



Relay and Timer Specifications

Bulletin 700





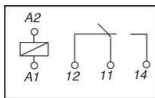
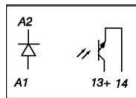
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700-HL Terminal Block Relay

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



Standard built-in Features: <ul style="list-style-type: none">• LED• Reverse Polarity Protection for DC Inputs• Coil Surge Protection⁽¹⁾				
	Cat. No. 700-HLT1Z24	Cat. No. 700-HLT2Z24	Cat. No. 700-HLS1Z24	Cat. No. 700-HLS11Z24
Specifications			(3) 	
Output Type	SPDT (1 C/O); $I_{th} = 6A^{(2)}$		1 N.O. solid-state; $I_{th} = 2 A, 24V DC$ or $I_{th} = 2 A, 240V AC$	
Recommended Tightening Torque	0.5 N•m max. (4.4 lb•in)			
Wire Range	Screw Terminal: 0.14 mm ² ...2.5 mm ² (#26...#14 AWG), Spring Terminal: 0.2 mm ² ...2.5 mm ² (#24...#14 AWG)			
Approvals	UL, cULus, cURus, ABS, CE			

(1) Diode surge protection provided.

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

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

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

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

(1) Leakage current suppression up to 2.2 mA off state current.

(2) Electromechanical relay to solid-state relay interchangeability is possible.

Accessories - 700-HLT, -HLS Relays





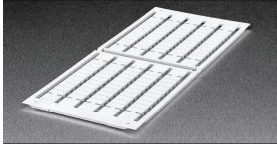
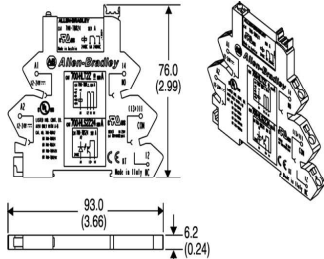
Photo	Description	Pkg. Quantity	Socket Input Voltage	Cat. No.
	Replacement Relays⁽¹⁾ Order must be for 20 relays or multiples of 20.	20	12V AC/DC	700-TBR12
			24V AC/DC	700-TBR24
			48V AC/DC	700-TBR48
			110/125V AC/DC 220...240V AC/DC	700-TBR60
	Replacement SSR 4-blade miniature relay for use with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

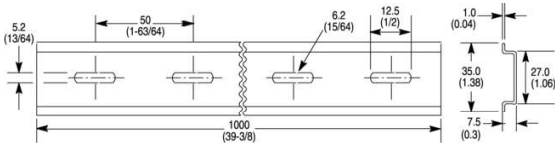
Photo	Description	Pkg. Quantity	Socket Input Voltage	Cat. No.
	End Barrier Used for visual inspection of groups, safe separation of neighboring 700-HL modules that end with jumpers.	10	Black	700-HN177
	Snap-in Marker These snap-in markers have a 6 x 10 mm surface and snap into the ejection lever for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

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

Dimensions - 700-HL Relays



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



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

Specifications - 700-HLT Relays

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

Cat. No. 700-HLT... (Relay Output)							
Min. Permissible Contact Ratings	12V, 6 mA (72 mW) for Silver Contacts, 8V, 2.5 mA (20 mW) for Gold Contacts						
Permissible Coil Voltage Variation	Pickup:	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC			Must Dropout Voltage:	10% of Nominal Voltage at AC 5% of Nominal Voltage at DC	
Power Consumption ±10%	AC	0.3VA					
	DC	0.2 W					
Design Specification / Test Requirements							
Dielectric Withstand Voltage	Pole to Pole (VRMS)	1000V					
	Contact to Coil (VRMS)	4000V					
Input Voltage	12V AC/DC	24V AC/DC	48V AC/DC	120V AC/DC	240V AC/DC	120V LCSC	240V LCSC
Impedance (Ohms)	1K	2 K	6 K	26 K	56 K	16 K	35 K
Mechanical							
Degree of Protection	IP20						
Mechanical Life Operations	1 x 10 ⁷						
Electrical Life Operations	6 A Resistive: 100 000 min. 24V DC, 1 A Inductive: 200 000 min. 120V AC 1 A Inductive: 300 000 min.						
Switching Frequency Operations (no-load)	10 cycles/sec						
Coil Voltages	See Overview/Product Selection						
Operating Time at Nominal Voltage at 20 °C (ms)	Pickup	7 ms					
	Dropout	3 ms					
Maximum Operating Rate (full load = 6 A)	6 cycles/min.						
Coil Surge Protection	Per EN 61000-4-5; Surge Immunity (801-5) Class III: 2 kV common and 1 kV differential mode						
Environmental							
Temperature	Operating	−40...+55 °C					
	Storage	−40...+100 °C					
Altitude	2000 m (6560 ft)						
Construction							
Insulating Material	Molded High Dielectric Material						
Enclosure	Relay IP67						
Contact Material	Silver Tin Ox, AgSnO ₂ or Silver with Gold Plating, AgSnO ₂ + Au						
Terminal Markings on Socket	In accordance with EN50 0005						
Certifications	cULus Listed (File No. E3125, E14843 Guide NLDX/NLDX7) with Allen-Bradley socket, CE Marked, ABS (American Bureau of Shipping)						
Standards	EN 61810-1, CSA 22.2, UL 508, NEMA IEE MAC Compliant, ICS-2 Compliant						
Hazardous Location Approvals	Class 1, Zn 2, Groups IIC, Ex nC IIC T5 Ta < 55 °C						
	UL Listed (UL60079-15)	700-HLT1Z12-EX (12V DC supply) 700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply) 700-HLT1U1-EX, 700-HLS1U1-EX (110V/125V AC/DC supply)					
	CSA Certified ⁽¹⁾ (CAN/CSA E60079-15)	700-HLT1Z12-EX (12V DC supply) 700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)					

