





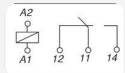
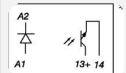
# Bulletin 700-HL Terminal Block Relay

## Bulletin 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
- 1 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 Δ
- 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

See Specifications

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

\* 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.





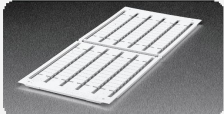
§ For Gold-plated contacts: Add the letter "X" at the end of the catalog number. For example: if Cat. No. 700-HLT1Z24 is required with gold plating, the new cat. no. is 700-HLT1Z24X.

Assembled Devices	Pkg. Quantity	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)
<b>Input Voltage</b>							
12V DC	10	‡ 700-HLT1Z12	700-HLT2Z12	—	—	—	—
24V DC	10	‡ 700-HLT1Z24	700-HLT2Z24	10	‡ 700-HLS1Z24	700-HLS2Z24	700-HLS11Z24
48V DC	10	‡ 700-HLT1Z48	700-HLT2Z48	10	‡ 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	‡ 700-HLS1U1	700-HLS2U1	700-HLS11U1
220...240V AC/DC	10	700-HLT1U2	700-HLT2U2	10	‡ 700-HLS1U2	700-HLS2U2	700-HLS11U2
240V AC	10	700-HLT1A2	—	—	—	—	—
Built-in LCSC (leakage current suppression circuit) 120V AC and 125V DC♣	10	‡ 700-HLT1L1	—	10	‡ 700-HLS1L1	—	700-HLS11L1
Built-in LCSC (leakage current suppression circuit) 240V AC♣	10	‡ 700-HLT1L2	—	10	‡ 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	—	—

‡ Electromechanical relay to solid-state relay interchangeability is possible.

♣ Leakage current suppression up to 2.2 mA off state current.

Δ Diode surge protection provided.

	Description	Pkg. Quantity	Socket Input Voltage	Cat. No.
 Cat. No. 700-TBR24	<b>Replacement Relays</b> 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*
 Cat. No. 700-TBS24	<b>Replacement SSR</b> 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
Cat. No. 700-TBS124	<b>Replacement SSR</b> 4-blade miniature relay for use with 1 N.O. SSR AC output. Order multiples of 20.	20	24V DC	700-TBS124
 Cat. No. 700-TBJ20B	<b>20-Way Jumper</b> 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
 Cat. No. 700HN177	<b>End Barrier</b> Used for visual inspection of groups, safe separation of neighboring 700-HL modules that end with jumpers.	10	Black	700-HN177
 Cat. No. 1492-MC6X10	<b>Snap-in Marker</b> These snap-in markers have a 6 x 10 mm surface and snap into the ejection lever for the relay.	100	Blank	1492-MC6X10
			Standard 1492-MC6X10	www.ab.com/catalogs for information
			Custom	‡

\* 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.

‡ Go to <http://www.ab.com/software/> and click on "Terminal Marking System and WinABMS" to download software. Create custom text, save file, and e-mail to your local Rockwell Automation sales office or Allen-Bradley distributor.

**Note:** Terminal block relay bases are not sold separately.

**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	Inductive	1-Pole						
	24V AC, 1-phase	30 A	▶  ◀	5 A	◀  ▶			
	120V AC, 1-phase	30 A		3 A				
	240V AC, 1-phase	15 A		1.5 A				
	Make, Break & Continuous V DC	24V DC				1.0 A		
		120V DC				0.2 A		
		240V DC				0.1 A		
Inductive Load	AC-15 250V, 3 A N.O. Contact, 1.5 A N.C. Contact DC-13 24V, 1 A N.O. and N.C. Contact							
Min. Permissible Contact Ratings	12V, 6 mA (72 mW) for Silver Contacts, 8V, 2.5 mA (20 mW) for Gold Contacts							
Permissible Coil Voltage Variation	Pickup:	85...110% of Nominal Voltage at 50 Hz 85...110% of Nominal Voltage at 60 Hz 80...110% of Nominal Voltage at DC			Must Dropout Voltage:	10% of Nominal Voltage at AC 5% of Nominal Voltage at DC		
Power Consumption ±10%	AC	0.3 VA						
	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)	1 K	2 K	6 K	26 K	56 K	16 K	35 K	
Mechanical								
Degree of Protection	IP20							
Mechanical Life Operations	1 x 10 <sup>7</sup>							
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 <sub>2</sub> or Silver with Gold Plating, AgSnO <sub>2</sub> + 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, ABS (American Bureau of Shipping)							
Standards	EN61810-1, EN60998-1, EN60998-2-1, 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/Class 1, Div 2, Groups A, B, C, and D							
	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‡ (CAN/CSA E60079-15)	700-HLT1Z12-EX (12V DC supply) 700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)						

