

INCH-POUND

MIL-PRF-39016/47C
27 August 2006
SUPERSEDING
MIL-PRF-39016/47B
20 July 1988

PERFORMANCE SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, ESTABLISHED RELIABILITY, DPDT,
LOW LEVEL TO 0.5 AMPERE (.100 D.I.P. TERMINAL SPACING)
ONE-TENTH SIZE, SENSITIVE, BI-STABLE, (LATCHING)

Inactive for new design and is no longer used,
except for replacement purposes as of 8 July 2002

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.

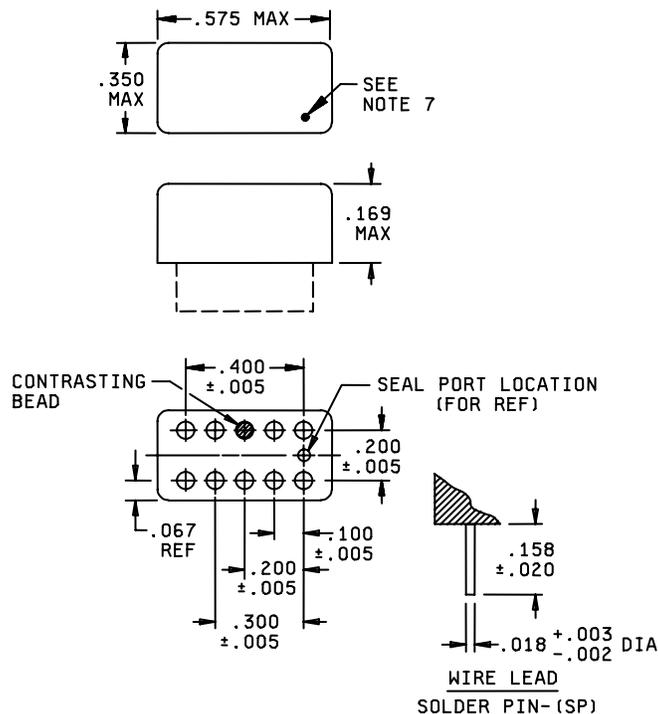
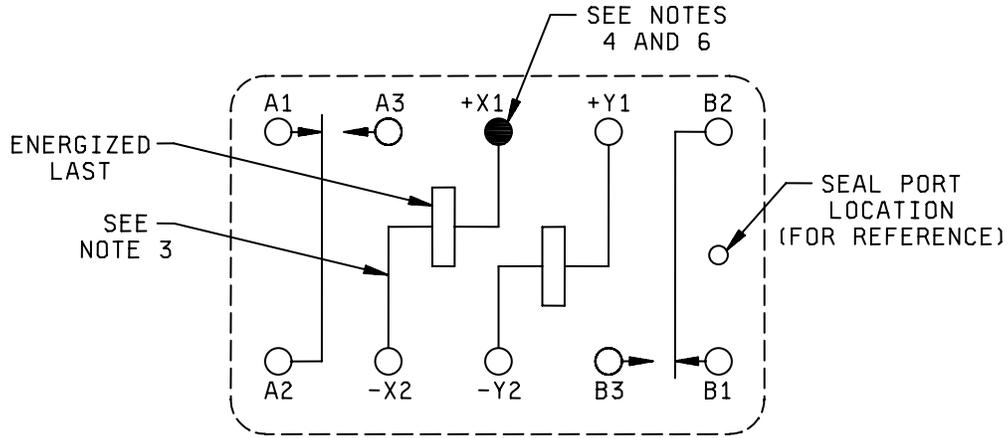


FIGURE 1. Dimensions and configuration.



CIRCUIT DIAGRAM
TERMINAL VIEW

Inches	mm	Inches	mm
.002	0.05	.158	4.01
.003	0.08	.169	4.29
.005	0.13	.200	5.08
.018	0.45	.300	7.62
.020	0.51	.350	8.90
.067	1.70	.400	10.16
.083	2.10	.575	14.60
.100	2.54		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Coil symbol is optional in accordance with MIL-STD-1285.
4. Indicated terminal X1 shall be identified with contrasting colored bead. Relays shall have plus (+) and minus (-) signs placed on circuit diagram as shown above, for X and Y terminals.
5. Terminal markings are for reference only.
6. Energizing the indicated coil (energized last), with the indicated polarity and voltage, shall cause the relay contacts to assume the position shown.
7. An orientation mark (position reference) will be on top of each relay above pin B2.

FIGURE 1. Dimensions and configuration - Continued.

REQUIREMENTS:

Contact data:

Arrangement: 2 form C.

