

700-HA General-purpose Relay

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



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

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

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

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

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

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

Accessories - 700-HA Relays







Photo	Description	Pkg. Qty.	Cat. No.
	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Guarded Terminal Construction. 8-Pin for use with DPDT 700-HA Relays, -HX Timing Relays, -HT (On-Delay), and -HRM, -HRC and -HV (Repeat Cycle) Timing Relays.	10	700-HN100
	Screw Terminal Tube Base Socket — Panel or DIN Rail Mounting; Open Style Construction. 8-Pin for use with DPDT 700-HA Relays, -HT (On-Delay) and -HRM, -HRC, and -HV (Repeat Cycle) Timing Relays. No retainer clip required.	10	700-HN125
	Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting; Guarded Terminal Construction. 11-pin for use with 3PDT 700-HA relays.	10	700-HN101
	Screw Terminal Tube Base Sockets — Panel or DIN Rail Mounting; Open Style Terminal Construction. 11-pin for use with 3PDT 700-HA relays. No retainer clip required.	10	700-HN126
	8-Pin Socket — Can Be Used With or Without Timing Attachment or Surge Suppressor Screw Terminal Tube Base Sockets — panel or DIN Rail mounting. Guarded terminal construction. Used with DPDT 700-HA Relays.	10	700-HN204
	11-Pin Socket — Can Be Used With or Without Timing Module or Surge Suppressor. Screw Terminal Tube Base Sockets — panel or DIN Rail mounting. Guarded terminal construction. Used with 3PDT 700-HA relays.	10	700-HN205
	DIN (#3) symmetrical hat rail 35 x 7.5 x 1 m	10	199-DR1


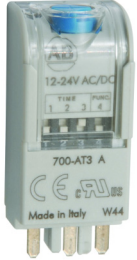
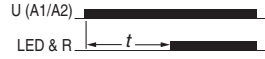

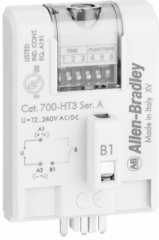







Photo	Description	Pkg. Qty.	Cat. No.
	Diode Surge Suppressor Voltage Range: 6...220V DC used with 700-HN204 and 700-HN205 socket	10	700-ADR
	Diode with LED Surge Suppressor Voltage Range: 6...24V DC used with 700-HN204 and 700-HN205 socket	10	700-ADL1R
	Diode with LED Surge Suppressor Voltage Range: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

Photo	Description	Pkg. Qty.	Cat. No.
	Timing Module On-Delay or One-Shot selectable voltage range: 12...24V AC/DC used with sockets that accept plug-in accessory modules.	1	700-AT3
	Timing Module On-Delay or One-Shot selectable voltage range: 110...125V AC used with sockets that accept plug-in accessory modules.	1	700-AT3A1
	Timing Module On-Delay or One-Shot selectable voltage range: 230...240V AC used with sockets that accept plug-in accessory modules.	1	700-AT3A2
	<p>On-Delay</p>  <p>One-Shot</p> 		
	Multi-Function Multi-Range Time Module Voltage range 12...240V AC 50/60 Hz and 12...240V DC, with a voltage variation of 85...110%. Repeat accuracy of +/- 1%. Reset time <50 ms. For use with 700-HA relays using 700-HN204 and 700-HN205 sockets. Refer to Specifications - 700-HT3 Time Module on page 17 .		
	1. 1 s	0.05...1 s	
	2. 10 s	0.5...10 s	
	3. 100 s	5...100 s	
	4. 10 min	0.5...10 min	
	5. 100 min	5...100 min	
	6. 10 hours	0.5...10 h	
	7. 100 hours	5...100 h	
	8. LED Indicator		
		1	700-HT3

Socket and Retainer Clip Reference

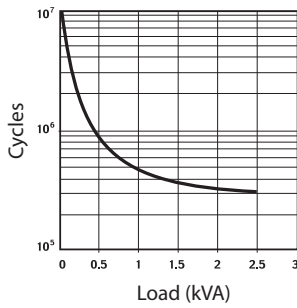
Relay Type	Socket	Retainer Clip
700-HA32 700-HAX2	700-HN100 700-HN125 700-HN204	700-HN157 Not Required 700-HN157
700-HA33 700-HAX3	700-HN101 700-HN126 700-HN205	700-HN157 Not Required 700-HN157

