

INCH-POUND

MIL-R-39016/34F
31 July 2006
SUPERSEDING
MIL-R-39016/34E
22 June 1992

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, DPDT, LOW LEVEL TO 1.0 AMPERE,
(0.100-INCH TERMINAL SPACING)

Inactive for new design after 22 June 1992.

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.

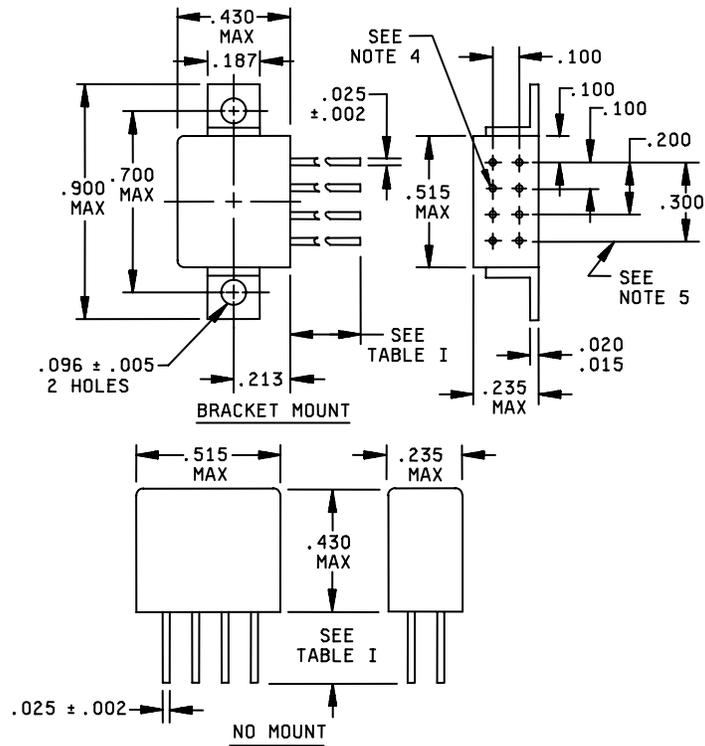
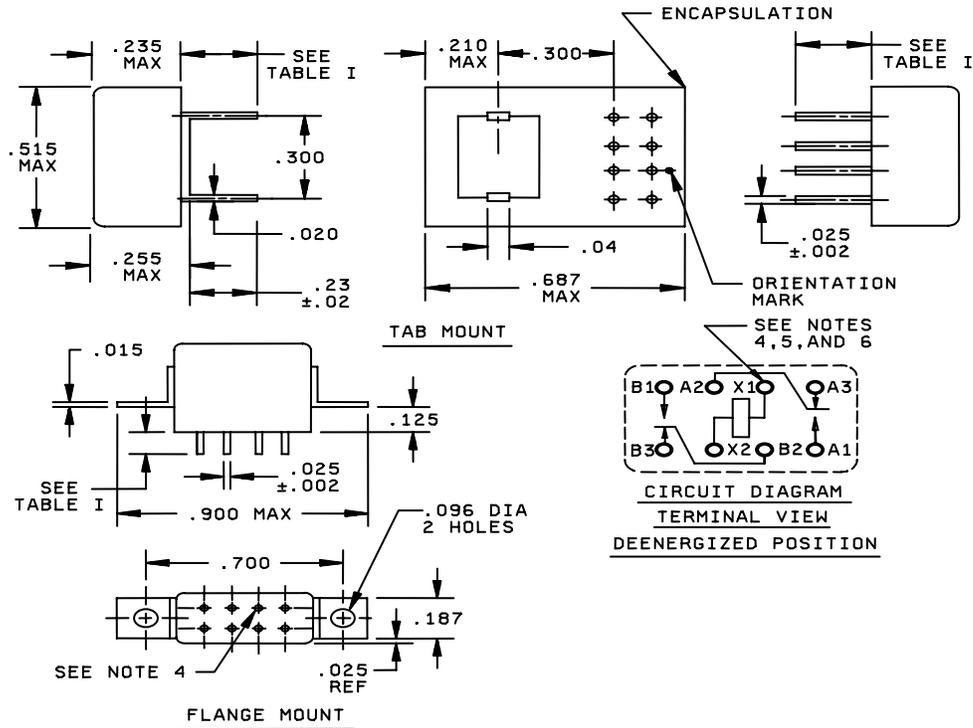


FIGURE 1. Outline and dimensions.

