



Relays and Timers- Reliable Global Solutions Selection Guide

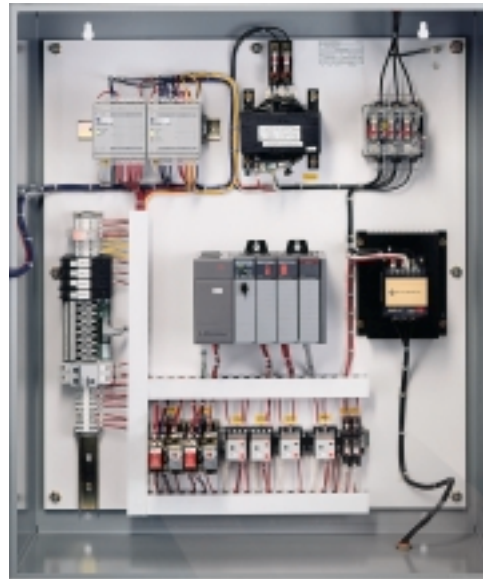


Bringing Together Leading Brands in Industrial Automation

Extensive Options and Accessories

Allen-Bradley relays and timers also offer many options and accessories, such as:

- Family of accessories including enclosures, pilot light options, surge suppressors, timing modules, and auxiliary contacts
- Mechanically linked contacts for safety circuits
- Bifurcated contacts or gold overlay for maximum reliability in switching low energy applications
- Contacts for up to 35 A switching
- Wide range of pole configurations – 1 to 12-pole
- Popular standard DIN Rail mounting
- Complete line of relay sockets to accommodate many relay styles and accessories



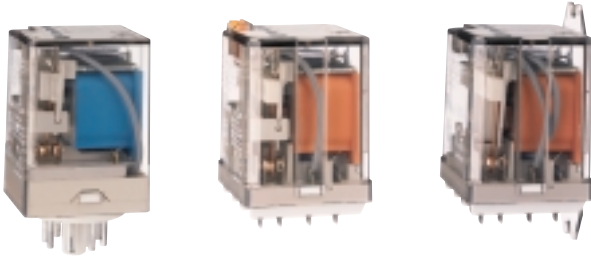
Relays work with PLCs and can be found in most panels.



General Purpose Relays

Increased Switching Capabilities by 50%

As part of Rockwell Automation's commitment to provide world-class products, Allen-Bradley is offering a new series of General Purpose Relays to its Bulletin 700 line — 700-HA, 700-HB Series D and 700-HD Series B relays are now the most powerful General Purpose relays for 10 A to 15 A continuous switching applications. These relays have increased switching capability, reduced size, and additional standard features that will reduce your installation and maintenance costs. They are the first relays and timers to have RINA and ABS third party certifications.



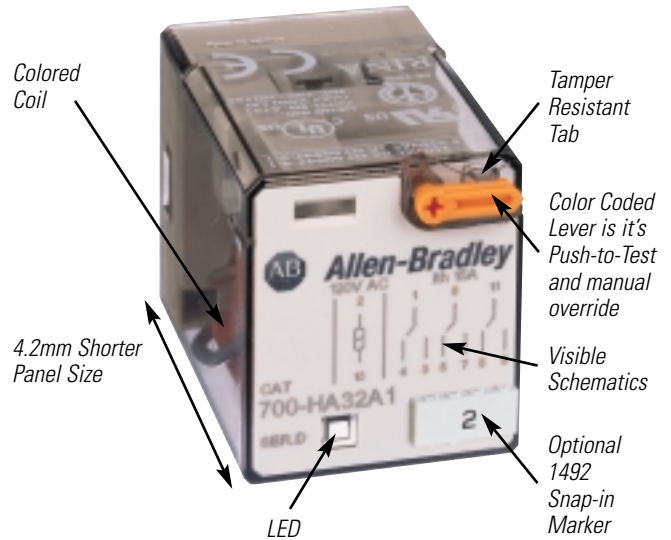
700-HA Series D
Ideal product offering for machine tool, pulp and paper, and transportation OEM equipment producers

700-HB Series D
Ideal product offering for HVAC, elevator and automotive industry applications

700-HD Series B
Product offering for HVAC, injection molding, and electric motor load applications

Key Benefits

- **Increased Performance** – through reliable and enriched improvements
- **Increased Switching Capability** – from 10 A to 15 A on 700-HB and 700-HD
- **Flexibility** – compatible among (7) different, existing Allen-Bradley 1492 terminal block snap-in marker lines
- **Easy Installation and Maintenance** – electrical wire schematic visible on faceplate
- **Tamper Resistant** – new “break-off” tab above optional push-to-test and manual override lever
- **Colored Coil and Lever** – gives you visual indication as to control voltage applied



The improvements made to this new series of relays is Rockwell Automation's approach to increase performance and reliability.



New NEMA Socket
Cat. No. 700-HN154



New IEC Socket
Cat. No. 700-HN153

Clean up electric cabinet wiring with our new 700-HB IEC Socket that allows you to separate your contact wiring from your coil wiring.

Industrial and Safety Control Relays

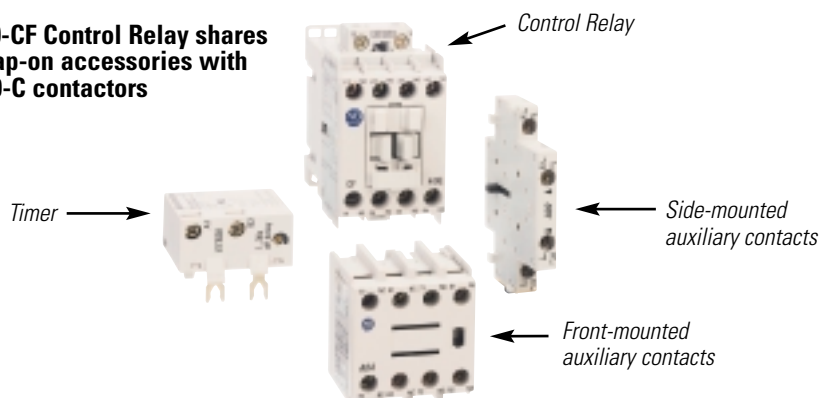
Designed for Robust Applications

700-CF Control Relays

The 700-CF is the newest member of the Allen-Bradley industrial relay family.

- IEC design with NEMA and IEC ratings
- Mechanically-linked double-break contacts
- Long mechanical and electrical life
- Switch 4 to 12 circuits
- Accessories include: solid-state and pneumatic timers, latches, and surge suppressors
- Finger-safe terminals
- Wide range of AC/DC coil voltages

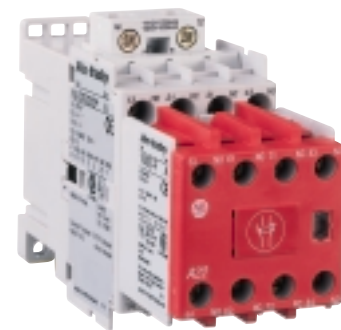
700-CF Control Relay shares snap-on accessories with 100-C contactors



700S-CF Safety Control Relays

The 700S-CF is a special version of the 700-CF with new safety features for safety and master control relay (MCR) applications.

- 8-pole safety version with contacts permanently mounted
- Protective cover to prevent manual operation
- Red contact housing for easy identification
- Mechanically linked contacts symbol prominently displayed on front
- SUVA third-party certification



700 S-CF

100-JE Interface Relays

The 100-JE is a combination of an interposing relay and surge suppressor.

- Interfaces a low-power DC control signal (from PLC) to a 100-C contactor
 - Very low power requirements – allows use of high density, low current PLC outputs
 - Green pilot light indicates when contactor is energized
 - Requires no additional surge suppression on contactor coil

Panel space savings –
100-JE Interface Module mounts onto 100-C contactor



700-M Mini Relays

- Double-break contacts and mechanically linked contacts
- Contact life is typically 2 to 4 times greater than plug-in style relays
- Low power consumption – 33 to 66% less power required than for typical industrial relays
- Contact options – Standard (700-M) and bifurcated (700-MB)
- 4 to 8 poles



Panel space savings –
about 1/2 to 1/3 the size of typical industrial relays

General Purpose Timers

Improved Performance by 100%

New Ultra-Slim 700-HNK

- Same pin configuration as 700-HK Relay
- Three input voltages
- SPDT or DPST - NO
- Four selectable operating modes
- Time range to 10 hours

Doubled
switching
capacity



Doubled
switching
capacity

Multifunction Digital Timer 700-HX

- Highly visible negative transmissive LCD Display
- Increased functionality-(10) timing modes
- Environmentally friendly-flash memory, no battery
- Improved performance HP rating/NEMA B300
- NEMA 4X/IP66 for washdown applications



DIN Rail Mounted Timing Relays – 700-FS/FE

- 17.5 and 22.5 mm wide
- (15) timing modes

General Information

- Quickselection table
- Contact switching data
- Surge suppression information
- Catalog number explanation
- Catalog number index

Page 18

General Purpose Relays



Bulletin 700-HA Tube Base Relays

- Tube base terminals
- 10 A contact rating
- DPDT (2 c/o) or 3PDT (3 c/o)
- Standard ON/OFF flag indicator
- Gold and bifurcated contacts available
- Optional LED
- Optional Push-to-test and manual override

Page 42



Bulletin 700-HB Square Base Relays

- Blade-style quick connect terminals
- 15 A contact rating
- DPDT (2 c/o) or 3PDT (3 c/o)
- Standard on/off flag indicator
- Optional LED

Page 55



Bulletin 700-HD Flange Mount Square Base Relays

- Blade-style quick connect terminals
- 15 A contact rating
- DPDT (2 c/o) or 3PDT (3 c/o)

Page 62



Bulletin 700-HF Miniature Square Base Relays

- Plug-in quick connect solder terminals
- 10 A contact ratings
- DPDT (2 c/o), 3PDT (3 c/o), 4PDT (4 c/o)
- Optional push-to-test and LED

Page 73

Latching Relay

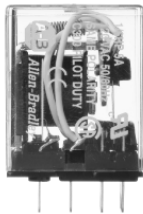


Bulletin 700-HJ Magnetic Latching Relays

- Plug-in blade style terminals
- 10 A contact ratings
- SPDT (1 c/o), DPDT (2 c/o)

Page 79

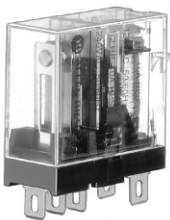
Interposing/Isolation Relays



Bulletin 700-HC Miniature Square Base Relays

- Blade style quick connect terminals
- 1 A, 3 A and 5 A contact ratings
- 4PDT (4 c/o)
- Standard, gold, or gold bifurcated contacts
- Optional Push-to-test and LED
- Ideal for PLC and drives applications

Page 67



Bulletin 700-HK Slim Line Relays

- Plug-in blade style terminals
- SPDT (1 c/o) — 10 A contacts, DPDT (2 c/o) — 5 A contacts
- Ideal for PLC and drives applications

Page 85



Bulletin 700-HL Terminal Block Relay

- Assembled socket and relay
- SPDT (1 c/o) contact output
- 1 N.O. solid-state 2 A output
- Ideal for low energy, high switching frequency, interfacing needs

Page 91

Power Relays



Bulletin 700-HG Power Relays

- Panel mounted
- 30 A contact ratings
- SPST-NO-DM, SPDT, SPDT-NO, DPDT
- Optional magnetic blowout for DC loads

Page 98



Bulletin 700-HHF Flanged Cover Power Relays

- Flange mounting
- 20 A, 25 A, 30 A contact ratings
- SPDT-NO-DM, DPDT, 3PDT
- Optional push to test and LED

Page 103

DIN Rail Timing Relays



Bulletin 700-FE Economy Timing Relays

- 1 N.O. or SPDT (1 c/o)
- Single, special, or multi-function timing available
- 0.05 s...10 h timing range available
- 17.5 mm width — uses minimum panel space

Page 107



Bulletin 700-FS Electronic High Performance Timing Relays

- SPDT (1 c/o) or DPDT (2 c/o)
- Single, special, or multi-function timing available
- 0.05 s...60 h timing range available
- 22.5 mm width — uses minimum panel space

Page 112

Plug-In Timing Relays



Bulletin 700-HR Dial Timing Relays

- 5 A contact rating
- SPDT (1 c/o), DPDT (2 c/o), transistor
- 0.05 s...300 h timing range
- Single Function, Multifunction, Twin Timer, Star Delta, or True OFF-delay

Page 120



Bulletin 700-HNC Miniature Timer

- 5 A contact rating
- DIN Rail mounted with socket
- 0.1 s...10 h timing range
- 4PDT (4 c/o)

Page 134



Bulletin 700-HNK

- 5 A contact ratings
- DIN Rail mounted with socket
- 0.1 s...10 h timing range
- SPDT (1 c/o), DPST (2 c/o)

Page 142



Bulletin 700-HS Timing Relays

- ON-delay or OFF-delay (0.1 s...180 s)
- 12 A contact rating, DPDT (2 c/o)
- Single range or fixed timing

Page 149



Bulletin 700-HT Timing Relays

- ON-delay OFF-delay (0.1 s... 600 s)
- 10 A contact rating, DPDT (2 c/o)
- Single range or fixed timing

Page 156



Bulletin 700-HV Repeat Cycle Timing Relays

- Repeat cycle (0.1 s...30 min.)
- 10 A contact rating, DPDT (2 c/o)
- Single range or fixed timing

Page 163

Digital Timing Relay



Bulletin 700-HX Digital Timing Relays

- Panel or DIN Rail mounted
- Totalized count of 8-digits
- User-friendly key pads for preset and monitoring
- SPDT (1 c/o)

Page 170

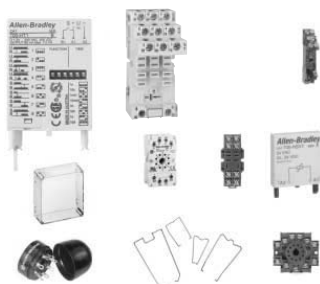
Digital Timing Relay Counter



Bulletin 700-HXM Preset Counter/Timer

- 5 A contact ratings
- World's smallest preset timer
- Panel mounted
- Built-in prescaling for counter operation
- SPDT (1 c/o)

Page 181



Bulletin 700-H Accessories

Page 190

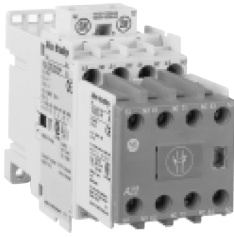
Industrial Relays



Bulletin 700-CF Control Relays

- Positively guided, mechanically linked contacts
- Long contact life
- 4...12 poles
- DIN rail mounting
- Finger protection
- MCS family of IEC products
- Pneumatic and solid-state timers
- Latches
- 12...600V AC, 9...250V DC coils
- SUVA approval

Page 204



Bulletin 700S-CF Safety Control Relays

Page 217



Bulletin 700-M Miniature Control Relays

- Compact size
- Optional bifurcated contacts (Bulletin 700-MB)
- DIN Rail mounting
- Finger protection
- 4...8 poles
- Mechanically linked contacts
- Low power consumption

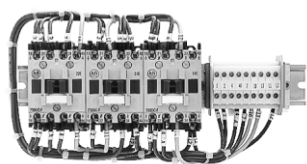
Page 221



Bulletin 700-P Heavy-Duty Relays

- Heavy-duty applications
- NEMA and IEC ratings
- Long contact life
- Switches from 1 mA...35 A
- 4...12 poles
- Direct drive—mechanically linked contacts
- Convertible contacts — N.O. to N.C. and N.C. to N.O.
- Replaceable contacts
- Double break contacts to minimize contact welding
- Bifurcated contacts for low-energy switching
- Flexible — 5 different contact designs and various accessories can be mixed and matched in one relay
- Pneumatic and solid-state timers
- Latches
- 24...600V AC, 6...600V DC coils
- High performance in demanding environmental conditions

Page 226



**Bulletin 700-ZP
Self-Monitoring
Relay Assemblies**

Page 243

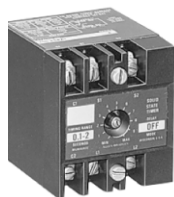
Sealed Switch Relays



**Bulletin 700-R
Sealed Switch Relays**

Page 247

Industrial Timing Relays



**Bulletin 700-PS
Solid-State Timing
Relays**

Page 253



**Bulletin 700-RTC
Solid-State Timing
Relay**

Page 257

Automatic Alternator




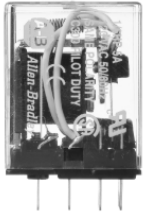
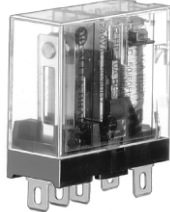


**Bulletin 841
Automatic Alternator**

Page 262

General Information





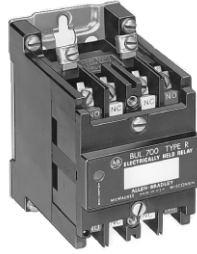
Quick Selection Table For Relays

			
Bulletin No.	700-HA	700-HB	700-HD
Type	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 Connection Terminals, Clear Cover for Visual Inspection
Contact Ratings			
Contact Form	DPDT, 3PDT	DPDT, 3PDT	DPDT, 3PDT
Contact Type	Single, Bifurcated	Single	Single
Contact Material	AgNi, Au	AgCdO	AgCdO
Max. operating current under resistive load	10 A	15 A	15 A
Min. permissible load	700-HA 10V 50 mA 700-HAB 6V 20 mA 700-HAX 6V 1 mA	10V 50 mA	10V 50 mA
Coil Ratings			
Coil Voltage	AC: 6V, 12V, 24V, 36V, 48V, 110V, 120V, 208V, 230V, 240V, 277V DC: 6V, 12V, 36V, 48V, 60V, 80V, 110V, 125V, 140V, 220V	AC: 6V, 12V, 24V, 120V, 240V DC: 6V, 12V, 24V, 48V, 110V	AC: 6V, 12V, 24V, 120V, 208V, 240V DC: 6V, 12V, 24V, 48V, 110V
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	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal 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 AC Contact to Coil: 4000V AC Contact to Frame: 2500V AC
Electric Service Life (cycles)	100,000 minimum	100,000 minimum	100,000 minimum
Reference			
Certifications	CE, cULus, cURus, ABS, IMQ, RINA	CE, cULus, cURus, ABS, IMQ, RINA	CE, cURus, ABS, IMQ, RINA
Socket Cat. No(s).	700-HN100 700-HN101 700-HN125 700-HN126 700-HN202 700-HN203	700-HN153 700-HN154	—
Page Number	42	55	62

				
700-HF	700-HC	700-HK	700-HL	700-HG
General Purpose Relay	Interposing/Isolation Relay	Interposing/Isolation Relay	Interposing/Isolation Relay	Power Relay
Miniature Square Base, Plug-in Quick Connect Solder Terminals, Optional Push-to-test and LED	Blade Style Terminals, Optional Push-to-test, Optional LED Clear Cover for Visual Inspection	Optional Pilot Light, Built-in Retainer Clip, Low Switching Capacity	Ideal for PLC Interfaces, Fully Assembled Relay/ Sockets, Standard LED, Relay or Solid-state Output	Panel Mount with Screw Terminals, Optional Magnetic Blowouts for Switching DC Loads
DPDT, 3PDT, 4PDT	4PDT	SPDT, DPDT	SPDT (1 c/o) 1 N.O. (SSR)	SPDT-NO-DM, SPDT, DPST-NO, DPDT
Single	Single, Bifurcated	Single	Single	Single
AgCdO	Au, Au/Ag, AdCdO	AgCdO, AgCd+Gold	AgSnO	AgCdO
10 A	1 A Gold Bifurcated 3 A Gold Single 5 A Single	5 A (DPDT), 10 A (SPDT)	6 A (SPDT), 2 A (SSR)	30 A
10V 50 mA	10V 50 mA	10V 50 mA (AgCdO), AgCd+Gold (5V 10 mA)	50 mW	10V 50 mA
AC: 6V, 12V, 24V, 120V, 240V DC: 6V, 12V, 24V, 48V, 110V	AC: 6V, 12V, 24V, 120V, 240V DC: 6V, 12V, 24V, 48V, 110V	AC: 6V, 12V, 24V, 120V, 240V DC: 6V, 12V, 24V, 48V, 110V	AC: 12V, 24V, 48V, 110V, 120V, 230V, 240V DC: 12V, 24V, 48V, 125V, 230V, 240V	AC: 24V, 120V, 240V, 277V, 480V DC: 12V, 24V, 48V, 110V, 220V, 250V
85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC
Pole-to-Pole: 1500V AC Contact to Coil: 1500V AC Contact to Frame: 1500V AC	Pole-to-Pole: 1500V Contact to Coil: 1500V Contact to Frame: 1500V	Pole-to-Pole: 1500V AC Contact to Coil: 1500V AC Contact to Frame: 1500V AC	Pole-to-Pole: — Contact to Coil: 4000V AC Contact to Frame: 1500V AC	Pole-to-Pole: 2200V AC Contact to Coil: 2200V AC Contact to Frame: 2200V AC
200,000 minimum, 500,000 minimum (DPDT)	100,000 minimum	100,000 minimum	100,000 minimum	100,000 minimum
CE, UL, CSA	CSA, UL, CE-marked	CE, UR, CSA	CE, cURus, cULus, ABS	CE, UL, CSA
700-HN116, 700-HN138, 700-HN139	700-HN103, 700-HN128	700-HN121 700-HN122	—	—
73	67	86	91	99

General Information





Quick Selection Table for Relays




					
Bulletin No.	700-CF and 700S-CF	700-M/MB	700-P	700-PK	700-R
Type	IEC Relay	Mini Relay	Heavy Duty NEMA	Heavy Duty NEMA	Sealed Switch
Features	Mechanically Linked Contacts, Timer and Latch Operations, Switch up to 600V AC and DC 700S-CF for Safety Circuits	Small Size, Long Life, Low Power Consumption, Mechanically Linked Contacts, Switch up to 600V AC and DC	Five Contact Styles, Mechanically Linked Contacts, Timer and Latch Options, Switch up to 600V AC and DC	Five Contact Styles, Mechanically Linked Contacts, Timer and Latch Options, Switch up to 600V AC and DC	Hazardous Location Ratings, Long Life in Dirty Environment, Timer and Latch Options, Switch 600V AC, 300V DC
Contact Form	4-12 Poles Double Break	4-8 Poles Double Break	2-12 Poles Double Break	2-12 Poles Double Break	2-8 Poles
Contact Type	Cross Stamp	X-Mark and Bifurcated	Bifurcated Double Break	Double Break	Sealed Switch
Contact Material	Silver	Silver-Copper	Silver-Nickel	Silver-Cadmium Oxide	Sealed Switch
Electrical					
Max. Current AC Resistive	20 A	15 A	10 A	20 A	5 A
Min. Load	17V, 30 mA	17V, 5 mA with Bulletin 700-MB	1 mA, 5V with Bulletin 700-CPR	1 mA, 5V with Bulletin 700-CPR	1 mA, 5V
Coil Voltage	12...600V AC 9...250V DC	24...480V AC 12...220V DC	24...600V AC 6...600V DC	24...600V AC 6...600V DC	24...240V AC 24...250V DC
Coil Voltage Pickup	85...110% AC Coils, 80...110% DC Coils	85...110% AC Coils, 80...110% DC Coils	85...110% AC Coils, 80...110% DC Coils	85...110% AC Coils, 80...110% DC Coils	85...110% AC Coils, 80...110% DC Coils
Di-electric withstand	2640V	2640V	2640V	2640V	2640V
Reference					
Electric Service Life (cycles)	1.2 million at 10 A 120V AC	800K at 10 A 120V AC	1.5 million at 10 A 120V AC	1.5 million at 10 A 120V AC	1.5 million at 5 A 120V AC
Certifications	UL, CSA, CE	UL, CSA, CE	UL, CSA, CE	UL, CSA, CE	UL, CSA, CE
Sockets	DIN Rail or Panel Mount	DIN Rail or Panel Mount	Panel or Rail Mount	Panel or Rail Mount	Panel or Rail Mount
Page Number	204, 217	222	226	228	247

			
Bulletin No.	700-HR52, -HRP, -HRS, -HRT, -HRV	700-HRM/-HRC	700-HRF
Type	Multifunction Timer	ON-Delay Timer	Twin Timer
Features	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	DPDT Timed, Transistor SPDT Timed/Instantaneous	DPDT Timed, Transistor SPDT Timed/Instantaneous	DPDT Timed
Operation 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...300 h	0.05 s...300 h	0.05 s...300 h
Supply Voltage	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	5 A	5 A
Certifications	cURus, CE, ACA	cURus, CE, ACA	cURus, CE, ACA
Socket Cat. No(s).	700-HN100 OR 700-HN101 700-HN125 OR 700-HN126	700-HN100 700-HN125	700-HN100 700-HN125
Page Number	121	121	121

General Information



Quick Selection Table For Timing Relays

				
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 Bulletin 700-HC Relay	Ultra-Slim Timing Relay 4 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, ACA	cURus, CE, ACA	cURus, CE, ACA	cURus, CE, VDE, 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 Number	122	122	135	143


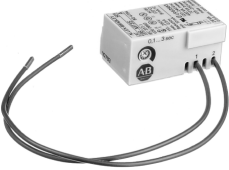


			
Bulletin No.	700-HT	700-HX	700-HXM
Type	Single Range Timing Relay	Digital Timer	Digital Counter/Timer
Features	Pin Style Terminals Single Range or Fixed Timers Available as -ON or -OFF Delays	Digital Timer 5 A Contact Rating Negative Transmissive LCD Display 10 Functions or Modes Environmentally Friendly—Flash Memory, No Battery NEMA B300 Rated NEMA 4/ IP66 DIN or Panel Mount Capable	World's Smallest Compact Preset Timer Built-in Prescaling for Counter Operation Finger Protection Terminal Block to Meet VDE0106/P100 Panel Surface Compatible with NEMA 4/IP66 Six-language Instruction Manual Provided Environmentally Friendly—Flash Memory, No Battery Negative Transmissive LCD Display
Control Outputs: Time Limit Instantaneous	DPDT	SPDT	SPDT
Timing Operation Modes:	ON-Delay Repeat Cycle Signal OFF-Delay One Shot Accumulative On/Off-duty Adjustable- Repeat Cycle Counter Multi Mode	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	ON-Delay Repeat Cycle Signal Off-Delay One Shot Accumulative On/Off-duty Adjustable- Repeat Cycle Counter Multi Mode
Time Range	0.1 s...30 min.	0.05 s...300 h	0...9999 h
Supply Voltage	12V DC 24V DC 24V AC 120V AC 240V AC	12...24V DC 24V AC 100...240V AC	24V DC
Contact Rating at 120V	10 A	5 A	5 A
Certifications	UR, CSA, CE	cURus, CE, NEMA 4/IP66, ACA	cURus, CE, NEMA 4/IP66, ACA
Socket Cat. No(s.)	700-HN100 OR 700-HN101 700-HN125 OR 700-HN126	700-HN100 700-HN125	—
Page Number	156	171	182

General Information

Quick Selection Table For Industrial Timing Relays

		
Bulletin No.	100-FPT	700-PT
Type	Pneumatic Timing Module (for 700-CF relays)	Pneumatic Time-Delay Timer
Features	Timing function works independent of the supply voltage. Relay contact operates instantaneously. Continuous adjustment range.	Continuous carrying current of 10 A, Contacts of N.O. and N.C. Open Type Without Enclosure. Mounts on 700-P relay.
Control Outputs: Time Limit Instantaneous	2 timed contacts	1 open, 1 closed
Timing Operation Modes:	ON-Delay OFF-Delay	ON-Delay OFF-Delay
Time Range	0.3...180 s	0.1...60 s
Supply Voltage	110...240V 50/60 Hz 110...250V DC	24...600V AC 6...600V DC
Page Number	206	226

Quick Selection Table For Industrial Timing Relays

				
Bulletin No.	100-ETA	196-MT3	700-RTC	700-PS
Type	Solid-state Timing Module (for 700-CF relays)	Solid-state Timing Module (for 700-M relays)	Solid-state Timing Relay	Solid-State Timer
Features	Changes all contacts on Bulletin 100-C contactors and Bulletin 700-CF control relays into timed contacts.	35 mm DIN Rail Mounting Adapter	Timed and instantaneous contacts. Sealed contacts for harsh environments and hazardous locations.	Self-contained or external potentiometer. Continuous carrying current of 5 A AC or DC. Stand alone or mount on 700-P or 700-R.
Control Outputs: Time Limit Instantaneous	4 timed contacts on relay	4 instantaneous to timed contacts	8 output contacts	3 output contacts
Timing Operation Modes:	ON-Delay OFF-Delay	ON-Delay	ON-Delay OFF-Delay	ON-Delay OFF-Delay
Time Range	0.1...180 s	0.1...30 s	0.05 s...64 min.	0.1...120 s
Supply Voltage	110...240V 50/60 Hz 24V DC 110...250V DC	110...250V AC/DC 50/60Hz	24V AC 110...120V AC 220...240V AC 24V DC 120V DC 240V DC	110...120V 50/60 Hz
Page Number	206	223	257	226

Relays and Timers

General Information

Contact Data Tables

	Relay Type	Contact Arrangement	Contact Style	Contact Material	NEMA Pilot Duty ❶	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	700-CF	Up to 8 form X or 8 form Y	cross stamped	Ag	A600 P600		24V											AC	
	700-MB	Up to 8 form X or 8 form Y	bifurcated	AgCu	A300 Q300		17V											AC	
	700-M	Up to 8 form X or 8 form Y	single "X" mark	AgCu	A600 Q600			17V										AC	
NEMA	700-CPR ❷	N.O. or N.C. cartridge	single	sealed	—	5V					AC (0.5 A Max.)							(150V) (30V)	
	700-P	Up to 12 form X or 8 form Y	bifurcated	NiAg	A600 P600			10V										AC	
	700-PK	Up to 12 form X or 8 form Y	single	AgCdO	2X A600 2X P600				10V									AC	(20 A Lighting Load)
	700-PH	Up to 6 form X or 4 form Y	tandem	AgCdO	A600 P600				10V									AC	(35 A Lighting Load)
	700-R	Up to 8 form A or form B	sealed sw.	W	B300 C600 P300	5V												AC	
	700-RM	Up to 8 form A or form B	sealed sw.	W	B300 C600 P300	5V												AC	
	700-RM	Up to 8 form A or form B	sealed sw.	W	B300 C600 P300	5V												DC	
	700-RM	Up to 8 form A or form B	sealed sw.	W	B300 C600 P300	5V												DC	
	700-RTC	Up to 4 form A or form B	sealed sw.	W	B600 P300	5V												AC	
	700-RTC	Up to 4 form A or form B	sealed sw.	W	B600 P300	5V												DC	

❶ NEMA contact rating chart is on page 29.

❷ Cartridge for 700-P relays for low energy switching.

Contact Data Tables, Continued

	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	700-HA	2, 3 form C	single	AgNi	B300			10V						AC					
														DC	(24V	Max.)			
	700-HAB	2, 3 form C	bifurcated	AgNi	—		6V							AC					
														DC	(24V	Max.)			
	700-HAX	2, 3 form C	bifurcated	Au/AgNi	—	6V								AC					
														DC	(24V	Max.)			
	700-HB	2, 3 form C	single	AgNi	B300			10V						AC					
														DC	(24V	Max.)			
	700-HC54	4 form C	bifurcated	Au/Ag	C300	10V								AC					
														DC	(30V	Max.)			
	700-HC14	4 form C	single	Ag	C300		10V							AC					
														DC	(30V	Max.)			
	700-HC24	4 form C	single	AgCdO	C300			10V						AC					
														DC	(30V	Max.)			
	700-HD	2, 3 form C	single	AgCdO	B300			10V						AC					
														DC	(24V	Max.)			
	700-HF	2, 3, 4 form C	single	AgCdO	B300			10V						AC					
														DC	(30V	Max.)			
	700-HG	1 form X, 1 form C, 2 form A, 2 form C	single	AgCdO	A600			10V						AC					(28V Max.)
														DC					
	700-HG with Blowouts	1 form X	single	AgCdO	A600			10V						AC					(110V Max.)
														DC					
	700-HG with Blowouts	1, 2 form C, 2 form A	single	AgCdO	A600			10V						AC					(110V Max.)
														DC					
	700-HHF45	1 form X	single	AgCdO	A600			10V						AC					(28V Max.)
														DC					
	700-HHF62	2 form C	single	AgCdO	B600			10V						AC					(28V Max.)
														DC					
	700-HHF73	3 form C	single	AgCdO	B300			10V						AC					(28V Max.)
														DC					
	700-HJ	1, 2 form C	single	AgCdO	—			10V						AC					(24V Max.)
														DC					
	700-HK36	1 form C	single	AgCdO	B300			10V						AC					(30V Max)
														DC					
	700-HKX36	1 form C	single	Au/AgCdO	—														
	700-HK32	2 form C	single	AgCdO	B300			5V						AC					(30V Max)
														DC					
	700-HKX32	2 form C	single	Au/AgCdO	—														
	700-FE	1 N.O.	single	AgCdO	D300			10V						AC					(24V Max.)
														DC					
	700-FS	1, 2 form C	single	AgCdO	B300			10V						AC					(24V Max.)
														DC					
	700-HT	2 form C	single	AgCdO	B300			10V						AC					(30V Max.)
														DC					

Relays and Timers

General Information, Continued

Contact Data Tables, Continued

Relay Type	Contact Arrangement	Contact Style	Contact Material	NEMA Pilot Duty ❶	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	
700-HS	2 Form C	single	AgCdO	B300			10V	AC						(30V Max.)			
								DC									
700-HLT	1 Form C	single	AgSnO			6V	AC/DC										
700-HLS	Solid-State 1 N.O.	—	—		3V	AC/DC											

❶ NEMA contact rating chart is on page 29.

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

NEMA Contact Rating Designation	Thermal Continuous Test Current [A]	Maximum 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

NEMA Contact Rating Designation	Thermal Continuous Test Current [A]	Maximum 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

Relays and Timers

General Information, Continued

NEMA Definitions for Contact Arrangements

Form “A” Contacts



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” Contacts



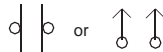
A Form B contact arrangement is one that has single-pole, single-throw, normally closed contacts. The function of this arrangement is to open a circuit when actuated.

Form “C” Contacts



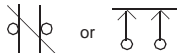
A Form C contact arrangement is one that has single-pole, double-throw contacts with three terminals - one for normally open, one for normally closed, and one common. The function of this arrangement is to transfer a circuit when actuated.

Form “X” Contacts



A Form X contact arrangement is one which has single-pole, single-throw, normally open double-make contacts. The function of this arrangement is to close a circuit when actuated.

Form “Y” Contacts



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” Contacts



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.

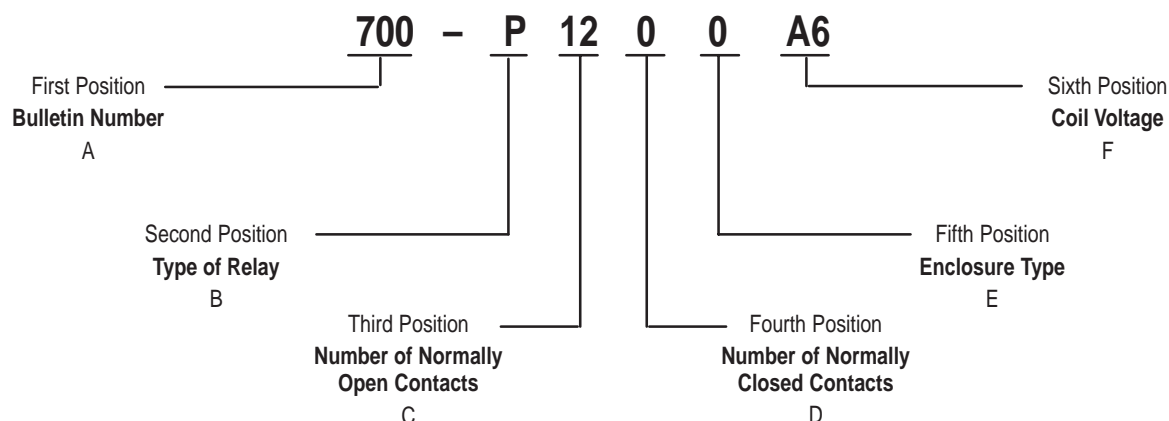
Surge Suppression Information

	Cat. No (s.)	For use with	Suppression Technique	Max. Relay Contact Dropout Time for 4-pole	Max. Transient Voltage Relative to System Voltage
See 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	5X	6...10X
	100-JE	100C, 700-CF	Diode	5X	6...10X
See 700-M Relay	700-M built-in	—	Diode	—	6...10X
	199-MSMA	100-M, 700-M	R-C Ckt	No Effect	3X
	199-MSMV	100-M, 700-M	MOV	No Effect	—
	199-MSMD	100-M, 700-M	Diode	5X	6...10X
	700-N5	700-P, 700-N	RC	No effect	3X
	700-N24	700-P, 700-N	RC	No effect	3X
See 700-R Relay	700-R built-in	—	Diode	—	6...10X
	199-FSMA1, FSMA2	700-P, 700-H, 700-CF, 700-M, 700-DCR	RC	No effect	3X
	199-FSMA9, 10, 11	700-P, 700-H, 700-CF, 700-M, 700-DCR	MOV	No effect	—
	199-FSMZ	700-P, 700-H, 700-CF, 700-M, 700-DCR	Diode	5X	—
	700-HSV1	700-HA	MOV	No effect	6...10X
	700-HSV2			—	
	700-HSV3			—	
	700-HSMD	700-HA	Diode	—	—

Relays and Timers

General Information, Continued

Industrial Relay Catalog Number Explanation



A Bulletin Number

700 is the Bulletin number for relays with AC coils.
700DC is the Bulletin number for relays with DC coils.

B Type of Relay

CF, P, PT, PL, M, MB, N, NT, R, or RM

C Number of Normally Open Contacts

This position indicates the quantity of Normally Open contacts (12 max.).

D Number of Normally Closed Contacts

This position indicates the quantity of Normally Closed contacts (8 max.).

E Enclosure Type

This position provides the designation of the enclosure, e.g., NEMA Type 1, 4, etc.

Note: "0" is for Open Type.

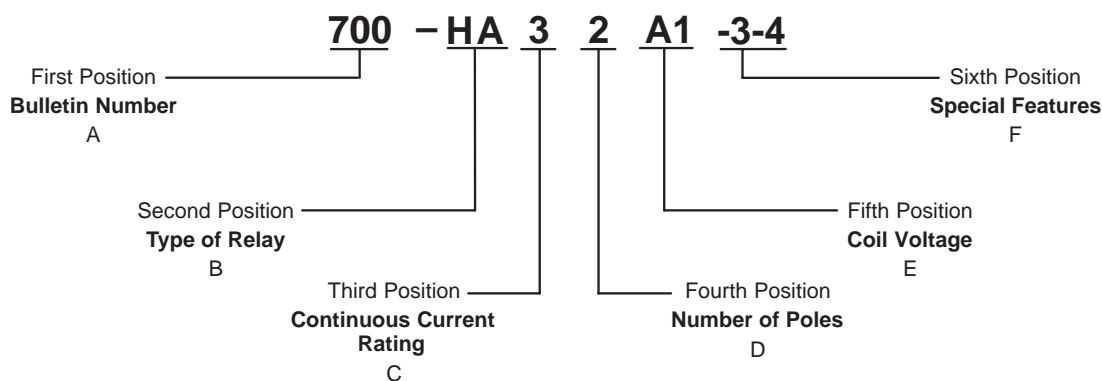
F Coil Voltage

The last position provides the letters and numbers of the coil voltage.

Coils are available from 6...600 Volts AC and DC.

Bulletin Number	Direct Drive Capability
700-CF	Yes
700-FS/H	No
700-M/MB	Yes (See page 222 note 3)
700-P	Yes
700-PS/852	No
700-R/-RTC	No
700-ZP	Yes

General Purpose Relay Catalog Number Explanation, Continued



A Bulletin Number

700 is the Bulletin number for general purpose relays.

B Type of Relay

HA, HB, HC, HD, HF, HG

C Continuous Current Rating

This position indicates the continuous current rating of the relay.

D Number of Poles

This position indicates the number of poles.

E Coil Voltage

This position designates an AC or DC coil voltage.

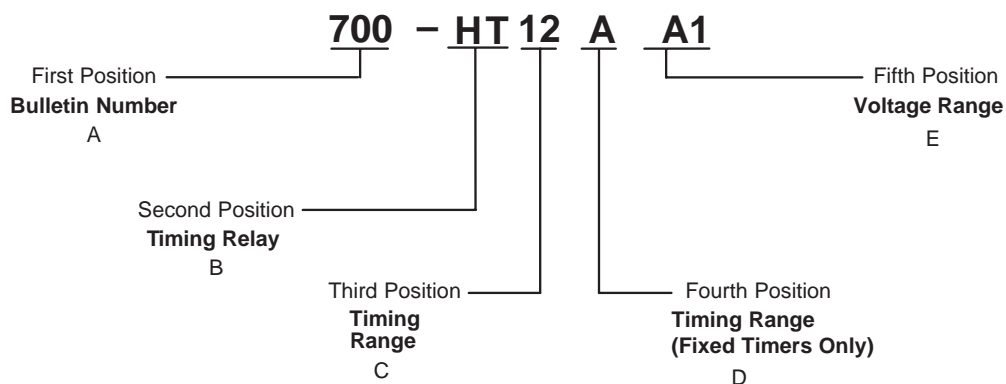
F Special Features

The last position indicates when special features have been selected. Features range from pilot light options to bulk packaging.

Relays and Timers

General Information, Continued

General Purpose Relay Catalog Number Explanation



A **Bulletin Number**

700 is the Bulletin number for general purpose relays.

B **Timing Relay**

HS, HSF, HJ, HTF, HV, HVF, HR, HRN, HRC

C **Timing Range**

Timing functions available.

D **Timing Range (Fixed Timers Only)**

This position indicates the number of poles.

E **Voltage Range**

Available from 12V...240V.

Relays and Timers

General Information, Continued

Timing Relay Selection Criteria

Single Function Timers

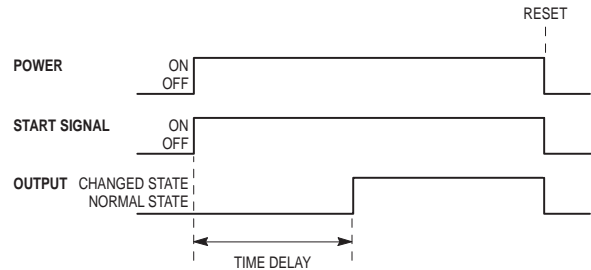
Timers that have only 1 timing mode (e.g., ON-Delay or OFF-Delay).

Multi-Function Timers

Timers that have 4...8 timing modes that are selected by turning the mode selection switch.

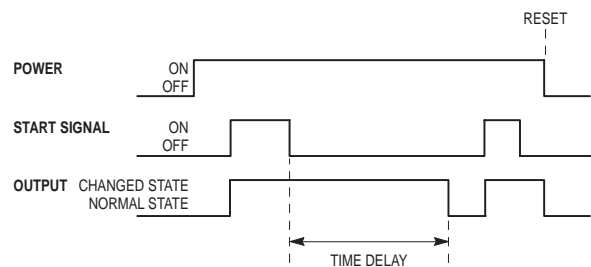
ON-Delay or (Delay on Operate)

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.



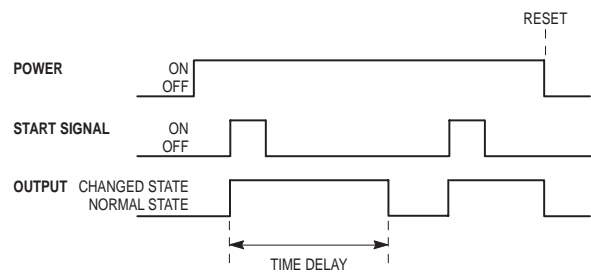
OFF-Delay or (Delay on Release)

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.



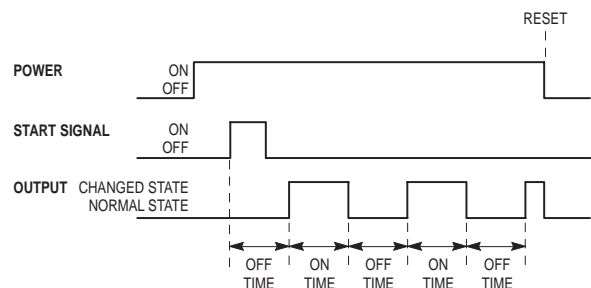
One Shot or (Repeat Cycle)

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

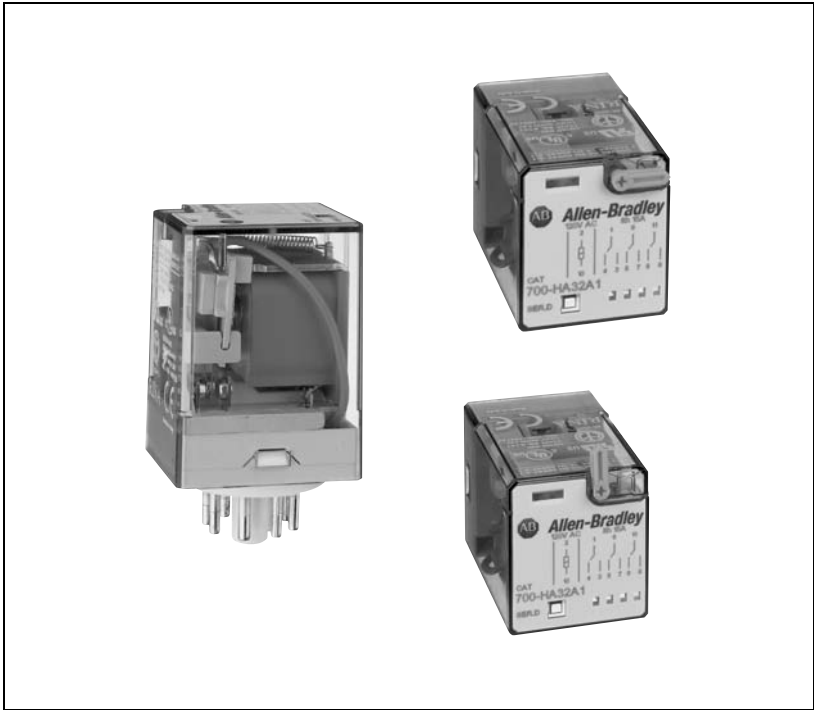
Mounting — Timing relays are available in several different models. They can be plugged into the same socket as the relay, or use a separate plug-in socket mounting.

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

Functionality — Timing relays with multi-range and multi-function capability are available. This allows 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.

