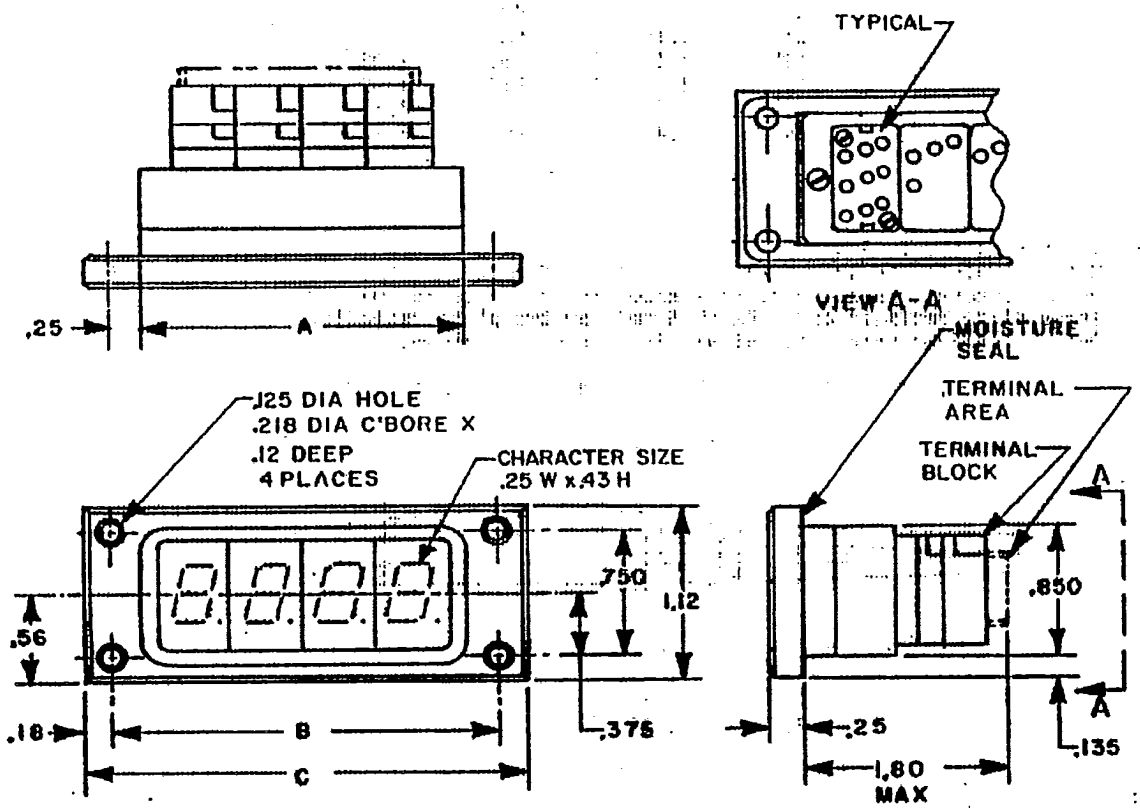
MILITARY SPECIFICATION SHEET

Ⓐ DISPLAY, OPTOELECTRONIC, SEGMENTED READOUT, STYLE I,
(RFI SHIELDED, MOISTURE SEALED, HIGH IMPACT SHOCK)
TYPE R02

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 the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-D-28803.



Ⓐ FIGURE 1. Type R02 display.

Ⓐ denotes changes

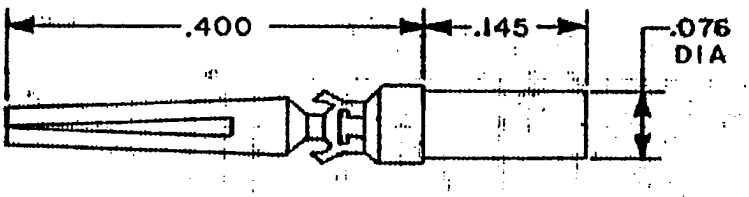
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Number of units per assembly	A	B	C	Weight ounce maximum
3	2.00 (50.8)	2.500 (63.5)	2.87 (72.9)	4.5
4	2.50 (63.5)	3.000 (76.2)	3.27 (83.1)	5.0
5	3.00 (76.2)	3.500 (88.9)	3.87 (98.3)	5.5
6	3.50 (88.9)	4.000 (101.6)	4.37 (110.1)	6.0
7	4.00 (101.6)	4.500 (114.3)	4.87 (123.7)	6.5
8	4.50 (114.3)	5.000 (127.0)	5.37 (136.4)	7.0
9	5.00 (127.0)	5.500 (139.7)	5.87 (149.1)	7.5
10	5.50 (139.7)	6.00 (152.4)	6.87 (174.5)	8.0

