

PERFORMANCE SPECIFICATION SHEET

SWITCH, PUSH BUTTON, ILLUMINATED,
4 LAMP, .870 SQUARE, 2 AMPERES,
2PDT AND 4PDT, PLUG-IN MODULE, EMI/RFI SHIELDING

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

The requirements for acquiring the indicator lights described herein shall
consist of this specification sheet and MIL-PRF-22885.

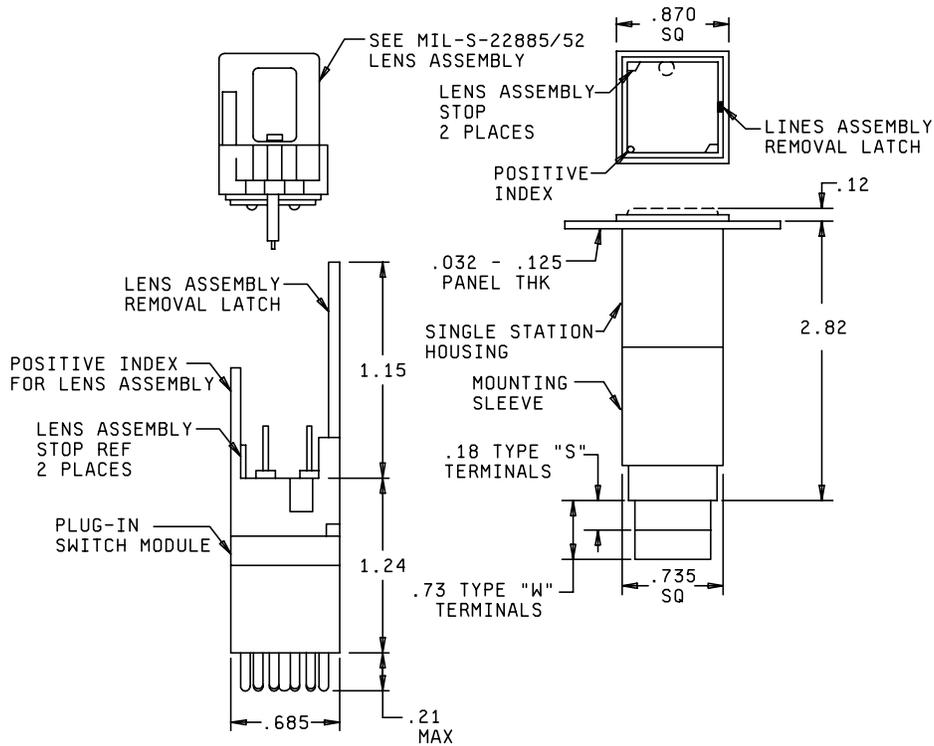
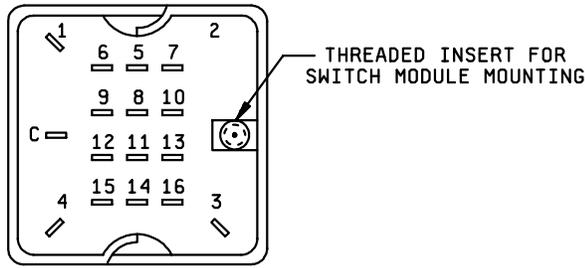
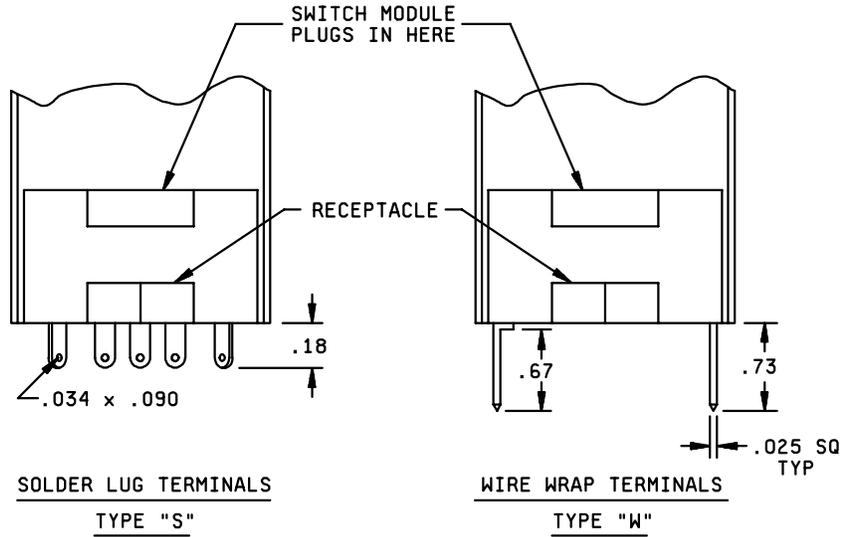


FIGURE 1. Push button switch assembly.