Cat. No.	Page	Cat. No.	Page
100-ETA	209	700-PC	236
100-FA	208	700-PH	232
100-FL	210	700-PK	230
100-FS	210	700-PKT	233
100-FPT	209	700-PL	234
100-JE	211	700-PLL	238
100-SA	208	700-PPT	233
195-MA	223	700-PS	237,254
196-MT	223	700-PT	237
700-CF	206	700-R	248
700-CFZ	206	700-RA	250
700-CP	236,237	700-RM	249
700-CR	250	700-RTC	258
700-DCM	222	700S-CF	218
700DC-P	229	700-TB	193
700DC-PH	232	700Z-P	244
700DC-PK	230		
700DC-PL	234		
700DC-PPT	233		
700-DC-PT	233		
700-DC-R	248		
700-DC-RM	249		
700-FE	109		
700-FS	115		
700-HA3	43		
700-HAB	44		
700-HAX	45		
700-HB	56		
700-HC	68		
700-HD3	63		
700-HF3	74		
700-HG4	99		
700-HK3	86		
700-HLS	92		
700-HLT	92		
700-HN	191		
700-HNC	135		
700-HNK	143		
700-HR	121		
700-HRC	121		
700-HRF	121		
700-HRM	121		
700-HRY	122		
700-HRQ	122		
700-HT12	157		
700-HT22	157		
700-HTF	158		
700-HX	171		
700-HXM	182		
700-M	222		
700-MB	222		
700-MP	238		
700-N23	239		
700-N24	239		
700-N25	254		
700-N26	254		
700-N3	239		
700-N4	239		
700-N5	239		
700-P	229		
700-PB	236		



Bulletin 700-HA

- 10 A Contact Rating
- DPDT, 3PDT
- Pin Style Terminals
- Standard ON/OFF Flag Indicator
- Clear Cover for Easy Visual Inspection
- Optional Push-to-test and Manual Override
- Optional LED
- Optional Socket Mounted Surge Suppressor Module
- Optional Multi-Function Timing Module
- Type HAB—Bifurcated Contacts
- Type HAX—Gold Bifurcated Contacts

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	43	Timing Charts	51
Accessories	46	Approximate Dimensions	52
Specifications	49		

Description

The Bulletin 700-HA General Purpose Relays have pin-style terminals and are available in 2-pole (DPDT) or 3-pole (3PDT). They feature a standard ON/OFF flag indicator, and can be ordered with an optional push-to-test operator, a LED, and bifurcated or gold bifurcated contacts. Coils are available in a wide range of AC and DC voltages. Contacts are rated up to 10 A.

Conformity to Standards:

- EN 60947-4-1
- EN 60947-5-1
- IEC 947
- CSA 22.2
- UL 508
- NEMA/EE MAC compliant
- ICS-2 compliant

Approvals:

- cURus Recognized, File E3125 Guide NLDX 2
- cULus Listed, with Allen-Bradley socket
- CE Marked (per EU Low Voltage Directive 73/23 EEC 93/68 EEC)
- ABS (American Bureau of Shipping), File 00-GE195140-PDA
- RINA listed


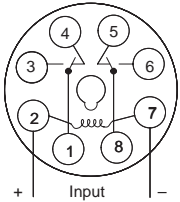
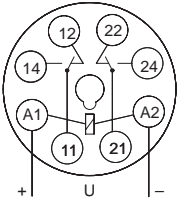
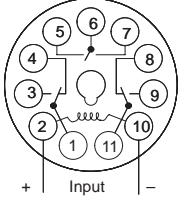
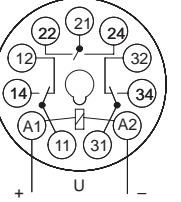
Your order must include:

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

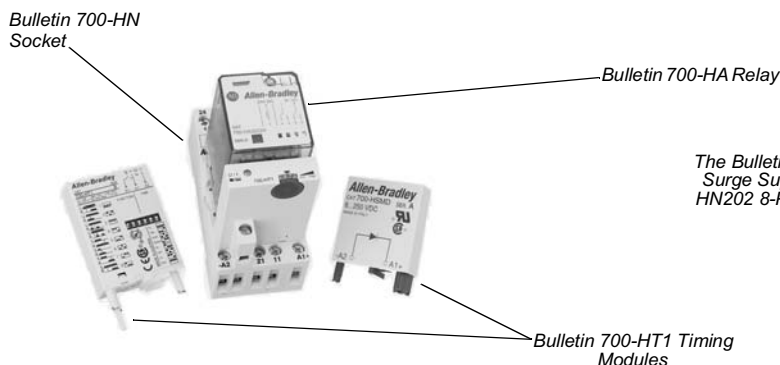
Third Party Approval:

- IMQ listed

Bulletin 700-HA Tube Base Relay with PIN Terminals (Single Contact) —
Mechanical ON/OFF Indicator included ❶

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No. ❷❸❹	Factory-Stocked Item	
			U.S./Canada	International			❺	❻
	DPDT 2-Pole 2 Form C Single AgNi Contact	10 A B300			6V AC	700-HA32A06		
					12V AC	700-HA32A12	✓	
					24V AC	700-HA32A24 ❺	✓	
					120V AC	700-HA32A1 ❺	✓	✓
					240V AC	700-HA32A2 ❺	✓	
					277V AC	700-HA32A27❻	✓	
					6V DC	700-HA32Z06		
					12V DC	700-HA32Z12 ❺	✓	
					24V DC	700-HA32Z24 ❺	✓	
					36V DC	700-HA32Z36		
					48V DC	700-HA32Z48	✓	
					110V DC	700-HA32Z1	✓	
					125V DC	700-HA32Z01	✓	
					140V DC	700-HA32Z3		
Sockets			700-HN125	700-HN100 700-HN202				
	3PDT 3-Pole 3 Form C Single AgNi Contact	10 A B300			6V AC	700-HA33A06		
					12V AC	700-HA33A12		
					24V AC	700-HA33A24 ❺	✓	
					120V AC	700-HA33A1 ❺	✓	✓
					240V AC	700-HA33A2	✓	
					6V DC	700-HA33Z06		
					12V DC	700-HA33Z12	✓	
					24V DC	700-HA33Z24 ❺	✓	
					48V DC	700-HA33Z48		
					110V DC	700-HA33Z1		
					125V DC	700-HA33Z01	✓	
					140V DC	700-HA33Z3		
Sockets			700-HN126	700-HN101 700-HN203				


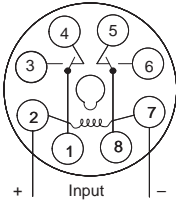
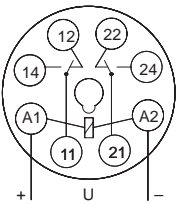
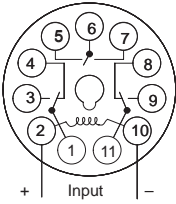
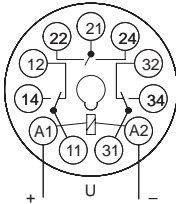
- ❶ For Time Module and Surge Suppressor Module, see page 47.
- ❷ LED Option: Add suffix **(-4)** to the selected Bulletin 700-HA Relay Cat. No., except for the 240V AC Units, add **(-4L)**.
- ❸ Push-to-test, Manual Override, and LED Option: Add suffix **(-3-4)** to the selected Bulletin 700-HA Relay Cat. No., except for the 240V AC units, add **(-3-4L)**.
- ❹ Push-to-test and Manual Override option: Add suffix **(-3)** to the selected Bulletin 700-HA relay.
- ❺ Bulk Package Option: Relay can be purchased at discounted prices in bulk quantities of 10. Add suffix **(-99)** to the selected relay catalog number.
- ❻ LED not available.
- ❼ Single pack
- ❽ Bulk pack



The Bulletin 700-HA Relays can be used together with Timing or Surge Suppressor Modules by plugging in to the Cat. No. 700-HN202 8-Pin Socket, or the Cat. No. 700-HN203 11-Pin Socket.

Bulletin 700-HA
General Purpose Relays
Product Selection, Continued

Bulletin 700-HAB Tube Base Relay with PIN Terminals (Bifurcated Contacts) —
Mechanical ON/OFF Indicator included ❶

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No. ❷❸❹	Factory-stocked Item ❺
			U.S./Canada	International			
	DPDT 2-Pole 2 Form C Bifurcated AgNi Contacts Sockets	4 A			6V AC	700-HAB2A06	
					12V AC	700-HAB2A12	
					24V AC	700-HAB2A24	
					120V AC	700-HAB2A1	✓
					240V AC	700-HAB2A2	
					277V AC	700-HAB2A27 ❸	
					6V DC	700-HAB2Z06	
					12V DC	700-HAB2Z12	
					24V DC	700-HAB2Z24	✓
					36V DC	700-HAB2Z36	
					48V DC	700-HAB2Z48	
					110V DC	700-HAB2Z1	
					125V DC	700-HAB2Z01	
					140V DC	700-HAB2Z3	
			700-HN125	700-HN100 700-HN202			
	3PDT 3-Pole 3 Form C Bifurcated AgNi Contacts Sockets	4 A			6V AC	700-HAB3A06	
					12V AC	700-HAB3A12	
					24V AC	700-HAB3A24	
					120V AC	700-HAB3A1	✓
					240V AC	700-HAB3A2	
					6V DC	700-HAB3Z06	
					12V DC	700-HAB3Z12	
					24V DC	700-HAB3Z24	✓
					48V DC	700-HAB3Z48	
					110V DC	700-HAB3Z1	
					125V DC	700-HAB3Z01	
					140V DC	700-HAB3Z3	
			700-HN126	700-HN101 700-HN203			

❶ For Time Module and Surge Suppressor Module, see page 47.

❷ LED Option: Add suffix **(-4)** to the selected Bulletin 700-HAB Relay Cat. No., except for the 240V AC Units, add **(-4L)**.


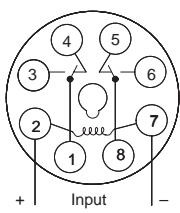
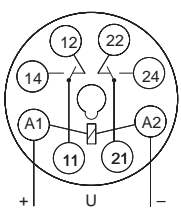
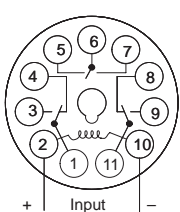
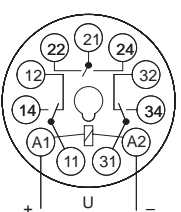
❸ Push-to-test, Manual Override & Pilot Light Option: Add suffix **(-3 -4)** to the selected Bulletin 700-HAB Relay Cat. No., except for the 240V AC units, add **(-3 -4L)**.

❹ Push-to-test and Manual Override option: Add suffix **(-3)** to the selected Bulletin 700-HA relay.

❺ Single Pack







❻ LED not available.



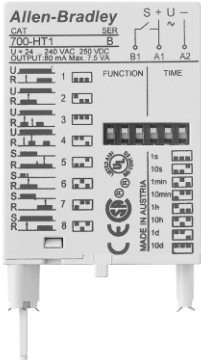
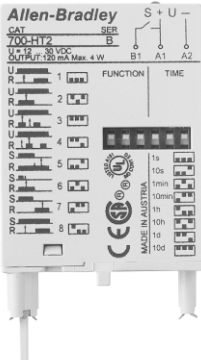
**Bulletin 700-HAX Tube Base Relay with PIN Terminals (Bifurcated Contacts with Gold Overlay) —
 Mechanical ON/OFF Indicator Included ❶**

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No. ❷❸❹	Factory-stocked Item ❺					
			U.S./Canada	International								
	DPDT 2-Pole 2 Form C Bifurcated AgNi Contacts with Gold Overlay Sockets	4 A			6V AC	700-HAX2A06						
					12V AC	700-HAX2A12						
					24V AC	700-HAX2A24						
					120V AC	700-HAX2A1	✓					
					240V AC	700-HAX2A2						
					277V AC	700-HAX2A27❷						
					6V DC	700-HAX2Z06						
					12V DC	700-HAX2Z12						
					24V DC	700-HAX2Z24	✓					
					36V DC	700-HAX2Z36						
					48V DC	700-HAX2Z48						
					110V DC	700-HAX2Z1						
					125V DC	700-HAX2Z01						
					140V DC	700-HAX2Z3						
	Sockets		700-HN125	700-HN100 700-HN202								
	3PDT 3-Pole 3 Form C Bifurcated AgNi Contacts with Gold Overlay Sockets	4 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						
					125V DC	700-HAX3Z01						
					140V DC	700-HAX3Z3						
						Sockets		700-HN126	700-HN101 700-HN203			

- ❶ For Time Module and Surge Suppressor Module, see page 47.
 ❷ LED Option: Add suffix **(-4)** to the selected Bulletin 700-HAX Relay Cat. No., except for the 240V AC Units, add **(-4L)**.
 ❸ Push-to-test and LED Option: Add suffix **(-3-4)** to the selected Bulletin 700-HAX Relay Cat. No., except for the 240V AC units, add **(-3-4L)**.
 ❹ Push-to-test and Manual Override option: Add suffix **(-3)** to the selected Bulletin 700-HA relay.
 ❺ LED not available.
 ❻ Single pack

Bulletin 700-HA
General Purpose Relays
Accessories

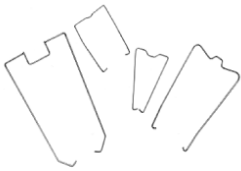
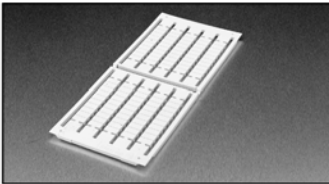
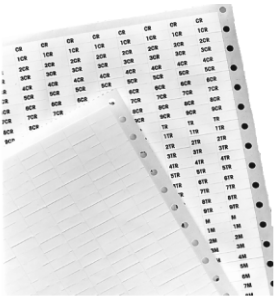
	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN100	Screw Terminal Tube Base Sockets – Panel or DIN Rail Mounting. Guarded Terminal Construction 8-pin for use with DPDT Bulletin 700-HA relays, -HX digital timing relays, -HT (ON-Delay) and -HRM, -HRC and -HV (Repeat Cycle) timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN100	✓
 Cat. No. 700-HN125	Screw Terminal Tube Base Sockets – Panel or DIN Rail Mounting Open Style Construction 8-pin for use with DPDT Bulletin 700-HA relays, -HT (ON-Delay) and -HRM, -HRC and -HV (Repeat Cycle) timing relays. Order must be for 10 sockets or multiples of 10. No retainer clip required.	10	700-HN125	✓
 Cat. No. 700-HN101	Screw Terminal Tube Base Sockets – Panel or DIN Rail Mounting. Guarded Terminal Construction 11-pin for use with 3PDT Bulletin 700-HA relays, -HR and -HT (OFF-Delay) timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN101	✓
 Cat. No. 700-HN126	Screw Terminal Tube Base Sockets – Panel or DIN Rail Mounting. Guarded Terminal Construction 11-pin for use with 3PDT Bulletin 700-HA relays, -HR and -HT (OFF-Delay) timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN126	✓
 Cat. No. 700-HN203	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 Bulletin 700-HA relays. Order must be for 10 sockets or multiples of 10.	10	700-HN202	✓
	11-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 3PDT Bulletin 700-HA relays. Order must be for 10 sockets or multiples of 10.	10	700-HN203	✓
 Cat. No. 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 <p>Cat. No. 700-HSV1</p>	MOV Suppressor Module ① Voltage Range: 24V AC 24...30V DC Order must be for 20 modules or multiples of 20.	20	700-HSV1	✓
	MOV Suppressor Module ① Voltage Range: 220...240V AC 220...300V DC Order must be for 20 modules or multiples of 20.	20	700-HSV2	✓
	MOV Suppressor Module ① Voltage Range: 110...120V AC 110...150V DC Order must be for 20 modules or multiples of 20.	20	700-HSV3	✓
 <p>Cat. No. 700-HSMD</p>	Diode Surge Suppressor ① Voltage Range: 6...250V DC Order must be for 20 modules or multiples of 20.	20	700-HSMD	✓
 <p>Cat. No. 700-HT1</p>	Multi-Function Multi-Range Time Module ① Voltage range 24...240V AC 50/60 Hz and 24...250V DC, with a voltage variation of 85...110%. Repeat accuracy of <0.5%. Reset time 150 ms. Refer to page 50 for Specifications. Eight (8) Timing Modes Eight (8) Timing Ranges: 1. 1 s 2. 10 s 3. 1 min. 4. 10 min. 5. 1 hour 6. 10 hours 7. 1 day (24 hours) 8. 10 days (240 hours) LED Indicator: 1. Steady Green (G) for power on, flashing during timing.	1	700-HT1	✓
 <p>Cat. No. 700-HT2</p>	Multi-Function Multi-Range Time Module ① Voltage range 12...30V DC, with a voltage variation of 90...110%. Repeat accuracy of <0.5%. Reset time 150 ms. Refer to page 50 for Specifications. Eight (8) Timing Modes (See page 51 for further details.) Eight (8) Timing Ranges: 1. 1 s 2. 10 s 3. 1 min. 4. 10 min. 5. 1 hour 6. 10 hours 7. 1 day (24 hours) 8. 10 days (240 hours) LED Indicator: 1. Steady Green (G) for power on, flashing during timing	1	700-HT2	

① Suppressors and Time Modules easily plug into sockets (Cat. Nos. 700-HN202 and 700-HN203). For use with Bulletin 700-HA relays.

ATTENTION: Cat. No. 700-HT1 Series A is wired with switch "S" connected to "A2", but 700-HT1 Series B is wired with switch "S" connected to "A1". The Time Modules must be wired correctly. Check the front of the Time Modules for the correct wiring diagrams.

Bulletin 700-HA
General Purpose Relays
Accessories, Continued

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Sample Retainer Clips	Retainer Clip for Cat. Nos. 700-HN100, -HN101, -HN200, -HN201, -HN202, and -HN203 Sockets with Bulletin 700-HA Relays ❶ Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN157	✓
 Snap-in markers	Relay Identification Snap-in Markers ❷ Snap-in markers fit on top of Bulletin 700-HA relay covers. The following are blank cards. Squares slip into molded slot on top of Bulletin 700-HA or 700-HB relay cover.	100	1492-SM5X12 1492-SM6X9 1492-SM6X12 1492-SM8X9 1492-SM8X12 1492-MP-Blank	❸
	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	

❶ See Bulletin 700-HA Relay, Socket, and Retainer Clip Reference Chart

❷ Refer to terminal block marking systems within the Industrial Control Catalog, publication A114

❸ For pre-printed marker cards, turn to the following 1492 sections: 1492-SM5X12_, 1492-SM6X9_, 1492-SM8X9_, 1492-SM8X12_, 1492-MP_

Relay Type	Socket	Retainer Clip
700-HA32	700-HN100	700-HN157
700-HAB2	700-HN125	Not Required ❹
700-HAX2	700-HN202	700-HN157
	700-HN200	700-HN157
700-HA33	700-HN201	700-HN157
700-HAB3	700-HN101	700-HN157
700-HAX3	700-HN126	Not Required ❹
	700-HN203	700-HN157

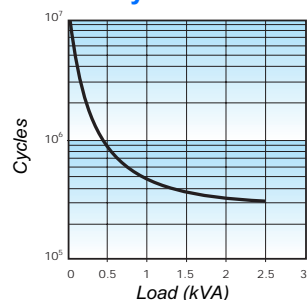
❹ Design of these sockets holds the relays securely and does not require retainer clips.

		Cat. No. 700-HA...		
Electrical Ratings				
Pilot Duty Rating ❷		NEMA B300		
Rated Thermal Current (<i>I</i> _{th})		HA = 10 A – 120V, 240V HAB/HAX = 6 A – 120V, 240V		
Rated Insulation Voltage (<i>U</i> _i)		250V IEC – 300V UL/CSA		
Contacts	Inductive	Make	Break	Hp
	120V AC	► ◄	◄ ►	0.33
	240V AC	30 A	3 A	1
	DC	15 A	1.5 A	
		30V DC, 10 A		
Min. Low Energy Permissible Load		HA = 10V, 50 mA HAB= 6V, 30 mA HAX = 6V, 1 mA		
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		
Coil Consumption ±10%	AC Coils	50 Hz	60 Hz	
	Inrush	3.3 VA	2.85 VA	
	Sealed	2.2 VA	1.9 VA	
	DC Coils	1.3 W		
Max. Allowable Leakage		25% of VA		
		10% of W		
Design Specification/Test Requirements				
Electrical				
Dielectric Withstand Voltage		2000V		
Pole-to-Pole		2000V		
Contact to Coil		2000V		
Contact to Frame		2000V		
Electrical Life (Operating)		100,000 min.		
Mechanical				
Degree of Protection (Open Type) IEC 529		IP 40		
Mechanical Life Operations (AC/DC)		> 20 x 10 ⁶ / 50 x 10 ⁶		
Switching Frequency Operations		3600/HR		
Coil Voltages		See Product Selection		
Operating Time	Max. Pickup	10 ms		
	Max. Dropout	10 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	
	Storage	AC/DC	–40...+100°C	
Altitude		2000 m (6560 ft)		
Construction				
Insulating Material		Molded High Dielectric Material		
Enclosure		Transparent Dust Cover		
Contact Material		700-HA: 10 A– AgNi 700-HAB: 4 A–Bifurcated AgNi 700-HAX: 4 A–Bifurcated/Gold Plating AgNi		
Terminal Markings on Socket		In accordance with EN50 0005		
Sockets		8-Pin Socket — 700-HN100, -HN125, -HN202 11-Pin Socket — 700-HN101, -HN126, -HN203		
Certifications		CE, cULus listed, IMQ, RINA, ABS		

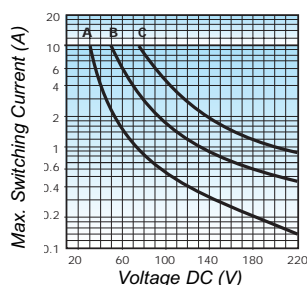
- ❶ Performance Data – See page Important-2, Industrial Controls Catalog.
❷ NEMA Rating Chart is on page 29.

Bulletin 700-HA
General Purpose Relays
Specifications, Continued ❶

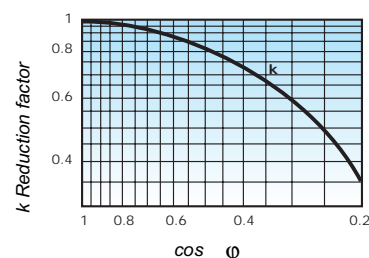
700-HA Relay Performance Graphs



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



Breaking capacity for DC1 load at 1800 cycles/h
A= load applied to 1 contact
B= load applied to 2 contacts in series
C= load applied to three contacts in series



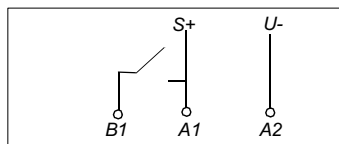
Load reduction factor vs. $\cos \phi$

		Time Module Cat. No. 700-HT1	Time Module Cat. No. 700-HT2
Electrical Ratings			
Operating Voltage Range		24...240V AC at 50/60 Hz 24...250V DC	12...30V DC
Power Consumption		24V AC/DC 70 mW 240V AC/DC 700 mW	12V DC 40 mW 30V DC 100 mW
Maximum Output Current		80 mA (2 W at 24V DC)	120 mA (2 W at 24V DC)
Maximum Output Voltage		265V AC, 275V DC	33V DC
Maximum Output Power		7.5 VA (30 mA at 240V AC)	4 W
Mechanical			
Degree of Protection of Input (B1) Terminal		IP 20 (Guarded Terminal)	
Input Terminal Wire Range		2 x 1.5 mm ² (2 # 16 AWG...1 # 20 AWG)	
Input Terminal Torque Range		0.45...0.8 Nm (4...7 lb-in.)	
LED Indicator		Steady when Power On and Flashing during Timing Period	
Repeat Accuracy ②		<0.5% or 5 ms	
Timing Change	Voltage Effect Temp. Effect	≤0.001%/V ≤0.01%/°C	≤0.001%/V ≤0.01%/°C
Reset Time		Power Reset: 150 ms Signal Reset: 50 ms AC, 30 ms DC	Power Reset: 150 ms Signal Reset: 10 ms DC
Selectable Timing Ranges		3 DIP Switches, 8 Ranges (set from 10...100% of range): 1 s, 10 s, 1 min., 10 min., 1 hr., 10 hr., 24 hr., 240 hr.	
Selectable Timing Modes		3 DIP Switches, 8 Modes: Power ON–Delay Single Shot – Power On Repeat Cycle – Starting with OFF–Delay Repeat Cycle – Starting with ON–Delay Signal OFF–Delay Single Shot – Signal is a Pulse Single Shot – Signal Off Signal ON–Delay	
Thumbwheel Scale Accuracy		≤5% of Time Range	
Environmental			
Temperature	Operating Storage	–25...+55°C (–13...+131°F) –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-HN202 (8-Pin with Plug) 700-HN203 (11-Pin with Plug)	
Certifications		CE, UL listed, CSA	

❶ Performance Data - See page Important-2, publication A113.

❷ At constant voltage and temperature.

Timing Charts, Cat. Nos. 700-HT1 and 700-HT2 Multi-Function Time Module (t = Time Range 0.10 s...240 h)
Cat. Nos. 700-HT1 and -HT2 Timing Modes, Time Description, Timing Charts, and DIP Switch Selections



Terms:
U is Power Input (Steady Green LED)
R is Relay Output
S Control, +A1 Socket, B1 Timer
t is the resulting Time Delay (Flashing Green LED)

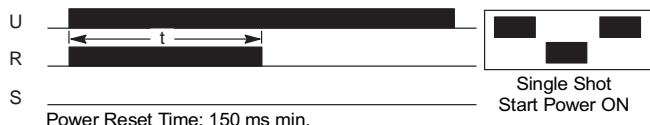
1. Power On-Delay

When the input voltage U is applied, the timing delay t begins. The relay contacts R change state after the time delay is complete. The contacts will return to their shelf state when the power U is removed. The terminal $B1$ is not used in this mode.



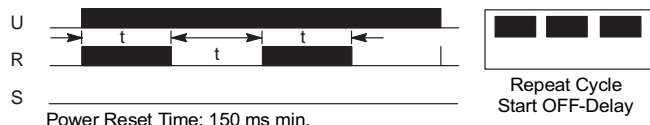
2. Single Shot — Power On

When the input voltage U is applied, the relay contacts R change state immediately and the timing cycle begins. When the time delay t is complete, the contacts return to shelf state. When the input voltage U is removed, the contacts return to their shelf state. The terminal $B1$ is not used in this mode.



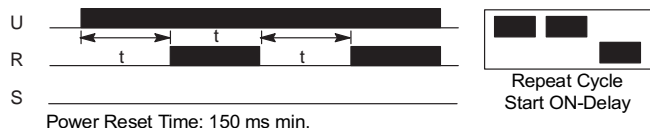
3. Repeat Cycle — Starting with Relay Energized

When the input voltage U is applied, the relay contacts R change state immediately and time delay t begins. When the time delay t is complete, the contacts return to their shelf state for time delay t . This cycle will repeat until the input voltage U is removed. The terminal $B1$ is not used in this mode.



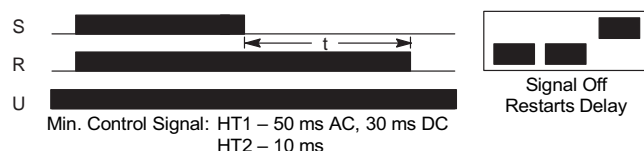
4. Repeat Cycle — Starting with On-Delay

When the input voltage U is applied, the time delay t begins. When the time delay t is complete, the relay contacts R change state for the time delay t . This cycle will repeat until the input voltage U is removed. The terminal $B1$ is not used in this mode.



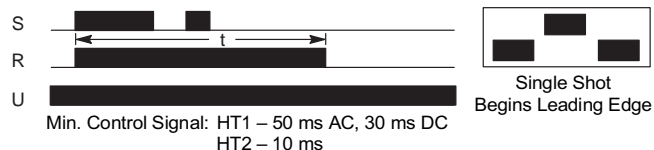
5. Signal Off-Delay

The input voltage U must be applied continuously. When the control S (wired at $B1$) is energized, the relay contacts R change state. When the control S is de-energized, the delay t begins. When delay t is complete, the contacts R return to their shelf state. If signal S is energized before the time delay t is complete, then the Time Module is reset, the delay begins again, and the relay contacts remain in their energized state. If the input voltage U is removed, the relay contacts R return to their shelf state.



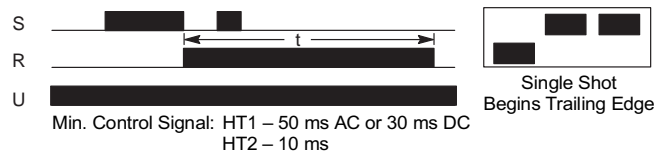
6. Single Shot — Signal Is a Pulse

The input U must be applied continuously. When the Control S (wired to $B1$ terminal) is energized, the relay contacts R change state and the time delay t begins. When the time delay t is completed, the contacts return to their shelf state. If signal S is de-energized before time t is completed, contacts R still stay in their changed state. The input signal S has control again when delay is completed or power reset. If the input voltage U is removed, the relay contacts R return to their shelf state.



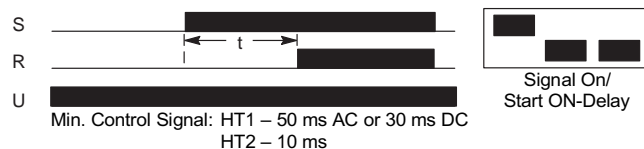
7. Single Shot — Signal Off

The input voltage U must be applied continuously. When the control S (wired at $B1$) is energized and then de-energized, the relay contacts R change state for the time delay t . If the control S is pulsed during the time period t , the relay contacts R will not be affected. If the input power is removed, the relay contacts R return to their shelf state.



8. On Delay — Pulse Controlled

The input voltage U must be applied continuously. When the control S (wired at $B1$) is energized, the time delay t begins. When the time delay t is complete, the relay contacts R change state and remain energized until the control S is de-energized. If the input power U is removed the relay contacts R return to their shelf state.

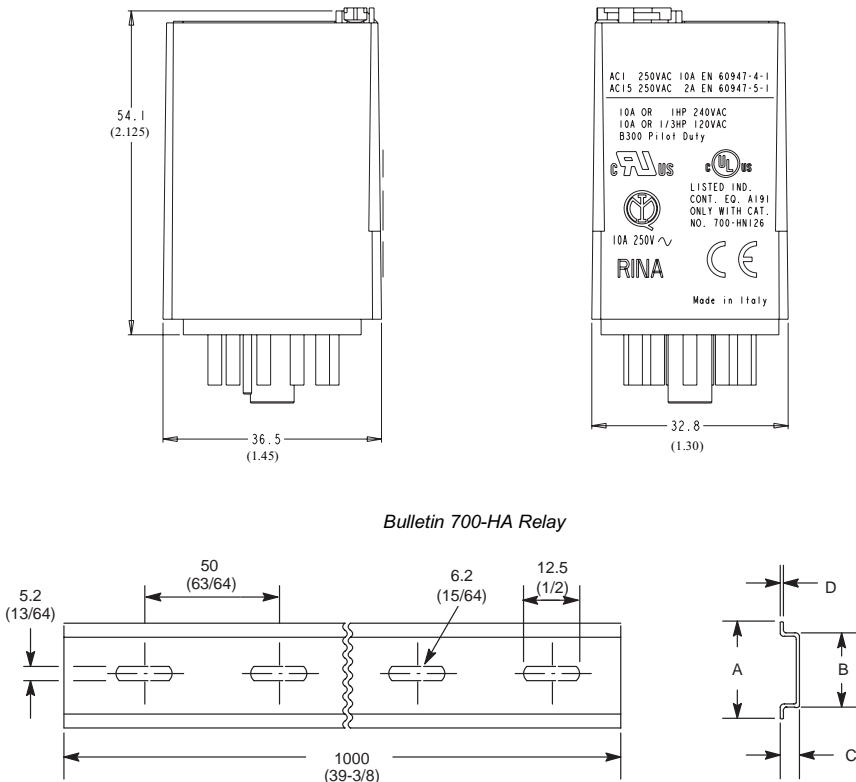


Bulletin 700-HA

General Purpose Relays

Approximate Dimensions

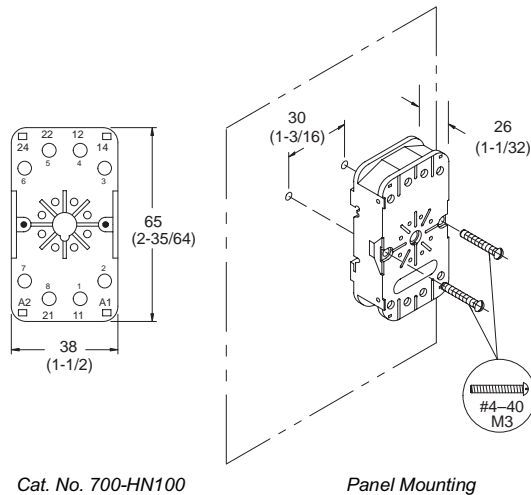
Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



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

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

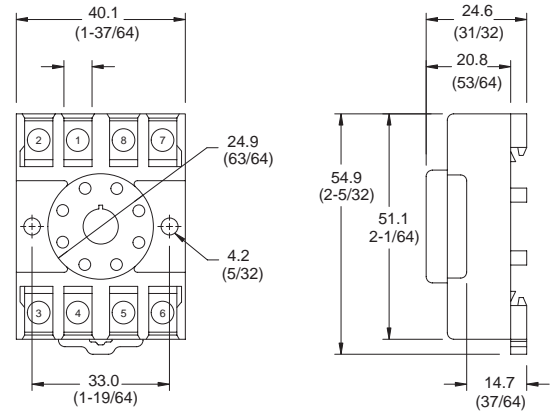
Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



Cat. No. 700-HN100

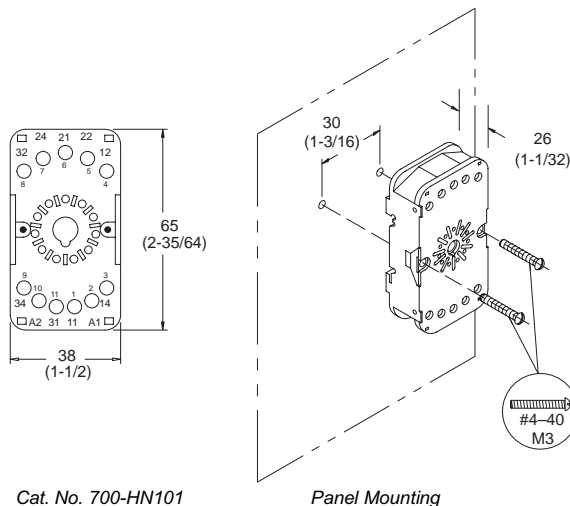
Panel Mounting

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



Cat. No. 700-HN125 ①

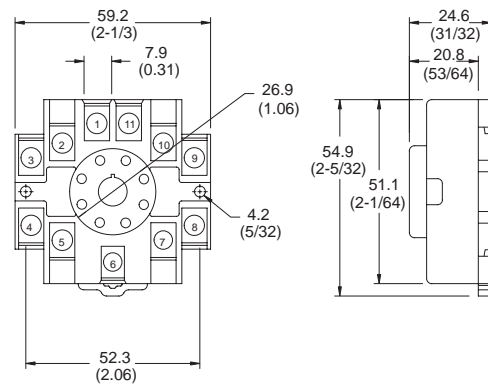
Wire Size: 2 x 2.5 mm²
 Single Wire – Up to 12 AWG
 Double Wire – 2 x 2.5 mm² (#2–#4 AWG...#2–20 AWG)
 (Either Solid or Stranded)
 Strip Length: 9 mm (3/8") – Torque: 0.8 Nm (7 lb.-in.)



Cat. No. 700-HN101

Panel Mounting

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



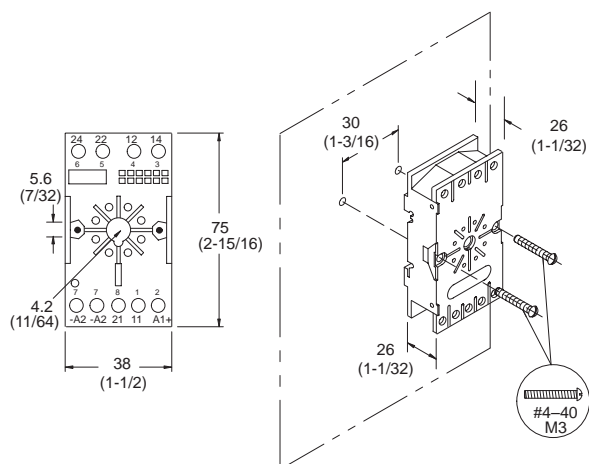
Cat. No. 700-HN126 ①

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

① Cat. No. 199-FSM Surge Suppressors fit on the coil terminals. See page 195.

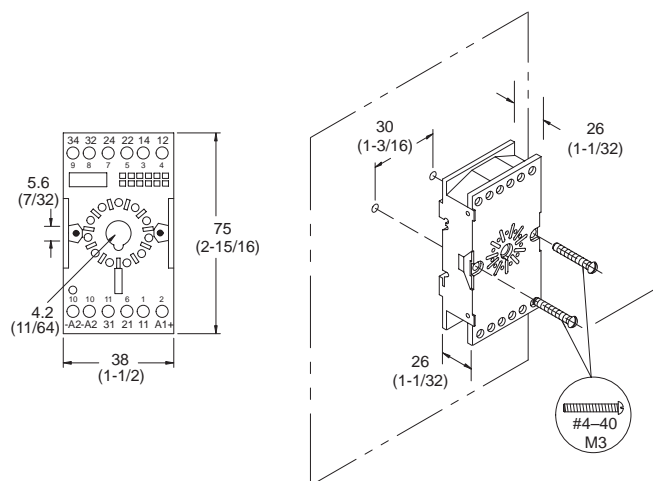
Bulletin 700-HA
General Purpose Relays
Approximate Dimensions, Continued

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



Cat. No. 700-HN202

Panel Mounting

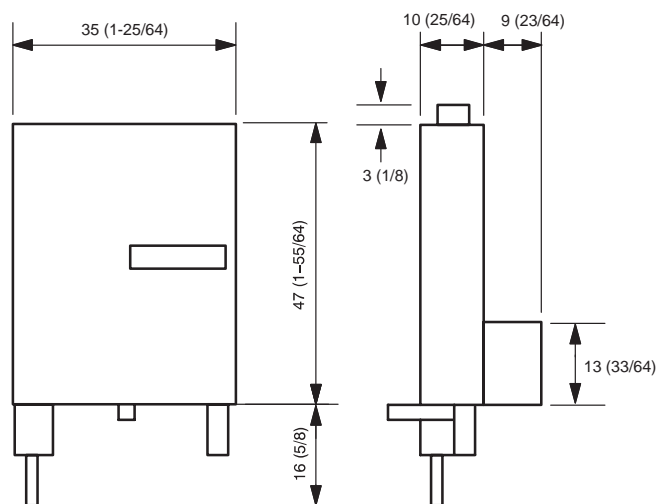


Cat. No. 700-HN203

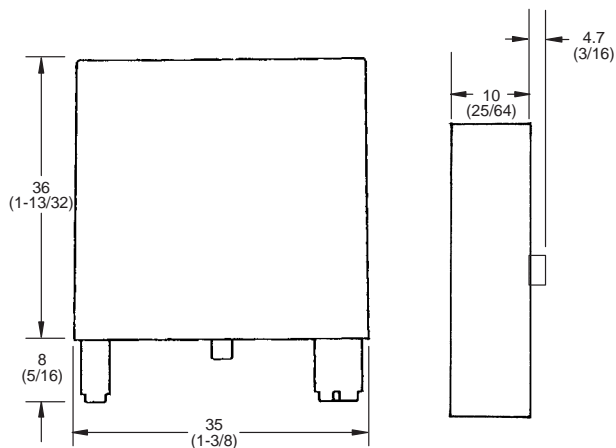
Panel Mounting

Wire Size: $2 \times 2.5 \text{ mm}^2$
 Single Wire – Up to #12 AWG
 Double Wire – $2 \times 2.5 \text{ mm}^2$ (#2–14 AWG... #2–20 AWG)
 (Either Solid or Stranded)
 Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)

Wire Size: $2 \times 2.5 \text{ mm}^2$
 Single Wire – Up to #12 AWG
 Double Wire – $2 \times 2.5 \text{ mm}^2$ (#2–14 AWG ... #2–20 AWG)
 (Either Solid or Stranded)
 Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Cat. Nos. 700-HT1 and 700-HT2



Cat. Nos. 700-HSV1, 700-HSV2, 700-HSV3, and 700-HSMD

Wire Size: $2 \times 1.5 \text{ mm}^2$ (#2 – 16 AWG... #1–20 AWG)
 (Either Solid or Stranded)
 Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Bulletin 700-HB

- 15 A Contact Rating
- DPDT, 3PDT
- Blade Style Quick Connect Terminals
- Standard ON/OFF Flag Indicator
- Clear cover for easy visual inspection
- Optional Push-to-test and Manual Override
- Optional LED

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	56	Specifications	58
Accessories	57	Approximate Dimensions	60

Description

The Bulletin 700-HB General Purpose Relays have blade-style quick connect terminals and are available in 2-pole (DPDT) or 3-pole (3PDT) configurations. They feature a standard ON/OFF flag indicator. Coils are available in a wide range of AC and DC voltages. Contacts are rated up to 15 A.

Conformity to Standards:

EN 60947-4-1
EN 60947-5-1
IEC 947
CSA 22.2
UL 508
NEMA/EEMAC ICS2 compliant

Approvals:

cURus Recognized, File E3125
Guide NLDX 2
cULus Listed, with Allen-Bradley socket
CE Marked (per EU Low Voltage Directive 73/23 EEC 93/68 EEC)
ABS (American Bureau of Shipping), File 00-GE 195140-PDA
RINA listed

Third Party Approvals:


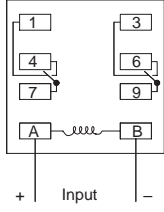
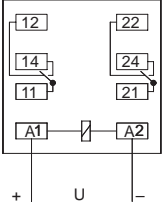
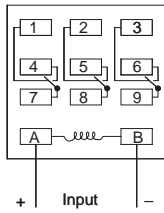
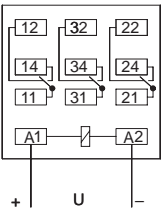
IMQ listed

Your order must include:





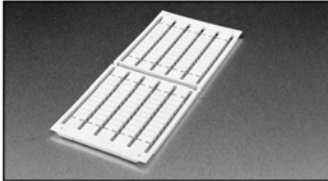
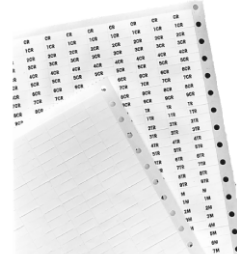
- Cat. No. of the plug-in relay plus suffixes of selection options.
- Cat. No. of socket required.
- If required, Cat. No. of any accessories.

Bulletin 700-HB
General Purpose Relays
Product Selection

**Bulletin 700-HB Square Base Relay with Blade Style Quick Connect/Solder Terminations —
Mechanical ON/OFF Indicator Included**

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No. ①②③	Factory-stocked Item	
			U.S./Canada	International			⑤	⑥
 Cat. No 700-HB...	DPDT 2-Pole 2 Form C Single AgCdO Contact	15 A B300	 + Input -	 + U -	6V AC 12V AC 24V AC 120V AC 240V AC 6V DC 12V DC 24V DC 48V DC 110V DC	700-HB32A06 700-HB32A12 700-HB32A24 700-HB32A1 ④ 700-HB32A2 700-HB32Z06 700-HB32Z12 700-HB32Z24 700-HB32Z48 700-HB32Z1	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
	Sockets		700-HN154	700-HN153				
	3PDT 3-Pole 3 Form C Single AgCdO Contact	15 A B300	 + Input -	 + U -	6V AC 12V AC 24V AC 120V AC 240V AC 6V DC 12V DC 24V DC 48V DC 110V DC	700-HB33A06 700-HB33A12 700-HB33A24 700-HB33A1 ④ 700-HB33A2 700-HB33Z06 700-HB33Z12 700-HB33Z24 ③ 700-HB33Z48 700-HB33Z1	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
	Sockets		700-HN154	700-HN153				

- ① LED Option: Add suffix **(-4)** to the selected Bulletin 700-HB Relay Cat. No., except for the 240V AC Units, add **(-4L)**.
 ② Push-to-test, Manual Override, and LED Option: Add suffix **(-3-4)** to the selected Bulletin 700-HB Relay Cat. No., except for the 240V AC units, add **(-3-4L)**.
 ③ Bulk Package Option: Relay can be purchased at discounted prices in bulk quantities of 10. Add suffix **(-99)** to the selected relay Catalog Number. The following relays are also available in the Bulk Package Option: Cat. Nos. 700-HB33A1-4 and 700-HB33Z24-4.
 ④ Push-to-test and Manual Override option: Add suffix **(-3)** to the selected Bulletin 700-HB relay.
 ⑤ Single Pack.
 ⑥ Bulk pack

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN153	Screw Terminal Socket – Panel or DIN Rail Mounting. Guarded Terminal Construction 11-blade socket for use with Bulletin 700-HB and -HJ relays and -HS timing relays. Order must be for 10 sockets or multiples of 10. Safe separation between coil and contacts.	10	700-HN153	✓
 Cat. No. 700-HN154	Screw Terminal Base Socket – Panel or DIN Rail Mounting. Open Style Construction 11-blade for use with Bulletin 700-HB and -HJ relays and -HS timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN154	✓
 Cat. No. 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓
 Sample Retainer Clips	Retainer Clip for Cat. No. -HN154 open terminal socket with 700-HB relays ❶ Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN156	✓
	Retainer clip for cat. nos. 700-HN 153 guarded terminal socket with 700-HB relays ❶ Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN158	✓
 Snap-in markers	Relay Identification Snap-in Markers ❸ Snap-in markers fit on top of Bulletin 700-HA relay covers. The following are blank cards. Squares slip into molded slot on top of Bulletin 700-HA or 700-HB relay cover.	100	1492-SM5X12 1492-SM6X9 1492-SM6X12 1492-SM8X9 1492-SM8X12 1492-MP-Blank	❷
	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	

❶ Bulletin 700-HB Square Base Relay, Socket, and Retainer Clip Reference Chart

❷ Refer to terminal block marking systems within the Industrial Control Catalog

❸ For pre-printed marker cards, turn to the following 1492 sections of publication A113: 1492-SM5X12_, 1492-SM6X9_, 1492-SM8X9_, 1492-SM8X12_, 1492-MP_

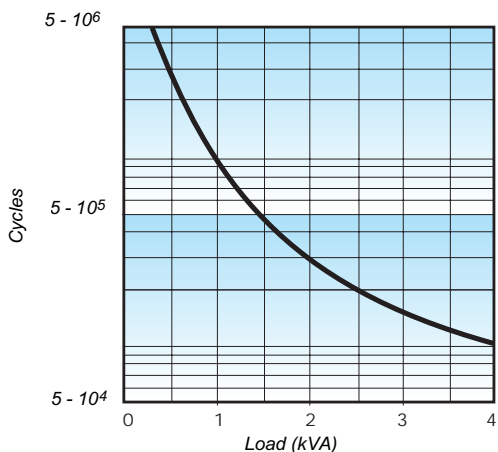
Relay Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HB	700-HN153	700-HN158
	700-HN154	700-HN156

Bulletin 700-HB
General Purpose Relays
Specifications ❶

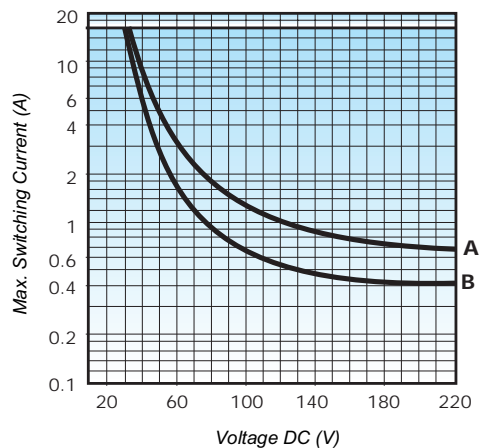
		Cat. No. 700-HB...		
Electrical Ratings				
Pilot Duty Rating ②		NEMA B300		
Rated Thermal Current (I _{th})		15 A – 120V, 240V		
Rated Insulation Voltage (U _i)		250V IEC-300V UL/CSA		
Contacts	Inductive	Make	Break	Hp
	120V AC	► ◄	◄ ►	3/4
	240V AC	60 A	6 A	2
	DC	30 A	3 A	
Min. Low Energy Permissible Load		30V DC, 15 A		
Permissible Coil Voltage Variation		10V 50 mA		
		85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC		
Coil Consumption ±10%	AC Coils	50 Hz 3.0 VA 2.0 VA	60 Hz 2.85 VA 1.9 VA	
	Inrush			
	Sealed			
	DC Coils	1.3 W		
Max. Allowable Leakage		25% of VA		
		10% of W		
Design Specification/Test Requirements				
Electrical				
Dielectric Withstand Voltage				
Pole-to-Pole		2500V		
Contact to Coil		4000V		
Contact to Frame		2500V		
Mechanical				
Degree of Protection (Open Type) IEC 529		IP 40		
Mechanical Life Operations		> 10 x 10 ⁶ /30 x 10 ⁶		
Switching Frequency Operations		3600/HR		
Coil Voltages		See Product Selection		
Operating Time (ms)	Pickup	15 ms		
	Dropout	15 ms		
Maximum Operating Rate		4 Ops/s		
Vibration	Endurance	5 G		
	Operational	2.5 G		
Shock	Endurance	50 G		
	Operational	15 G		
Environmental				
Temperature	Operating	AC/DC	-40...+70°C	
	Storage	AC/DC	-40...+100°C	
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		CE, cULus, cURus, IMQ, RINA, ABS		

❶ Performance Data – See page Important 2, publication A113.

