0.2 mm^2…2.5 mm^2 (24 AWG…14 AWG), Double Wire: 0.2 …2.5 mm^2 (24 AWG…14 AWG), Qty. 2 wires
Wire Type: solid or stranded, copper only, Strip Length: 7 mm (9/32 in.), Torque: 0.5 N•m (4.4 lb•in)



Cat. No. 700-HN103

Single Wire: 0.2 mm^2…2.5 mm^2 (#24 AWG…14 AWG)
Double Wire: 0.2…2 x 1.5 mm^2 (24 AWG…16 AWG), Qty. 2 wires
Wire Type: Solid or Stranded, Copper only
Strip Length: 8 mm (5/16 in.), Torque: 0.5 N•m (4.4 lb•in)

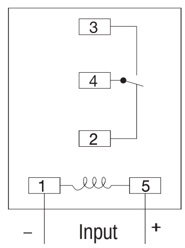
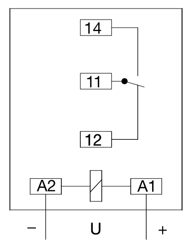
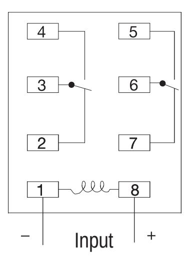
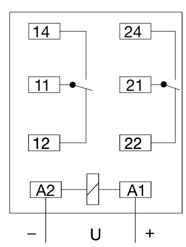


Cat. No. 700-HN128

Wire Size: 2 x 1.5 mm^2 (#2-16 AWG…#1-20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Toque: 0.8 N•m (7 lb•in)

700-HK Slim Line Relay

- 8 A/16 A contact ratings
- DPDT/SPDT
- Plug-in blade-style terminals (2.5 x 0.5 mm)
- Retainer clip with sockets
- Options: LED, push-to-test and manual override, socket-mounted surge suppressor module, or timer module
- Standard ON/OFF flag indicator
- Relay faceplate accepts optional Bulletin1492 snap-in markers
- Choice of standard silver/nickel contacts or silver/nickel with gold plated contacts
- Maximum duty version available

Photo	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No.(1)
			U.S./Canada	International		
	SPDT 1-Pole 1 Form C AgNi Contacts	16 A			6V AC	700-HK36A06
					12V AC	700-HK36A12
					24V AC	700-HK36A24
					120V AC	700-HK36A1
					240V AC	700-HK36A2
					6V DC	700-HK36Z06
					12V DC	700-HK36Z12
					24V DC	700-HK36Z24
					48V DC	700-HK36Z48
	Socket		700-HN121, 700-HN221, 700-HN223	700-HN121, 700-HN221, 700-HN223	110V DC	700-HK36Z1
	DPDT 2-Pole 2 Form C AgNi Contacts	8 A			6V AC	700-HK32A06
					12V AC	700-HK32A12
					24V AC	700-HK32A24
					120V AC	700-HK32A1
					240V AC	700-HK32A2
					6V DC	700-HK32Z06
					12V DC	700-HK32Z12
					24V DC	700-HK32Z24
					48V DC	700-HK32Z48
	Socket		700-HN122, 700-HN222, 700-HN224	700-HN122, 700-HN222, 700-HN224	110V DC	700-HK32Z1

(1) **Options**
Pilot Light: Add suffix (-4) to the selected 700-HK Relay catalog number except for the 240V AC units, add (-4L).
Manual Operator and LED: Add suffix (-3-4) to the selected 700-HK Relay catalog number, except for the 240V AC units, add (-3-4L).
AgNi Contact with Gold plating: Replace "3" with "X" om catalog number. For example, if catalog number 700-HK36A1 is required with gold plating, the new catalog number is 700-HKX6A1.
For high inductive, Tungsten, or Capacitive load applications, replace the "3" with a "M" in the catalog number. Only available in a SPDT configuration and with 24V DC, 120V AC, or 240V AC coil voltages.

Accessories- 700-HK Relays

Photo	Description	Pkg. Qty.	Cat. No.
	Screw Terminal Socket — Panel or DIN Rail Mounting 5-blade miniature socket with 10 A rating for use with 1-pole, 700-HK relays. Accepts forked lug conductors. Socket includes a retainer clip.	10	700-HN121
	**Screw Terminal Socket — Panel or DIN Rail Mounting** 5-blade miniature socket with 16 A rating for use with 1-pole, 700-HK relays. Retainer clips are packaged separately with socket. Guarded terminal construction and compatible with optional plug-in module accessories.	10	700-HN221
	Spring Clamp Terminal Socket — Panel or DIN Rail Mounting 5-blade miniature socket for use with 1-pole, 700-HK relays.	10	700-HN223
	Screw Terminal Socket — Panel or DIN Rail Mounting 8-blade miniature socket with 5 A rating for use with 2-pole, 700-HK relays. Accepts forked lug conductors. This socket includes a retainer clip.	10	700-HN122
	**Screw Terminal Socket — Panel or DIN Rail Mounting** 8-blade miniature socket with 8 A rating for use with 2-pole, 700-HK relays. Retainer clips are packaged separately with socket. Guarded terminal construction and compatible with optional plug-in module accessories.	10	700-HN222
	Spring Clamp Terminal Socket — Panel or DIN Rail Mounting 8-blade miniature socket for use with 2-pole 700-HK relays.	10	700-HN224
	**Flange Mount Adapter** Used for panel-mounting bulletin 700-HK relays. Order must be for 10 adapters or multiples of 10.	10	700-HN226
	**35 mm Rail Mount Adapter** Mounts bulletin 700-HK relays to a 35 mm rail. Order must be for 10 adapters or multiples of 10.	10	700-HN227
	**Socket Retainer Clip and Ejection Lever** For use with 700-HN22, -HN222, -HN223, and -HN224 sockets. Orders must be for 10 clips or multiples of 10.	10	700-HN229

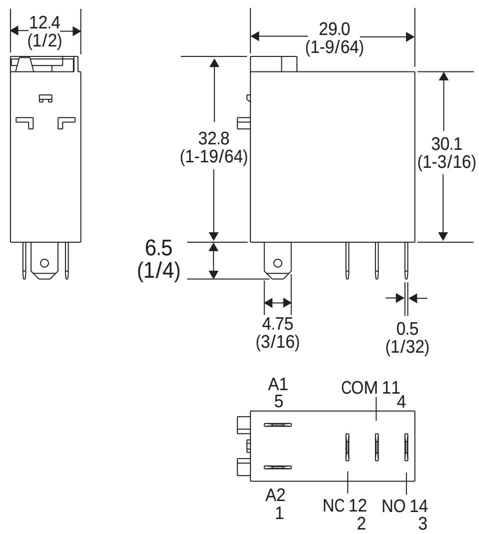
Specifications- 700-HK Relays

Attribute		700-HK			
		Electrical Ratings			
Rated Thermal Current (I_{th})		1-Pole, 1 CO, SPDT — 16 A		2-Pole, 2 CO, DPDT — 8 A	
Rated Insulation Voltage (U_i)		250V IEC, 300V UL/CSA			
Contacts	**Inductive V AC**	120V AC	AC-15, 6.2 A B300 Pilot Duty, 3 A A300 (700-HKM_) 1/3 Hp (0.24 kW) 1-phase	120V AC	AC-15, 2.9 A B300 Pilot Duty, 3.0 A 1/4 Hp (0.18 kW), 1-phase
		240V AC	AC-15, 3.1 A B300 Pilot Duty, 1.5 A A300(700-HKM_) 3/4 Hp (0.55 kW), 1-phase	240V AC	AC-15, 1.4 A B300 Pilot Duty, 1.5 A 1/2 Hp (0.37 kW), 1-phase
		230V AC	0.55 kW, 1-phase	230V AC	0.37 kW, 1-phase
	Inductive V DC	24V DC	DC-13, 5.0 A	24V DC	DC-13, 3.0 A
		125V DC	DC-13, 0.2 A / R300 Pilot Duty, 0.22 A	125V DC	DC-13, 0.2 A / R300 Pilot Duty, 0.22 A
		250V DC	DC-13, 0.1 A / R300 Pilot Duty, 0.11 A	5 A, 250V AC	DC-13, 0.1 A / R300 Pilot Duty, 0.11 A
	Resistive	230V AC	AC-1, 16 A	230V AC	AC-1, 8 A
		277V AC	16 A, General Use	277V AC	8 A, General Use
	Make, Break , and Continuous	30V DC	DC-1, 12 A / 10 A, Resistive	30V DC	DC-1, 6 A / 6 A, Resistive
Min. Permissible Contact Ratings		300 mW (5V/60 mA or 60V/5 mA) for AgNi Contacts (700-HK3_) 50 mW (5V/10 mA or 25V/2 mA) for AgNi + Gold Contacts (700-HKX_) 500 mW (100V/5 mA or 5V/100 mA) for $AgSnO_2$ Contacts (700-HKM_)			
Permissible Coil Voltage Variation	**Pickup:** **holding Voltage:** **Must Dropout Voltage:**	80…110% of Nominal Voltage at 50/60 Hz, 73...110% of Nominal Voltage at DC 80% of Nominal V AC at 50/60 Hz, 40% of Nominal V DC 20% of Nominal V AC at 50/60 Hz, 10% Nominal V DC			
Power Consumption		1.2V A (V AC Coils), 0.5 W (V DC Coils)			
Coil Voltages		See Overview/Product Selection			
		Design Specification/Test Requirements			
Dielectric Withstand Voltage	**Pole to Pole (VRMS)** **Contact to Coil (VRMS)**	2000V AC 4000V AC			
		Mechanical			
Degree of Protection		IP 20 (guarded terminal sockets), RT II — Flux-proof (Relay)			
Mechanical Life Operations		10×10^6			
Electrical Lifecycles		230V AC, 16 A Resistive: 100 000 min. 277V AC, 16 A Resistive: 30 000 min. 30V DC, 10 A Resistive: 30 000 min. B300, R300, Hp (kW): 6000 min. A300 (700-HKM_): 100,000 min.		230V AC, 8 A Resistive: 100 000 min. 277V AC, 8 A Resistive: 30 000 min. 30V DC, 6 A Resistive: 30 000 min. B300, R300, Hp (kW): 6000 min.	
Switching Frequency		Mechanical: 18,000 cycles/hr. Electrical: 900 cycles/hr.			
Operating Time at Nominal Voltage at 20 °C (ms)	**Pickup**	15 ms			
	Dropout	5 ms			
Vibration	**Operational** **Non-Operational**	10…2000 Hz, 0.76 mm (0.03 in.) 2.5 G 10…2000 Hz, 0.76 mm (0.03 in.) 5.0 G			
Shock	**Operational** **Non-Operational**	15 G 50 G			
		Environmental			
Temperature	**Operating** **Storage**	−40…+70 °C (−40…+158 °F) −40…+85 °C (−40…+185 °F)			
Altitude		2000 m (6560 ft)			
		Construction			
Insulating Material		Molded High Dielectric Material			
Enclosure		Transparent Dust Cover			
Contact Material		700-HK3_: Silver nickel (AgNi); 700-HKX_: Silver Nickel + Gold Plating (AgNi + Au); 700-HKM_: Silver Tin Oxide($AgSnO_2$)			
Terminal Markings on Socket		In accordance with EN 50005			

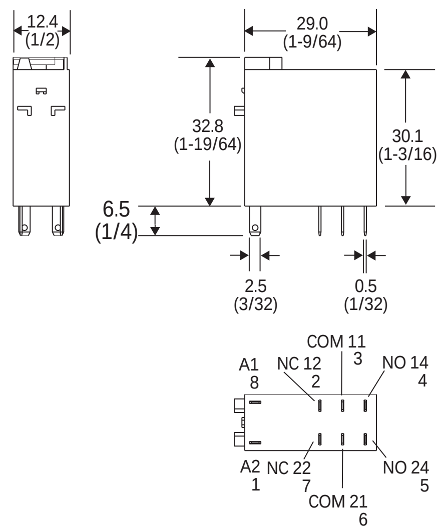
Attribute		700-HK	
		1-Pole	2-Pole
Sockets	Screw Terminal	700-HN121 (10 A @ 70 °C) 700-HN221 (16 A @ 50 °C, 12 A @ 70 °C)	700-HN122 (2 x 5 A @ 70 °C) 700-HN222 (2 x 8 A @ 70 °C)
	Spring Clamp	700-HN223 (15 A @ 40 °C with 2 conductors per terminal) (10 A @ 70 °C with 1 conductor per terminal)	700-HN224 (2 x 8 A@ 70 °C)
Approvals			
Certifications		CSA Certified, File 75088, UL Recognized, File E3125 Guide NLDX2/NLCX8, cULus Listed with Allen-Bradley sockets (File No. 3125 Guide NLDX/NLDX7), CE Marked	
Standards		EN61810-1, CSA 22.2 No. 14, UL 508	

Dimensions- 700-HK Relays

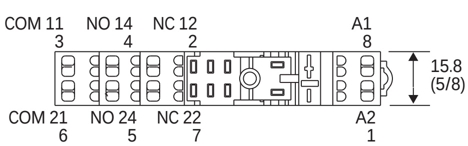
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



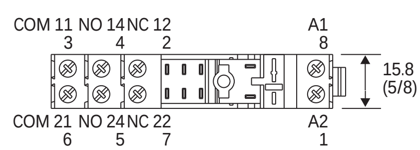
Cat. No. 700-HK36_ (SPDT)



Cat. No. 700-HK32_ (DPDT)



Cat. No. 700-HN224



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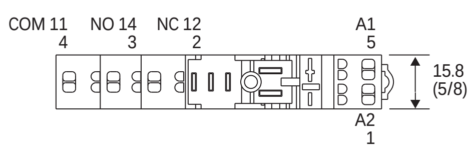
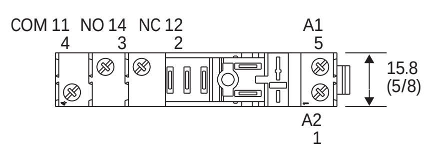
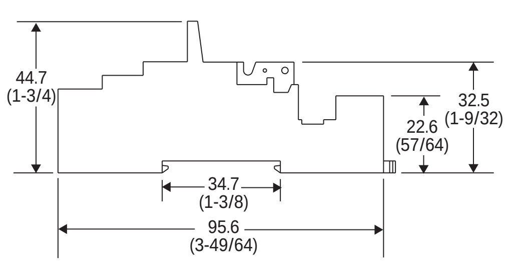


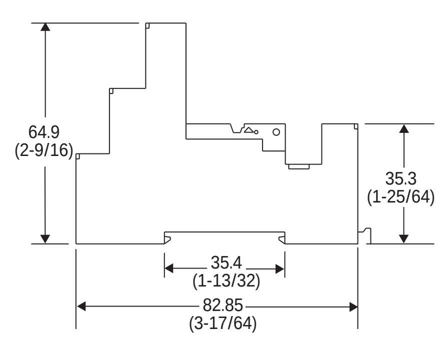
Cat. No. 700-HN223



Cat. No. 700-HN221



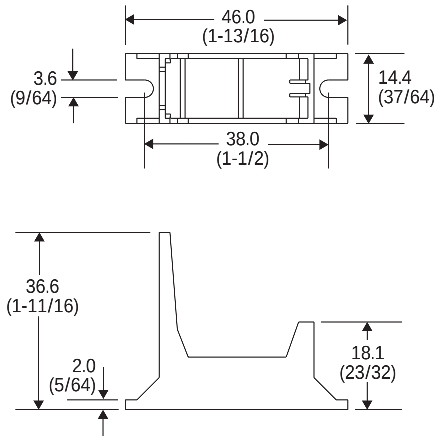
Cat. No. 700-HN223, 700-HN224
Wire Size: 0.2 mm^2...1.5 mm^2 (#24 AWG....#14 AWG)
Either Solid or Stranded
Strip Length: 8 mm (5/16 in)



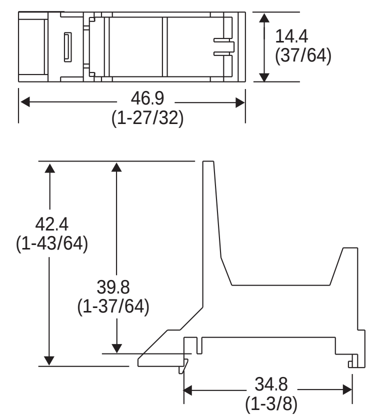
Cat. No. 700-HN221, 700-HN222
Wire Size: 0.2 mm^2...2.5 mm^2 (#24 AWG....#12 AWG)
Either Solid or Stranded
Strip Length: 8 mm (5/16 in), Torque: 0.8Nm (7.0 lb.-in.)

Dimensions - 700-HK Relays

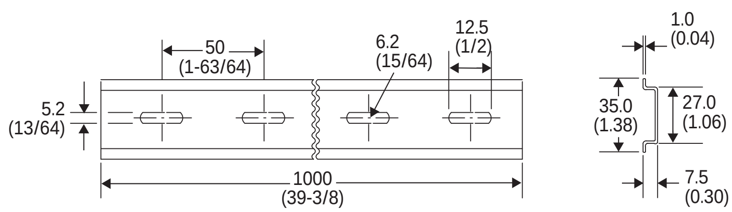
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



Cat. No. 700-HN226

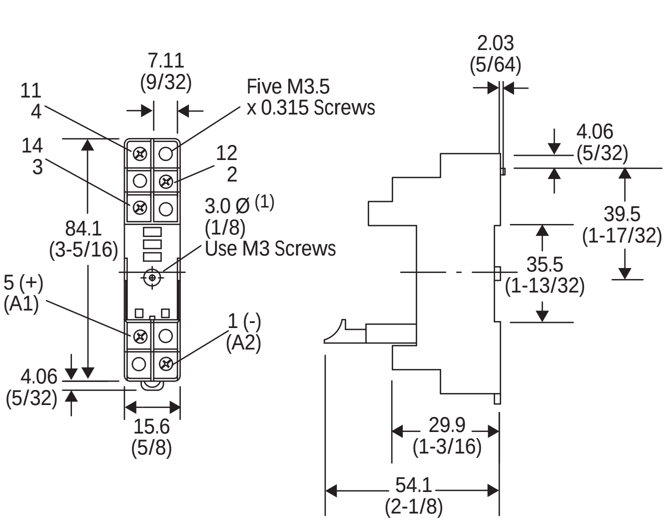


Cat. No. 700-HN227

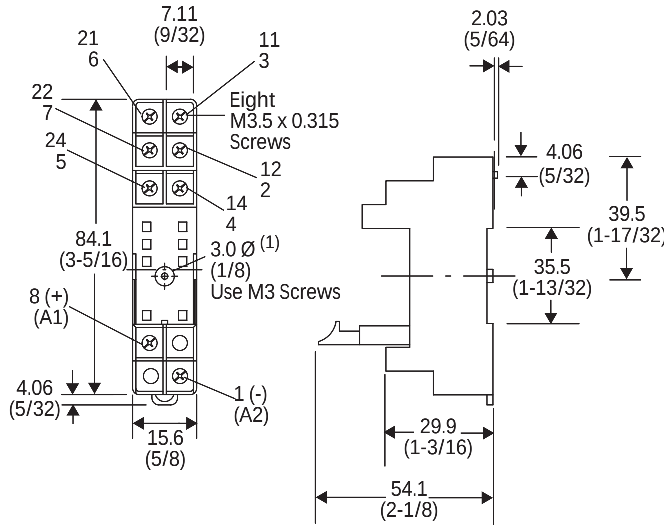


Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes
Cat. No. 199-DR1 DIN Mounting Rail Series B

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 lb) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lb) (5/pkg)



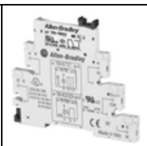
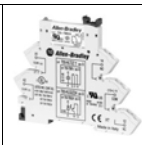
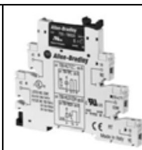
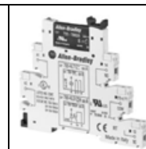
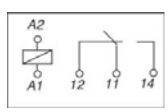
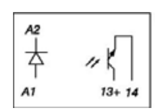
Cat. No. 700-HN121
Wire Size: 2 x 2.5 mm^2
Single Wire – Up to #14 AWG
Double Wire – 2 x 2.5 mm^2 (14 AWG… 20 AWG) Qty. 2 wires
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN122
Wire Size: 2 x 2.5 mm^2
Single Wire – Up to #14 AWG
Double Wire – 2 x 2.5 mm^2 (14 AWG… 20 AWG) Qty. 2 wires
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N•m (7 lb•in)

700-HL Terminal Block Relay

- Relay and socket assembled interface modules for high density interposing or isolation applications
- Screw terminal and spring-clamp bases
- 6 A relay, choice of silver or gold contacts
- 2 A solid-state relay — DC output
- 2 A solid-state relay — AC output
- SPDT (relay), 1 N.O. (solid-state)
- Built-in retainer clip and snap-in marker lever
- Standard LED, reverse polarity protection, and surge protection
- Externally replaceable relay modules
- Unique leakage current suppression version to address industry concerns of nuisance coil turn-on or contact non-drop out when connecting to PLCs with leakage current
- Available with hazardous location certification

Standard built-in Features: • LED • Reverse Polarity Protection for DC Inputs • Coil Surge Protection(1)	 Cat. No. 700-HLT1Z24	 Cat. No. 700-HLT2Z24	 Cat. No. 700-HLS1Z24	 Cat. No. 700-HLS11Z24
Specifications			(3) 	
Output Type	SPDT (1 C/O); I_{th} = 6A(2)		1 N.O. solid-state; I_{th} = 2 A, 24V DC or I_{th} = 2 A, 240V AC	
Recommended Tightening Torque	0.5 N• m max. (4.4 lb• in)			
Wire Range	Screw Terminal: 0.14 mm^2…2.5 mm^2 (#26…#14 AWG), Spring Terminal: 0.2 mm^2…2.5 mm^2 (#24…#14 AWG)			
Approvals	UL, cULus, cURus, ABS, CE			

(1) Diode surge protection provided.