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

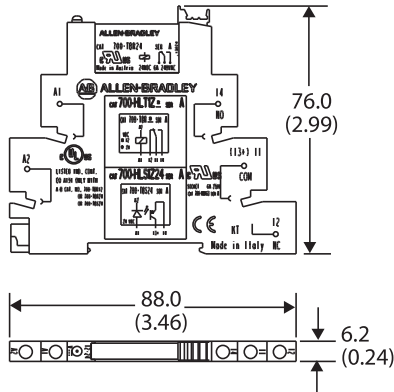
Cat. No. 700-HLS... (Solid-state Output)			
Electrical			
Rated Thermal Current (I_{th})		2 A (DC output)	2 A (AC output)
Rated Insulation Voltage (U_i)	250V IEC, 300V UL/CSA		

Cat. No. 700-HLS... (Solid-state Output)						
Control Circuit	Min. Control Voltage	80% nominal voltage				
	Maximum Control Voltage	110% nominal voltage				
	Control Current	9 mA ±10% (24V) 4 mA ±10% (120/240V)				
	Release Voltage	0.4 x nominal voltage (24V), 0.35 x nominal voltage (120/240V)				
	Min. Control Circuit Resistance	3200 ohms (24V), 16k ohms (120V), 32k ohms (240V)	2500 ohms (24V), 12k ohms (120V), 24kohms(240V)			
Outputs	Load Voltage Range	0...24VDC			24...240VAC	
	Max. Repetitive Blocking Voltage	33V			600V	
	Max. Switching Current (inductive/ resistive)	2 A DC			1 A AC	
	On State Voltage Drop @ Max. Switching Current	<120 mV DC			<1V AC	
	Leakage Current	max. 100 µA (@U = 24V)				
Power Consumption ±10%	AC	0.6VA(120V), 1VA(240V)				
	DC	0.2 W			0.3 W	
Design Specification/Test Requirements						
Dielectric Withstand Voltage	Pole to Pole (VRMS)	2500V				
	Contact to Coil (VRMS)	2500V				
Input Voltage	24VDC	48VDC	120V AC/DC	240V AC/DC	120VLCSC	240VLCSC
Impedance(Ohms)	2K	9 K	26 K	58 K	16 K	35 K
Mechanical						
Degree of Protection	IP20					
Input Voltages	See Overview/Product Selection					
Operating Time at Nominal Voltage at 20 °C (ms)	Turn on Time	30 µs (DC only input voltage), 7 ms (AC/DC input voltage)				
	Drop Out Time	350 µs (DC only input voltage), 10 ms (AC/DC input voltage)				
Maximum Operating Rate	300 Hz					
Environmental						
Temperature	Operating	-20...+55 °C				
	Storage	-40...+70 °C				
Altitude	2000 m (6560 ft)					
Construction						
Insulating Material	Molded High-Dielectric Material					
Enclosure	RelayIP67					
Terminal Markings on Socket	In accordance with EN50 0005					
Certifications	cULus Listed (File No. E14843, Guide NLDX/NLDX7), CE Marked, ABS (American Bureau of Shipping)					
Standards	UL 508, CSA C22.2 No. 14, EN 61810-1					
Hazardous Location Approvals	Class 1, Zn 2, Groups IIC, Ex nC IIC T5 Ta < 55 °C					
	UL Listed (UL60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply) 700-HLT1U1-EX, 700-HLS1U1-EX (110V/125V AC/DC supply)				
	CSA Certified ⁽¹⁾ (CAN/CSA60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)				