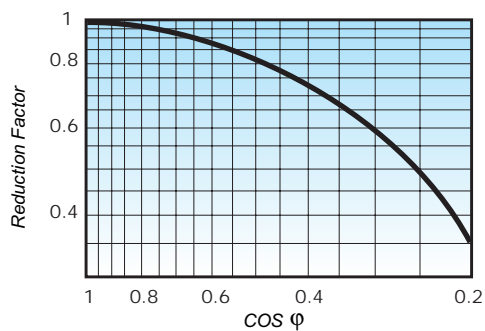
❷ NEMA Rating Chart is on page 29.



Contact life vs AC1 load at 600 cycles/h.



Breaking capacity for DC1 load at 600 cycles/h.
 Load applied to 1 contact.
 A = for N.O. types
 B = other types



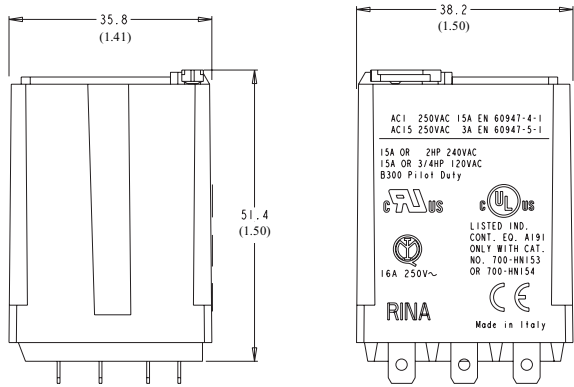
Load Reduction factor vs $\cos \phi$

Bulletin 700-HB

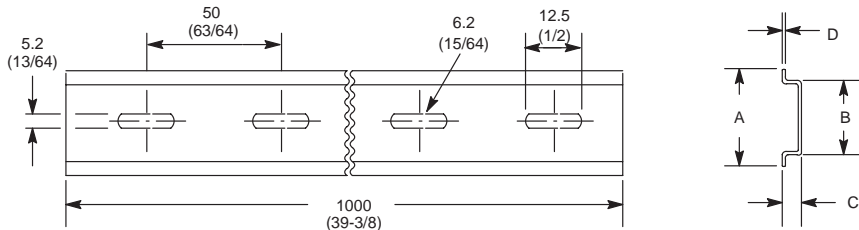
General Purpose Relays

Approximate Dimensions

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



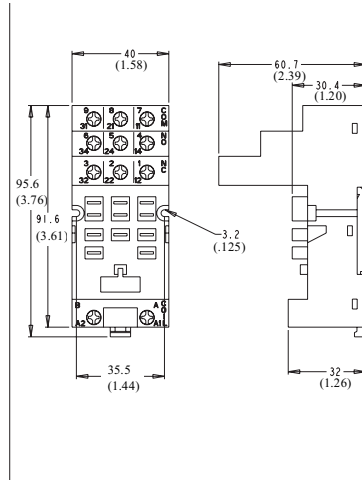
Bulletin 700-HB Relay



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

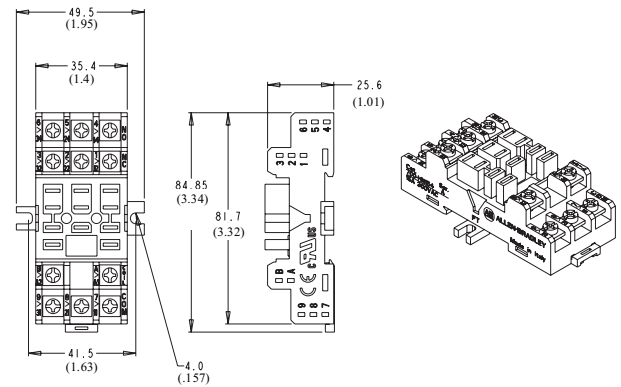
Cat. No.	A	B	C	D	Approx. Shipping Wt.
199-DR1	35 (1-3/8)	27 (1-1/16)	7.5 (19/64)	1.02 (1/64)	1.85 kg (4.07 lbs.) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lbs.) (5/pkg)

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



Cat. No. 700-HN153

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



Cat. No. 700-HN154 ①

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

① 199-FSM Surge Suppressors fit on the coil terminals. See page 195.



Bulletin 700-HD

- Flange-Mounted
- 15 A Contact Rating
- DPDT, 3PDT
- Optional Snap-in Markers on Faceplate
- Blade Style Quick Connect Terminals (0.187 x 0.020 in.)
- Solder Terminations
- Clear Cover for Easy Visual Inspection

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	63	Specifications	64
Accessories	63	Approximate Dimensions	66

Description

The Bulletin 700-HD General Purpose Relays feature flanged mounting with blade style quick connect/solder terminations. All contacts are AgCdO. Coils are available in a variety of AC and DC voltages.

Conformity to Standards:

EN 60947-4-1
EN 60947-5-1
IEC 947
CSA 22.2
UL 508
NEMA/EEMAC ICS2 compliant

Approvals:

cURus Recognized, File E3125
Guide NLDX 2
CE Marked (per EU Low Voltage Directive 73/23 EEC 93/68 EEC)
ABS (American Bureau of Shipping), File 00-GE 195140-PDA
RINA listed


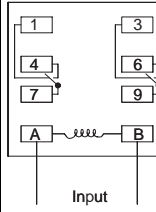
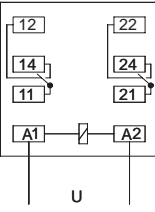
Third Party Approvals:

IMQ listed

Your order must include:

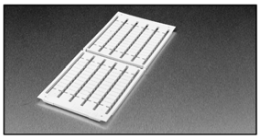
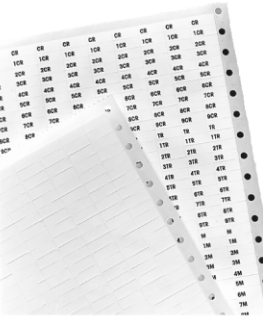
- Cat. No. of the plug-in relay plus suffixes of selection options.
- Cat. No. of socket required.
- If required, Cat. No. of any accessories.

Flange-Mounted Relay with Blade Style 0.187 x 0.020" Quick Connect/Solder Terminations

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No.	Factory-stocked Item ●
			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	✓
					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
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						

❶ Single Pack

Accessories

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 <i>Snap-in markers</i>	Relay Identification Snap-in Markers ❶ Snap-in markers fit on top of Bulletin 700-HA relay covers. The following are blank cards. Squares slip into molded slot on top of Bulletin 700-HD relay cover.	100	1492-SM5X12 1492-SM6X9 1492-SM6X12 1492-SM8X9 1492-SM8X12 1492-MP-Blank	❷
	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	

❶ Refer to terminal block marking systems within the Industrial Control Catalog

❷ For pre-printed marker cards, turn to the following 1492 sections of publication A113: 1492-SM5X12_, 1492-SM6X9_, 1492-SM8X9_, 1492-SM8X12_, 1492-MP_

Bulletin 700-HD
General Purpose Relays
Specifications ❶

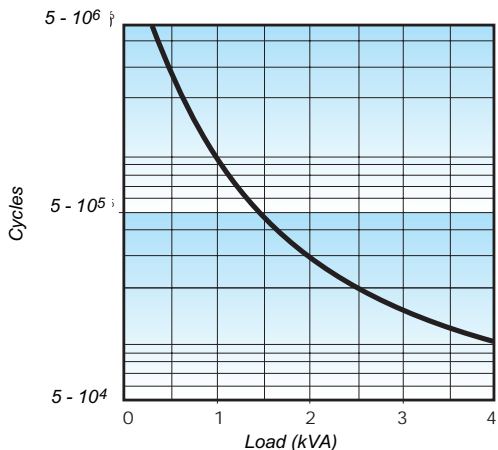
		Cat. No. 700-HD...		
Electrical Ratings				
Pilot Duty Rating ②		NEMA B300		
Rated Thermal Current (<i>I</i> _{th})		15 A ③ – 120V 15 A ③ – 240V		
Rated Insulation Voltage (<i>U</i> _i)		250V IEC-300V UL/CSA		
Contacts	Inductive	Make	Break	Hp
	120V AC	►][◄	◄][►	3/4
	240V AC	60 A 30 A	6 A 3 A	2
	DC	30V DC, 15 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		
Coil Consumption ±10%	AC Coils Inrush Sealed	50 Hz 3.3 VA 2.2 VA	60 Hz 2.25 VA 1.9 VA	
	DC Coils	1.3 W		
Design Specification/Test Requirements				
Electrical				
Dielectric Withstand Voltage				
Pole-to-Pole		2500V		
Contact to Coil		4000V		
Contact to Frame		2500V		
Mechanical				
Degree of Protection (Open Type) IEC 529		IP 40		
Mechanical Life Operations (AC/DC)		> 10 x 10 ⁶ / 30 x 10 ⁶		
Switching Frequency Operations		3600/HR		
Coil Voltages		See Product Selection		
Operating Time	Pickup	15 ms		
	Dropout	15 ms		
Maximum Operating Rate		4 Ops/s		
Minimum Low Energy Permissible Load		50 mW		
Environmental				
Temperature	Operating	–40...+70°C		
	Storage	–40...+100°C		
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		
Certifications		CE, cURus, IMQ, RINA, ABS		

❶ Performance Data – See page Important-2., publication A113

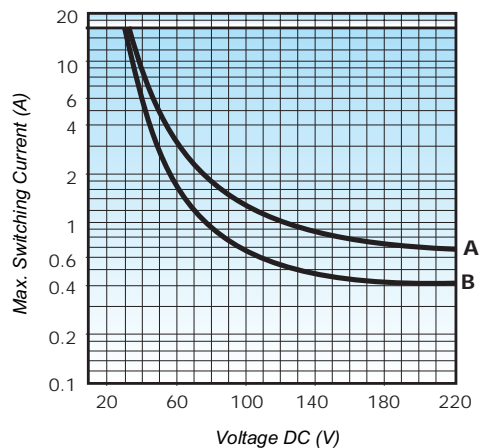
❷ NEMA Rating Chart is on page 29.

❸ 3-pole relays have a 20 A maximum total current rating for all three poles.

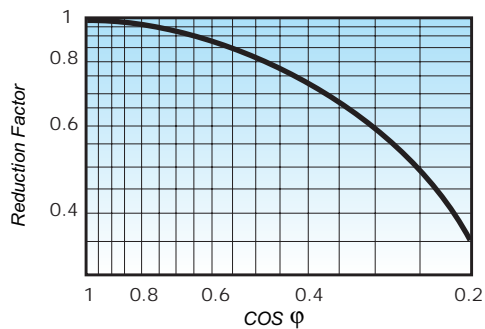
❹ Bulletin 700-HD wiring terminals are the quick connect/solder type 4.7 mm x 0.5 mm (0.187 x 0.020") termination.



Contact life vs AC1 load at 600 cycles/h.



Breaking capacity for DC1 load at 600 cycles/h.
 Load applied to 1 contact.
 A = for N.O. types
 B = other types



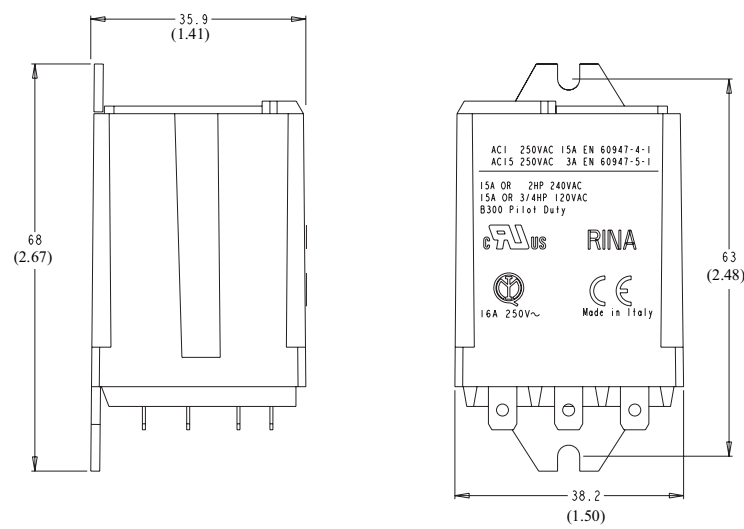
Load Reduction factor vs $\cos \phi$

Bulletin 700-HD

General Purpose Relays

Approximate Dimensions

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



Bulletin 700-HD Relay



Bulletin 700-HC

- Standard, Gold, or Gold Bifurcated Contacts
- 1 A, 3 A, and 5 A Contact Ratings
- 4PDT
- Blade Style Terminals
- Optional Manual Operator
- Optional LED
- Ice Cube Style Relay

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	68	Specifications	70
Accessories	69	Approximate Dimensions	71

Description

The Bulletin 700-HC General Purpose Ice Cube Style Relays feature a plug-in square base with blade style terminals. The 1 A version relays feature gold bifurcated contacts to increase the switching reliability at lower power levels. All relays have opposite polarity arc barriers as a standard feature. Coils are available in a variety of AC and DC voltages.

Conformity to Standards:

EN 60947-4-1
EN 60947-5-1
IEC 947
CSA 22.2
UL 508

Approvals:

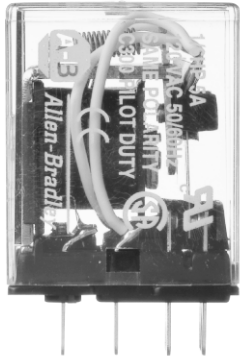
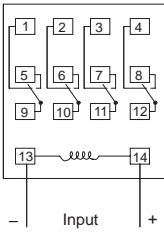
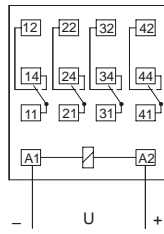
CSA Certified, File LR701700
UL Recognized, File E14840
Guide NLDX 2
CE Marked (per EU Low Voltage
Directive 73/23 EEC 93/68 EEC)

Your order must include:

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

Bulletin 700-HC
Interposing/Isolation Relays
Product Selection

Bulletin 700-HC Miniature Square Base with Blade Terminals






	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No. ① ②	Factory-stocked Item
			U.S./Canada	International			④
	4PDT 4-Pole 4 Form C Contacts: 1 A = Au/Ag Bifurcated Gold Contacts Sockets	1 A	 700-HN128	 700-HN103	12V DC	700-HC54Z12	
					24V DC	700-HC54Z24	✓
					24V AC	700-HC54A24	
					120V AC	700-HC54A1 ③	✓
	4PDT 4-Pole 4 Form C Contacts: 3 A = Au/Ag Gold Contacts Sockets	3 A (C300)			6V AC	700-HC14A06	
					12V AC	700-HC14A12	
					24V AC	700-HC14A24	✓
					120V AC	700-HC14A1 ③	✓
					240 AC	700-HC14A2	✓
					6V DC	700-HC14Z06	
					12V DC	700-HC14Z12	✓
					24V DC	700-HC14Z24 ③	✓
					48V DC	700-HC14Z48	
					110V DC	700-HC14Z1	
	4PDT 4-Pole 4 Form C Contacts: 5 A = AgCdO Silver Contacts Sockets	5 A (C300)			6V AC	700-HC24A06	
					12V AC	700-HC24A12	
					24V AC	700-HC24A24 ③	✓
					120V AC	700-HC24A1 ③	✓
					240V AC	700-HC24A2	✓
					6V DC	700-HC24Z06	
					12V DC	700-HC24Z12	✓
					24V DC	700-HC24Z24 ③	✓
					48V DC	700-HC24Z48	✓
					110V DC	700-HC24Z1	

① LED Option: Add suffix **(-4)** to the selected Bulletin 700-HC Relay Cat. No. except for the 240V AC units, add **(-4L)**.

② Manual Operator and LED Option: Add suffix **(-1-4)** to the selected Bulletin 700-HC Relay Cat. No., except for the 240V AC units, add **(-1-4L)**.

③ Bulk Package Option: Relay can be purchased at discounted prices in bulk quantities of 50. Add suffix **(-99)** to the selected relay Catalog Number.

④ Single Pack

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN103	Screw Terminal Socket – Panel or DIN Rail Mounting. Guarded Terminal Construction 14-blade miniature socket for use with Bulletin 700-HC relays.	1	700-HN103	✓
 Cat. No. 700-HN128	Screw Terminal Base Sockets – Panel or DIN Rail Mounting. Open Style Construction 14-blade miniature socket for use with Bulletin 700-HC relays. Order must be for 10 sockets or multiples of 10.	10	700-HN128	✓
 Cat. No. 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓
 Sample Retainer Clips	Retainer Clip for Cat. Nos. 700-HN103, and -HN128 Sockets with 700-HC Relays and Cat. Nos. 700-HN116, Sockets with Bulletin 700-HF DPDT Relays ❶ Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN114	✓
	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	

❶ Bulletin 700-HC Miniature Square Base Relay, Socket, and Retainer Clip Reference Chart

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

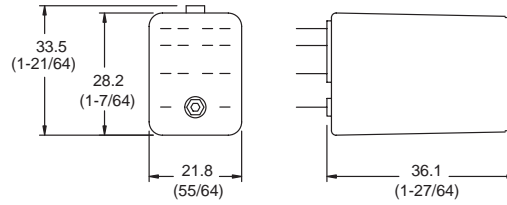
Bulletin 700-HC
Interposing/Isolation Relays
Specifications ❶

		Cat. No. 700-HC...					
Electrical Ratings							
Pilot Duty Rating ②		3 A, 5 A NEMA C300 (For 3 A/5 A only)					
Rated Thermal Current (<i>I</i> _{th})		1 A, 3 A and 5 A					
Rated Insulation Voltage (<i>U</i> _i)		250V IEC – 300V UL/CSA					
Contacts	Inductive	1 A		Hp	3 A/5 A		Hp
	120V AC	►][◄ 5 A	◄][► 0.5 A	1/16	►][◄ 15 A	◄][► 1.5 A	1/10
	240V AC	—	—	1/16	7.5 A	0.75	1/6
	DC	30V DC, 1 A			30V DC, 3 A/5 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					
Coil Consumption ±10%		50 Hz			60 Hz		
AC Coils	Inrush	2.4 VA			2.1 VA		
	Sealed	1.6 VA			1.4 VA		
DC Coils		0.9 W					
Max. Allowable Leakage		25% of VA					
		10% of W					
Design Specification/Test Requirements							
Electrical							
Dielectric Withstand Voltage		1500V					
Pole-to-Pole		1500V					
Contact to Coil		1500V					
Contact to Frame		1500V					
Electrical Life		200,000 minimum					
Mechanical							
Degree of Protection (Open Type) IEC 529		IP 20 (Guarded Terminal Sockets)					
Mechanical Life Operations		50 x 10 ⁶					
Switching Frequency Operations		1800/HR					
Coil Voltages		See Product Selection					
Operating Time (ms)	Max. Pickup	25					
	Max. Dropout	20					
Maximum Operating Rate		4 Ops/s					
Environmental							
Temperature	Operating	–30...+55°C (–22...+131°F)					
	Storage	–55...+85°C (–67...+185°F)					
Altitude		2000 m (6560 ft)					
Construction							
Insulating Material		Molded High Dielectric Material					
Enclosure		Transparent Dust Cover					
Contact Material		1 A – Bifurcated/Gold plated, Ag 3 A Gold Flashed, Ag/Au 5 A – Silver Cad. Ox., AgCdO					
Terminal Markings on Socket		In accordance with EN50 0005					
Sockets		700-HN103, -HN128					
Certifications		CE, UL, CSA					

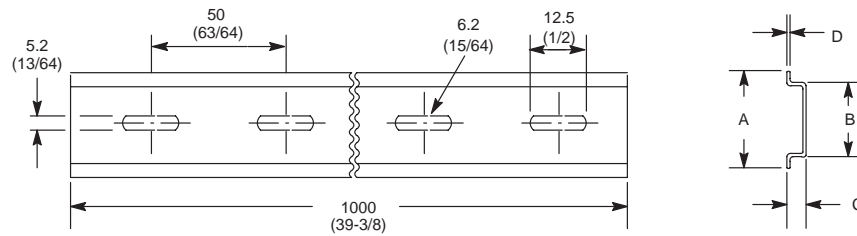
❶ Performance Data – See page Important-2, publication A113.

❷ NEMA Rating Chart is on page 195.

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



Bulletin 700-HC Relay



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

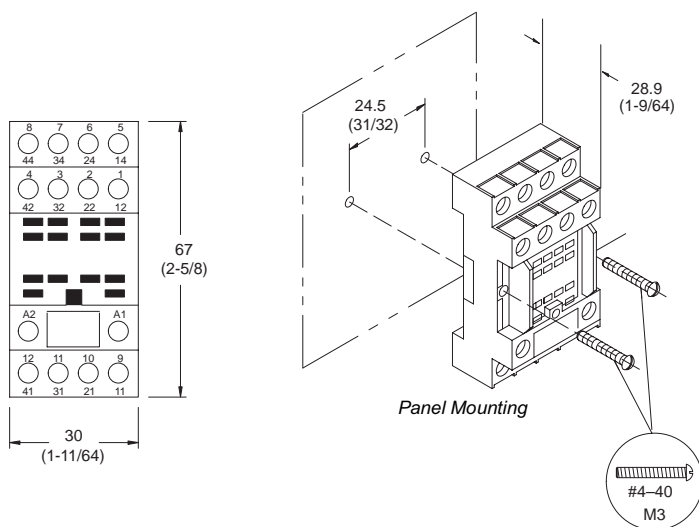
Cat. No.	A	B	C	D	Approx. Shipping Wt.
199-DR1	35 (1-3/8)	27 (1-1/16)	7.5 (19/64)	1.02 (1/64)	1.85 kg (4.07 lbs.) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lbs.) (5/pkg)

Bulletin 700-HC

Interposing/Isolation Relays

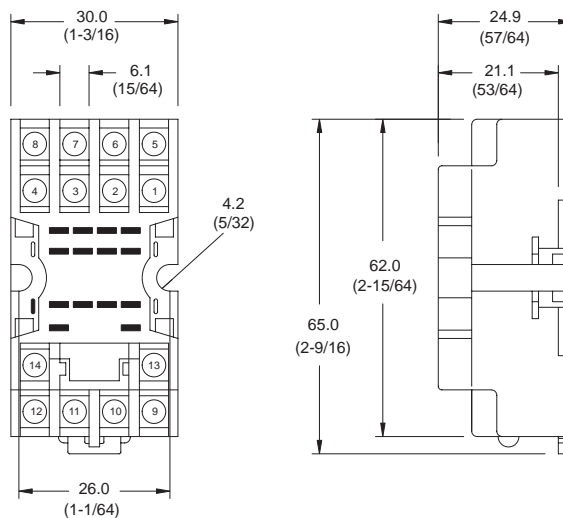
Approximate Dimensions, Continued

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



Cat. No. 700-HN103

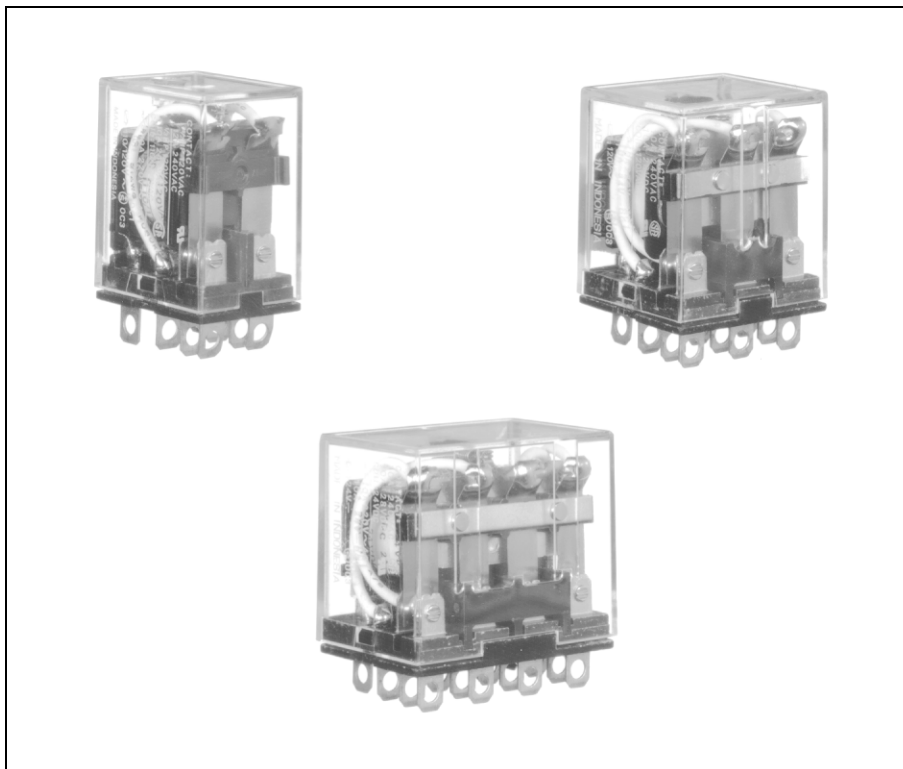
Wire Size: $2 \times 1.5 \text{ mm}^2$ (# 2-16 AWG...#1-20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Cat. No. 700-HN128 ❶

Wire Size: $2 \times 1.5 \text{ mm}^2$ (# 2-16 AWG...#1-20 AWG)
(Either Solid or Stranded)
Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)

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



Bulletin 700-HF

- Miniature Square Base
- 10 A Contact Rating
- DPDT
- 3PDT
- 4PDT
- Plug-in Quick Connect Solder Terminals
- Panel or DIN Rail Mounting
- Optional Push-to-Test Operator
- Optional LED

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	74	Specifications	76
Accessories	75	Approximate Dimensions	77

Description

The Bulletin 700-HF General Purpose Relays feature a plug-in square base with quick connect/solder style terminals and are available in DPDT, 3PDT, or 4PDT. All relays come with AgCdO contacts and opposite polarity arc barriers as standard features. Coils are available in a variety of AC and DC voltages.

Conformity to Standards:

CSA 22.2
UL 508
pr EN 60255-1-0
IEC 255-1-00
IEC 255-0-20

Approvals:


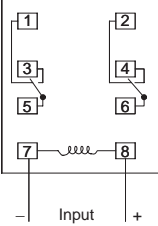
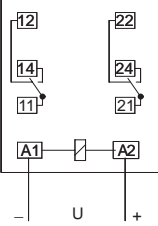
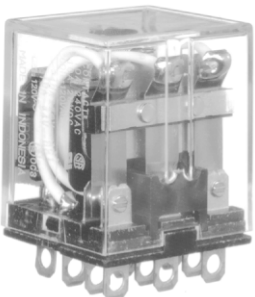
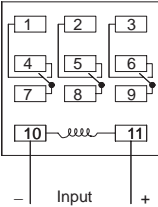
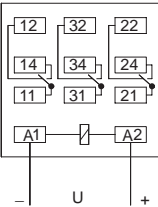
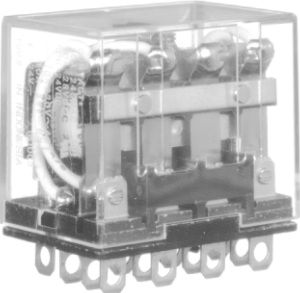
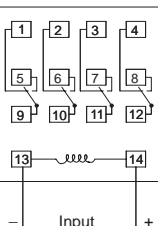
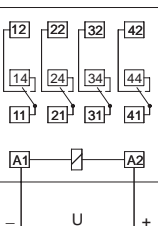
CSA Certified, File LR75088
UL Recognized, File E3125
Guide NLDX 2
CE Marked (per EU Low Voltage
Directive 73/23 EEC 93/68 EEC)

Your order must include:

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

Bulletin 700-HF
General Purpose Relays
Product Selection

Miniature Square Base with Quick Connect/Solder Style Terminations

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No. ① ②	Factory-stocked Item	
			U.S./Canada	International			⑤	⑥
	DPDT 2-pole 2 Form C AgCdO Contacts Socket	10 A	 700-HN116	 700-HN116	6V AC	700-HF32A06		
					12V AC	700-HF32A12		
					24V AC	700-HF32A24 ③	✓	✓
					120V AC	700-HF32A1 ③	✓	
					240V AC	700-HF32A2	✓	
					6V DC	700-HF32Z06		
					12V DC	700-HF32Z12	✓	
					24V DC	700-HF32Z24 ③	✓	
					48V DC	700-HF32Z48		
					110V DC	700-HF32Z1		
	3PDT 3-pole 3 Form C AgCdO Contacts Socket	10 A	 700-HN138	 700-HN138	6V AC	700-HF33A06		
					12V AC	700-HF33A12		
					24V AC	700-HF33A24 ④	✓	
					120V AC	700-HF33A1 ④	✓	
					240V AC	700-HF33A2 ④	✓	
					6V DC	700-HF33Z06		
					12V DC	700-HF33Z12 ④		
					24V DC	700-HF33Z24 ④	✓	
					48V DC	700-HF33Z48 ④		
					110V DC	700-HF33Z1		
	4PDT 4-pole 4 Form C AgCdO Contacts Socket	10 A	 700-HN139	 700-HN139	6V AC	700-HF34A06		
					12V AC	700-HF34A12		
					24V AC	700-HF34A24 ④	✓	
					120V AC	700-HF34A1 ④	✓	
					240V AC	700-HF34A2	✓	
					6V DC	700-HF34Z06		
					12V DC	700-HF34Z12		
					24V DC	700-HF34Z24 ④	✓	
					48V DC	700-HF34Z48 ④		
					110V DC	700-HF34Z1		

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







② Manual Operator and LED Option: Add suffix (-1-4) to the selected Bulletin 700-HF Relay Cat. No., except for the 240V AC units, add (-1-4L).

③ Bulk Package Option: Relay can be purchased at discounted prices in bulk quantities of 50. Add suffix (-99) to the selected relay Catalog Number. The following relay is also available in the Bulk Package Option: Cat. No. 700-HF32A1-4.

④ Bulk Package Option: Relay can be purchased at discounted prices in bulk quantities of 20. Add suffix (-99) to the selected relay Catalog Number. The following relays are also available in the Bulk Package Option: Cat. Nos. 700-HF33A1-4, 700-HF33Z24-4, 700-HF34A24-4, 700-HF34A1-4, and 700-HF34Z24-4.

⑤ Single Pack

⑥ Bulk Pack

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No 700-HN116	Screw Terminal Socket – Panel or DIN Rail Mounting 8-blade miniature socket for use with DPDT Bulletin 700-HF relays. Order must be for 10 sockets or multiples of 10.	10	700-HN116	✓
 Cat. No. 700-HN138	Screw Terminal Socket – Panel or DIN Rail Mounting 11-blade socket for use with 3PDT Bulletin 700-HF relays.	1	700-HN138	✓
 Cat. No. 700-HN139	Screw Terminal Socket – Panel or DIN Rail Mounting 14-blade socket for use with 4PDT Bulletin 700-HF relays.	1	700-HN139	✓
 Cat. No 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓
 Sample Retainer Clips	Retainer Clip for Cat. Nos. 700-HN103, -HN104, -HN105, and -HN128 Sockets with 700-HC Relays and Cat. Nos. 700-HN116, -HN117 and -HN118 Sockets with Bulletin 700-HF DPDT Relays ❶ Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN114	✓
	Retainer Clip for Cat. Nos. 700-HN138 and -HN139 Sockets with Bulletin 700-HF 3PDT and 4PDT Relays ❶ Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN140	✓
	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	

❶ Bulletin 700-HF Miniature Square Base Relay, Socket, and Retainer Clip Reference

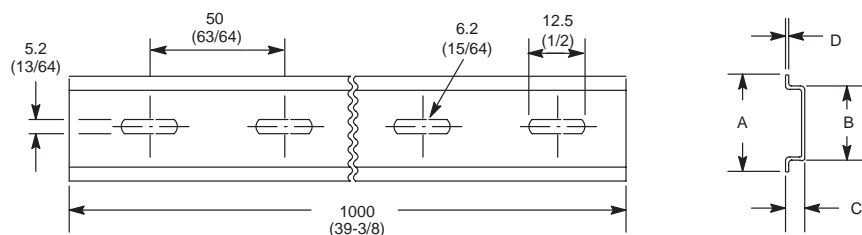
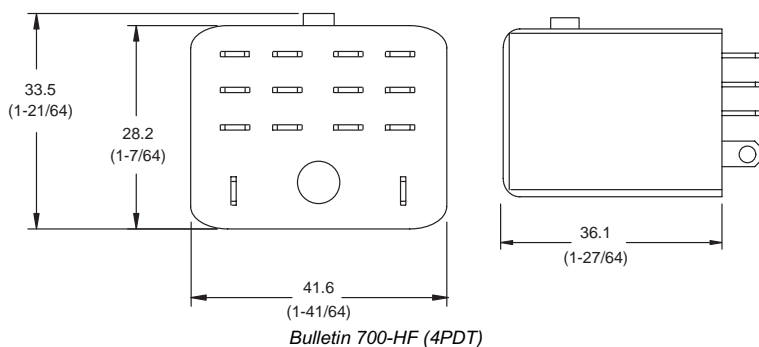
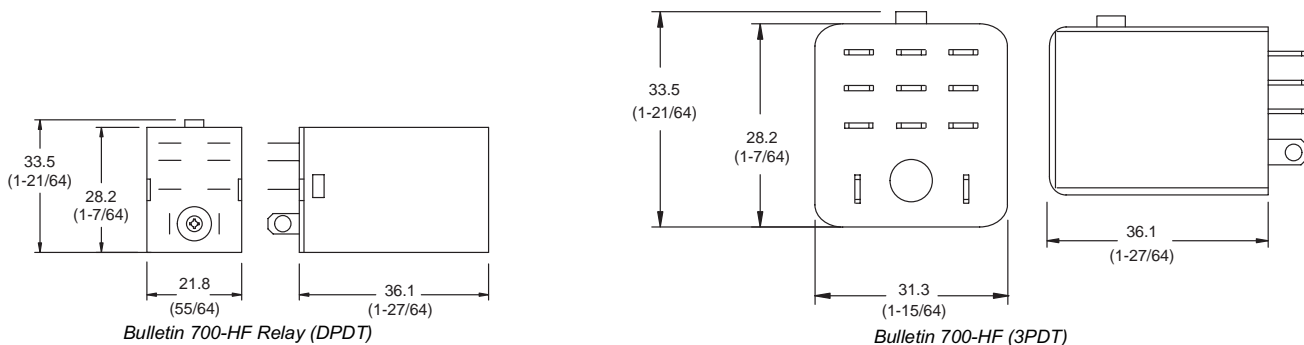
Relay Type	Cat. No. Socket	Cat. No. Retainer Clip
700-HF32	700-HN116	700-HN114
700-HF33	700-HN138	700-HN140
700-HF34	700-HN139	700-HN140

Bulletin 700-HF
General Purpose Relays
Specifications ❶

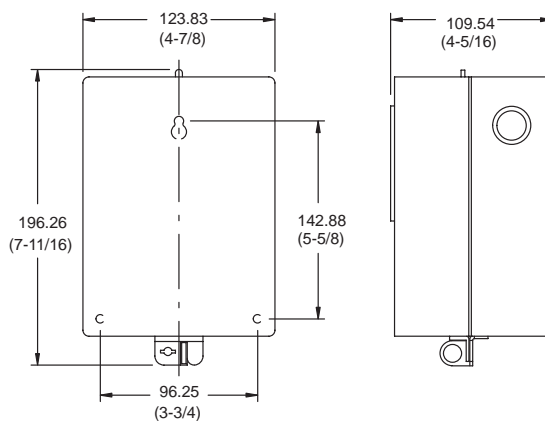
		Cat. No. 700-HF...		
Electrical Ratings				
Pilot Duty Rating		C300		
Rated Thermal Current (<i>I</i> _{th})		10 A		
Rated Insulation Voltage (<i>U</i> _i)		250V IEC, 300 UL/CSA		
Contacts	Inductive	Make	Break	Hp
	120V AC	► ◄ 30 A	◄ ► 3 A	1/3
	240V AC	15 A	1.5 A	1/2
	DC	30V DC, 10 A		
Permissible Coil 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		
Coil Consumption ±10% AC Coils	Inrush Sealed	50 Hz	60 Hz	
		2.4 VA 1.6 VA	2.1 VA 1.4 VA	
DC Coils		0.9 W		
Max. Allowable Leakage		25% of VA		
		10% of 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 (Sockets)		
Mechanical Life Operations		30 x 10 ⁶		
Switching Frequency Operations		3600/hr		
Coil Voltages		See Product Selection		
Operating Time at Nominal Voltage at 20°C	Pickup	15 ms		
	Dropout	15 ms		
Maximum Operating Rate		4 Ops/s		
Shock (Mechanical Durability)		100 G		
Shock (Malfunction Durability)		20 G		
Environmental				
Temperature	Operating	-30...+55°C (-22...+131°F)		
	Storage	-55...+85°C (-67...+185°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		8-Blade Socket (DPDT) Cat. No. 700-HN116 11-Blade Socket (3PDT) Cat. No. 700-HN138 14-Blade Socket (4PDT) Cat. No. 700-HN139		

❶ Performance Data – See page Important-2, publication A113.

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



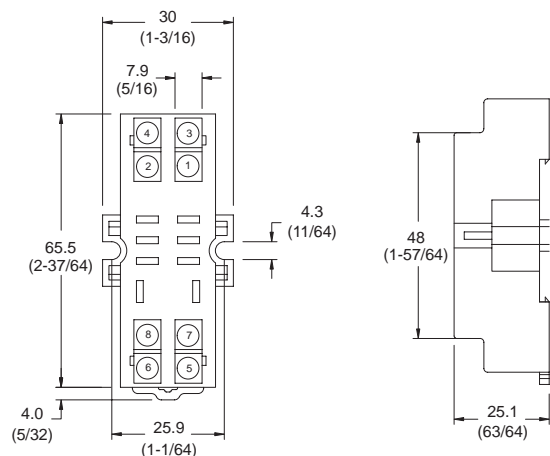
Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes



NEMA Type 1 Enclosure
Cat. No. 700-HN120

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

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



Cat. No. 700-HN116

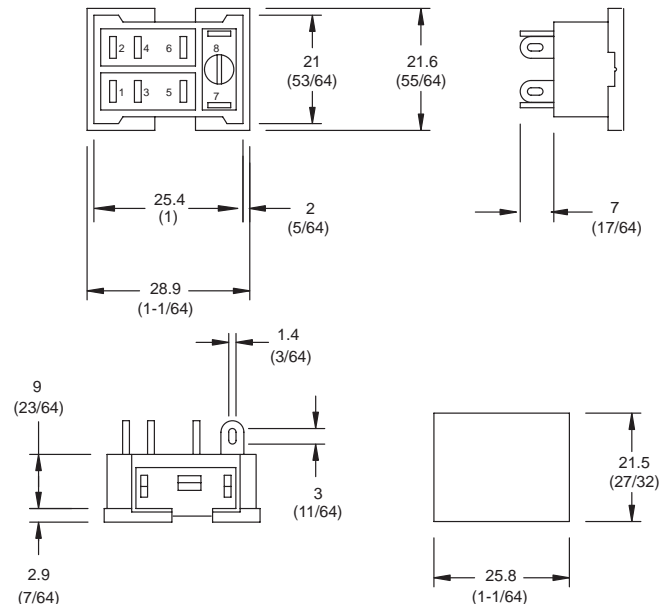
Wire Size: 2 x 2.5 mm²

Single Wire – Up to #12 AWG

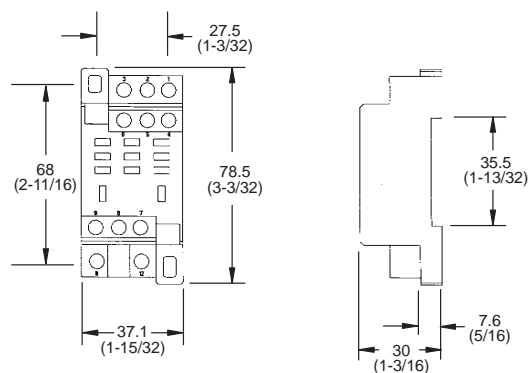
Double Wire – 2 x 2.5 mm² (#2–14 AWG... #2–20 AWG)

(Either Solid or Stranded)

Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Cat. No. 700-HN117



Cat. No. 700-HN138

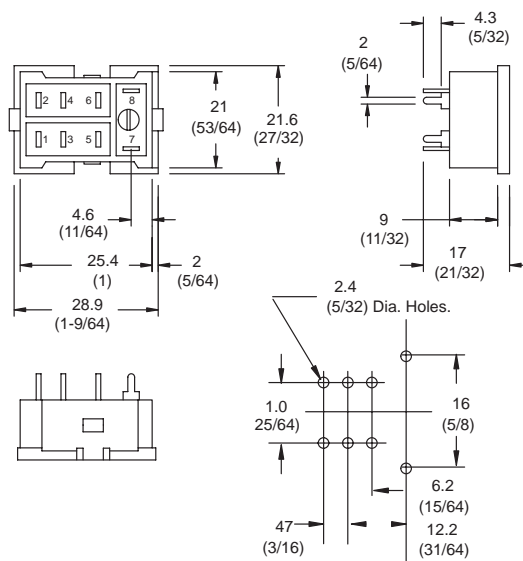
Wire Size: 2 x 2.5 mm²

Single Wire – Up to #12 AWG

Double Wire – 2 x 2.5 mm² (#2–14 AWG... #2–20 AWG)

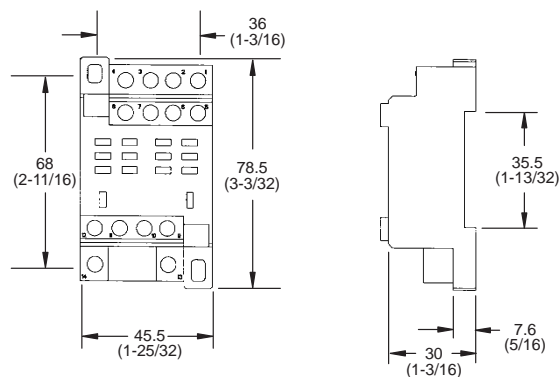
(Either Solid or Stranded)

Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



P.C. Board Layout

Cat. No. 700-HN118



Cat. No. 700-HN139

Wire Size: 2 x 2.5 mm²

Single Wire – Up to #12 AWG

Double Wire – 2 x 2.5 mm² (#2–14 AWG... #2–20 AWG)

(Either Solid or Stranded)

Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Bulletin 700-HJ

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

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	80	Specifications	82
Accessories	81	Approximate Dimensions	83

Description

The Bulletin 700-HJ General Purpose Relays are magnetic latching relays with blade style quick connect terminals. All AC relays include internal diodes and AgCdO contacts. Single and dual coil versions are available.

Conformity to Standards:

EN 60947-4-1
EN 60947-5-1
IEC 947
CSA 22.2
UL 508

Approvals:

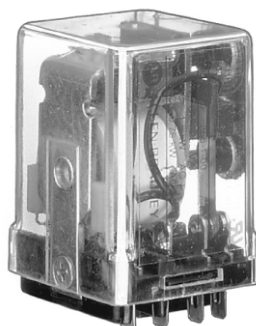
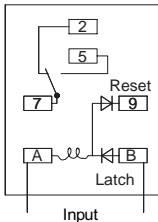
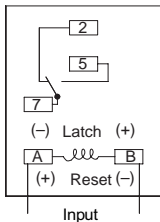
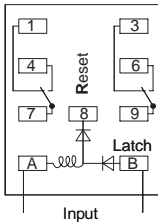
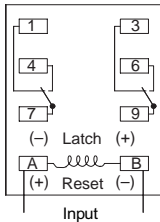
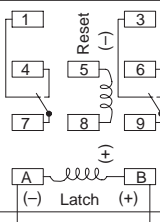
CSA Certified, File LR7000260
UL Recognized, File E3125
Guide NLDX 2

Your order must include:





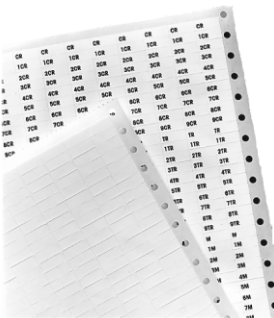
- Cat. No. of the plug-in relay plus suffixes of selection options.
- Cat. No. of socket required.
- If required, Cat. No. of any accessories.

