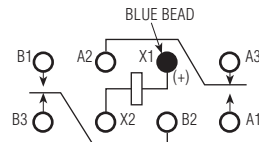


## Double Pole, Electrically Held, 2 Amps and Less

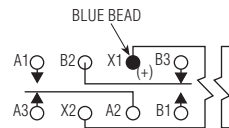
**HFW, HMB, HMS**

**HFW**  
**Standard Half Size**  
**High Performance Relay**  
**Qualified to**  
**MIL-R-39016/6**



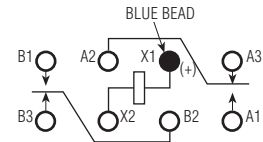
Terminal View

**HMB**  
**Bifilar Half Size**  
**High Performance Relay**  
**Qualified to**  
**MIL-R-39016/22**



Terminal View

**HMS**  
**Sensitive Half Size**  
**High Performance Relay**  
**Qualified to**  
**MIL-R-39016/44**



Terminal View

**Product Facts**

- Hermetically sealed
- Up to 2 amps switching
- High shock & vibration ratings
- Optional terminals & mounting styles
- Excellent RF switching

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**Electrical Characteristics**

**Contact Arrangement** —  
 2 Form C (DPDT)

**Contact Material** —  
 Stationary —  
 Hardened silver alloy  
 Moveable —  
 Gold plated hardened silver alloy

**Contact Resistance** —  
 Before Life — 50 milliohms max.  
 (measured at 10 mA @ 6 Vdc)  
 After Life — 100 milliohms max.  
 (measured @ 2 A @ 28 Vdc)

**Mechanical Life Expectancy** —  
 50 million operations

**Coil Voltage** —  
 5 to 48 Vdc (HFW)  
 6 to 26.5 Vdc (HMB)  
 5 to 36 Vdc (HMS)

**Coil Power** — 1.4 watts max. @ 25°C

**Duty Cycle** — Continuous

**Pick-up Voltage** — Approximately  
 50% of nominal coil voltage

**Pick-up Sensitivity @ 25°C** —  
 145 to 260 mW (HFW)  
 325 mW (HMB)  
 100 to 125 mW (HMS)

**Contact Ratings**

| Contact Load                    | Type              | Operations Min. |
|---------------------------------|-------------------|-----------------|
| 2 A @ 28 Vdc                    | Resistive         | 100,000         |
| 0.75 A @ 28 Vdc                 | Inductive (200mH) | 100,000         |
| 0.1 A @ 115 Vac, 60 Hz & 400 Hz | Resistive         | 100,000         |
| 0.3 A @ 115 Vac, 60 Hz & 400 Hz | Resistive         | 100,000         |
| 0.1 A @ 28 Vdc                  | Intermediate      | 50,000          |
| 0.160 A @ 28 Vdc                | Lamp              | 100,000         |
| 30 μA @ 50 mVdc                 | Low Level         | 1,000,000       |

**RF Performance**

| Frequency (MHz) | RF Losses (dB) | VSWR   | Isolation (dB) |
|-----------------|----------------|--------|----------------|
| 100             | 0.1            | 1.17:1 | 40             |
| 500             | 0.3            | 1.19:1 | 28             |
| 1000            | 0.4            | 1.19:1 | 23             |

**Double Pole, Electrically Held, 2 Amps and Less (Continued)**

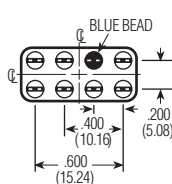
**HFW, HMB, HMS (Continued)**

**Operating Characteristics**

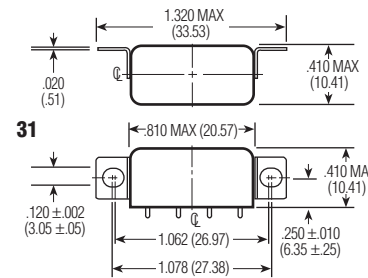
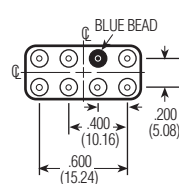
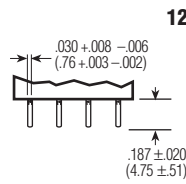
**Timing** —  
 Operate Time —  
 4.0 ms max. (HFW)  
 5.0 ms max. (HMB)  
 6.0 ms max. (HMS)  
 Release Time —  
 4.0 ms max. (HFW)  
 5.0 ms max. (HMB/HMS)  
**Contact Bounce** — 2.0 ms max.  
**Dielectric Withstanding Voltage** —  
 Between Open Contacts —  
 500 Vrms 60 Hz  
 Between Adjacent Contacts —  
 1000 Vrms 60 Hz  
 Between Contacts & Coil —  
 1000 Vrms 60 Hz  
**Insulation Resistance** —  
 10,000 megohms min. @ 500 Vdc

