INCH-POUND

MIL-R-5757/13H
3 September 2004
SUPERSEDING
MIL-R-5757/13G
11 April 1990

MILITARY SPECIFICATION SHEET

RELAYS, ELECTRICAL, HERMETICALLY SEALED, DPDT, LOW LEVEL TO 2 AMPERES, (SENSITIVE, 40 MILLIWATTS)

INACTIVE FOR NEW DESIGN
AFTER 15 OCTOBER 1998

This specification sheet 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-R-5757.

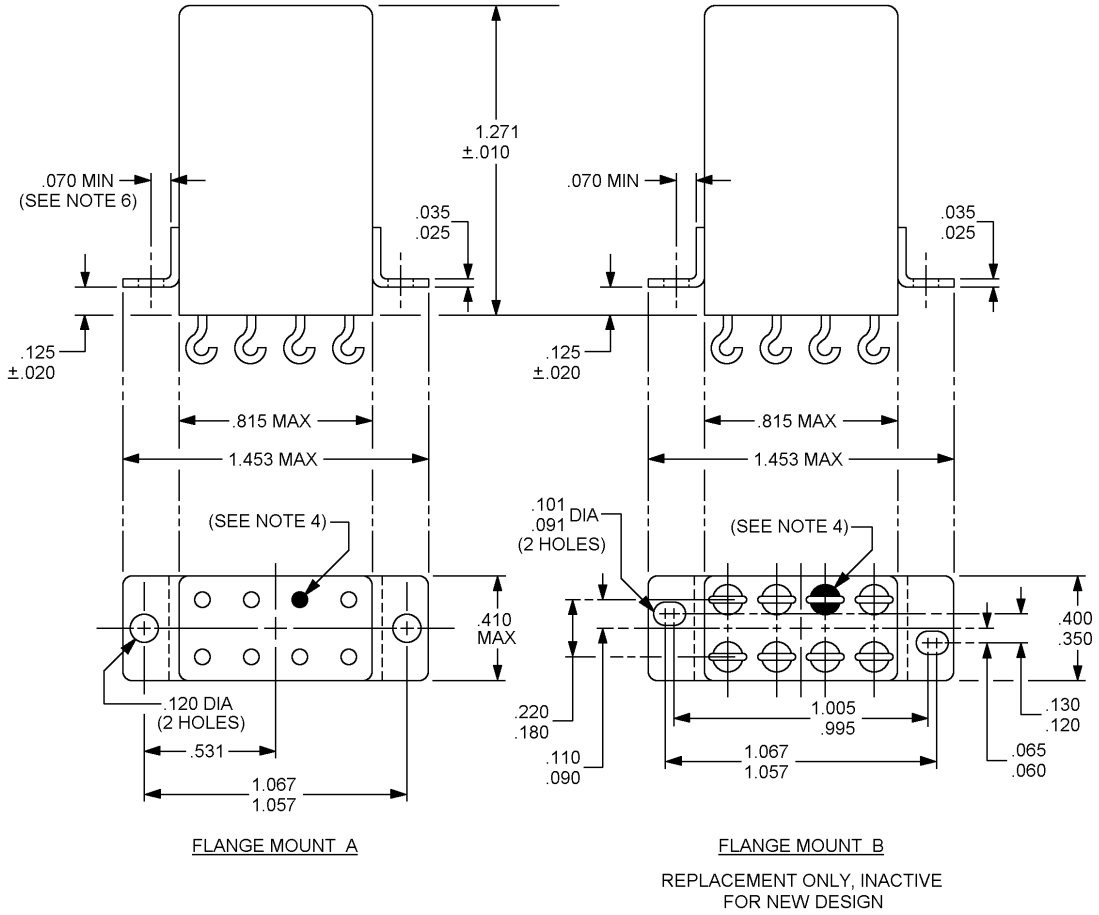


FIGURE 1. Dimensions and configuration.

