

INCH-POUND

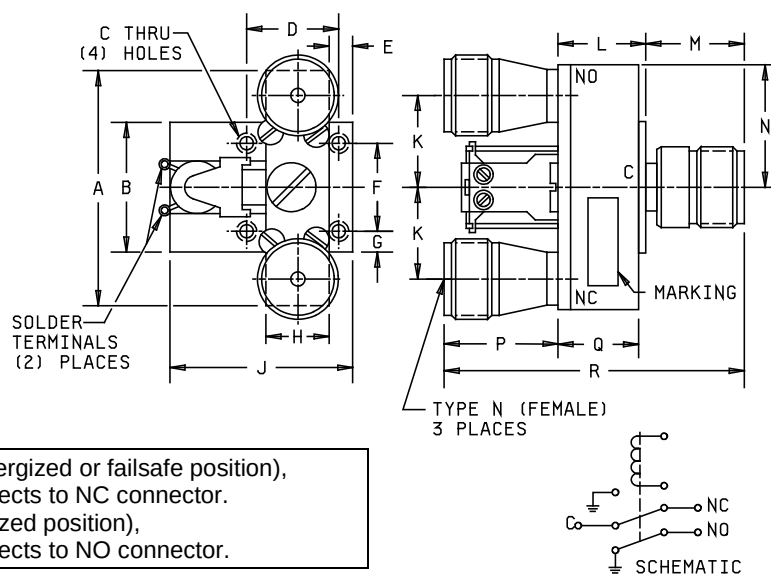
MIL-DTL-3928/10F
w/AMENDMENT 1
21 February 2018
SUPERSEDING
MIL-DTL-3928/10F
28 January 2013

DETAIL SPECIFICATION SHEET

SWITCHES, RADIO-FREQUENCY TRANSMISSION LINE (COAXIAL) (ELECTRICALLY OPERATED) CLASS 1

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

Requirements for acquiring the switch described herein
shall consist of this specification and MIL-DTL-3928.



Position 1. (De-energized or failsafe position),
C connects to NC connector.
Position 2. (Energized position),
C connects to NO connector.

Dimensions									
Letter	Inches		Millimeters		Letter	Inches		Millimeters	
	Max	Min	Max	Min		Max	Min	Max	Min
A	2.03	1.97	51.6	50.0	J	1.510	1.490	38.35	37.85
B	1.135	1.115	28.83	28.32	K	.792	.772	20.12	19.61
C	.112-40 UNC-2B dia		2.84-40 UNC-2B dia		L	.604	.584	15.34	14.83
D	.697	.677	17.70	17.20	M	.681	.661	17.30	16.79
E	.104	.084	2.64	2.13	N	1.03	.97	26.2	24.6
F	.885	.865	22.48	21.97	P	.775	.755	19.68	19.18
G	.135	.115	3.43	2.92	Q	.510	.490	12.95	12.45
H	.510	.490	12.95	12.45					

- NOTES:
1. Dimensions are in inches.
 2. Metric equivalents (in millimeters) are given for general information only (1.00 inch = 25.4 mm).
 3. Corners of case may be round or square.
 4. Unless otherwise specified, tolerances are $\pm .010$ (± 0.25 mm) for three place decimals and $\pm .03$ (± 0.8 mm) for two place decimals.

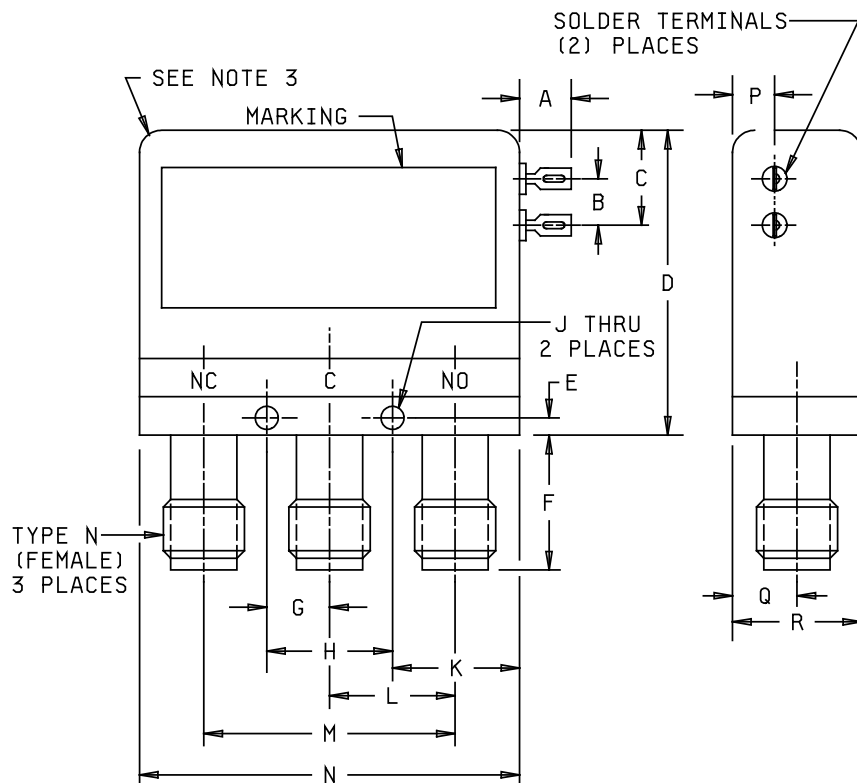
FIGURE 1. PINs M3928/10-01, M3928/10-02, and M3928/10-03.