(2) For Gold-plated contacts: Add the letter "X" at the end of the catalog number. For example: if Cat. No. 700-HLT1Z24 is required with gold plating, the new cat. no. is 700-HLT1Z24X.

(3) Reverse polarity on the output terminals of the solid-state relay will result in the output being "ON" regardless of the state of the input voltage.

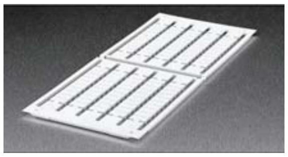
Input Voltage	Pkg. Qty.	Cat. No. (Screw Terminals)	Cat. No. (Spring Clamp Terminals)	Pkg. Quantity	Cat. No. (Screw Terminals) (DC Output)	Cat. No. (Spring Clamp Terminals) (DC Output)	Cat. No. (Screw Terminals) (AC Output)
12V DC	10	(2) 700-HLT1Z12	700-HLT2Z12	—	—	—	—
24V DC	10	(2) 700-HLT1Z24	700-HLT2Z24	10	(2) 700-HLS1Z24	700-HLS2Z24	700-HLS11Z24
48V DC	10	(2) 700-HLT1Z48	700-HLT2Z48	10	(2) 700-HLS1Z48	700-HLS2Z48	700-HLS11Z48
12V AC/DC	10	700-HLT1U12	700-HLT2U12	—	—	—	—
24V AC/DC	10	700-HLT1U24	700-HLT2U24	—	—	—	—
48V AC/DC	10	700-HLT1U48	700-HLT2U48	—	—	—	—
110/125V AC/DC	10	700-HLT1U1	700-HLT2U1	10	(2) 700-HLS1U1	700-HLS2U1	700-HLS11U1
220…240V AC/DC	10	700-HLT1U2	700-HLT2U2	10	(2) 700-HLS1U2	700-HLS2U2	700-HLS11U2
240V AC	10	700-HLT1A2	—	—	—	—	—

Input Voltage	Pkg. Qty.	Cat. No. (Screw Terminals)	Cat. No. (Spring Clamp Terminals)	Pkg. Quantity	Cat. No. (Screw Terminals) (DC Output)	Cat. No. (Spring Clamp Terminals) (DC Output)	Cat. No. (Screw Terminals) (AC Output)
Built-in LCSC (leakage current suppression circuit) 120V AC and 125V DC[1]	10	[2] 700-HLT1L1	—	10	[2] 700-HLS1L1	—	700-HLS11L1
Built-in LCSC (leakage current suppression circuit) 240V AC[1]	10	[2] 700-HLT1L2	—	10	[2] 700-HLS1L2	—	700-HLS11L2
Hazardous Location Certification 24V DC	10	700-HLT1Z24-EX	—	10	700-HLS1Z24-EX	—	—
Hazardous Location Certification 12V DC	10	700-HLT1Z12-EX	—	10	—	—	—
Hazardous Location Certification 110/125V AC/DC	10	700-HLT1U1-EX	—	10	700-HLS1U1-EX	—	—

(1) Leakage current suppression up to 2.2 mA off state current.
(2) Electromechanical relay to solid-state relay interchangeability is possible.

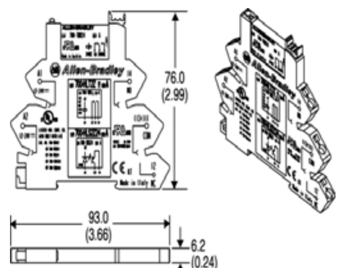
Accessories – 700-HLT, -HLS Relays

Photo	Description	Pkg. Quantity	Socket Input Voltage	Cat. No.
	Replacement Relays[1] Order must be for 20 relays or multiples of 20.	20	12V AC/DC	700-TBR12
			24V AC/DC	700-TBR24
			48V AC/DC	700-TBR48
			110/125V AC/DC 220…240V AC/DC	700-TBR60
	**Replacement SSR** 4-blade miniature relay for use with 1 N.O. SSR DC output. Order multiples of 20.	20	24V DC	700-TBS24
			48V DC, 110/125V AC/DC 220…240V AC/DC	700-TBS60
	Replacement SSR 4-blade miniature relay for use with 1 N.O. SSR AC output. Order multiples of 20.	20	24V DC	700-TBS124
	Replacement SSR 4-blade miniature relay for use with 1 N.O. SSR AC output. Order must be for 20 relays or multiples of 20.	20	48V DC 110/125V AC/DC 220…240V AC/DC	700-TBS160
	20-Way Jumper Can be cut to required length. I_{th} = 36 A max per 20-way jumper.	1	**Color**	
			Red	700-TBJ20R
			Grey	700-TBJ20G
			Blue	700-TBJ20B

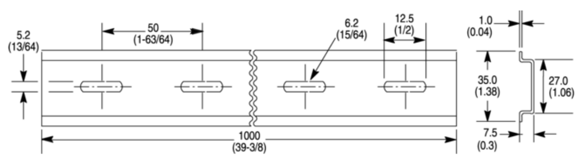
Photo	Description	Pkg. Quantity	Socket Input Voltage	Cat. No.
	End Barrier Used for visual inspection of groups, safe separation of neighboring 700-HL modules that end with jumpers.	10	Black	700-HN177
	**Snap-in Marker** These snap-in markers have a 6 x 10 mm surface and snap into the ejection lever for the relay. For custom markers, contact your local Rockwell Automation sales office or Allen-Bradley distributor for more information.	100	Blank	1492-MC6X10

(1) For gold-plated contacts: Add the letter "X" at the end of the catalog number. For example: if Cat. No. 700-TBR24 is required with gold plating, the new cat. no. is 700-TBR24X.

Dimensions - 700-HL Relays



700-HL Spring Terminal Design Single Wire: 0.2 mm2…2.5 mm2 (#24 AWG…#14 AWG) Wire Type: Solid or stranded, copper only.Strip Length: 9 mm (11/32 in.)



Cat. No. 199-DR1 DIN Mounting Rail Series B, Cat. No. 199-DR4 DIN Mounting Rail Series B has no mounting holes.

Specifications - 700-HLT Relays

Cat. No. 700-HLT… (Relay Output)							
Electrical Ratings							
Pilot Duty Rating	B 300, R 300						
Rated Thermal Current (I_{th})	1-Pole — 6 A						
Rated Insulation Voltage (U_i)	250V IEC, 300V UL/CSA						
Contacts	1-Pole						
	Inductive V AC	24V AC, 1-phase	30 A	►][◄ Make	5 A	◄][► Break	
		120V AC, 1-phase	30 A		3 A		
		240V AC, 1-phase	15 A		1.5 A		
	Inductive V DC	24V DC	DC-13, 1.0 A				
		125V DC	DC-13, 0.2 A				
		240V DC	DC-13, 0.1 A				
	Resistive Make, Break, and Continuous	24V DC	6.0 A				
		250V AC	6.0 A				
		240V DC	0.1 A				
Inductive Load	AC-15 250V, 3 A N.O. Contact, 1.5 A N.C. Contact DC-13 24V, 1 A N.O., *and* N.C. Contact						

Cat. No. 700-HLT… (Relay Output)							
Min. Permissible Contact Ratings	12V, 6 mA (72 mW) for Silver Contacts, 8V, 2.5 mA (20 mW) for Gold Contacts						
Permissible Coil Voltage Variation	Pickup:	85…110% of Nominal Voltage at 50 Hz 85…110% of Nominal Voltage at 60 Hz 80…110% of Nominal Voltage at DC			Must Dropout Voltage:	10% of Nominal Voltage at AC 5% of Nominal Voltage at DC	
Power Consumption ±10%	AC DC	0.3VA 0.2 W					
Design Specification / Test Requirements							
Dielectric Withstand Voltage	Pole to Pole (VRMS)	1000V					
	Contact to Coil (VRMS)	4000V					
Input Voltage	12V AC/DC	24V AC/DC	48V AC/DC	120V AC/DC	240V AC/DC	120V LCSC	240V LCSC
Impedance (Ohms)	1K	2 K	6 K	26 K	56 K	16 K	35 K
Mechanical							
Degree of Protection	IP20						
Mechanical Life Operations	1×10^7						
Electrical Life Operations	6 A Resistive: 100 000 min. 24V DC, 1 A Inductive: 200 000 min. 120V AC 1 A Inductive: 300 000 min.						
Switching Frequency Operations (no-load)	10 cycles/sec						
Coil Voltages	See Overview/Product Selection						
Operating Time at Nominal Voltage at 20 °C (ms)	Pickup	7 ms					
	Dropout	3 ms					
Maximum Operating Rate (full load = 6 A)	6 cycles/min.						
Coil Surge Protection	Per EN 61000-4.5; Surge Immunity (801-5) Class III: 2 kV common and 1 kV differential mode						
Environmental							
Temperature	Operating	–40…+55 °C					
	Storage	–40…+100 °C					
Altitude	2000 m (6560 ft)						
Construction							
Insulating Material	Molded High Dielectric Material						
Enclosure	Relay IP67						
Contact Material	Silver Tin Ox, $AgSnO_2$ or Silver with Gold Plating, $AgSnO_2 + Au$						
Terminal Markings on Socket	In accordance with EN50 0005						
Certifications	cULus Listed (File No. E3125, E14843 Guide NLDX/NLDX7) with Allen-Bradley socket, CE Marked, ABS (American Bureau of Shipping)						
Standards	EN 61810-1, CSA 22.2,UL 508,NEMA IEE MAC Compliant, ICS-2 Compliant						
Hazardous Location Approvals	Class 1, Zn 2, Groups IIC, Ex nC IIC T5 Ta < 55 °C						
	UL Listed (UL60079-15)	700-HLT1Z12-EX (12V DC supply) 700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply) 700-HLT1U1-EX, 700-HLS1U1-EX (110V/125V AC/DC supply)					
	CSA Certified (1) (CAN/CSA E60079-15)	700-HLT1Z12-EX (12V DC supply) 700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)					

(1) Product shall be installed in an enclosure providing at least IP54 protection. Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40%.

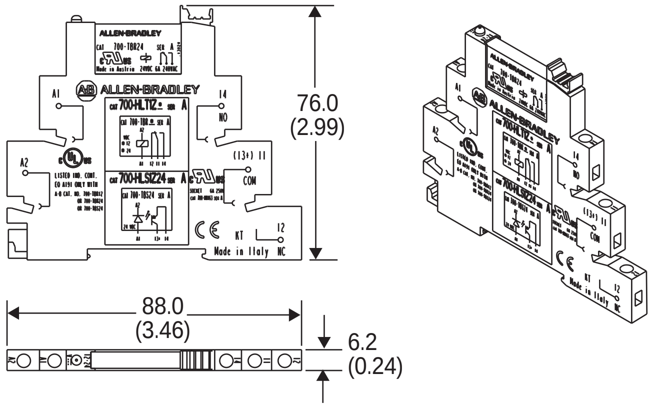
Cat. No. 700-HLS… (Solid-state Output)			
Electrical			
Rated Thermal Current (I_{th})		2 A (DC output)	2 A (AC output)
Rated Insulation Voltage (U_i)	250V IEC, 300V UL/CSA		

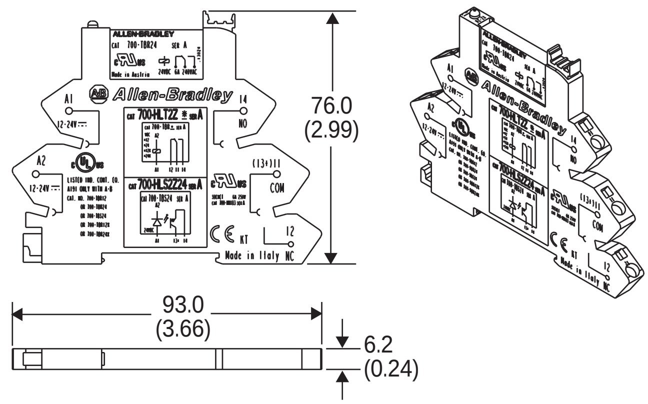
Cat. No. 700-HLS… (Solid-state Output)						
Control Circuit	Min. Control Voltage	80% nominal voltage				
	Maximum Control Voltage	110% nominal voltage				
	Control Current	9 mA ±10% (24V) 4 mA ±10% (120/240V)				
	Release Voltage	0.4 x nominal voltage (24V), 0.35 x nominal voltage (120/240V)				
	Min. Control Circuit Resistance	3200 ohms (24V), 16k ohms (120V), 32k ohms (240V)			2500 ohms (24V), 12k ohms (120V), 24k ohms (240V)	
Outputs	Load Voltage Range	0…24V DC			24…240V AC	
	Max. Repetitive Blocking Voltage	33V			600V	
	Max. Switching Current (inductive/ resistive)	2 A DC			1 A AC	
	On State Voltage Drop @ Max. Switching Current	<120 mV DC			<1V AC	
	Leakage Current	max. 100 σA (@U = 24V)				
Power Consumption ±10%	AC	0.6VA (120V), 1VA (240V)				
	DC	0.2 W			0.3 W	
Design Specification/Test Requirements						
Dielectric Withstand Voltage	Pole to Pole (VRMS)	2500V				
	Contact to Coil (VRMS)	2500V				
Input Voltage	24V DC	48V DC	120V AC/DC	240V AC/DC	120V LCSC	240V LCSC
Impedance (Ohms)	2K	9 K	26 K	58 K	16 K	35 K
Mechanical						
Degree of Protection	IP20					
Input Voltages	See Overview/Product Selection					
Operating Time at Nominal Voltage at 20 °C (ms)	Turn on Time	30 σs (DC only input voltage), 7 ms (AC/DC input voltage)				
	Drop Out Time	350 σs (DC only input voltage), 10 ms (AC/DC input voltage)				
Maximum Operating Rate	300 Hz					
Environmental						
Temperature	Operating	–20…+55 °C				
	Storage	–40…+70 °C				
Altitude	2000 m (6560 ft)					
Construction						
Insulating Material	Molded High-Dielectric Material					
Enclosure	Relay IP67					
Terminal Markings on Socket	In accordance with EN50 0005					
Certifications	cULus Listed (File No. E14843, Guide NLDX/NLDX7), CE Marked, ABS (American Bureau of Shipping)					
Standards	UL 508, CSA C22.2 No. 14, EN 61810-1					
Hazardous Location Approvals	Class 1, Zn 2, Groups IIC, Ex nC IIC T5 Ta < 55 °C					
	UL Listed (UL60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply) 700-HLT1U1-EX, 700-HLS1U1-EX (110V/125V AC/DC supply)				
	CSA Certified (1) (CAN/CSA60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)				

(1) Product shall be installed in an enclosure providing at least IP54 protection. Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40%.

Dimensions - 700-HLT, -HLS Relays

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

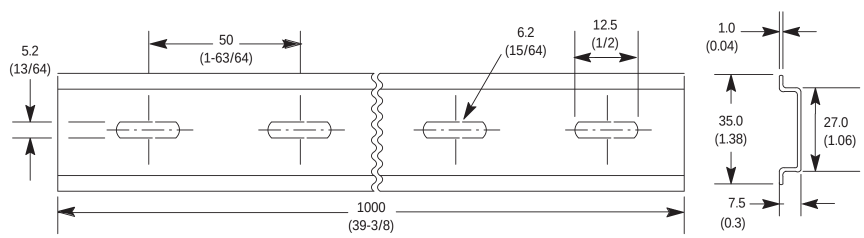




700-HLT / -HLS Screw Terminal Design
Single Wire: 0.14 mm^2…2.5 mm^2 (#26 AWG…#14 AWG)
Double Wire: 2 x 0.14 mm^2…2 x 1.5 mm^2 (2 x #26 AWG…2 x #16 AWG)
Wire Type: Solid or stranded, copper only
Strip Length: 9 mm (11/32 in). Torque: 0.5 N•m (4.4 lb•in)

700-HLT / -HLS Spring Terminal Design
Single Wire: 0.2 mm^2…2.5 mm^2 (#24 AWG…#14 AWG)
Wire Type: Solid or stranded, copper only
Strip Length: 9 mm (11/32 in.)

Dimensions - 700-HLT, -HLS Relay Accessories

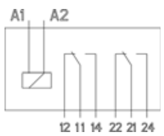


Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

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

700-HL 2-pole Terminal Block Relay

- Relay and socket assembled interface modules for high density interposing or isolation applications
- Screw terminal and spring-clamp bases
- 10 A relay, choice of silver or gold contacts
- DPDT (relay)
- Built-in retainer clip and snap-in marker lever
- Standard LED, reverse polarity protection, and surge protection
- Externally replaceable relay modules

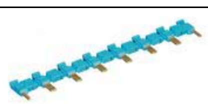


Output Type	DPDT (2 C/O); I_{th} = 10 A
Recommended Tightening Torque	0.6 N•m max. (5.3 lb•in.)
Wire Range	Screw Terminal: 0.2…2.5 mm^2 (#24…14 AWG), Spring Terminal: 0.2…2.5 mm^2 (#24…14 AWG)
Approvals	cULus, cURus, CE

Input Voltages	Pkg. Quantity	Cat. No.(1) (Screw Terminals)	Cat. No.(Spring Clamp Terminals)
12V DC	10	700-HLT12Z12	700-HLT22Z12
24V DC	10	700-HLT12Z24	700-HLT22Z24
48V DC	10	700-HLT12Z48	700-HLT22Z48
24V AC/DC	10	700-HLT12U24	700-HLT22U24
110/125V AC/DC	10	700-HLT12U1	700-HLT22U1
220…240V AC/DC	10	700-HLT12U2	700-HLT22U2

(1) For Gold-plated contacts: Add the letter "X" at the end of the catalog number. Example: Cat. No. 700-HLT12Z24 with gold plated contacts is Cat. No. 700-HLT12Z24X. The following relays are available with the gold-plated contact option: 700-HLT_2Z24, 700-HLT_2U24, 700-HLT_2U1, and 700-HLT_2U2. Not available on 12V and 48V DC products.

Accessories - 700-HL Relays (2- pole)

Photo	Description	Pkg. Qty.	Socket Input Voltage/Color	Cat. No.
	**Replacement Relays** Order must be for 20 relays or multiples of 20.	20	12V DC	700-TBR212
			24V AC/DC	700-TBR224
			48V DC	700-TBR248
			110/125V AC/DC, 220…240V AC/DC	700-TBR2110
	8-Way Jumper Can be cut to required length. I_{th} = 10 A max per 8-way jumper.	1	Red	700-TBJ08R
			Grey	700-TBJ08G
			Blue	700-TBJ08B
	End Barrier Used for visual inspection of groups, safe separation of neighboring 700-HL modules that end with jumpers.	10	Black	700-HN177
	**Snap-in Marker**(1) These snap-in markers have a 6 x 12 mm surface and snap into the ejection lever for the relay.	100	Blank	1492-MS6X12

(1) For custom markers, contact your local Rockwell Automation sales office or Allen-Bradley distributor for more information.

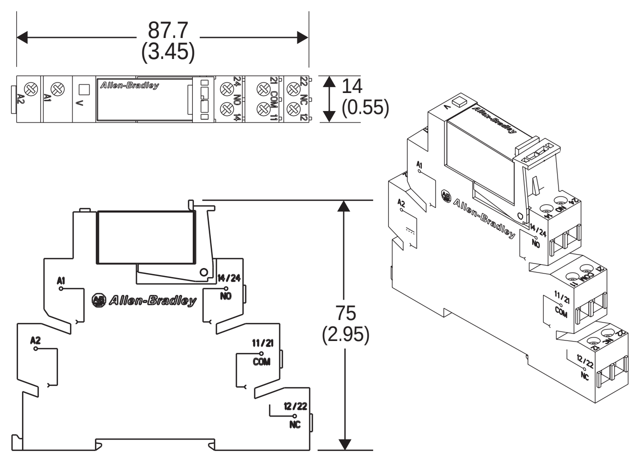
Specifications - 700-HL Relays (2-Pole)

Cat. No. 700-HLT…2-Pole (Relay Output)						
Electrical Ratings						
Pilot Duty Rating		B 300, R 300				
Rated Thermal Current (I_{th})		2-Pole — 10 A				
Rated Insulation Voltage (U_i)		250V IEC, 300V UL/CSA				
Contacts	Inductive V AC UL	120V AC	AC-15, 3.0A B 300, 3.0 A	1/4 HP (186 W), 1-phase		
		240V AC	AC-15, 3.0 A B 300, 1.5 A	1/2 HP (373 W), 1-phase		
	Inductive V DC	24V DC	DC-13, 2.0 A			
		125V DC	DC-13, 0.3 A			
		250V DC	DC-13, 0.2 A			
	Resistive Make, Break, and Continuous	250V AC	10 A			
		24V DC	10 A			
		250V DC	0.28 A			
Min. Permissible Contact Ratings		12V, 10 mA (120 mW) for Silver Contacts, 5V, 1 mA (50 mW) for Gold Contacts				
Permissible Coil Voltage Variation		Pickup:	85…110% of Nominal Voltage at 50 Hz 85…110% of Nominal Voltage at 60 Hz 80…110% of Nominal Voltage at DC		Must Dropout Voltage:	10% of Nominal Voltage at AC 5% of Nominal Voltage at DC
Design Specification/Test Requirements						
Dielectric Withstand Voltage		Pole to Pole (VRMS)	1000V			
		Contact to Coil (VRMS)	5000V			
		Adjacent Contacts (VRMS)	2500V			
Input Voltage		12V AC/DC	24V AC/DC	48V DC	120V AC/DC	240V AC/DC
Impedance (Ohms)		1 K	2 K	3 K	34 K	72 K
Power Consumption ±10%	AC	N/A	0.5V A	N/A	0.4V A	0.8V A
	DC	0.4 W	0.5 W	0.8 W	0.5 W	0.7 W
Mechanical						
Degree of Protection		IP20				
Mechanical Life Operations		3×10^7				
Electrical Life Operations		250V AC/24V DC, 8 A Resistive: 100 000 min. 24V DC, 10 A Resistive: 6000 min. 250V DC, 0.28 A Resistive: 6000 min. 250V AC, 10 A Resistive: 30 000 min.				
Switching Frequency Operations (no-load)		1200 cycles/sec				
Coil Voltages		See Overview/Product Selection				
Operating Time at Nominal Voltage at 20 °C (ms)		Pickup	typical 10 ms			
		Dropout	typical 10 ms			
Maximum Operating Rate (full load = 6 A)		6 cycles/min.				