Inches	mm	Inches	mm
.12	3.0	.43	10.9
.125	3.18	.56	14.2
.135	3.43	.750	19.05
.18	4.6	.850	21.59
.218	5.54	1.12	28.5
.25	6.4	1.80	45.7
.375	9.52		

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±.010 (0.25 mm) for three place decimals and ±.02 (0.5 mm) for two place decimals.
4. Design configuration optional within envelope as shown.

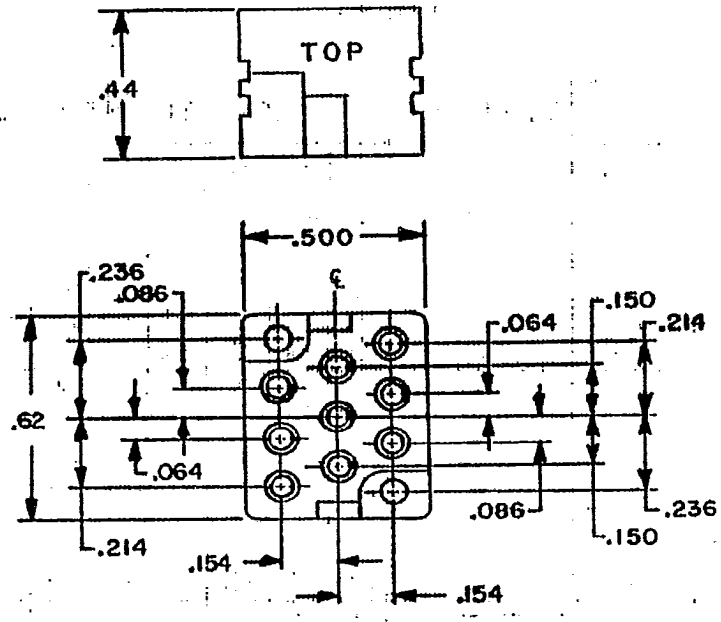
Ⓐ FIGURE 1. Type R02 display - Continued.



Inches	mm
.076	1.93
.145	3.68
.400	10.16

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.010 (0.25 mm).
4. Design configuration optional within envelope as shown.

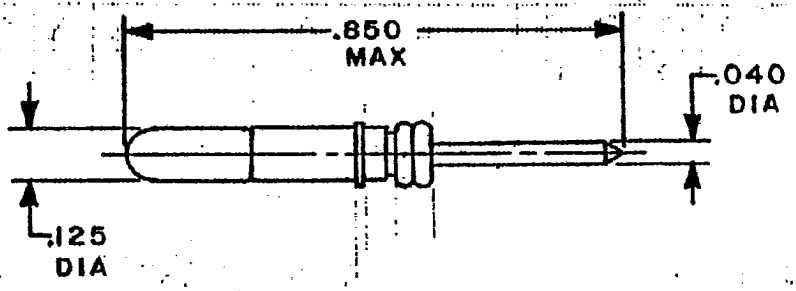
Ⓐ FIGURE 2. Terminal, crimp type.



Inches	mm
.064	1.63
.086	2.18
.150	3.81
.154	3.91
.214	5.44
.236	5.99
.44	11.2
.500	12.70
.62	15.7

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±.010 (0.25 mm) for three place decimals and ±.02 (0.5 mm) for two place decimals.
4. Design configuration optional within envelope as shown.

FIGURE 3. Connector block.

