

INCH-POUND

MIL-R-39016/39G
7 October 2014
SUPERSEDING
MIL-R-39016/39F
31 July 2006

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, HERMETICALLY SEALED,
4PDT, LOW-LEVEL TO 3 AMPERES (400 MILLIWATTS)

Inactive for new design after 4 August 1994.

This specification is approved for use by all Departments and
Agencies of the Department of Defense.

The requirements for acquiring the product described herein
shall consist of this specification sheet and [MIL-PRF-39016](#).

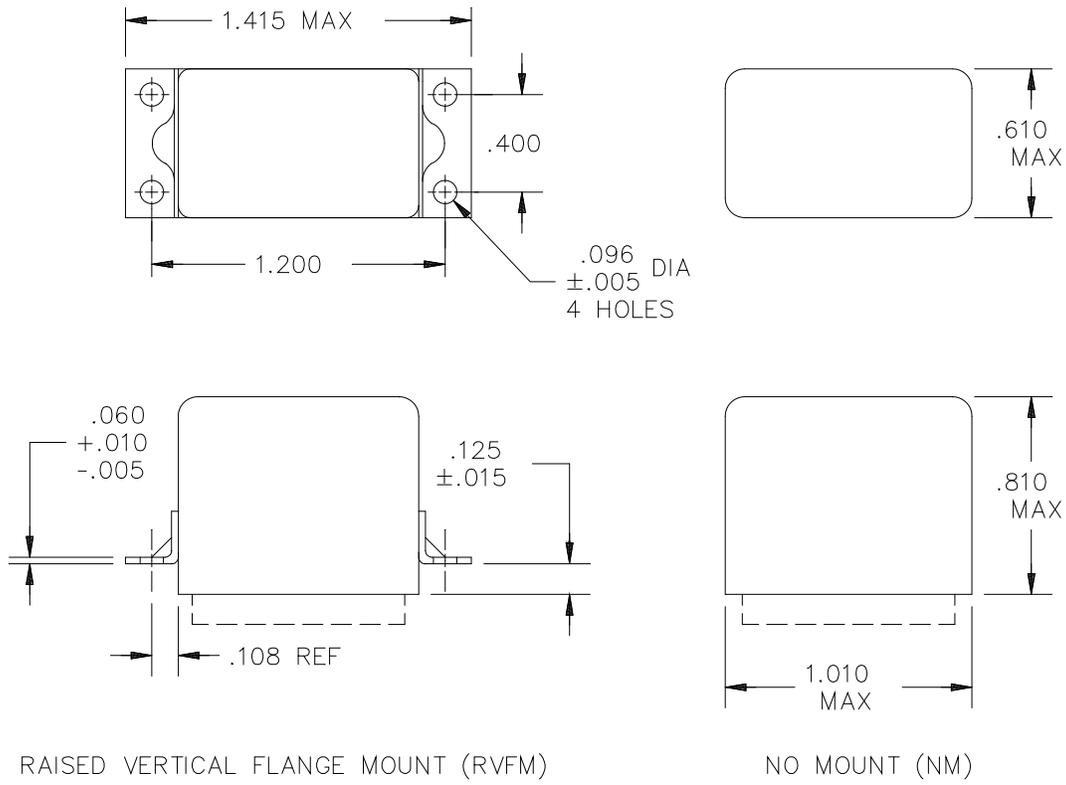


FIGURE 1. Dimensions and configuration.