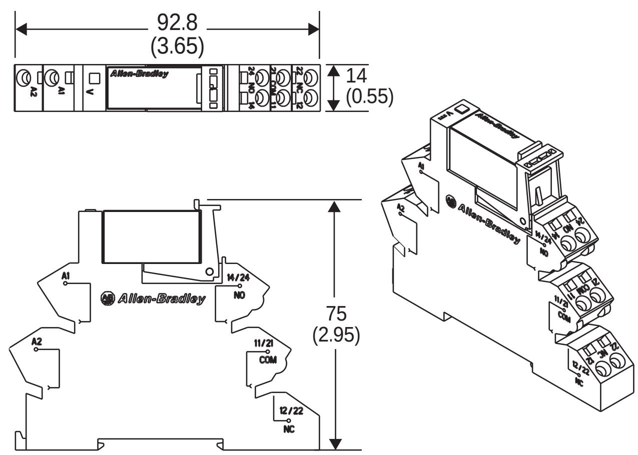
Cat. No. 700-HLT…2-Pole (Relay Output)		
Environmental		
Temperature	Operating	–40…+60 °C
	Storage	–40…+100 °C
Altitude	2000 m (6560 ft)	
Construction		
Insulating Material	Molded High-Dielectric Material	
Enclosure	Relay RT II — flux-proof, pollution degree 2 installation environment	
Contact Material	AgNi 90/10 or AgNi 90/10 + Au	
Terminal Markings on Socket	In accordance with EN50 0005	
Certifications	cULus Listed (File No. E3125, Guide NRNT/NRNT7), CE Marked	
Standards	UL 508, CSA C22.2 No. 14, EN 61810-1	

Dimensions - 700-HL (2-pole)

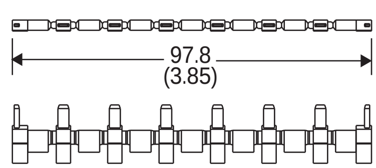
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



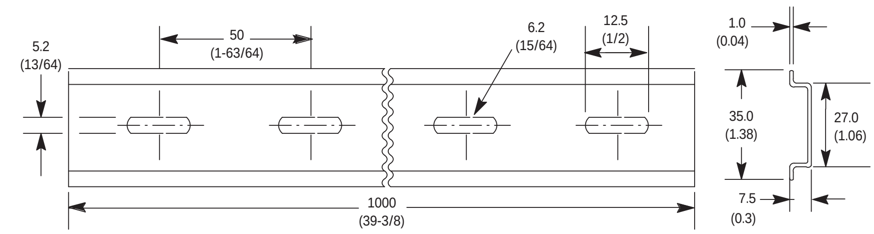
Bulletin 700-HL Screw Terminal Design
Single Wire: 0.14 mm^2…2.5 mm^2 (#26 AWG…14 AWG)
Double Wire: 2 x 0.14 mm^2…2 x 1.5 mm^2 (2 x #26 AWG…2 x 16 AWG)
Wire Type: Solid or stranded, copper only
Strip Length: 9 mm (11/32 in). Torque: 0.5 N•m (4.4 lb•in)



Bulletin 700-HL Spring Terminal Design
Single Wire: 0.2 mm^2…2.5 mm^2 (#24 AWG…#14 AWG)
Wire Type: Solid or stranded, copper only
Strip Length: 9 mm (11/32 in)



Bulletin 700-TBJ08_ 8-Way Jumper

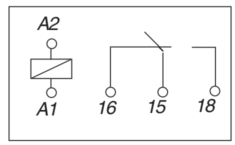


Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

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 lb) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lb) (5/pkg)

700-HLF Terminal Block Timing Relay

- Relay and socket assembled modules for high-density applications
- Screw terminal bases
- 6 A relay, choice of silver or gold contacts
- SPDT (relay)
- Four timing functions
- Time range from 0.1 sec...6 hr
- Built-in retainer clip and snap-in marker lever
- Standard LED, reverse polarity protection, and surge protection
- Externally replaceable relay modules

Wiring Diagram	
Output Type	SPDT (1 C/O); I_{th} = 6A§
Recommended Tightening Torque	0.5 N•m max. (4.4 lb•in)
Wire Range	Screw Terminal: 0.14 mm^2…2.5 mm^2 (#26…#14 AWG)
Approvals	cULus, cURus, CE

Assembled Device		
Input Voltage	**Pkg. Quantity**	**Cat. No.**[1]
24V AC/DC	10	700-HLF1U24

(1) For gold-plated contacts add an X after the catalog number listed.

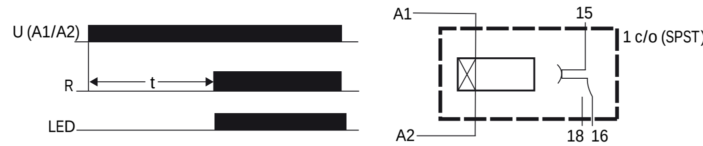
Accessories - 700-HLF Relays

Terminal block timing relay bases are not sold separately.

Photo	Description	Pkg. Quantity	Socket Input Voltage	Cat. No.
	Replacement Relays Order must be for 20 relays or multiples of 20.	20	24V AC/DC	700-TBR24[1]
	20-Way Jumper Can be cut to required length. I_{th} = 36 A max per 20-way jumper.	1	Color	
			Red	700-TBJ20R
			Grey	700-TBJ20G
			Blue	700-TBJ20B
	End Barrier Used for visual inspection of groups, safe separation of neighboring 700-HL modules that end with jumpers.	10	Black	700-HN177
	**Snap-in Marker** These snap-in markers have a 6 x 10 mm surface and snap into the ejection lever for the relay.	100	Blank	1492-MC6X10

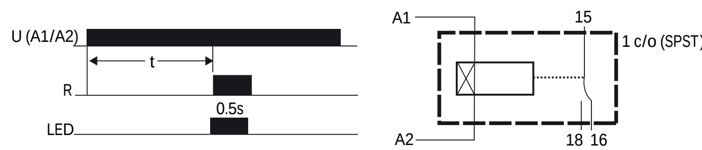
(1) For gold-plated contacts: Add the letter "X" at the end of the catalog number. For example: if Cat. No. 700-TBR24 is required with gold plating, the new cat. no. is 700-TBR24X.

Function and Connection Diagrams - 700-HLF Relays

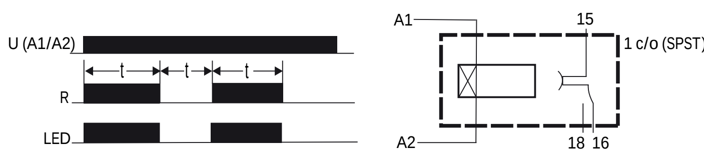


On-Delay

One Shot



Pulse



Flasher

Specifications- 700-HLF Relays

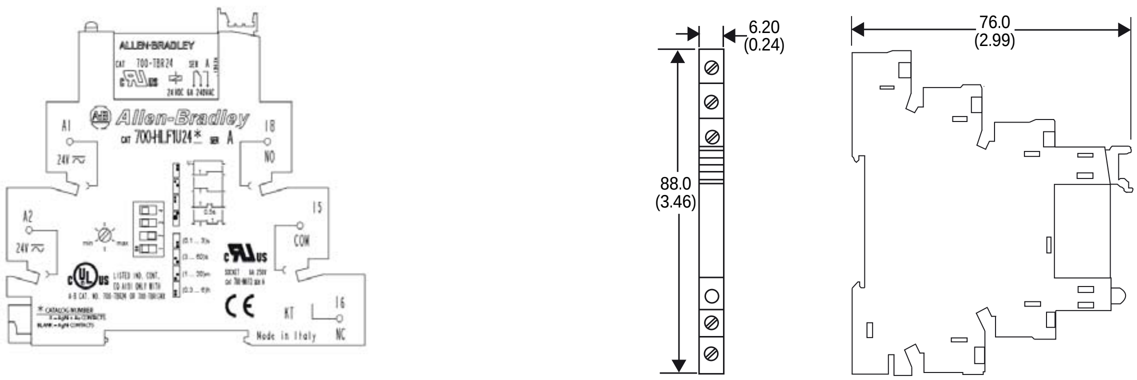
Cat. No. 700-HLF… (Relay Output) (1)					
Electrical Ratings					
Pilot Duty Rating	B 300, R 300				
Rated Thermal Current (I_{th})	1-Pole — 6 A				
Rated Insulation Voltage (U_i)	250V IEC, 300V UL/CSA				
Contacts	Inductive	1-Pole			
	24V AC, 1-phase	30 A	►][◄	5 A	◄][►
	120V AC, 1-phase	30 A		3 A	
	240V AC, 1-phase	15 A		1.5 A	
	Make, Break and Continuous V DC	24V DC			1.0 A
		120V DC			0.2 A
		240V DC			0.1 A
Inductive Load	AC-15 250V, 3 A N.O. Contact, 1.5 A N.C. Contact DC-13 24V, 1 A N.O. *and* N.C. Contact				
Min. Permissible Contact Ratings	12V, 6 mA (72 mW) for Silver Contacts, 8V, 2.5 mA (20 mW) for Gold Contacts				

Permissible Coil Voltage Variation	Pickup:	85…110% of Nominal Voltage at 50 Hz 85…110% of Nominal Voltage at 60 Hz 80…110% of Nominal Voltage at DC	Must Dropout Voltage:	10% of Nominal Voltage at AC, 5% of Nominal Voltage at DC
Power Consumption ±10%	AC/DC	0.5VA		
Design Specification/Test Requirements				
Dielectric Withstand Voltage	Pole to Pole (VRMS)	1000V		
	Contact to Coil (VRMS)	4000V		
Input Voltage	24V AC/DC			
Impedance(Ohms)	2 K			
Mechanical				
Degree of Protection	IP20			
Mechanical Life Operations	1 x 10^7			
Electrical Life Operations	6 A Resistive: 100,000 min. 24V DC, 1 A Inductive: 200,000 min. 120V AC 1 A Inductive: 300,000 min.			
Switching Frequency Operations (no-load)	10 cycles/sec			
Coil Voltages	See Overview/Product Selection			
Timer Functions	On-Delay, One Shot, Pulse, and Flasher			
Timer Settings	0.1...3 s, 3...60 s, 1...20 min, and 0.3...6 hr			
Timer Adjustments	Min and Max adjustments with Potentionmeter			
Timer Accuracy	Repeatability 1%, Recovery Time < 50 ms, Setting Accuracy Full Range 5%			
Coil Surge Protection	Per EN 61000-4.5; Surge Immunity (801-5) Class III: 2 kV common and 1 kV differential mode			
Environmental				
Temperature	Operating	−40…+55 °C (−40…+131 °F)		
	Storage	−40…+100 °C (−40…+212 °F)		
Altitude	2000 m (6560 ft)			
Construction				
Insulating Material	Molded High Dielectric Material			
Enclosure	Relay IP67			
Contact Material	Silver Tin Ox, $AgSnO_2$ or Silver with Gold Plating, $AgSnO_2 + Au$			
Terminal Markings on Socket	In accordance with EN50 0005			
Certifications	cULus Listed (File No. E3125, Guide NLDX/NLDX7) with Allen-Bradley socket, CE Marked			
Standards	EN60947-4-1,EN60947-5-1,CSA 22.2,UL 508,NEMA IEE MAC Compliant, ICS-2 Compliant			

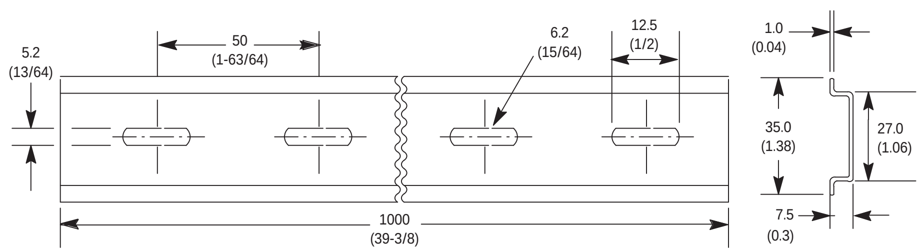
(1) Product shall be installed in an enclosure providing at least IP54 protection. Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40%.

Dimensions- 700-HLF Relays

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



700-HLF Screw Terminal Design
Single Wire: 0.14 mm^2…2.5 mm^2 (#26 AWG…14 AWG)
Double Wire: 2 x 0.14 mm^2…2 x 1.5 mm^2 (2 x #26 AWG…2 x 16 AWG)
Wire Type: Solid or stranded, copper only
Strip Length: 9 mm (11/32 in.). Torque: 0.5 N•m (4.4 lb•in)



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 lb) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lb) (5/pkg)

700-HP Slim Line Relay

- 8 A contact ratings
- DPDT/ (2 c/o) contacts
- Plug-in PIN style (PCB) terminals (5 mm pinning)
- Choice of standard silver nickel contacts, or silver nickel with gold-plated contacts
- Available with mechanically linked contacts (Type B)
- Safety Control Relay Version (700-HPS)

Photo	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Pkg. Qty.	Cat. No.
			U.S./Canada	International			
	DPDT 2-Pole 2 Form C AgNi + Au Gold Plated Contacts	8 A			6V AC	10	700-HPX2A06
					12V AC	10	700-HPX2A12
					24V AC	10	700-HPX2A24
					120V AC	10	700-HPX2A1
					240V AC	10	700-HPX2A2
					6V DC	10	700-HPX2Z06
					12V DC	10	700-HPX2Z12
					24V DC	10	700-HPX2Z24
					48V DC	10	700-HPX2Z48
					110V DC	10	700-HPX2Z1
	DPDT 2-Pole 2 Form C AgNi Contacts				6V AC	10	700-HP32A06
					12V AC	10	700-HP32A12
					24V AC	10	700-HP32A24
					120V AC	10	700-HP32A1
					240V AC	10	700-HP32A2
					6V DC	10	700-HP32Z06
					12V DC	10	700-HP32Z12
					24V DC	10	700-HP32Z24
					48V DC	10	700-HP32Z48
	Sockets		700-HN123	700-HN123	110V DC	10	700-HP32Z1

700-HPS Safety Control Relay

Photo	Description	Contact Rating	Wiring Diagrams U.S./Canada	Wiring Diagrams International	Coil Voltage	Pkg. Qty.	Cat. No.
	DPDT 2-Pole 2 Form C AgNi + Au Gold Plated Mechanically Linked Contacts	8 A			6V DC	10	700-HPSXZ06
					12V DC	10	700-HPSXZ12
					24V DC	10	700-HPSXZ24
					48V DC	10	700-HPSXZ48
					60V DC	10	700-HPSXZ60
					110V DC	10	700-HPSXZ1
					125V DC	10	700-HPSXZ01
	DPDT 2-Pole 2 Form C AgNi Mechanically Linked Contacts				6V DC	10	700-HPS2Z06
					12V DC	10	700-HPS2Z12
					24V DC	10	700-HPS2Z24
					48V DC	10	700-HPS2Z48
					60V DC	10	700-HPS2Z60
					110V DC	10	700-HPS2Z1
700-HPS DPDT	Sockets		700-HN123	700-HN123	125V DC	10	700-HPS2Z01

Accessories - 700-HP, -HPS

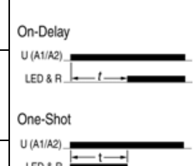
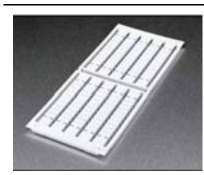
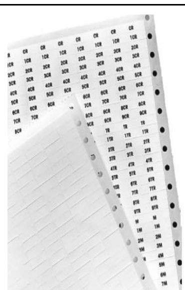
Photo	Description		Pkg. Qty.	Cat. No.
	Diode Surge Suppressor Voltage Range: 6…220V DC used with 700-HN123 socket		10	700-ADR
	Diode with LED Surge Suppressor Voltage Range: 6…24V DC used with 700-HN123 socket		10	700-ADL1R
	Diode with LED Surge Suppressor Voltage Range: 28…60V DC used with 700-HN123 socket		10	700-ADL2R
	Diode with LED Surge Suppressor Voltage Range: 110…220V DC used with 700-HN123 socket		10	700-ADL3R
	Diode with LED Surge Suppressor Voltage Range: 6…24V AC used with 700-HN123 socket		10	700-AV1R
	Varistor with LED Surge Suppressor Voltage Range: 110…240V AC used with 700-HN123 socket		10	700-AV3R
	RC Surge Suppressor Voltage Range: 6…24V AC/DC used with 700-HN123 socket		10	700-AR1
	RC Surge Suppressor Voltage Range: 110…240V AC/DC used with 700-HN123 socket		10	700-AR2
	**Timing Module** On-Delay or One-Shot selectable voltage range: 12…24V AC/DC used with sockets that accept plug-in accessory modules.		1	700-AT3
	Timing Module On-Delay or One-Shot selectable voltage range: 110…125V AC used with sockets that accept plug-in accessory modules.			700-AT3A1
	Timing Module On-Delay or One-Shot selectable voltage range: 230…240V AC used with sockets that accept plug-in accessory modules.			700-AT3A2

Photo	Description		Pkg. Qty.	Cat. No.
	**Screw Terminal Socket — Panel or DIN Rail Mounting** 8-pin miniature socket for use with 2-pole, 700-HP relays. Incorporates coil and contact separation.		10	700-HN123
	8-Way Jumper can be cut to required length. Rated 10 A – 250V	Red	1	700-TBJ20R
		Gray		700-TBJ20G
		Blue		700-TBJ20B
	Plastic Retainer and Ejection Lever For use with the 700-HN123 sockets Built-in ability to accept 1492 snap-in markers		10	700-HN119
	Spring Clamp Terminal Socket — Panel or DIN Rail Mounting 8-pin miniature socket for use with 2-pole, 700-HP relays. Incorporates coil and contact separation.		10	700-HN230
	Plastic Retainer and Ejection Lever For use with the 700-HN230 sockets Built-in ability to accept 1492 snap-in markers		10	700-HN232
	DIN (#3) symmetrical hat rail 35 x 7.5 x 1 m		10	199-DR1
	**Relay Identification Snap-in Markers** Note - These markers can only be used when the Plastic Retainer and Ejection Lever accessory (part # 700-HN119) is used because the markers snap into the Ejection Lever (and not into the relay itself).		5	1492-MS5X12
			5	1492-MS6X9
			5	1492-MS6X12
			5	1492-MS8X9
			5	1492-MS8X12
			100	1492-MP-Blank
	**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
				700-N41

Socket, and Retainer Clip Reference		
Relay Type	**Socket Cat. No.**	**Retainer Clip Cat. No.**
700-HPX2	700-HN123	700-HN119
700-HP32	700-HN123	700-HN119
700-HPS2	700-HN123	700-HN119
700-HPSX	700-HN123	700-HN119

Specifications [1] - 700-HP Relays

Cat. No. 700-HP…			Cat. No. 700-HP3…, 700-HPX	Cat. No. 700-HPS…
Contacts	Inductive	V AC	AC 15 @ 500V AC	
			C300	B300
			1/3 Hp @ 240V AC	1/2 Hp @ 240V AC
			1/6 Hp @ 120V AC	1/3 Hp @ 120V AC
			AC-1 2000VA	
		V DC	R300	—
			DC-1: 8A @ 30V DC	
			DC-1: 0.3A @ 110V DC	DC-1: 0.65A @ 110V DC
			DC-1: 0.1A @ 220V DC	DC-1: 0.2A @ 220V DC
	Resistive	AC	8 A @ 277V AC (per pole)	
		DC	8 A @ 30V DC (per pole)	
	Minimum Load		700-HP32: 300mW (5V, 5 mA) 700-HPX2: 50mW (5V, 5 mA)	700-HPS2: 500 mW (10V, 10 mA) 700-HPSX: 50 mW (5V, 5 mA)
Nominal Coil Power (AC/DC)			1.2 VA / 0.65 W	0.7 W
Operating Range (AC/DC)			80...110% / 73...150% Nominal Voltage	75...120% Nominal Voltage DC
Holding Voltage (AC/DC)			80 / 40% Nominal Voltage	40% Nominal Voltage DC
Must Drop Out Voltage (AC/DC)			20 / 10% Nominal Voltage	10% Nominal Voltage DC
Insulation Voltage			250V AC	
Design Specification/Test Requirements			**700-HP3, 700-HPX**	**700-HPS**
Dielectric Withstand Voltage for 1 minute	Pole to Pole (VRMS)		2000V AC	
	Contact to Coil (VRMS)		4000V AC	
Mechanical				
Degree of Protection			Open Type (Sockets)	
Mechanical lifecycles			10 x 10^6 (AC Coils), 20 x 10^6 (DC coils)	10 x 10^6 (DC Coils)
Switching Frequency Operations			1800/hr (no load)	900/hr (no load)
Coil Voltages			See Overview/Product Selection	
Operating Time at Nominal Voltage at 20 °C (ms)	Pickup		12	10
	Dropout		4	
Maximum Operating Rate			16 Ops/s (full load)	8 Ops/s (full load)
Vibration	Enclosure		5 G	
	Fragility		2.5 G	
Shock	Endurance		50 G	
	Fragility		15 G	
Max. Socket Torque			0.5 N•m (4.4 lb•in)	
Environmental				
Temperature	Operating		–40…+85 °C (–40…+185 °F)	–40…+70 °C (–40…+158 °F)
	Storage		–45…+100 °C (–49…+212 °F)	–50…+80 °C (–40…+176 °F)
Altitude			2000 m (6560 ft)	