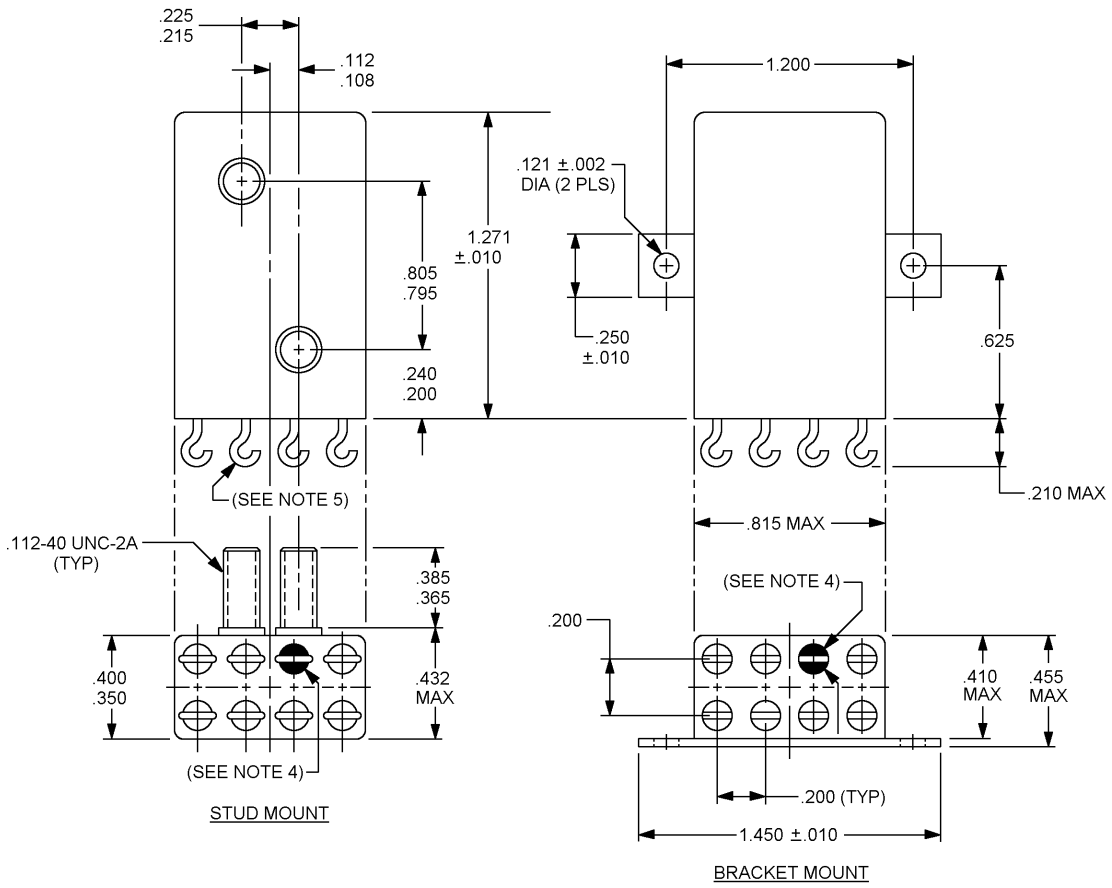
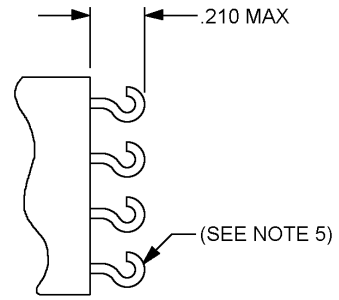
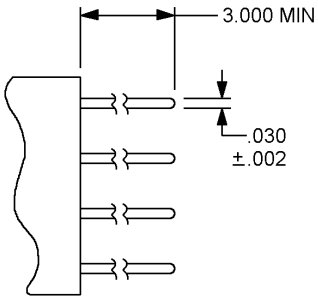


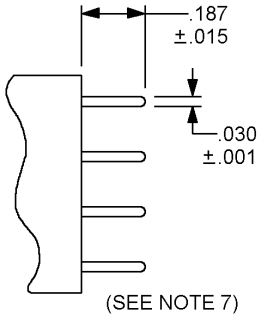
FIGURE 1. Dimensions and configuration - Continued.