**Environmental Characteristics**

**Temperature Range** —  
 -65°C to +125°C  
**Weight** — 0.46 oz. (13 gms max.)  
**Vibration Resistance** —  
 HFW/HMB/HMS —  
 Standard — 20 G's, 10 to 2,000 Hz  
 HFW/HMB —  
 QPL — 30 G's, 10 to 3,000 Hz  
 HMS —  
 QPL — 20 G's, 10 to 2,500 Hz  
**Shock Resistance** —  
 100 G's, 6 ±1 ms  
 50 G's, 11 ±1 ms (HMS)  
**QPL Approval** —  
 MIL-R-39016/6 (HFW)  
 MIL-R-39016/22 (HMB)  
 MIL-R-39016/44 (HMS)



**Terminals**



**Mounting Styles**

**Standard Coil Data**

|                              | Nom. Coil Voltage (Vdc) | Coil Resistance in Ohms ±10% @ 25°C | Pickup Voltage Vdc (Max.) @ 25°C | Pickup Voltage Vdc (Min.) @ 125°C | Drop-out Voltage Vdc (Min.) @ 25°C | Drop-out Voltage Vdc (Min.) @ -65°C | Nom. Coil Power (mW) @ 25°C | Max. Coil Voltage | Coil Desig. |
|------------------------------|-------------------------|-------------------------------------|----------------------------------|-----------------------------------|------------------------------------|-------------------------------------|-----------------------------|-------------------|-------------|
| HFW                          | 5.0                     | 27                                  | 2.7                              | 3.8                               | 0.29                               | 0.21                                | 926                         | 6.0               | L           |
|                              | 6.0                     | 40                                  | 3.2                              | 4.5                               | 0.35                               | 0.25                                | 900                         | 7.5               | F           |
|                              | 12.0                    | 160                                 | 6.4                              | 9.0                               | 0.7                                | 0.5                                 | 900                         | 15.0              | G           |
| HMB                          | 6.0                     | 40                                  | 3.6                              | 4.8                               | 0.35                               | 0.25                                | 900                         | 7.5               | F           |
|                              | 12.0                    | 160                                 | 7.2                              | 9.6                               | 0.7                                | 0.5                                 | 900                         | 15.0              | G           |
|                              | 26.5                    | 700                                 | 15.0                             | 20.0                              | 1.5                                | 1.0                                 | 1003                        | 32.0              | K           |
| HMS                          | 5.0                     | 47                                  | 2.2                              | 3.2                               | 0.21                               | 0.12                                | 532                         | 7.0               | S001        |
|                              | 6.0                     | 75                                  | 2.75                             | 4.0                               | 0.27                               | 0.17                                | 480                         | 9.0               | S002        |
|                              | 12.0                    | 310                                 | 5.6                              | 8.0                               | 0.55                               | 0.35                                | 465                         | 20.0              | S003        |
|                              | 26.5                    | 1,030                               | 11.4                             | 16.5                              | 1.1                                | 0.7                                 | 682                         | 35.0              | S004        |
|                              | 30.0                    | 1,620                               | 14.3                             | 21.0                              | 1.4                                | 0.9                                 | 556                         | 44.0              | S005        |
|                              | 36.0                    | 2,640                               | 18.0                             | 26.0                              | 1.8                                | 1.1                                 | 491                         | 56.0              | S006        |
| Other                        | 6-8                     | 60                                  | 3.5                              | 4.85                              | 0.35                               | 0.22                                | 817                         | 9.0               | A           |
| (avail. for HFW relays only) | 12-15                   | 320                                 | 6.8                              | 9.42                              | 0.68                               | 0.44                                | 570                         | 21.0              | B           |
|                              | 18.0                    | 520                                 | 9.5                              | 13.16                             | 0.95                               | 0.62                                | 623                         | 27.0              | J           |
|                              | 26.5-32                 | 1,250                               | 14.0                             | 19.4                              | 1.5                                | 0.98                                | 684                         | 42.0              | D           |
|                              | 40.0                    | 2,700                               | 21.3                             | 29.5                              | 2.1                                | 1.37                                | 593                         | 61.0              | H           |
|                              | 48.0                    | 3,500                               | 25.5                             | 35.3                              | 2.5                                | 1.63                                | 658                         | 70.0              | E           |

**Specifying a Part Number Example:**

| Type | Terminals | Mountings | Coils | Features     |
|------|-----------|-----------|-------|--------------|
| HFW  | 12        | 30        | K     | 00 (n/a HMS) |

\* The part number example shown on this page is for catalog items. For a list of specific QPL part numbers, please see the index in Section 15.