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

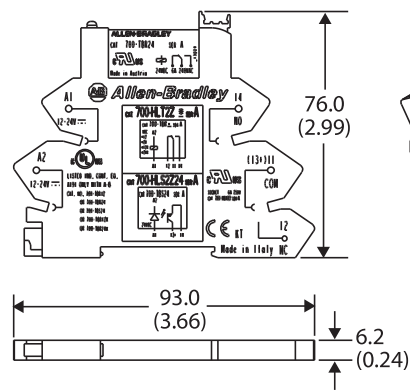
Dimensions - 700-HLT, -HLS Relays

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



700-HLT / -HLS Screw Terminal Design

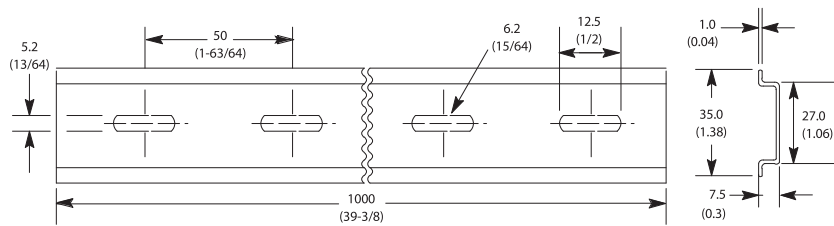
Single Wire: 0.14 mm²...2.5 mm² (#26 AWG...#14 AWG)
Double Wire: 2 x 0.14 mm²...2 x 1.5 mm² (2 x #26 AWG...2 x #16 AWG)
Wire Type: Solid or stranded, copper only
Strip Length: 9 mm (11/32 in). Torque: 0.5 N·m (4.4 lb·in)



700-HLT / -HLS Spring Terminal Design

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

Dimensions - 700-HLT, -HLS Relay Accessories



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

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

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- (1) Diode surge protection provided.
- (2) For Gold-plated contacts: Add the letter "X" at the end of the catalog number. For example: if Cat. No. 700-HLTNU24 is required with gold plating, the new cat. no. is 700-HLTNU24X.
- (3) Reverse polarity on the output terminals of the solid-state relay will result in the output being "ON" regardless of the state of the input voltage.



(1) Leakage current suppression up to 2.2 mA off state current.

Accessories - 700-HLT, -HLS Relays

Photo	Description	Pkg. Quantity	Socket Input Voltage	Cat. No.
	Replacement Relays⁽¹⁾ Order must be for 20 relays or multiples of 20.	20	12V AC/DC	700-TBR12
			24V AC/DC 24...240V AC/DC	700-TBR24
	Replacement SSR 4-blade miniature relay for use with 1 N.O. SSR DC output. Order multiples of 20.	20	24V AC/DC	700-TBS24
			24V AC/DC 24...240V AC/DC	700-TBS124
	16-Way Jumper Can be cut to required length. $I_{th} = 36$ A max per 16-way jumper. Maximum 6 A per pole.	1	Color	
			Red	700-TBJ16R
			Grey	700-TBJ16G
			Blue	700-TBJ16B
	Terminal Doubler Allows two wires per one push-in terminal. Max wire 2 X 1.5 mm ² (2 X #16 AWG)	5	—	700-TBT2
	Terminal Block Relay Wiring Adapter Plugs into 700-HL_N Relays	1	—	700-TBWA
	Cable Used with 700-TBWA.	1	—	700-TBCBL
	End Barrier Used for visual inspection of groups, safe separation of neighboring 700-HLN modules that end with jumpers.	10	Black	700-HN377
	Snap-in Marker These snap-in markers have a 6 x 10 mm surface and snap into the ejection lever for the relay. For custom markers, contact your local Rockwell Automation sales office or Allen-Bradley distributor for more information.	100	Blank	1492-MC6X10