AMSC N/A

FSC 5985



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- Position 1. (De-energized or failsafe position),
C connects to NC connector.
- Position 2. (Energized position),
C connects to NO connector.

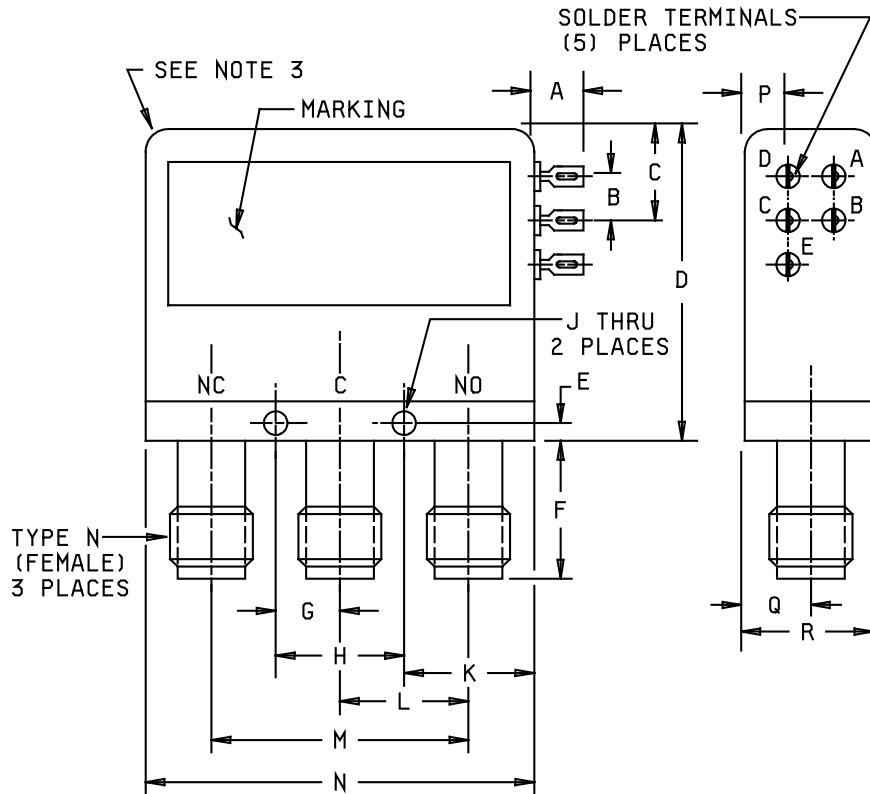
Dimensions									
Letter	Inches		Millimeters		Letter	Inches		Millimeters	
	Max	Min	Max	Min		Max	Min	Max	Min
A	.32	---	8.1	---	J	.213 dia	.193 dia	5.41 dia	4.90 dia
B	.38	.32	9.7	8.1	K	.880	.860	22.35	21.84
C	.73	.67	18.5	17.0	L	.895	.875	22.73	22.23
D	2.2	---	56	---	M	1.780	1.760	45.21	44.70
E	.210	.190	5.33	4.83	N	2.71	---	68.8	---
F	.63	.57	16.0	14.5	P	.27	.21	6.9	5.3
G	.452	.432	11.48	10.97	Q	.56	.50	14.2	12.7
H	.895	.875	22.73	22.23	R	1.09	---	27.7	---

NOTES:

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FIGURE 2. PINs M3928/10-04 and M3928/10-09.

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- Position 1. (De-energized or failsafe position),
C connects to NC connector.
- Position 2. (Energized position),
C connects to NO connector.