Bulletin 700-HJ
Latching Relays
Product Selection

Bulletin 700-HJ Magnetic Latching Relay with Blade 0.187 x 0.020" Quick Connect/Solder Terminations

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No.	Factory-stocked Item ④
			AC ①	DC ②			
 Type HJ	SPDT 1-Pole 1 Form C AgCdO Contacts (Single Coil AC or DC)	10 A	 Input 700-HN102	 Input 700-HN154	24V AC	700-HJ36A24	
	Sockets		120V AC	700-HJ36A1			
			240V AC	700-HJ36A2			
			12V DC	700-HJ36Z12			
			24V DC	700-HJ36Z24			
DPDT 2-Pole 2 Form C AgCdO Contacts (Single Coil AC or DC)	10 A	 Input 700-HN102	 Input 700-HN154	24V AC	700-HJ32A24		
				120V AC	700-HJ32A1	✓	
				240V AC	700-HJ32A2		
				12V DC	700-HJ32Z12		
				24V DC	700-HJ32Z24		
DPDT 2-Pole 2 Form C AgCdO Contacts (Dual Coil) ③	10 A	DC Only	 Input 700-HN153 or 700-HN154	12V DC	700-HJD32Z12		
				Socket	24V DC	700-HJD32Z24	✓

- ① AC Relays include internal diodes.
 ② For DC operation, polarity must be observed.
 ③ Available only in DC Coil with DPDT contacts.
 ④ Single Pack

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN153	Screw Terminal Socket – Panel or DIN Rail Mounting. Guarded Terminal Construction 11-blade socket for use with Bulletin 700-HB and -HJ relays and HS timing relays.	1	700-HN153	✓
 Cat. No. 700-HN154	Screw Terminal Base Socket – Panel or DIN Rail Mounting. Open Style Construction 11-blade for use with Bulletin 700-HB and -HJ relays and -HS timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN154	✓
 Cat. No. 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓
 Sample Retainer Clips	Retainer Clip For Cat. Nos. 700-HN153 and -HN154 Sockets with Bulletin 700-HJ Relays ❶ 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, S, 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	

❶ Bulletin 700-HJ Magnetic Latching Relay, Socket, and Retainer Clip Reference Chart

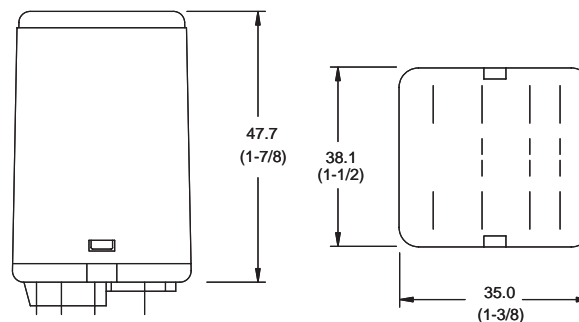
Relay Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HJ	700-HN153	700-HN159
	700-HN154	700-HN159

Bulletin 700-HJ
Latching Relays
Specifications ❶

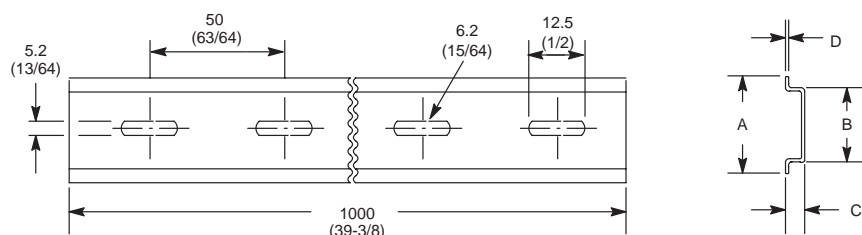
		Cat. No. 700-HJ...		
Electrical Ratings				
Pilot Duty Rating		—		
Rated Thermal Current (I_{th})		10 A		
Rated Insulation Voltage (U_i)		250V IEC, 300V UL/CSA		
Contacts	Inductive	Make	Break	Hp
		►][◄	◄][►	
	120V AC	30 A	3 A	1/4
	240V AC	15 A	1.5 A	1/3
DC		24V DC, 10 A		
Permissible Coil Voltage Variation		85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC		
Coil Consumption ±10%	Inrush Sealed	Single AC Coil	Single DC Coil	Dual DC Coil
AC Coils		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	25 ms	
		Dropout	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		

❶ Performance Data - See page Important-2, publication A113.

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



Bulletin 700-HJ Relay



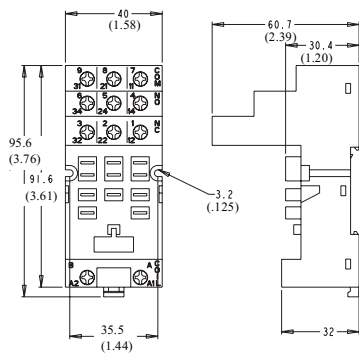
Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

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

Latching Relays

Approximate Dimensions, Continued

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



Cat. No. 700-HN153

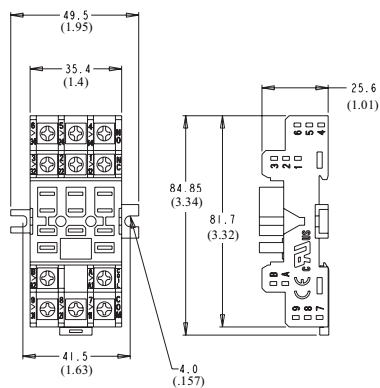
Wire Size: 2 x 2.5 mm²

Single Wire – Up to #12 AWG

Double Wire – 2 x 2.5 mm² (#2–14 AWG...#2–20 AWG)

(Either Solid or Stranded)

Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Cat. No. 700-HN154

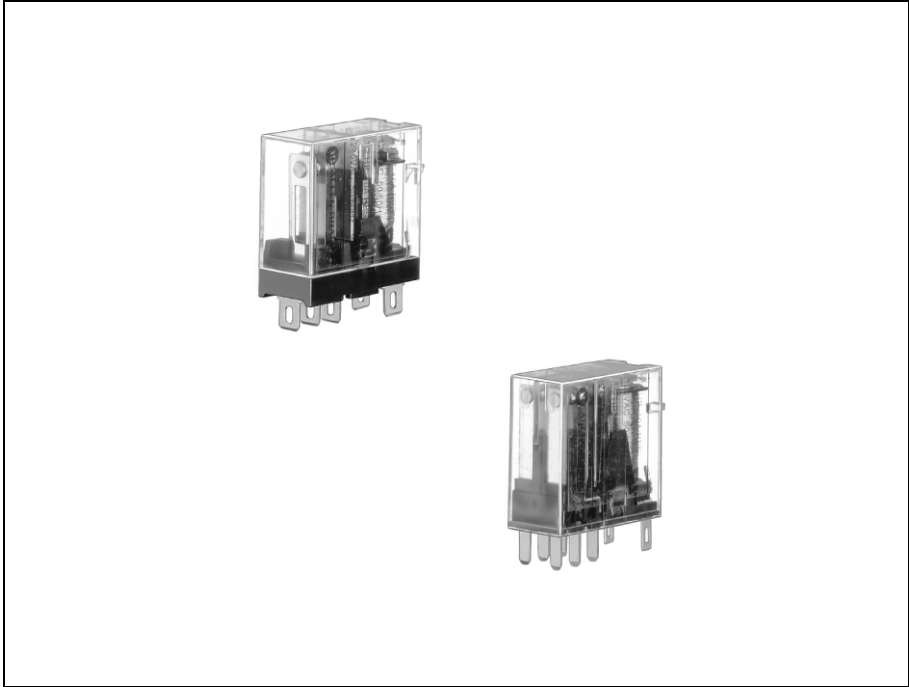
Wire Size: 2 x 2.5 mm²

Single Wire – Up to #12 AWG

Double Wire – 2 x 2.5 mm² (#2–14 AWG...#2–20 AWG)

(Either Solid or Stranded)

Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)



Bulletin 700-HK

- SPDT – 10 A Contacts
- DPDT – 5 A Contacts
- Plug-In Blade Style Terminals
- Built-in Retainer Clip
- Optional LED
- Available with Gold Overlay Contacts (Bulletin 700- HKX)
- Low Switching Capacity
- Ideal for PLC and Drives Applications
- Slim Line Style Relay

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	86	Specifications	88
Accessories	87	Approximate Dimensions	89

Description

The Bulletin 700-HK General Purpose Slim Line Relays feature blade style terminations. The DPDT version is capable of 5 A per pole for a total of 10 A per relay. The SPDT relay contacts are rated at 10 A. Both the SPDT and DPDT relays feature AgCdO contacts with an option to add a gold overlay. All 700-HK relays, when assembled with the proper sockets, are UL listed. Coils are available in a variety of AC and DC voltages.

Conformity to Standards:

IEC 255-1-00
IEC 255-23
CSA 22.2
UL 508

Approvals:

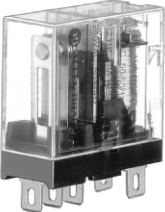

CSA Certified, File LR75088
UL Recognized, File E3125
Guide NLDX 2
UL Listed, with Allen-Bradley socket
CE Marked (per EU Low Voltage
Directive 73/23 EEC 93/68 EEC)

Your order must include:

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

Bulletin 700-HK
Interposing/Isolation Relays
Product Selection

Slim Line Relay with Plug-in Quick Connect Terminations

	Description	Contact Rating	Wiring Diagrams		Coil Voltage	Cat. No. ❶ ❷	Factory-stocked Item	
			U.S./Canada	International			❸	❹
 Bulletin 700-HK SPDT	SPDT 1-Pole 1 Form C AgCdO Contacts Socket	10 A	 700-HN121	 700-HN121	6V AC	700-HK36A06		
					12V AC	700-HK36A12	✓	
					24V AC	700-HK36A24 ❸	✓	✓
					120V AC	700-HK36A1 ❸	✓	✓
					240V AC	700-HK36A2	✓	
					6V DC	700-HK36Z06		
					12V DC	700-HK36Z12	✓	
					24V DC	700-HK36Z24 ❸	✓	✓
					48V DC	700-HK36Z48	✓	
					110V DC	700-HK36Z1	✓	
 Bulletin 700-HK DPDT	DPDT 2-Pole 2 Form C AgCdO Contacts Socket	5 A	 700-HN122	 700-HN122	6V AC	700-HK32A06		
					12V AC	700-HK32A12		
					24V AC	700-HK32A24 ❸	✓	
					120V AC	700-HK32A1 ❸	✓	
					240V AC	700-HK32A2	✓	
					6V DC	700-HK32Z06		
					12V DC	700-HK32Z12	✓	
					24V DC	700-HK32Z24 ❸	✓	
					48V DC	700-HK32Z48	✓	
					110V DC	700-HK32Z1		




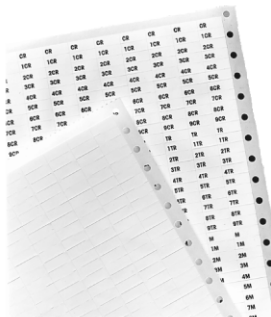
❶ LED Option: Add suffix (-4) to the selected Bulletin 700-HK relay Cat. No. except for the 240V AC units, add (-4L).

❷ For AgCdO Contact with Gold Overlay: Replace "3" with "X" in Cat. No. For example, if Cat. No. 700-HK36A1 is required with Gold Overlay, the new catalog number is 700-HKX6A1.

❸ Bulk Package Option: Relay can be purchased at discounted prices in bulk quantities of 100. Add suffix (-99) to the selected relay Catalog Number. The following relays are also available in the Bulk Package Option: Cat. Nos. 700-HK32A1-4, 700-HK32Z24-4, 700-HK36A1-4, and 700-HK36Z24-4.

❹ Single Pack

❺ Bulk Pack

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN121	Screw Terminal Socket – Panel or DIN Rail Mounting 5-blade miniature socket for use with 1-pole, Bulletin 700-HK relays. This socket includes a retainer clip. Order must be for 10 sockets or multiples of 10.	10	700-HN121	✓
 Cat. No. 700-HN122	Screw Terminal Socket – Panel or DIN Rail Mounting 8-blade miniature socket for use with 2-pole, Bulletin 700-HK relays. This socket includes a retainer clip. Order must be for 10 sockets or multiples of 10.	10	700-HN122	✓
 Cat. No. 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓
	Pre-printed identification tags – contains 10 sheets of pre-printed and blank tags. Each sheet contains thirteen sets of the markings CR...9CR, TR...9TR, M...9M, F, R, 1S, and 117 blank tags. Tags are peel-off with sticky backing for easy placement on relays.	10	700-N40	
	Blank identification tags – contains 10 sheets of blank identification tags for customer specialized printing. Each sheet contains 546 blank tags. Tags are peel-off with sticky backing for easy placement on relays.	10	700-N41	

Bulletin 700-HK Slim Line Relay, Socket, and Retainer Clip Reference Chart

Relay Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HK32	700-HN122	Provided
700-HK36	700-HN121	Provided

Bulletin 700-HK
Interposing/Isolation Relays
Specifications ❶

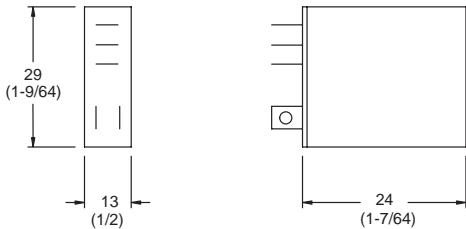
		Cat. No. 700-HK...					
Electrical Ratings							
Pilot Duty Rating ②		B300					
Rated Thermal Current (<i>I</i> _{th})		1-Pole — 10 A			2-Pole — 5 A		
Rated Insulation Voltage (<i>U</i> _i)		250V IEC, 300V UL/CSA					
Contacts	Inductive	1-Pole		Hp	2-Pole		Hp
		►][◄	◄][►		►][◄	◄][►	
	120V AC, 1-phase	30 A	3 A	1/3	30 A	3 A	1/6
	240V AC, 1-phase	10 A	1.5 A	1/2	15 A	1.5 A	1/3
Make, Break, & Continuous V DC		30V, 10 A			30V, 5 A		
Min. Permissible Contact Ratings		700-HK = 500 mW, 700-HKX = 50 mW					
Permissible Coil Voltage Variation		80...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC					
Sealed Power Consumption ±10%		Max. Allowable Leakage OFF 25% of VA③					
AC Coils		1.1 VA 60 Hz 0.9 VA 50 Hz					
DC Coils		Max. Allowable Leakage of 10% of W 0.53 W					
Design Specification/Test Requirements							
Dielectric Withstand Voltage	Pole to Pole (VRMS)	1500V AC					
	Contact to Coil (VRMS)	1500V AC					
Mechanical							
Degree of Protection		Open Type (Sockets)					
Mechanical Life Operations		5 x 10 ⁶					
Switching Frequency Operations		1800/hr.					
Coil Voltages		See Product Selection					
Operating Time at Nominal Voltage at 20°C (ms)	Pickup	15					
	Dropout	15					
Maximum Operating Rate		3 Ops/s					
Vibration	Mechanical	10...55 Hz, 1.50 mm (0.6 in.) double amplitude					
	Malfunction	10...55 Hz, 1.50 mm (0.6 in.) double amplitude					
Shock	Mechanical	100 G					
	Malfunction	20 G (energized) 10 G (de-energized)					
Environmental							
Temperature	Operating	-30...+55°C (-22...+131°F)					
	Storage	-5...+85°C (-67...+185°F)					
Altitude		2000 m (6560 ft)					
Construction							
Insulating Material		Molded High Dielectric Material					
Enclosure		Transparent Dust Cover					
Contact Material		Silver Cad. Ox., AgCdO					
Terminal Markings on Socket		In accordance with EN50 0005					
Sockets		1-Pole			2-Pole		
		700-HN121			700-HN122		

❶ Performance Data – See page Important-2, publication A113.

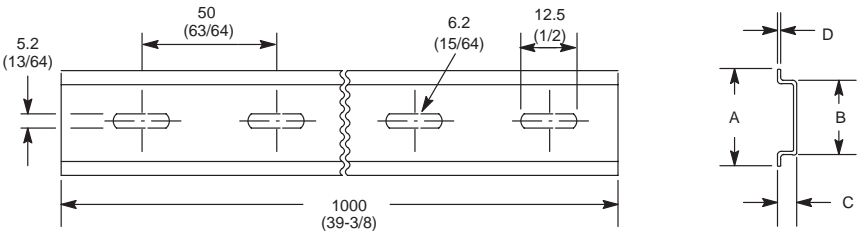
❷ NEMA Rating Chart is on page 29.

❸ The inrush VA equals 1.5 times the sealed VA.

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



Bulletin 700-HK Relay
SPDT and DPDT Relays



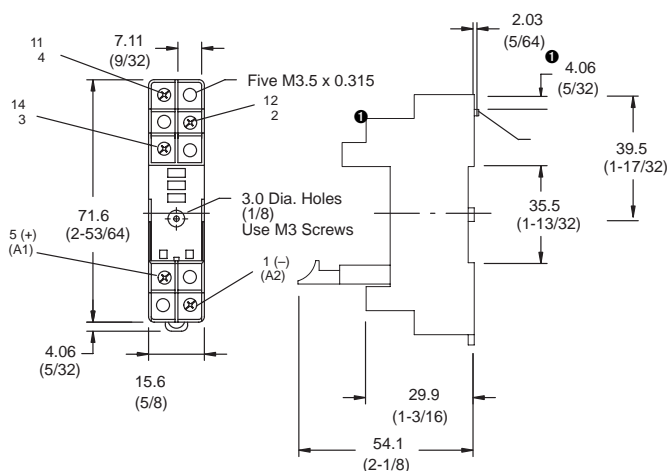
Cat. No. 199-DR1 DIN Mounting Rail Series B
Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

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

Interposing/Isolation Relays

Approximate Dimensions, Continued

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



Cat. No. 700-HN121

Wire Size: 2 x 2.5 mm²

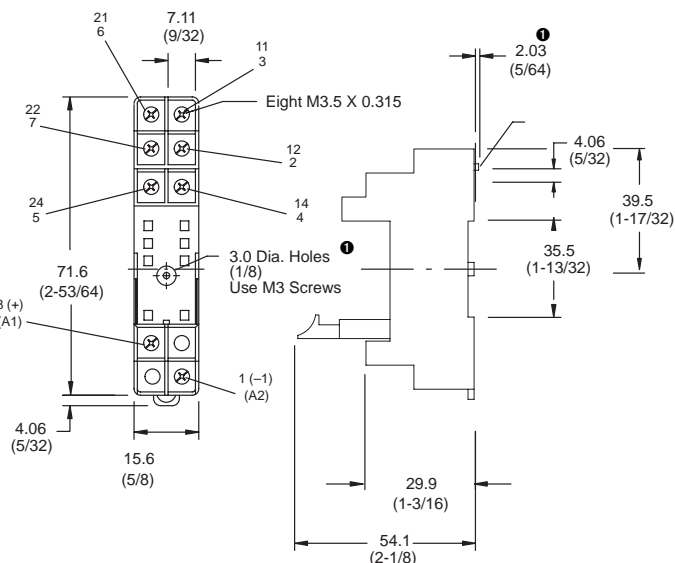
Single Wire – Up to #12 AWG

Double Wire – 2 x 2.5 mm² (#2–14 AWG... #2–20 AWG)

(Either Solid or Stranded)

Strip Length: 9 mm (3/8 in.)—Torque: 0.8 Nm (7 lb.-in.)

① Holes required for mounting [3 mm (1/8 in.) diameter].



Cat. No. 700-HN122

Wire Size: 2 x 2.5 mm²

Single Wire – Up to #12 AWG

Double Wire – 2 x 2.5 mm² (#2–14 AWG... #2–20 AWG)

Leads Wire - 24 AWG min.
(Either Solid or Stranded)

Strip Length: 9 mm (3/8 in.) – Torque: 0.8 Nm (7 lb.-in.)

① Holes required for mounting [3 mm (1/8 in.) diameter].



Economy Timing Relays Bulletin 700-FE

1 N.O.
|
/

- **17.5 mm Wide**
- **Multi-Function**
 - 4 Functions Selectable
 - 4 Time Setting Ranges
- **Single-Functions**
 - 4 Functions Available
 - 4 Time Setting Ranges

Economy Timing Relays Bulletin 700-FE

SPDT
L
/

- **17.5 mm Wide**
- **Multi-Function**
 - 4 Functions Selectable
 - 6 Time Setting Ranges
- **Single Functions**
 - 6 Single Functions Available
 - 6 Time Setting Ranges
- **Special Function**
 - 1 Single Function
 - 4 Time Setting Ranges

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	108	Specifications	110
Accessories	109	Approximate Dimensions	111

Description

The Bulletin 700-FE Economy Timing Relays are 17.5 mm wide, multi-function timers with timing ranges from 0.05 s...10.0 h. They are available with 1 N.O. or SPDT timed contacts.

Conformity to Standards:

EN 60947-1
EN 60947-5-1
EN 50081-1
IEC 947
UL 508

Approvals:

cUL Recognized, File E14840
UL Listed, File E14840
Guide NKCR
CE Marked (per EU Low Voltage Directive 73/23 EEC 93/68 EEC: per Electromagnetic Compatibility Directive 89/336 EEC 92/31 EEC 93/681 EEC

Your order must include:

- Cat. No. of the timing relay.
- If required, Cat. No. of any accessories.



Multi-Function

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

Functions Available	Contact Output	Time Ranges	Supply Voltages	Cat. No.	Factory-stocked Item
On-delay, off delay, one shot, Flasher (repeat cycle starting with pulse)	1 N.O.	0.75 s...1 h (4 settings) ^②	24V AC/DC ^① 110...240V AC 50/60 Hz	700-FEM1RU22	✓
On-delay, off delay, one shot, Flasher (repeat cycle starting with pulse)	SPDT (1 C/O)	0.05 s...10 h (6 settings) ^③	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FEM3TU23	✓

Single-Function

This device offers you one specific timing function.

Functions Available	Contact Output	Time Ranges	Supply Voltages	Cat. No.	Factory-stocked Item
On-delay	1 N.O.	0.75 s...1 h (4 settings) ^④	24V AC/DC ^① 110...240V AC 50/60 Hz	700-FEA1SU22	✓
	SPDT (1 C/O)	0.05S...10 h (6 settings) ^③	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FEA3TU23	✓
Off-delay	1 N.O.	0.75 s...1 h (4 settings) ^④	24V AC/DC ^① 110...240V AC 50/60 Hz	700-FEB1SU22	✓
	SPDT (1 C/O)	0.05S...10 h (6 settings) ^③	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FEB3TU23	✓
One Shot	1 N.O.	0.75 s...1 h (4 settings) ^④	24V AC/DC ^① 110...240V AC 50/60 Hz	700-FED1SU22	
	SPDT (1 C/O)	0.05 s...10 h (6 settings) ^③	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FED3TU23	✓
Fleeting Off-delay	SPDT (1 C/O)	0.05 s...10 h (6 settings) ^③	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FEE3TU23	
Flasher (repeat cycle starting with pulse)	1 N.O.	0.75 s...1 h (4 settings) ^④	24V AC/DC ^① 110...240V AC 50/60 Hz	700-FEF1SU22	
	SPDT (1 C/O)	0.05 s...10 h (6 settings) ^③	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FEF3TU23	
Pulse Converter	SPDT (1 C/O)	0.05 s...10 h (6 settings) ^③	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FEL3TU23	

Special Function

Functions Available	Contact Output	Time Ranges	Supply Voltages	Cat. No.	Factory-stocked Item
Star-delta	2N.O. with 1 Common	0.15 s...10 min. ^⑤ (4 settings)	24V...48V AC/DC 24...240V AC 50/60 Hz	700-FEY2QU23	

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

② Time ranges: 0.5 s...10 s, 3...60 s, 0.5 s...10 min., 3...60 min.

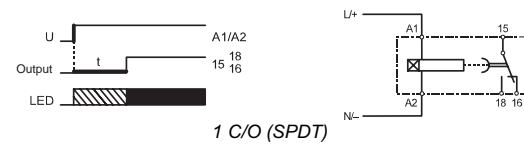
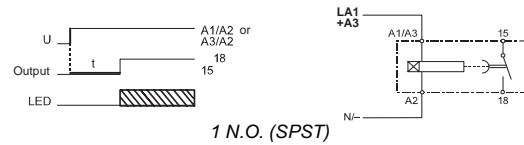
③ Time ranges: 0.05 s...1 s, 0.5...10 s, 0.05...1 min., 0.5...10 min, 0.05...1 h, 0.5...10 h.

④ Time ranges: 0.75...15 s, 3...60 s, 0.4...8 min., 3...60 min.

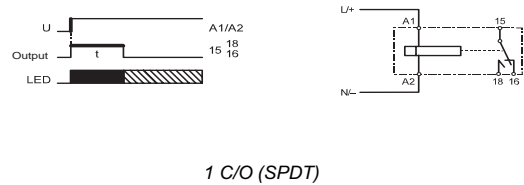
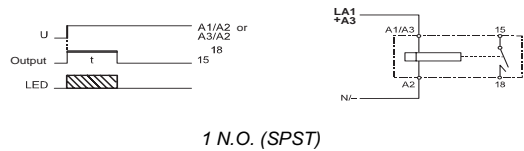
⑤ Time ranges: 0.15...3 s, 0.5...10 s, 3 s...1 min., 30 s...10 min.

700-FE Function and Connection Diagrams

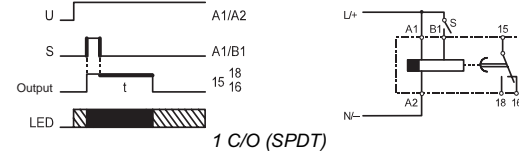
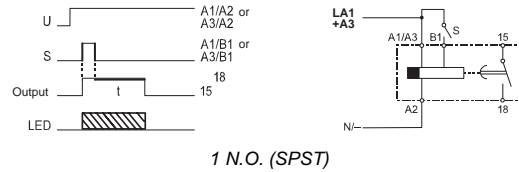
(A) On-Delay



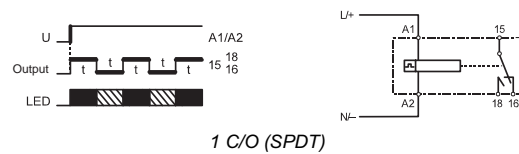
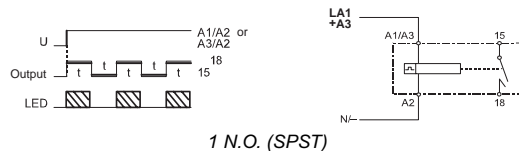
(D) One Shot



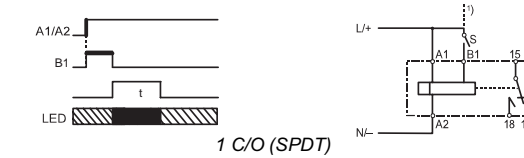
(B) Off-Delay



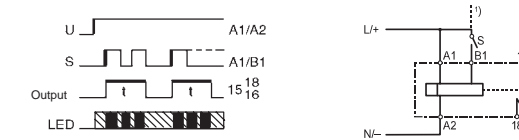
(F) Flasher (Repeat Cycle Starting with Pulse)



(E) Fleeting Off-delay



(L) Pulse Converter



(Y) Star-delta timing relay



Bi-Color LED: 1 C/O (SPDT) Contact Timers

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

LED: 1 N.O. Contact Timers


- ON = green
- OFF = no color

Single Color LED: 2 N.O. with Common

- ON = green
- OFF = red

● Voltage is either 24V DC or 24V AC 50/60 Hz.




Accessories

	Description	Qty.	Cat. No.	Factory-stocked Item
	Panel Mounting Adapter For surface mounting according to drilling plan EN 50 002	5	199-FSA	
	Labeling sheet: 10 sheets with 105 self-adhesive paper labels each, 6 x 17 mm	10	100-FMS	

DIN Rail Timing Relays

Specifications ❶

Time Characteristics (according to VDE 0435, part 2021)

		 1 N.O.	 SPDT
Setting Accuracy		±5% of full scale	
Repeatability		±1% of setting (typical)	
Tolerance		By voltage: ±0.01%/°ΔU By temperature: ±0.25%/°C	By voltage: ±0.001%/°ΔU By temperature: ±0.025%/°C
Supply			
Supply Voltage		24V AC/DC  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, 9 VA at 240V AC	0.5 W at 24V DC, 5 VA at 240V AC
Time Energized		100%	
Reset Time		250 ms	100 ms
Cable Length (Supply Voltage Control)		Max. 100 m (30 feet)	Max. 250 m (75 feet)
Pulse Control (B1)			
Impulse Duration		≥ 250 ms	≥50 ms (AC), ≥ 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
Switching Capacity	Power	1250 VA	
	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 LED

❶ Performance Data – See page Important-2, publication A113.

❷ Voltage is either 24V DC or AC 50/60 Hz.

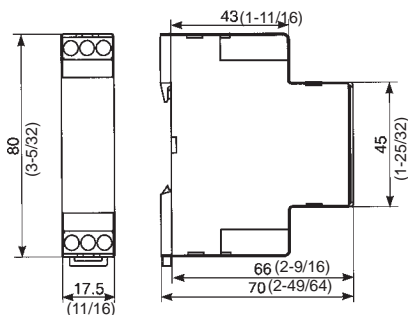
General Specifications

	1 N.O.	SPDT
Insulation Characteristics	2 kV AC/50 Hz test voltage according to VDE 0435 and 4 kV 1.2/50 μ s surge voltage according to IEC 947-1 between all inputs and outputs	
EMC/Interference Immunity	The following requirements are fulfilled: Surge capacity of the supply voltage according to IEC 1000-4-5: Level 3 (A1-A2) 110...240V AC according to IEC 1000-4-5: Level 2 (A3-A2) 24V AC/DC ❶ Burst according to IEC 1000-4-4: Level 3 ESD discharge according to IEC 1000-4-2: Level 3	The following requirements are fulfilled: Surge capacity of the supply voltage according to IEC 1000-4-5: Level 3 Burst according to IEC 1000-4-4: Level 3 ESD discharge according to IEC 1000-4-2: Level 3
EMC/Emission	electromagnetical fields according to EN 55 022: Class B	
Safe Isolation	according to VDE 106, Part 101	
Climatic Withstand	56 cycles (24 h) at 25...40°C and 95% relative humidity according to IEC 68-2-30 and IEC 68-2-3	
Vibration Resistance	4 g in 3 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 IEC 947-1	Enclosure: Terminal:	IP 40 IP 20
Weight	60 g	60 g
Approvals	UL, cUL, CE Certified	UL, cUL, 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 screw-driver. 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 VDE 0106	
Mounting	For surface mounting in any position; snap-on mounting on 35 mm DIN Rail or by adapter and 2 screws (M4 type)	
Disposal	Synthetic materials without dioxin according to EC/EFTA-Notification No. 93/0141/D electrical contacts are AgCdO	

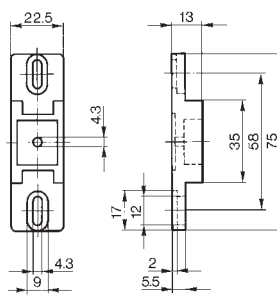
❶ Voltage is either 24V DC or AC 50/60 Hz.

Approximate Dimensions

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



Cat. No. 199-FE...



Cat. No. 199-FSA...

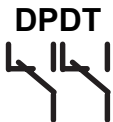


Timing Relays
Bulletin 700-FS



- **Multi-Function**
 - 10 Functions Selectable
 - 10 Time Setting Ranges
- **Single Functions**
 - 11 Single-Functions Available
 - 12 Time Ranges Available
- **Special Functions**
 - 2 Single-Functions
 - 12 Time Ranges Available
- **22.5 mm Wide**

Timing Relays
Bulletin 700-FS



- **Multi-Function**
 - 10 Functions Selectable
 - 10 Time Setting Ranges
- **Single-Functions**
 - 2 Single-Functions Available
 - 10 Time Setting Ranges
- **22.5 mm Wide**

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	113	Specifications	119
Accessories	115		

Description

The Bulletin 700-FS Timing Relays are 22.5 mm wide multi-function or single-function timers with timing ranges from 0.05 s...60 h. They are available with SPDT or DPDT timed 8 A contacts (5 A contacts for Bulletin 700-FSQ).

Conformity to Standards:

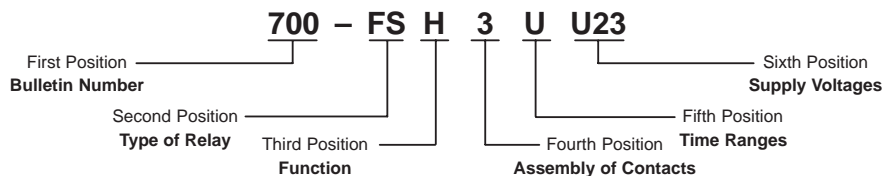
EN 60947-1
EN 60947-5-1
EN 50081-1
IEC 947
UL 508

Approvals:

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

Your order must include:

- Cat. No. of the timing relay.
- If required, Cat. No. of any accessories.



Single-Function (With SPDT 1 C/O contacts)

700-FS	<u>A</u>	<u>3</u>	<u>A</u>	<u>U23</u>
	Function	Contact Outputs	Time Ranges	Supply Voltages
	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 Ⓢ	All functions: 3 1 Change-over 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 h J 0.15...3 h K 0.5...10 h L 3.0...60 h U 0.05 s...60 h Ⓢ	Z12 12V DC U23 24...48V DC 24...240V AC 50/60 Hz

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

Functions Available	Contact Outputs	Time Ranges	Supply Voltages	Cat. No.	Factory-stocked Item
ON-Delay	(DPDT) 2 C/O	0.05 s...60 h	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	✓

Multi-Function (This device offers you the flexibility of selecting one of 8 single timing functions.)

Functions Available	Contact Outputs	Time Ranges	Supply Voltages	Cat. No.	Factory-stocked Item
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) <i>note: See next page for function description.</i>	(SPDT) 1 C/O	0.05 s...60 h Ⓢ	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	✓

- Ⓢ The time range of "0.05 s...60 h" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.
 Ⓢ Valid for functions "A" and "B" only.

Special Function

Functions Available	Contact Outputs	Time Ranges	Supply Voltages	Cat. No.	Factory-stocked Item
Flasher (Repeat cycle starting with pulse or pause)	SPDT (1 C/O)	0.05 s...60 h ❶	12V DC	700-FSH3UZ12	
			24...48V DC 24...240V AC 50/60 Hz	700-FSHUU23	
		2 x0.05 s...60 h (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)❸	SPDT (1 C/O)	0.15 s...10 m ❷	24...48V DC	700-FSQ3QU18	✓
	DPDT (2 C/O)		24...240V AC 50/60 Hz	700-FSQ4QU18	✓
Star-Delta	2 N.O. + 1 common	0.5 s...10 s	24...48V DC	700-FSY2CU23	
		1.5...30 s		700-FSY2DU23	
		0.05 s...1 min.	24...240V AC 50/60 Hz	700-FSY2EU23	
		0.15...3 min.		700-FSY2FU23	
		0.5...10 min.		700-FSY2GU23	





❶ The time range of "0.05 s...60 h" is selectable in 12 smaller ranges plus an ON and OFF function for maintenance needs.

❷ 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.

❸ Due to shock during shipment, the state of the contacts should be verified before initial use.

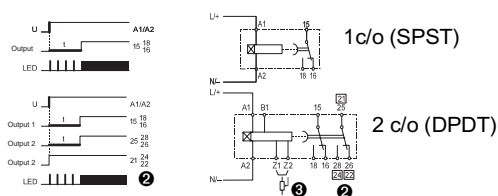
Multi-Function Timing Relay Function and Time Range Settings

Description	SPDT	DPDT
<p>Multi-function timing relays 700-FSM3U includes 10 setting functions:</p> <p>(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) (I) On-delay pulse generator (L) Pulse converter (On) ON-Function * (Off) OFF-Function * * (for installation and maintenance)</p> <p>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</p>	<p>Multi-Time Setting Range 0.05 s...60 h</p> <p>(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 h) 0.05...1 h (3 h) 0.15...3 h (10 h) 0.5...10 h (60 h) 3...60 h</p>	<p>⊗</p> <p>10h</p>

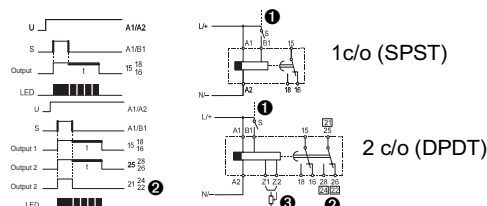
	Description	Qty	Cat. No.
 	Setting Knob with Scale (for time setting without tools)	10	700-FSK
	Panel Mounting Adapter For surface mounting according to drilling plan EN 50 002	5	199-FSA
	Labeling Sheet: 10 sheets with 105 self-adhesive paper labels each, 6 x 17 mm	10	100-FMS
	Marking Tag Sheet: 10 sheets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

❶ Cat. No. 100-FMA2 is only a marking tag carrier. Please refer to the Terminal Block Accessories section, page 12-174 of publication A113 for appropriate marker cards to be used with this carrier.

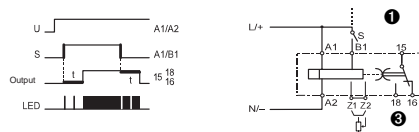
(A) On-Delay



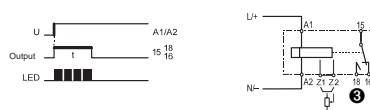
(B) Off-Delay (Min. Pulse AC 50 ms...DC 30 ms)



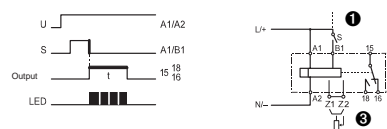
(C) On- and Off-Delay



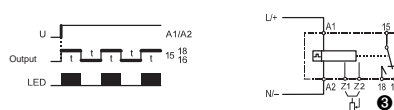
(D) One Shot



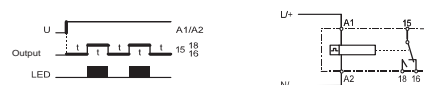
(E) Fleeting Off-Delay (Min. Pulse AC 50 ms...DC 30 ms)



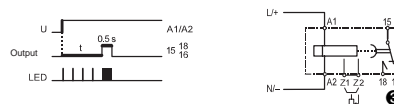
(F) Flasher (Repeat Cycle Starts with Pulse)



(G) Flasher (Repeat Cycle Starts with Pause)



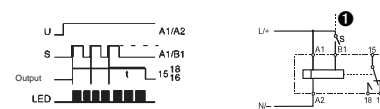
(H) On-Delay Pulse Generator



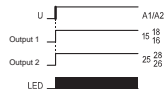
(J) On-Delay (Pulse Controlled)



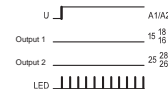
(K) One Shot/ Watch Dog (Pulse Controlled)



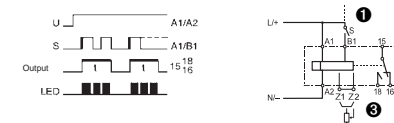
(Off) OFF-Function



(On) ON-Function



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



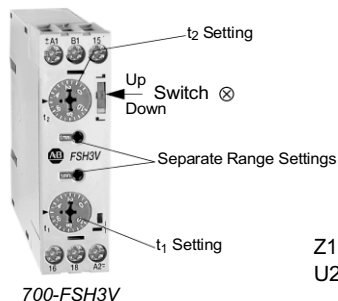
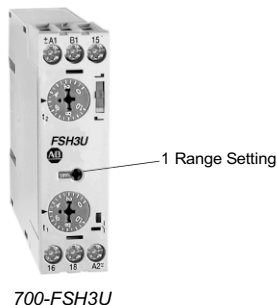
Cleverly Designed Function Display LED (Green)

- Output in rest position, no timing
- ||||| Output in rest position, time running
- Output in operation position, no timing
- Output in operation position, time running

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

Special Function Flasher (Repeat Cycle Starting with Pulse or Pause) Timing Relays

Description



Supply Voltages (A1/A2)

Z12	12V DC
U23	24...48V DC
	24...240V AC, 50/60 Hz

Function Diagram / Connection Diagram

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

The repeat cycle timer permits different settings for on and off times.

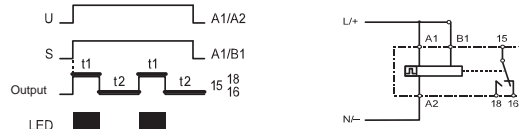
The following operating modes are possible:

- Oscillating mode; repeat cycle starts with voltage 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 .

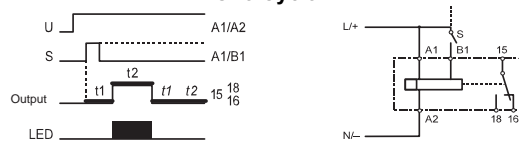
Supply Voltage Controlled, Oscillating Mode Starting with Pause — Switch ⊗ is Up



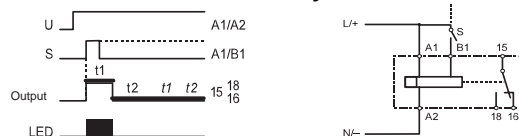
Supply Voltage Controlled, Oscillating Mode Starting with Pulse — Switch ⊗ is Down



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.



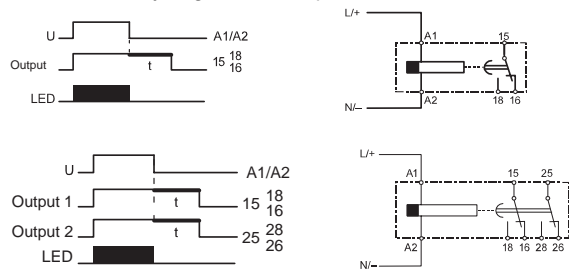
Note: If B1 is pulsed, a one full time cycle consisting of t_1 and t_2 is completed.

LED Operation Chart — Green LED

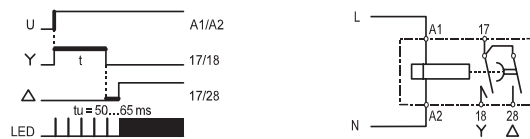
LED	Output at Shelf State, No Timing — LED Off
LED	Output at Shelf State, Time is Running — LED Flashing
LED	Output NO Contact is Closed, No Timing — LED On
LED	Output NO Contact is Closed, Time is Running — LED Long Flashing

Function Diagram/Connection Diagram

(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 17/28Δ changes state. Both output contacts return to shelf state whenever the power is removed.



