

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 *
- 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

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Product Selection

| | | | | |
|--|--|-----------------------------|---|------------------------------|
| Standard built-in Features: • LED • Reverse Polarity Protection for DC Inputs • Coil Surge Protection * | | | | |
| | Cat. No. 700-HLT1Z24 | Cat. No. 700-HLT2Z24 | Cat. No. 700-HLS1Z24 | Cat. No. 700-HLS11Z24 |
| Specifications | | | | |
| Output Type | SPDT (1 C/O); $I_{th} = 6A\ddagger$ | | 1 N.O. solid-state; $I_{th} = 2 A, 24V DC$ or $I_{th} = 1 A, 240V AC$ | |
| 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 | | | |





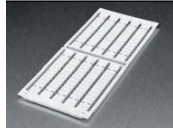
| Assembled Devices | Pkg. Quantity | Cat. No. (Screw Terminals) | Cat. No. (Spring Clamp Terminals) | Pkg. Quantity | Cat. No. (Screw Terminals) (DC Output) | Cat. No. (Spring Clamp Terminals) (DC Output) | Cat. No. (Screw Terminals) (AC Output) |
|--|---------------|----------------------------|-----------------------------------|---------------|--|---|--|
| Input Voltage | | | | | | | |
| 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 | — | — |

* 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.
 * Electromechanical relay to solid-state relay interchangeability is possible.
 ‡ 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.
 § Leakage current suppression up to 2.2 mA off state current.
 * Diode surge protection provided.

Interposing/Isolation Relays

Accessories

Accessories

| | Description | Pkg. Quantity | Socket Input Voltage | Cat. No. |
|--|--|---------------|--|--|
|  <p>Cat. No. 700-TBR24</p> | Replacement Relays 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* |
|  <p>Cat. No. 700-TBS24</p> | 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 |
| | | | 24V DC | 700-TBS124 |
| | | | 48V DC 110/125V AC/DC 220...240V AC/DC | 700-TBS160 |
|  <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 |
| | | | Grey | 700-TBJ20G |
| | | | Blue | 700-TBJ20B |
|  <p>Cat. No. 700HN177</p> | 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 |
| | | | 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 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, Guide NLDX/NLDX7) with Allen-Bradley socket, CE Marked, ABS (American Bureau of Shipping) | | | | | | |
| Standards | EN60947-4-1, EN60947-5-1, CSA 22.2, UL 508, NEMA IEE MAC Compliant, ICS-2 Compliant Class 1, Zn 2, Groups IIC, Ex nC IIC T5 Ta < 55 °C | | | | | | |
| Hazardous Location Approvals | 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 3.

* 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%.



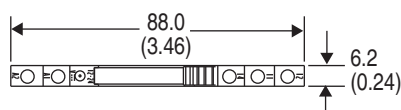
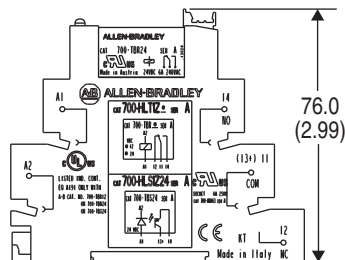
Bulletin 700-HL
Interposing/Isolation Relays
 Specifications

| 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 μ 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 μ s (DC only input voltage), 7 ms (AC/DC input voltage) | | | | |
| | Drop Out Time | 350 μ 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. E14843, Guide NLDX/NLDX7), CE Marked, ABS (American Bureau of Shipping) | | | | | |
| Standards | UL 508, CSA C22.2 No. 14, EN/IEC 60947-1, -5-1 | | | | | |
| 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) | | | | |

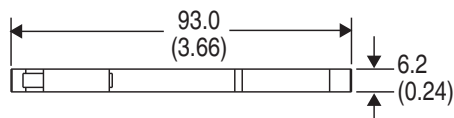
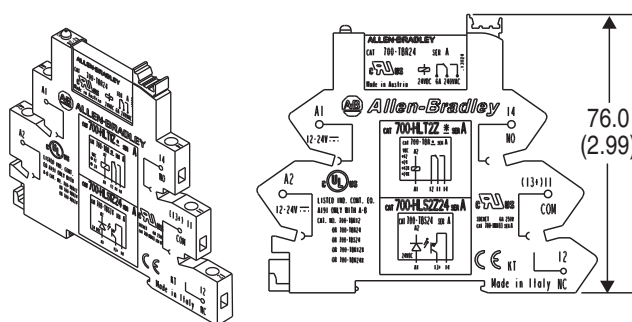
* Product shall be installed in an enclosure providing at least IP54 protection. Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40%.

Approximate Dimensions

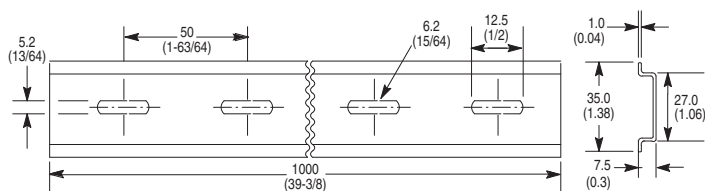
Approximate Dimensions are shown in millimeters (inches). Approximate Dimensions are not intended to be used for manufacturing purposes.



Bulletin 700-HL Screw Terminal Design
 Single Wire: 0.14 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)



Bulletin 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

| 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) |