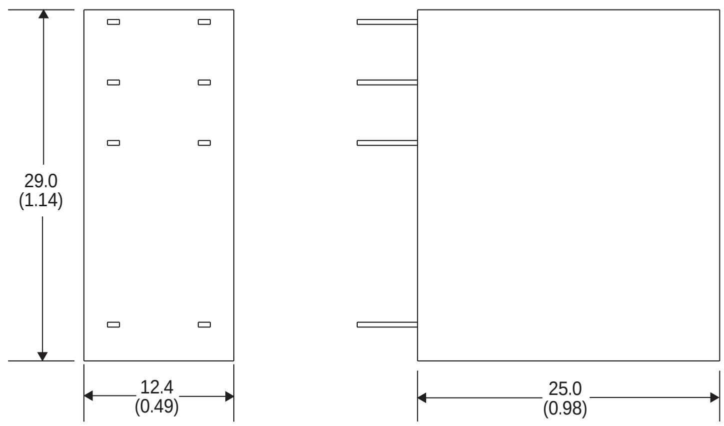
Specifications [1] - 700-HP Relays

Construction		
Insulating Material	Molded High-Dielectric Material	
Enclosure	Transparent Dust Cover	Red Transparent Dust Cover
Contact Material	Silver Nickel, (AgNi) (700-HP32 and 700-HPS2), Silver Nickel + Gold Plating (AgNi + Au) (700-HPX2 and 700-HPSX)	
Terminal Markings on Socket	In accordance with EN50 0005	
Sockets	2-Pole	
	700-HN123	
Approvals		
Certifications	cURus Recognized (File No. E3125, Guide NLDX2/NLDX8), cULus Listed when used with 700-HN123 socket (File No. E3125, Guide NLDX/NLDC7), CSA Certified (files 229473), CE Marked, LR Certified (700-HP), IMQ & TÜV Certified (700- HPS)	
Standards	UL 508, CSA 22.2 No. 14, EN 61810-1, EN 50205 (700-HPS)	

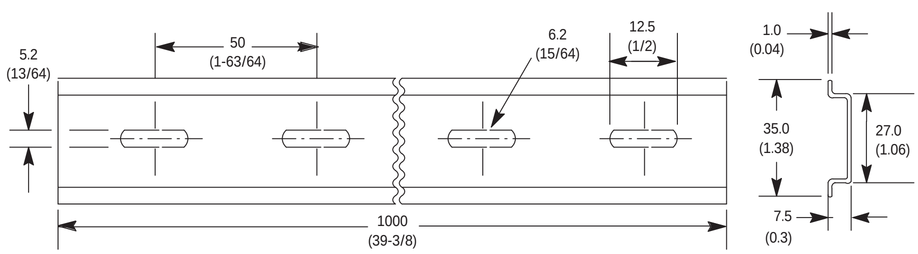
(1) The inrush VA equals 1.5 times the sealed VA.

Dimensions - 700-HP Relays

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



700-HP Relay



Cat. No. 700-HN123

Single Wire: 0.2.....2.5 mm^2 (#24.....14 AWG)

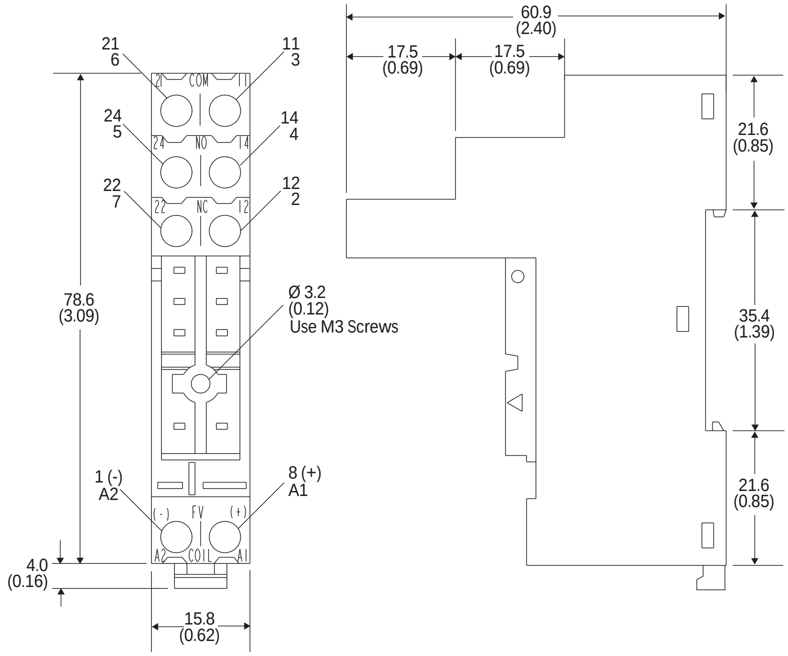
Double Wire: 2 X 0.2.....2 X 2.5 mm^2 (#2 X 24....2 X 14 AWG)

Wire Type: solid or stranded, copper only

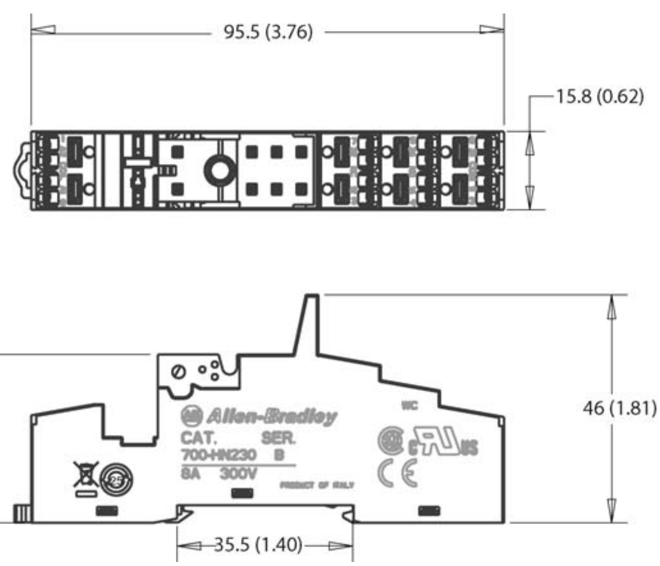
Strip Length: 7 mm (9/32 in.), Torque: 0.5 N•m (4.4 lb•in)

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 lb) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lb) (5/pkg)

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



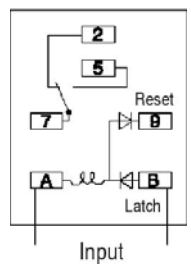
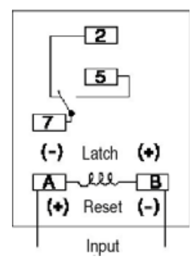
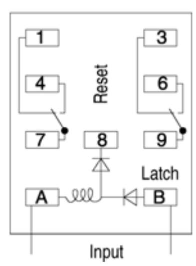
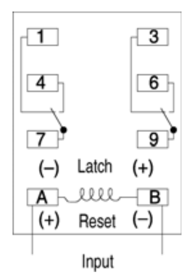
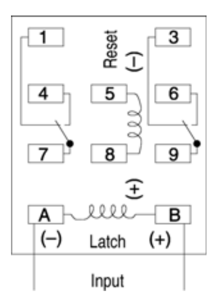
Cat. No. 700-HN123
Single Wire: 0.2.....2.5 mm^2 (#24.....14 AWG)
Double Wire: 2 X 0.2.....2 X 2.5 mm^2 (#2 X 24....2 X 14 AWG)
Wire Type: solid or stranded, copper only
Strip Length: 7 mm (9/32 in.), Torque: 0.5 N•m (4.4 lb•in)



Cat. No. 700-HN230
Min wire size: 0.5mm^2 (21 AWG.)
Max wire size: 2 x 1.5 and 1 x 2.5 mm^2 (2 x18 / 1 x 14 AWG)
Wire Type: solid or stranded, copper only
Stripe Length: 8mm (10/32 in.)

700-HJ Magnetic Latching Relay

- 10 A Contact Rating
- SPDT
- DPDT Single Coil
- DPDT Dual Coil
- Blade Style Quick Connect Terminals

<table>
<tr><th rowspan="2">Photo</th><th rowspan="2">Description</th><th rowspan="2">Contact Rating</th><th colspan="2">Wiring Diagrams</th><th rowspan="2">Coil Voltage</th><th rowspan="2">Cat. No.</th></tr>
<tr><th>AC(2)</th><th>DC(3)</th></tr>
<tr><td rowspan="13"></td><td rowspan="3">SPDT
1-Pole
1 Form C
AgCdO Contacts
(Single Coil
AC or DC)</td><td rowspan="4">10 A</td><td rowspan="3"></td><td rowspan="3"></td><td>24V AC</td><td>700-HJ36A24</td></tr>
<tr><td>120V AC</td><td>700-HJ36A1</td></tr>
<tr><td rowspan="2">24V DC</td><td rowspan="2">700-HJ36Z24</td></tr>
<tr><td>Sockets</td><td>700-HN153</td><td>700-HN154</td></tr>
<tr><td rowspan="4">DPDT
2-Pole
2 Form C
AgCdO Contacts
(Single Coil
AC or DC)</td><td rowspan="5">10 A</td><td rowspan="4"></td><td rowspan="4"></td><td>24V AC</td><td>700-HJ32A24</td></tr>
<tr><td>120V AC</td><td>700-HJ32A1</td></tr>
<tr><td>240V AC</td><td>700-HJ32A2</td></tr>
<tr><td>12V DC</td><td>700-HJ32Z12</td></tr>
<tr><td>Sockets</td><td>700-HN153</td><td>700-HN154</td><td>24V DC</td><td>700-HJ32Z24</td></tr>
<tr><td>DPDT
2-Pole
2 Form C
AgCdO Contacts
(Dual Coil(1)</td><td rowspan="2">10 A</td><td rowspan="2">DC Only</td><td></td><td rowspan="2">24V DC</td><td rowspan="2">700-HJD32Z24</td></tr>
<tr><td>Sockets</td><td>700-HN153 or
700-HN154</td></tr>
</table>

(1) Available only in DC Coil with DPDT contacts.
(2) AC Relays include internal diodes.
(3) For DC operation, polarity must be observed.

Accessories-700-HJ Relays

Photo	Description	Pkg. Qty.	Cat. No.
	Screw Terminal Socket — Panel or DIN Rail Mounting. Guarded Terminal Construction 11-blade socket for use with 700-HB relays. This socket has coil and contact separation as well as the ability to use optional plug-in modules (700-A___ accessories, LED, surge suppression, timing modules).	10	700-HN153
	**Screw Terminal Base Socket — Panel or DIN Rail Mounting. Open Style Construction** 11-blade for use with 700-HB relays.	10	700-HN154
	**DIN (#3) symmetrical hat rail** 35 x 7.5 x 1 m	10	199-DR1
	Retainer Clip **For Cat. Nos. 700-HN153 and -HN154 Sockets with 700-HJ Relays** Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN159
	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

Socket and Retainer Clip Reference

Relay Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HJ	700-HN153	700-HN159
	700-HN154	700-HN159

Specifications - 700-HJ Relays

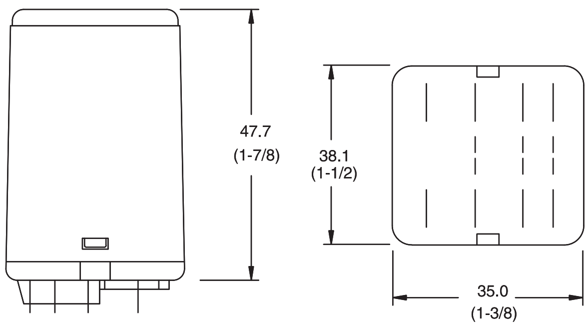
Attribute		700-HJ		
Electrical Ratings				
Pilot Duty Rating		—		
Rated Thermal Current (I_{th})		10 A		
Rated Insulation Voltage (U_i)		250V IEC, 300V UL/CSA		
Contacts	Inductive	**Make**	**Break**	**Hp**
		►][◄	◄][►	
	120V AC 240V AC	30 A 15 A	3 A 1.5 A	1/4 1/3
	DC	24V DC, 10 A		
Permissible Coil Voltage Variation		85…110% of Nominal Voltage at 50 Hz 85…110% of Nominal Voltage at 60 Hz 80…110% of Nominal Voltage at DC		

Specifications - 700-HJ Relays

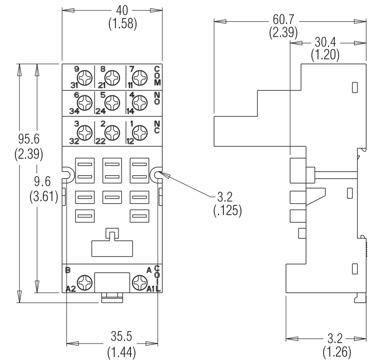
			Single AC Coil	Single DC Coil	Dual DC Coil
Coil Consumption ±10%	AC Coils	Inrush Sealed	1.44 VA 1.44 VA	—	—
	DC Coils		—	1.2 W	12V 1.63 W 24V 1.67 W
Design Specification/Test Requirements					
Dielectric Withstand Voltage		Pole-to-Pole	1500V AC		
		Contact-to-Pole	1500V AC		
		Contact-to-Frame	1500V AC		
Mechanical					
Degree of Protection			Open Type (Guarded Terminal Sockets)		
Mechanical Life Operations			10 x 10^6		
Switching Frequency Operations			1800/HR		
Coil Voltages			See Product Selection		
Operating Time at Nominal Voltage at 20 °C		Pickup Dropout	25 ms 25 ms		
Maximum Operating Rate			—		
Environmental					
Temperature		Operating	−45…+50 °C (−49…+122 °F)		
		Storage	−45…+100 °C (−49…+212 °F)		
Altitude			2000 m (6560 ft)		
Construction					
Insulating Material			Molded High Dielectric Material		
Enclosure			Transparent Dust Cover		
Contact Material			Silver Cad. Ox.		
Terminal Markings on Socket			In accordance with EN50 0005		
Sockets			11-Blade Socket Cat. No. 700-HN153 Cat. No. 700-HN154		
Certifications			CSA Certified, File LR700026, UL Recognized, File E3125, Guide NLDX 2		
Standards			UL 508, CSA 22.2 No. 14, EN/IEC 60947-4-1, -5-1		

Dimensions - 700-HJ Relays

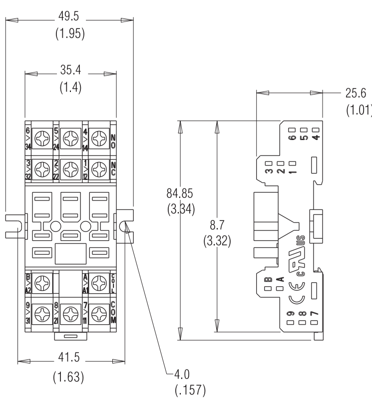
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



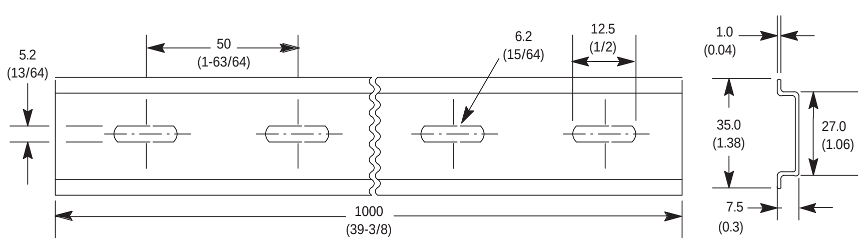
700-HJ Relay



Cat. No. 700-HN153
Wire Size: 2 x 2.5 mm^2
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm^2 (#2–14 AWG… #2–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in) – Torque: 0.8 N•m (7 lb•in



Cat. No. 700-HN154
Wire Size: 2 x 2.5 mm^2
Single Wire – Up to #12 AWG
Double Wire – 2 x 2.5 mm^2 (#2–14 AWG… #2–20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in) – Torque: 0.8 N•m (7 lb•in)

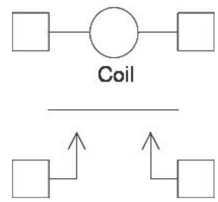
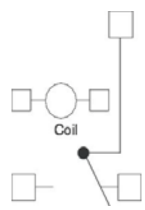
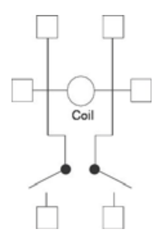
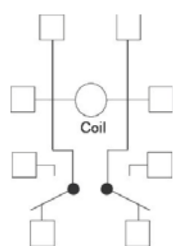


Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

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 lb) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lb) (5/pkg)

700-HG Power Relay

- 40 A Contact Ratings
- SPST-NO-DM, SPDT, DPST-NO, DPDT
- Panel Mounted
- Options: Magnetic Blowout for High DC Loads, Auxiliary Snap Action Switch
- Screw Terminals #6-32 for Coil, #8-32 for Contacts

	Description	Contact Ratings	Wiring Diagrams	Coil Voltage	Cat. No.(1)
	SPST-NO-DM 1 Form X AgCdO Contacts	40 A (A600)		24V AC	700-HG45A24
				120V AC	700-HG45A1
				240V AC	700-HG45A2
				277V AC	700-HG45A27
				480V AC	700-HG45A4
				12V DC	700-HG45Z12
				24V DC	700-HG45Z24
				48V DC	700-HG45Z48
				110V DC	700-HG45Z1
	SPDT 1-pole 1 Form C AgCdO Contacts	40 A (A600)		24V AC	700-HG46A24
				120V AC	700-HG46A1
				240V AC	700-HG46A2
				12V DC	700-HG46Z12
				24V DC	700-HG46Z24
				48V DC	700-HG46Z48
				110V DC	700-HG46Z1
	DPST-NO 2-pole 2 Form A AgCdO Contacts	40 A (A600)		24V AC	700-HG47A24
				120V AC	700-HG47A1
				240V AC	700-HG47A2
				480V AC	700-HG47A4
				12V DC	700-HG47Z12
				24V DC	700-HG47Z24
				48V DC	700-HG47Z48
				110V DC	700-HG47Z1
	DPDT 2-pole 2 Form C AgCdO Contacts	40 A (A600)		24V AC	700-HG42A24
				120V AC	700-HG42A1
				240V AC	700-HG42A2
				277 AC	700-HG42A27
				12V DC	700-HG42Z12
				24V DC	700-HG42Z24
				48V DC	700-HG42Z48
				110V DC	700-HG42Z1
				220V DC	700-HG42Z2
				250V DC	700-HG42Z25

(1) Auxiliary Snap Switch Option: Add suffix (-5) to the selected 700-HG relay Cat. No., except for the 220V DC add (-5L).
Magnetic Blowout Option: Add suffix (-6) to the selected 700-HG relay Cat. No. (suppresses the arc when switching DC loads – ratings listed below).