\* Performance Data - See this catalog, Important Performance Data.

‡ 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)	1 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)	
	Min. Control Circuit Resistance	3200 ohms (24V), 16k ohms (120V), 32k ohms (240V)	2500 ohms (24V), 12k ohms (120V), 24k ohms (240V)
Outputs	Load Voltage Range	0...24V DC	24...240V AC
	Max. Repetitive Blocking Voltage	33V	600V
	Max. Switching Current (inductive/resistive)	2 A DC	1 A AC
	On State Voltage Drop @ Max. Switching Current	<120 mV DC	<1V AC
	Leakage Current	max. 100 $\mu$ A (@U = 24V)	
Power Consumption $\pm$ 10%	AC	0.6 VA (120V), 1 VA (240V)	
	DC	0.2 W	0.3 W

### Design Specification/Test Requirements

Dielectric Withstand Voltage	Pole to Pole (VRMS)	2500V				
	Contact to Coil (VRMS)	2500V				
Input Voltage	24V DC	48V DC	120V AC/DC	240V AC/DC	120V LCSC	240V LCSC
Impedance (Ohms)	2K	9 K	26 K	58 K	16 K	35 K

### Mechanical

Degree of Protection	IP20					
Input Voltages	See Overview/Product Selection					
Operating Time at Nominal Voltage at 20 °C (ms)	Turn on Time	30 $\mu$ s (DC only input voltage), 7 ms (AC/DC input voltage)				
	Drop Out Time	350 $\mu$ s (DC only input voltage), 10 ms (AC/DC input voltage)				
Maximum Operating Rate	300 Hz					

### Environmental

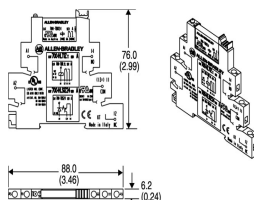
Temperature	Operating	-20...+55 °C				
	Storage	-40...70 °C				
Altitude	2000 m (6560 ft)					

### Construction

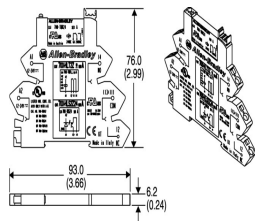
Insulating Material	Molded High-Dielectric Material					
Enclosure	Relay IP67					
Terminal Markings on Socket	In accordance with EN50 0005					
Certifications	cULus Listed - File No. E3125, Guide NLDX/NLDX7 (with Allen-Bradley socket), CE Marked, ABS (American Bureau of Shipping)					
Standards	EN61810-1, EN60998-1, EN60998-2-1, 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 (UL 60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply) 700-HLT1U1-EX, 700-HLS1U1-EX (110V/125V AC/DC supply)				
	CSA Certified* (CAN/CSA 60079-15)	700-HLT1Z24-EX, 700-HLS1Z24-EX (24V DC supply)				

\* 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%.

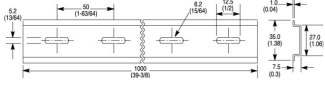
Approximate Dimensions are shown in millimeters (inches). Approximate Dimensions are not intended to be used for manufacturing purposes.



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



Bulletin 700-HL Spring Terminal Design Single Wire: 0.2 mm<sup>2</sup>...2.5 mm<sup>2</sup> (#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

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)