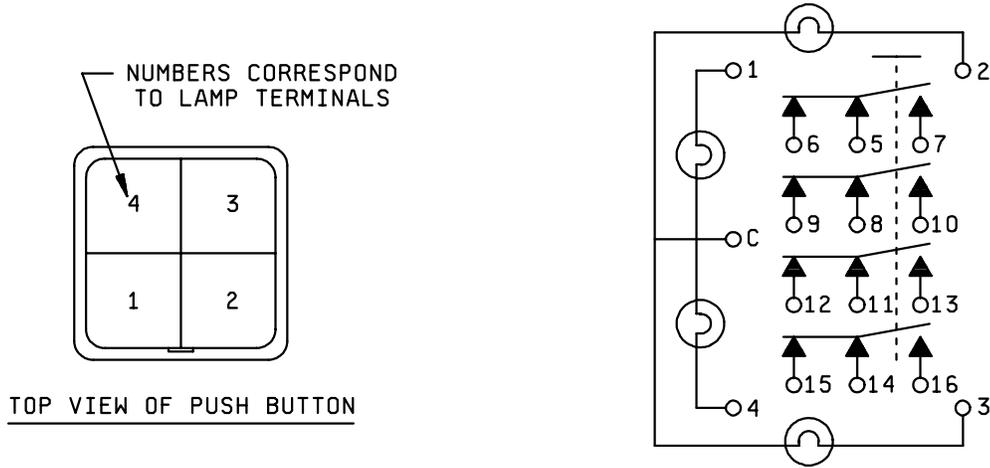
TERMINAL LOCATION FOR SWITCH MODULES AND RECEPTACLES

Inches	mm	Inches	mm
.022	0.56	.67	17.0
.025	0.64	.685	17.40
.032	0.81	.73	18.5
.034	0.86	.735	18.67
.090	2.29	.870	22.10
.12	3.0	1.15	29.2
.125	3.18	1.24	31.5
.18	4.6	2.82	71.6
.21	5.3		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ± 0.015 (0.38 mm) for three-place decimals and ± 0.03 (0.8 mm) for two-place decimals.
4. Terminals shall be permanently identified with numbers as shown in terminal location.

FIGURE 1. Pushbutton switch assembly - Continued.



NOTES:

1. Terminals 8 through 13 are omitted from 2DPT configurations.
2. Terminals 5 through 16 are omitted for indicator configurations.
3. Circuit schematic shall be marked on the housing.
4. Terminals 5, 8, 11, and 14 are pole terminals.

FIGURE 2. Lamp and 4PDT switch schematic.

TABLE I. Lens code, and color position sequence.

TABLE I LENS CODE AND COLOR POSITION SEQUENCE

LENS CODE	LENS STYLE	COLOR SYMBOL POSITION (SEE NOTE)				
A	4-WAY SPLIT	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td>2</td></tr><tr><td>3</td><td>4</td></tr></table>	1	2	3	4
1	2					
3	4					
B	3-WAY SPLIT	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td>2</td></tr><tr><td colspan="2">3</td></tr></table>	1	2	3	
1	2					
3						
C	SPLIT HORIZONTALLY	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td></tr><tr><td>2</td></tr></table>	1	2		
1						
2						
D	SOLID	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td></tr></table>	1			
1						
E	3-WAY SPLIT	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td></tr><tr><td>2</td><td>3</td></tr></table>	1	2	3	
1						
2	3					
F	SPLIT VERTICALLY	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td>2</td></tr></table>	1	2		
1	2					
G	3-WAY SPLIT	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td>2</td></tr><tr><td colspan="2">3</td></tr></table>	1	2	3	
1	2					
3						
H	3-WAY SPLIT	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td>3</td></tr><tr><td colspan="2">2</td></tr></table>	1	3	2	
1	3					
2						

NOTE:

1. Lens assembly removal latch is shown orientation.

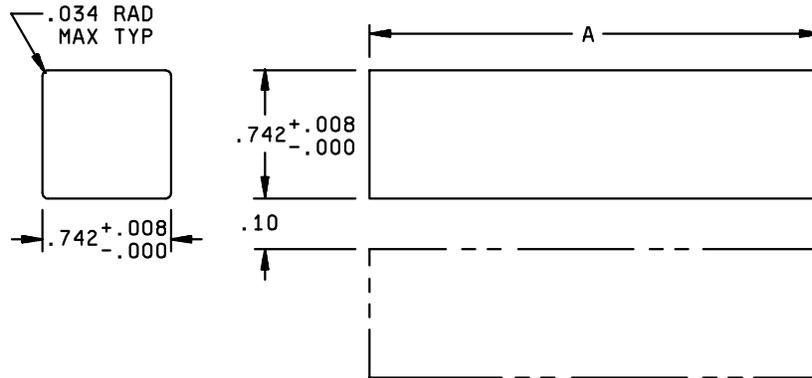


TABLE II. Panel cutout dimensions.

Number units	Dimensions A
1	.742
2	1.612
3	2.482
4	3.352
5	4.222
6	5.092
n	$A = .742 + .870 (n-1)$

Inches	mm
.008	0.20
.034	0.86
.10	2.5
.742	18.85
.870	22.10
1.612	40.94
2.482	63.04
3.352	85.14
4.222	107.24
5.092	129.34

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ± 0.015 (0.38 mm) for three-place decimals and ± 0.03 (0.8 mm) for two-place decimals.
4. Dimensions apply for both vertical and horizontal (shown) slot mounting.

FIGURE 3. Horizontal and vertical slot mounting.

TABLE III. Dash numbers, design and operating characteristics.

Dash number 1/		Circuit description	Lens code	RF: shielded
Type S	Type W			
-191	---	4PDT momentary	---	---
-192	---	4PDT alternate	---	---
-193	---	2PDT momentary	---	---
-194	---	2PDT alternate	---	---
-195	---	Indicator	---	---
-006	-098	Housing	---	No
-007	-099	Housing	---	Yes
-008	-100	4PDT momentary	---	No
-009	-101	4PDT alternate	---	No
-010	-102	2PDT momentary	---	No
-011	-103	2PDT alternate	---	No
-012	-104	Indicator	---	No
-013	-105	4PDT momentary	---	Yes
-014	-106	4PDT alternate	---	Yes
-015	-107	2PDT momentary	---	Yes
-016	-108	2PDT alternate	---	Yes
-017	-109	Indicator	---	Yes
-018(XXXX)	-110(XXXX)	4PDT momentary	A	No
-019(XXX)	-111(XXX)	4PDT momentary	B	No
-020(XX)	-112(XX)	4PDT momentary	C	No
-021(X)	-113(X)	4PDT momentary	D	No
-022(XXX)	-114(XXX)	4PDT momentary	E	No
-023(XX)	-115(XX)	4PDT momentary	F	No
-024(XXX)	-116(XXX)	4PDT momentary	G	No
-025(XXX)	-117(XXX)	4PDT momentary	H	No
-026(XXXX)	-118(XXXX)	4PDT momentary	A	Yes
-027(XXX)	-119(XXX)	4PDT momentary	B	Yes
-028(XX)	-120(XX)	4PDT momentary	C	Yes
-029(X)	-121(X)	4PDT momentary	D	Yes
-030(XXX)	-122(XXX)	4PDT momentary	E	Yes
-031(XX)	-123(XX)	4PDT momentary	F	Yes
-032(XXX)	-124(XXX)	4PDT momentary	G	Yes
-033(XXX)	-125(XXX)	4PDT momentary	H	Yes
-034(XXXX)	-126(XXXX)	4PDT alternate	A	No
-035(XXX)	-127(XXX)	4PDT alternate	B	No
-036(XX)	-128(XX)	4PDT alternate	C	No
-037(X)	-129(X)	4PDT alternate	D	No
-038(XXX)	-130(XXX)	4PDT alternate	E	No
-039(XX)	-131(XX)	4PDT alternate	F	No
-040(XXX)	-132(XXX)	4PDT alternate	G	No
-041(XXX)	-133(XXX)	4PDT alternate	H	No
-042(XXXX)	-134(XXXX)	4PDT alternate	A	Yes

See footnotes at end of table.

TABLE III. Dash numbers, design and operating characteristics - Continued.