Actuator and ind. ckt terminals	
Solenoid common	A
Solenoid (position 2) +28 V dc	B
Ind. ckt common	C
Ind. ckt (position 1)	D
Ind. ckt (position 2)	E

Dimensions									
Letter	Inches		Millimeters		Letter	Inches		Millimeters	
	Max	Min	Max	Min		Max	Min	Max	Min
A	.32	---	8.1	---	J	.213 dia	.193 dia	5.41 dia	4.90 dia
B	.38	.32	9.7	8.1	K	.880	.860	22.35	21.84
C	.73	.67	18.5	17.0	L	.895	.875	22.73	22.23
D	2.2	---	56	---	M	1.780	1.760	45.21	44.70
E	.210	.190	5.33	4.83	N	2.71	---	68.8	---
F	.63	.57	16.0	14.5	P	.27	.21	6.9	5.3
G	.452	.432	11.48	10.97	Q	.555	.535	14.10	13.59
H	.895	.875	22.73	22.23	R	1.09	---	27.7	---

NOTES:

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FIGURE 3. PIN M3928/10-05.

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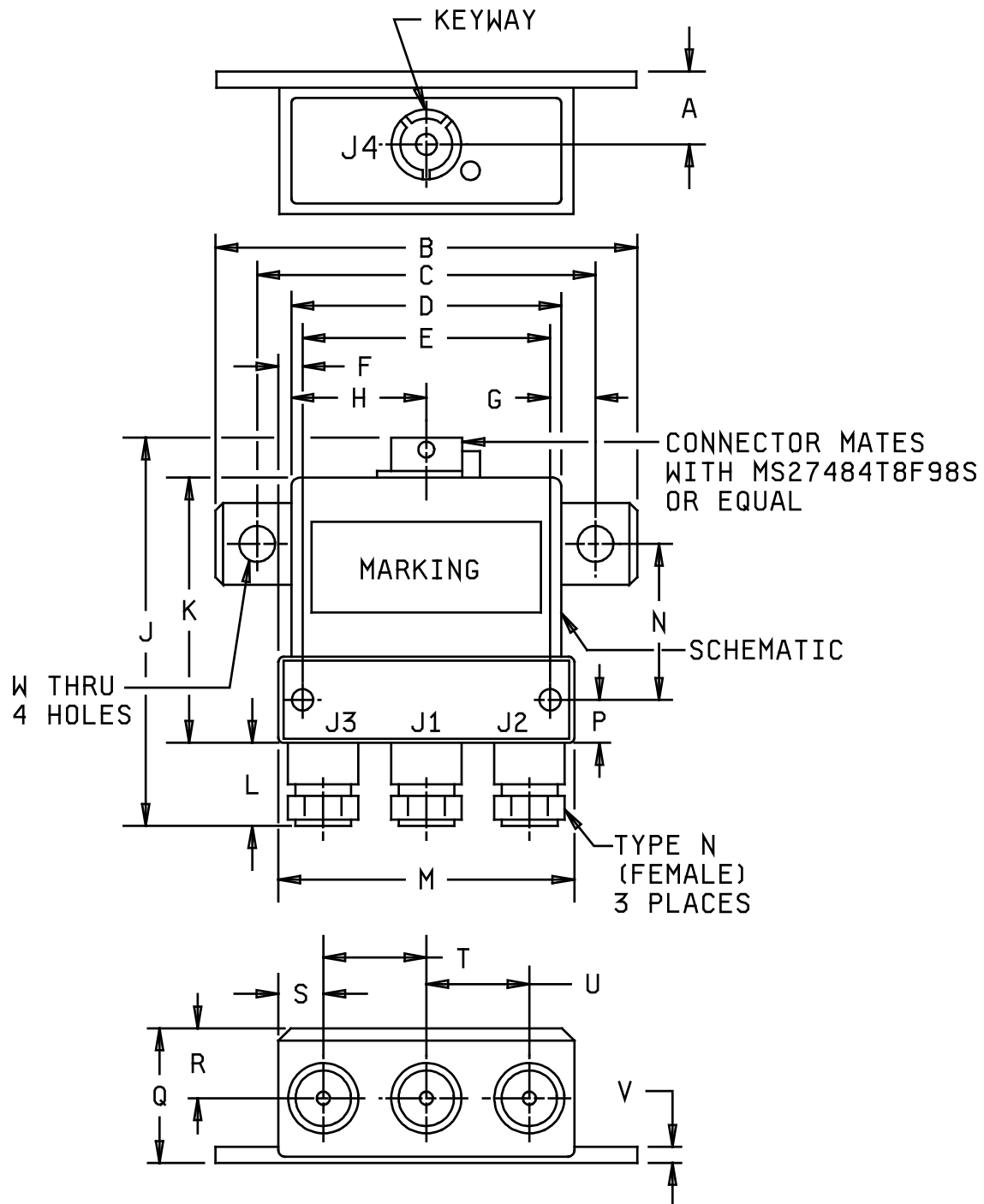
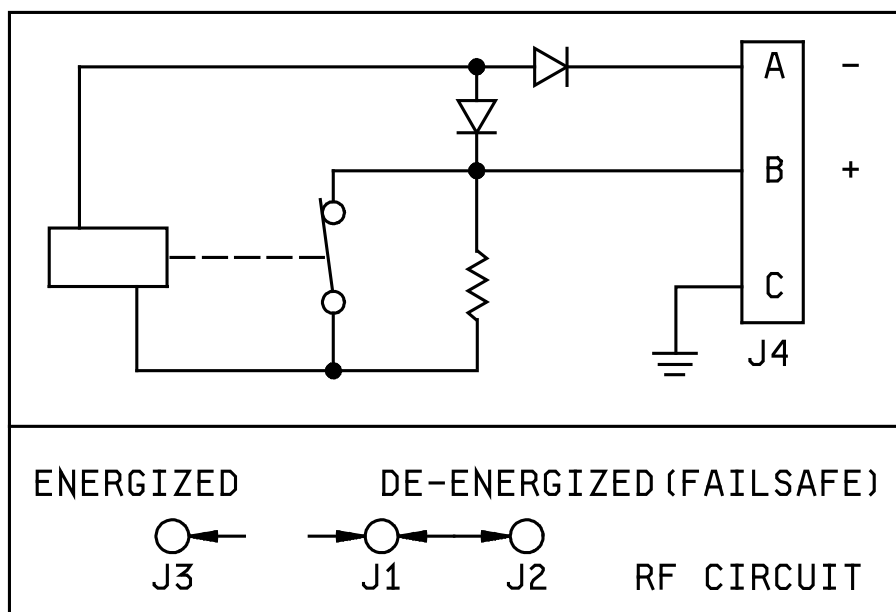


