

# Relays and Timers Specifications

Bulletin Number 700

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## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource  | Description   |
|---|---|
| Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a> | Provides general guidelines for installing a Rockwell Automation industrial system. |
| Product Certifications website, <a href="http://www.ab.com">http://www.ab.com</a>           | Provides declarations of conformity, certificates, and other certification details. |

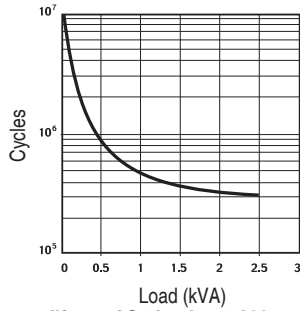
You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.



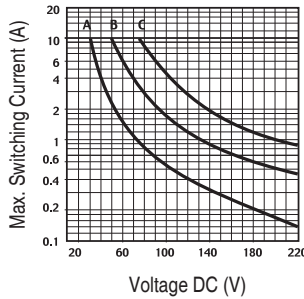
| Cat. No. 700-HA...                       |                 |  |                                  |           |
|--|-----------------|--|----------------------------------|-----------|
| Electrical Ratings                       |                 |  |                                  |           |
| Pilot Duty Rating‡                       |                 | NEMA B300  |                                  |           |
| Rated Thermal Current ( $I_{th}$ )       |                 | HA = 10 A – 120V, 240V<br>HAX = 6 A – 120V, 240V   |                                  |           |
| Rated Insulation Voltage ( $U_i$ )       |                 | 250V IEC – 300V UL/CSA   |                                  |           |
| Contacts                                 | Inductive       | <b>Make</b>  | <b>Break</b>                     | <b>Hp</b> |
|  |                 | ▶ ◀  | ◀ ▶                              |           |
|  | 120V AC         | 30 A   | 3 A                              | 1/3       |
|  | 240V AC         | 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<br>HAX = 5V, 2 mA   |                                  |           |
| Permissible Coil Voltage Variation       |                 | Pickup: 80...110% of Nominal Voltage at 50 Hz<br>80...110% of Nominal Voltage at 60 Hz<br>80...110% of Nominal Voltage at DC   |                                  |           |
| Coil Consumption ±10%                    | AC Coils        | <b>50 Hz</b>   | <b>60 Hz</b>                     |           |
|  | Inrush          | 3.3 VA   | 2.85 VA                          |           |
|  | Sealed          | 2.2 VA   | 1.9 VA                           |           |
|  | DC Coils        | 1.3 W  |                                  |           |
| Must Dropout Voltage                     |                 | 20% of nominal V AC<br>10% of nominal V DC   |                                  |           |
| Max. Contact Resistance                  |                 | 50 MΩ (700-HA and 700-HAB)<br>30 MΩ (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 Life Cycles (AC/DC)           |                 | > 20 x 10 <sup>6</sup> / 50 x 10 <sup>6</sup>  |                                  |           |
| 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-HAX:   | 6 A–Bifurcated/Gold Plating AgNi |           |
| Terminal Markings on Socket              |                 | In accordance with EN50 0005   |                                  |           |
| Sockets                                  |                 | 8-Pin Socket — 700-HN100, -HN125, -HN204<br>11-Pin Socket — 700-HN101, -HN126, -HN205  |                                  |           |
| Certifications                           |                 | cURus Recognized (File No. E3125, Guide NLDX2/NLDX8), cULus Listed when used with Bulletin 700-HN sockets noted above (File No. E3125, Guide NLDX/NLDX7), CE Marked, CSA Certified, UR Certified (File 229473) |                                  |           |
| Standards                                |                 | UL508, CSA C22.2 No. 14, EN 61810-1  |                                  |           |

‡ NEMA Rating Chart is in publication 700-SG003\*

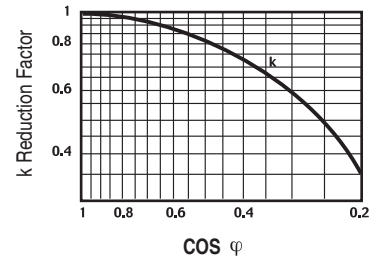
700-HA Relay Performance Graphs



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



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



Load reduction factor vs.  $\cos \phi$

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

| Time Module Cat. No. 700-HT3                |  |                                   |
|---|--|-----------------------------------|
| Electrical Ratings                          |  |                                   |
| Operating Voltage Range                     | 12...240V AC (50/60 Hz) 12...240V DC   |                                   |
| Power Consumption                           | 0.1 W (12V)<br>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 <sup>2</sup> ...2.5 mm <sup>2</sup> (24 AWG...14 AWG)<br>2.0 x 0.2 mm <sup>2</sup> ...1.5 mm <sup>2</sup> (24 AWG...16 AWG)   |                                   |
| Input Terminal Torque Range                 | 0.45...0.8 Nm (4...7 lb-in.)   |                                   |
| LED Indicator                               | Red  |                                   |
| Repeat Accuracy‡                            | ±1%  |                                   |
| Recovery Time                               | <50 ms   |                                   |
| Selectable Timing Ranges                    | Three DIP switches, seven ranges (set from 5...100% of range):<br>1 s, 10 s, 100 s, 10 min, 100 min, 10 h, 100 h   |                                   |
| Selectable Timing Modes                     | Three DIP switches, eight modes:<br>1. Power On-Delay<br>2. Power On One-Shot<br>3. Power On Repeat Cycle, On Start<br>4. Signal On-Delay and Signal Off-Delay<br>5. Signal Off-Delay<br>6. Signal On-One-Shot<br>7. Signal Off-One-Shot<br>8. Signal On and Signal Off Watchdog Monitor |                                   |
| Adjustable Trimmer Scale Accuracy           | ±5% of Time Range  |                                   |
| Environmental                               |  |                                   |
| Temperature                                 | Operating  | -20 °C...+50 °C (-4 °F...+122 °F) |
|   | Storage  | -55 °C...+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)<br>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  |                                   |

‡ At constant voltage and temperature.