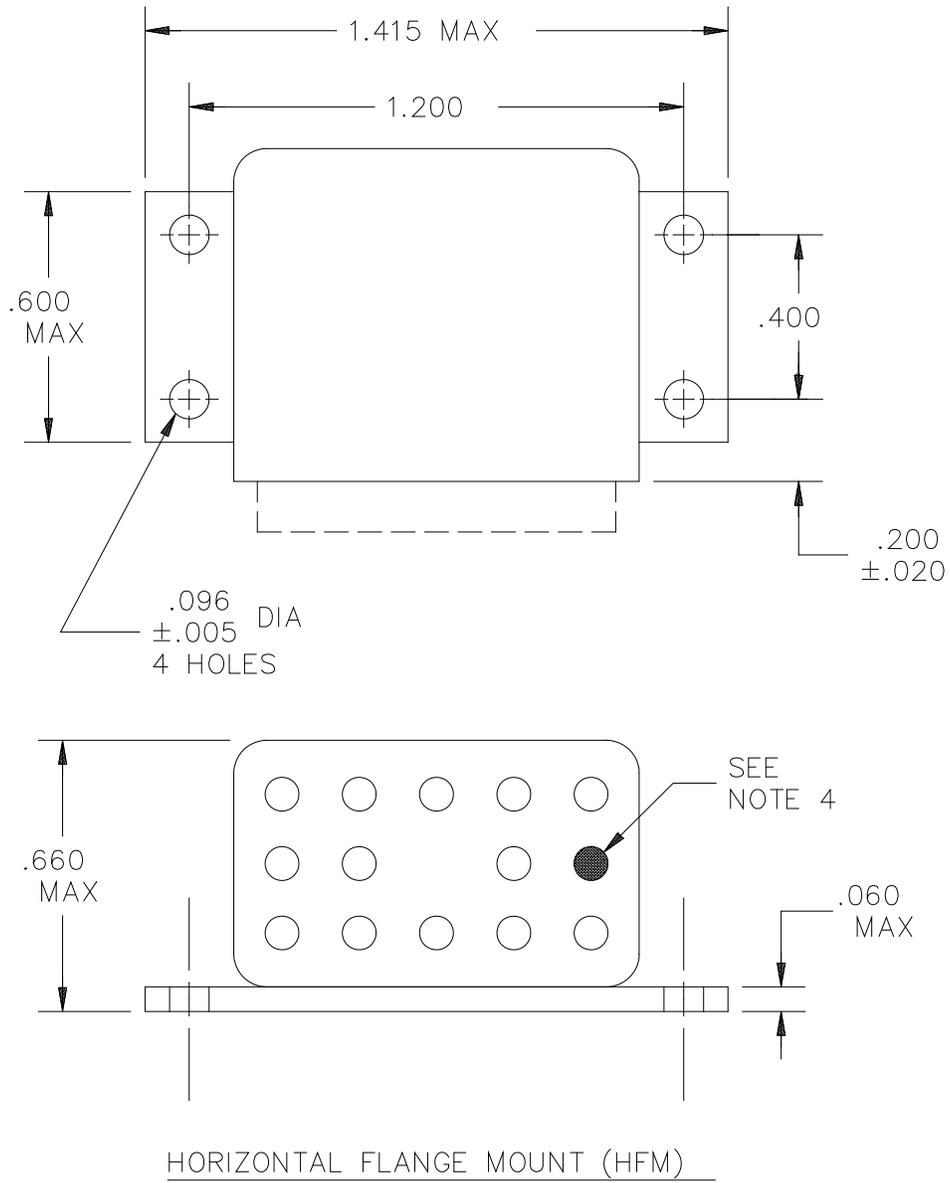
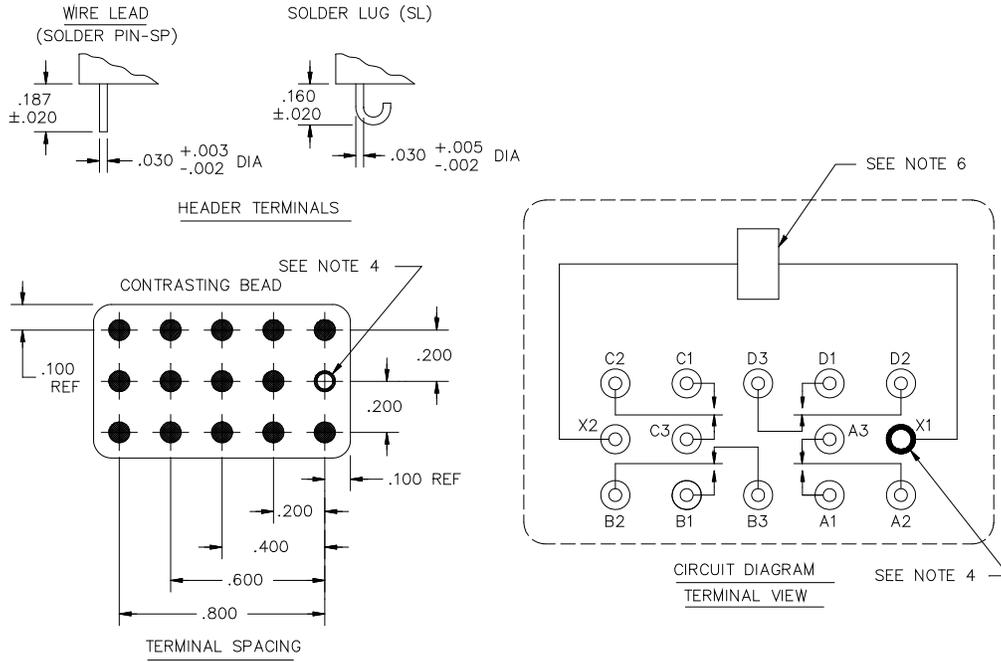


FIGURE 1. Dimensions and configuration – Continued.