Specifications - 700-HA Relays

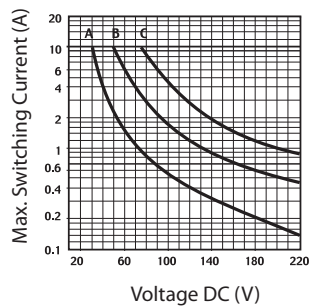
Attribute		700-HA		
Electrical Ratings				
Pilot Duty Rating ⁽¹⁾		NEMA B300		
Rated Thermal Current (I_{th})		HA = 10 A – 120V, 240V; HAX = 6 A – 120V, 240V		
Rated Insulation Voltage (U)		250V IEC – 300V UL/CSA		
Contacts	Inductive	Make	Break	Hp
		►] [◀	◀] [►	
	120VAC	30 A	3 A	1/3
	240VAC	15 A	1.5 A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

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

Relay Performance Graphs

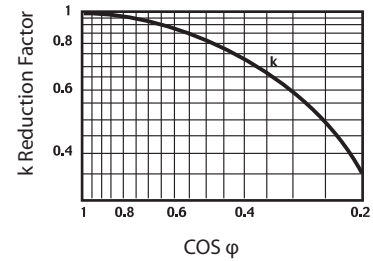


Contact life vs. AC1 load at 1,800 cycles/h



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

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



Load reduction factor vs. cos φ

Specifications - 700-HT3 Time Module

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

(1) At constant voltage and temperature.

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

Terms:

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

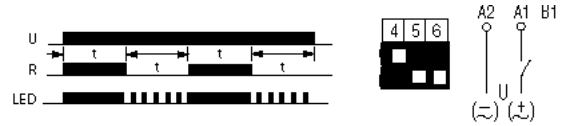
1. Power On-delay

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



3. Power On Repeat Cycle, On Start

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



2. Power On One-shot

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



4. Signal On-delay and Signal Off-delay

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



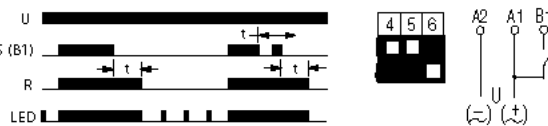
Timing Charts -Cat. No. 700-HT3 Timing Modes, Time Description, Timing Charts, and DIP Switch Selections

Terms:

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

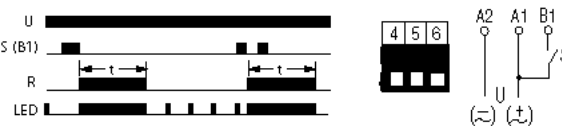
5. Signal Off-delay

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



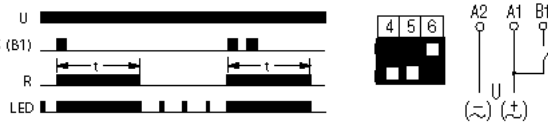
7. Signal Off One-shot

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



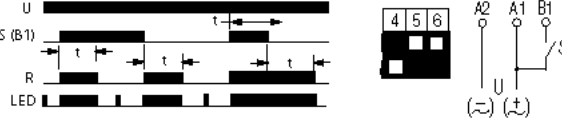
6. Signal On One-shot

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



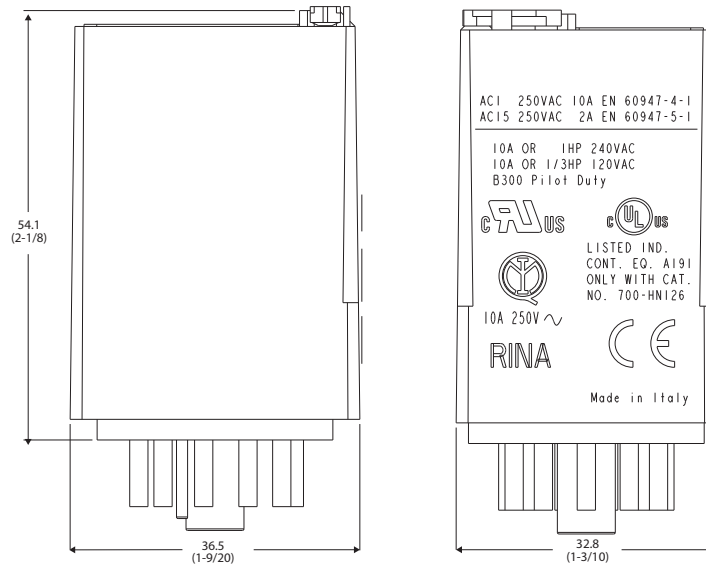
8. Signal On and Signal Off Watchdog Monitor

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

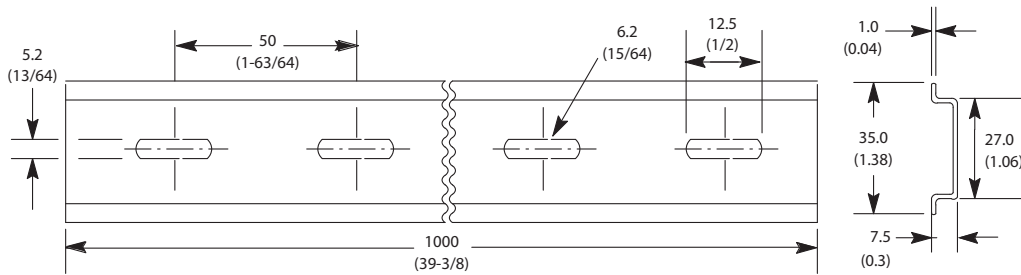


Dimensions -700-HA Relays

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



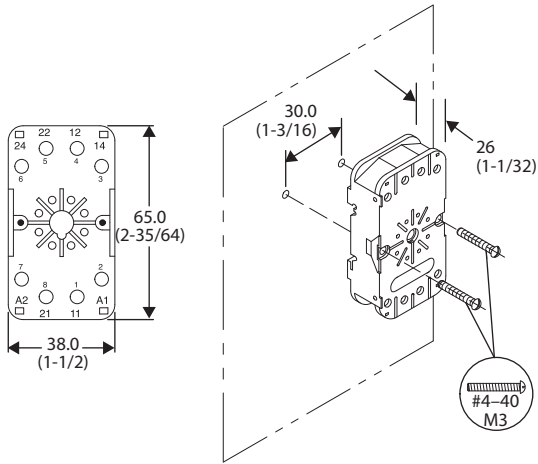
700-HA Relay



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

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

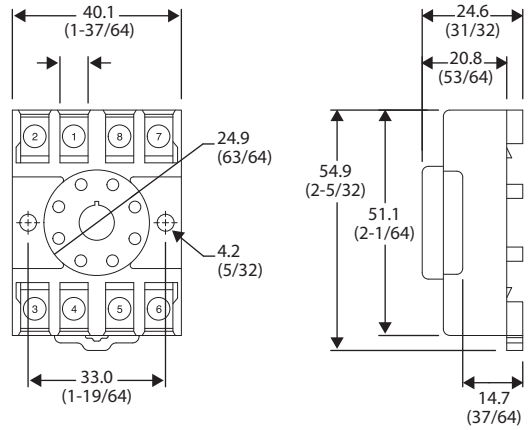
Approximate dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.