FIGURE 4. PIN M3928/10-06.

SCHEMATIC



Dimensions									
Letter	Inches		Millimeters		Letter	Inches		Millimeters	
	Max	Min	Max	Min		Max	Min	Max	Min
A	.59	.53	15.0	13.5	M	2.72	2.66	69.1	67.6
B	3.47	3.41	88.1	86.6	N	1.545	1.535	39.2	39.0
C	2.945	2.935	74.80	74.55	P	.39	.33	9.9	8.4
D	2.53	2.47	64.3	62.7	Q	1.15	1.09	29.2	27.7
E	2.395	2.385	60.83	60.58	R	.59	.53	15.0	13.5
F	.18	.12	4.6	3.0	S	.50	.44	12.7	11.2
G	.30	.24	7.6	6.1	T	.873	.867	22.17	22.02
H	1.28	1.22	32.5	31.0	U	.873	.867	22.17	22.02
J	3.66	---	93.0	---	V	.10	.04	2.5	1.0
K	2.63	---	66.8	---	W	.185	.175	4.70	4.44
L	.69	.63	17.5	16.0					

NOTES:

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3. Corners of case may be round or square.
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FIGURE 4. PIN M3928/10-06 - Continued.

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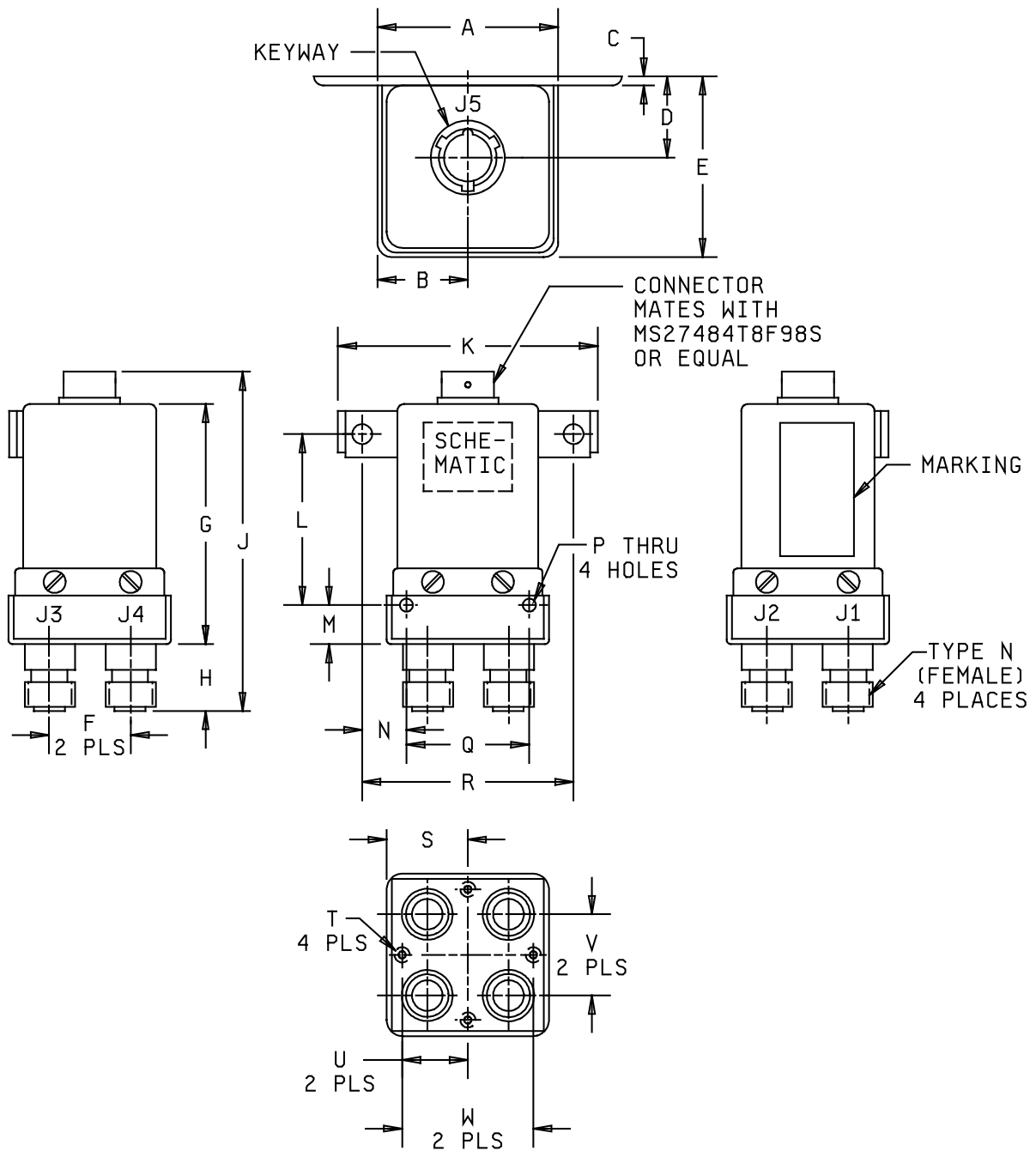
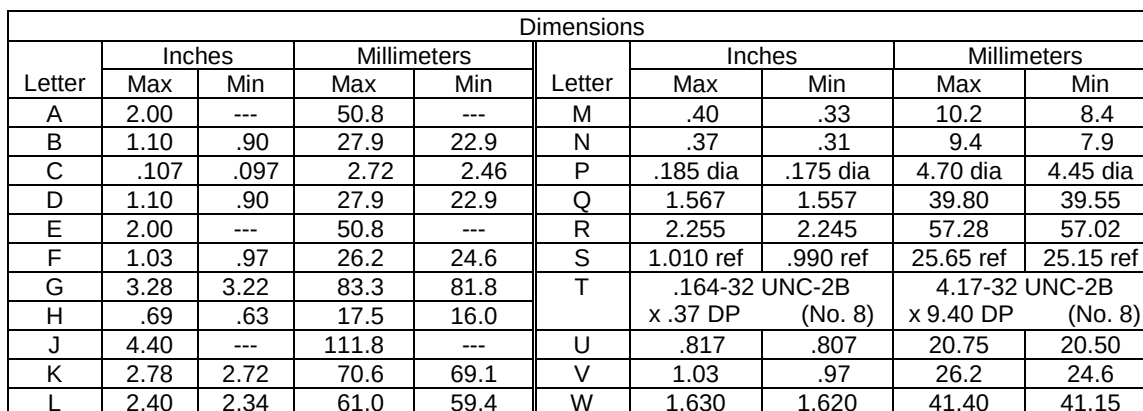


FIGURE 5. PIN M3928/10-07.