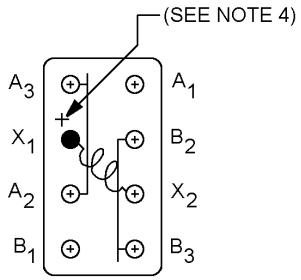
SOLDER LUG



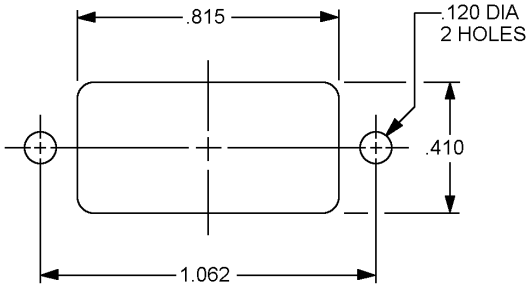
WIRE LEAD



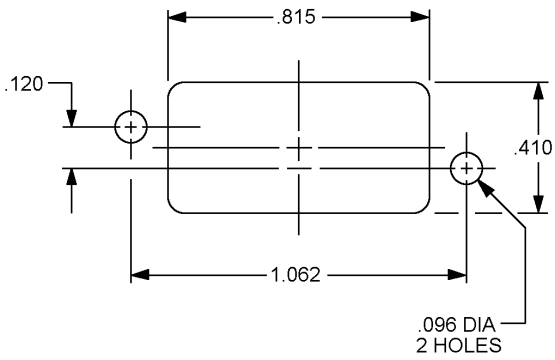
PIN



SCHEMATIC DIAGRAM UNENERGIZED POSITION
BOTTOM VIEW



FLANGE MOUNT A
CHASSIS CUTOUT



RECOMMENDED FLANGE MOUNT B
CHASSIS CUTOUT

FIGURE 1. Dimensions and configuration - Continued.

Inches	mm	Inches	mm	Inches	mm	Inches	mm
.001	0.03	.101	2.57	.225	5.72	.815	20.70
.002	0.05	.108	2.74	.240	6.10	.995	25.27
.010	0.25	.110	2.79	.250	6.35	1.005	25.53
.015	0.38	.112	2.84	.350	8.89	1.057	26.85
.020	0.51	.120	3.05	.365	9.27	1.062	26.97
.025	0.64	.121	3.07	.385	9.78	1.067	27.10
.030	0.76	.125	3.18	.400	10.16	1.200	30.48
.035	0.89	.130	3.30	.410	10.41	1.271	32.28
.060	1.52	.180	4.57	.432	10.97	1.450	36.83
.065	1.65	.187	4.75	.455	11.56	1.453	36.91
.070	1.78	.200	5.08	.531	13.49	3.000	76.20
.090	2.29	.210	5.33	.625	15.88		
.091	2.31	.215	5.46	.795	20.19		
.096	2.36	.220	5.59	.805	20.45		

NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerance is ±.005 (0.13 mm).
3. Metric equivalents are given for general information only.
4. The X_1 terminal shall be identified with a contrasting bead. In the case of relays with polarized coils, the contrasting bead shall indicate the positive terminal and a +(plus) sign shall be placed on the schematic diagram to indicate this terminal.
5. Shape of solder terminals optional.
6. Mounting screw head clearance for .995 (25.27 mm) -1.005 (25.53 mm) dimension based on use of No. 2 filister head screw.
7. Relays with pin terminals shall not be used for plug-in socket applications.

FIGURE 1. Dimensions and configurations - Continued.

REQUIREMENTS:

Contact data:

Configuration: DPDT

Arrangement: 2 form C

Load ratings: 1/

High level (relay case grounded):

Resistive: 2 amperes at 28 V dc.

0.3 ampere at 115 V ac, 60 to 400 Hz. 2/

Inductive: 0.75 ampere at 28 V dc, at an inductive load of 200 millihenries, minimum.

Lamp: 0.1 ampere at 28 V dc.

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

Intermediate current: Applicable.

Contact resistance or voltage drop:

Rated life:

Before: 0.05 ohm.

During: 10 percent of open circuit voltage maximum.

After: 0.1 ohm.

Intermediate current:

Before: 0.05 ohm.

During: 3 ohms.

After: 3 ohms.

Low level:

Before: 0.05 ohm.

During: 100 ohms.

After: 0.15 ohm.

1/ Each relay possesses high 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/ For qualifications, testing of 400 hertz (Hz) loads are not required.

Contact bounce: 2 milliseconds (ms) maximum, load shall be 10 mA at 6 V dc maximum.

Overload test:

Resistive: 2 times rated current.

Inductive: 2 times rated current.

COIL DATA:

Duty rating: Continuous.

Nominal current: See table I.

Pick-up current: See table I.

Drop-out current: See table I.

Coil release: See table I.

Operate time: 15 ms maximum over temperature range.

Release time: 10 ms maximum over temperature range.