Cat. No. 700-HN100

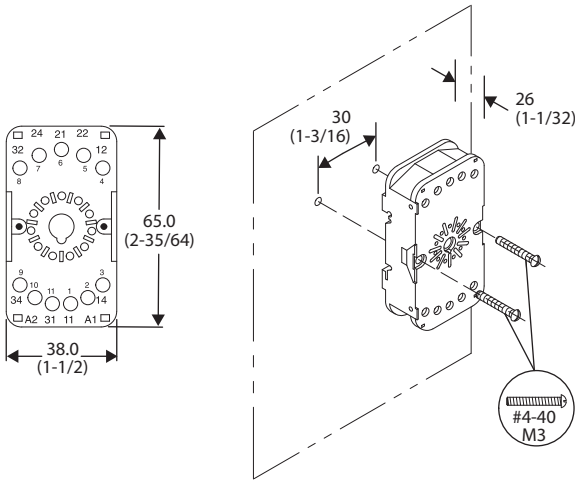
Panel Mounting

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 N·m (7 lb·in)



Cat. No. 700-HN125

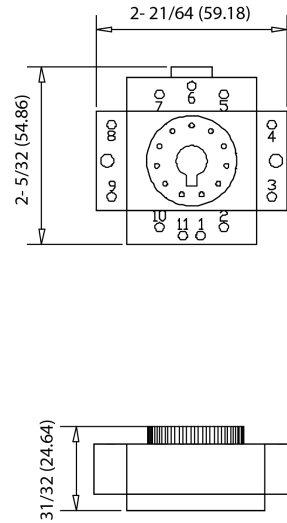
Wire Size: $2 \times 2.5 \text{ mm}^2$
 Single Wire – Up to #12 AWG
 Double Wire – $2 \times 2.5 \text{ mm}^2$ (#2–14 AWG... #2–20 AWG)
 (Either Solid or Stranded)
 Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N·m (7 lb·in)



Cat. No. 700-HN101

Panel Mounting

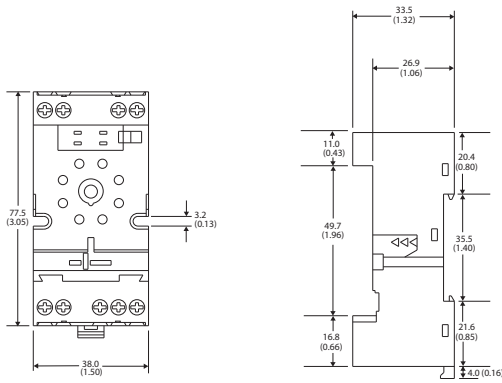
Wire Size: $2 \times 2.5 \text{ mm}^2$
 Single Wire – Up to #12 AWG
 Double Wire – $2 \times 2.5 \text{ mm}^2$ (#2–14 AWG... #2–20 AWG)
 (Either Solid or Stranded)
 Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N·m (7 lb·in)



Cat. No. 700-HN126

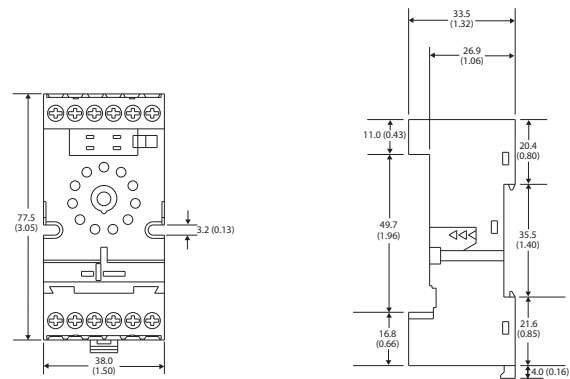
Wire Size: $2 \times 2.5 \text{ mm}^2$
 Single Wire – Up to #12 AWG
 Double Wire – $2 \times 2.5 \text{ mm}^2$ (#2–14 AWG... #2–20 AWG)
 (Either Solid or Stranded)
 Strip Length: 9 mm (3/8 in.) – Torque: 0.8 N·m (7 lb·in)

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



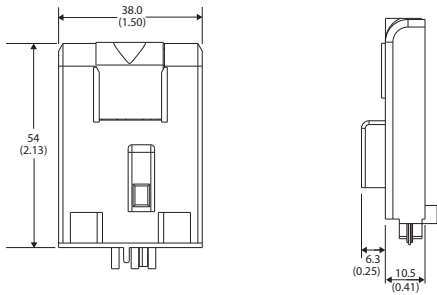
Cat. No. 700-HN204

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



Cat. No. 700-HN205

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



Cat. No. 700-HT3

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