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

Specifications - 700-HLTN Relays

Cat. No. 700-HLTN... (Relay Output)							
Electrical Ratings							
Pilot Duty Rating	B 300, R 300						
Rated Thermal Current (I_{th})	1-Pole — 6 A						
Rated Insulation Voltage (U_i)	250V IEC, 300V UL/CSA						
Contacts	1-Pole						
	Inductive V AC	24VAC, 1-phase	30 A	 Make	5 A	 Break	
		120VAC, 1-phase	30 A		3 A		
		240VAC, 1-phase	15 A		1.5 A		
	Inductive V DC	24VDC	DC-13, 1.0 A				
		125VDC	DC-13, 0.2 A				
		240VDC	DC-13, 0.1 A				
	Resistive Make, Break, and Continuous	24VDC	6.0 A				
		250VAC	6.0 A				
		240VDC	0.1 A				
Inductive Load	AC-15 250V, 3 A N.O. Contact, 1.5 A N.C. Contact DC-13 24V, 1 A N.O., <i>and</i> N.C. Contact						
Min. Permissible Contact Ratings	12V, 10 mA (120 mW) for Silver Contacts, 8V, 3 mA (25 mW) for Gold Contacts						
Permissible Coil Voltage Variation	Pickup:	80...110% of Nominal Voltage at DC			Must Dropout Voltage:	10% of Nominal Voltage	
Power Consumption $\pm 10\%$	AC	0.4 VA					
	DC	0.3 W					
Design Specification / Test Requirements							
Dielectric Withstand Voltage	Pole to Pole (VRMS)	1000V					
	Contact to Coil (VRMS)	4000V					
Mechanical							
Degree of Protection	IP20						
Mechanical Life Operations	1 x 10 ⁷						
Electrical Life Operations	6 A Resistive: 100 000 min. 24V DC, 1 A Inductive: 200 000 min. 120V AC 1 A Inductive: 300 000 min.						
Switching Frequency Operations (no-load)	10 cycles/sec						
Coil Voltages	See Overview/Product Selection						
Operating Time at Nominal Voltage at 20 °C (ms)	Pickup	6 ms					
	Dropout	6 ms					
Maximum Operating Rate (full load = 6 A)	6 cycles/min.						
Coil Surge Protection	Per EN 61000-4.5; Surge Immunity (801-5) Class III: 2 kV common and 1 kV differential mode						
Environmental							
Temperature	Operating	−40...+70 °C					
	Storage	−40...+100 °C					
Altitude	2000 m (6560 ft)						
Construction							
Insulating Material	Molded High Dielectric Material						

Cat. No. 700-HLTN... (Relay Output)		
Enclosure	Relay IP67	
Contact Material	Silver Tin Ox, AgSnO ₂ or Silver with Gold Plating, AgSnO ₂ + Au	
Terminal Markings on Socket	In accordance with EN50 0005	
Certifications	cULus Listed (File No. E3125, E14843 Guide NLDX/NLDX7) with Allen-Bradley socket, CE Marked	
Standards	EN 61810-1, CSA 22.2, UL 508, NEMA IEE MAC Compliant, ICS-2 Compliant	
Hazardous Location Approvals	Class 1, Zn 2, Groups IIC, Ex nC IIC T6 Ta < 70°C	
	UL Listed (UL 60079-15)	700-HLT1Z12-EX (12V DC supply) 700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply) 700-HLT1U1-EX, 700-HLS1U1-EX (110V/125V AC/DC supply)
	CSA Certified ⁽¹⁾ (CAN/CSA E60079-15)	700-HLT1Z12-EX (12V DC supply) 700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)