Time Characteristics (according to VDE 0435, Part 2021)

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

Supply

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)
Cable Length (Supply Voltage Control)	Max. 250 m (800 ft)

Pulse Control (B1)

Pulse Duration	≥ 50 ms (AC), ≥ 30 ms (DC)
Input Voltage	Supply voltage range
Input Current	1 mA
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

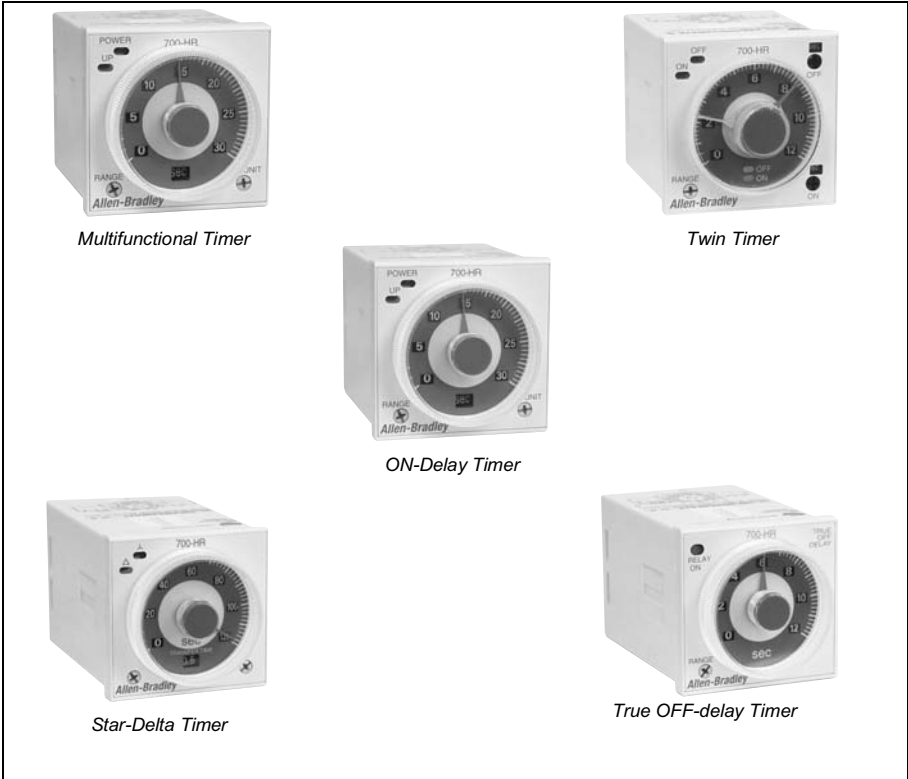
Outputs

Contact Type	Relay as changeover switch
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
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

Insulation Characteristics	2 kVAC/50 Hz test voltage according to VDE 0435 and 6 kV 1.2/50 μs 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 μs 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 h) at 25...40°C and 95% relative humidity according to IEC 68-2-30 and IEC 68-2-3
Vibration Resistance	4 g in 3 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 Posidrive, Philips, and slotted screws. Suitable for power screwdriver. Rated tightening torque 8.8 lb.-in. (0.8 Nm, max. 1.2 Nm). 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

1 Performance Data — See page Important-2, publication A113.



Bulletin 700-HR

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

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	121	Timing Charts	128
Accessories	125	Approximate Dimensions	132
Specifications	127		

Description

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

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

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

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

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

Your order must include:

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




Conformity to Standards:

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

Approvals:

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

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




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

❶ Voltage Input


Timing mode description

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

Bulletin 700-HR
Plug-in Timing Relays
Product Selection, Continued

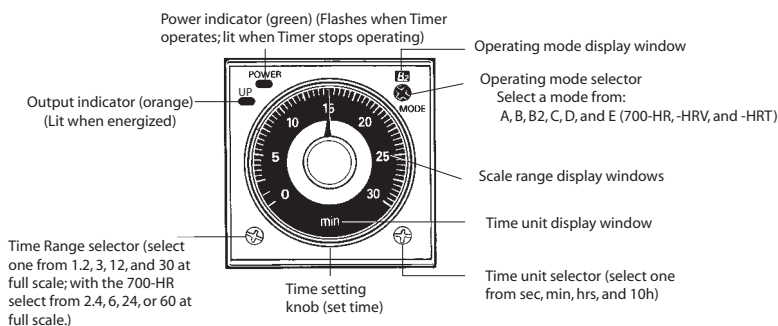
	Timing Mode	Timing Range	Sockets	Pins	Input Voltage	Contact Outputs	Cat. No.	Factory-stocked Item
Twin Timer  Cat. No. 700-HRF...	B2	0.05 s....30 h	700-HN100 700-HN125 700-HN108	8	12V DC	DPDT	700-HRF82DZ12	
		0.05 s....30 h	700-HN100 700-HN125 700-HN108	8	24V AC/DC	DPDT	700-HRF82DU25	
		0.05 s....30 h	700-HN100 700-HN125 700-HN108	8	48...125V DC	DPDT	700-HRF82DZ45	
		0.05 s....30 h	700-HN100 700-HN125 700-HN108	8	100...240V AC	DPDT	700-HRF82DA18	✓
Star-Delta Timer  Cat. No. 700-HRY...	Star-Delta	0.5 s....120 s	700-HN100 700-HN125 700-HN108	8	100...120V AC	SPDT Timed + Instantaneous Contact	700-HRY6FA12	✓
					200...240V AC		700-HRY6FA22	✓
True OFF-Delay Timer  Cat. No. 700-HRQ...	True OFF-Delay	.05 s...12 s	700-HN100 700-HN125 700-HN108	8	100...120V AC	DPDT	700-HRQN2GA12	✓
					200...240V AC	DPDT	700-HRQN2GA22	
			700-HN101 700-HN126 700-HN129	11	100...120V AC	DPDT	700-HRQR2GA12 ❶	
					200...240V AC	DPDT	700-HRQR2GA22 ❶	
		.05 min... 12 min.	700-HN100 700-HN125 700-HN108	8	100...120V AC	DPDT	700-HRQN2HA12	✓
					200...240V AC	DPDT	700-HRQN2HA22	
			700-HN101 700-HN126 700-HN129	11	100...120V AC	DPDT	700-HRQR2HA12 ❶	
					200...240V AC	DPDT	700-HRQR2HA22 ❶	
		.05 s...12 s	700-HN100 700-HN125 700-HN108	8	24V AC/DC	DPDT	700-HRQN2GU25	
			700-HN101 700-HN126 700-HN129	11	24V AC/DC	DPDT	700-HRQR2GU25 ❶	

❶ Indicates True OFF-delay timer with reset

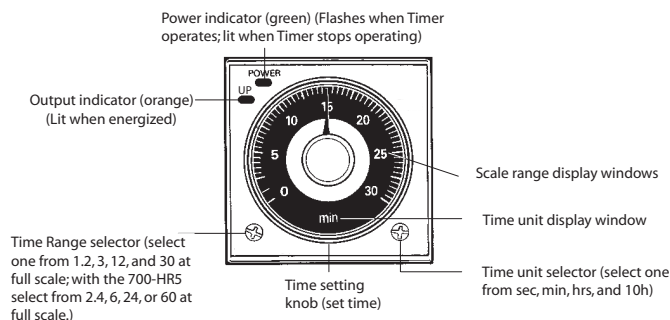
	Timing Mode	Timing Range	Sockets	Pins	Input Voltage	Contact Outputs	Cat. No.	Factory-stocked Item
 <p>True OFF-Delay Timer</p> <p>Cat. No. 700-HRQ...</p>	True OFF-Delay	.05 min....12 min.	700-HN100 700-HN125 700-HN108	8	24V AC/DC	DPDT	700-HRQN2HU25	
			700-HN101 700-HN126 700-HN129	11	24V AC/DC	DPDT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

❶ Indicates True OFF-delay timer with reset

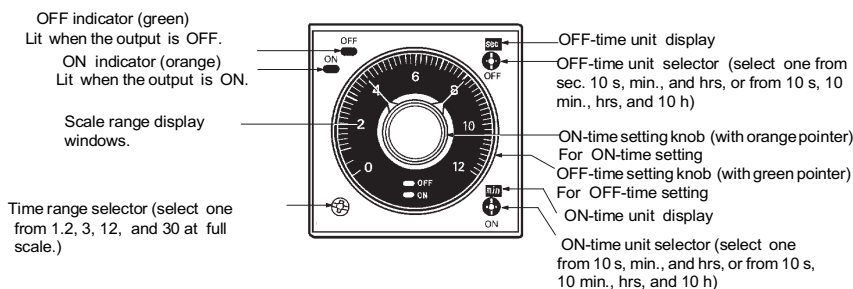
700-HR Multifunction Timer



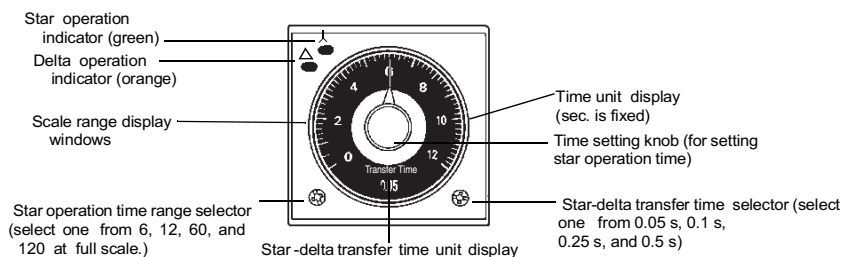
700-HRC -HRM ON-Delay Timer



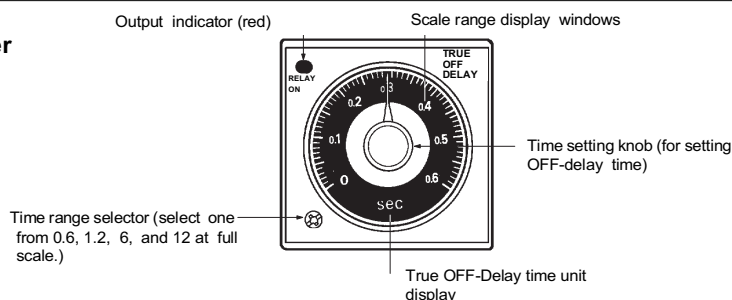
700-HRF Twin Timer










700-HRY Star-Delta Timer




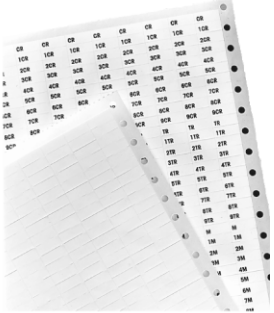


700-HRQ True OFF-Delay Timer



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

Bulletin 700-HR
Plug-in Timing Relays
Accessories, Continued

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

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

Timer Type	Socket Cat. No.	Retainer Clip Cat. No.
700-HR, HRQR2, HRV HRT6	700-HN101 ②	700-HN131
	700-HN126 ②	Not Required ①
	700-HN129 ②	Not Applicable
700-HRC/HRF/HR5, HRT4, HRM, HRP	700-HN100 ③	700-HN131(See note above)
	700-HN108 ③	Not Applicable
	700-HN125 ③	Not Required ①

① Design of these sockets holds the timing relays securely and does not require retainer clips.

② 11 pins.

③ 8 pins.

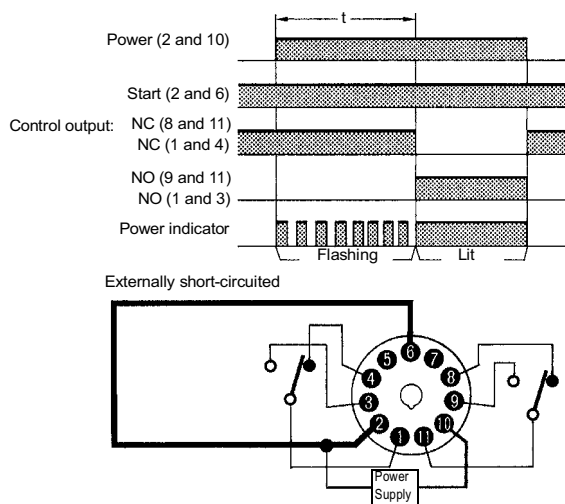
	700-HR, -HRS, -HRV	700-HRP	700-HRC	700-HRM	700-HRF	700-HRY	700-HRQ	700-HRT (Transistor Outputs)
Electrical Ratings								
Pilot Duty Rating	NEMA B300							—
Thermal Current (<i>I</i> _{th})	5 A							100 mA
►][◄ Make	120V AC 240V AC	30 A					—	
		15 A					—	
◄][► Break	120V AC 240V AC	3 A					—	
		1.5 A					—	
Hp at 120V	1/6 Hp	1/4 Hp	1/6 Hp			1/4 Hp	1/6 Hp	—
Hp at 240V	1/3 Hp							—
Accuracy of operating time	±0.2% FS max. (±0.2%±10 ms max. in a range of 1.2 s)							
Setting error	±5% FS ±50 ms (The value is ±5% FS +100 ms to -0 ms max. when the C, D, or G mode signal of the 700-HRVs are OFF.)							
Reset time	Min. power-opening time: 0.1 s max. Min. pulse width: 0.05 s (cat nos. 700-HR52TA17, 700-HR52TU24, 700-HRT6TTU24)							
Reset voltage	10% max. of rated voltage							
Influence of voltage	±0.2% FS max. (±0.2%±10 ms max. in a range of 1.2 s)							
Influence of temperature	±1% FS max. (±1%±10 ms max. in a range of 1.2 s)							
Design Specifications								
Dielectric strength	2,000V AC (1,000 VAC for 700-HRT), 50/60 Hz for 1 min. (between current-carrying metal parts and exposed non-current-carrying metal parts)							
	2,000V AC (1,000 VAC for 700-HRT), 50/60 Hz for 1 min. (between control output terminals and operating circuit)							
	2,000V AC, 50/60 Hz for 1 min. (between contacts of different polarities)							
	1,000V AC, 50/60 Hz for 1 min. (between contacts not located next to each other)							
	2,000V AC, 50/60 Hz for 1 min. (between input and control output terminals and operation circuit)							
Mechanical								
Vibration resistance	Malfunction: 10...55 Hz with 0.5 mm double amplitude each in three directions for ten minutes each							
Shock resistance	Malfunction: 100 m/s ² (10 G)		98 m/s ² (10 G)		294 m/s ² (10 G)	98 m/s ² (10 G)	100 m/s ² (10 G)	
Environmental								
Noise immunity	±1.5 kV for ±600V DC			±400V for 12V DC		±1kV for 48V DC	±1.5 kV for ±600 V DC	
Static immunity	Malfunction: 8 kV							
Ambient temperature	Operating:		-10°...55°C (with no icing)					
	Storage:		-25°...65°C (with no icing)					
Ambient humidity	Operating:		35...85%					
Construction								
Life expectancy (operations min.)	Mechanical: 20,000,000. (under no load at 1,800 operations/h					Mech: 10 ⁷	Mech: 20 ⁷	
	Electrical: 100,000 (5 A at 250V AC, resistive load at 1,800 operations/h)					Electrical: 10 ⁴	Electrical: 10 ⁴	
EMC	(EMI)		EN50081-2					
	Emission Enclosure:		EN55011 Group 1 class A					
	Emission AC Mains:		EN55011 Group 1 class A					
	(EMS)		EN50082-2					
	Immunity ESD:		EN61000-4-2:		4 kV contact discharge (level 2)			
					8 kV air discharge (level 3)			
	Immunity RF-interference from AM Radio Waves:		ENV50140: 10 V/m (80 MHz...1 GHz) (level 3)					
	Immunity RF-interference from Pulse-modulated Radio Waves:		ENV50204: 10 V/m (900±5 MHz) (level 3)					
	Immunity Conducted Disturbance:		ENV50141:		10 V (0.15...80 MHz) (level 3)			
Immunity Burst:		EN61000-4-4:		2 kV power-line (level 3)				
Immunity Surge:		EN61000-4-5		2 kV I/O signal-line (level 4)				
					1 kV line to line			
					2 kV line to ground (level 3)			
Degree of protection	IP40 (panel surface)							
Weight	Approx. 90 g							

Multifunction and ON-Delay Timer**Application Examples****A Mode: Signal ON-Delay**

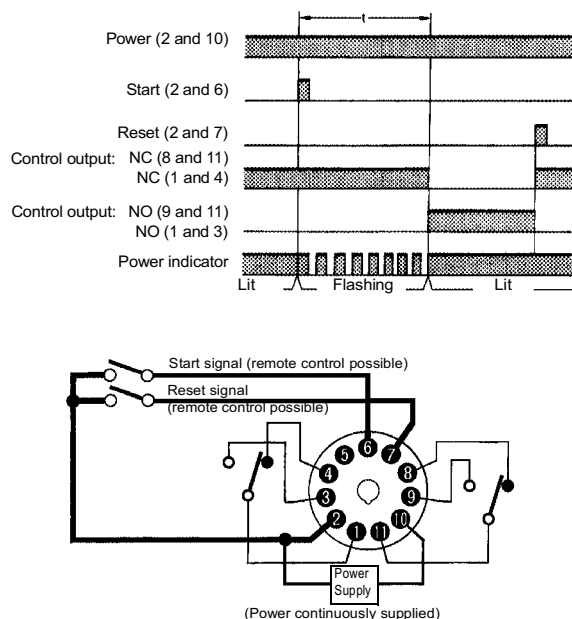
ON-delay operation (A mode) is a basic mode.

1. Power-ON Start/Power-OFF Reset

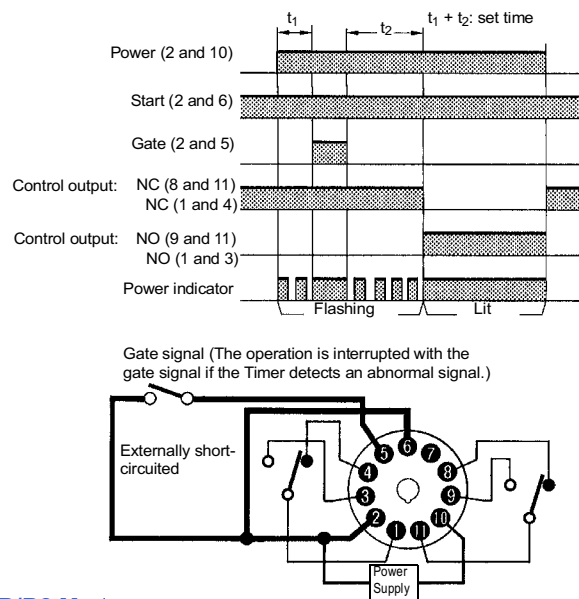
The Power-ON start/Power-OFF reset operation is a standard operating method.

**2. Signal Start/Signal Reset**

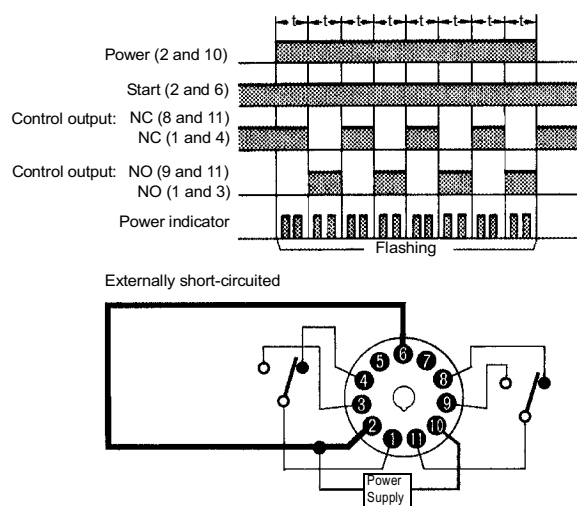
The Signal start/Signal reset operation is useful for remote control of the Timer.

**3. Control of Integrated Time with Gate Signal**

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

**B/B2 Mode: Repeat Cycle**

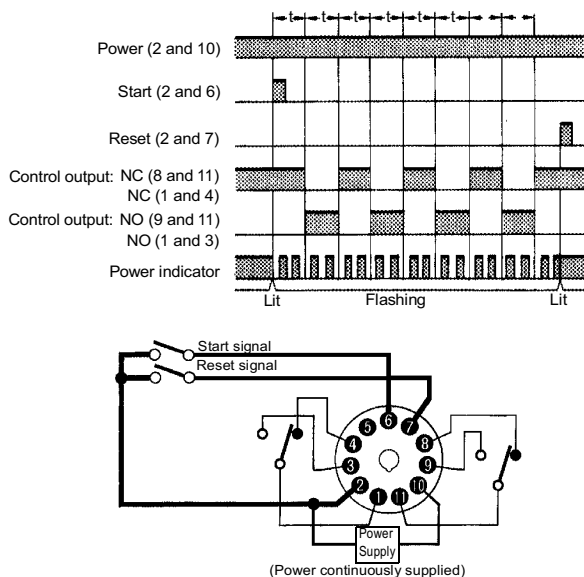
The Repeat Cycle operation in the B and B2 modes can be effectively applied to lamp or buzzer (ON and OFF) alarms or the monitoring of an intermittent operation with a display.

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

Multifunction and ON-Delay Timer, Continued

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

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

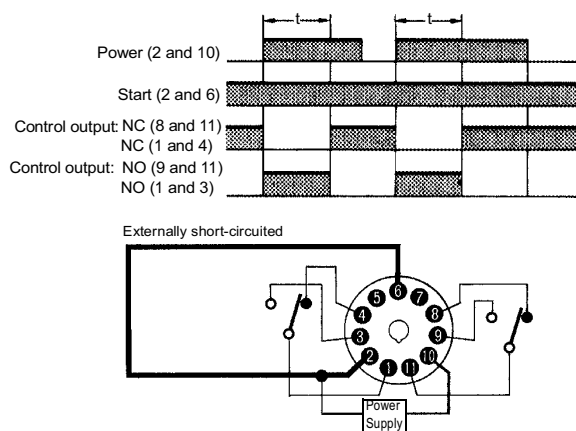


C Mode: Signal ON/OFF-Delay

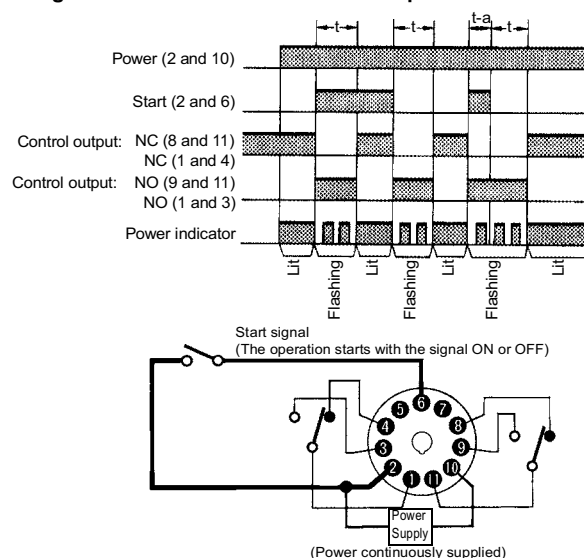
The Signal ON-/OFF-delay operation (C mode) is useful for the control of distribution of products on a production line into boxes by the specified number or time.

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

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



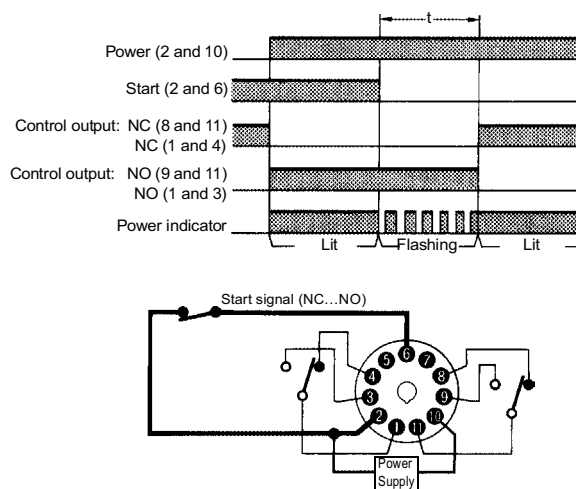
2. Signal-ON-OFF Start/Instantaneous Operation/Time-Limit Reset

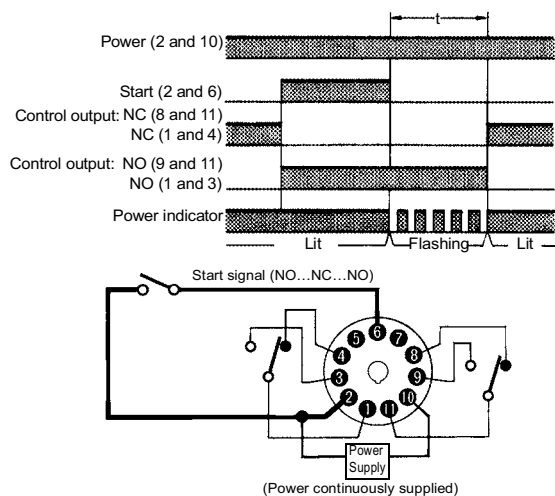


D Mode: Signal OFF-Delay

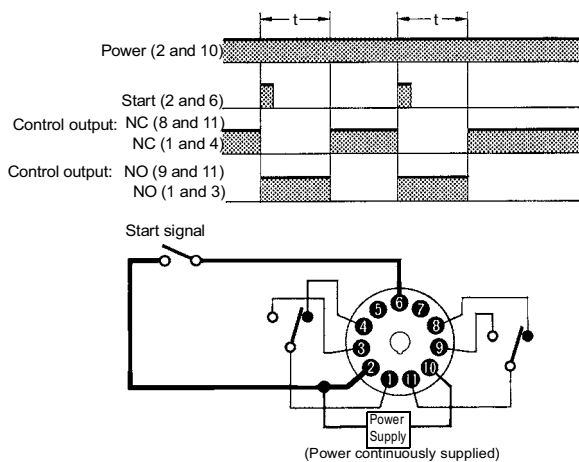
Signal OFF-delay operation (D mode) can be effectively used to keep a load operating for a certain period. For example, this function enables the cooling fan for a lamp or heater to operate for a certain period after the lamp or heater is switched OFF.

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

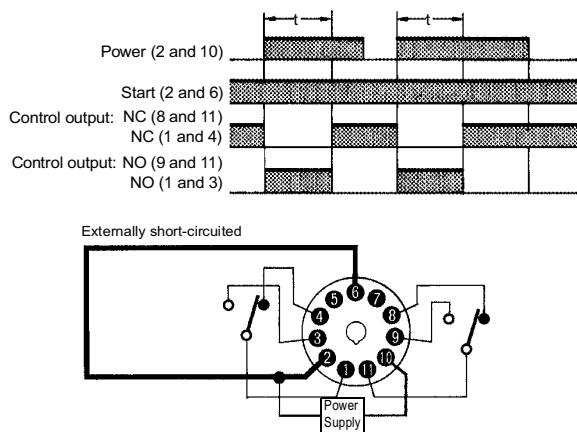


Multifunction and ON-Delay Timer, Continued**2. Signal Start/Instantaneous Operation/Time-Limit Reset****2. Signal Start/Instantaneous Operation/Time-Limit Reset**

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

**E Mode: One Shot****1. Power-ON Start/Instantaneous Operation/Time-Limit Reset**

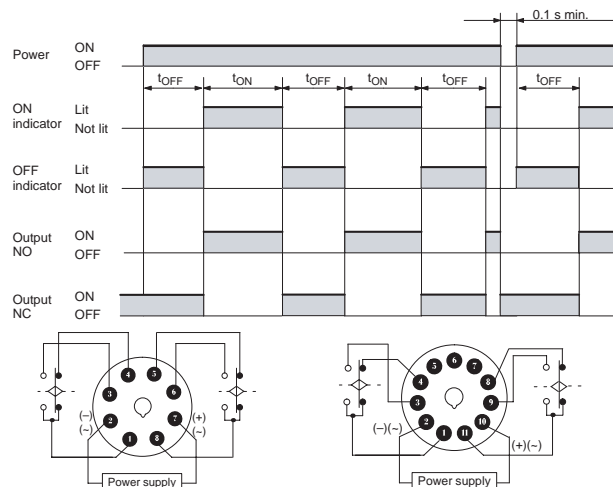
This function is useful for the operation of a machine for a specified period after power is ON.



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

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

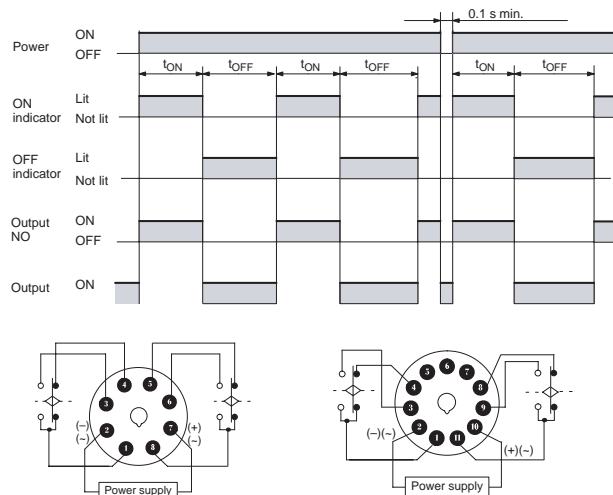
The Repeat Cycle operation in the B mode can be effectively applied to lamp or buzzer (ON and OFF) alarms or the monitoring of an intermittent operation with a display.

1. Power-ON Start/Power-OFF Reset (in B Mode)**B2 Mode: Repeat Cycle On-start (700-HRF)**

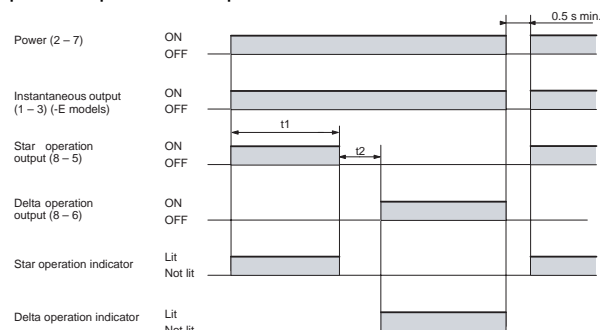
The Repeat Cycle operation in the B2 mode can be effectively applied to lamp or buzzer (ON and OFF) alarms or the monitoring of an intermittent operation with a display

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

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

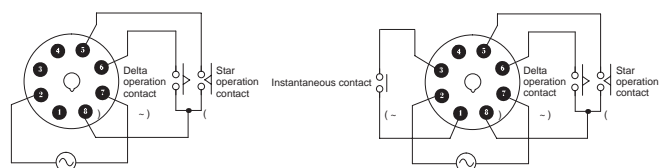
**E Mode: One Shot (700-HRY)****1. Power-ON Start/Instantaneous Operation/Time-Limit Reset**

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

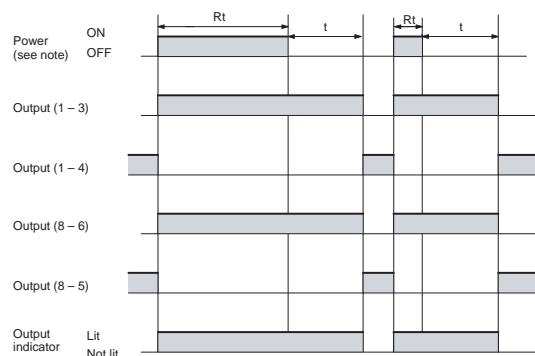


t1: Star operation time setting

t2: Star-delta transfer time

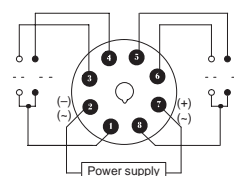
**D Mode: True OFF-Delay (700-HRQ)**

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

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

t: Set time

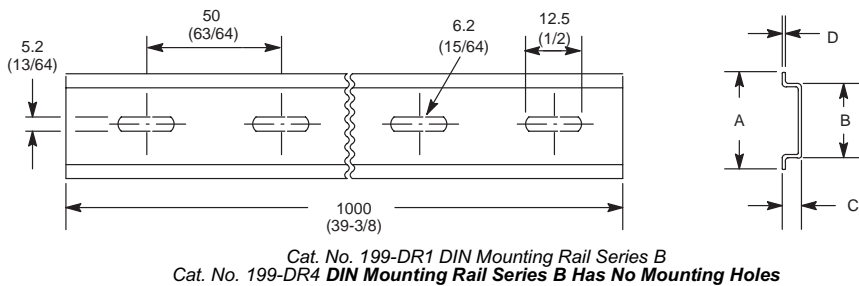
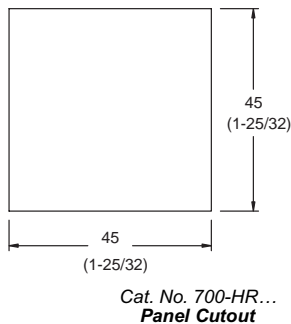
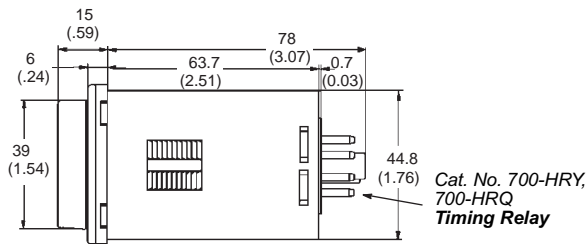
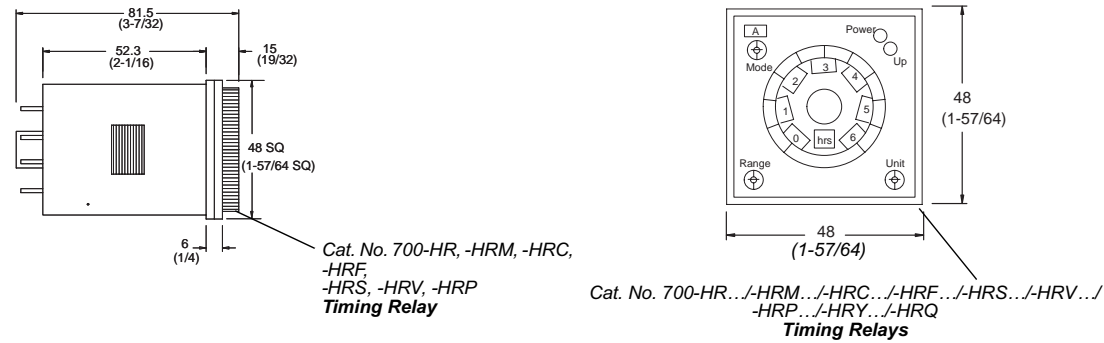
Rt: Minimum Power On



Bulletin 700-HR

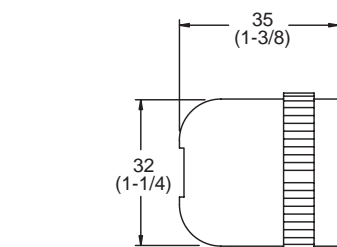
Plug-in Timing Relays

Approximate Dimensions

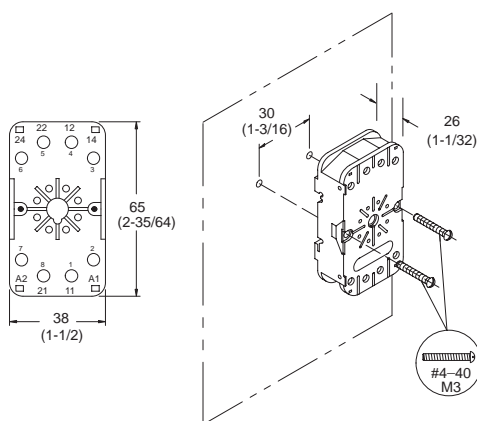
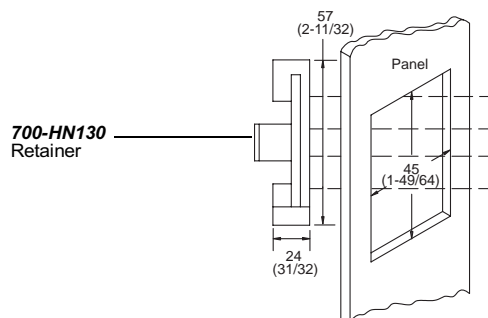


Cat. No.	A	B	C	D	Approx. Shipping Wt.
199-DR1	35 (1-3/8)	27 (1-1/16)	7.5 (19/64)	1.02 (1/64)	1.85 kg (4.07 lbs.) (10/pkg)
199-DR4	35 (1-3/8)	27 (1-1/16)	15 (19/32)	2.3 (3/32)	3.68 kg (8 lbs.) (5/pkg)

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

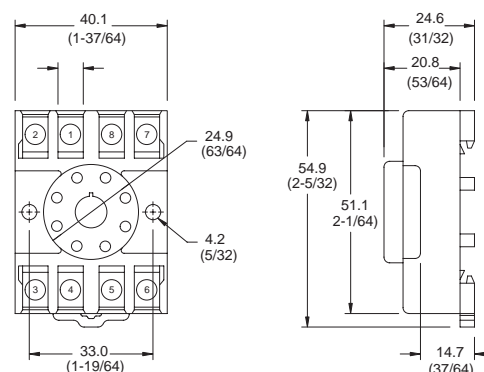


Cat. No. 700-HN129 — 11-Pin
 Cat. No. 700-HN108 — 8-Pin
 Socket



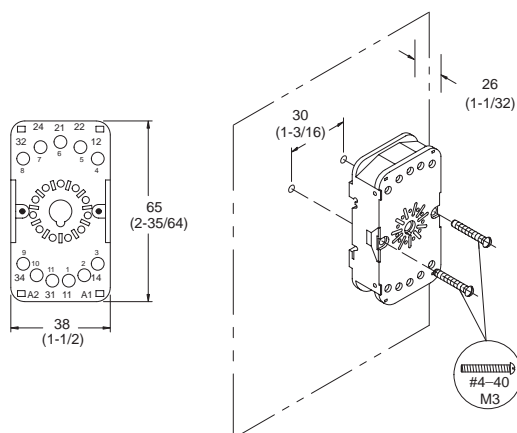
Cat. No. 700-HN100 Panel Mounting

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



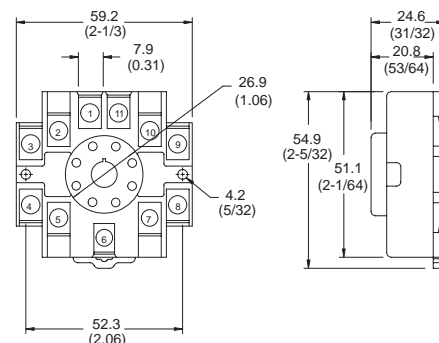
Cat. No. 700-HN125 ●

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



Cat. No. 700-HN101 Panel Mounting


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



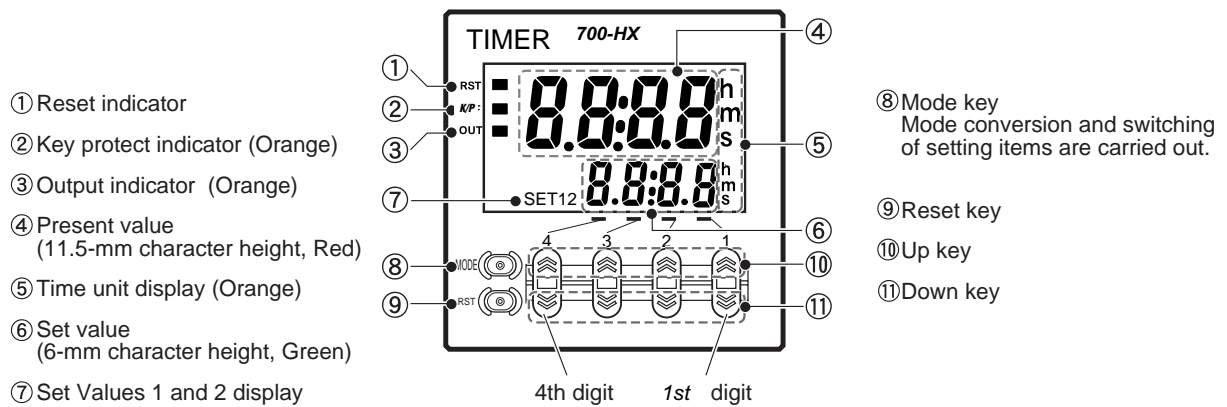
Cat. No. 700-HN126 ●








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


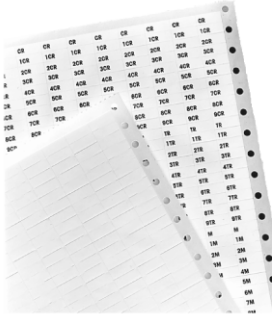
● Cat. No. 199-FSM Surge Suppressors fit on the coil terminals. See page 195.

Model	Output Modes	Timing Ranges	Sockets	Output	Pins	Cat. No.	Factory-stocked Item
 Cat. No. 700-HX...	A mode: Signal ON-Delay 1 A-1 mode: Signal ON-Delay 2 A-2 mode: Power ON-Delay 1 A-3 mode: Power On-Delay 2 B mode: Repeat Cycle 1 B-1 mode: Repeat Cycle 2 D mode: Signal OFF-delay E mode: One Shot F mode: Cumulative Twin Timer	0.000...9.999 s 0.000...99.99 s 0.000...999.9 s 0.000...9999 s 0.000...99 min. 59 s 0.000...999.9 min. 0.000...9999 min. 0.000...99 h 59 min. 0.000...999.9 h 0.000...9999 h	700-HN100 700-HN125	SPDT	8	700-HX86SA17	✓
						700-HX86SU24	✓

General Timer Functions



	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN100	Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting Guarded Terminal Construction 8-pin for use with Bulletin 700-HX timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN100	✓
 Cat. No. 700-HN125	Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting Open Style Construction 8-pin for use with Bulletin 700-HX timing relays. Order must be for 10 sockets or multiples of 10. No retainer clip required.	10	700-HN125	✓
 Cat. No. 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓
 Cat. No. 700-HN108	Specialty Socket 8-pin backwired socket with solder terminals for use with Bulletin 700-H timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN108	✓
 Cat. No. 700-HN129	Specialty Socket 11-pin backwired socket with solder terminals for use with Bulletin 700-H timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN129	✓
 Sample Retainer Clips	Retainer Clip for Cat. No. 700-HN100 Socket with all 700-HR and 700-HX Timing Relay Secures timer in socket. Order must be for 10 clips or multiples of 10. Note: Not required for installation	10	700-HN131	✓
 Cat. No. 700-HN130	Frame Adapter For flush or door mounting of all Bulletin 700-HR and -HX timers.	1	700-HN130	✓

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN132	Protective Cover Helps prevent tampering of timing and mode settings. Provides a degree of protection against water and dirt from entering the front of the relay. For use with all Bulletin 700-HRs and -HX timing relays.	1	700-HN132	✓
	Pre-printed identification tags — contains 10 sheets of pre-printed and blank tags. Each sheet contains 13 sets of the markings CR...9CR, TR...9TR, M...9M, F, R, 1S, and 117 blank tags. Tags are peel-off with sticky backing for easy placement on relays.	10	700-N40	
	Blank identification tags — contains 10 sheets of blank identification tags for customer specialized printing. Each sheet contains 546 blank tags. Tags are peel-off with sticky backing for easy placement on relays.	10	700-N41	

Bulletin 700-HX
Plug-in Timing Relays
Specifications ❶

Electrical Ratings		
Pilot Duty Rating		NEMA B300
Rated supply voltage		100 to 240V AC, 24V AC/12 to 24V DC (50/60Hz) (permissible ripple: 20%(p-p) max.)
Operating voltage range		85%...110% of rated supply voltage
Power consumption	100...240V AC	4.3 VA
	24V AC/12...24V DC	3.4 VA/1.7 W
Inrush Current	100...240V AC	3 A
	24V AC/12...24V DC	5 A
►][◄ 120V AC		30 A
Make 240V AC		15 A
◄][► 120V AC		3 A
Break 240V AC		1.5 A
Hp at 120V AC		1/4 Hp
Hp at 240V AC		1/3 Hp
Mechanical		
Mounting method		Flush mounting, surface mounting, DIN mounting
Display		7-segment, negative transmissive LCD; t Present value (red, 8 mm high characters); Set value (green, 4 mm high characters)
Digits		4 digits
Timer	Output modes	N, F, C, or K
	Time ranges	0.000...9.999 s, 0.00...99.99 s, 0.0...999.9 s, 0...9999 s, 0 min. 00 s...99 min. 59 s, 0.0...999.9 min., 0 h 00 min....99 h 59 min., 0.0 h...999.9 h, 0 h...9999 h
	Timer modes	Elapsed time (Up), remaining time (Down), selectable
	Output modes	A, A-1, A-2, A-3, B, B-1, D, E, F, Z, ton or toff
Inputs	Input signals	Start, reset
	Input method	No-voltage input via:NPN transistor or switching of contact
	Start, reset, gate	Minimum input signal width: 1 or 20 ms (selectable)
	Power reset	Minimum power-opening time: 0.5 s (Except for A-3, B-1, and F mode)
Control output		SPDT contact output: 5 A at 250V AC, resistive load (cosine=1) Minimum applied load: 10 mA at 5 V DC (failure level: P, reference value)
External Power Supply		No
Key Protect		Yes
Memory backup		EEP-ROM (overwritten 200,000 times min.), which can store data for 20 years min.
Accuracy of Operating Time and Setting Error ❶		Power-ON start: $\pm 0.01\%$ ± 50 ms max. * to be rated against set value Signal start: ± 0.005 ± 30 ms max. * to be rated against set value Signal start at transistor output model: $\pm 0.005\%$ ± 3 ms max. ❷ If the set value is within the sensor w

❶ The values are based on the set value.

❷ The value is applied for a minimum pulse width of 1 ms.

Characteristics		
Insulation resistance		100 MΩ min. (at 500V DC)
Dielectric strength		2000V AC, 50/60Hz for 1 min. between current-carrying terminals and non-current-carrying metal parts (1000V AC for 24V AC/12 to 24V DC type), 1000 VAC, 50/60 Hz for 1 min. between non-continuous contacts
Noise immunity		'+-1.5 kV (between power terminals) for 100 to 240 VAC, +-480V for 24VAC/12 to 24VDC, and +-600V (between input terminals), square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise)
Static immunity		±8 kV (malfunction), ±15 kV (destruction)
Vibration resistance	Malfunction	10...55 Hz with 0.35 mm single amplitude each in three directions for 10 min.
Shock resistance	Malfunction	98 m/s ² (approx. 10 G) each in three directions
Life expectancy	Mechanical	10 million operations min.
	Electrical	100,000 operations min. (5 A at 250V AC, resistive load)
EMC		(EMI) EN61326 Emission Enclosure: EN55011 Group1 class A Emission AC mains: EN55011 Group1 class A (EMS) EN61326 Immunity ESD: EN61000-4-2: 4 kV contact discharge (level2) 8 kV air discharge (level3) Immunity RF-interference: EN61000-4-3: 10 V/m
Approved standards		UL508, CSA C22.2 No.14 Conforms to EN61010-1/IEC61010-1 (Pollution degree 2/overvoltage category II) Conforms to VDE0106/P 100 (Finger Protection), conforms to NEMA output rating (N/F)
Enclosure ratings		Panel surface: IP66 and NEMA Type 4 (indoors) ❶
Weight		Approx. 100 g

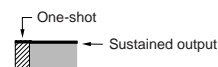
❶ An attached waterproof packing is necessary to ensure IP66 waterproofing between the 700-HX and installation pan.

Bulletin 700-HX

Plug-in Timing Relays

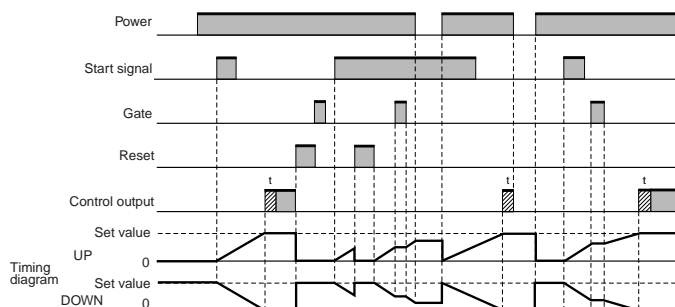
Operating Modes

Timing Charts



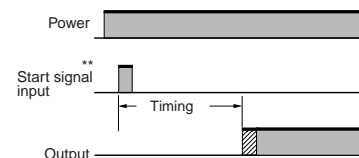
One-shot outputs can be set to 0.1 s, 0.5 s, 1 s, 5 s, 10 s, 20 s.

Output mode A Mode: Signal ON-Delay (Timer resets when power comes ON.)



Timing starts when the start signal goes ON. While the start signal is ON, the timer starts when power comes ON or when the reset input goes OFF. The control output is controlled using a sustained or one-shot time period.

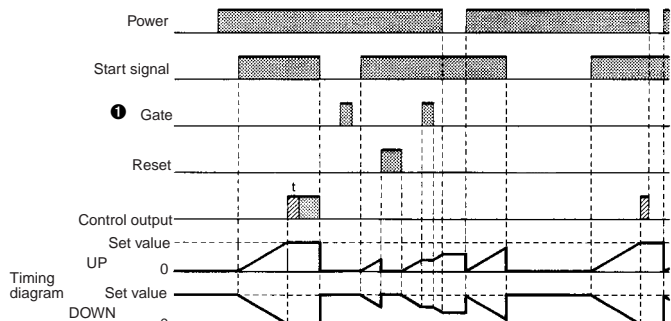
Basic Operation



* Output is instantaneous when setting is 0.

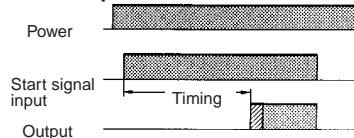
** Start signal input is enabled during timing.

Output Mode A-1: Signal ON-Delay 2 (Timer resets when power comes ON.)



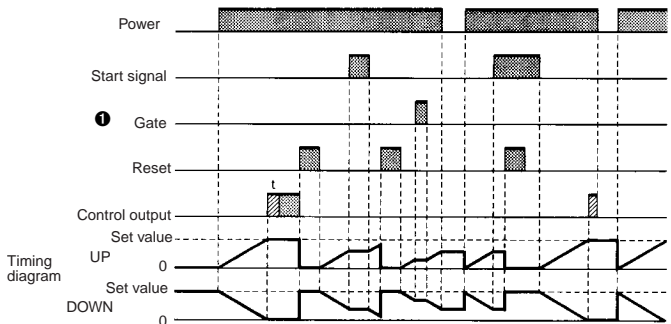
Timing starts when the start signal goes ON, and is reset when the start signal goes OFF. While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF. The control output is controlled using a sustained or one-shot time period.

Basic Operation



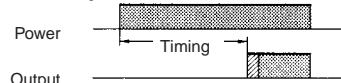
*Output is instantaneous when setting is 0.