Accessories - 700-HG Relays

Photo	Description	Pkg. Qty.	Cat. No.
	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
	**Type 1 Enclosure** For use with any of the listed relays. Knockouts for 1/2 in. and 3/4 in. conduit connections. The enclosure exceeds the minimum clearances required by U.S. standards, resulting in generous wiring spaces.	1	700-HN120

Auxiliary Snap Action Switch

Contact	Material	Rating	Dielectric Withstand V (1 Min.)
SPDT (1 Form C)	Silver Cad. Ox.	10 A at 120 or 240 Resistive	1500V AC RMS Contact to Frame

Specifications - 700-HG Relays

Attribute	700-HG
Electrical Ratings	
Pilot Duty Rating [1]	A600
Rated Thermal Current (I_{th})	40 A
Rated Insulation Voltage (U_i)	600V UL

Contact Ratings: AC Ratings SPST-NO-DM						**Contact Ratings:** AC Ratings SPDT, DPST - NO and DPDT					
Volts	Inductive			Resistive - Make/Break and Continuous	HP	Volts	Inductive			Resistive - Make/Break and Continuous	HP [2]
	Make	Break	Continuous				Make	Break	Continuous		
120	60 A	6 A	10 A	40 A	2	120	60 A	6 A	10 A	40 A	1 - 1/2
240	30 A	3 A	10 A	40 A		240	30 A	3 A	10 A	40 A	
480V	15 A	1.5 A	10 A	12 A	2	480	15 A	1.5 A	10 A	5 A	1 - 1/2
600V	12 A	1.2 A	10 A	10 A		600	15 A	1.2 A	10 A	5 A	

DC Ratings: Without Magnetic Blowouts - 28V 40 A - Make, Break and Continuous Est Drop 125V 1.2...3 A

DC Ratings: With Magnetic Blowouts:		SPST - NO - DM	SPDT, DPST - NO and DPDT
Make, Break, and Continuous	110V	20 A	10 A
	220V	8 A	4 A
	325V	4 A	2 A
	500V	2 A	—

Permissible Coil Voltage Variation	80…100% of Nominal Voltage at 50 Hz
	85…110% of Nominal Voltage at 60 Hz
	80…110% of Nominal Voltage at DC

			50 HZ	**60 HZ**
Coil Consumption ±10%	AC Coils	Inrush	13 VA	16 VA
		Sealed	10 VA	11 VA
	DC Coils		2.0 W	

Design Specification/Test Requirements		
Dielectric Withstand Voltage	Pole-to-Pole	2200V AC
	Contact to Pole	2200V
	Contact to Frame	2200V AC
Mechanical		
Degree of Protection		Open Type
Mechanical Life Operations		5×10^6
Switching Frequency Operations		1600/Hr
Coil Voltage		See Overview/Product Selection
Operating Time at Nominal Voltage at 20 °C (68 °F)	Pickup Dropout	40 ms 35 ms
Maximum Operating Rate		—

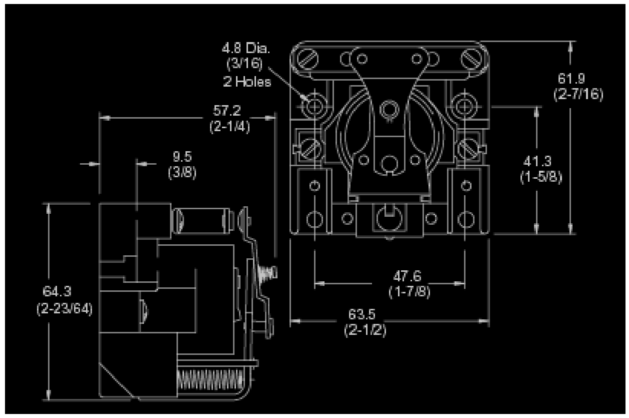
Specifications - 700-HG Relays

Environmental		
Temperature	Operating	30…+55 °C (-22...+149 °F)
	Storage	-30…+65 °C (-22...+149 °F)
Altitude		2000 m (6560 ft)
Construction		
Insulating Material		Molded Thermo
		Setting Plastic
Enclosure		—
Contact Material		Silver Cadmium Oxide
Terminal Markings on Socket		—
Sockets		—
Certifications		CSA Certified, File 225674, UL Listed, File E3125, Guide NLDX, CE Marked
Standards		UL 508, CSA 22.2 No. 14, EN/IEC 60947-1, -5-1

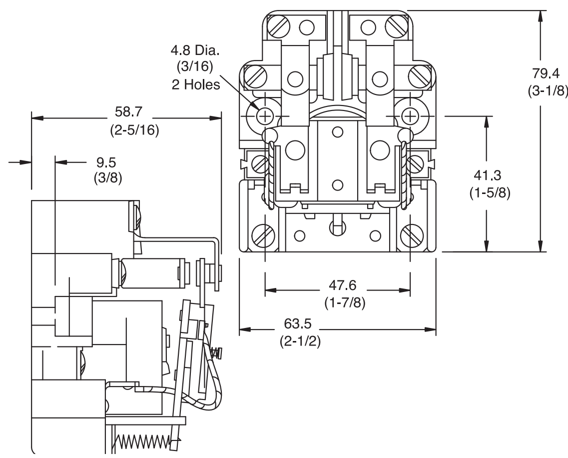
(1) NEMA Rating Chart is on page 19 of publication 700-SG003B-EN-P.
(2) For DPDT only: 2 Hp Switching 2 Poles, 200...600V AV, 50/60 Hz.

Dimensions - 700-HG Relays

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



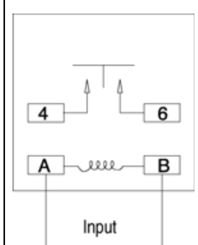
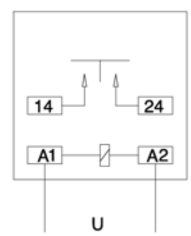
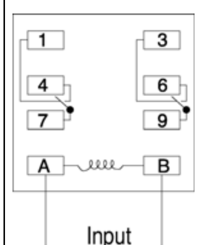
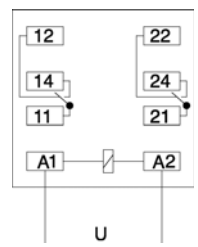
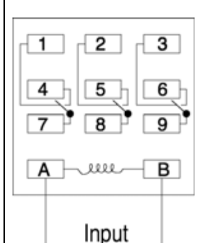
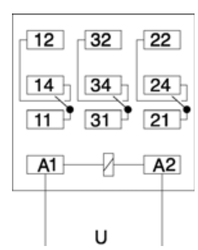
700-HG Relay, SPST-NO-DM



700-HG Relay

700-HHF Flange Mount Power Relay

- Flange-Mounted
- Blade Style 0.250 x 0.032 Quick Connect/Solder (no socket) Terminals
- Solder Terminals (no socket)

	Description	Contact Rating	Wiring Diagrams U.S./Canada	Wiring Diagrams International	Coil Voltage	Cat. No.
	SPST-NO-DM 1 Form X AgCdO Contacts	30 A (A600)			120V AC	700-HHF45A1
					24V DC	700-HHF45Z24
	DPDT 2-Pole 2 Form C AgCdO Contacts	25 A (B600)			24V AC	700-HHF62A24
					120V AC	700-HHF62A1
					240V AC	700-HHF62A2
					12V DC	700-HHF62Z12
					24V DC	700-HHF62Z24
	3PDT 3-Pole 3 Form C AgCdO Contacts	20 A (B300)			120V AC	700-HHF73A1

Specifications - 700-HHF Relays

Attribute		700-HHF…								
Electrical Ratings										
Pilot Duty Rating [1]		SPST-NO-DM			NEMA A600					
		DPDT			NEMA B600					
		3PDT			NEMA B300					
Rated Thermal Current (I_{th})		SPST-NO-DM 30 A, DPDT 25A, 3PDT 20 A								
Rated Insulation Voltage (U_i)		250V IEC-300V UL/CSA								
Contacts	Inductive	**SPST-NO-DM**		**Hp**	**DPDT**		**Hp**	**3PDT**		**Hp**
		►][◄	◄][►		►][◄	◄][►		►][◄	◄][►	
	120V AC	60 A	6 A	1	30 A	3 A	1	30 A	3 A	1/2
	240V AC	30 A	3.0 A	1-1/2	15 A	1.5 A	1-1/2	15 A	1.5 A	—
	DC	28V DC, 30 A			28V DC, 13 A			—		

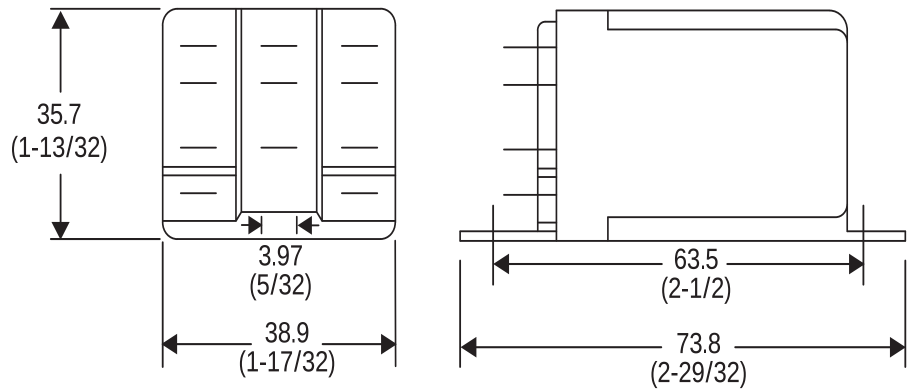
Specifications - 700-HHF Relays

Attribute			700-HHF…					
Permissible Coil Voltage Variation			85…110% of Nominal Voltage at 50 Hz					
			85…110% of Nominal Voltage at 60 Hz					
			80…110% of Nominal Voltage at DC					
			SPST-NO-DM		**DPDT**		**3PDT**	
			50 Hz	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**
Coil Consumption ±10%	AC Coils	Inrush	7.2 VA	6.3 VA	7.2 VA	6.3 VA	7.2 VA	6.3 VA
		Sealed	4.8 VA	4.2 VA	4.8 VA	4.2 VA	4.8 VA	4.2 VA
	DC Coils		1.4 W					
Max. Allowable Leakage			25% of VA					
			10% of W					
Design Specification/Test Requirements								
Dielectric Withstand Voltage		Pole-to-Pole	2200V AC					
		Contact-to-Pole	2200V AC					
		Contact-to-Frame	1600V AC					
Mechanical								
Mechanical Life Operations			5×10^6					
Switching Frequency Operations			3600/Hr					
Coil Voltages			See Overview/Product Selection					
Operating Time at Nominal Voltage at 20 °C		Pickup	20 ms					
		Dropout	15 ms					
Maximum Operating Rate			4 Ops/s.					
Environmental								
Temperature		Operating	−30…+50 °C					
			(−22…+122 °F)					
		Storage	−30…+100 °C					
			(−22…+212 °F)					
Altitude			2000 m (6560 ft)					
Construction								
Insulating Material			Molded High Dielectric Material					
Enclosure			Transparent Dust Cover					
Contact Material			Silver Cadmium Oxide					
Terminal Markings			In accordance with EN50 0005					
Sockets			(2)					
Certifications			cURus Recognized, File E3125, Guide NLDX2/NLDX8, CE Marked					
Standards			UL 508, CSA 22.2 No.14, EN/IEC 60947-1, -5-1					

(1) See NEMA Ratings and Test Values on page 5.
(2) 700-HHF relay wiring and terminals are the quick connect / solder type 6.35 x 0.82 mm (0.250 x 0.032 in) termination.

Dimensions - 700-HHF Relays

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



700-HHF Relay

700-HTA Alternating Relay

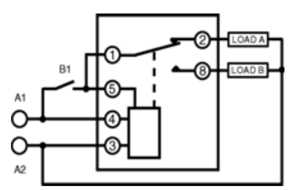
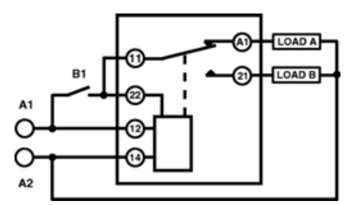
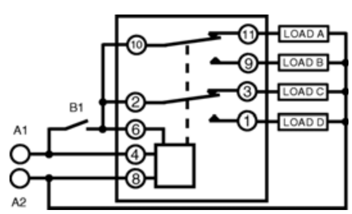
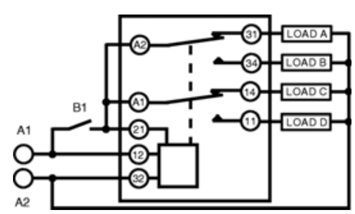
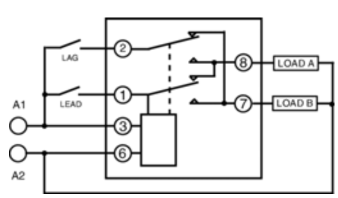
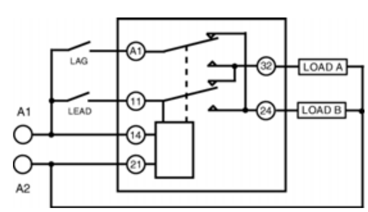
- Alternating Relay
- Rugged Pin Style Socket Mounting
- 10 A, SPDT, DPDT, and Cross Wired
- Excellent for Pump Panel Applications

700	–	HTA	2	A12	7
a		b	c	d	e

Catalog Number Explanation - 700-HTA Relays

a Bulletin Number	-	b Relay Type	c Model Type	d Coil Voltage	e Gold Plated Contacts Option
700		HTA - Tube Base Alternating Relay	1 - SPDT 2 - DPDT 3 -Cross-Wired	A12 - 12V AC 50/60 Hz A24 - 24V AC 50/60 Hz A1 - 120V AC 50/60 Hz A2 - 240V AC 50/60 Hz	Blank - Without switch 7 - With switch

Alternating Relays with Pin-Style Terminations

700-HTA	Alternating Relay	Wiring Diagrams	
		U.S./Canada	International
SPDT Form C Contact	SPDT		
DPDT 2 Form C Contact	DPDT		
Cross-Wired DPDT 2 Form C Contacts	Cross-Wired		

Accessories - 700-HTA Relays

Photo	Description	Pkg. Qty.	Cat. No.
	**Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction.** 8-Pin for use with 700-HTA1A or -HTA3A alternating relays. Order ten or multiples of ten.	10	700-HN100
	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Open Style Construction. 8-Pin for use with 700-HTA1A or -HTA3A alternating relays. Order ten or multiples of ten. No retainer clip required.	10	700-HN125
	Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting; Guarded Terminal Construction. 11-pin for use with 700-HTA2A alternating relays. Order in multiples of 10.	10	700-HN101
	Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting; Open Style Terminal Construction. 11-pin for use with 700-HTA2A alternating relays. Order in multiples of 10. No retainer clip required.	10	700-HN126
	**DIN (#3) symmetrical hat rail** 35 x 7.5 x 1 m	10	199-DR1
	**Retainer Clip for Cat. Nos. 700-HN100 and -HN101 Sockets with 700-HT Timing Relays, and 700-HTA Alternating Relays** Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN110
	**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

Specifications - 700-HTA Relays

Attribute			700-HTA		
Electrical Ratings					
Pilot Duty Rating (1)			NEMA B300 AC 15		
Rated Thermal Current (I_{th})			10 A		
Rated Insulation Voltage (U_i)			250V IEC, 300V UL/CSA		
Contacts		Inductive	**Make**	**Break**	**HP**
			►][◄	◄][►	
		120V AC	30 A	3 A	1/3
		240V AC	15 A	1.5 A	1/2
		Resistive 30V DC	10 A	10 A	—
Permissible Coil Voltage Variation			85…110% of Nominal Voltage at 50 Hz 85…110% of Nominal Voltage at 60 Hz		
Power Consumption ±10%	AC	24V AC	2 VA		
		120V AC	4 VA		
		240V AC	4 VA		
Design Specification/Test Requirements					
Dielectric Withstand Voltage		Pole-to-Pole, same circuit (VRMS)	1000V AC		
		Pole-to-Pole, different circuits (VRMS)	2000V AC		
		Contact-to-Coil (VRMS)	2000V AC		
Electrical Life Operations			100,000 minimum		
Switching Frequency Operations			1800/hr		
Coil Voltages			See product selection		
Mechanical					
Degree of Protection			Open Type (Guarded Terminal Sockets)		
Mechanical Life Operations			10×10^6		
Switching Frequency Operations			18,000/hr		
Start-up Time (max. time from power application until unit is timing)			0.05 sec		
Max. Function Time (max. time power can drop out and unit continues timing)			0.01 sec		
Min. Cycle Time			100 ms on release of the control switch		

Specifications - 700-HTA Relays

Attribute		700-HTA
Environmental		
Temperature	Operating	−28…+65 °C (50 °C max., 240V AC coil) (−18…+149 °F) (122 °F max., 240V AC coil)
	Storage	−55…+85 °C (−67…+185 °F)
Altitude		2000 m (6560 ft)
Construction		
Insulating Material		Molded High Dielectric Material
Enclosure		Impact Resistant Dust Cover
Contact Material		Silver Tin Oxide
Terminal Markings on Socket		In accordance with EN50 005
Sockets		8- or 11-Pin Socket 700-HN100, -HN125 700-HN101, -HN126
Certifications		CSA Certified, File 223833, UL Recognized (File E3125 Guide NLDX2/NLDX8), cULus Listed with 700-HN100, 700-HN101, 700-HN125, and 700-HN126 Sockets (File No. E3125 Guide NLDX/NLDX7), CE-Marked (per EU Low Voltage Directive)
Standards		EN 61812-1, CSA 22.2 No. 14, UL 508

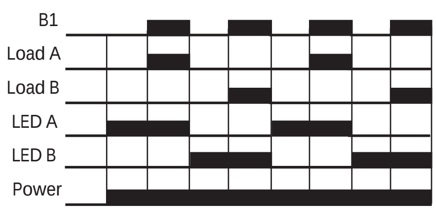
(1) See NEMA Ratings and Test Values on page 5.

Trigger Signal Cat. Nos. 700-HTA

Contact closure provides signal to timer. The 700-HTA alternating relay generates a low energy signal. For optimum reliability, use contacts designed for low energy switching (10V, 1 mA) (Example: Bul. 800F-X_V, 800T-X_V). No external voltage can be connected to the contact signal.

Load Diagrams - 700-HTA Relays

Common Input/Output SPDT/DPDT

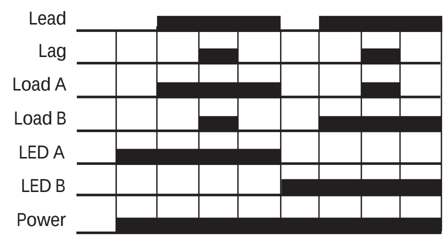


Socket Pinout Map SPDT	
Relay	Socket
A1	4
A2	3

Socket Pinout Map DPDT	
Relay	Socket
A1	4
A2	8

Note: pin out in wiring diagram may not match actual printed socket see pinout map for wiring up the power source

Cross Wired Lead/Lag/Lag/lead Sequence

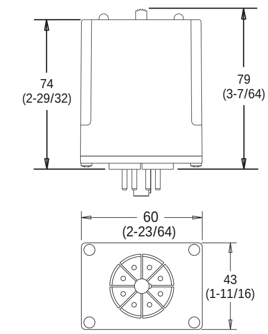


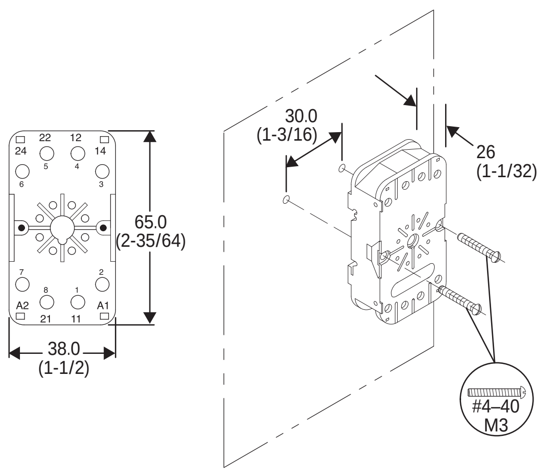
Socket Pinout Map Cross-Wired	
Relay	Socket
A1	3
A2	6

Note: pin out in wiring diagram may not match actual printed socket see pinout map for wiring up the power source

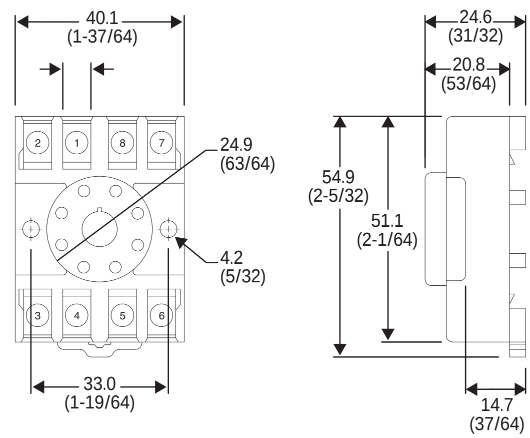
Dimensions - 700-HTA Relays

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

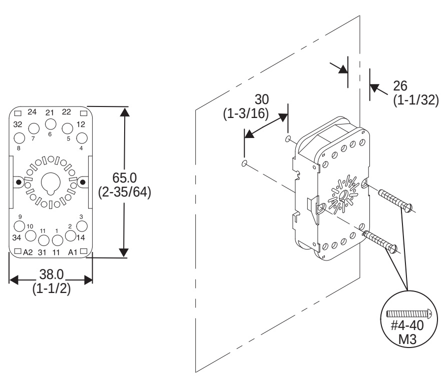




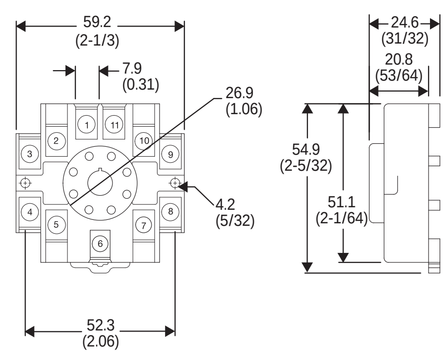
Cat. No. 700-HN100
Panel Mounting
Double Wire — 2 x 2.5 mm^2 (#2 – 14 AWG…#2 – 20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in) – Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN125
Wire Size: 2 x 2.5 mm^2
Single Wire — Up to #12 AWG
Double Wire — 2 x 2.5 mm^2 (#2 – 14 AWG… #2 – 20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in) — Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN101
Panel Mounting
Double Wire – 2 x 2.5 mm^2 (#2 – 14 AWG…#2 – 20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in) – Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN126
Wire Size: 2 x 2.5 mm^2
Single Wire — Up to 12 AWG
Double Wire — 2 x 2.5 mm^2 (#2 – 14 AWG…#2 – 20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in) — Torque: 0.8 N•m (7 lb•in)