MIL-R-39016/34F



Inches	mm	Inches	mm
.002	0.05	.23	5.8
.003	0.13	.235	5.97
.015	0.38	.25	6.35
.020	0.51	.255	6.48
.025	0.64	.300	7.62
.04	1.0	.430	10.92
.096	2.44	.505	12.83
.100	2.54	.687	17.45
.187	4.75	.700	17.78
.200	5.08	.900	22.86
.210	5.33	1.470	37.34
.213	5.31		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.010 (0.25 mm).
4. The X1 terminal shall be identified with a contrasting bead.
5. Terminal locations shown are applicable to all type mounts.
6. Terminal numbers shown on circuit diagram are for reference only. Numbers do not appear on relay.

FIGURE 1. Outline and dimensions - Continued.

TABLE I. Dash numbers and characteristics.

Dash numbers				Mount	Coil voltage 4/ (V dc)		At +25°C				Over temperature range		
Wire lead 1.50 ±.020	Wire lead (solder pin-SP) .187 ±.020	Wire lead (solder pin-SP) .25 ±.02	Pin (plug in) .187 ±.020 2/ 3/		Rated	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				Bracket	6.0	8.0	90	3.0	1.5	0.3	4.0	2.0	0.2
	-002			No mount	6.0	8.0	90	3.0	1.5	0.3	4.0	2.0	0.2
		-003		Tab mount	6.0	8.0	90	3.0	1.5	0.3	4.0	2.0	0.2
-004				Bracket	12	16	310	6.0	3.0	0.6	8.0	4.0	0.4
	-005			No mount	12	16	310	6.0	3.0	0.6	8.0	4.0	0.4
		-006		Tab mount	12	16	310	6.0	3.0	0.6	8.0	4.0	0.4
-007				Bracket	26.5	32	1,500	13.5	10	1.5	18	14	1.0
	-008			No mount	26.5	32	1,500	13.5	10	1.5	18	14	1.0
		-009		Tab mount	26.5	32	1,500	13.5	10	1.5	18	14	1.0
			-010	No mount	6.0	8.0	90	3.0	1.5	0.3	4.0	2.0	0.2
			-011	No mount	12	16	310	6.0	3.0	0.6	8.0	4.0	0.4
			-012	No mount	26.5	32	1,500	13.5	10	1.5	18	14	1.0
			-013	Flange mount	6.0	8.0	90	3.0	1.5	0.3	4.0	2.0	0.2
			-014	Flange mount	12	16	310	6.0	3.0	0.6	8.0	4.0	0.4
			-015	Flange mount	26.5	32	1,500	13.5	10	1.5	18	14	1.0

3

MIL-R-39016/34F

- 1/ Each relay possesses high level and low level capabilities. However, relays previously tested or used above 10 mA resistive at 6 V dc or peak ac open circuit are not recommended for subsequent use in low level applications.
- 2/ Pins (plug-in) are gold plated leads.
- 3/ Socket plug-in relays are not to be used in Air Force airborne applications.
- 4/ CAUTION: The use of any coil voltage less than rated coil voltage will compromise the operation of the relay.

REQUIREMENTS:

CONTACT DATA:

Load ratings:

High level (relay case grounded):

Resistive: 1.0 ampere maximum at 28 V dc maximum.

Inductive: 0.2 ampere maximum at 28 V dc maximum with 200 millihenries minimum.

Lamp: 0.100 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: Applicable.

Contact resistance or voltage drop: 1/

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.

Intermediate current:

During intermediate current: 1 ohm maximum.

After intermediate current: 0.100 ohm maximum.

Contact bounce: 2.0 milliseconds (ms) maximum.