Output mode A-2: Power ON Delay 1 (Timer resets when power comes ON)



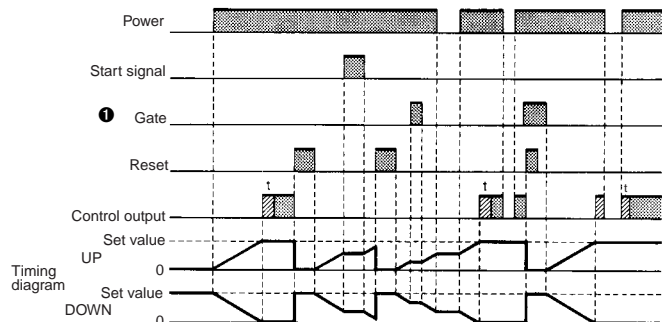
Timing starts when the reset input goes OFF. The start signal disables the timing function (i.e., same function as the gate input). The control output is controlled using a sustained or one-shot time period.

Basic Operation



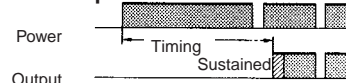
*Output is instantaneous when setting is 0.

Output mode A-3 Power ON Delay 2 (Timer does not reset when power comes ON)



Timing starts when the reset input goes OFF. The start signal disables the timing function (i.e., same function as the gate input). The control output is controlled using a sustained or one-shot time period.

Basic Operation

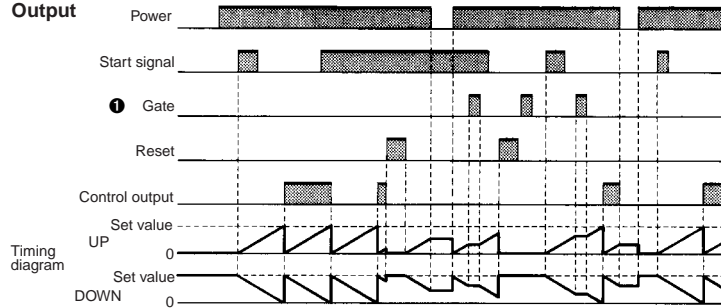


*Output is instantaneous when setting is 0.

① Gate not included

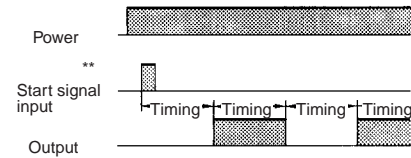
Output mode B: Repeat Cycle (Timer resets when power comes ON.)

Sustained Output



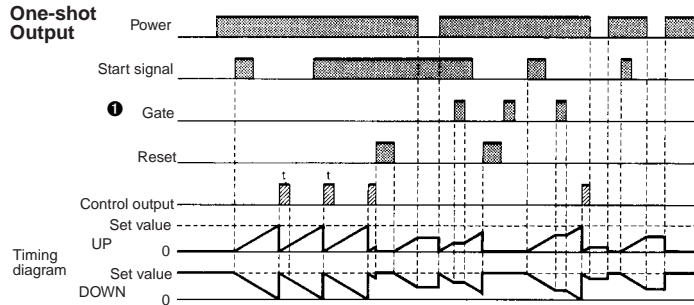
Timing starts when the start signal goes ON.
The status of the control output is reversed when time is up (OFF at start).
While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF.

Basic Operation



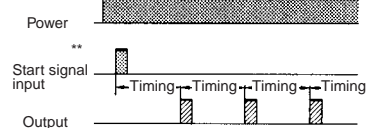
- * Normal output operation will not be possible if the set time is too short.
Set the value to at least 100 ms (contact output type).
- ** Start signal input is disabled during timing.

One-shot Output



Timing starts when the start signal goes ON.
The control output is turned ON when time is up.
While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF.

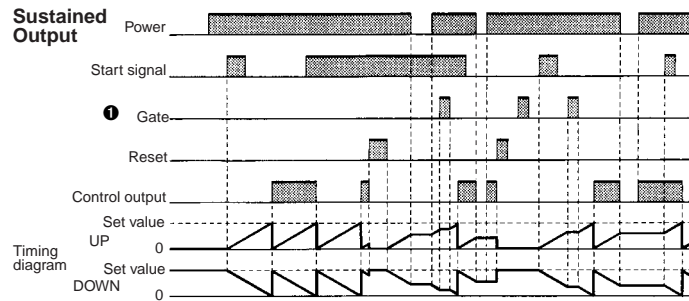
Basic Operation



- * Normal output operation will not be possible if the set time is too short.
Set the value to at least 100 ms (contact output type).
- ** Start signal input is disabled during timing.

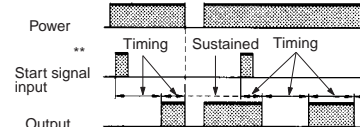
Output Mode B-1: Repeat Cycle 2 (Timer does not reset when power comes ON)

Sustained Output



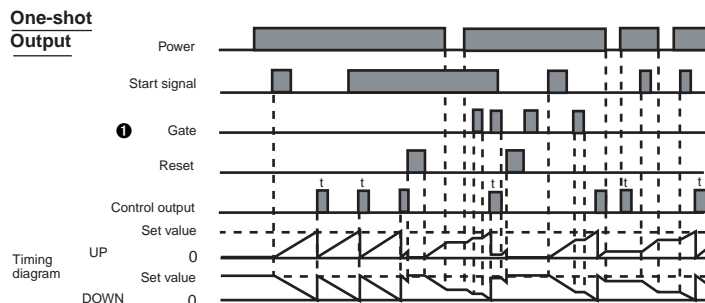
Timing starts when the start signal goes ON.
The status of the control output is reversed when time is up (OFF at start).
While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF.

Basic Operation



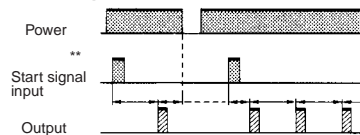
- * Normal output operation will not be possible if the set time is too short.
Set the value to at least 100 ms (contact output type).
- ** Start signal input is disabled during timing.

One-shot Output



Timing starts when the start signal goes ON.
The control output comes ON when time is up.
While the start signal is ON, the timer starts when power comes ON or when the reset input goes OFF.

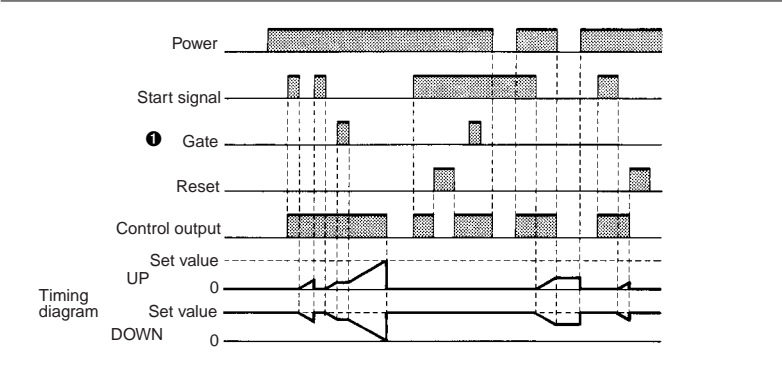
Basic Operation



- * Normal output operation will not be possible if the set time is too short.
Set the value to at least 100 ms (contact output type).
- ** Start signal input is disabled during timing.

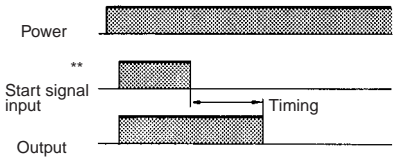
① Gate not included.

Output mode D: Signal OFF-delay (Timer resets when power comes ON.)



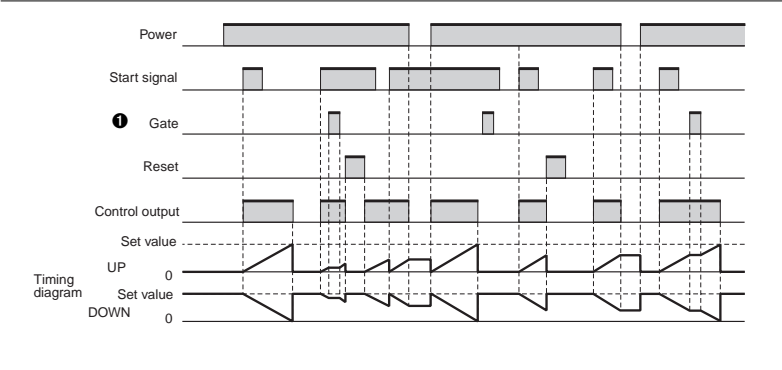
The control output is ON when the start signal is ON (except when the power is OFF or the reset is ON).
The timer is reset when the time is up.

Basic Operation



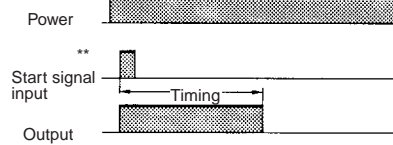
* Output functions only during start signal input when setting is 0.
** Start signal input is enabled during timing.

Output mode E: Interval (Timer resets when power comes ON.)



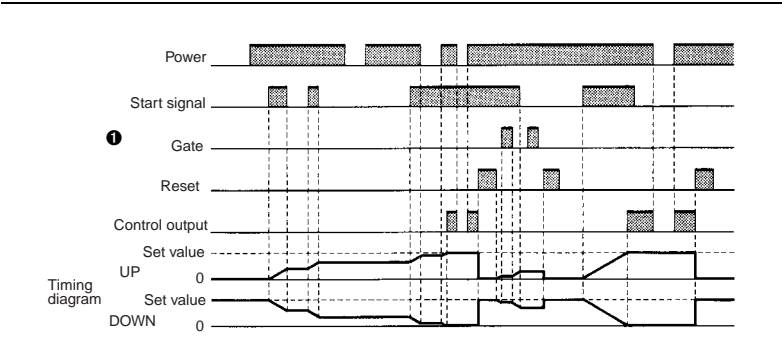
Timing starts when the start signal comes ON.
The control output is reset when time is up.
While the start signal is ON, the timer starts when power comes ON or when the reset input goes OFF.

Basic Operation



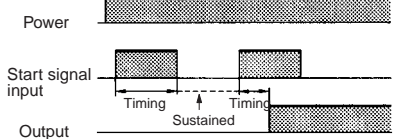
* Output is disabled when the setting is 0.
** Start signal input is enabled during timing.

Output Mode F: Cumulative (Timer does not reset when power comes ON)



Start signal enables timing (timing is stopped when the start signal is OFF or when the power is OFF).
A sustained control output is used.

Basic Operation



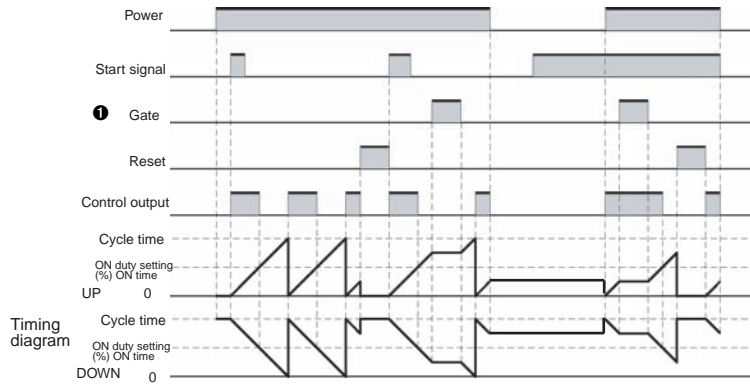
*Output is instantaneous when setting is 0.

1 Gate not included.

Z Mode

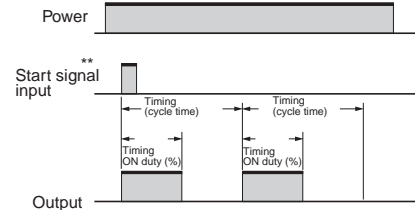
Output quantity can be adjusted by changing the cycle time set in the adjustment level to 1 and by changing the ON duty (%) set value. The set value shows the ON duty (%) and can be set to a value between 0 and 100 (%). When the cycle time is 0, the output will always be OFF. When the cycle time is not 0 and when ON duty has been set to 0 (%), the output will always be OFF. When ON duty has been set to 100 (%), the output will always be ON.

Z mode: ON/OFF-duty Adjustable Repeat Cycle



Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (ON at start). While the start signal is ON, the timer starts when power comes ON or when the reset input goes OFF.

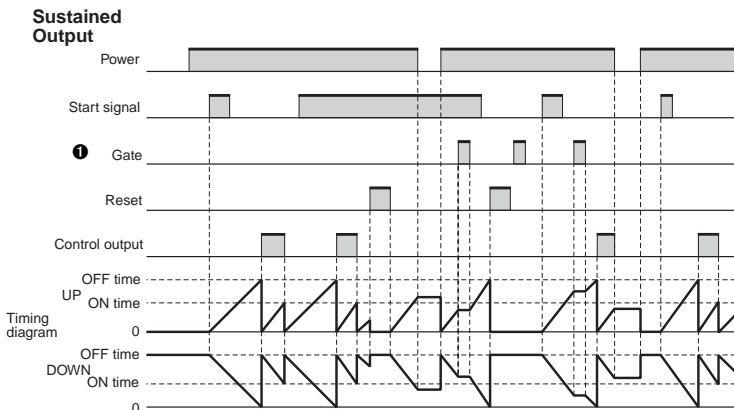
Basic Operation



* Normal output operation will not be possible if the set time is too short. Set the value to at least 100 ms (contact output type).

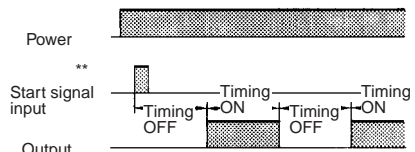
** Start signal input is enabled during timing.

Output mode T OFF: Twin Timer OFF start



Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (OFF at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF.

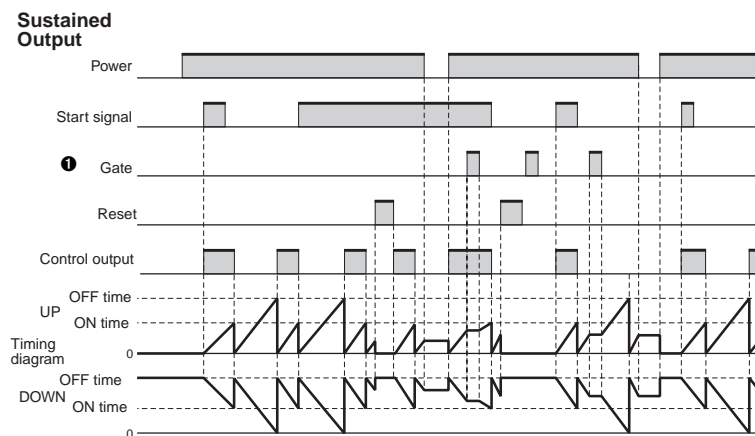
Basic Operation



* Normal output operation will not be possible if the ON/OFF set time is too short. Set the value to at least 100 ms (contact output type).

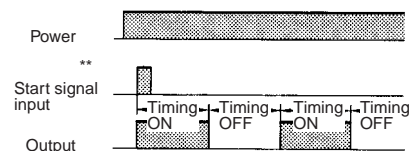
** Start signal input is disabled during timing.

Output mode T ON: Twin Timer ON start



Timing starts when the start signal goes ON. The status of the control output is reversed when time is up (ON at start). While the start signal is ON, the timer starts when the power comes ON or when the reset input goes OFF.

Basic Operation



* Normal output operation will not be possible if the ON/OFF set time is too short. Set the value to at least 100 ms (contact output type).

** Start signal input is disabled during timing.

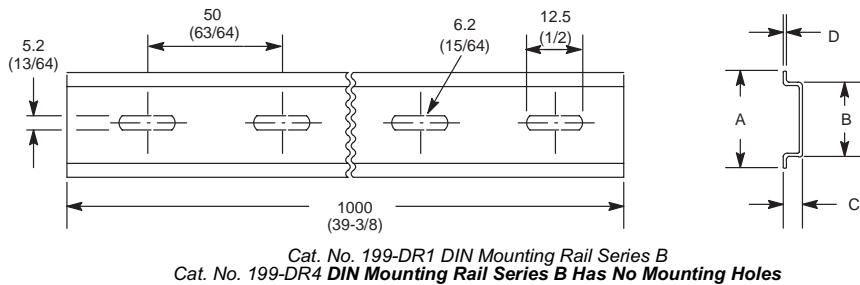
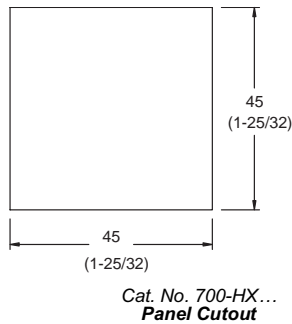
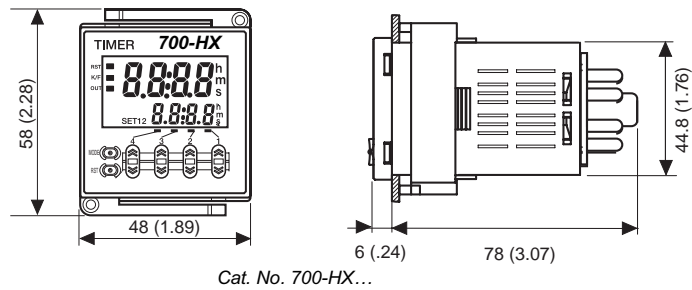
① Gate not included

Bulletin 700-HX

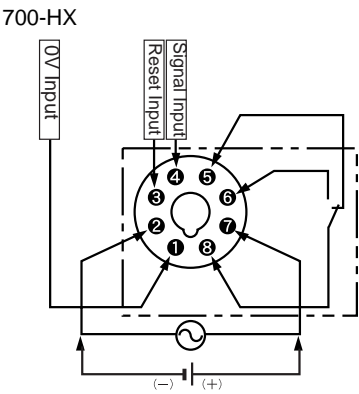
Plug-in Timing Relays

Approximate Dimensions

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



Terminal Arrangement





Bulletin 700-HXM

- One of the World's Smallest Compact Preset Timers
- Built-in Prescaling for Counter Operation
- Finger Protection Terminal Block to Meet VDE0106/ P100
- Panel Surface Compatible with NEMA4/IP66
- Six-language Instruction Manual Provided
- Environmentally Friendly—Flash Memory, No Battery
- Highly Visible LED Display

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	182	Operating Mode	186
Specifications	184	Dimensions	189

Description

The Bulletin 700-HXM Digital Timing Relay allows switching between 4-digit preset counter and 4-digit timer operation. While using the preset counter, it is possible to switch the display to monitor the totalizing count value (8 digits). The Counter/Timer features four preset values that can be changed by the front panel key. It also comes with an ON/OFF-duty adjustable repeat cycle mode that can be used to perform cyclic control for timer operation.

Conformity to Standards:

EN61010-1
IEC61010-1
VDE0106/P 100
NEMA 4/IP66
VDE0106/P100


Approvals:

CE Certified
UL508
CSA C22.2 No. 14
ACA

Your order must include:

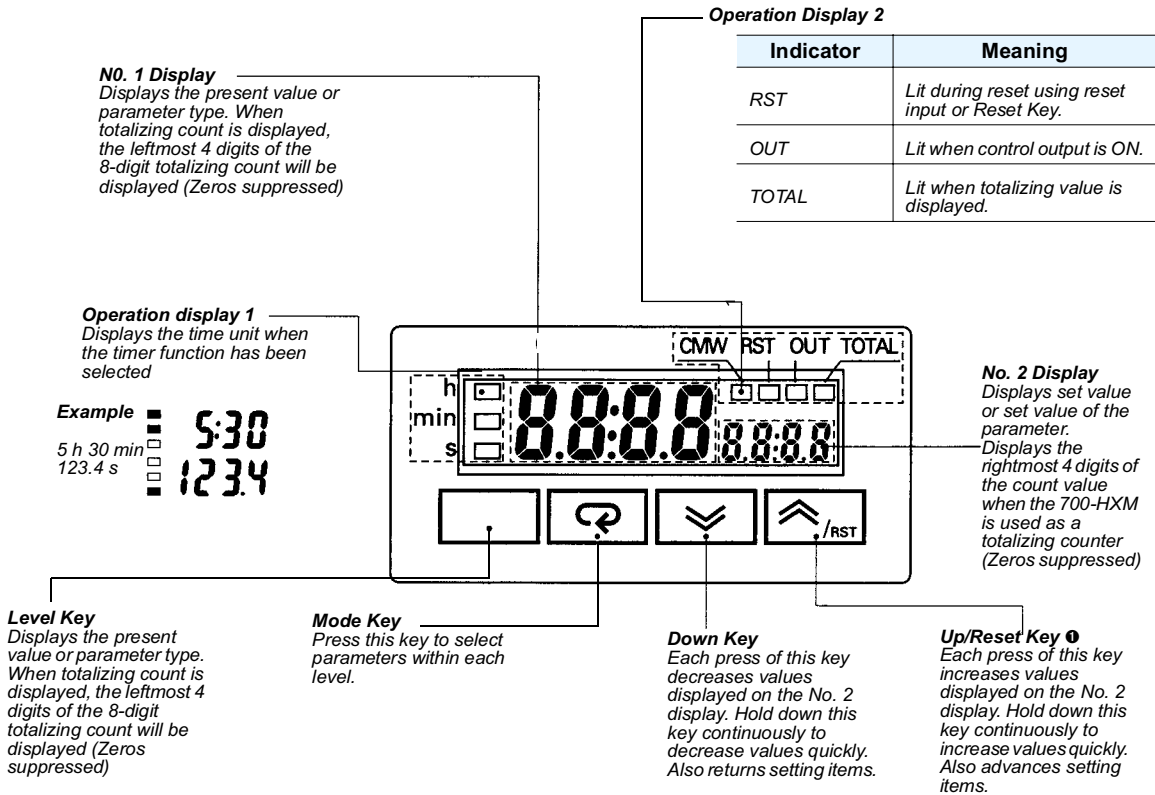
- Cat. No. of the timing relay plus suffixes of selection options.
- Cat. No. of socket required.
- If required, Cat. No. of any accessories.

"700-HXM User Manual" Available At:
<http://www.theautomationbookstore.com>

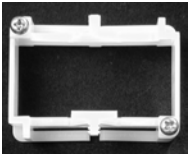
Model	Timer Modes	Counter Modes ❶		Timing Range	Counter Range	Cat. No.	Factory-stocked Item
		Input	Output				
 Cat. No 700-HXM...	A mode: Signal ON-delay B mode: Repeat Cycle D mode: Signal OFF-delay E mode: One Shot F mode: Accumulative Z mode: ON/OFF-duty Adjustable Repeat Cycle	Increment Decrement Individual Quadrature	N,F,C,K	0.000...9999 h	-999...9999	700-HXM66Z24	✓

❶ For counter mode explanation, see page 184.

General Timer Functions



❶ To reset the present value, press this key while the present value is displayed. If this key is pressed while the totalizing count value is displayed, the totalizing count value and the present value will be reset.

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 <p>Cat. No. 700-HN141</p>	Replacement Flush Mounting Adapter (One shipped with each 700-HXM66Z24)	1	700-HN141	✓

Bulletin 700-HXM
Timing Relays
Specifications ❶

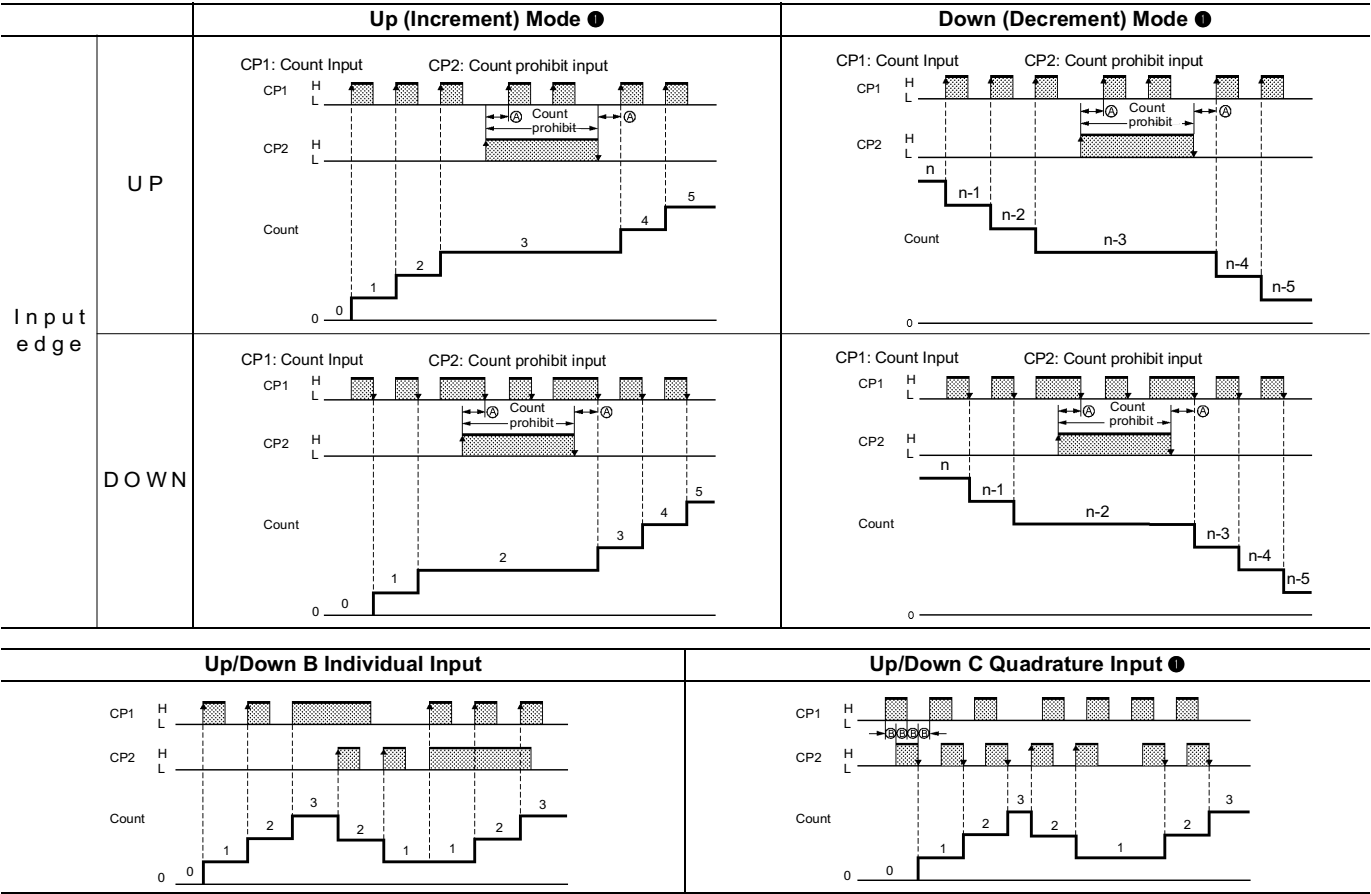
Electrical Ratings		
Pilot Duty Rating		NEMA B300
Rated supply voltage		24 VDC
Operating voltage range		85%...110% of rated supply voltage
Power consumption		1.5 W max. (for max. DC load) (Inrush current: 15 A max.)
► ◄	120V AC	30 A
Make	240V AC	15 A
◄ ►	120V AC	3 A
Break	240V AC	1.5 A
Hp at 120V AC		1/4 Hp
Hp at 240V AC		1/3 Hp
Mechanical		
Mounting method		Flush mounting (Panel or door)
Terminal screw tightening torque		0.5 Nm max.
Display		7-segment, negative transmissive LCD; time display (h, min., s); CMW, OUT, RST, TOTAL Present value (red, 7 mm high characters); Set value (green, 3.4 mm high characters)
Digits		PV: 4 digits SV: 4 digits When total count value is displayed: 8 digits (Zeros suppressed)
Memory backup		EEPROM (non-volatile memory) (number of writes: 100,000 times)
Counter	Maximum counting speed	30 Hz or 5 kHz ❶
	Counting range	-999...9,999
	Input modes	Increment, decrement, individual, quadrature inputs
	Output modes	N, F, C, or K
Timer	Time ranges	0.000...9.999 s, 0.00...99.99 s, 0.0...999.9 s, 0...9999 s, 0 min. 00 s...99 min. 59 s, 0.0...999.9 min., 0 h 00 min....99 h 59 min., 0.0 h...999.9 h, 0 h...9999 h
	Timer modes	Elapsed time (Up), remaining time (Down)
	Output modes	A, B, D, E, F, or Z
Inputs	Input signals	For Counter: CP1, CP2, and reset For Timer: Start, gate, and reset
	Input method	No-voltage input (contact short-circuit and open input) Short-circuit (ON) impedance: 1 KΩ max. (Approx. 2 mA runoff current at 0Ω) Short-circuit (ON) residual voltage: 2V DC max. Open (OFF) impedance: 100 kΩ min. Applied voltage: 30V DC max.
	Start, reset, gate	Minimum input signal width: 1 or 20 ms (selectable)
	Power reset	Minimum power-opening time: 0.5 s
	Control output	SPDT contact output: 5 A at 250V AC/30V DC, resistive load (cos φ = 1)
Minimum applied load		10 mA at 5 VDC (failure level: P, reference value)
Reset system		External, manual, and power supply resets (for timer in A, B, D, E, or Z modes)
Sensor waiting time		260 ms max. (Inputs cannot be received during sensor wait time if control outputs are turned OFF.)

❶ The figures given for maximum counting speed are for incrementing or decrementing operation with a prescale value of x1. If prescaling is used and 5 kHz is set, the maximum counting speed will be reduced to about half. The maximum counting speed will also be reduced to about half when the up/down mode is selected.

Characteristics		
Timer function		Signal start: $\pm 0.03\%$ ± 30 ms max. Power-ON start: $\pm 0.03\%$ ± 50 ms max.
Insulation resistance		100 M Ω min. (at 500V DC)
Dielectric strength		1,500V AC, 50/60 Hz for 1 min. between output terminals and non-current-carrying metal parts 510V AC, 50/60 Hz for 1 min. between current-carrying terminals (except output terminals) and non-current-carrying metal parts 1,500V AC, 50/60 Hz for 1 min. between output terminals and current-carrying terminals (except output terminals) 500V AC, 50/60 Hz for 1 min. between communications terminals and current-carrying terminals (except output terminals) 1,000V AC, 50/60 Hz for 1 min. between contacts not located next to each other
Noise immunity		Square-wave noise by noise simulator; ± 480 V (between power terminals), ± 600 V (between input terminals)
Static immunity		± 8 kV (malfunction), ± 15 kV (destruction)
Vibration resistance	Malfunction	10...55 Hz with 0.35 mm single amplitude each in three directions for 10 min.
Shock resistance	Malfunction	100 m/s ² (approx. 10 G), 3 times each in six directions
Life expectancy	Mechanical	10 million operations
	Electrical	100,000 operations min. (3 A at 250V AC, resistive load)
Ambient temperature	Operating	-10°C...55°C (with no icing or condensation)
	Storage	-25°C...65°C (with no icing or condensation)
Ambient humidity		25%...85%
EMC		(EMI): Emission Enclosure: EN61326 Class A (EMS): EN61326 Immunity ESD: EN61000-4-2: 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: EN61000-4-3: 10 V/m (Amplitude-modulated, 80 MHz...1 GHz) (level 3); 10 V/m (Pulse-modulated, 900 MHz ± 5 MHz) (level 3) Immunity Conducted Disturbance: EN61000-4-6: 3 V (0.15...80 MHz) (level 2) Immunity Burst: EN61000-4-4: 2 kV power-line (level 3); 1 kV I/O signal-line (level 4); 1 kV communications-line (level 3) Immunity Surge: EN61000-4-5: 1 kV between lines (power and output lines) (level 3); 2 kV between grounds (power and output lines) (level 3)
Approved standards		UL508, CSA C22.2 No.14 Conforms to EN61010-1/IEC61010-1 (Pollution degree 2/overvoltage category II) Conforms to VDE0106/P 100 (Finger Protection)
Enclosure ratings		Panel surface: IP66 and NEMA Type 4 (indoors) Rear case: IP20 Terminal block: IP20
Weight		Approx. 80 g

Input/Output Modes and Count Values

Note: H = Short-circuited
L = Open



① (A) indicates the minimum signal width and (B) requires at least 1/2 the minimum signal width. If these conditions are not met, a counting error (+1 or -1) may occur.

Input/Output Mode Settings

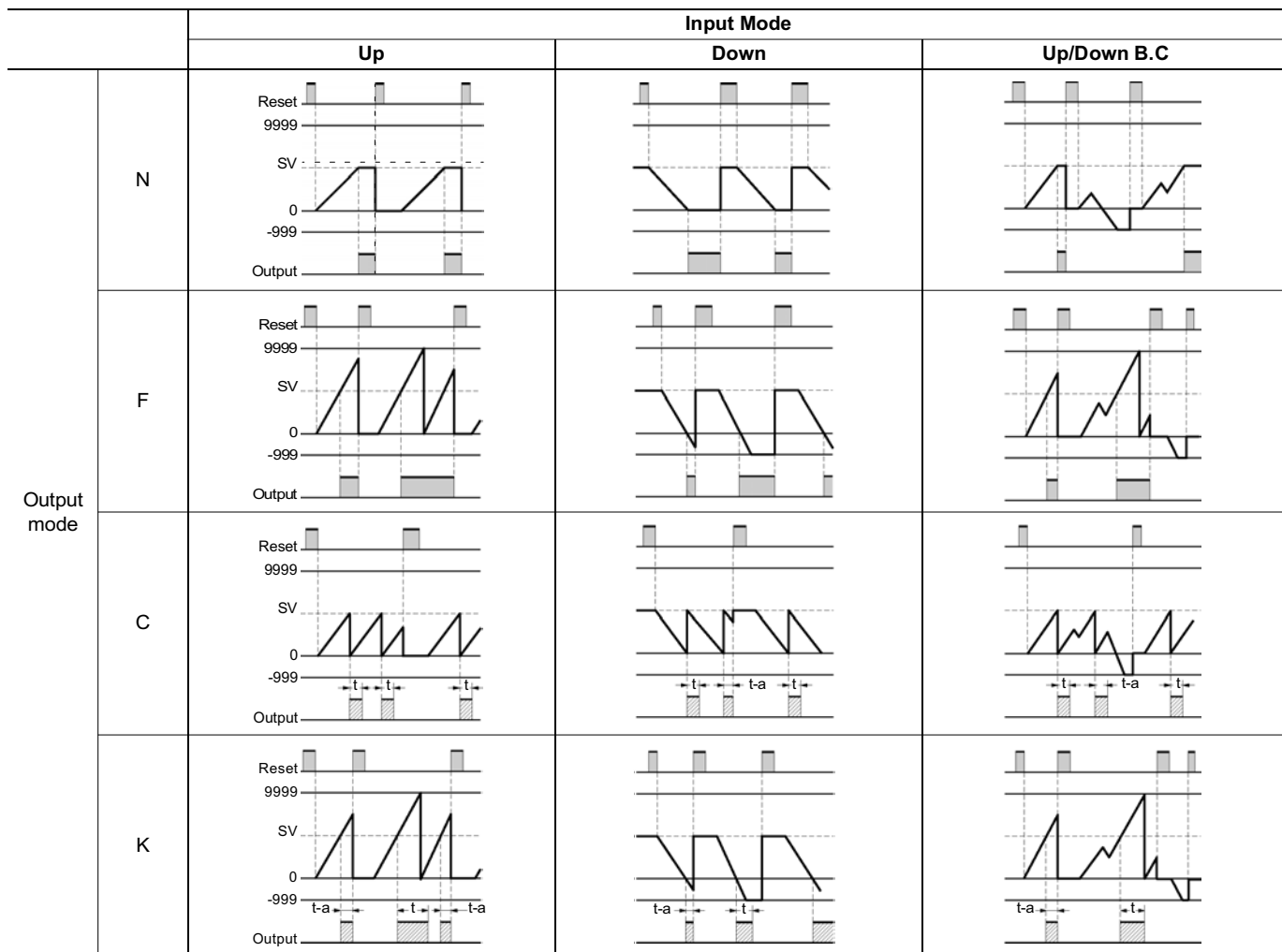
Counter Function

If there is a power failure during output ON, output will turn ON again when the power supply has recovered. For one-shot output, an output will be made again for the duration of the output time setting once the power supply has resumed.

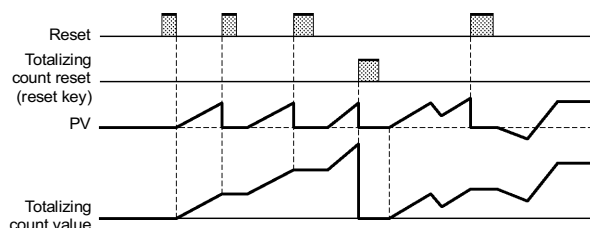
Output timing restarted during one-shot outputs is ignored.

Note: t-a: Less than the output time

t: Output time

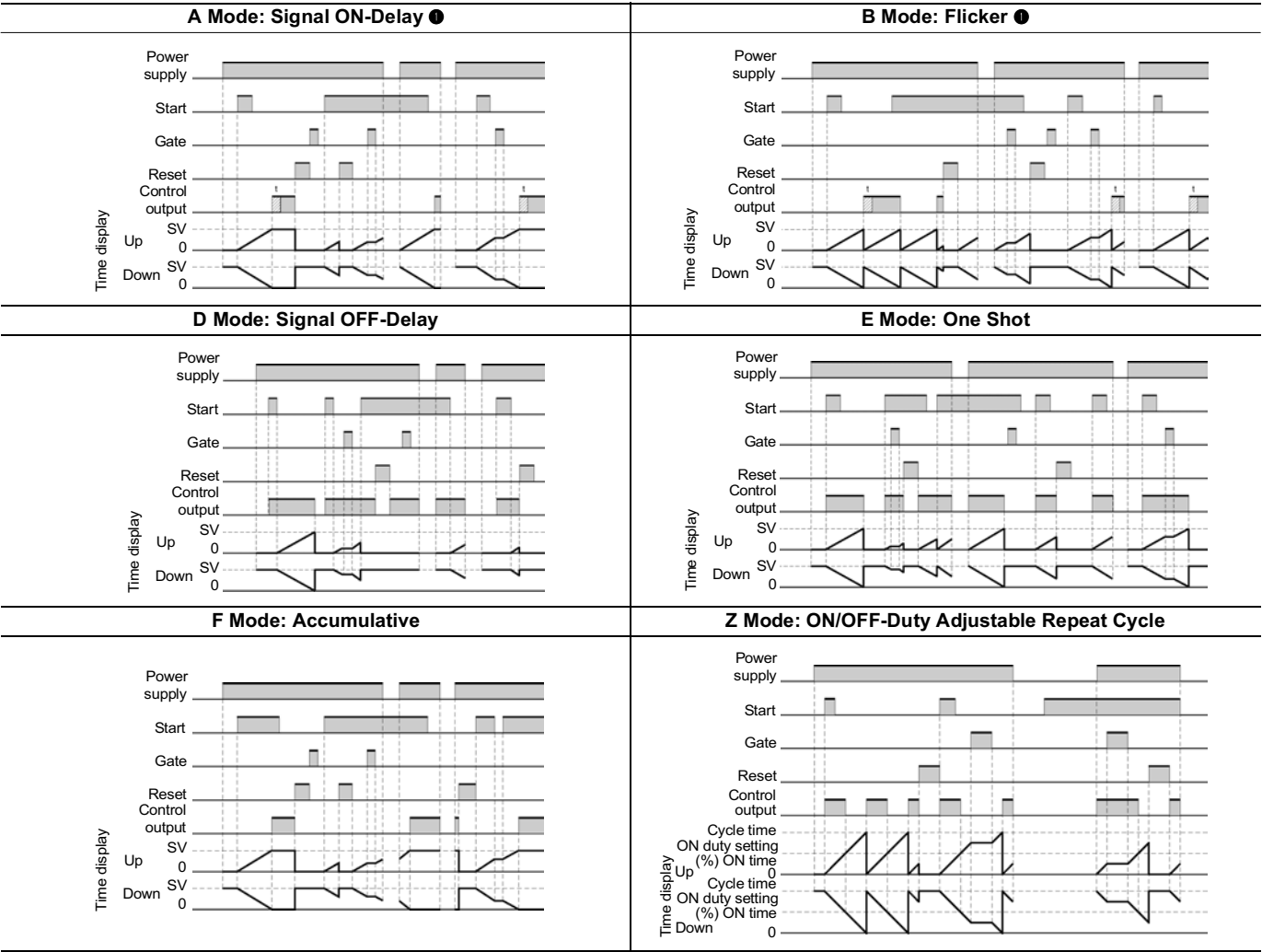


Totalizing Counter Operation



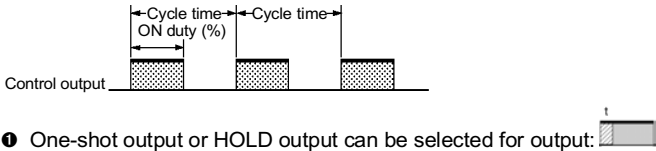
- Totalizing counter continues to count the present value, regardless of whether an reset input (by the reset key) has been made to reset the PV.
- When totalizing count value is reset, the PV is reset at the same time.
- The totalizing count range is 0...99,999,999. If the totalizing count exceeds 99,999,999, the count returns to 0. If the count drops below 0, it becomes 99,999,999.

Timer Function

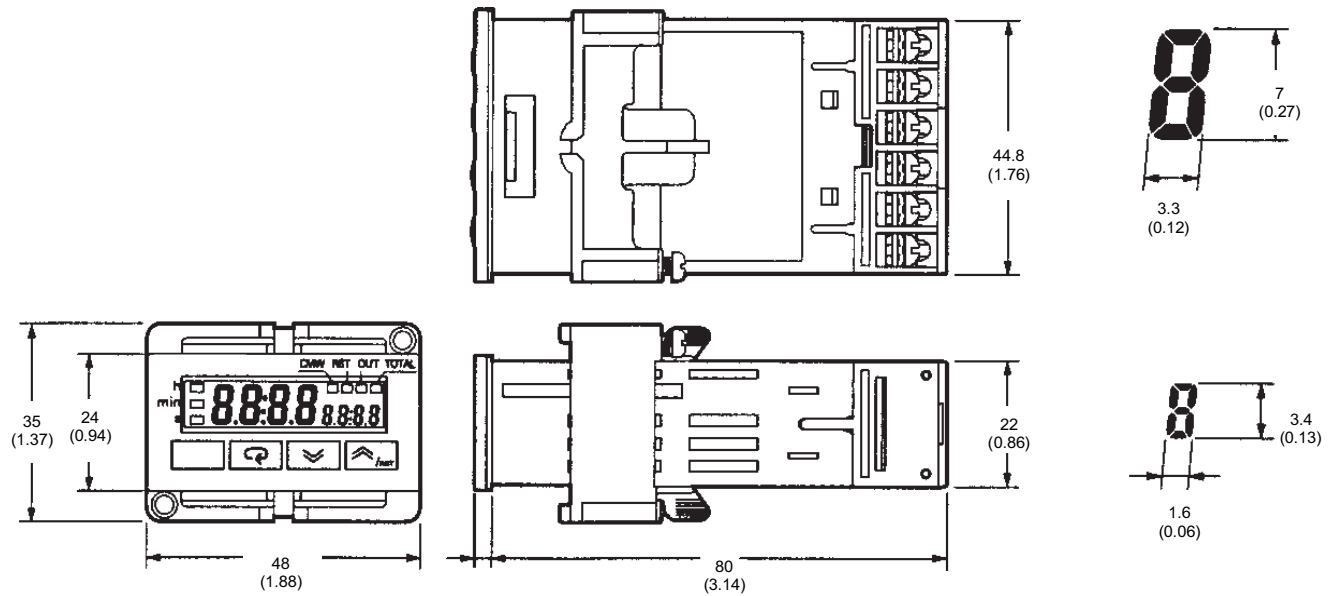


Z Mode

Output quantity can be adjusted by changing the cycle time set in the adjustment level to 1 and by changing the ON duty (%) set value. The set value shows the ON duty (%) and can be set to a value between 0 and 100 (%). When the cycle time is 0, the output will always be OFF. When the cycle time is not 0 and when ON duty has been set to 0 (%), the output will always be OFF. When ON duty has been set to 100 (%), the output will always be ON.

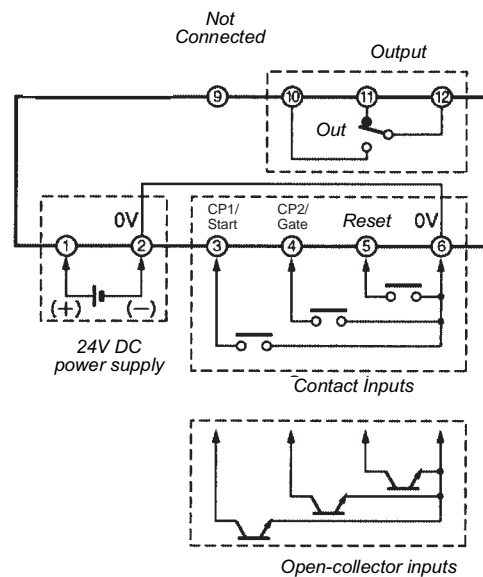


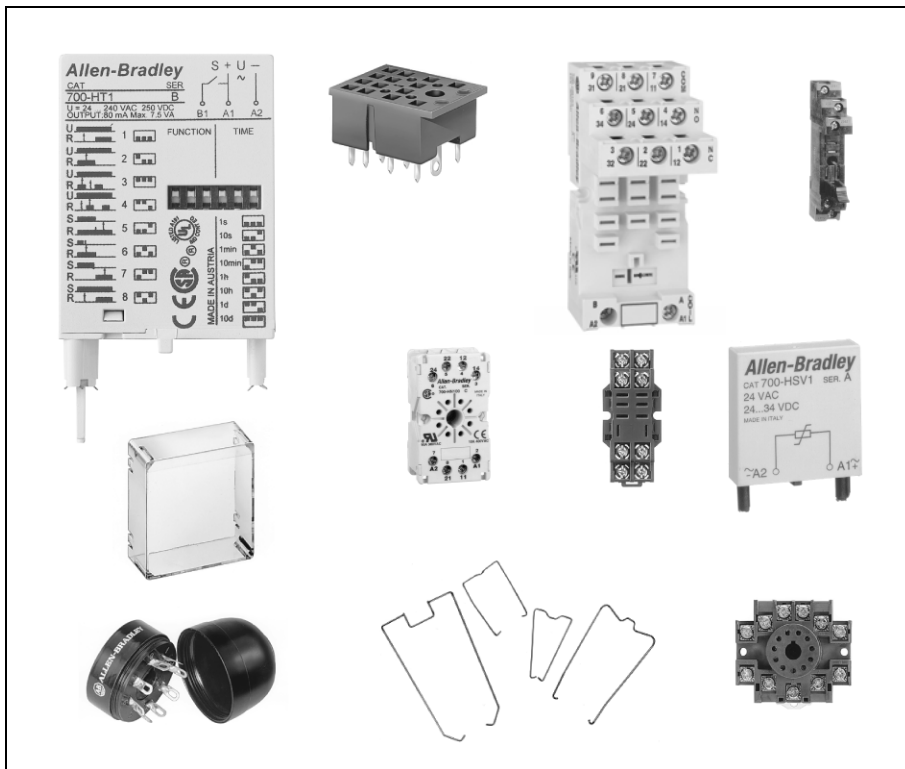
Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



Cat. No. 700-HXM...