Load ratings (relay case grounded).

High level: (100,000 cycles).

Resistive:

0.5 ampere at 28 V dc.

Inductive:

0.1 ampere at 28 V dc (200 mH).

Lamp: Not applicable.

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:

Initial: 0.200 ohm maximum.

High level:

During life: Maximum of 10 percent of open circuit voltage.

After life: 0.300 ohm maximum.

Low level:

During life: 100 ohms maximum.

After life: 0.300 ohm maximum.

Intermediate current:

During intermediate current: 3 ohms maximum.

After intermediate current: 0.500 ohm maximum.

Contact bounce: 2.0 ms maximum (applicable to failure rate level "L").

Contact stabilization time: 2.5 ms maximum (applicable to failure rate levels "M", "P", and "R").

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Overload (high level only):

Resistive: 2 times rated current.

Inductive: 2 times rated current.

Neutral screen: Applicable.

Coil data: See table I.

Operate time (each coil): 6.0 ms maximum over temperature range with rated coil voltage.

Release time: Not applicable.

Electrical data:

Insulation resistance: 1,000 megohms minimum except the resistance between coil and case at high temperature shall be 100 megohms or greater. Measure at 100 V dc.

Dielectric withstanding voltage:

	Sea level V rms (60 Hz)	Altitude V rms (60 Hz)
Between case, frame, or enclosure, and all contacts- - -	500	} 175 All terminals to case
Between case, frame, or enclosure and coil(s)- - - - -	350	
Between all contacts and coil(s)- - - - -	500	
Between open contacts in the set and reset positions - - - - -	350	
Between coils - - - - -	350	
Between contact poles - - - - -	500	

Environmental data:

Temperature range: -65°C to +125°C.

Magnetic interference: Not applicable.

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

Coil life: Not applicable.

Resistance to soldering heat: Applicable.

Acceleration: 100 g.

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Physical data:

Seal: Hermetic.

Terminals: See figure 1.

Terminal strength: 1.0 ±0.1 pound pull (453 grams).

Solderability: Applicable.

Terminal twist test: Not applicable.

Dimensions and configuration: See figure 1.

Weight: 2.0 grams (0.07 ounce) maximum.

Minimum marking: Applicable.

Life test requirements:

High level: 100,000 cycles.

Low level: 100,000 cycles plus 900,000 cycles mechanical life.

Part or Identifying Number (PIN): M39016/47- (dash number from table I and suffix letter designating failure rate level).

TABLE I. Dash number and characteristics. 1/ 2/

Dash number 3/	Coil voltage 4/ (V dc)		At +20°C		At +125°C
	Rated	Max	Coil resistance ohms ±15%	Specified pickup (latch/reset) value (voltage) 5/ (V dc)	Specified pickup (latch/reset) value (voltage) 5/ (V dc)
001	5	7	65	2.5	3.5
002	12	14	375	6.3	9.0
003	24	28	1,500	12.6	18.0

1/ WARNING: When latching relays are installed in equipment, the latch and reset coils should not be pulsed simultaneously. Coils should not be pulsed with less than the rated coil voltage. The nominal power sensitivity (rectangular pulses) is 2.0 millijoules at 5 milliseconds. The nominal coil voltage and the pulse width should be a minimum of three times the specified operate time of the relay.

2/ Relays previously tested or used above 10 mA resistive at 6 V dc maximum or peak ac open circuit shall not be used for low level applications.

3/ The suffix letter L, M, P, or R to designate the applicable failure rate level that shall be added to the applicable listed dash number. Failure rate level (percent per 10,000 cycles): L, 3.0; M, 1.0; P, 0.1; R, 0.01.
EXAMPLE, 001L - - - - - 002M.

4/ CAUTION: Use of any voltage less than the rated voltage will compromise the operation of the relay.

5/ Allow 10 percent increase in maximum operate voltages after life tests.

Qualification inspection:

Qualification inspection and sample size: See table II.

TABLE II. Qualification inspection and sample size.

Single submission	Group submission	
24 units plus 1 open unit for level L at C = 0 <u>1/</u>	M39016/47-002	24 units plus 1 open unit for level L at C = 0 <u>1/</u>
33 units plus 1 open unit for level M at C = 0 <u>1/</u>		33 units plus 1 open unit for level M at C = 0 <u>1/</u>
Qualification inspection as applicable.	M39016/47-001	2 units each part number, qualification inspection table, Q1.
	M39016/47-003	2 units, qualification inspection table, Q1, and 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.

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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 last previous issue.

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

Preparing activity:
DLA - CC

(Project 5945-1295-000)

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>.