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

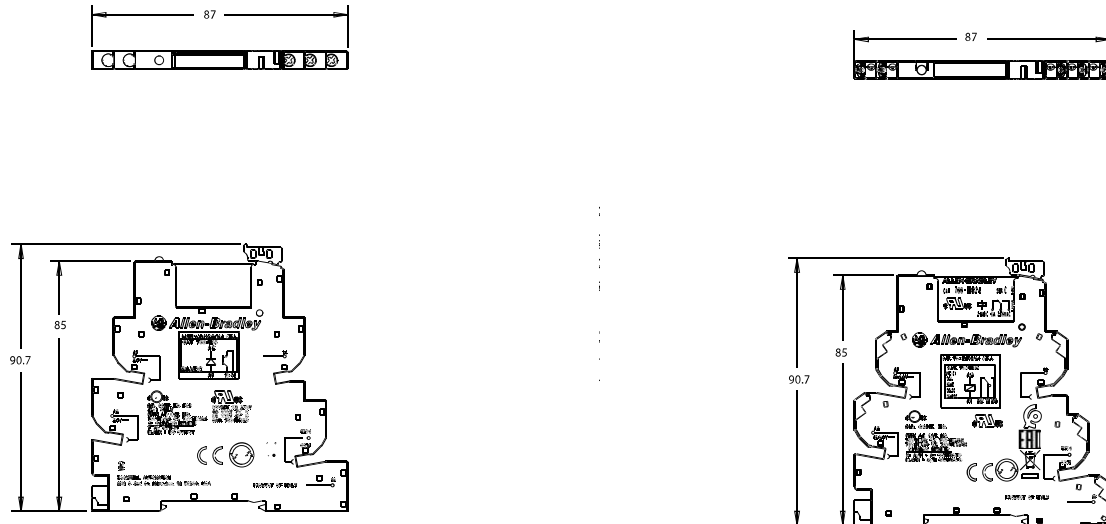
Cat. No. 700-HLSN... (Solid-state Output)			
Electrical			
Rated Thermal Current (I_{th})		2 A (DC output)	2 A (AC output)
Rated Insulation Voltage (U_i)		250V IEC, 300V UL/CSA	
Control Circuit	Min. Control Voltage	80% nominal voltage	
	Maximum Control Voltage	110% nominal voltage	
	Control Current	9 mA \pm 10% (24V) 4 mA \pm 10% (120/240V)	
	Release Voltage	0.4 x nominal voltage (24V), 0.35 x nominal voltage (120/240V)	
Outputs	Load Voltage Range	1.5...33VDC	12...275VAC
	Max. Repetitive Blocking Voltage	33V	600V
	Max. Switching Current (inductive/resistive)	2 A DC	2 A AC
	On State Voltage Drop @ Max. Switching Current	<400 mV DC	<1.5VAC
	Leakage Current	max. 100 μ A	max. 1.5 μ A
Power Consumption \pm 10%	AC	0.6VA(120V), 1VA(240V)	
	DC	0.3 W (24V)	
Design Specification/Test Requirements			
Dielectric Withstand Voltage	Pole to Pole (VRMS)	2500V	
	Contact to Coil (VRMS)	3000V	
Mechanical			
Degree of Protection	IP20		
Input Voltages	See Overview/Product Selection		
Operating Time at Nominal Voltage at 20 °C (ms)	Turn on Time	200 μ s (DC only input voltage), 12 ms (AC/DC input voltage)	
	Drop Out Time	600 μ s (DC only input voltage), 12 ms (AC/DC input voltage)	
Maximum Operating Rate	300 Hz		
Environmental			
Temperature	Operating	−20...+70 °C	
	Storage	−40...+70 °C	
Altitude	2000 m (6560 ft)		

Cat. No. 700-HLSN... (Solid-state Output)		
Construction		
Insulating Material	Molded High-Dielectric Material	
Enclosure	RelayIP67	
Terminal Markings on Socket	In accordance with EN50 0005	
Certifications	cULus Listed (File No. E14843, Guide NLDX/NLDX7), CE Marked, ABS (American Bureau of Shipping)	
Standards	UL 508, CSA C22.2 No. 14, EN 61810-1	
Hazardous Location Approvals	Class 1, Zn 2, Groups IIC, Ex nC IIC T6 Ta < 70°C	
	UL Listed (UL60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply) 700-HLT1U1-EX, 700-HLS1U1-EX (110V/125V AC/DC supply)
	CSA Certified ⁽¹⁾ (CAN/CSA60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)

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

Dimensions - 700-HLTN, -HLSN Relays

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



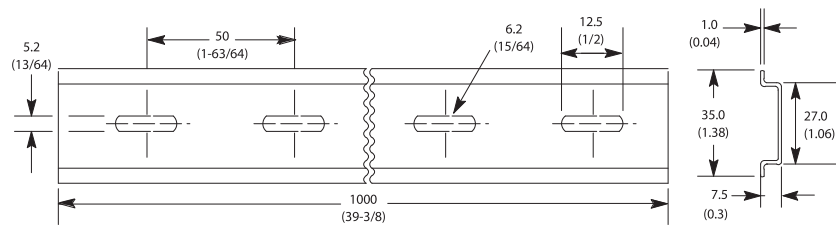
700-HLTN / -HLSN Screw Terminal Design

Single Wire: 0.5 mm² ... 2.5 mm² (#21 AWG ... #14 AWG)
 Double Wire: 2 x 0.5 mm² ... 2 x 1.5 mm² (2 x #26 AWG ... 2 x #16 AWG)
 Wire Type: Solid or stranded, copper only
 Strip Length: 10 mm (0.4 in). Torque: 0.5 N·m (4.4 lb·in)

700-HLTN / -HLSN Push-in Terminal Design

Single Wire: 0.5 mm² ... 2.5 mm² (#21 AWG ... #14 AWG)
 Wire Type: Solid or stranded, copper only
 Strip Length: 9 mm (11/32 in.)