General Purpose Electronic Timers and Counters

Product Overview

					
Bulletin No.	**700-FE**	**700-FS**	**700-HR52, -HRP, -HRS, -HRT, -HRV**	**700-HRM/-HRC**	**700-HRF**
Type	DIN Rail Timer	DIN Rail Timer	Multifunction Timer	On-Delay Timer	Twin Timer
Features	• Only 17.5 mm wide • 5 A contact rating • Multifunction or single function • No additional socket required	• Only 22.5 mm wide • 8 A contact rating • Multifunction or single function • No additional socket required • Optional: • Star-delta timing function • True off-delay timing function • Hazardous location certification	• 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 • 7 different operating modes	• 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	• Independent ON and OFF settings • 14 time ranges • 8-pin models available • Dial timing relays • UL508
Control Outputs: Time Limit Instantaneous	1 N.O. or SPDT timed	SPDT or DPDT or 2 N.O. + 1 common	DPDT Timed, Transistor SPDT Timed/Instantaneous	DPDT Timed, Transistor SPDT Timed/Instantaneous	DPDT Timed
Operation Modes:	On-delay Off-delay One shot Repeat cycle-pulse Fleeting off-delay Pulse converter	11 timing modes	On-Delay Off-Delay One Shot Repeat Cycle Off Start Repeat Cycle On Start Signal On/Off-Delay On-Delay One Shot	On-Delay	Repeat Cycle Off Start Repeat Cycle On Start
Time Range	0.05 s…10 hr	0.05 s…60 hr	0.05 s…300 h	0.05 s…300 h	0.05 s…300 h
Supply Voltage	24V AC/DC 110…240V AC 24…48V AC/DC 24…240V AC	12V DC 24V…48V DC 24V…240V AC	12…48V DC 24…48V AC 100…240V AC 100…125V DC	12…48V DC 24…48V AC 100…240V AC 100…125V DC	12V DC 24V AC/DC 48…125V DC 100…240V AC
Contact Rating at 120V AC	5 A	8 A	5 A	5 A	5 A
Certifications	CE, cULus	CE, cULus	cURus, CE, C-Tick	cURus, CE, C-Tick	cURus, CE, C-Tick
Socket Cat. No(s).	DIN Rail or panel mount	DIN Rail or panel mount	700-HN100 OR 700-HN101 700-HN125 OR 700-HN126	700-HN100 700-HN125	700-HN100 700-HN125
Page	92	96	116	117	117

				
Bulletin No.	**700-HRY**	**700-HRQ**	**700-HNC**	**700-HNK**
Type	Star-Delta Timer	True Off-Delay Timer	Miniature Timer	Ultra-Slim Timer
Features	• A wide star-time range (up to 120 s) • Star-delta transfer time range (up to 0.5 s) • UL Recognized	• Dial timing relays • Long power Off-delay times • 11-pin and 8-pin models are available • UL Recognized	• Four different operating modes • DIN Rail mount with socket • Pin configuration same as 700-HC relay	• Ultra-slim timing relay • Four different operating modes • Three operating voltages • DIN Rail mount with socket • Pin configuration same as 700-HK relay
Control Outputs: **Time Limit** **Instantaneous**	SPST (Star, Delta) Timed SPST - NO Instantaneous	DPDT Timed	4PDT	SPDT, DPST-NO
Operation Modes:	Star-Delta	True OFF-delay Timer True OFF-delay Timer w/reset	On-Delay One Shot Repeat Cycle Off Start Repeat Cycle On Start	On-Delay One Shot Repeat Cycle Off Start Repeat Cycle On Start
Time Range	0.5 s…120 s	0.05 s…12 min	0.1 s…10 h	0.1 s…10 h
Supply Voltage	100…120V AC 200…240V AC	48V DC 24V AC/DC 100…240V AC 100…125V DC	12V DC 24V AC/DC 48…125V DC 100…240V AC	12V DC 24V DC 24V AC
Contact Rating at 120V AC	5 A	5 A	5 A	5 A
Certifications	cURus, CE, C-Tick	cURus, CE, C-Tick	cURus, CSA, CE, C-Tick	cURus, CE, ACA
Socket Cat. No(s).	700-HN100 700-HN125	700-HN100 OR 700-HN101 700-HN125 OR 700-HN126	700-HN103 700-HN128	700-HN121 700-HN122
Page	117	118	103	109

			
Bulletin No.	**700-HT**	**700-HV**	**700-HX**
Type	Tube Base Timing Relay	Repeat-Cycle Timing Relay	Digital Timer
Features	• Pin-style terminals • Single range or fixed timers • Available as ON- or OFF-Delays	• Pin-style terminals • Single-range timer • Repeat cycle	• Digital timer • 5 A contact rating • Negative transmissive LCD display • 10 functions or modes • Environmentally friendly—flash memory, no battery • NEMA B300 rated • NEMA 4/IP66 • DIN Rail or panel mount capable
Control Outputs: Time Limit Instantaneous	DPDT	DPDT	SPDT
Timing Operation Modes:	On-Delay Off-Delay	Repeat Cycle	Signal On-Delay 1 and 2 Signal Off-Delay One Shot Repeat Cycle Off Start Repeat Cycle On Start Signal On/Off-Delay Power On-Delay 1 and 2 Twin Timer Cumulative
Time Range	0.1 s…30 min.	0.1 s…30 min.	0.05 s…300 h
Supply Voltage	12V DC 24V DC 24V AC 120V AC 240V AC	24V DC 24V AC 120V AC 240V AC	12…24V DC 24V AC 100…240V AC
Contact Rating at 120V AC	10 A	10 A	5 A
Certifications	UR, UL, CSA, CE	UR, UL, CSA, CE	cURus, CE, C-Tick
Socket Cat. No(s).	700-HN100 OR 700-HN101 700-HN125 OR 700-HN126	700-HN100 700-HN125	700-HN100 700-HN125
Page	128	133	138

700-FE Economy Timing Relay

- Adjustable function and timing range timing relays
- DIN Rail mounted without cost of socket
- 17.5 mm wide, multi-function or single function
- Available as 1 N.O. or SPDT contact output, 5 A
- Timing ranges from 0.05 s...10.0 hr
- Coil surge protection

Multi-Function

This device offers you the flexibility of selecting one of 4 single timing functions.

Operating Mode	Contact Output	Timing Range(1)	Input Voltage	Cat. No.
ON-delay, OFF-delay, One Shot, Flasher (repeat cycle starting with pulse)	1 N.O.	0.05 s…10 hr (6 settings)	24V AC/DC (2) 110…240V AC 50/60 Hz	700-FEM1TU22
ON-delay, OFF-delay, One Shot, Flasher (repeat cycle starting with pulse)	SPDT (1 C/O)	0.05 s…10 hr (6 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEM3TU23

(1) Time ranges: 0.05 s…1 s, 0.5…10 s, 0.05…1 min, 0.5…10 min, 0.05…1 hr, 0.5…10 hr.
(2) Voltage is either 24V AC/DC 50/60 Hz.

Single-Function

This device offers you one specific timing function.

Operating Mode	Contact Output	Timing Range(1)	Input Voltage	Cat. No.
ON-delay	1 N.O.	0.05 s…10 hr (6 settings)	24V AC/DC 110…240V AC 50/60 Hz(2)	700-FEA1TU22
	SPDT (1 C/O)	0.05 s…10 hr (6 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEA3TU23
OFF-delay	1 N.O.	0.05 s…10 hr (6 settings)	24V AC/DC 110…240V AC 50/60 Hz(2)	700-FEB1TU22
	SPDT (1 C/O)	0.05 s…10 hr (6 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEB3TU23
One Shot	1 N.O.	0.05 s…10 hr (6 settings)	24V AC/DC 110…240V AC 50/60 Hz(2)	700-FED1TU22
	SPDT (1 C/O)	0.05 s…10 hr (6 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FED3TU23
Fleeting OFF-delay	SPDT (1 C/O)	0.05 s…10 hr (6 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEE3TU23
Flasher (repeat cycle starting with pulse)	1 N.O.	0.05 s…10 hr (6 settings)	24V AC/DC 110…240V AC 50/60 Hz(2)	700-FEF1TU22
	SPDT (1 C/O)	0.05 s…10 hr (6 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEF3TU23
Pulse Converter	SPDT (1 C/O)	0.05 s…10 hr (6 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEL3TU23

(1) Time ranges: 0.05 s…1 s, 0.5…10 s, 0.05…1 min, 0.5…10 min, 0.05…1 hr, 0.5…10 hr.
(2) Voltage is either 24V AC 50/60 Hz or 24V DC.

Special Functions

Operating Mode	Contact Output	Timing Range(1)	Input Voltage	Cat. No.
Star-Delta	2 N.O. with 1 Common	0.15 s…10 min (4 settings)	24V…48V AC/DC 24…240V AC 50/60 Hz	700-FEY2QU23

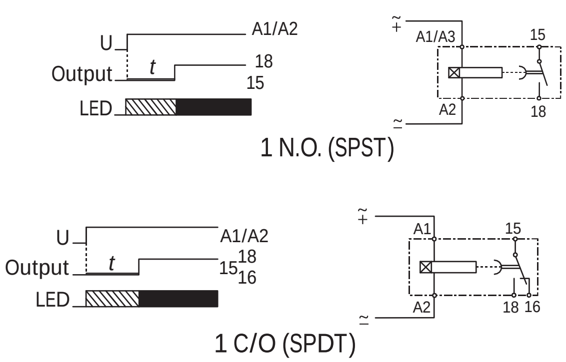
(1) Time ranges: 0.15…3 s, 0.5…10 s, 3 s…1 min, 30 s…10 min.

Accessories - 700-FE Relays

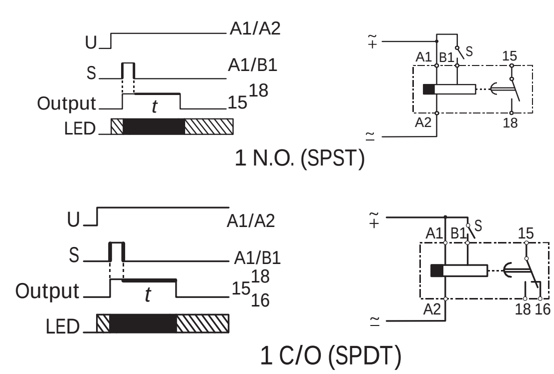
Description		Pkg. Quantity	Cat. No.
	Panel Mounting Adapter For surface mounting according to drilling plan EN 50 002	5	199-FSA
	Label Sheet 105 self-adhesive paper labels each, 6 x 17 mm	10	100-FMS

Function and Connection Diagrams - 700-FE Relays

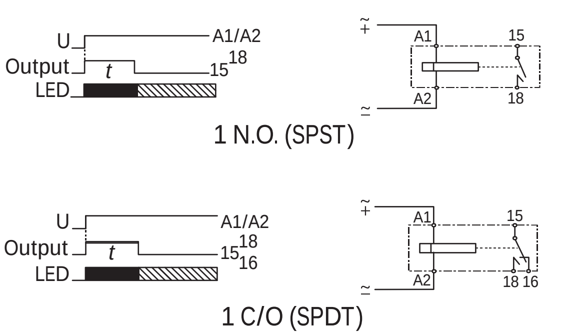
(A) On-Delay



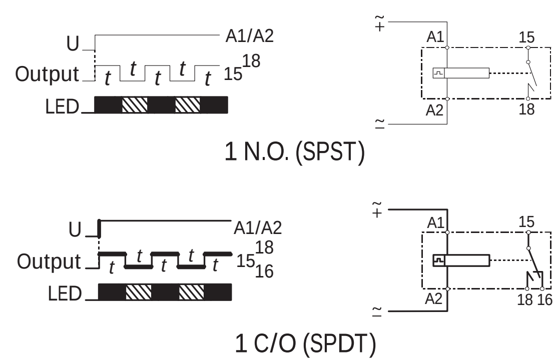
(B) Off-Delay



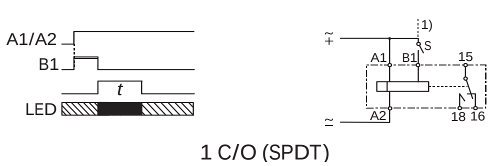
(D) One Shot



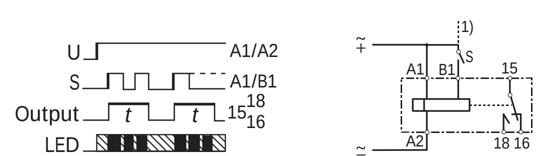
(F) Flasher (Repeat Cycle Starting with Pulse)



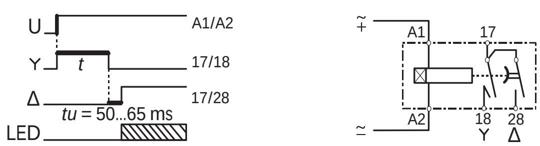
(E) Fleeting Off-Delay



(L) Pulse Converter



(Y) Star-Delta Timing Relay



Bi-color light-emitting diode: 1 C/O (SPDT) or 1 N.O. Contact Timers

LED U = green: Supply voltage available.
LED Relay = red: Output is energized.

Single Color light-emitting diode: 2 N.O. with Common

ON = green
OFF = red

Specifications - 700-FE Relays(1)

Attribute		700-FE			
			1 N.O.		SPDT
Setting Accuracy		±5% of full scale			
Repeatability		±1% of setting (typical)			
Tolerance		By voltage: ±0.01%/%÷U By temperature: ±0.25%/°C		By voltage: ±0.001%/%÷U By temperature: ±0.025%/°C	
Supply					
Supply Voltage		24V AC/DC(1) and 110…240V AC, 50/60 Hz		24…48V DC and 24…240V AC, 50/60 Hz	
Voltage Tolerance	AC	−15%/+10%			
	DC	−15%/+20%			
Power Consumption		0.5 W at 24V DC, 5VA at 240V AC			
Time Energized		100%			
Reset Time		100 ms			
Cable Length (Supply Voltage Control)		Max. 250 m (750 feet)			
Pulse Control (B1)					
Impulse Duration		Ø 250 ms		Ø 50 ms (AC), Ø 30 ms (DC)	
Input Voltage		supply voltage range			
Input Current		1 mA			
Cable Length		Max. 250 m without parallel load between B1 and A2 Max. 50 m with load (< 3 kΩ between B1 and A2			
Outputs					
Contact Type		1 N.O. contact		1 Form C – SPDT contact	
Dielectric Withstand Voltage	Contact-to-coil	4000V			
Switching Capacity	Power	1250VA			
	According to IEC 947-5-1	AC-1	5 A /250V AC (resistive load)		
		AC-14	1 A/250V AC (inductive load)		
		DC-13	1 A/24V DC (inductive load)		
	According to UL 508	NEMA D300 - 1 A/300V AC			
Short circuit Resistance		6 A gL (Fast Blow Fuse)			
Life	Mechanical	20 million operations			
	Electrical	0.4 million at 1 A/250V AC, resistive 0.4 million at 0.5 A/250V AC, cos φ = 0.4 0.4 million at 1 A/24V DC, resistive			
State Indicator		1 bicolor light-emitting diode (Supply; Relay)			
Certifications		cULus Listed (File No. E14840, Guide NKCR/NKCR7), CE Marked			
Standards		EN/IEC 60947-1, EN/IEC 60947-5-1, UL 508, CSA 22.2 No. 14			
Insulation Characteristics		2 kV AC/50 Hz test voltage according to VDE 0435 and 4 kV 1.2/50 σs surge voltage according to IEC 60947-1 between all inputs and outputs			
EMC/Interference Immunity		The following requirements are fulfilled: Surge capacity of the supply voltage according to IEC 61000-4-5: Level 3 Burst according to IEC 61000-4-4: Level 3 ESD discharge according to IEC 61000-4-2: Level 3			
EMC / Emission		electromagnetic fields according to EN 55 022: Class B			

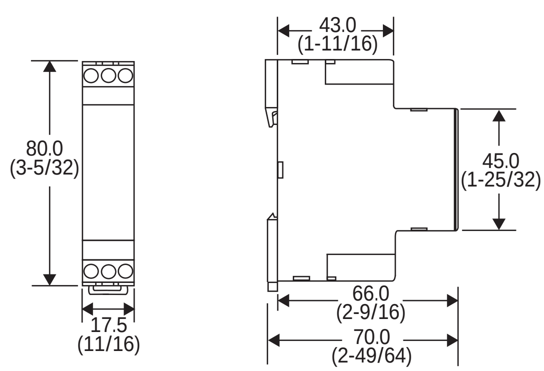
(1) Time Characteristics (according to VDE 0435, part 2021)

Attribute	700-FE	
Safe Isolation	according to VDE 0106 T 101	
Climatic Withstand	56 cycles (24 hr) at 25…40 °C and 95% relative humidity according to IEC 60068-2-30	
Vibration Resistance	4 g in three axes at 10…500 Hz, test FC according to IEC 60068-2-6	
Shock Resistance	50 g according to IEC 68-2-27	
Protection Class IEC 60947-1	Enclosure: IP40 Terminal: IP20	
Weight	60 g	60 g
Certifications	cULus, CE Certified	cULus, Germanischer Lloyd, CE Certified
Ambient Temperature	Open: –25…+60 °C Enclosed: –25…+45 °C Storage: –40…+85 °C	
Connections	Screw terminal M3 for Pozidriv No.1, Philips, and slotted screws No.2. suitable for power screwdriver. Rated tightening torque 8.8 lb.-in. (max. 1.0 Nm) For terminal cross-sections of 1 x 0.5 mm^2…2 x 1.5 mm^2 (solid) or 2 x 1.5 mm^2 (stranded with sleeve), #20…14 AWG. Finger protection according to EN 50274	
Mounting	For surface mounting in any position; snap-on mounting on 35 mm DIN Rail or by adapter and two screws (M4 type)	
Disposal	Synthetic materials without dioxin according to EC/EFTA-Notification No. 93/0141/D electrical contacts are AgCdO	

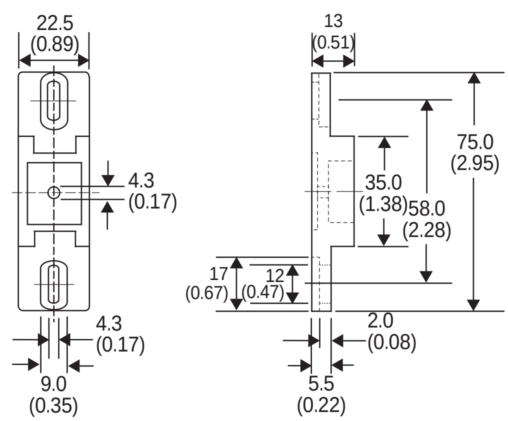
(1) Voltage is either 24V DC or AC 50/60 Hz.

Dimensions - 700-FE Relays

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



Cat. No. 700-FE…



Cat. No. 199-FSA…

700-FS High Performance Timing Relay

- Adjustable function and timing range timing relays
- DIN Rail mounted without cost of socket
- 22.5 mm wide multi-function or single functions
- Available as SPDT or DPDT contact output, 8 A
- Timing Ranges From 0.05 s...60 hr
- Coil surge protection
- Hazardous location version available

Catalog Number Explanation - 700-FS Relays

700	–	FS	H	3	U	–	U23
a		b	c	d	e		f

a Bulletin Number	-	b Type of Relay	c Operating Mode	d Contact Output	e Timing Range	f Input Voltage
700		FS	A–On-delay B–Off-delay C–On- and off-delay D–One shot E–Fleeting off-delay F–Flasher (repeat cycle starts with pulse) G–Flasher (repeat cycle starts with pause) I–On-delay pulse generator J–On-delay (pulse controlled) K–One shot/watch dog (pulse controlled) L–Pulse converter	3–One changeover contact (SPDT)1 C/O	A–0.05…1 s B–0.15…3 s C–0.5…10 s D–1.5…30 s E–0.05…1 min F–0.15…3 min G–0.5…10 min H–1.5…30 min I–0.05…1 hr J–0.15…3 hr K–0.5…10 hr L–3.0…60 hr U–0.05 s…60 hr (1)	Z12–12V DC U23–24…48V DC | 24…240V AC 50/60 Hz

(1) Valid for functions "A" and "B" only.

Single Function (With 2PDT 2 C/O contacts)

Operating Mode	Contact Output	Timing Range(1)	Input Voltage	Cat. No.
On-delay	(DPDT) 2 C/O	0.05 s…60 hr	12V DC	700-FSA4UZ12
On-delay	(DPDT) 2 C/O		24…48V DC 24…240V AC, 50/60 Hz	700-FSA4UU23
Off-delay	(DPDT) 2 C/O		12V DC	700-FSB4UZ12
Off-delay	(DPDT) 2 C/O		24…48V DC 24…240V AC, 50/60 Hz	700-FSB4UU23

(1) The time range of "0.05 s…60 hr" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.

Single Function With Hazardous Location Certification(1) (With SPDT 1 C/O contacts)

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
One Shot / Watch Dog (Pulse Controlled)	(SPDT) 1 C/O	0.05 s…1 s	24…48V DC 24…240V AC 50/60 Hz	700-FSK3AU23-EX
		0.5 s…10 s		700-FSK3CU23-EX

Multi-Function

This device allows the flexibility of selecting one of 8 single timing functions.

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
Multi-function timing relays 8 Single-functions: A, B, C, D, E, F, I, and L ON and OFF function additional (for installation and maintenance) note: See connection diagrams for further description.	(SPDT) 1 C/O	0.05 s…60 hr	12V DC	700-FSM3UZ12
	(SPDT) 1 C/O		24…48V DC 24…240V AC 50/60 Hz	700-FSM3UU23
	(DPDT) 2 C/O		12V DC	700-FSM4UZ12
	(DPDT) 2 C/O		24…48V DC 24…240V AC 50/60 Hz	700-FSM4UU23

Multi-Function With Hazardous Location Certification (1)

This device allows the flexibility of selecting one of 8 single timing functions.