Dash number <u>1/</u>		Circuit description	Lens code	RF: shielded
Type S	Type W			
-043(XXX)	-135(XXX)	4PDT alternate	B	Yes
-044(XX)	-136(XX)	4PDT alternate	C	Yes
-045(X)	-137(X)	4PDT alternate	D	Yes
-046(XXX)	-138(XXX)	4PDT alternate	E	Yes
-047(XX)	-139(XX)	4PDT alternate	F	Yes
-048(XXX)	-140(XXX)	4PDT alternate	G	Yes
-049(XXX)	-141(XXX)	4PDT alternate	H	Yes
-050(XXXX)	-142(XXXX)	2PDT momentary	A	No
-051(XXX)	-143(XXX)	2PDT momentary	B	No
-052(XX)	-144(XX)	2PDT momentary	C	No
-053(X)	-145(X)	2PDT momentary	D	No
-054(XXX)	-146(XXX)	2PDT momentary	E	No
-055(XX)	-147(XX)	2PDT momentary	F	No
-056(XXX)	-148(XXX)	2PDT momentary	G	No
-057(XXX)	-149(XXX)	2PDT momentary	H	No
-058(XXXX)	-150(XXXX)	2PDT momentary	A	Yes
-059(XXX)	-151(XXX)	2PDT momentary	B	Yes
-060(XX)	-152(XX)	2PDT momentary	C	Yes
-061(X)	-153(X)	2PDT momentary	D	Yes
-062(XXX)	-154(XXX)	2PDT momentary	E	Yes
-063(XX)	-155(XX)	2PDT momentary	F	Yes
-064(XXX)	-156(XXX)	2PDT momentary	G	Yes
-065(XXX)	-157(XXX)	2PDT momentary	H	Yes
-066(XXXX)	-158(XXXX)	2PDT alternate	A	No
-067(XXX)	-159(XXX)	2PDT alternate	B	No
-068(XX)	-160(XX)	2PDT alternate	C	No
-069(X)	-161(X)	2PDT alternate	D	No
-070(XXX)	-162(XXX)	2PDT alternate	E	No
-071(XX)	-163(XX)	2PDT alternate	F	No
-072(XXX)	-164(XXX)	2PDT alternate	G	No
-073(XXX)	-165(XXX)	2PDT alternate	H	No
-074(XXXX)	-166(XXXX)	2PDT alternate	A	Yes
-075(XXX)	-167(XXX)	2PDT alternate	B	Yes
-076(XX)	-168(XX)	2PDT alternate	C	Yes
-077(X)	-169(X)	2PDT alternate	D	Yes
-078(XXX)	-170(XXX)	2PDT alternate	E	Yes
-079(XX)	-171(XX)	2PDT alternate	F	Yes
-080(XXX)	-172(XXX)	2PDT alternate	G	Yes
-081(XXX)	-173(XXX)	2PDT alternate	H	Yes

See footnotes at end of table.

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TABLE III. Dash numbers, design and operating characteristics - Continued.

Dash number <u>1/</u>		Circuit description	Lens code	RF: shielded
Type S	Type W			
-082(XXXX)	-174(XXXX)	Indicator	A	No
-083(XXX)	-175(XXX)	Indicator	B	No
-084(XX)	-176(XX)	Indicator	C	No
-085(X)	-177(X)	Indicator	D	No
-086(XXX)	-178(XXX)	Indicator	E	No
-087(XX)	-179(XX)	Indicator	F	No
-088(XXX)	-180(XXX)	Indicator	G	No
-089(XXX)	-181(XXX)	Indicator	H	No
-090(XXXX)	-182(XXXX)	Indicator	A	Yes
-091(XXX)	-183(XXX)	Indicator	B	Yes
-092(XX)	-184(XX)	Indicator	C	Yes
-093(X)	-185(X)	Indicator	D	Yes
-094(XXX)	-186(XXX)	Indicator	E	Yes
-095(XX)	-187(XX)	Indicator	F	Yes
-096(XXX)	-188(XXX)	Indicator	G	Yes
-097(XXX)	-189(XXX)	Indicator	H	Yes

1/ Dash numbers shown are for units with color filters. Replace the X(s) with the desired color symbol(s) of MIL-PRF-22885 in the position sequence shown in table I.

2/ See table I.

3/ These are plug-in switch or indicator modules that do not include lens and housing assemblies. Type S terminal designation does not apply.

4/ Part or Identifying Number (PIN) M22885/86-001 through -005 have been superseded by M22885/86-191 through -195 respectively. PIN's M22885/86-191 through -195 have unslotted terminals in lieu of terminals with slotted holes. The term Part or Identifying Number (PIN) is equivalent to the term part number which was previously used in this specification.