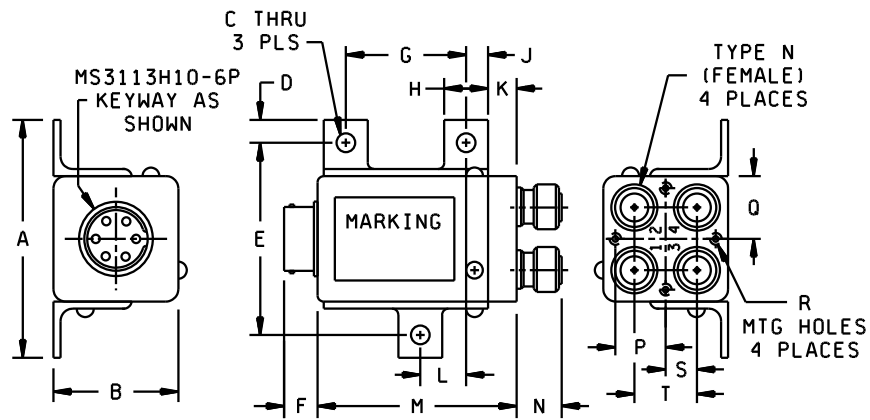
SCHEMATIC



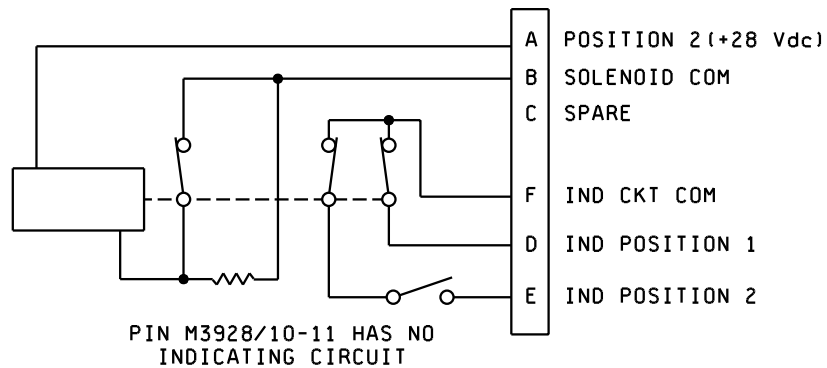
1. Dimensions are in inches.
2. Metric equivalents (in millimeters) are given for general information only (1.00 inch = 25.4 mm).
3. Corners of case may be round or square.
4. Unless otherwise specified, tolerances are $\pm .010$ (± 0.25 mm) for three place decimals and $\pm .03$ (± 0.8 mm) for two place decimals.

FIGURE 5. PIN M3928/10-07 - Continued.

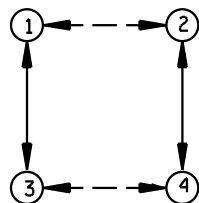
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FAILSAFE SCHEMATIC FOR PIN M3928/10-08 AND 11



RF CIRCUIT



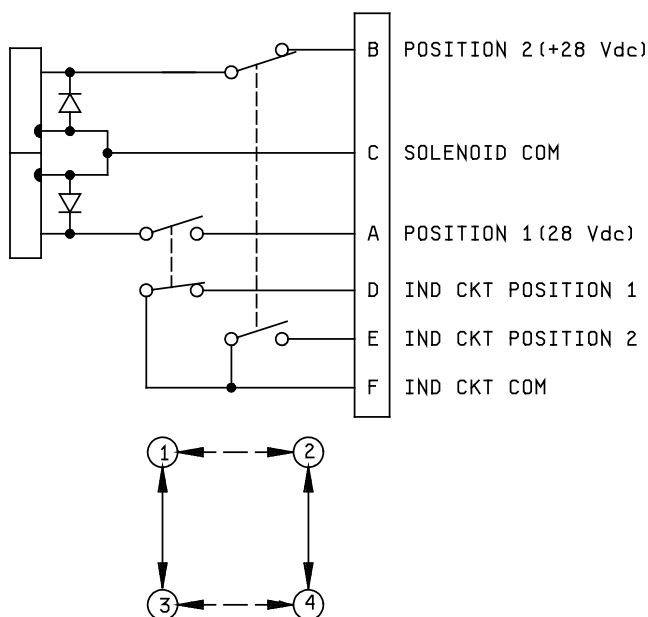
POSITION 1 (FAILSAFE POSITION) 1-3, 2-4

POSITION 2 (ENERGIZED POSITION) 1 CONNECTS TO 2 AND 3 CONNECTS TO 4

FIGURE 6. PINs M3928/10-08, M3928/10-10, and M3928/10-11.

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LATCHING SCHEMATIC FOR PIN M3928/10-10