Inches	mm	Inches	mm	Inches	mm	Inches	mm
.002	0.05	.060	1.52	.187	4.75	.800	20.32
.003	0.08	.096	2.44	.200	5.08	.810	20.57
.005	0.13	.100	2.54	.400	10.16	1.010	25.65
.010	0.25	.108	2.74	.600	15.24	1.200	30.48
.020	0.51	.125	3.18	.610	15.49	1.400	35.56
.030	0.76	.160	4.06	.660	16.76		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is $\pm .010$ (0.25 mm) for three place decimals.
4. Indicated terminal shall be identified with a contrasting bead.
5. Terminal locating dimensions shown are applicable to all type mounts with a tolerance of $\pm .005$ (0.13 mm).
6. Coil symbol optional in accordance with MIL-STD-1285.
7. All terminals shall be marked on the circuit diagram.

FIGURE 1. Dimensions and configurations – Continued.

REQUIREMENTS:

Contact data:

Load ratings:

High level (relay case grounded):

Resistive: 3.0 amperes at 28 V dc; 0.300 ampere at 115 V ac, 60 Hz and 400 Hz.

Resistive (relay case not grounded): 0.75 ampere at 115 V ac, 60 Hz and 400 Hz.

Inductive: 1.0 ampere at 200 mH inductive at 28 V dc (100,000 cycles).

Lamp: 0.200 ampere at 28 V dc.

Low level: 10 μ A to 50 μ A at 10 mV to 50 mV dc or peak ac.

Intermediate current: Not applicable.

Contact resistance or voltage drop:

Initial: 0.050 ohm maximum.

High level:

During life: Not more than 5 percent of open circuit voltage.

After life: 0.100 ohm maximum.

Low level:

During life: 33 ohms maximum.

After life: 0.150 ohm maximum.

Contact bounce: 2.0 ms maximum.

Contact stabilization time: 2.5 ms maximum.

Overload (high level only):

Resistive: Two times rated, except grounded case ac.

Coil data (See [table I](#)).

Operate time: 8 ms maximum over temperature range with rated coil voltage.

Release time: 8 ms maximum over temperature range from rated coil voltage.

TABLE I. Dash numbers and characteristics. [1/](#)

Dash no.	Mounting style (see figure 1)	Terminal code	Coil voltage (V dc)		At +25°C			Over temperature range			
			Rated 2/	Max	Coil resistance ohms ± 10%	Specified pickup value (voltage) (V dc)	Specified hold value (voltage) (V dc)	Specified dropout value (voltage) (V dc)	Specified pickup value (voltage) (V dc)	Specified hold value (voltage) (V dc)	Specified dropout value (voltage) (V dc)
-001	RVFM	SL	26.5	32.0	500	13.5	7.0	2.0	18.0	11.5	1.0
-002	RVFM	SP	26.5	32.0	500	13.5	7.0	2.0	18.0	11.5	1.0
-003	NM	SL	26.5	32.0	500	13.5	7.0	2.0	18.0	11.5	1.0
-004	NM	SP	26.5	32.0	500	13.5	7.0	2.0	18.0	11.5	1.0
-005	HFM	SL	26.5	32.0	500	13.5	7.0	2.0	18.0	11.5	1.0
-006	HFM	SP	26.5	32.0	500	13.5	7.0	2.0	18.0	11.5	1.0
-007	RVFM	SL	12.0	16.5	117	6.6	3.4	1.0	8.8	5.65	0.48
-008	RVFM	SP	12.0	16.5	117	6.6	3.4	1.0	8.8	5.65	0.48
-009	NM	SL	12.0	16.5	117	6.6	3.4	1.0	8.8	5.65	0.48
-010	NM	SP	12.0	16.5	117	6.6	3.4	1.0	8.8	5.65	0.48
-011	HFM	SL	12.0	16.5	117	6.6	3.4	1.0	8.8	5.65	0.48
-012	HFM	SP	12.0	16.5	117	6.6	3.4	1.0	8.8	5.65	0.48
-013	RVFM	SL	6.0	8.5	32	3.4	1.7	0.5	4.55	2.9	0.24
-014	RVFM	SP	6.0	8.5	32	3.4	1.7	0.5	4.55	2.9	0.24
-015	NM	SL	6.0	8.5	32	3.4	1.7	0.5	4.55	2.9	0.24
-016	NM	SP	6.0	8.5	32	3.4	1.7	0.5	4.55	2.9	0.24
-017	HFM	SL	6.0	8.5	32	3.4	1.7	0.5	4.55	2.9	0.24
-018	HFM	SP	6.0	8.5	32	3.4	1.7	0.5	4.55	2.9	0.24