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 V rms (60 Hz)	Altitude V rms (60 Hz)
Between case, frame or enclosure, and all contacts both in the energized and deenergized positions: ----------	1,000	350 All terminals to case
Between case, frame or enclosure and coil: ----------	500	
Between all contacts and coil: ----------	1,000	
Between open contacts in the energized and deenergized positions: ----------	500	
Between contact poles: ----------	1,000	

ENVIRONMENTAL DATA:

Temperature range: -65°C to +125°C.

Vibration: 15 g's.

Acceleration: 30 g's.

Shock: 100 g's.

Resistance to soldering heat: Applicable to pin type (printed circuit).

Internal moisture: Applicable.

PHYSICAL:

Enclosure design: Hermetically sealed.

Terminal strength: 3 ±0.3 pound pull.

Terminal twist test: Applicable to wire leads.

Sealed by welding: Applicable.

Dimensions and configuration: See figure 1.

Termination: See figure 1 and table I.

Weight: 1.1 ounces maximum.

Part or Identifying Number (PIN): See table I.

LIFE TEST REQUIREMENTS:

High level: 100,000 operations each at rated load.

Two relays per contact rating shall be tested, with rated loads on all contacts, except intermediate current.

For qualification inspection, life lamp load test not required.

Low level: Applicable (100,000 cycles).

Intermediate current: (50,000 cycles).

VERIFICATION (See table II):

Group A.

a. Group A2: 100 percent.

b. Dielectric withstanding voltage:

(1) Tests to be conducted at sea level rating only.

(2) Duration of application: 5-10 seconds at a 10 percent increase in the dielectric strength voltage.

TABLE I. PIN and characteristics.

PIN M5757/13-	Mount	Terminal	DC coil resistance (±10%) +25°C ±5°C (ohms)	Nominal coil current (mA)	Pickup current (max) (mA)	Dropout current	
						Max (mA)	Min (mA)
083	Flange A	Lug (solder)	20.0	90.0	45.0	22.5	4.5
084	Flange A	Lug (solder)	100.0	40.0	20.0	10.0	2.0
085	Flange A	Lug (solder)	500.0	18.0	9.0	4.5	0.9
086	Flange A	Lug (solder)	1,000	13.0	6.5	3.1	0.65
087	Flange A	Lug (solder)	1,500	11.0	5.2	2.6	0.52
088	Flange A	Lug (solder)	2,000	9.0	4.5	2.2	0.50
089	Flange A	Lug (solder)	2,500	8.0	4.0	2.0	0.40
090	Flange A	Lug (solder)	5,000	6.0	2.8	1.4	0.30
091	Flange A	Lug (solder)	8,000	5.0	2.3	1.1	0.23
092	Flange A	Lug (solder)	10,000	4.0	2.0	1.0	0.20
093	Flange A	Pin (PW)	20.0	90.0	45.0	22.5	4.5
094	Flange A	Pin (PW)	100.0	40.0	20.0	10.0	2.0
095	Flange A	Pin (PW)	200.0	28.4	14.2	10.0	1.4
096	Flange A	Pin (PW)	500.0	18.0	9.0	4.5	0.9
097	Flange A	Pin (PW)	1,000	13.0	6.5	3.1	0.65
098	Flange A	Pin (PW)	1,500	11.0	5.2	2.6	0.52
099	Flange A	Pin (PW)	2,000	9.0	4.5	2.2	0.50
100	Flange A	Pin (PW)	2,500	8.0	4.0	2.0	0.40
101	Flange A	Pin (PW)	5,000	6.0	2.8	1.4	0.30
102	Flange A	Pin (PW)	8,000	5.0	2.3	1.1	0.23
103	Flange A	Pin (PW)	10,000	4.0	2.0	1.0	0.20
104	Flange B	Lug (solder)	20.0	90.0	45.0	22.5	4.5
105	Flange B	Lug (solder)	100.0	40.0	20.0	10.0	2.0
106	Flange B	Lug (solder)	500.0	18.0	9.0	4.5	0.9
107	Flange B	Lug (solder)	1,000	13.0	6.5	3.1	0.65
108	Flange B	Lug (solder)	1,500	11.0	5.2	2.6	0.52
109	Flange B	Lug (solder)	2,000	9.0	4.5	2.2	0.50
110	Flange B	Lug (solder)	2,500	8.0	4.0	2.0	0.40
111	Flange B	Lug (solder)	5,000	6.0	2.8	1.4	0.30
112	Flange B	Lug (solder)	8,000	5.0	2.3	1.1	0.23
113	Flange B	Lug (solder)	10,000	4.0	2.0	1.0	0.20
114	Stud	Lug (solder)	20.0	90.0	45.0	22.5	4.5
115	Stud	Lug (solder)	100.0	40.0	20.0	10.0	2.0
116	Stud	Lug (solder)	500.0	18.0	9.0	4.5	0.9
117	Stud	Lug (solder)	1,000	13.0	6.5	3.1	0.65

TABLE I. PIN and characteristics - Continued.