Dimensions - 700-HLTN, -HLSN Relay Accessories

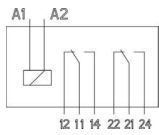




Cat. No. 199-DR1 DIN Mounting Rail Series B
 Cat. No. 199-DR4 DIN Mounting Rail Series B Has No Mounting Holes

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

700-HL 2-pole Terminal Block Relay




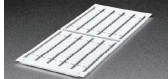
- Relay and socket assembled interface modules for high density interposing or isolation applications
- Screw terminal and spring-clamp bases
- 10 A relay, choice of silver or gold contacts
- DPDT (relay)
- Built-in retainer clip and snap-in marker lever
- Standard LED, reverse polarity protection, and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

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

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

(1) For Gold-plated contacts: Add the letter "X" at the end of the catalog number. Example: Cat. No. 700-HLT12Z24 with gold plated contacts is Cat. No. 700-HLT12Z24X. The following relays are available with the gold-plated contact option: 700-HLT_22Z4, 700-HLT_2U24, 700-HLT_2U1, and 700-HLT_2U2. Not available on 12V and 48V DC products.

Accessories - 700-HL Relays (2- pole)

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

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

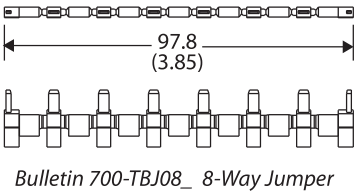
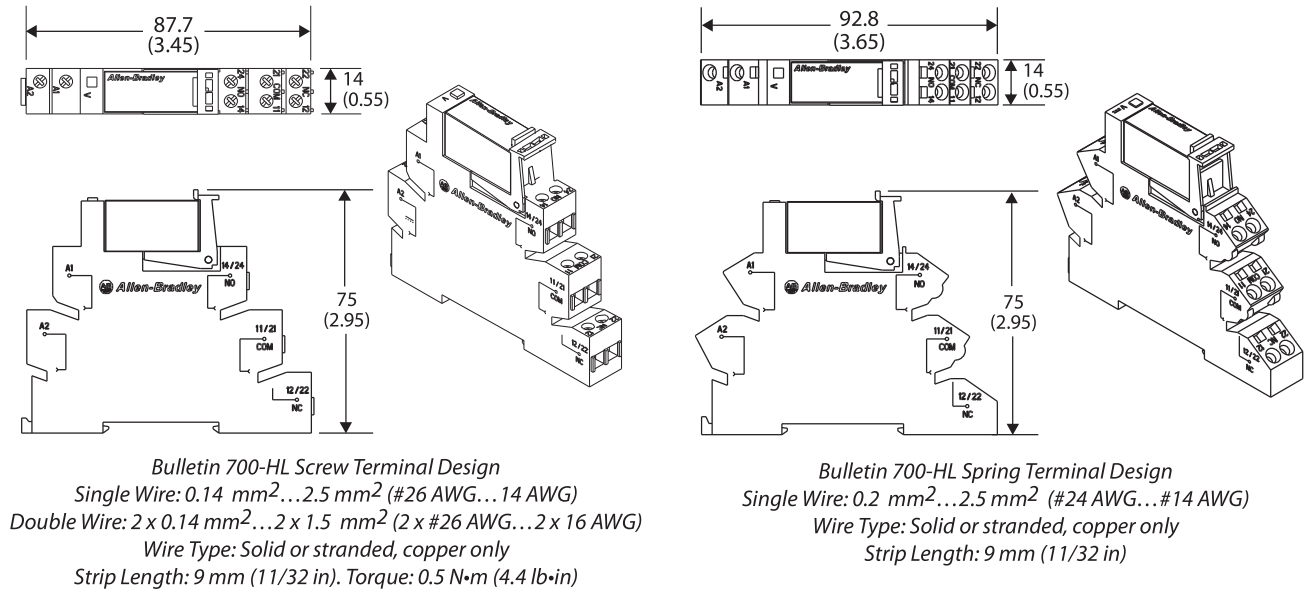
Specifications - 700-HL Relays (2-Pole)