[1/](#) Each relay possesses high level and low level capabilities. However, relays previously tested or used above 10 mA resistive at 6 V dc maximum or peak ac open circuit are not recommended for subsequent use in low level applications.

[2/](#) CAUTION: The use of any coil voltage less than the rated coil voltage will compromise the operation of the relay.

Electrical data:

Insulation resistance: 1,000 megohms minimum, except the resistance between coil and case at high temperature shall be 500 megohms, or greater.

Dielectric withstanding voltage:

Sea level:

Between case, frame, or enclosure, and all contacts in the energized and ----- 1,000 V rms (60 Hz)
de-energized positions

Between case, frame, or enclosure and coils ----- 500 V rms (60 Hz)

Between all contacts and coil(s) ----- 1,000 V rms (60 Hz)

Between open contacts in the energized and de-energized positions ----- 500 V rms (60 Hz)

Between contact poles ----- 1,000 V rms (60 Hz)

Altitude:

Between all terminals to case ----- 350 V rms (60 Hz)

Environmental data:

Temperature range: -65°C to +125°C.

Vibration (sinusoidal): Method 204, MIL-STD-202. Contact chatter shall not exceed 10 µs maximum for closed contacts, and 1 µs maximum closure for open contacts.

Vibration (random): Method 214, MIL-STD-202, test condition IG. Contact chatter shall not exceed 10 µs maximum for closed contacts, and 1 µs maximum closure for open contacts.

Shock (specified pulse): Method 213, MIL-STD-202, test condition A, 50 g's, (see figure 1, HFM); test condition B, 75 g's, (see figure 1, RVFM and NM). Contact chatter shall not exceed 10 µs maximum for closed contacts and 1 µs maximum closure for open contacts.

Resistance to soldering heat: Applicable.

Physical data:

Terminals: See figure 1 and table I.

Terminal strength: 3 pounds ± 0.2 pound (pull).

Solderability: Applicable.

Dimensions and configurations: See figure 1.

Weight: 30 grams (1.06 ounce) maximum.

Identification marking (full): Applicable.

Life test requirements:

High level: 100,000 cycles.

Low level: 100,000 cycles.

Part or Identifying Number (PIN): M39016/39- (dash from table I).

Qualification inspection:

Qualification inspection and sample size: See table II.

TABLE II. Qualification inspection and sample size. 1/

Single submission	Group submission	
50 units plus 1 open unit. One failure allowed.	M39016/39-001	50 units plus 1 open unit. One failure allowed.
Qualification inspection as applicable.		Qualification inspection as applicable.
	M39016/39-018	Two units, qualification, Q1, also shock, vibration, acceleration, terminal strength and seal.

1/ The number of units required for qualification testing will be increased as required in Q5, table II, MIL-PRF-39016, if the relay manufacturer elects to test the number of units permitting one or more failures. Prior to performance of qualification inspection testing; the relay manufacturer shall preselect the sampling plan.

Supersession data: See [table III](#).

TABLE III. Supersession data.

Superseded PIN M5757/12-	New PIN M39016/39-
001	001
003	002
005	003
007	004
009	005
011	006
013	007
015	008
017	009
019	010
021	011
023	012
025	013
027	014
029	015
031	016
033	017
035	018

Quality assurance provisions:

Group B and group C not required. Group A required. The qualifying activity shall be notified of any design or construction changes and shall impose additional testing requirements as necessary.

Referenced documents: In addition to [MIL-PRF-39016](#), this document references the following:

[MIL-STD-202](#) [MIL-STD-1285](#)

Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

Custodians:
 Army – CR
 Navy – EC
 Air Force – 85
 DLA – CC

Preparing activity:
 DLA – CC
 (Project 5945-2014-018)

Review activities:
 Army – AR, AT, AV, CR4, MI
 Navy – SH
 Air Force – 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.