PIN M5757/13-	Mount	Terminal	DC coil resistance (±10%) +25°C ±5°C (ohms)	Nominal coil current (mA)	Pickup current (max) (mA)	Dropout current	
						Max (mA)	Min (mA)
118	Stud	Lug (solder)	1,500	11.0	5.2	2.6	0.52
119	Stud	Lug (solder)	2,000	9.0	4.5	2.2	0.50
120	Stud	Lug (solder)	2,500	8.0	4.0	2.0	0.40
121	Stud	Lug (solder)	5,000	6.0	2.8	1.4	0.30
122	Stud	Lug (solder)	8,000	5.0	2.3	1.1	0.23
123	Stud	Lug (solder)	10,000	4.0	2.0	1.0	0.20
124	Stud	Wire lead	20.0	90.0	45.0	22.5	4.5
125	Stud	Wire lead	100.0	40.0	20.0	10.0	2.0
126	Stud	Wire lead	500.0	18.0	9.0	4.5	0.9
127	Stud	Wire lead	1,000	13.0	6.5	3.1	0.65
128	Stud	Wire lead	1,500	11.0	5.2	2.6	0.52
129	Stud	Wire lead	2,000	9.0	4.5	2.2	0.50
130	Stud	Wire lead	2,500	8.0	4.0	2.0	0.40
131	Stud	Wire lead	5,000	6.0	2.8	1.4	0.30
132	Stud	Wire lead	8,000	5.0	2.3	1.1	0.23
133	Stud	Wire lead	10,000	4.0	2.0	1.0	0.20
134	Bracket	Lug solder	20.0	90.0	45.0	22.5	4.5
135	Bracket	Lug solder	100.0	40.0	20.0	10.0	2.0
136	Bracket	Lug solder	500.0	18.0	9.0	4.5	0.9
137	Bracket	Lug solder	1,000	13.0	6.5	3.1	0.65
138	Bracket	Lug solder	1,500	11.0	5.2	2.6	0.52
139	Bracket	Lug solder	2,000	9.0	4.5	2.2	0.50
140	Bracket	Lug solder	2,500	8.0	4.0	2.0	0.40
141	Bracket	Lug solder	5,000	6.0	2.8	1.4	0.30
142	Bracket	Lug solder	8,000	5.0	2.3	1.1	0.23
143	Bracket	Lug solder	10,000	4.0	2.0	1.0	0.20

TABLE II. Qualification inspection and sample size.

Single submission	Group submission	
20 units plus 1 open unit. Table I Qualification inspection as applicable.	M5757/13-092	20 units plus 1 open unit. Qualification inspection as applicable.
	M5757/13-113 M5757/13-133 M5757/13-143	2 units each PIN Qualification inspection Q1 plus shock, vibration, acceleration, terminal strength, and seal.
	M5757/13-103	4 units Qualification inspection and shock, vibration, acceleration, terminal strength, resistance to soldering heat, and seal.

SUPERSESSION DATA:

Supersession data: See table III.

TABLE III. Supersession data.

Superseded PIN M5757/13-	New PIN M5757/13-	Superseded PIN M5757/13-	New PIN M5757/13-
011	104	054	097
012	105	055	098
013	106	056	099
014	107	057	100
015	108	058	101
016	109	059	102
017	110	060	103
018	111	061	124
019	112	062	125
020	113	063	126
031	114	064	127
032	115	065	128
033	116	066	129
034	117	067	130
035	118	068	131
036	119	069	132
037	120	070	133
038	121	072	134
039	122	073	135
040	123	074	136
041	083	075	137
042	084	076	138
043	085	077	139
044	086	078	140
045	087	079	141
046	088	080	142
047	089	081	143
048	090	082	095
049	091		
050	092		
051	093		
052	094		
053	096		

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.

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

Review activities:
Army - AT, AV, CR4, MI
Navy - AS, MC, OS, SH
Air Force - 19, 99

Preparing activity:
DLA - CC

(Project 5945-1242)

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