Terminal Arrangement





Bulletin 700-H Accessories

- **Sockets**
- **HSV1 MOV Suppressor Module**
- **HMSD Diode Surge Suppressor**
- **HT1 Time Module**
- **HT2 Time Module**
- **Retainer Clips**
- **Identification Marker Kit**
- **Enclosure**
- **Frame Adapter**
- **Protective Cover**

Description

Allen-Bradley offers a broad range of accessories to compliment the General-Purpose Relay Family.

Conformity to Standards:

IEC 255-1-00
VDE 0435

Approvals:

CSA Certified
UL Recognized, File E3125
Guide NLDX 2
UL Listed, File E3125
Guide NLDX
cURus Recognized, File E96409 (For
700-HN153 and 700-HN154)




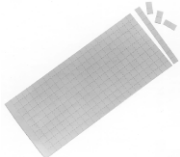

Your order must include:

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

Relay, Socket, and Retainer Clip Reference Chart



Relay Type Cat. No.	Socket Cat. No.	Retainer Clip Cat. No.	Relay Type	Socket Cat. No.	Retainer Clip
700-HA32 700-HAB2 700-HAX2	700-HN100 700-HN125 700-HN202 700-HN200	700-HN157 Not Required ❶ 700-HN157 700-HN157	700-HK32	700-HN122, 700-HN136	Provided
700-HA33 700-HAB3 700-HAX3	700-HN201 700-HN101 700-HN126 700-HN203	700-HN157 700-HN157 Not Required ❶ 700-HN157	700-HR	700-HN101 700-HN126 700-HN129	700-HN131 Not Required ❶ 700-HN130 Frame Adapter
700-HB	700-HN153 700-HN154	700-HN158 700-HN156	700-HRM/HRC	700-HN100 700-HN108 700-HN125	700-HN131 700-HN130 Frame Adapter Not Required ❶
700-HC	700-HN103 700-HN128	700-HN114 700-HN114	700-HS	700-HN153 700-HN154	700-HN162 700-HN160
700-HF32	700-HN116	700-HN114	700-HT12	700-HN100 700-HN125	700-HN110 Not Required ❶
700-HF33	700-HN138	700-HN140	700-HT22	700-HN101 700-HN126	700-HN110 Not Required ❶
700-HF34	700-HN139	700-HN140	700-HV	700-HN100 700-HN125	700-HN110 Not Required ❶
700-HJ	700-HN153 700-HN154	700-HN161 700-HN159	700-HX	700-HN100 700-HN108	Not Required 700HN-130 Frame Adapter
700-HK36	700-HN121, 700-HN134	Provided		700-HN125	Not Required ❶









Accessories


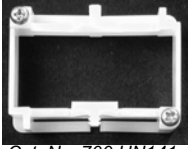



	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN100	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction 8-pin for use with DPDT Bulletin 700-HA relays, -HX digital timing relays, -HT (ON-Delay) and -HRM, -HRC and -HV (Repeat Cycle) timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN100	✓
 Cat. No. 700-HN101	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction 11-pin for use with 3PDT Bulletin 700-HA relays, -HR and -HT (OFF-Delay) timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN101	✓
 Cat. No. 700-HN103	Screw Terminal Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction 14-blade miniature socket for use with Bulletin 700-HC relays.	1	700-HN103	✓
 Cat. No. 700-HN106	Relay Identification Marker Kit Kit consists of perforated sheet with 250 blank squares. Two squares required per relay. Squares slip into molded slot on top of Bulletin 700-HA or 700-HB relay cover.	1	700-HN106	
 Cat. No. 700-HN108	Specialty Socket 8-pin backwired socket with solder terminals for use with Bulletin 700-HRM, -HRC and -HX timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN108	✓




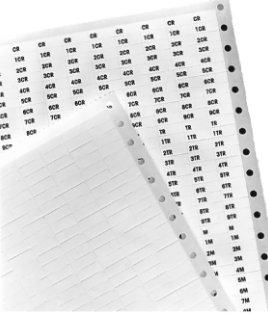

❶ Design of these sockets holds the relays securely and does not require retainer clips.

Bulletin 700-H
Accessories
Accessories, Continued



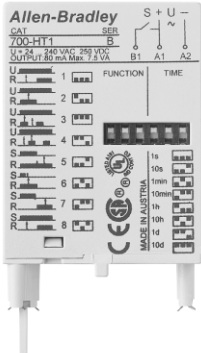
























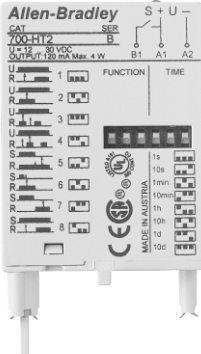





















	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 <p>Sample Retainer Clips</p>	Retainer Clip for Cat. No. 700-HN100 and -HN101 Sockets with 700-HT Timing Relays. Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN110	✓
	Retainer Clip for Cat. No. 700-HN153 and -HN154 Sockets with 700-HS Timing Relays Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN112	✓
	Retainer Clip for Cat. No. 700-HN153 and -HN154 Sockets with Bulletin 700-HJ Relays Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN113	✓
	Retainer Clip for Cat. No. 700-HN103 and -HN128 Sockets with 700-HC Relays and Cat. No. 700-HN116 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-HN100 and -HN101 Sockets with 700-HR Timing Relay or Cat. No. 700-HN Socket with Bulletin 700-HRM and -HRC Timing Relays Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN131	✓
	Retainer Clip for Cat. No. 700-HN138 and -HN139 Sockets with 700-HF 3PDT and 4PDT Relays Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN140	✓
	Retainer Clip for Cat. No. 700-HN154 Socket 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. No. 700-HN100, -HN101, -HN200, -HN201, -HN202, and -HN203 Sockets with 700-HA Relays Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN157	✓
	Retainer Clip for Cat. No. 700-HN153 Sockets with 700-HB Relays Secures relay in socket. Order must be for 10 clips or multiples of 10.	10	700-HN158	✓
 <p>Cat. No 700-HN116</p>	Screw Terminal Socket — Panel or DIN Rail Mounting 8-blade miniature socket for use with DPDT HF relays. Order must be for 10 sockets or multiples of 10.	10	700-HN116	✓
 <p>Cat. No. 700-HN121</p>	Screw Terminal Socket — Panel or DIN Rail Mounting 5-blade miniature socket for use with 1-pole, Type HK relays. Order must be for 10 sockets or multiples of 10.	10	700-HN121	✓
 <p>Cat. No. 700-HN122</p>	Screw Terminal Socket — Panel or DIN Rail Mounting 8-blade miniature socket for use with 2-pole, Type HK relays. Order must be for 10 sockets or multiples of 10.	10	700-HN122	✓

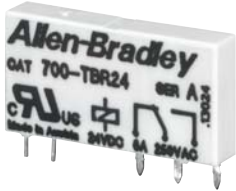



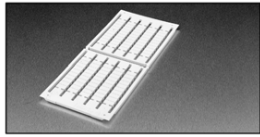
	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN125	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Open Style Construction 8-pin for use with DPDT Bulletin 700-HA relays, -HX digital timing relays, -HT (ON-Delay) and -HRM, -HRC and -HV (Repeat Cycle) timing relays. Order must be for 10 sockets or multiples of 10. No retainer clip required.	10	700-HN125	✓
 Cat. No. 700-HN126	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction 11-pin for use with 3PDT Bulletin 700-HA relays, -HR and -HT (OFF-Delay) timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN126	✓
 Cat. No. 700-HN128	Screw Terminal Base Socket — Panel or DIN Rail Mounting; Open Style Construction 14-blade miniature socket for use with Bulletin 700-HC relays. Order must be for 10 sockets or multiples of 10.	10	700-HN128	✓
 Cat. No. 700-HN129	Specialty Socket 11-pin backwired socket with solder terminals for use with Bulletin 700-HR timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN129	✓
 Cat. No. 700-HN130	Frame Adapter For flush or door mounting of Bulletin 700-HR, -HRM and -HRC timing relays.	1	700-HN130	✓
 Cat. No. 700-HN132	Protective Cover Helps prevent tampering of timing and mode settings. Provides a degree of protection against water and dirt from entering the front of the relay. For use with Bulletin 700-HR, -HRM, -HRC, and -HX timing relays.	1	700-HN132	
 Cat. No. 700-HN134	Specialty Socket — PC Board Mounting 5-blade socket for use with 1 pole, Bulletin 700-HK relays. Order must be for 10 sockets or multiples of 10.	10	700-HN134	✓
 Cat. No. 700-HN138	Screw Terminal Socket — Panel or DIN Rail Mounting 11-blade socket for use with 3PDT Bulletin 700-HF relays.	1	700-HN138	✓

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item
 Cat. No. 700-HN139	Screw Terminal Socket —Panel or DIN Rail Mounting 14-blade socket for use with 4PDT Bulletin 700-HF relays.	1	700-HN139	✓
 Cat. No. 700-HN141	Replacement Flush Mounting Adapter for 700-HXM Counter/Timing Relay	1	700-HN141	
 Cat. No. 700-HN153	Screw Terminal Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction 11-blade socket for use with Bulletin 700-HB and -HJ relays and -HS timing relays.	10	700-HN153	✓
 Cat. No. 700-HN154	Screw Terminal Base Socket — Panel or DIN Rail Mounting; Open Style Construction 11-blade for use with Bulletin 700-HB and -HJ relays and -HS timing relays. Order must be for 10 sockets or multiples of 10.	10	700-HN154	✓
 Cat. No. 700-HN203	8-Pin Socket — can be used with or without timing attachment or surge suppressor Bulletin 700-HN Screw Terminal Tube Base Socket — panel or DIN Rail mounting. Guarded terminal construction. Used with DPDT Bulletin 700-HA relays. Order must be for 10 sockets or multiples of 10.	10	700-HN202	✓
	11-Pin Socket — can be used with or without timing attachment or surge suppressor Bulletin 700-HN Screw Terminal Tube Base Socket — panel or DIN Rail mounting. Guarded terminal construction. Used with 3PDT Bulletin 700-HA relays. Order must be for 10 sockets or multiples of 10.	10	700-HN203	✓

	Description	Pkg. Qty.	Cat. No.	Factory-stocked Item																				
 Cat. No. 199-DR1	DIN Rail Mounting Pack Standard 35 x 7.5 mm DIN Rail, 1 meter long, 10 rails per package. Order must be for 10 rails or multiples of 10.	10	199-DR1	✓																				
 Cat. No. 199-FSM	<table border="1"> <tr> <td rowspan="6">Surge Suppressor</td><td>RC Type 110/120V AC ❶</td><td rowspan="6">1</td><td>199-FSMA1</td><td>✓</td></tr> <tr> <td>RC Type 220/240V AC ❶</td><td>199-FSMA2</td><td></td></tr> <tr> <td>MOV Type Current Limiter Varistor 24...48V AC/DC ❶</td><td>199-FSMA9</td><td>✓</td></tr> <tr> <td>MOV Type Current Limiter Varistor 50...125V AC/DC ❶</td><td>199-FSMA10</td><td>✓</td></tr> <tr> <td>MOV Type Current Limiter 130...250V AC/DC ❶</td><td>199-FSMA11</td><td></td></tr> <tr> <td>Diode Type 6...300V DC ❶</td><td>199-FSMZ-1</td><td></td></tr> </table>	Surge Suppressor	RC Type 110/120V AC ❶	1	199-FSMA1	✓	RC Type 220/240V AC ❶	199-FSMA2		MOV Type Current Limiter Varistor 24...48V AC/DC ❶	199-FSMA9	✓	MOV Type Current Limiter Varistor 50...125V AC/DC ❶	199-FSMA10	✓	MOV Type Current Limiter 130...250V AC/DC ❶	199-FSMA11		Diode Type 6...300V DC ❶	199-FSMZ-1				
Surge Suppressor	RC Type 110/120V AC ❶		1		199-FSMA1	✓																		
	RC Type 220/240V AC ❶				199-FSMA2																			
	MOV Type Current Limiter Varistor 24...48V AC/DC ❶				199-FSMA9	✓																		
	MOV Type Current Limiter Varistor 50...125V AC/DC ❶				199-FSMA10	✓																		
	MOV Type Current Limiter 130...250V AC/DC ❶				199-FSMA11																			
	Diode Type 6...300V DC ❶	199-FSMZ-1																						
 Cat. No. 199-FSA	Panel Mount Adapter Use for Panel Mounting Bulletin 700-FE and Bulletin 700-FS Timing Relays	5	199-FSA																					
	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																					
 Cat. No. 199-FSK	Setting knob with scale (for time setting without tools)	10	700-FSK																					

❶ Used with sockets -HN116, -HN125, -HN154, and -HN128.

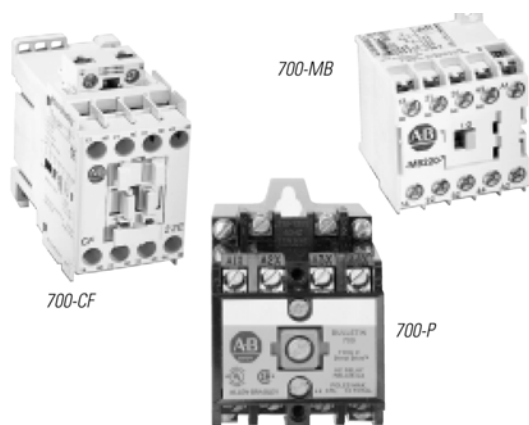
	Description	Pkg. Qty.	Cat. No.	Factory- stocked Item																
 Cat. No. 700-HSV1	MOV Suppressor Module ❶ Voltage Range: 24V AC 24...30V DC Order must be for 20 modules or multiples of 20.	20	700-HSV1	✓																
	MOV Suppressor Module ❶ Voltage Range: 220...240V AC 220...300V DC Order must be for 20 modules or multiples of 20.	20	700-HSV2																	
	MOV Suppressor Module ❶ Voltage Range: 110...120V AC 110...150V DC Order must be for 20 modules or multiples of 20.	20	700-HSV3	✓																
 Cat. No 700-HSMD	Diode Surge Suppressor ❶ Voltage Range: 6...250V DC Order must be for 20 modules or multiples of 20.	20	700-HSMD	✓																
 Cat. No. 700-HT1	Multi-Function Multi-Range Time Module ❶ Voltage range 24... 240V AC 50/60 Hz and 24...250V DC, with a voltage variation of 85%...110%. Repeat accuracy of <0.5%. Reset time 150 ms. Refer to page 50 for Specifications. Eight (8) Timing Modes (See page 50 for further details.) Eight (8) Timing Ranges: <table><tr><td>1. 1 second</td><td></td></tr><tr><td>2. 10 seconds</td><td></td></tr><tr><td>3. 1 minute</td><td></td></tr><tr><td>4. 10 minutes</td><td></td></tr><tr><td>5. 1 hour</td><td></td></tr><tr><td>6. 10 hours</td><td></td></tr><tr><td>7. 1 day (24 hours)</td><td></td></tr><tr><td>8. 10 days (240 hours)</td><td></td></tr></table> LED Indicator: 1. Steady Green (G) for power on, flashing during timing	1. 1 second		2. 10 seconds		3. 1 minute		4. 10 minutes		5. 1 hour		6. 10 hours		7. 1 day (24 hours)		8. 10 days (240 hours)		1	700-HT1	✓
1. 1 second																				
2. 10 seconds																				
3. 1 minute																				
4. 10 minutes																				
5. 1 hour																				
6. 10 hours																				
7. 1 day (24 hours)																				
8. 10 days (240 hours)																				
 Cat. No. 700-HT2	Multi-Function Multi-Range Time Module ❶ Voltage range 12...30V DC, with a voltage variation of 90...110%. Repeat accuracy of <0.5%. Reset time 150 ms. Refer to page 50 for Specifications. Eight (8) Timing Modes (See page 51 for further details.) Eight (8) Timing Ranges: <table><tr><td>1. 1 s</td><td></td></tr><tr><td>2. 10 s</td><td></td></tr><tr><td>3. 1 min.</td><td></td></tr><tr><td>4. 10 min.</td><td></td></tr><tr><td>5. 1 h</td><td></td></tr><tr><td>6. 10 h</td><td></td></tr><tr><td>7. 1 day (24 h)</td><td></td></tr><tr><td>8. 10 days (240 h)</td><td></td></tr></table> LED Indicator: 1. Steady Green (G) for power on, flashing during timing	1. 1 s		2. 10 s		3. 1 min.		4. 10 min.		5. 1 h		6. 10 h		7. 1 day (24 h)		8. 10 days (240 h)		1	700-HT2	
1. 1 s																				
2. 10 s																				
3. 1 min.																				
4. 10 min.																				
5. 1 h																				
6. 10 h																				
7. 1 day (24 h)																				
8. 10 days (240 h)																				

	Description	Pkg. Qty.	Socket Input Voltage	Cat. No.	Factory-stocked Item
 <p>Cat. No. 700-TBR24</p>	Replacement Relays Order must be for 20 relays or multiples of 20.	20	12V	700-TBR12	✓
			24V	700-TBR24	✓
			48V	700-TBR48	✓
			110/125V	700-TBR60	✓
			220...240V	700-TBR60	✓
			120V...125V	700-TBR60	✓
			240V	700-TBR60	✓
 <p>Cat. No. 700-TBS24</p>	Replacement SSR 4-blade miniature relay for use with 1 N.O. SSR output. Order must be for 18 relays or multiples of 18.	18	24V	700-TBS24	✓
			48V	700-TBS60	✓
			110/125V	700-TBS60	✓
			220...240V	700-TBS60	✓
			120V...125V	700-TBS60	✓
			240V	700-TBS60	✓
			120/125V	700-TBS60	✓
 <p>Cat. No. 700-TBJ20B</p>	20-Way Jumper Can be cut to required length. I_{th} = 36 A max per 20-way jumper.	1	Color		
			Red	700-TBJ20R	✓
			Gray	700-TBJ20G	✓
			Blue	700-TBJ20B	✓
 <p>Cat. No. 700-HN177</p>	End Barrier Used for visual inspection of groups, safe separation of neighboring 700-HL modules that end with jumpers. Order must be for 10 or multiples of 10.	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-SMN81	
		100	Text	See Publication A113, Bulletin 1492 Marking System Section.	

❶ Suppressors and time modules easily plug into sockets Cat. No. 700-HN202 and 700-HN203. For use with Bulletin 700-HA relays.

ATTENTION: Cat. No. 700-HT1 Series A is wired with switch “S” connected to “A2”, but 700-HT1 Series B is wired with switch “S” connected to “A1”. The time modules must be wired correctly. Check the front of the time modules for the correct wiring diagrams.

Industrial Relays



This portion of the selection guide covers industrial relays. Industrial relays are used for:

- Safety applications
- Applications requiring long life
- Heavy Loads
- Hazardous Areas and Difficult Environments
- Latch and Pneumatic Timers

Safety Features

Industrial relays have important features that provide safe, more reliable design of control systems.

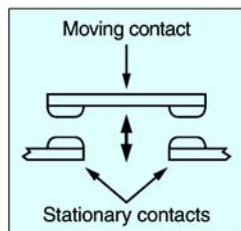
- Mechanically linked contacts (positive-guided contacts)
- Double-break contacts make it possible to detect a welded contact and also reduce the possibility of welding a contact.
- Break before make contacts (non-overlapping)

Importance of Mechanically Linked Contacts

This feature allows detection of a welded contact condition. In most relays, each contact opens and closes independently of the other contacts. Mechanically linked (also known as positively guided and Direct Drive™) contacts are linked together, thereby preventing the reclosing of the N.C. contacts if a N.O. contact has welded.

Importance of Double-Break Contacts

This design provides better protection against contact welding than single break design. Other benefits include greater DC load breaking capability and better isolation. It also provides separation of N.O. and N.C. circuits, unlike standard "Form C" contacts. Double-break contacts open the circuit in two places, creating two air gaps. It is analogous to having two contacts in series.



Long Life

Allen-Bradley industrial relays and contacts are designed for long life. Each component is engineered for millions of operations, without compromising performance. Contact life is often 3 to 5 times greater than plug-in relays.

Safety Applications:

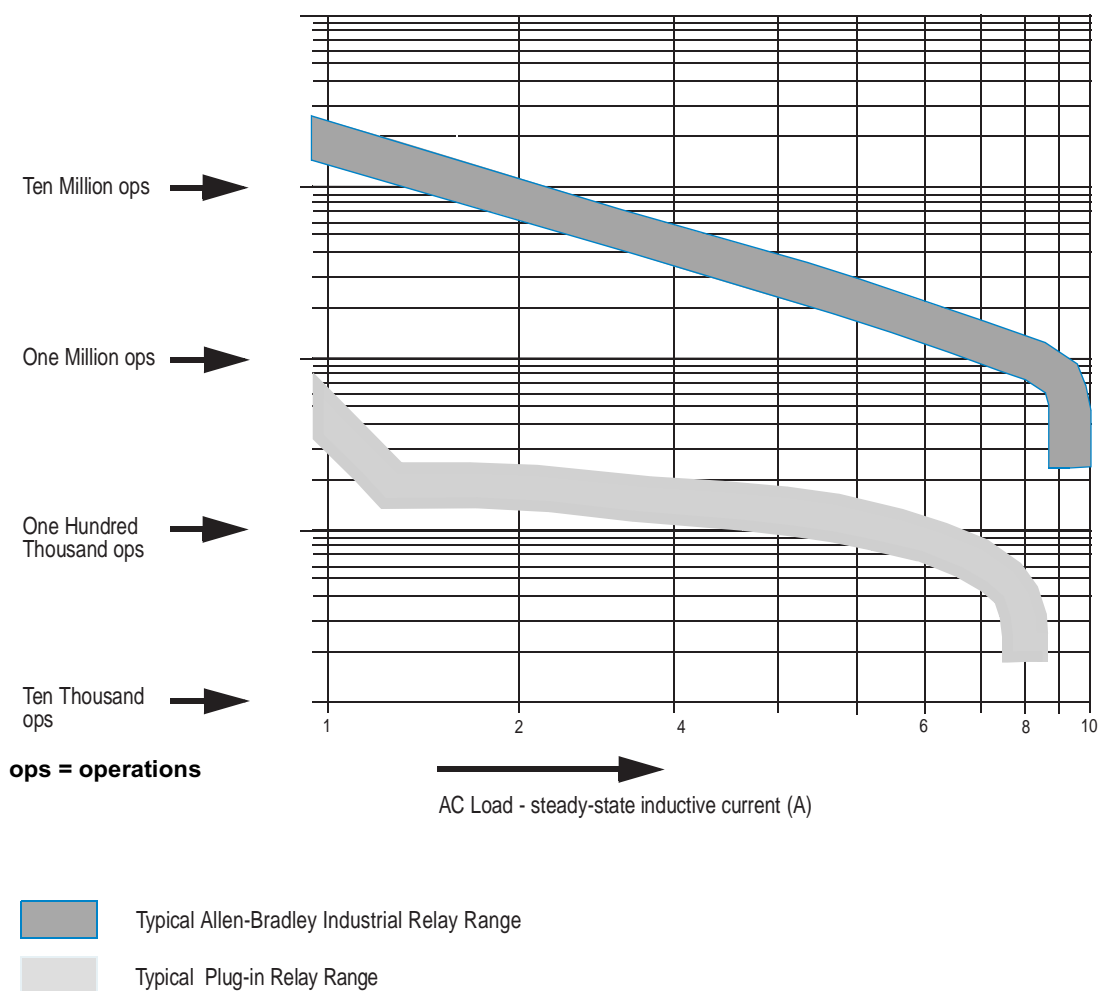
Allen-Bradley industrial relays are frequently used in safety circuits for:

- Safety relay output – to expand the current rating or contact life of a safety relay
- Master Control Relays (switching PLC power supplies)
- E-Stop Relays
- Directing course of action when a safety condition occurs
- Light curtain monitoring
- Press control

Additional Features and Options

- Switch up to 12 circuits with one relay
- Sealed contacts for dirty environments and low-energy switching
- Coil voltages from 12...600V AC and 6...600V DC
- Switch from 5...600V AC and DC
- Switch from 1 mA...35 A
- Pneumatic timers to maintain timing even if power is lost

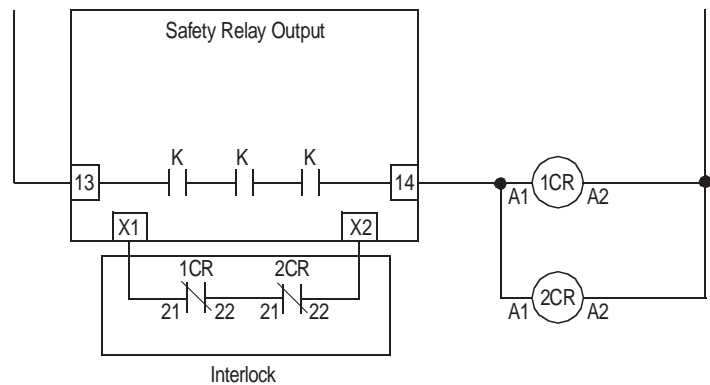
Relay Load Life Comparison—Pilot Duty Loads (solenoid valve, contactor coil, relay coil)



Does not change conditions of sales or warranty.

Safety Relay Output Block Diagram

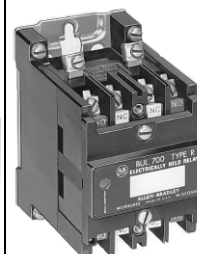
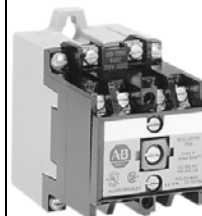
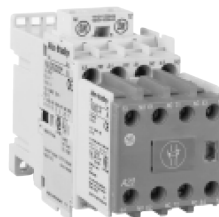
This diagram illustrates how 2 industrial relays can be used to expand safety relay outputs.



SAFETY OUTPUTS				
1 CR		2 CR		
13	14	13	14	LOAD 1
33	34	33	36	LOAD 2
43	44	43	44	LOAD 3
53	54	53	54	LOAD 4
63	64	63	64	LOAD 5
73	74	73	74	LOAD 6
83	84	83	84	LOAD 7

CR = Industrial Relay (700-P, 700-M, 700-CF)

Note: 1 CR and 2 CR are Allen-Bradley industrial relays with mechanically linked contacts (Bulletins 700-P, 700-CF, and 700-M).



Bulletin No.	700-M/MB	700-CF	700S-CF	700-P	700-R
Mechanically linked contacts ❶	Y ❷	Y	Y	Y ❸	N
Double-break contacts	Y	Y	Y	Y	—
Switch millions of operations at >1 A	Y	Y	Y	Y	Y
Low-energy switching	Y	Y	Y	Y	Y
Marine certification—vibration applications	Y	Y	Y	Y	Y
Relay Differences					
Number of circuits to switch (number of poles)	4...8	4...12	8...12	2...12	2...8
Current ratings at 120V AC	10 A	12 A	12 A	10...35 A	5 A
Pneumatic timer option	N	Y	N	Y	Y
Electronic timer option	Y	Y	N	Y	Y
Latch option	N	Y	N	Y	Y
Built-in surge suppression for 24V DC coil option	Y	Y	Y	N	Y ❹
Convertible and replaceable contacts	N	N	N	Y	Y
Switch 20...35 A on 6...12 poles	N	N	N	Y	N
DIN Rail Mounting	Y	Y	Y	N	N
Finger-Safe Terminals	Y	Y	Y	N	N
8 poles permanently attached	N	N	Y	Y	Y

❶ If a N.O. contact welds, the N.C. contacts will remain open and if a N.C. contact welds, the N.O. contacts will remain open.

❷ Yes for main poles, restrictions apply for auxiliary contacts.

❸ The 700-P meets the component requirements for relays of ANSI B11.19 section 5.5.1 (Control Reliability).

❹ Y for AC coil.



Bulletin 700-CF

- AC and DC Operating Coils
- Positive-Guided (Mechanically Linked) Main and Auxiliary Contacts
- Ideal for Use in Safety Circuits
- Front-and Side-Mounted Auxiliary Contacts
- Guarded Terminals with Ready-to-Wire Terminal Screws
- Solid-State and Pneumatic Timing Modules
- Environmentally Friendly Materials
- Space-Saving Coil Modules
- Common accessories with Bulletin 100-C Contactors
- 4...12 Poles

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	205	Specifications	213
4-Pole Control Relays, AC Operated	205	Technical Data	213
6- and 8-Pole Control Relays, AC Operated	207	Shipping Weights	213
4-Pole Control Relays, DC Operated	205	Approximate Dimensions	216
Accessories	208		
Auxiliary Contacts	208		
Control Modules	209		
Marking Systems	212		
Renewal Parts	212		

Description

The Bulletin 700-CF range of 4-pole relays combined with its adder decks, timers and accessories provides a highly flexible line of devices acceptable worldwide. It is also available in an 8-pole safety version (700S-CF).

Conformity to Standards

- IEC 947-5-1
- EN 50011, EN 50005, EN 50022
- UL 508
- VDE 0660
- CSA C22.2 Part 14

Approvals

- CE Certified
- CSA Certified
- UL Listed, File E14840, Guide NKCR
- SUVA Third Party Certified

Your order must include:

- Cat. No. of the relays required, complete with coil suffix.
- Cat. No. of adder decks, timers and accessories required.
- If required, the part number of replacement coils.

4-Pole AC Voltage





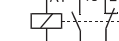
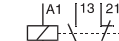
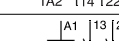
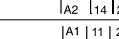
Cat. No. 700-CF220®



Cat. No. 700-CF310®



Cat. No. 700-CF400®

AC-1		AC-11 and AC-15							Connection Diagrams	Contacts		Cat. No. ❶
I_e [A]		I_e [A]										
40°C	60°C	24/48V	120V	240V	400V	500V	600V	690V				
25	20	16	14	10	5	2.5	1.8	1		2	2	700-CF220®
										3	1	700-CF310®
										4	0	700-CF400®
										0	4	700-CF040®




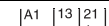
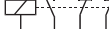
❶ All Cat. Nos. are factory stocked.

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 700-CF220®** becomes **Cat. No. 700-CF220F**.

Voltage	12	24	32	36	42	48	100	100-110	110	120	127	200	200-220	208	208-240	220-230	230	230-240	240	277	347	380	380-400	400	400-415	440	480	500	550	600
50 Hz	R	K	V	W	X	Y	KP	—	D	P	S	KG	—	—	—	F	—	VA	T	—	—	—	N	—	G	B	—	M	C	—
60 Hz	Q	J	—	V	—	X	KP	—	D	—	—	—	KG	H	L	—	—	—	A	T	I	E	—	—	—	N	B	—	—	C
50/60 Hz	—	KJ	—	—	—	KY	KP	—	KD	—	—	KG	—	—	—	—	KF	—	KA	—	—	—	—	KN	—	KB	—	—	—	—

4-Pole DC Voltages

AC-1		AC-11 and AC-15							Connection Diagrams	Contacts		Cat. No.❶
I_e [A]		I_e [A]										
40°C	60°C	24/48V	120V	240V	400V	500V	600V	690V				
25	20	16	14	10	5	2.5	1.8	1		2	2	700-CF220Z⊗
										3	1	700-CF310Z⊗
										4	0	700-CF400Z⊗

❶ All Cat. Nos. are factory stocked.

⊗ Voltage Suffix Code ❶

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 700-CF220Z®** becomes **Cat. No. 700-CF220ZJ** for 24V DC.



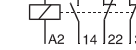
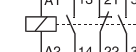
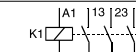
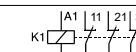
Voltage	9	12	24	36	48	60	64	72	80	110	115	125	220	230	250
Standard	R	Q	J	W	Y	Z	B	G	E	D	P	S	A	F	T
With diode suppressor			DJ												

❶ When ordering DJ coil with built-in surge suppression, remove Z from the Cat. No. Example: Cat. No. 700-CF400Z® becomes Cat. No. 700-CF400DJ. DJ — not polarity sensitive, uses bi-polar diode.

4-Pole AC Voltage



Cat. No. 700-CFM310[⊗]

AC-1		AC-11 and AC-15							Connection Diagrams	Contacts		Cat. No. ❶
I_e [A]		I_e [A]										
40°C	60°C	24/4 8V	120V	240V	400V	500V	600V	690V		N.O.	N.C.	
30	24	19.2	16.8	12	6	3	2.16	1.2		2	2	700-CFM220⊗ (Available November 2001)
										3	1	700-CFM310⊗ (Available November 2001)
										4	0	700-CFM400⊗ (Available November 2001)
										0	4	700-CFM040⊗ (Available November 2001)




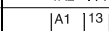
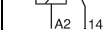
❶ All Cat. Nos. are factory stocked.

⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: Cat. No. 700-CFM220[⊗] becomes Cat. No. 700-CFM220F.

Voltage	12	24	32	36	42	48	100	100-110	110	120	127	200	200-220	208	208-240	220-230	230	230-240	240	277	347	380	380-400	400	400-415	440	480	500	550	600
50 Hz	R	K	V	W	X	Y	KP	—	D	P	S	KG	—	—	—	F	—	VA	T	—	—	—	N	—	G	B	—	M	C	—
60 Hz	Q	J	—	V	—	X	—	KP	—	D	—	—	KG	H	L	—	—	—	A	T	I	E	—	—	—	N	B	—	—	C
50/60 Hz	—	KJ	—	—	—	KY	KP	—	KD	—	—	—	KG	—	—	—	KF	—	KA	—	—	—	—	KN	—	KB	—	—	—	—

4-Pole DC Voltages

AC-1		AC-11 and AC-15							Connection Diagrams	Contacts		Cat. No. ❶
I_e [A]		I_e [A]										
40°C	60°C	24/48V	120V	240V	400V	500V	600V	690V				
30	24	19.2	16.8	12	6	3	2.16	1.2		2	2	700-CFM220Z⊗ (Available November 2001)
										3	1	700-CFM310Z⊗ (Available November 2001)
										4	0	700-CFM400Z⊗ (Available November 2001)

❶ All Cat. Nos. are factory stocked.

⊗ Voltage Suffix Code ❶

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: Cat. No. 700-CFM220Z[⊗] becomes Cat. No. 700-CFM220ZJ for 24V DC.

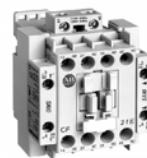
Voltage	9	12	24	36	48	60	64	72	80	110	115	125	220	230	250
Standard	R	Q	J	W	Y	Z	B	G	E	D	P	S	A	F	T
With diode suppressor			DJ												

❶ When ordering DJ coil with built-in surge suppression, remove Z from the Cat. No. Example: Cat. No. 700-CFM400Z[⊗] becomes Cat. No. 700-CFM400DJ. DJ — not polarity sensitive, uses bi-polar diode.

6- and 8-Pole Relays



Cat. No. 700-CFZ 1420



Cat. No. 700-CFZ 0530

Control Relays with Overlapping Side-Mounted Contacts

AC-1		AC-11 and AC-15							Left Aux.	Relay Arrangement	Right Aux.	Contacts		Overlapping Side-Mounted Contacts		Cat. No. ❶
I_e [A]		I_e [A]										N.O.	N.C.	N.O.	N.C.	
40°C	60°C	24/48V	120V	240V	400V	500V	600V	690V								
25	20	16	14	10	5	2.5	1.8	1		4	0	1	1	700-CFZ1510⊗		
										3	1	1	1	700-CFZ1420⊗		
										2	2	1	1	700-CFZ1330⊗		
25	20	16	14	10	5	2.5	1.8	1		4	0	2	2	700-CFZ2620⊗		
										3	1	2	2	700-CFZ2530⊗		
										2	2	2	2	700-CFZ2440⊗		

Control Relays with Standard Side-Mounted Contacts

AC-1		AC-11 and AC-15							Left Aux.	Relay Arrangement	Right Aux.	Contacts		Standard Side-Mounted Contacts		Cat. No. ❶
<i>I_e</i> [A]		<i>I_e</i> [A]										N.O.	N.C.	N.O.	N.C.	
40°C	60°C	24/48V	120V	240V	400V	500V	600V	690V								
25	20	16	14	10	5	2.5	1.8	1			4	0	1	1	700-CFZ0510⊗	
											3	1	1	1	700-CFZ0420⊗	
											2	2	1	1	700-CFZ0330⊗	
											4	0	2	2	700-CFZ0620⊗	
											3	1	2	2	700-CFZ0530⊗	
											2	2	2	2	700-CFZ0440⊗	

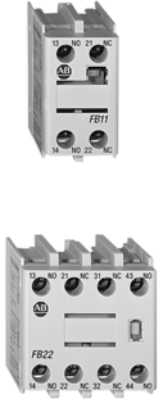
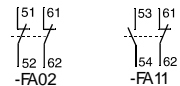
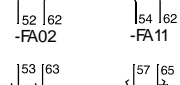
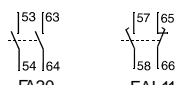
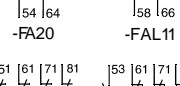
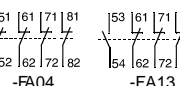
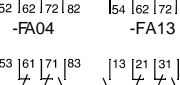
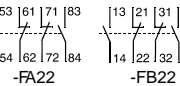
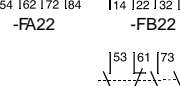
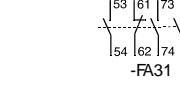
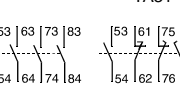
① All Cat. Nos. are factory stocked.


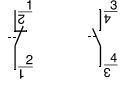
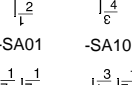
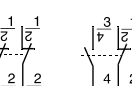
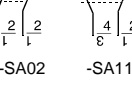
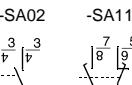
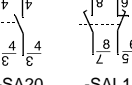
⊗ Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 700-CFZ0510** becomes **Cat. No. 700-CFZ0510F**.

Voltage	12	24	32	36	42	48	100	100-110	110	120	127	200	200-220	208	208-240	220-230	230	230-240	240	277	347	380	380-400	400	400-415	440	480	500	550	600
50 Hz	R	K	V	W	X	Y	KP	—	D	P	S	KG	—	—	—	F	—	VA	T	—	—	—	N	—	G	B	—	M	C	—
60 Hz	Q	J	—	V	—	X	—	KP	—	D	—	—	KG	H	L	—	—	—	A	T	I	E	—	—	—	N	B	—	—	C
50/60 Hz	—	KJ	—	—	—	KY	KP	—	KD	—	—	KG	—	—	—	—	KF	—	KA	—	—	—	—	KN	—	KB	—	—	—	—

Auxiliary Contacts

	Description	N.O.	N.C.	Connection Diagrams	For Use With	Cat. No. ⑤
	Auxiliary Contact Blocks for Front Mounting ①③ <ul style="list-style-type: none"> 2- and 4-pole Quick and easy mounting without tools Mutual positive guidance to the main contactor poles (except for L types) Models with equal function with several terminal numbering choices L = Late break/Early make	0	2		700-CF	100-FA02
		1	1		700-CF	100-FA11
		2	0		700-CF	100-FA20
		1L	1L		700-CF	100-FAL11
		0	4		700-CF	100-FA04
		1	3		700-CF	100-FA13
		2	2		700-CF	100-FA22
		3	1		700-CF	100-FA31
		4	0		700-CF	100-FA40
		1+1L	1+1L		700-CF	100-FAL22

	Description	N.O.	N.C.	Connection Diagrams	For Use With	Cat. No. ⑤
	Auxiliary Contact Blocks for Side Mounting without Sequence Terminal Designations ②③ <ul style="list-style-type: none"> 1- and 2-pole Two-way numbering for right or left mounting on the contactor Quick and easy mounting without tools Mutual positive guidance and to the main relay poles (except for L types) L = Late break/Early make	0	1		700-CF	100-SA01
		1	0		700-CF	100-SA10
		0	2		700-CF	100-SA02
		1	1		700-CF	100-SA11
		2	0		700-CF	100-SA20
		L1	L1		700-CF	100-SAL11

① Control Relay and Auxiliary Contact

② Up to 8 auxiliary contacts may be mounted (a maximum of 4 N.C. contacts on the front of the contactor and a maximum of 2 N.O. contacts on each side).

③ Maximum No. of Contacts: Refer to the following tables





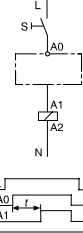
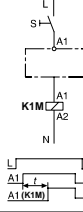
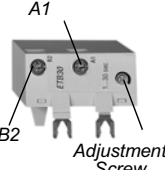
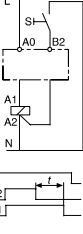

700CF (AC and DC coils), vertical mounting, 60°C					
Cat. No. 700... ⑤	Max. N.O. Side Aux.	Max. N.C. Side Aux.	Max. N.O. Front + Side Aux.	Max. N.C. Front + Side Aux.	Max. N.O. + N.C. Front + Side Aux.
CF400	2	4	6	6	6
CF310	2	4	6	6	6
CF220	2	4	6	6	6
CF040 ④	2	2	4	4	4

700CF (AC and DC coils), vertical mounting, 40°C					
Cat. No. 700... ⑤	Max. N.O. Side Aux.	Max. N.C. Side Aux.	Max. N.O. Front + Side Aux.	Max. N.C. Front + Side Aux.	Max. N.O. + N.C. Front + Side Aux.
CF400	2	4	6	7	7
CF310	2	4	6	7	7
CF220	2	4	6	7	7
CF040 ④	2	3	4	5	5

④ AC coils only.

⑤ All Cat. Nos. are factory stocked.


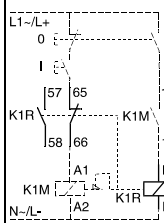
Control Modules


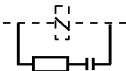
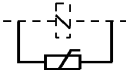
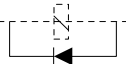
	Description	Connection Diagrams	Reset Time	Repeat Accuracy	For Use With	Cat. No. ②
 Cat. No. 100-FPTA30 Mount on front of 700-CF Relay	Pneumatic Timing Module — ON Delay Timed contact operates after the time delay. Relay contact operates instantaneously. • Continuous adjustment range		25...90 ms for AC Coils	+/-10%	700-CF AC Coils DC Coils ❶	100-FPTA30 100-FPTA180
	Pneumatic Timing Module — OFF Delay Timed contact will remain in operation until the end of the time delay. Relay contact operates instantaneously. • Continuous adjustment range		47...85 ms for DC coils		700-CF All	100-FPTB30 100-FPTB180
 Cat. No. 100-ETA30	Solid-state Timing Module Changes all contacts on Bulletin 100-C contactors and Bulletin 700-CF control relays into timed contacts.		100 ms min. 100 ms max.	+/-1%	700-CF 110...240V 50/60 Hz 110...250VDC	100-ETA3 100-ETA30 100-ETA180
	100-ETA The contactor is switched on after the end of the delay time.				700-CF with DC coils 24V DC and 48V DC	100-ETAZJ3 100-ETAZJ30 100-ETAZJ180
 Cat. No. 100-ETB30 Adjustment Screw	100-ETB After interruption of the control signal, the contactor is switched off after the end of the set delay time. • Continuous adjustment range				700-CF 110...240V AC coils, 50/60 Hz	100-ETB3 100-ETB30 100-ETB180
					700-CF 24V AC coils	100-ETBKJ3 100-ETBKJ30 100-ETBKJ180

❶ Cannot be used with side-mounted auxiliary contacts.

❷ All Cat. Nos. are factory stocked.

Control Modules, Continued

	Description	Connection Diagrams	For Use With	Cat. No. ②
 <p>Cat. No. 100-FL⊗</p>	<p>Mechanical Latch—Mount on top of 700-CF Relay</p> <p>In contactors and relays with latching, the coil is immediately switched off after closing by the contact on the latch (65 – 66). Consequently, no holding current flows. It can be used with all Bulletin 100-C contactor and Bulletin 700-CF relay models with AC operating mechanism (with AC coils). For 24...240V DC control voltage, use the AC coil with the same voltage rating.</p> <ul style="list-style-type: none"> Auxiliary Contacts 1 N.O. + 1 N.C. 		700-CF	100-FL11⊗

	Description		Connection Diagrams	For Use With	Cat. No. ②	
	Surge Suppressors Surge Suppressors reduce the high transient voltage generated when the coil circuit is opened. <ul style="list-style-type: none">• Coil-mounted• Suitable for 100-C/700-CF	RC Module AC Operating Mechanism	24...48V 50/60 Hz		700-CF	100-FSC48
			110...280V 50/60 Hz			100-FSC280
			380...480V 50/60 Hz			100-FSC480
		Varistor Module AC/DC Operating Mechanism	12...55V AC/ 12...77V DC		700-CF	100-FSV55
			56...136V AC/ 78...180V DC			100-FSV136
			137...277V AC/ 181...350V DC			100-FSV277
			278...575V AC			100-FSV575
		Diode Module DC Operating Mechanism	12...250V DC		700-CF with DC coils	100-FSD250


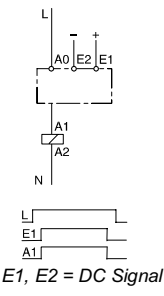
⊗ **Voltage Suffix Code**

The Cat. No. as listed is incomplete. Select a Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 100-FL11**⊗ becomes **Cat. No. 100-FL11J**. ❶

Voltage	24	48	100	110	120	230-240	240	277	380-400	400-415	440	480
50 Hz	K	Y	KP	D	—	VA	T	—	N	G	B	—
60 Hz	J	—	—	—	D	—	A	T	—	—	N	B

❶ For special voltages, consult your local Allen-Bradley Sales Office.



❷ All Cat. Nos. are factory stocked.