Contact stabilization time: 2.5 milliseconds (ms) maximum.

Overload (high level only): Two times rated current.

COIL DATA: See table I.

Operate time: 4 ms maximum over temperature range with rated coil voltage.

Release time: 4 ms maximum over temperature range from rated coil voltage.

1/ For tab mount only, add 0.025 ohm to the contact resistance values specified.

MIL-R-39016/34F

ELECTRICAL DATA:

Insulation resistance: 10,000 megohms minimum, except the resistance between coil and case at high temperature shall be 1,000 megohms or greater. MIL-STD-202, method 302, test condition A.

Dielectric withstanding voltage:

	Sea level V rms (60 Hz)	Altitude V rms (60 Hz)
Between case, frame, or enclosure, and between all contacts in the energized and deenergized positions	500	300 All terminals to case
Between case, frame, or enclosure and coils -----	500	
Between all contacts and coils -----	500	
Between open contacts in the energized and deenergized positions -----	350	
Between contact poles -----	500	

ENVIRONMENTAL DATA:

Temperature range: -65°C to +125°C.

Vibration (sinusoidal): MIL-STD-202, method 204, test condition D (20 g's). Contact chatter shall not exceed 10 microseconds maximum for closed contacts, and 1 microsecond maximum closure for open contacts.

Vibration (random): MIL-STD-202, method 214, test condition IG. Contact chatter shall not exceed 10 microseconds maximum for closed contacts, and 1 microsecond maximum closure for open contacts (applicable to qualification and group C testing only).

Shock (specified pulse): MIL-STD-202, method 213, test condition C (100 g's). Contact chatter shall not exceed 10 microseconds maximum for closed contacts, and 1 microsecond maximum closure for open contacts.

Magnetic inference: Applicable.

Resistance to soldering heat: Applicable.

Acceleration: Applicable.

PHYSICAL:

Terminals: See figure 1.

Terminal strength: 1 ± .1 pound pull.

Solderability: Applicable to all terminations except pin, plug-in.

Terminal twist test: Applicable to wire leads.

Terminal, socket plug-in: Plug-in terminals shall provide the operational, environmental, and interface characteristics to provide a reliable interconnect to gold plated contacts. One system for gold plating that may be used is ASTM B488, type 3, class 1.25 nickel underplate 50 to 150 microinches thick. The gold plating shall enable the product to meet the performance requirements of this specification and shall be approved by the qualifying activity.

MIL-R-39016/34F

Dimensions and configurations: See figure 1.

Weight: 0.15 ounce maximum.

Identification marking (full): Applicable, marking surface for date code is optional.

LIFE TEST REQUIREMENTS:

Intermediate current: 50,000 cycles.

Electrical: 100,000 cycles.

Mechanical: 1,000,000 cycles

Part or Identifying Number (PIN): M39016/34- (dash number from table I).

QUALIFICATION INSPECTION:

Qualification inspection and sample size: See table II.

TABLE II. Qualification inspection and sample size.

Single submission	Group submission	
50 units plus 1 open unit. One failure allowed. Qualification inspection as applicable.	M39016/34-007	50 units plus 1 open unit. One failure allowed. Qualification inspection as applicable.
	M39016/34-006	2 units, qualification, Q1, also shock, vibration, acceleration, terminal strength, seal, and resistance to soldering heat.
	M39016/34-013	2 units qualification, inspection Q1.

SUPERSESSION DATA: See table III.

TABLE III. Supersession data.

M39016/34-	M5757/30-
001	025, 028, 031, 034
002	033, 036
004	037, 040, 043, 046
005	045, 048
010	027, 030
011	039, 042
	M5757/19-
007	013, 016, 019, 022
008	021, 024
012	015, 018

QUALITY ASSURANCE PROVISIONS:

Group B and group C not required. Group A required. The qualifying activity shall be notified of any design and/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 ASTM B488

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 last previous issue.

Custodians:

Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5945-1289-000)

Review activities:

Army - AR, AT, AV, CR4
Navy - AS, OS, SH

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 <http://assist.daps.dla.mil>.