POSITION 1 $\longleftrightarrow$ 1-3, 2-4

POSITION 2 $\longleftrightarrow$ 1-2, 3-4

RF CIRCUIT

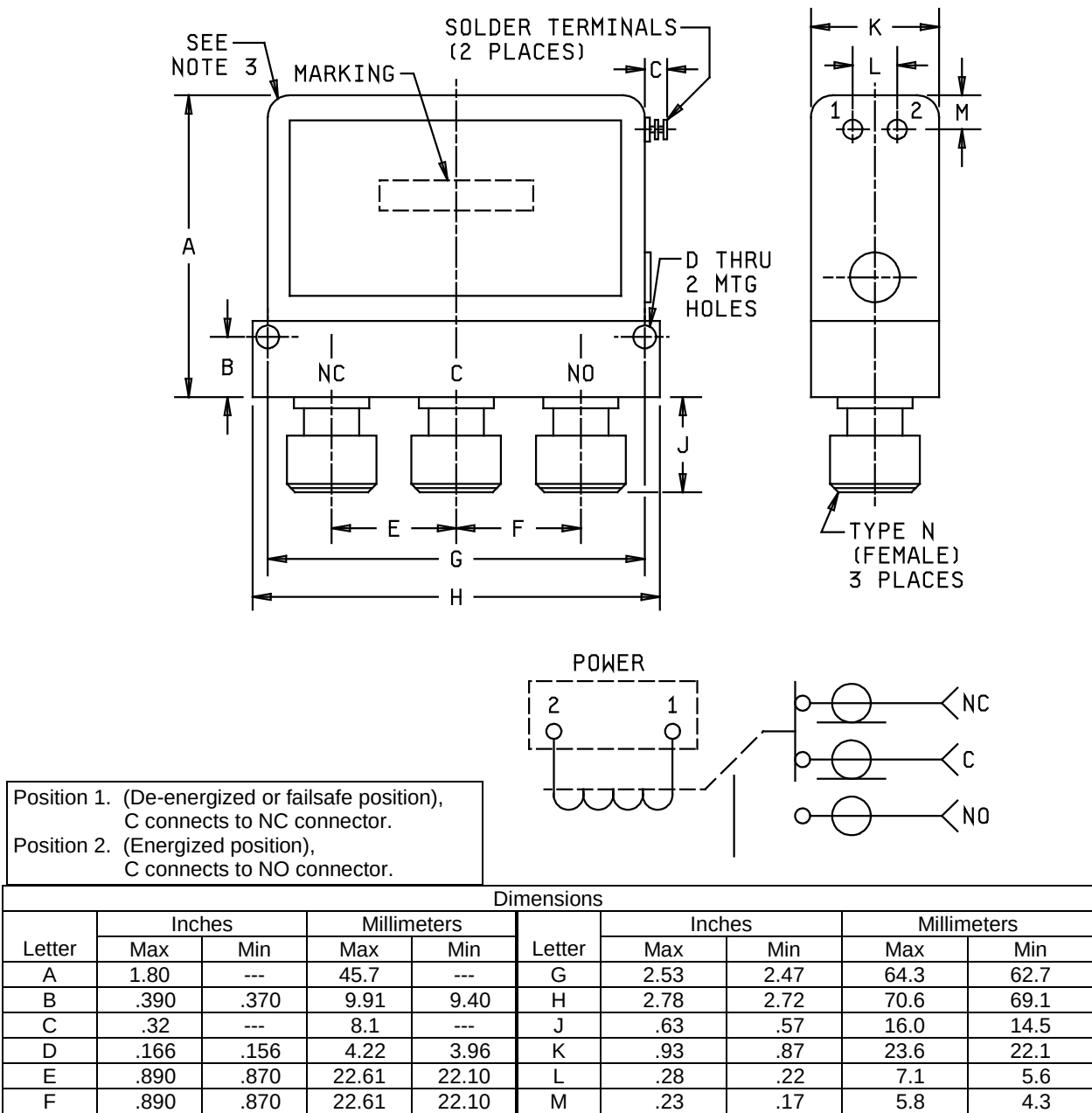
Dimensions									
Letter	Inches		Millimeters		Letter	Inches		Millimeters	
	Max	Min	Max	Min		Max	Min	Max	Min
A	3.28	3.22	83.3	81.8	L	.753	.747	19.13	18.97
B	1.78	---	45.2	---	M	2.60	---	66.0	---
C	.198 dia	.192 dia	5.03 dia	4.88 dia	N	.65	---	16.5	---
D	.35	.29	8.9	7.4	P	.730	.710	18.54	18.03
E	2.610	2.590	66.29	65.79	Q	.885	.865	22.48	21.97
F	.49	---	12.4	---	R	.138-32 UNC-2B x .25 DP (No. 6)		3.50-32 UNC-2B x 6.4 DP (No. 6)	
G	1.510	1.490	38.35	37.85	S	.452	.432	11.48	10.97
H	.63	.57	16.0	14.5	T	.895	.875	22.73	22.23
J	.33	.27	8.4	6.9					
K	.28	.22	7.1	5.6					

NOTES:

1. Dimensions are in inches.
2. Metric equivalents (in millimeters) are given for general information only (1.00 inch = 25.4 mm).
3. Corners of case may be round or square.
4. Unless otherwise specified, tolerances are $\pm .010$ (± 0.25 mm) for three place decimals and $\pm .03$ (± 0.8 mm) for two place decimals.

FIGURE 6. PINS M3928/10-08, M3928/10-10, and M3928/10-11 - Continued.

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NOTES:

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FIGURE 7. PIN M3928/10-12.

TABLE I. Electrical and performance characteristics.