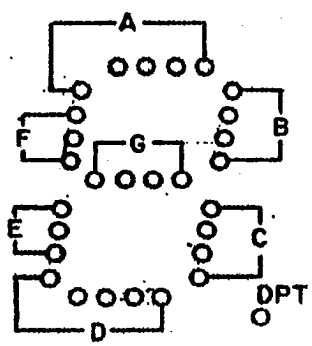


Inches	mm
.040	1.02
.125	3.18
.850	21.59

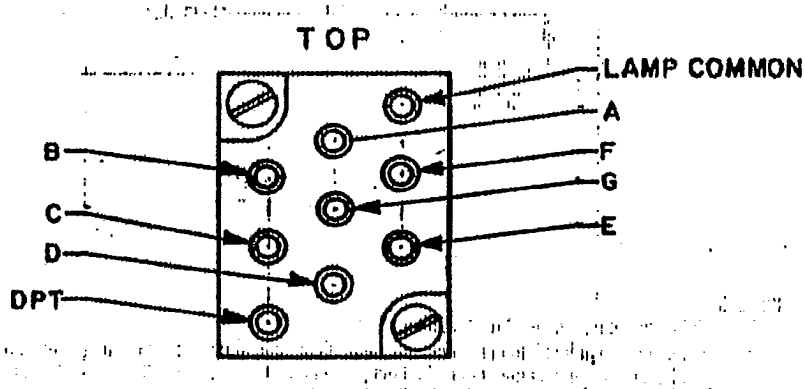
NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.010 (0.25 mm).
4. Design configuration optional within envelope as shown.

FIGURE 4. Lamp assembly.

TRUTH TABLE																
CIRCUIT CONFIGURATION 3																
INPUT								DISPLAY	△ = SEGMENT LIT							
DPT	A	B	C	D	E	F	G		A	B	C	D	E	F	G	DPT
	O	O	O	O	O	O		0	△	△	△	△	△	△		
		O	O					1		△	△					
	O	O		O	O		O	2	△	△		△	△		△	
	O	O	O	O			O	3	△	△	△	△			△	
		O	O			O	O	4		△	△			△	△	
	O		O	O		O	O	5	△		△	△		△	△	
	O		O	O	O	O	O	6	△		△	△	△	△	△	
	O	O	O					7	△	△	△					
	O	O	O	O	O	O	O	8	△	△	△	△	△	△	△	
	O	O	O			O	O	9	△	△	△			△	△	
	O	O	O		O	O	O	A	△	△	△		△	△	△	
			O	O	O	O	O	b			△	△	△	△	△	
	O			O	O	O		C	△		△	△	△			
		O	O	O	O		O	d		△	△	△	△		△	
	O			O	O	O	O	E	△			△	△	△	△	
	O				O	O	O	F	△				△	△	△	
O								O								△



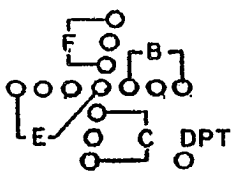
Front view - 7 segment



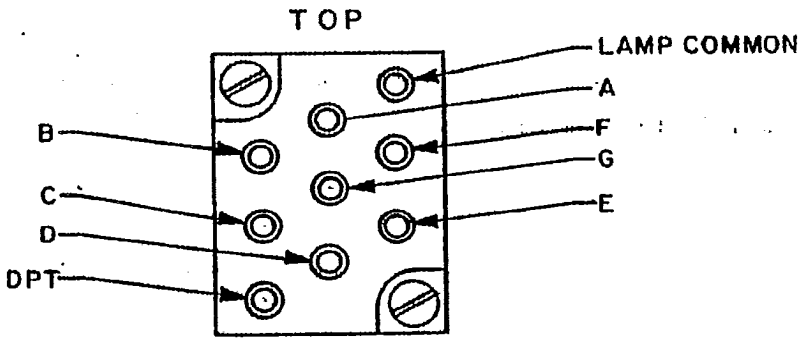
Terminal designation (rear view)

FIGURE 5. Truth table and seven segment direct wired numeric alpha display.

TRUTH TABLE										
CIRCUIT CONFIGURATION 4										
INPUT					DISPLAY	SEGMENT LIT				
DPT	B	C	E	F		B	C	E	F	DPT
	O	O	O	O	+	△	△	△	△	
	O		O		—	△		△		
O					○					△



Front view - 4 segment



Terminal designation (rear view)

FIGURE 6. Truth table and four segment direct wired sign display.

REQUIREMENTS:

Dimensions and configuration: See figure 1 through figure 6 and table I through table IV.

Display assembly shall be assembled and shall include:

a. Readout modules.

b. Bezel assembly with lens, panel gasket, and fasteners.

c. Lamp assemblies.

d. Connector blocks.