	Description	Connection Diagrams	For Use With	Cat. No. ②
 <p>Cat. No. 100-JE</p>	Interface (Solid-state)—Mount on top of 700-CF Relay Interface between the DC control signal (PLC) and the AC operating mechanism of the contactor or relay. <ul style="list-style-type: none"> Interfaces a single DC control signal (12...48V DC) to a 100-C contactor or 700-CF relay. Controls 110...240V AC coils on 100-C contactor and 700-CF relay. Very low power requirements—allows use of high density, low current PLC outputs. Mounts directly on 100-C contactor or 700-CF relay to save panel space. Requires no additional surge suppression on contactor coil. Pilot light indicates when contactor coil is energized. 	 <p><i>E1, E2 = DC Signal</i></p>	700-CF with AC coils	100-JE
				100-JE12
				100-JE48

	100-JE	100-JE12	100-JE48
Electrical			
Input Voltage	24V DC	12V DC	48V DC
Input Voltage Range	18...30V DC	6...12V DC	35...48V DC
Output Voltage	110...240V DC	110...240V DC	110...240V DC
Power Consumption	0.1...0.4 W	0.02...0.12 W	0.2...0.5 W
Minimum Actuation	5V DC, 2 mA DC	5V DC, 2 mA DC	5V DC, 2 mA DC
Mechanical			
Finger Protection	IP20	IP20	IP20
Pickup Time	0...10 ms + pickup time of the contactor	0...10 ms + pickup time of the contactor	0...10 ms + pickup time of the contactor
Dropout Time	0...10 ms + dropout time of the contactor	0...10 ms + dropout time of the contactor	0...10 ms + dropout time of the contactor
Max. Cycles Per Second	2 ❶	2 ❶	2 ❶
Isolation/Breakdown Voltage	In: 50V, Out: 250V	In: 50V, Out: 250V	In: 50V, Out: 250V
Rated Impulse Withstand Voltage	4 kV	4 kV	4 kV
Environmental			
Ambient Temperature Range	-25...60°C	-25...60°C	-25...60°C
Storage Temperature Range	-50...+80°C	-50...80°C	-50...80°C
Life	100+ million ops	100+ million ops	100+ million ops
Construction			
Wire Size Range 1 Wire	0.5...2.5 mm ² (flexible wire)	0.5...2.5 mm ² (flexible wire)	0.5...2.5 mm ² (flexible wire)
2 Wire	0.75...2.5 mm ² (flexible wire)	0.75...2.5 mm ² (flexible wire)	0.75...2.5 mm ² (flexible wire)
1 Wire	1.0...2.5 mm ² (solid wire)	1.0...2.5 mm ² (solid wire)	1.0...2.5 mm ² (solid wire)
2 Wire	1.0...2.5 mm ² (solid wire)	1.0...2.5 mm ² (solid wire)	1.0...2.5 mm ² (solid wire)
Solid and Stranded	18...14 AWG	18...14 AWG	18...14 AWG
Tightening Torque	1...1.5 Nm/7...15 lb-in	1...1.5 Nm/7...15 lb-in	1...1.5 Nm/7...15 lb-in
Type of Light	LED	LED	LED





- ❶ To consider the maximum ops/hour of the contactors.
❷ All Cat. Nos. are factory stocked.

Assembly Components


	Description	For Use With	Pkg. Qty.	Cat. No. ❶
 Cat. No. 100-SCCA	Protective Covers <ul style="list-style-type: none"> Provides protection against unintended manual operation For contactors and front mounted auxiliary contacts 	700-CF, all	10	100-SCCA
 Cat. No. 100-SCFA		100-FA, FB, FC, FP, FL	1	100-SCFA

Marking Systems

Uniform labelling materials for contactors, motor startup equipment, timing relays and circuit breakers.


	Description	Cat. No. ❶
 Label Sheet <ul style="list-style-type: none"> 10 sheets with 105 self-adhesive paper labels each, 6 x 17 mm 		100-FMS
 Marking Tag Sheet <ul style="list-style-type: none"> 10 sheets with 160 perforated paper labels each, 6 x 17 mm To be used with a transparent cover 		100-FMP
 Transparent Cover <ul style="list-style-type: none"> 100 each To be used with marking tag sheets 		100-FMC
 Marking Tag Carriers <ul style="list-style-type: none"> 100 each To be used with label frame: 	System V4/V5 System Bull. 1492W	100-FMA1 100-FMA2

Coils

	AC Coil Code	AC Voltages			Cat. No. ❶ 700-CF	DC Voltages	DC Coil Code	Cat. No. ❶ 700-CF
		50 Hz	60 Hz	50/60 Hz				
	Q	—	12V	—	TA006	9V	R	TA766
	R	12V	—	—	TA404	12V	Q	TA708
	J	—	24V	—	TA013	24V Diode	DJ	TA714M
	K	24V	—	—	TA407	24V	J	TA714
	KJ	—	—	24V	TA855	36V	W	TA719
	V	32V	36V	—	TA481	48V	Y	TA724
	W	36V	—	—	TA410	60V	Z	TA774
	X	42V	48V	—	TA482	64V	B	TA727
	Y	48V	—	—	TA414	72V	G	TA728
	KY	—	—	48V	TA860	80V	E	TA729
	KP	100V	100 – 110V	100V	TA861	110V	D	TA733
	D	110V	120V	—	TA473	115V	P	TA734
	KD	—	—	110V	TA856	125V	S	TA737
	P	120V	—	—	TA425	220V	A	TA747
	S	127V	—	—	TA428	230V	F	TA749
	KG	200V	200 – 220V	200V	TA862	250V	T	TA751
	H	—	208V	—	TA049			
	L	200 – 220V	208 – 240V	—	TA296			
	A	220V	240V	—	TA474			
	F	220 – 230V	—	—	TA441			
	KF	—	—	230V	TA851			
	VA	230 – 240V	—	—	TA440			
	T	240V	277V	—	TA480			
	KA	—	—	240V	TA858			
	I	—	347V	—	TA065			
	E	—	380V	—	TA067			
	N	380 – 400V	440V	—	TA071			
	KN	—	—	400V	TA863			
	G	400 – 415V	—	—	TA457			
	B	440V	480V	—	TA475			
	KB	—	—	440V	TA859			
	M	500V	—	—	TA479			
	C	550V	600V	—	TA476			




❶ All Cat. Nos. are factory stocked

General

		Cat. No. 700-CF ③	Aux./Pneumatic Timer Contact (Front-mounted)		
Contact Ratings — NEMA		A600, P600	A600, Q600		
Minimum Contact Rating	17 – 19.9V	30 mA			
	20 – 24V	20 mA			
Contact Ratings — IEC AC-15 (solenoids, contactors) at rated voltage IEC 947, EN 60947	24V	16 A	6 A		
	48V	16 A	6 A		
	120V	14 A	6 A		
	240V	10 A	5 A		
	400V	5 A	3 A		
	480V/500V	2.5 A	1.6 A		
	600V	1.8 A	1.2 A		
	690V	1 A	1.0 A		
AC-12 (Control of resistive loads) IEC 947, EN 60947	40°C I_{th}	25 A	10 A		
	230V	10 kW			
	400V	17 kW			
	690V	30 kW			
	60°C I_{th}	20 A	6 A		
	230V	8 kW			
	400V	14 kW			
	690V	24 kW			
Switching DC Loads					
I_R < 1ms, Resistive Loads	24V	12 A	12 A		
	48V	9 A	9 A		
	110V	3.5 A	3.5 A		
	220V	0.55 A	0.55 A		
	440V	0.2 A	0.2 A		
	24V	9 A	9 A		
	48V	5 A	5 A		
	110V	2 A	2 A		
I_R < 15ms, Inductive Loads with economy resistor in series	220V	0.4 A	0.4 A		
	440V	0.16 A	0.16 A		
	DC-13 IEC 947, EN 60947, Sole- noids and contactors				
	24V	5 A	5 A		
	48V	2 A	2 A		
	125V	0.7 A	0.7 A		
	220V	0.25 A	0.25 A		
	440V	0.12 A	0.12 A		
		Yes	Yes ❶		
 Positively Guided Contacts ❷	Location of welded N.O. contacts	State of N.C. Contacts if N.O. contact welds			
		Main	Front aux.	Left side aux.	Right side aux.
	Main	Open	Open ❶	Open	Open
	Front aux.	Open	Open ❶	Open	Open
	Left side aux.	Open	Open ❶	Open	Open
	Right side aux.	Open	Open ❶	Open	Open

① If the accessory is a pneumatic timer or latch, there is no positive guidance; the accessory contacts are independent.

② Defined in IEC 947-5-1 annex L. Positive guidance is a relationship between contacts of opposite types (i.e., N.O. and N.C.).

		Cat. No. 700-CF	Aux./Pneumatic Timer Contact (Front-mounted)
Mechanical Life	[Mil]	15	15
Electrical Life	AC-15 (240V, 3 A)	1.5	1.5
Weight	AC Op. Mechanism	390	—
Terminal Cross-Sections			
Terminal Type			
Terminal Size per IEC 947-1		2 x A4	2 x A4
 Solid/Stranded 1 Conductor	[mm ²]	1.5...6	0.5...2.5
	① 2 Conductor	1.5...6	0.75...2.5
Max. Wire Size per UL/CSA		[AWG]	16...10
Tightening Torque		[lb.-in.]	8.9...22
Tightening Torque		[Nm]	1...1.5

	Aux. Contact (Side-mounted)
Contact Ratings — IEC	
AC-15 (solenoids, contactors) at rated voltage	
240V	3
400V	2
480V/500V	2
AC-12 (Control of resistive loads)	
IEC 947, EN 60947 40°C I_{th}	10 A
60°C I_{th}	6 A
DC-13 IEC 947, EN 60947, Solenoids and contactors	
24V	3 A
48V	1.5 A
110V	0.6 A
220V	0.3 A
440V	0.2 A

① For 16 or more strands, end ferrule is required

DC Switching Ratings for 700-CF Main Poles in Series (Resistive Load at 60° C)			
	1 pole	2 poles	3 poles
24/48 V	25/20 A	25 A	25 A
125 V	6 A	25 A	25 A
220 V	1.5 A	8 A	25 A
440 V	0.4 A	1 A	3 A

Control Circuit

			Cat. No. 700-CF
Operating Voltage			
AC 50/60 Hz	Pickup	[x U _s]	0.85...1.1
	Dropout	[x U _s]	0.3...0.6
DC ❶	Pickup	[x U _s]	0.8...1.1
	Dropout	[x U _s]	0.1...0.6
Coil Consumption			
AC 50/60 Hz	Inrush	[VA/W]	70/50
	Seal	[VA/W]	8/2.6
DC	Inrush/Seal	[W]	6.75
Operating Times			
AC 50/60 Hz	Pickup Time	[ms]	15...30
	Dropout Time	[ms]	10...60
DC	Pickup Time	[ms]	40...70
	Dropout Time	[ms]	7...15
Latch Attachment Release, 100-FL			
Coil Consumption		[VA/W] [W]	AC 45 VA/40W DC 25 W
Contact Signal Duration		[min./max]	0.03...15 s
Timing Attachment			
Reset Time, 100ETA, 100-ETB		[ms]	
setting	at min. time		10
	at max. time		70
setting			
Repeat Accuracy			± 10%

❶ For 9V DC, code ZR, use operating voltage 0.65... 1.3 x U_s.
For 24V DC, code ZJ or DJ, use operating voltage 0.7... 1.25 x U_s.

General

Cat. No. 700-CF	
Rated Insulation Voltage U_i	
IEC	690V
UL; CSA	600V
Rated Impulse Strength U_{imp}	
8 kV	
High Test Voltage	
1 minute (per IEC 947-4)	
2500V	
Rated Voltage U_e	
AC	115, 230, 400, 500, 690V
DC	24, 48, 110, 220, 440V
Short-Circuit Protection IEC 158-1	
Fuse	
Rated Frequency	
50/60 Hz, DC	
Ambient Temperature	
Storage	
–55...+80°C (–67...176°F)	
Operation at nominal current	
–25...+60°C (–13...140°F)	
Conditioned 15% current reduction after AC-1 at > 60°C	
–25...+70°C (–13...158°F)	
Corrosion Resistance	
humid-alternating climate, cyclic, per IEC 68-2-30 and DIN 50 016, 56 cycles	
Altitude	
2000 m above mean sea level, per IEC 947-4	
Type of Protection	
IP20 (IEC 529 and DIN 40050)	
in connected state	
Finger Protection	
safe from touch by fingers and back of hand per VDE 0106, Part 100	

Utilization Category Table from EN 947-5-1

Verification of Making and Breaking Capacities of Switching Elements Under Normal Conditions
Corresponding to the Utilization Categories ❷

Utilization Category	Normal Condition of Use								
	Make ❸			Break ❸			Number and Rate of Making and Breaking operations		
	I/I _e	U/U _e	cos ψ	I/I _e	U/U _e	cos ψ	No. operating cycles ❹	Operating cycles per minute	ON time (s) ❺
AC-12 ❷	1	1	0.9	1	1	0.9	6050	6	0.05
AC-13 ❷	2	1	0.65	1	1	0.65	6050	6	0.05
AC-14 ❷	6	1	0.3	1	1	0.3	6050	6	0.05
AC-15 ❷	10	1	0.3	1	1	0.3	6050	6	0.05
DC			T _{0.95}			T _{0.95}			
DC-12	1	1	1 ms	1	1	1	6050	6	0.05 ❺
DC-13	1	1	6 x P ❻	1	1	6 x P ❻	6050	6	0.05 ❺
DC-14 ❷	10	1	15 ms	1	1	15	6050	6	0.05 ❷

I_e Rated operational current
U_e Rated operational voltage I Current to be made or broken
P U_eI_e Steady-state power consumption (W)
T_{0.95} Time to reach 95% of the steady-state current (ms) U Voltage before make

❷ See sub-clause 8.3.3.5.2

❸ For tolerances on test quantities, see sub-clause 8.3.2.2

❹ The first 50 operating cycles shall be run at U/U_e=1.1 with the loads set at U_e

❺ The value "6 x P" results from an empirical relationship which is found to represent most DC magnetic loads to an upper limit of P = 50 W, e.g., 6 x P = 300 W

❻ The ON time shall be at least equal to T_{0.95}

❼ Where the break current differs from the make current value, the ON time refers to the make current value after which the current is reduced to the break current value for a suitable period e.g., 0.05 s

Contact Rating Table from EN 947-5-1

Examples of Contact Rating Designation Based on Utilization Categories										
NEMA Designation ❶	IEC Utilization Category	Conventional Thermal Current I_{the} (A)	Rated Operational Current I_e (A) at Rated Operational Voltage U_e						VA Rating	
AC			120V	240V	380V	480V	500V	600V	Make	Break
A150	AC-15	10	6	—	—	—	—	—	7200	720
A300	AC-15	10	6	3	—	—	—	—	7200	720
A600	AC-15	10	6	3	1.9	1.5	1.4	1.2	7200	720
B150	AC-15	5	3	—	—	—	—	—	3600	360
B300	AC-15	5	3	1.5	—	—	—	—	3600	360
B600	AC-15	5	3	1.5	0.95	0.75	0.72	0.6	3600	360
C150	AC-15	2.5	1.5	—	—	—	—	—	1800	180
C300	AC-15	2.5	1.5	0.75	—	—	—	—	1800	180
C600	AC-15	2.5	1.5	0.75	0.47	0.375	0.35	0.3	1800	180
D150	AC-14	1.0	0.6	—	—	—	—	—	432	72
D300	AC-14	1.0	0.6	0.3	—	—	—	—	432	72
E150	AC-14	0.5	0.3	—	—	—	—	—	216	36
DC			125V	250V	440V	500V	600V			
N150	DC-13	10	2.2	—	—	—	—		275	275
N300	DC-13	10	2.2	1.1	—	—	—		275	275
N600	DC-13	10	2.2	1.1	0.63	0.55	0.4		275	275
P150	DC-13	5	1.1	—	—	—	—		138	138
P300	DC-13	5	1.1	0.55	—	—	—		138	138
P600	DC-13	5	1.1	0.55	0.31	0.27	0.2		138	138
Q150	DC-13	2.5	0.55	—	—	—	—		69	69
Q300	DC-13	2.5	0.55	0.27	—	—	—		69	69
Q600	DC-13	2.5	0.55	0.27	0.15	0.13	0.1		69	69
R150	DC-13	1.0	0.22	—	—	—	—		28	28
R300	DC-13	1.0	0.22	0.1	—	—	—		28	28

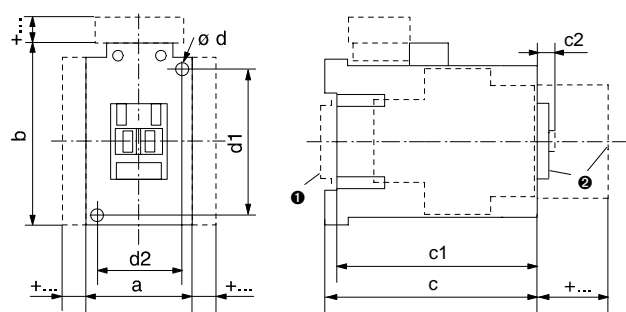
❶ This letter stands for the conventional thermal current and identifies AC or DC: e.g., B = 5 A AC. The number that follows is the rated insulation voltage

Bulletin 700-CF

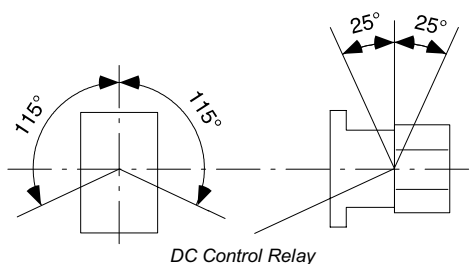
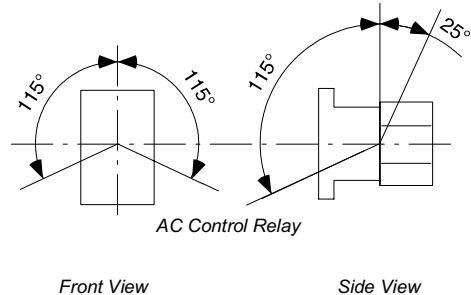
Industrial Relays

Approximate Dimensions

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



Mounting Position



Relay

Type	a	b	c	c1	c2	Ød	d1	d2
700-CF	45 (1-25/32)	81 (3-3/16)	80.5 (3-11/64)	75.5 (3-3/32)	6 (1/4)	2 screws 4.5 (3/16)	60 (2-23/64)	35 (1-25/64)
700-CF__Z	45 (1-25/32)	81 (3-3/16)	106.5 (4-3/16)	101.5 (4)	6 (1/4)	2 screws 4.5 (3/16)	60 (2-23/64)	35 (1-25/64)

1 May be mounted to 35 mm EN 50 022 DIN Rail.

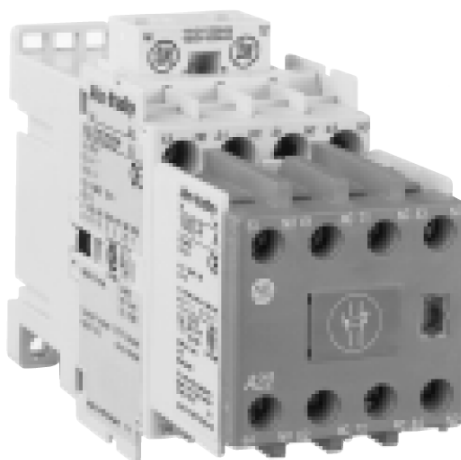
Accessories

Relay with	AC Control Relay		DC Control Relay	
	mm	(inches)	mm	(inches)
Auxiliary Contact for Front Mounting 2- or 4-pole	c/c1 + 39	(c/c1 + 1 – 37/64)	c/c1 + 39	(c/c1 + 1 – 37/64)
Auxiliary Contact for Side Mounting 1- or 2-pole	a + 9	(a + 23/64)	a + 9	(a + 23/64)
Pneumatic Timing Module	c/c1 + 58	(c/c1 + 2 – 23/64)	—	—
Solid-state Timing Module on coil terminal side	b + 24	(b + 15/16)	b + 24	(b + 15/16)
Mechanical Interlock on side of contactor	a + 9	(a + 23/64)	a + 9	(a + 23/64)
Mechanical Latching	c/c1 + 61	(c/c1 + 2 – 31/64)	—	—
Interface on coil terminal side	b + 9	(b + 23/64)	—	—
Protective Element on coil terminal side	b + 3	(b + 1/8)	b + 3	(b + 1/8)
● Labelling with: label sheet	+0	(+0)	+0	(+0)
marking tag with cover	+0	(+0)	+0	(+0)
marking tag carrier for System V4/V5	+5.5	(+7/32)	+5.5	(+7/32)
marking tag carrier for System Bull. 1492W	+5.5	(+7/32)	+5.5	(+7/32)

Product Selection — Page 206

Accessories — Page 208

Specifications — Page 213



Bulletin 700S-CF

- Positively guided/mechanically linked contacts
- Mechanically linked contacts symbol prominently displayed on front
- Red face plate
- 8 poles, all permanently attached
- Ideal for use in safety circuits
- AC and DC operating coils
- SUVA third-party certification

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	218	Diagrams	220
Dimensions	219		

Description

Bulletin 700S-CF Safety Control Relays provide mechanically linked, positively guided contacts, which are required in feedback circuits for modern safety applications. The positively guided N.C. auxiliary contacts will not change state if a N.O. contact welds. Use with safety relays to expand output capability.

Conformity to Standards

IEC 947-5-1
EN 50011, EN 50005, EN 50022
UL 508
VDE 0660
CSA C22.2 Part 14

Approvals









CE Certified
CSA Certified
UL Listed, File E14840, Guide NKCR
SUVA Third Party Certified

Your order must include:

- Cat. No. of the relays required, complete with coil suffix.
- Cat. No. of adder decks, timers and accessories required.
- If required, the part number of replacement coils.

Type CF Safety Control Relays — 8-Pole AC Voltage



AC-1		AC-11 and AC-15							Connection Diagrams		Contacts		Catalog Number ❶
I _e [A]		I _e [A]							Main Contacts	Auxiliary Contacts			
40°C	60°C	24/48V	120V	240V	400V	500V	600V	690V			N.O.	N.C.	
25	20	16	14	10	5	2.5	1.8	1			4	4	700S-CF440⊗C
											5	3	700S-CF530⊗C
											6	2	700S-CF620⊗C

❶ All Cat. Nos. are factory stocked.

⊗ AC Voltage Suffix Code









Voltage	12	24	32	36	42	48	100	100-110	110	120	127	200	200-220	208	208-240	220-230
50 Hz	R	K	V	W	X	Y	KP	—	D	P	S	KG	—	—	—	F
60 Hz	Q	J	—	V	—	X	—	KP	—	D	—	—	KG	H	L	—
50/60 Hz	—	KJ	—	—	—	KY	KP	—	KD	—	—	KG	—	—	—	—

Voltage	230	230-240	240	277	347	380	380-400	400	400-415	440	480	500	550	600
50 Hz	—	VA	T	—	—	—	N	—	G	B	—	M	C	—
60 Hz	—	—	A	T	I	E	—	—	—	N	B	—	—	C
50/60 Hz	KF	—	KA	—	—	—	—	KN	—	KB	—	—	—	—

Ordering Details

Type CF Control Relays — 8-Pole DC Voltage



AC-1		AC-11 and AC-15							Connection Diagrams		Contacts		Catalog Number ❶ ❷
I _e [A]		I _e [A]							Main Contacts	Auxiliary Contacts			
40°C	60°C	24/48V	120V	240V	400V	500V	600V	690V			N.O.	N.C.	
25	20	16	14	10	5	2.5	1.8	1			4	4	700S-CF440Z⊗C
											5	3	700S-CF530Z⊗C
											6	2	700S-CF620Z⊗C

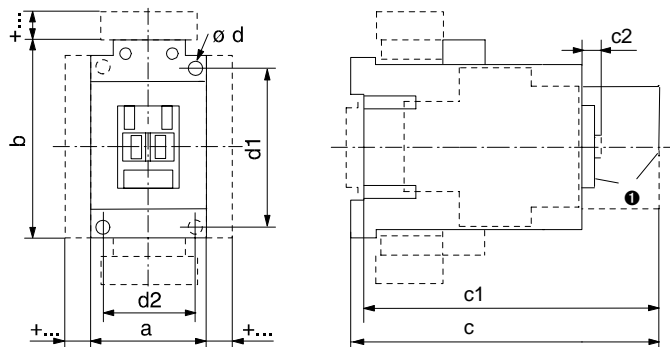
❶ All Cat. Nos. are factory stocked.

❷ See page 219 for coil voltage selection information.

⊗ DC Voltage Suffix Code ❶

Voltage	9	12	24	36	48	60	64	72	80	110	115	125	220	230	250
Standard	R	Q	J	W	Y	Z	B	G	E	D	P	S	A	F	T
With diode suppressor ȁ	—	—	DJ	—	—	—	—	—	—	—	—	—	—	—	—

❶ When ordering **DJ** coil with built-in surge suppression, remove **Z** from the Cat. No. Example: Cat. No. 700S-CF440Z⊗C becomes Catalog Number 700S-CF440DJC



AC Safety Control Relays

a	b	c	c1	c2	Ød	d1	d2	Cat. No. ❷
45 (1-25/32)	81 (3-3/16)	119.5 (4-3/4)	114.5 (4-43/64)	6 (1/4)	2 - 4.5 (2 - 3/16)	60 (2-23/64)	35 (1-25/64)	700S-CF

DC Safety Control Relays

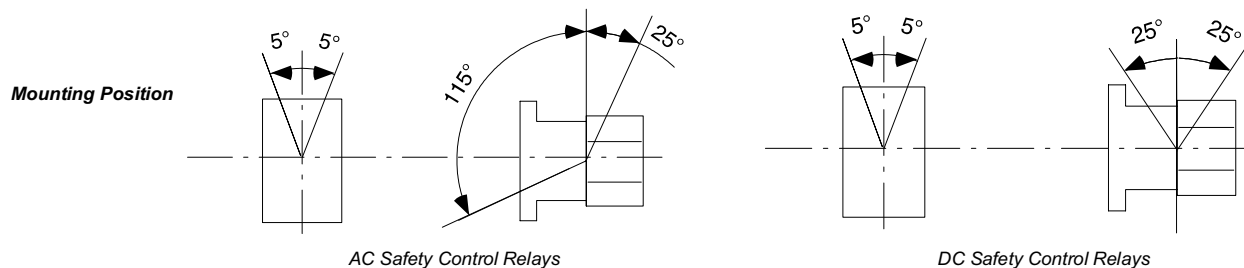
a	b	c	c1	c2	Ød	d1	d2	Cat. No. ❷
45 (1-25/32)	81 (3-3/16)	145.5 (5-49/64)	140.5 (5-37/64)	6 (1/4)	2 - 4.5 (2 - 3/16)	60 (2-23/64)	35 (1-25/64)	700S-CF

❶ All Cat. Nos. are factory stocked.

Accessories

Safety Control Relays with	mm	(inches)
Auxiliary contact block for side mounting 1- or 2-pole	a + 9	(a + 23/64)
Electronic Timing Module on coil terminal side	b + 24	(b + 15/16)
Mechanical Interlock on side of contactor	a + 9	(a + 23/64)
Interface Module on coil terminal side	b + 9	(b + 23/64)
Surge Suppressor on coil terminal side	b + 3	(b + 1/8)
Labeling with label sheet	+ 0	(+ 0)
marking tag sheet with clear cover	+ 0	(+ 0)
marking tag adapter for System Bul. 1492W	+ 5.5	(+ 7/32)

Mounting Positions



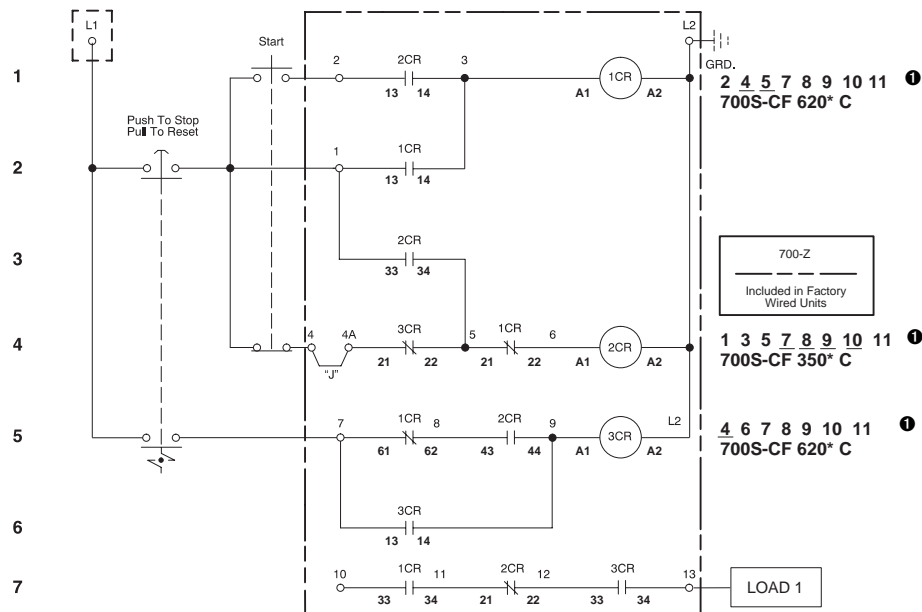
Safety Relay Circuit With 5 Safety Outputs

- Use for E-stop control. E-stop will work properly if any one fault occurs (a fault could be one welded contact or one undesired open connection such as a loose wire).
- High output switching capability and long contact life.
- Circuit complies with EN 954 categories 1, 2, 3, 4
- Prevents restart of the 5 safety outputs if there is a single fault anywhere in the system.

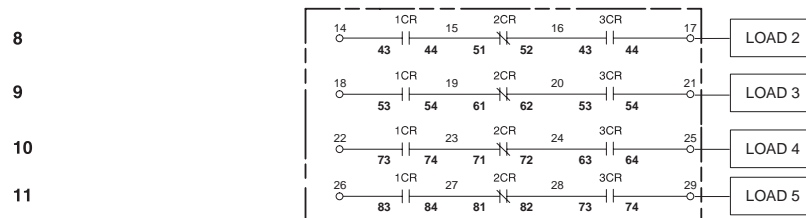
Use (3) 700S-CF relays and this diagram to construct the circuit, or contact your local Allen Bradley sales office for pre-assembled module

Basic Circuit

(1) Output Circuit (3 Relays, 9 Terminal Blocks)



(5) Output Circuit (3 Relays, 17 Terminal Blocks)



① Numbers shown are the line numbers where the contacts for this relay appear.



Bulletin 700-M, -MB

- Compact Size
- Bifurcated Contacts (700-MB)
- DIN Rail Mounting
- Finger-Safe Terminals
- 10 A AC, 600V AC/DC (700-M)
- 5 A AC 300V AC/DC (700-MB)
- Relay Configurations
 - 4 N.O.
 - 3 N.O., 1 N.C.
 - 2 N.O., 2 N.C.
- AC and DC Operating Coils
- Low Power Consumption
1.4 VA (AC) 2.5 W (DC)
- Mechanically Linked Contacts

TABLE OF CONTENTS

Description	Page	Description	Page
Product Selection	222	Specifications	224
Accessories	223	Approximate Dimensions	227

Description

The Allen-Bradley miniature control relays are designed for commercial and industrial applications where panel space is at a premium. These miniature devices, while 45 mm wide, are smaller in height and depth requirements than standard IEC control relays, and are about 1/2 the size of standard IEC relays. They are an excellent alternative to plug-in relays for applications requiring longer contact life.

They are also compatible with Bulletin 100-M Miniature Contactors.

These mini-control relays are designed with flexibility in mind. They are available in a wide variety of contact configurations and offer 2- and 4-pole adder decks. Additionally, the relays are available with either AC or DC operating coils.

Bulletin 700-MB line of miniature control relays features bifurcated "H" style contacts to increase the switching reliability at lower power levels.

Bulletin 700-M relays have a single contact pad design with a "+" stamped into the contact for more reliability.

Conformity to Standards:

IEC 947, BS 5424, 4794, CEE24
SEV 1025
UTE NF C63-110
VDE 0660
CSA C22.2 No. 14
UL 508


Approvals:

SEV, CEBEC, DEMKO, NEMKO, SEMKO
Finland,
Germ. Lloyd
Bureau Veritas
USSR Register
CSA Certified, UL Listed, File E14840

Your order must include:

- Cat. No. of the miniature relay.
selected with voltage code.
- If required, Cat. No. of any accessories.

AC Control Relays (700-M) and Control Relays with Bifurcated Contacts (700-MB) ⑥


	Contact Configuration		Pkg. Qty. ①	Cat. No. ① ④
	N.O.	N.C.		
	2	2	1	700-M220Ⓢ
	3	1	1	700-M310Ⓢ
	4	—	1	700-M400Ⓢ
	2	2	1	700-MB220Ⓢ
	3	1	1	700-MB310Ⓢ
	4	—	1	700-MB400Ⓢ

⊗ **AC Voltage Suffix Code**

The Cat. No. as listed is incomplete. Select a voltage suffix code from the table below to complete the Cat. No. Example: **Cat. No. 700-MB400Ⓢ** becomes **Cat. No. 700-MB400A24S**. For other voltages, consult your local Allen-Bradley Sales Office.

Voltage	24	48	100	110...120	220...230	230...240	380	440	440...480
50 Hz	A24	A48	A1	—	A2	—	A3	A4	—
60 Hz	A24	A48	—	A1	—	A2	A3	—	A4

DC Control Relays (700DC-M) and Control Relays with Bifurcated Contacts (700DC-MB) ⑥

	Contact Configuration		Pkg. Qty. ①	Cat. No. ①
	N.O.	N.C.		
	2	2	1	700DC-M220Ⓢ
	3	1	1	700DC-M310Ⓢ
	4	—	1	700DC-M400Ⓢ
	2	2	1	700DC-MB220Ⓢ
	3	1	1	700DC-MB310Ⓢ
	4	—	1	700DC-MB400Ⓢ

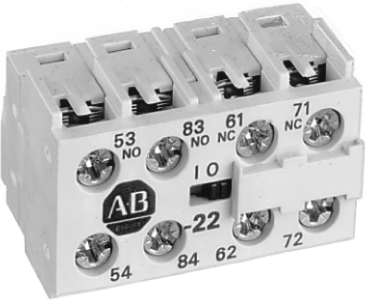
⊗ **DC Voltage Suffix Code**

The Cat. No. as listed is incomplete. Select a voltage suffix code from the table below to complete the Cat. No. Example: **Cat. No. 700DC-MB400Ⓢ** becomes **Cat. No. 700DC-MB400Z24S**. To order a relay with a diode surge suppressor, in a 24V DC coil, change the letter "Z" to "D". Example: **Cat. No. 700DC-MB220Z24** becomes **Cat. No. 700DC-MB220D24** (coil tab is green for diode.)


Voltage	12	24	24 with Diode	48	80	110	125	220
DC	Z12	Z24	D24②	Z48	Z80	Z11	Z3	Z2

- ① 10-packs can be ordered for the following voltage codes: A1, A2, A24, Z24, D24. To order a 10-pack, specify quantity in multiples of 10 and drop the final "S" from the catalog number.
- ② To determine whether a 700DC-M relay has a diode, check the voltage label above the A1 terminal. A green background indicated that the relay has a built-in diode; a white background indicates that there is no diode.
- ③ Positively Guided Contacts — Summary:
700-M, 700-MB, 700DC-M, and 700DC-MB relays are positively guided for 4 main poles. Restrictions apply when using auxiliary contacts.
- ④ All Cat. Nos. are factory stocked.

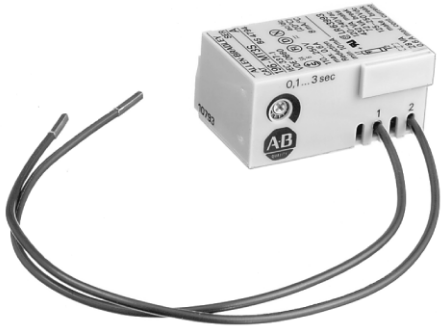
Auxiliary Contact Adder Decks

	For Use with 700-MB Relays		
	Contact Configuration	Pkg. Qty.	Cat. No. ❶
	1 N.O.–1 N.C.	10	195-MA11
	2 N.O.	10	195-MA20
	2 N.C.	10	195-MA02
	2 N.O.–2 N.C.	10	195-MA22
	4 N.O.	10	195-MA40
	1 N.O.–3 N.C.	10	195-MA13
	4 N.C.	10	195-MA04

Surge Suppressors

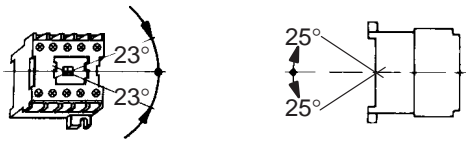
	Description		Pkg. Qty.	Cat. No. ❶
	R-C Suppressor	24...48V AC	10	199-MSMA48
		110...280V AC	10	199-MSMA1
	MOV Suppressor	12...55V AC	10	199-MSMV1
		56...136V AC	10	199-MSMV2
		137...277V AC	10	199-MSMV3
	Diode Suppressor	12...250V DC	10	199-MSMD1

Timers


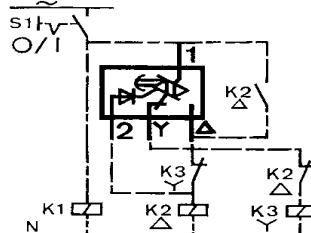
	Description		Pkg. Qty.	Cat. No. ❶
	Solid State Timing Element 110...250V 50/60 Hz, DC	0.1...3 s On-Delay	10	196-MT3S
		1...30 s On-Delay	10	196-MT30S
	Star-Delta Timer 1...30 s The Star (K3) contactor is energized for the time setting and de-energized. Then after 90 ± 30 ms the Delta (K2) contactor is energized.	220...250V 50/60Hz	10	196-MTSDA2
		110...120V 50/60 Hz	10	196-MTSDA1
	35 mm DIN Rail Mounting Adapter For Above Timers		10	196-MTM

❶ All Cat. Nos. are factory stocked.

Mini-Relays

			Cat. Nos. 700-M... and 700-MB...
Electrical			
Operating Range	AC	Pick-Up	85...110% nominal coil voltage
		Drop-Out	35...65% nominal coil voltage
	DC	Pick-Up	80...110% nominal coil voltage
		Drop-Out	10...25% nominal coil voltage
Coil Consumption	AC	Inrush	22 VA
		Sealed	4 VA
	DC	Inrush	2.5 W
		Sealed	2.5 W
Mechanical			
Operating Time	AC	Pick-Up	15...40 ms
		Drop-Out	15...25 ms
	DC	Pick-Up	18...40 ms
		Drop-Out	6...12 ms
Environmental			
Ambient Temperature	In storage, transport		–55...+80°C (–67...176°F)
	At rated operational current		–50...+60°C (–58...140°F)
	At 85% rated operational current		–50...+70°C (–58...158°F)
Resistance to Climatic Change	Humid heat		40°C (104°F), 95% relative humidity, 56 days
	Alternating climatic conditions		23°C (73.4°F), 83%/40°C (104°F), 93%, 56 cycles
Mounting Position			
Construction			
Protection Class			IP20
Protection Against Accidental Contact			Finger and back-of-hand proof according to VDE 0106, part 100
Terminals	Wire		2 x 0.75...2.5 mm ² (#18...14 AWG)
	Stranded lead without connector sleeve		2 x 0.75...2.5 mm ² (#18...14 AWG)
	Stranded lead with connector sleeve		2 x 0.75...2.5 mm ² (#18...14 AWG)
Weight			700-M = 153 g, 700-MB = 153 g

Timers

Cat. No.		196-M	196-MSD
Electrical			
Operational Voltage		AC and DC 110V –23%...250V +10%	AC only, 50/60 Hz 110V –23%...120V +10% 220V –20%...240V +10%
Voltage Drop		5V maximum	5V maximum
Load current for reliable function		10 mA minimum	10 mA minimum
Load current at 20°C (68°F)		600 mA	600 mA
40°C (104°F)		440 mA	440 mA
55°C (131°F)		320 mA	320 mA
Leakage current at 220V		5 mA	Y 17 mA, Δ 6 mA
Time range (delayed operation)		0.1...3 s 1...30 s	1...30 s
Transition time Y/Δ		—	90 ms ± 30 ms
Reset time		≥ 200 ms	≥ 200 ms
Voltage failure duration having no influence on time sequence		≤ 15 ms	≥ 20 ms
Repeat accuracy		At fixed temperature ±1% With temperature range of –5...+55°C (+23...+131°F) ±5%	±1% ±5%
Time interval for start commands		1.4 X set time	2 X set time
General			
Functional description		After the set time has expired, the timer completes the circuit and switches on the series connected relay or contactor.	After the set time has expired, contactor KY is switched off, and after the fixed switching interval 90 ± 30 ms, contactor KΔ is switched on.
Circuit diagrams			
Time setting		The 0.1...3 s and 1...30 s delay period is preset by means of the seconds marking and then corrected according to the process sequence or by checking with a stop watch.	
Environmental			
Ambient temperature	Operation	–20...+55°C (–40...+131°F)	–20...+55°C (–40...+131°F)
	Storage	–40...+80°C (–4...+176°F)	–40...+80°C (–40...+176°F)
Construction			
Terminals: 0.8 mm ² (AWG 18)		2 free cable ends, each 250 mm long	4 free cable ends, each 250 mm long

Surge Suppressors

Cat. No.		196-M	196-MSD
Electrical			
Overvoltage factor		$n = U_{\max}/U_n = 0.8...2.5$	

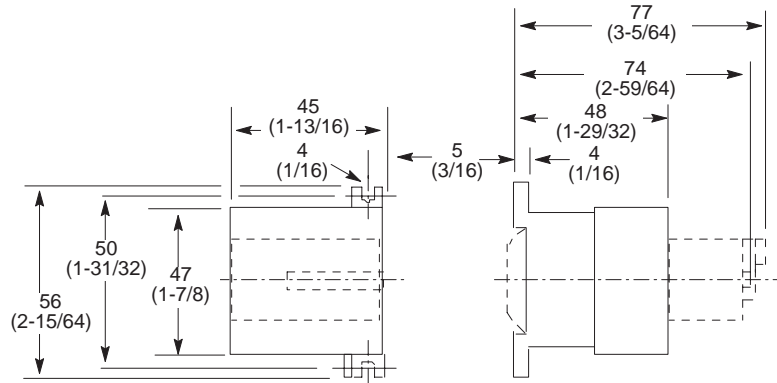
Contact Ratings

Description							
Cat. No.		700-MB... and Auxiliary Contacts		700-M...			
Rated Thermal Current	I_{th} Open ❶	10 A		16 A			
	I_{th} Enclosed ❶	6 A		12 A			
Contact Ratings Continuous		10 A @ 300V AC NEMA A300 ❷ 2.5 A @ 300V DC NEMA Q300 ❷		10 A @ 600V AC NEMA A600 ❷ 2.5 A @ 600V DC NEMA Q600 ❷			
Make/Break IEC 947 AC-15 (Switching Solenoid)		12...120V	5.0 A	12...120V	10.0 A		
		220...240V	2.5 A	220...240V	6.0 A		
		360...400V	2.0 A	360...400V	2.5 A		
		480...500V	2.0 A	480...500V	1.25 A		
Make/Break IEC 947 DC-13		24V	5.0 A	24V	5.0 A		
		48V	0.6 A	48V	4.0 A		
		110V	0.45 A	110V	0.6 A		
		220V	0.1 A	220V	0.2 A		
Minimum Switching Recommendation		17V, 5 mA		17V, 25 mA			
Rated Voltage Withstand U_i	IEC, AS, BS, ASE, VDE 0660	500V		500V			
	UL, NEMA, CSA, EEMAC	600V		600V			
	IEC 947-4, IEC 158-1	2500V		2500V			
Back-Up Fuse IEC 158-1		10 A		16 A			
Life	Mechanical	10 million operations		10 million operations			
	AC-1 Electrical (230V / 6 A)	0.7 million operations		0.7 million operations			
Continuous Rating		300V	10 A	300V	12 A		
		600V	10 A	600V	12 A		
DC Switching (DC-1 Slightly Inductive Loads at 60°C)		—		24/48V	1 pole 6/4	2 poles 6.0 A	3 poles 6.0 A
				110V	0.6 A	4.0 A	6.0 A
				220V	0.2 A	0.8 A	3.0 A
				440V	0.08 A	0.2 A	0.4 A

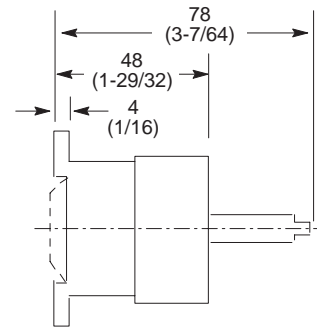
❶ "Open" values refer to 40°C (104°F) ambient temperature. "Enclosed" values refer to 60°C (140°F) ambient temperature.

❷ Refer to page 29 for NEMA Contact Rating information.

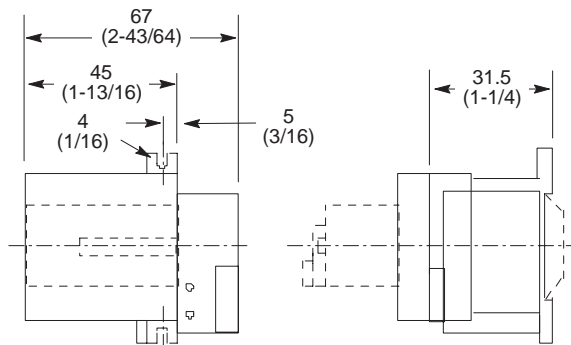
Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



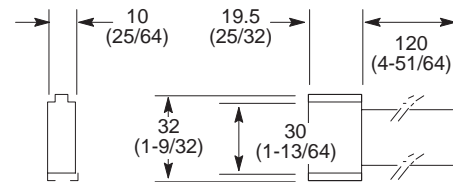
Mini-contactor or mini-relay with auxiliary contact adder deck or timer mounted to front.
 Cat. No. 700-M and 700-MB



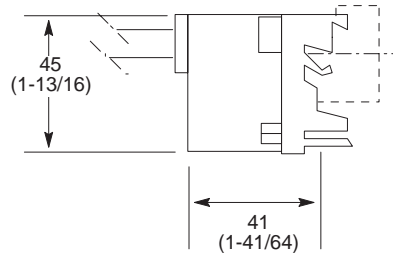
Mini-contactor or mini-relay with surge suppressor mounted to front.
 Cat. No. 700-M and 700-MB



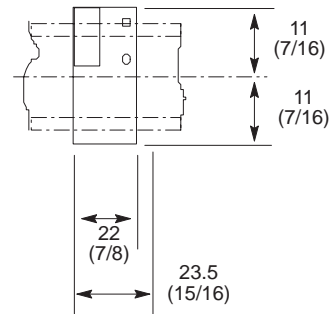
Mini-contactor or mini-relay with auxiliary contact adder deck mounted to front and timer mounted to side
 Cat. No. 700-M and 700-MB



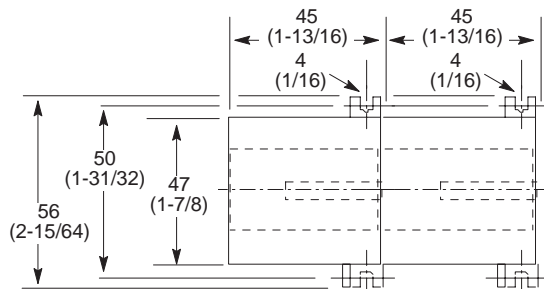
Surge Suppressor
 Cat. No. 199-MSM



Timer with DIN Rail mounting adapter on 35 mm DIN Rail
 Cat. No. 196-MT



Timer with DIN Rail mounting adapter on 35 mm DIN Rail
 Cat. No. 196-MT



Mini-contactors or mini-relays latched
 Cat. No. 700-ML