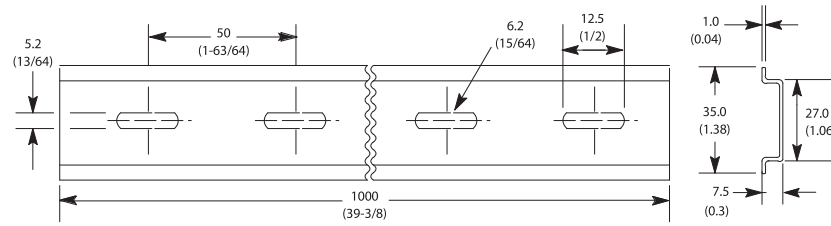
Cat. No. 700-HLT...2-Pole (Relay Output)						
Electrical Ratings						
Pilot Duty Rating		B 300, R 300				
Rated Thermal Current (I_{th})		2-Pole — 10 A				
Rated Insulation Voltage (U_i)		250V IEC, 300V UL/CSA				
Contacts	Inductive V AC UL	120V AC	AC-15, 3.0A B 300, 3.0 A		1/4 HP (186 W), 1-phase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

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

Dimensions - 700-HL (2-pole)

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





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

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

700-HLF Terminal Block Timing Relay

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



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

Assembled Device		
Input Voltage	Pkg. Quantity	Cat. No. ⁽¹⁾
24V AC/DC	10	700-HLF1U24

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

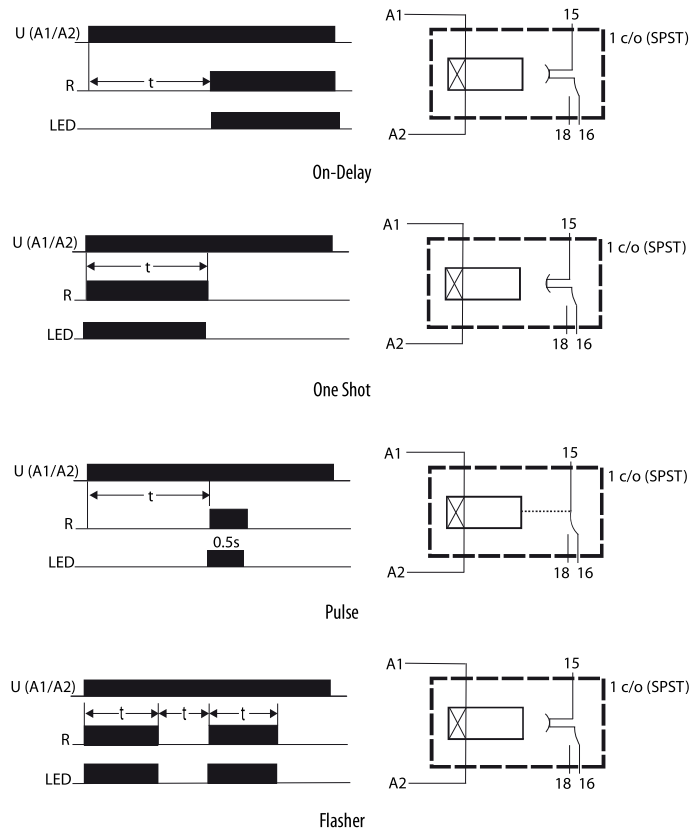
Accessories - 700-HLF Relays

Terminal block timing relay bases are not sold separately.