Ⓐ e. Insertable crimp type terminals (packaged separately). Terminals can be installed into terminal blocks without the use of special tools, but tool part number 800-P2 (FSCM 96182) is required for removal.

Solderability: Not applicable.

Vibration grade: 2.

Shock: Method II (high-impact).

Light source: T-1 incandescent lamps.

Contrast ratio: C_1 = 5 to 1 minimum.
C^2 = 4 to 1 minimum.

Terminal strength: 5 pounds, test condition letter A.

Mechanical endurance: Not applicable.

Dot-to-dot ratio: 1:1 maximum.

Lens material used to convert clear incandescent lamps to colored lights.

Chromaticity: Method I.

Electrical:

Supply voltage: 5 V ±.25 V.

Supply current: (each lamp) .020 ampere ±.002 ampere.

QUALIFICATION:

Extent of qualification: If suppliers are qualified to MIL-D-28803/1, table I applies. If manufacturers are not qualified to MIL-D-28803/1, table IV applies.

Ⓐ TABLE I. Extent of qualification for suppliers qualified to MIL-D-28803/1.

PIN	Number of samples required	Tests of MIL-R-28803	Extent of approval
M28803/2-RA	2	Group I	All
M28803/2-R 1/	10	Group IV	

1/ Two sample units for each color.

TABLE II. Code letters for combinations of number of stations and type and arrangement of modules.

Code letter	Number of modules	Type of module and arrangement
A	3 module assembly	All 7 segment modules
B	4 module assembly	All 7 segment modules
C	5 module assembly	All 7 segment modules
D	6 module assembly	All 7 segment modules
E	7 module assembly	All 7 segment modules
F	8 module assembly	All 7 segment modules
G	9 module assembly	All 7 segment modules
H	10 module assembly	All 7 segment modules
J	3 module assembly	1 4 segment followed by 2 7 segment
K	4 module assembly	1 4 segment followed by 3 7 segment
L	5 module assembly	1 4 segment followed by 4 7 segment
M	6 module assembly	1 4 segment followed by 5 7 segment
N	7 module assembly	1 4 segment followed by 6 7 segment
P	8 module assembly	1 4 segment followed by 7 7 segment
Q	9 module assembly	1 4 segment followed by 8 7 segment
R	10 module assembly	1 4 segment followed by 9 7 segment

TABLE III. Code letters for combinations color and luminance.

Code letter	Color	2100° Kelvin limits of chromaticity		Luminance (Value) foot-lamberts minimum
		X	Y	
A	Incandescent white	1/	1/	300
B	Red	.695	.285	50
		.703	SL 2/	
		.655	.325	
		.660	SL 2/	
C	Green	.260	.570	25
		.335	SL 2/	
		.018	SL 2/	
D	Yellow	.562	.415	200
		.570	SL 2/	
		.596	.382	
		.605	SL 2/	

1/ Unfiltered, incandescent light.
2/ SL-Spectrum locus (where intersected by other coordinate pair).

A TABLE IV. Extent of qualification for suppliers not qualified to MIL-D-28803/1.

PIN	Number of samples required	Tests	Extent of approval
M28803/2-JA M28803/2-PB M28803/2-A 1/	4 2 10	Complete in accordance with qualification inspection of MIL-D-28803	All

1/ Two sample units for each color.

Part or Identifying Number (PIN): The PIN shall consist of the letter "M" followed by the basic number of the specification sheet and a coded two-letter symbol indicating the number, type, and arrangement of the modules, and color and luminance, as specified (see 3.1). Example:

M28803/2 - M C

Military designator and specification sheet number.

Single code indicating number, type and arrangement of modules as specified (see table II).

Single code indicating color and luminance (see table III).

PIN for connector block (figure 3) and terminals (figure 2, 11 each) M28803/2-WR.

PIN for lamp assembly (figure 4): M28803/2-MS.

CONCLUDING MATERIAL

Custodians:
Army - ER
Navy - EC
Air Force - 85

Review activities:
Navy - AS
Air Force - 11, 17, 99
DLA - ES

User activities:
Army - AR, AT, AV, ME, MI
Navy - MC, OS, SH

Preparing activity:
Navy - EC

Agent:
DLA - ES

(Project 5980-0004-2)