Operating Mode	Contact Output	Timing Range(1)	Input Voltage	Cat. No.
M Multi-function timing relays 8 Single-functions: A, B, C, D, E, F, I, and L ON and OFF function additional (for installation and maintenance) Note: See connection diagrams for further description.	(SPDT) 1 C/O	0.05 s…60 h	24…48V DC 24…240V AC 50/60 Hz	700-FSM3UU23-EX
	(DPDT) 2 C/O			700-FSM4UU23-EX

(1) The time range of "0.05 s…60 hr" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.

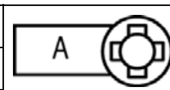
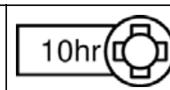
Special Function

Operating Mode	Contact Output	Timing Range	Input Voltage	Cat. No.
Flasher (repeat cycle starting with pulse or pause)	(SPDT) 1 C/O	0.05 s…60 hr (2)	12V DC	700-FSH3UZ12
			24…48V DC 24…240V AC 50/60 Hz	700-FSH3UU23
		2 x 0.05 s…60 hr (2 ranges)	12V DC	700-FSH3VZ12
			24…48V DC 24…240V AC, 50/60 Hz	700-FSH3VU23
OFF-delay without supply voltages (True OFF-delay)(1)	(SPDT) 1 C/O	0.15 s…10 min(3)	24…240V DC 24…240V AC 50/60 Hz	700-FSQ3QU18
	(DPDT) 2 C/O			700-FSQ4QU18
Star-Delta	2 N.O. + 1 Common	0.5 s…10 s	24…48V DC	700-FSY2CU23
		1.5…30 s	24…240V AC 50/60 Hz	700-FSY2DU23
		0.05 s…1 min		700-FSY2EU23
		0.15…3 min		700-FSY2FU23
		0.5…10 min		700-FSY2GU23

(1) Due to shock during shipment, the state of the contacts should be verified before initial use. Minimum power on time is 800 msec
(2) The time range of "0.05 s…60 hr" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.
(3) This time range is selectable in four smaller ranges: 0.15 s…2.5 s, 0.5 s…10 s, 4 s…80 s, 30 s…10 min.

(1) Temp. Code T4A 2A 32VDC MAX.: II 3 G, EEx nL IIC T4 DEMKO 04 ATEX 0404974X 2A 32VDC MAX. Ta 70 °C
Ind. Cont. Eq. for Hazardous Location Listed 87SL Class 1, Div. 2, Groups A,B,C,D Class 1, Zn 2, Group IIC
Subject devices are to be installed in an ATEX Certified IP54 (as defined in IEC 60529) enclosure and accessible only by the use of a tool.

Multi-Function Timing Relay Function and Time Range Settings - 700-FS Relays

Description			SPDT	DPDT
	Multi-function timing relays 700-FSM3U includes 10 setting functions:		Multi-Time Setting Range 0.05 s…60 h	
	(A)On-Delay		(1 s) 0.05…1 s (3 s) 0.15…3 s (10 s) 0.5…10 s (1 min) 0.05…1 min (3 min) 0.15…3 min (10 min) 0.5…10 min (1 hr) 0.05…1 hr (3 hr) 0.15…3 hr (10 hr) 0.5…10 hr (60 hr) 3.…60 hr	
	(B)Off-Delay			
	(C)On- and Off-Delay			
	(D)One shot			
	(E)Fleeting Off-Delay			
	(F)Flasher (repeat cycle starts with pulse)			
	(I)On-Delay pulse generator			
	(L)Pulse converter			
	(On)ON-Function (1)			
	(Off)OFF-Function(1)			
	Note: Switch ◡ is on DPDT relays only. When switch is down, one contact is instantaneous and one is timed. When switch is up, both contacts are timed.			

(1) For installation and maintenance.

Accessories - 700-FS Relays

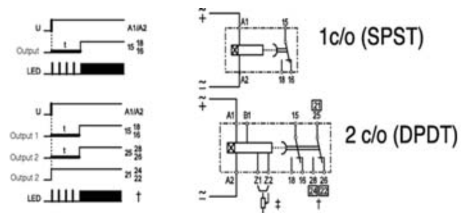
	Description	Pkg. Quantity	Cat. No.
 	**Setting Knob with Scale** (for time setting without tools)	10	700-FSK
	Panel Mounting Adapter For surface mounting according to drilling plan EN 50 002	5	199-FSA
	**Label Sheet** 105 self-adhesive paper labels each, 6 x 17 mm	10	100-FMS
	Marking Tag Sheet 160 perforated paper labels each, 6 x 17 mm, to be used with a transparent cover	10	100-FMP
	Transparent Cover To be used with marking tag sheets	100	100-FMC
	Marking Tag Adapters To be used with marking tag: System 1492 W	100	(1) 100-FMA2

(1) Cat. No. 100-FMA2 is only a marking tag carrier. Please refer to the Terminal Block Accessories section, Marking Solutions of this publication for appropriate marker cards to be used with this carrier.

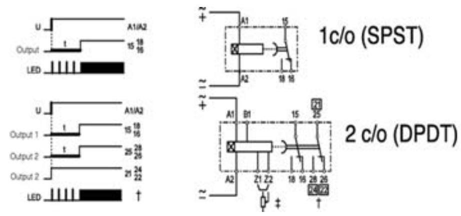
IMPORTANT Versatile Mounting: The 700-FS timing relay can be panel or DIN rail mounted. For best long-term performance, allow at least 5 mm (0.2 in.) of space on each side of the relay for proper ventilation.

Function and Connection Diagrams - 700-FS Relays

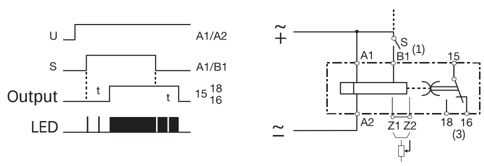
(A) On-Delay



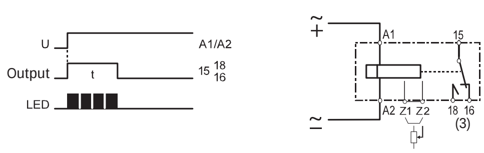
(B) Off-Delay (Min. Pulse AC 50 ms…DC 30 ms)



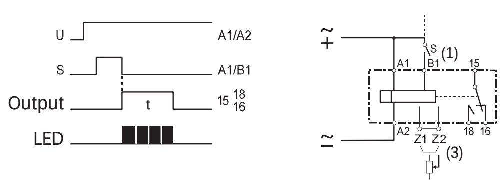
(C) On- and Off-Delay



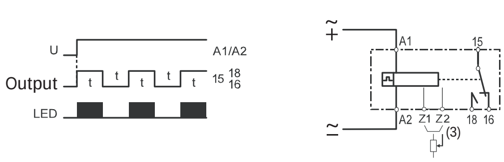
(D) One Shot



(E) Fleeting Off-Delay (Min. Pulse AC 50 ms…DC 30 ms)

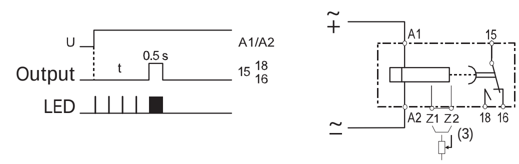


(F) Flasher (Repeat Cycle Starts with Pulse)

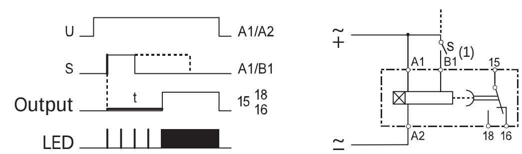


(G) Flasher (Repeat Cycle Starts with Pause)

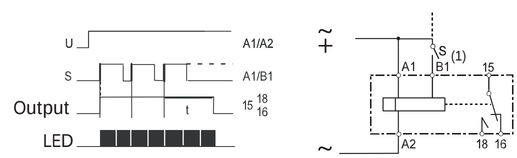
(I) On-Delay Pulse Generator



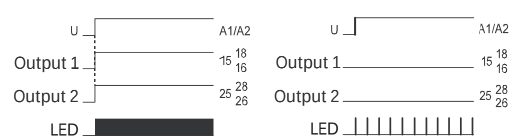
(J) On-Delay (Pulse Controlled)



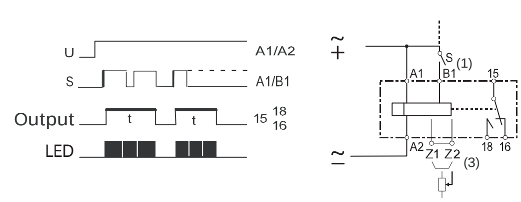
(K) One Shot/Watch Dog (Pulse Controlled)



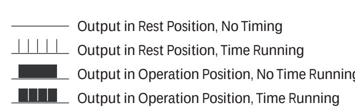
(On) ON-Function (Off) OFF-Function



(L) Pulse Converter (Min. Pulse AC 50 ms…DC 30 ms)



Cleverly Designed Function Display light-emitting diode (Green)

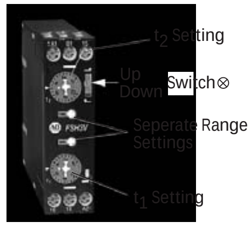


(1) A voltage other than the supply voltage can be used at B1, but must be within voltages specified on timer.
(2) Output 2 is selectable as instantaneous contact with sliding switch (◡) on front panel (instantaneous when switch is down, timed when switch is up).
(3) Available on multifunction "M," and single function "A" or "B" option timing relays along with code "4" (2PDT contacts).
Bridge or potentiometer 10 kΩ, 0.25 W min. (low voltage) for external time setting. Set timer dial to 0.0.

Special Function Flasher Timing Relay

Description

700-FSH3U



700-FSH3V

Supply Voltages (A1/A2)
Z12 12V DC
U23 24…48V DC, 24…240V AC, 50/60 Hz

Function Diagram / Connection Diagram(1)

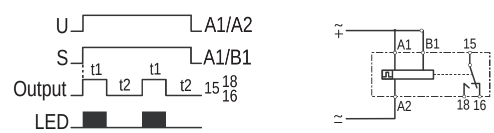
(H) Flasher (Repeat Cycle Starting with Pulse or Pause)

The repeat cycle timer permits different settings for on and off times. The following operating modes are possible:

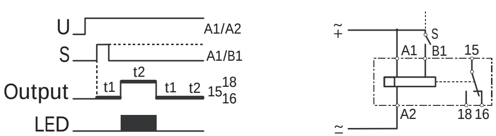
- Oscillating mode; repeat cycle starts with voltage that is applied at A1 and B1, and continues to repeat until voltage is off.
- One cycle mode; started by energizing B1 with voltage on A1 and A2.
- Output starts with pulse or pause (switch ◡ Up or Down).
- 700-FSH3U provides (1) range setting for t_1 and t_2
  700-FSH3V provides (2) range settings for t_1 and t_2

Supply Voltage Controlled, Oscillating Mode Starting with Pause — Switch ◡ Is up

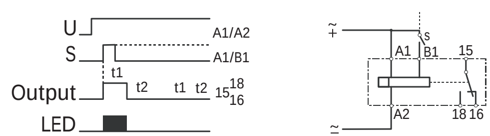
Supply Voltage Controlled, Oscillating Mode Starting with Pulse — Switch ◡ is Down



Pulse Controlled, Output Starts With Pause (Min. Pulse AC 50 ms — DC 30 ms) — Switch ◡ is Up One Cycle Mode — Voltage Supplied at A1 and A2, then Pulsing “s” to Energize B1 will Initiate One Cycle.

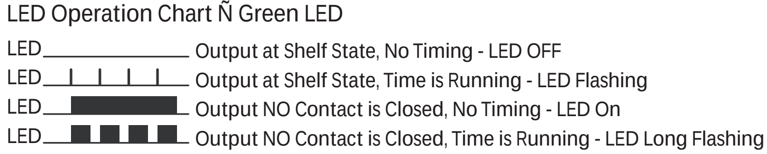


Pulse Controlled, Output Starts with Pulse (Min. Pulse AC 50 ms — DC 30 ms) — Switch ◡ is Down One Cycle Mode — Voltage Supplied at A1 and A2, then Pulsing “s” to Energize B1 will Initiate One Cycle.

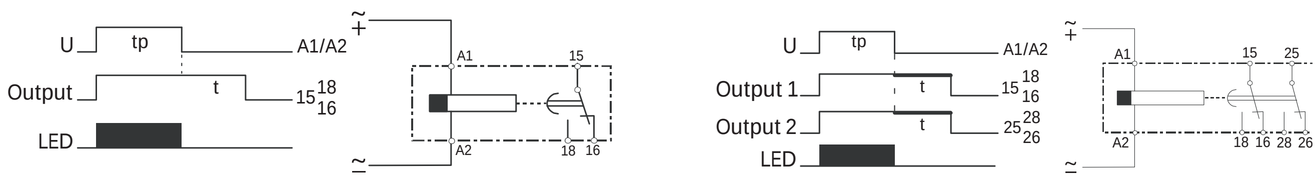


(1) If B1 is pulsed, a one full time cycle consisting of t1 and t2 is completed.

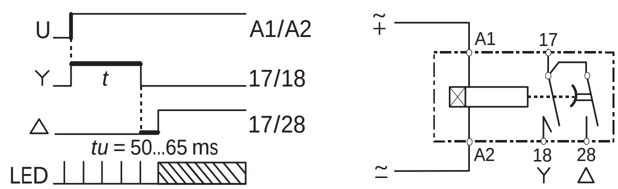
LED Operation Chart Ñ Green LED



Function Diagram / Connection Diagram[1]
(Q) Off-Delay without Supply Voltage (True Off-Delay) • When input power is turned on, the output contact changes state. When the power is removed, the time delay begins. The output contact returns to shelf state at the end of the time delay.



(Y) Star-Delta Timing Relay
• When power is applied, the output contact 17/18(Y) changes state. After the time setting, the output contact 17/18(Y) returns to shelf state. After the fixed time (50… 60 ms), the output contact 17/28÷ changes state. Both output contacts return to shelf state whenever the power is removed.



(1) Min. pulse (tp) required: 800 ms

Specifications - 700-FS Relays[1]

Attribute	Value
Setting Accuracy	±5% of full scale
Repeatability	±0.2% of the setting values
Tolerance	Voltage: ±0.001%/%÷U Temperature: ±0.025%/°C

Supply

Attribute	Value
Supply Voltages	24…48V DC and 24…240V AC, 50/60 Hz (multi voltage)
Voltage Tolerance	–20…+20% (DC), –15…+10% (AC)
Power Consumption	0.5 W at 24V DC, 5 VA at 240V AC
Time Energized	100%
Reset Time	50 ms
Voltage Interruption	∅20 ms without reset (supply voltage)
Input Impedance	Relay ON: 3K-13K ohms, Relay OFF: 0.7K-4K ohms
Cable Length (Supply Voltage Control)	Max. 250 m (800 ft)

Pulse Control (B1)

Attribute	Value
Pulse Duration	∅50 ms (AC), ∅30 ms (DC)
Input Voltage	Supply voltage range
Input Current	1 mA
Max. Leakage Current	400 micro Amps
Cable Length	Max. 250 m (800 ft) without parallel load between B1 and A2, Max. 50 m (160 ft) with load (<3 kΩ) between B1 and A2

Outputs

Contact Type	Relay as changeover switch
Dielectric Coil to Contact	5000 V
Switching Capacity	Voltage: 440V AC
	Current I_{th} (AC-1): 8 A (5 A for 700- FSQ)
	Power: 2000 VA
	According to IEC 947-5-1:
	3 A/440V AC (inductive load, AC 14)
	3 A/250V AC (inductive load, AC 15)
	1 A/24V DC (inductive load, DC 13)
	According to UL 508:
	1.5 A/250V AC (B300)
	3 A/120V AC (B300)
Short-Circuit Resistance	10 A gL

(1) Time Characteristics (according to VDE 0435, Part 2021)

Life	Mechanical: 30 million operations
	Electrical operations:
	4 mil at 1 A/250V AC, cos φ = 1
	0.2 mil at 6 A/250V AC, cos φ = 1
	1.5 mil at 1 A/250V AC, cos φ = 0.3
	0.3 mil at 3 A/250V AC, cos φ = 0.3
	0.5 mil at 6 A/24V DC, resistive
	2 mil at 4 A/24V DC, resistive
	2 mil at 0.2 A/230V DC, resistive
	1 mil at 0.4 A/24V DC, L/R = 20 ms
	1 mil at 0.2 A/110V DC, L/R = 20 ms
	1 mil at 0.1 A/230V DC, L/R = 20 ms
State Indicator	1 LED, combination signal

General Data- 700-FS Relays

Insulation Characteristics	2 kVAC/50 Hz test voltage according to VDE 0435 and 6 kV 1.2/50 σs surge voltage according to IEC 947-1 between all inputs and outputs
EMC/Interference Immunity	Performance of following requirements: Surge capacity of the supply voltage according to IEC 1000-4-5: 4 kV 1.2/50 σs Burst according to IEC 1000-4-4: 6 kV 6/50 ns ESD discharge according to IEC 1000- 4-2: Contact 8 kV, air 8 kV Electromagnetic HF field according to IEC 801-3 and conducted electromagnetic HF signal according to IEC 801-6: Level 3
EMC/Emission	Electromagnetic fields according to EN 55 022: class B
Safe Isolation	According to VDE 106, part 101
Climatic Withstand	56 Cycles (24 hr) at 25…40 °C and 95% relative humidity according to IEC 68-2-30 and IEC 68-2-3
Vibration Resistance	4 g in three axes at 10…500 Hz, test FC according to IEC 68-2-6
Shock Resistance	50 g according to IEC 68-2-27
Protection Class	Enclosure: IP 40 IP 30 (Single-function) Terminal: IP 20 according to IEC 947-1
Weight	100 g
Approval	UL, C-UL
Ambient Temperature	Open: –25…+60 °C Enclosed: –25…+45 °C Storage: –40…+85 °C
Terminals	Screw terminal M3.5 for Number 2 Posidriv, Philips, and slotted screws. Suitable for power screwdriver. Rated tightening torque 8.8 lb.-in. (0.8 N•m, max. 1.2 N•m). Dual-chamber system for terminal cross-sections of 1 x 0.5 mm^2…2 x 2.5 mm^2 (solid) or stranded 2 x 2.5 mm^2 (flexible with sleeve), #20…14 AWG. Finger protection according to VDE 0106.
Mounting	Front mounting; For snap-on mounting on 35 mm DIN Rail or screw fixing by adapter and 2 screws (M4 type)
Disposal	Synthetic material without dioxin according to EC/EFTA notification Number 93/0141/D electrical contacts with cadmium
Certifications	cULus Listed (File No. E14840, Guide NKCR/NKCR7), CE Marked
Standards	EN/IEC 60947-1, EN/IEC 60947-5-1, UL 508, CSA 22.2 No. 14

		Temp. Code T4A 2A 32VDC MAX.

Mounting: Product shall be installed in an enclosure constructed in accordance with the requirements of EN50021.