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

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

Function and Connection Diagrams - 700-HLF Relays



Specifications- 700-HLF Relays

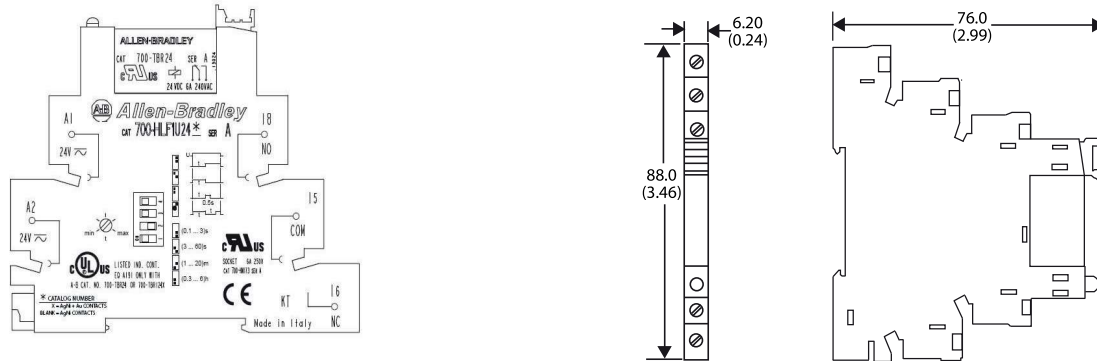
Cat. No. 700-HLF... (Relay Output) ⁽¹⁾					
Electrical Ratings					
Pilot Duty Rating	B 300, R 300				
Rated Thermal Current (I_{th})	1-Pole — 6 A				
Rated Insulation Voltage (U_i)	250V IEC, 300V UL/CSA				
Contacts	Inductive	1-Pole			
	24VAC, 1-phase	30 A	▶ ◀	5 A	◀ ▶
	120VAC, 1-phase	30 A		3 A	
	240VAC,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

Permissible Coil Voltage Variation	Pickup: 85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC		Must Dropout Voltage:	10% of Nominal Voltage at AC, 5% of Nominal Voltage at DC
Power Consumption ±10%	AC/DC	0.5VA		
Design Specification/Test Requirements				
Dielectric Withstand Voltage	Pole to Pole (VRMS)	1000V		
	Contact to Coil (VRMS)	4000V		
Input Voltage	24V AC/DC			
Impedance(Ohms)	2 K			
Mechanical				
Degree of Protection	IP20			
Mechanical Life Operations	1 x 10 ⁷			
Electrical Life Operations	6 A Resistive: 100,000 min. 24V DC, 1 A Inductive: 200,000 min. 120V AC 1 A Inductive: 300,000 min.			
Switching Frequency Operations (no-load)	10 cycles/sec			
Coil Voltages	See Overview/Product Selection			
Timer Functions	On-Delay, One Shot, Pulse, and Flasher			
Timer Settings	0.1...3 s, 3...60 s, 1...20 min, and 0.3...6 hr			
Timer Adjustments	Min and Max adjustments with Potentionmeter			
Timer Accuracy	Repeatability 1%, Recovery Time < 50 ms, Setting Accuracy Full Range 5%			
Coil Surge Protection	Per EN 61000-4.5; Surge Immunity (801-5) Class III: 2 kV common and 1 kV differential mode			
Environmental				
Temperature	Operating	−40...+55 °C (−40...+131 °F)		
	Storage	−40...+100 °C (−40...+212 °F)		
Altitude	2000 m (6560 ft)			
Construction				
Insulating Material	Molded High Dielectric Material			
Enclosure	RelayIP67			
Contact Material	Silver Tin Ox, AgSnO ₂ or Silver with Gold Plating, AgSnO ₂ + Au			
Terminal Markings on Socket	In accordance with EN50 0005			
Certifications	cULus Listed (File No. E3125, Guide NLDX/NLDX7) with Allen-Bradley socket, CE Marked			
Standards	EN60947-4-1, EN60947-5-1, CSA 22.2, UL 508, NEMA IEE MAC Compliant, ICS-2 Compliant			

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

Dimensions- 700-HLF Relays

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



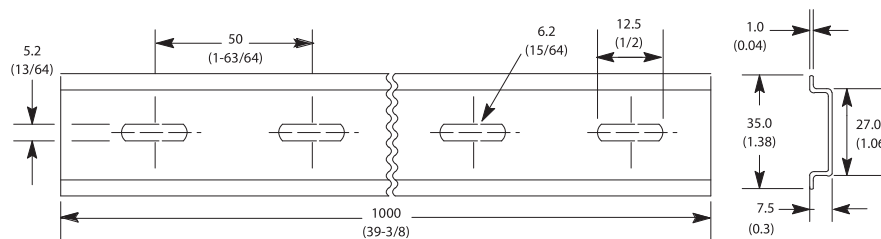
700-HLF Screw Terminal Design

Single Wire: 0.14 mm²...2.5 mm² (#26 AWG...14 AWG)

Double Wire: 2 x 0.14 mm²...2 x 1.5 mm² (2 x #26 AWG...2 x 16 AWG)

Wire Type: Solid or stranded, copper only

Strip Length: 9 mm (11/32 in.). Torque: 0.5 N·m (4.4 lb·in)



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

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

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