PIN M3928/10-	Fig. No.	Hous- ing	Con- fig.	Manual or remote	Sole- noid or motor	Fail- safe or latch- ing	Fre- quency range dc to GHz	VSWR	Insert- ion loss (dB)	Isola- tion (dB)	Switch- ing time (ms)	Posi- tion indicat- ing circuit	Life cycles x 1000	Operat- ing voltage	Pick- up volt- age	Drop- out volt- age	Operat- ing current (A) <u>1/</u>	Holding current fail-safe type <u>1/</u> (A)	Power and indicator connector	Weight (oz) <u>2/</u>
01N, S <u>3/</u>	1	O	1P2T	R	S	F	5.2	max	max	min	max	None	1000	nom	max	min	max	0.2	Solder terminals	max 8 (227)
02N, S <u>3/</u>	1	O	1P2T	R	S	F	5.2	1.4:1	0.48	25	20	None	1000	28 V dc	18 V dc	3 V dc	0.2	0.2	Solder terminals	8 (227)
03N, S <u>3/</u>	1	O	1P2T	R	S	F	5.2	1.4:1	0.48	25	20	None	1000	115 V ac	93 V ac	5 V ac	0.2	0.2	Solder terminals	8 (227)
04N, S	2	E	1P2T	R	S	F	12.4	1.5:1	0.5	60	50	None	100	28 V dc	18 V dc	3 V dc	0.8	0.4	Solder terminals	8 (227)
05N, S	3	E	1P2T	R	S	F	12.4	1.5:1	0.5	60	50	Yes	100	28 V dc	18 V dc	3 V dc	0.8	0.4	Solder terminals	8 (227)
06N, S	4	H	1P2T	R	S	F	12.4	1.5:1 <u>5/</u>	0.5 <u>6/</u>	25 <u>7/</u>	20 <u>30</u> <u>4/</u>	None	50	28 V dc	20 V dc	14 V dc	1.0	0.5	see Fig 4	12 (342)
07N, S	5	H	TR	R	S	F	12.4	1.5:1 <u>5/</u>	0.5 <u>6/</u>	25 <u>7/</u>	20 <u>30</u> <u>4/</u>	None	50	28 V dc	20 V dc	14 V dc	1.5	0.6	see Fig 5	16 (456)
08N, S	6	H	TR	R	S	F	12.4	1.5:1 <u>5/</u>	0.5 <u>6/</u>	60 <u>7/</u>	20 <u>30</u> <u>4/</u>	Yes	100	28 V dc	20 V dc	14 V dc	1.0	0.3	see Fig 6	16 (456)
09N, S	2	E	1P2T	R	S	F	12.4	1.5:1	0.5	60	50	None	100	115 V dc	95 V ac	5 V ac	0.12	.12	Solder terminals	8 (227)
10N, S	6	H	TR	R	S	L	12.4	1.5:1 <u>5/</u>	0.5 <u>6/</u>	60	20	Yes	100	28 V dc	20 V dc	---	0.64	---	see Fig 6	12 (342)
11N, S	6	H	TR	R	S	F	12.4	1.5:1	0.5	60	20	None	100	28 V dc	20 V dc	14 V dc	1.5	.25	see Fig 6	12 (342)
12N, S	7	E	1P2T	R	S	F	.96 to 1.215	1.2:1	0.3	60	30	None	100	28 V dc	20 V dc	14 V dc	0.2	0.2	Solder terminals	8 (227)

1/ At nominal operating voltage and 20°C.2/ Mass in grams in parentheses.3/ Open port is grounded.4/ At low and high temperature extremes.5/ The VSWR at .225-.400 GHz for dash numbers 06 and 07 is 1.1:1. The VSWR at .100-.500 GHz for dash number 08 is 1.15:1. The VSWR at 4 GHz for dash number 10 is 1.25:1.6/ The insertion loss at .225-.400 GHz for dash numbers 06 and 07 is 0.1 dB. The insertion loss at .100-.500 GHz for dash number 08 is 0.15 dB. The insertion loss at 4 GHz for dash number 10 is 0.25 dB.7/ The isolation at .225-.400 GHz for dash numbers 06 and 07 is 50 dB. The isolation at .100-.500 GHz for dash number 08 is 80 dB.

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REQUIREMENTS:

Dimensions and configurations: See figures 1 through 7.

RF connectors: Female connectors shall mate with type N connectors in accordance with MIL-PRF-39012/1.

Nominal impedance: 50 ohms.

Termination: Open.

RF power handling capability (average): 100 watts for dash numbers 01 through 11 and 280 watts for dash number 12.

RF connectors: Series N connectors shall mate with series N male connectors in accordance with MIL-PRF-39012/1.

Electrical and performance characteristics: See table I.

Vibration: Method I.

Operating temperature: -55 ° C to +85 ° C.

Part or Identifying Number (PIN): M3928/10- (dash number from table I).

TABLE II. PIN to type cross-reference.

PIN M3928/10-	Type SA- /U
01	1360
02	1361
03	1362
04	---
05	---
06	---
07	---
08	---
09	---
10	---
11	---
12	---

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Referenced documents: In addition to MIL-DTL-3928, this specification sheet also references MIL-PRF-39012/1.

The margins of this specification sheet are marked with vertical lines to indicate modifications generated by this amendment. 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.

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:

DLA - CC

(Project 5985-2018-003)

Review activities:

Army - MI
Navy - AS, MC, OS, SH
Air Force - 19, 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/>.