700-HNC Miniature Timing Relay

- Miniature timer, perfect for converting 700-HC "Ice Cube" relays into timing relays
- 4 operating modes
- 4PDT contact output
- Timing range from 0.1 s...10 hr
- Socket mounted

Model	Timing Mode	Contact Output	Input Voltages	Timing Range	Socket Type	Cat. No.
	On-Delay One Shot Repeat cycle, OFF-start Repeat cycle, ON-start	4PDT	12V DC	0.1 s…10 min	700-HN103 700-HN128	700-HNC44AZ12
				.1 min…10 hr		700-HNC44BZ12
			24V DC	0.1 s…10 min		700-HNC44AZ24
				0.1 min.…10 hr		700-HNC44BZ24
			48V DC	0.1 s…10 min		700-HNC44AZ48
				0.1 min.…10 hr		700-HNC44BZ48
			100…110V DC	0.1 s…10 min		700-HNC44AZ11
				0.1 min.…10 hr		700-HNC44BZ11
			125V DC	0.1 s…10 min		700-HNC44AZ25
				0.1 min.…10 hr		700-HNC44BZ25
			24V AC	0.1 s…10 min		700-HNC44AA24
				0.1 min.…10 hr		700-HNC44BA24
			100…120V AC	0.1 s…10 min		700-HNC44AA12
				0.1 min.…10 hr		700-HNC44BA12
			200…230V AC	0.1 s…10 min		700-HNC44AA23
Cat. No. 700-HNC				0.1 min.…10 hr		700-HNC44BA23

Accessories - 700-HNC Relays

Photo	Description	Pkg. Quantity	Cat. No.
	**Screw Terminal Socket — Panel or DIN Rail Mounting.** **Guarded Terminal Construction** 14-Blade miniature socket for use with 700-HNC timers.	10	700-HN103
	**Screw Terminal Base Sockets — Panel or DIN Rail Mounting.** **Open Style Construction** 14-blade miniature socket for use with 700-HNC timers.	10	700-HN128
	**Screw Terminal Socket – Panel or DIN Rail Mounting. Guarded Terminal Construction** 14-blade miniature socket for use with 700-HNC timers. This socket has coil and contact separation.	10	700-HN104
	Retainer Clip for Cat. Nos. 700-HN103, -HN104 and -HN128 Sockets with 700-HNC Timers. Secures Timer in Socket.	10	700-HN263

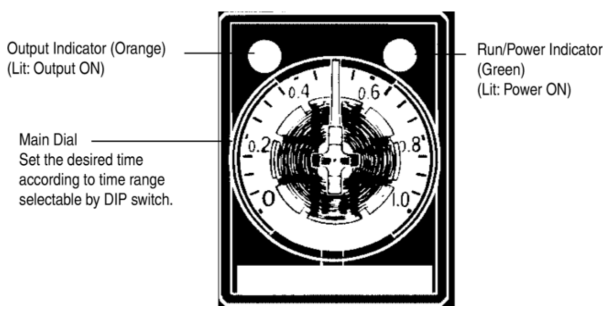
Specifications - 700-HNC Relays

Attribute		700-HNC		
Pilot Duty Rating		NEMA B300		
Pin type		Plug-in		
Operating voltage range		85%…110% of rated supply voltage (12V DC: 90%…110% of rated supply voltage) [1]		
Reset voltage		10% min. of rated supply voltage		
Power consumption		24V AC:	Relay ON: Relay OFF:	1.5 VA (1.1 W) (at 24V AC, 60 Hz) 0.2 VA (0.1 W) (at 24V AC, 60 Hz)
		100…120V AC:	Relay ON: Relay OFF:	1.5 VA (1.3 W) (at 120V AC, 60 Hz) 0.8 VA (0.5 W) (at 120V AC, 60 Hz)
		200…230V AC:	Relay ON: Relay OFF:	1.8 VA (1.5 W) (at 230V AC, 60 Hz) 1.2 VA (0.9 W) (at 230V AC, 60 Hz)
		12V DC:	Relay ON: Relay OFF:	0.9 W (at 12V DC) 0.07 W (at 12V DC)
		24V DC:	Relay ON: Relay OFF:	0.9 W (at 24V DC) 0.07 W (at 24V DC)
		48V DC:	Relay ON: Relay OFF:	1.0 W (at 48V DC) 0.2 W (at 48V DC)
		100…110V DC:	Relay ON: Relay OFF:	1.3 W (at 110V DC) 0.3 W (at 110V DC)
		125V DC:	Relay ON: Relay OFF:	1.3 W (at 125V DC) 0.3 W (at 125V DC)
Controloutputs		4PDT: 5 A at 250V AC, resistive load (cos φ = 1)		
Characteristics				
Make ►][◄	120V AC	30 A		
	240V AC	15 A		
Break ◄][►	120V AC	3 A		
	240V AC	1.5 A		
Hp at 120V AC		1/6 Hp		
Hp at 240V AC		1/6 Hp		
Accuracy of operating time		±1% FS max. (1 s range: ±1%±10 ms max.)		
Setting error		±10%±50 ms FS max.		
Reset time		Min. power-opening time: 0.1 s max. (including halfway reset)		
Influence of voltage		±2% FS max.		
Influence of temperature		±2% FS max.		
Insulation resistance		100 mΩ min. (at 500V DC)		
Dielectric strength		2000V AC, 50/60 Hz for 1 min (between current-carrying terminals and exposed non-current-carrying metal parts) [2]		
		2000V AC, 50/60 Hz for 1 min (between operating power circuit and control output)		
		2000V AC, 50/60 Hz for 1 min (between different pole contacts; 2-pole model)		
		1500V AC, 50/60 Hz for 1 min (between different pole contacts; 4-pole model)		
		1000V AC, 50/60 Hz for 1 min (between non-continuous contacts)		
Vibration resistance		Malfunction: 10…55 Hz, 0.5 mm single amplitude		
Shock resistance		Malfunction: 100 m/s^2 (approx. 10G)		
Ambient temperature		Operating: -10 °C…50 °C (with no icing)		
		Storage: -25 °C…65 °C (with no icing)		

Attribute	700-HNC
Ambient humidity	Operating: 35%…85%
Life expectancy	Mechanical: 10 000 000 operations min. (under no load at 1800 operations/hr)
	Electrical: 4PDT: 200 000 operations min. (3 A at 250V AC, resistive load at 1800 operations/hr)
Noise immunity	±1.5 kV, square-wave noise by noise simulator (pulse width: 100 ns / 1 σs, 1- ns rise)
Static immunity	Destruction:8 kV Malfunction:4 kV
Enclosure rating	IP40
Weight	Approx. 50 g
EMC	Emission Enclosure:EN55011 Group 1 class A
	Emission AC Mains:EN55011 Group 1 class A
	Immunity ESD:EN61000-4-2:4 kV contact discharge (level 2) 8 kV air discharge (level 3)
	Immunity RF-interference:ENV50140:10 V/m (amplitude modulated, 80 MHz to 1 GHz) (level 3) 10 V/m (pulse modulated, 900 MHz)
	Immunity Conducted Disturbance:ENV50141:10 V (0.15…80 MHz) (level 3)
	Immunity Burst:EN61000-4-4:2 kV power-line (level 3) 2 kV I/O signal-line (level 4)
Standards	UL 508, CSA 22.2 No. 14, EN/IEC 61812-1
Certifications	cURus Recognized (File No. E14843, Guide NRNT2/NRNT8), CSA Certified (File 224268), CE Marked, C- Tick Marked

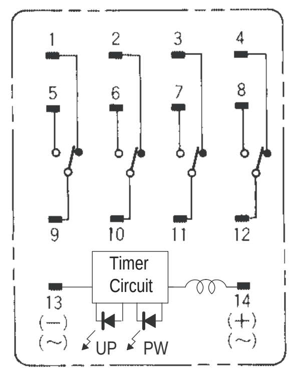
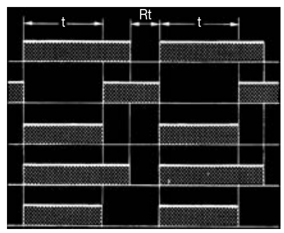
(1) Single-phase, full-wave-rectified power supplies can be used.
(2) When using the 700-HNC continuously in any place where the ambient temperature is in a range of 45 °C…50 °C, supply 90%…110% of the rated supply voltages supply 95%…110% with 12V DC type).

General Timer Functions



Timing Charts - 700-HNC Relays

IMPORTANT t: Set time, Rt:Reset time

Operating Mode	Timing Charts / Wiring Diagram	
ON-Delay Power t Output	(13-14) (9-1, 10-2, 11-3, 12-4) (9-5, 10-6, 11-7, 12-8) / ( ) ( )	
One shot Power t Output	(13-14) (9-1, 10-2, 11-3, 12-4) (9-5, 10-6, 11-7, 12-8) / ( ) ( ) 	
-S Power Output	(13-14) (9-1, 10-2, 11-3, 12-4) (9-5, 10-6, 11-7, 12-8) / ( ) ( )	
-S Power Output	(13-14) (9-1, 10-2, 11-3, 12-4) (9-5, 10-6, 11-7, 12-8) / ( ) ( )	

General Timer Functions

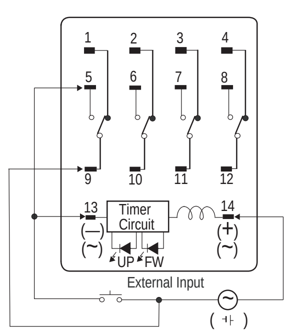
Output Indicator (Orange)
(Lit: Output ON)

Run/Power Indicator (Green)
(Lit: Power ON)

Main Dial
Set the desired time according to time range selectable by DIP switch.

Pulse Operation

A pulse output for a certain period can be obtained with a random external input signal. Use the 700-HNC timing relay in interval mode as shown in the following timing charts.



(9-14)
a u
(5-13)
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(10-6, 11-7, 12-8)
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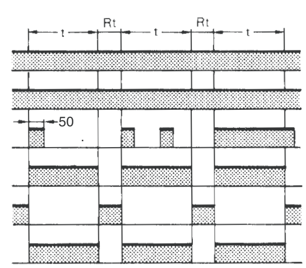


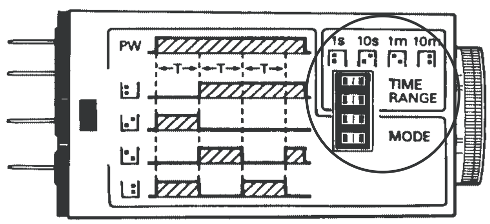
Note: :
:

DIP Switch Settings - 700-HNC Relays

Time Ranges

Cat. No.	Time Range	Time Setting Range	Setting	Factory-Set
700-HNC44AZ12 700-HNC44AZ24 700-HNC44AZ48 700-HNC44AZ11 700-HNC44AZ25 700-HNC44AA24 700-HNC44AA12 700-HNC44AA23	1 s	0.1 s…1 s		Yes
	10 s	1 s…10 s		No
	1 min	0.1 s…1 min		No
	10 min	1…10 min		No
700-HNC44BZ12 700-HNC44BZ24 700-HNC44BZ48 700-HNC44BZ11 700-HNC44BZ25 700-HNC44BA24 700-HNC44BA12 700-HNC44BA23	1 min	0.1…1 min		Yes
	10 min	1…10 min		No
	1 hr	0.1…1 hr		No
	1 hr	1…10 hr		No

Note: The top two DIP switch pins are used to select the time ranges.

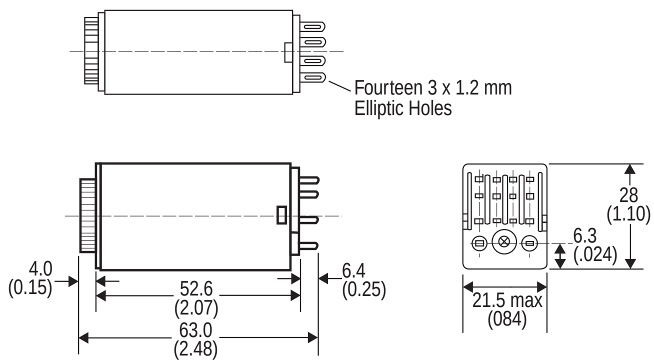


Operating Mode	Setting	Factory-set
ON-delay		Yes
One Shot		No
Repeat Cycle OFF-start		No
Repeat Cycle ON-start		No

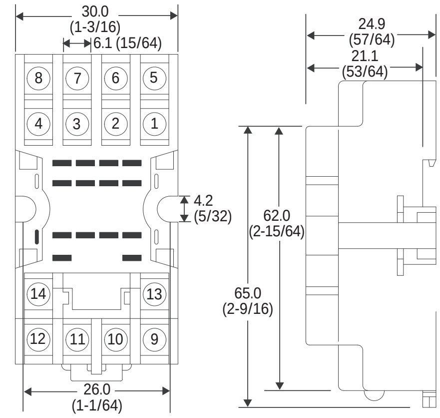
Note: The top two DIP switch pins are used to select the time ranges.

Dimensions - 700-HNC Relays

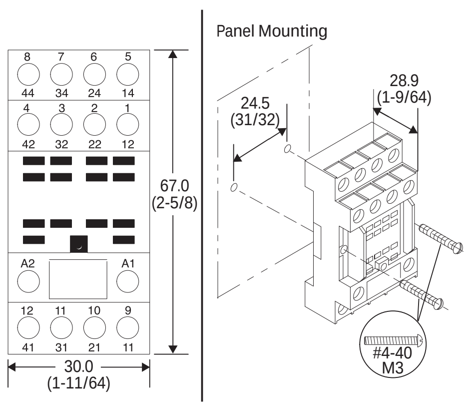
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



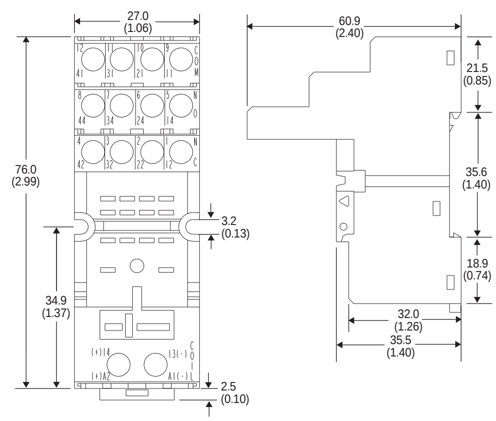
Cat. No. 700-HNC…



Cat. No. 700-HN128 (1)
Wire Size: 2 x 1.5 mm^2 (#2-16 AWG…#1-20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) - Torque: 0.8 N•m (7 lb•in)



Cat. No. 700-HN103
Single wire: 0.2…2.5 mm^2 (#24 AWG…14 AWG)
Double wire: 2 x 0.2 mm^2…2 x 1.5 mm^2 (2 x 24 AWG…2 x 16 AWG)
Wire type: solid or stranded, copper only
Strip length: 8 mm (5/16 in.), Torque: 0.5 N•m (4.4 lb•in)



Cat. No. 700-HN104
Single Wire: 0.2…2.5 mm^2 (#24 AWG…14 AWG)
Double Wire: 2 x 0.2 mm^2…2 x2.5 mm^2 (2 x 24 AWG…2 x 14 AWG)
Wire Type: solid or stranded, copper only
Strip Length: 7 mm (9/32 in.), Torque: 0.5 N•m (4.4 lb•in)

(1) Total height of 700-HN128 + 700-HNC is 82.5 mm.

700-HNK Ultra-Slim Timing Relay

- The ultra-slim timing relay is the smallest relay available
- It is perfect for converting 700-HK relays into a timing relay
- SPDT and DPST-NO contact output
- Socket-mounted
- Timing range From 0.1 s...10 hr

Photo	Timing Mode	Socket Type	Contact Output	Timing Range	Input Voltage	Cat. No.
	On-Delay One Shot Repeat Cycle, OFF-start Repeat Cycle, ON-start	700-HN121	SPDT [1]	0.1 s…10 min	12V DC	700-HNK41AZ12
					24V DC	700-HNK41AZ24
					24V AC	700-HNK41AA24
				0.1 min…10 hr	12V DC	700-HNK41BZ12
					24V DC	700-HNK41BZ24
					24V AC	700-HNK41BA24
		700-HN122	DPST-NO[2]	0.1 s…10 min	12V DC	700-HNK42AZ12
					24V DC	700-HNK42AZ24
					24V AC	700-HNK42AA24
				0.1 min…10 hr	12V DC	700-HNK42BZ12
					24V DC	700-HNK42BZ24
					24V AC	700-HNK42BA24

(1) 5-blade terminal type only.
(2) 8-blade terminal type only.

Accessories - 700-HNK Relays

Description		Pkg. Quantity	Cat. No.
	Screw Terminal Socket — Panel or DIN Rail Mounting 5-blade miniatue socket. For use with 1-pole type 700-HNK41 timers. Socket includes a retainer clip.	10	700-HN121
	Screw Terminal Socket — Panel or DIN Rail Mounting 8-blade miniature socket for use with 2-pole, 700-HNK42 timers. This socket includes a retainer clip.	10	700-HN122

Sockets and Retainer Clip Reference

Timer Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HNK	700-HN121	Provided
	700-HN122	Provided

Specifications - 700-HNK Relays

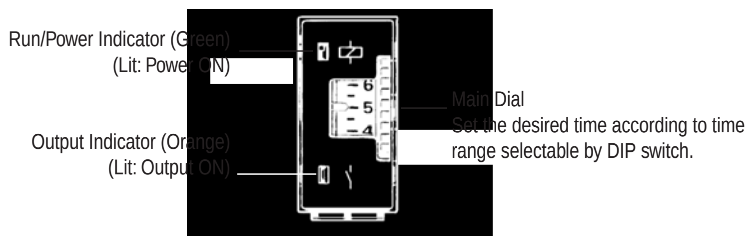
Attribute		700-HNK	
Pilot Duty Rating		NEMA B300	
Rated Supply Voltage		24V AC; 12, 24V DC	
Pin Type		Plug-in	
Operating Mode		ON-delay, One Shot, Repeat Cycle OFF start, or Repeat Cycle ON start selectable with DIP switch.	
Operating Voltage Range		85%…110% of rated supply voltage (12 VDC: 90%…110% of rated supply voltage) (1)	
Power Consumption		24V AC:Relay ON:approx. 0.8 VA (at 24 VAC, 60 Hz) Relay OFF:0.5 VA (at 24V AC, 60 Hz) 12V DC:Relay ON:approx. 0.4 W (at 12V DC) Relay OFF:0.1 W (at 12V DC) 24V DC:Relay ON:approx. 0.5 W (at 24V DC) Relay OFF:0.2 W (at 24V DC)	
Control Outputs		5 A at 250V AC, resistive load (cos φ = 1) The minimum applicable load is 10 mA at 5 VDC (P reference value).	
Characteristics			
Make ►][◄	120V AC	30 A	
	240V AC	15 A	
Break ◄][►	120V AC	3 A	
	240V AC	1.5 A	
Hp at 240V AC		1/6 Hp	
Accuracy of Operating Time		±1% FS max. (1 s range: +1% ±10 ms max.)	
Setting Error		±15% +50 ms FS max.	
Reset Time		Min. power-opening time:	12, 24V DC: 0.1 s max. (including halfway reset) 24V AC: 0.5 s max. (including halfway reset)
Influence of Voltage		±2% FS max.	
Influence of Temperature		±2% FS max.	
Insulation Resistance		100 mΩ min. (at 500V DC)	
Dielectric Strength		2000V AC, 50/60 Hz for 1 min (between operating circuit and control output, or contacts of different poles) 1000V AC, 50/60 Hz for 1 min (between non-continuous contacts)	
Vibration Resistance		Malfunction: 10…55 Hz, 0.5 mm single amplitude	
Shock Resistance		Malfunction: 100 m/s^2 (approx. 10G)	
Ambient Temperature		Operating: -10 °C…50 °C (with no icing) Storage: -25 °C…65 °C (with no icing)	
Ambient Humidity		Operating: 35…85%	
Life Expectancy		Mechanical: 10 000 000 operations min. (under no load at 1800 operations/hr) Electrical: 100 000 operations min. (3 A at 250V AC, resistive load at 1800 operations/hr)	
Impulse Withstand Voltage		Between power terminals: 1 kV	
Noise Immunity		±1.5 kV, square-wave noise by noise simulator (pulse width: 100 ns/1 σs, 1-ns rise)	
Static Immunity		Destruction: 8 kV Malfunction: 4 kV	
Enclosure Rating		IP20	
Weight		Approx. 18 g	

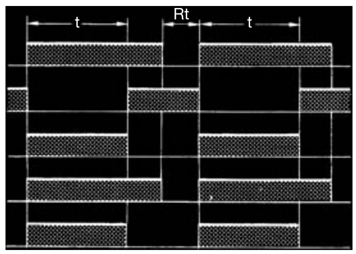
Attribute	700-HNK
EMC	Emission Enclosure: EN55011 Group 1 class A Emission AC Mains: EN55011 Group 1 class A Immunity ESD: EN61000-4-2:4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: ENV50140: 10 V/m (amplitude modulated, 80 MHz…1GHz) (level 3) 10 V/m (pulse modulated, 900 MHz) Immunity Conducted Disturbance: ENV50141:10 V (0.15…80 MHz) (level 3) Immunity Burst: EN61000-4-4:2 kV power-line (level 3) 2 kV I/O signal-line (level 4)
Standards	UL508, CSA C22.2 No. 14, EN/IEC 60947-5-1, EN/IEC 61812-1
Certifications	cURus Recognized Component (File No. E14843, Guide NRNTZ/NRNT8), CE Marked, C-Tick Marked

(1) When using 700-HNK timer in any place where the ambient temperature is more than 50 °C, supply 90…110% of the rated voltages (12V DC: 95…11% of the rated voltage).

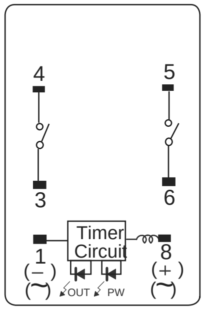
IMPORTANT t: Set time, Rt:Reset time

General Timer Functions

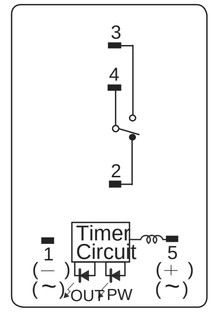


Operating Mode	Timing Charts / Wiring Diagram	
	700-HNK41…	700-HNK42…
ON-Delay Power t Output	(1-5) (4-2) (4-3) / ( ) ( )	(1-8) a 4-3, 5-6 u / a ( ) u u a ( )
One shot Power t Output	(1-5) (4-2) (4-3) / ( ) ( )  	(1-8) a (4-3, 5-6) u / a ( ) u u a ( )
-S Power Output	(1-5) (4-2) (4-3) / ( ) ( )	(1-8) a (4-3, 5-6) u / a ( ) u u a ( )
-S Power Output	(1-5) (4-2) (4-3) / ( ) ( )	(1-8) a (4-3, 5-6) u / a ( ) u u a ( )

Wiring- 700-HNK Relays

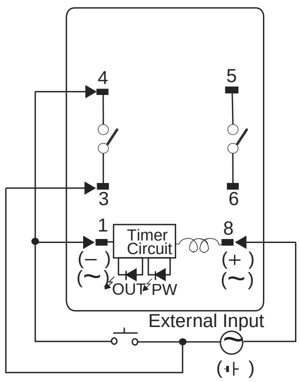


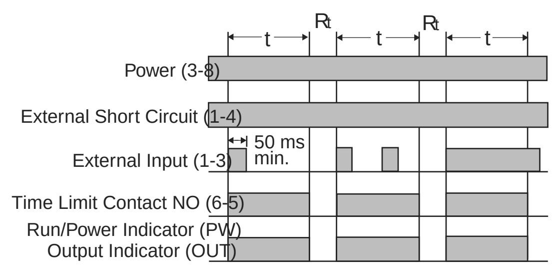
Cat. No. 700-HNK42...



Cat. No. 700-HNK4

A pulse output for a certain period can be obtained with a random external input signal. Use the 700-HNK in timing mode as sh Use the following internal chart.





Note: t: Set time
Rt: Reset time

Mode	Terminals
Pulse Operation	Power supply between 3 and 8 Short-circuit between 4 and 1 Input signal between 3 and 1
Operating mode; One shot and other modes	Power supply between 1 and 8