5/ These are housings only that do not include lens and switch modules.

6/ These are switch or indicator units that do not contain lens assemblies.

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REQUIREMENTS:

Design and construction: See figures 1, 2, and 3 and table I, II, and III.

Illuminated pushbutton switch shall consist of:

- 1 Lens assembly - Accommodates four midget flange base T-1-3/4 incandescent lamps.
Lens design permits application of photographic or engraved legends.
- 1 Plug-in switch module with mounting screw.
- 1 Housing with receptacle and mounting sleeve.
- 4 Lamps, not included --order separately or specify in contract or purchase order.

Material and finish:

- Lens display screen. Shall be of clear transparent thermoplastic material.
- Lens housing: Finished black.
- Switch module housing. Finished black per MIL-A-8625 (for RFI chemical filmed per MIL-C-5541).
- Mounting bracket: Finished black per MIL-A-8625 (for RFI- chemical filmed per MIL-C-5541).

Enclosure design: 1 (unsealed).

Temperature characteristic: 1 (-55°C to +85°C).

Vibration grade: 3 (10-2,000 Hz).

Operation: A (momentary action), B (alternate action) or N (indicator light), see table III.

Display type: W (white until illuminated, then background appears in color).

Operating characteristics:

- Operating force: 3.5 ±1.0 pounds.
- Release force: 0.5 pound minimum.
- Pretravel: 0.200 inch maximum (5.08 mm).

Dielectric withstanding voltage: 450 V rms at 70,000 feet.

Shock: Test condition A (50 g), method 213 of MIL-STD-202.

Electrical rating:

Contact rated load:

	<u>28 V dc</u>	<u>115 V ac</u>
Resistive	2 amperes	2 amperes
Inductive	1.0 ampere	1.0 ampere
Lamp	0.75 ampere	0.75 ampere

EMI/RFI shielding: When switches are tested in accordance with the shielding efficiency test of MIL-PRF-22885, the attenuation shall be not less than specified on figure 4.

Weight: 0.110 pound ±10 percent (includes lamps).

Luminance and color: see MIL-PRF-22885/52. Luminance of EMI/RFI shielded pushbuttons is reduced by approximately 30 percent.

Part or Identifying Number (PIN): M22885/86- (dash number from table III).

Intended use: As lens for 4-lamp illuminated push switches, MIL-PRF-22885/80 and MIL-PRF-22885/74.

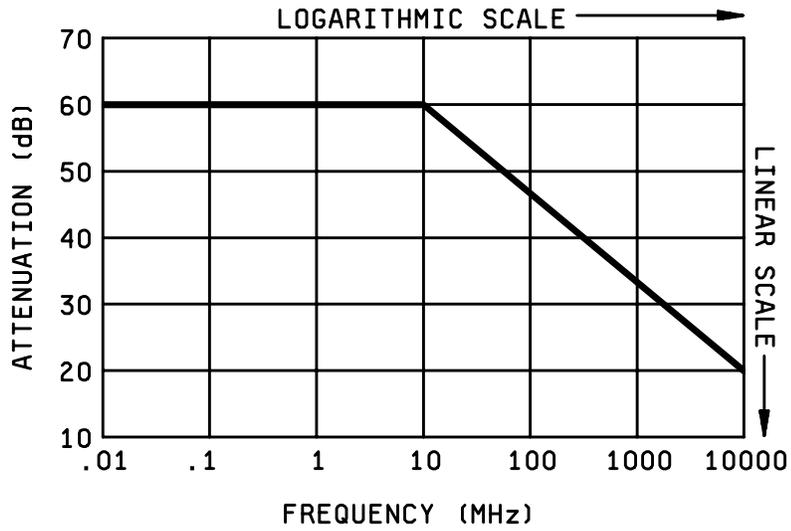


FIGURE 4. Shielding effectiveness.

Qualification inspection.

Group submission: Table IV applies when the momentary and alternate action switches and the indicator are submitted for qualification at the same time.

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TABLE IV. Qualification inspection.

Switch	Qualification inspection table x of MIL-PRF-22885		Additional inspection	Extent of approval
	Group	Number of sample units		
M22885/86-037(X) (4PDT alternate, non-RFI, S-terminals)	I	20		All
	II	2 (from group I)		
	III	2 (from group I)		
	IV	2 (from group I)		
	V	2 (from group I)		
	VI	12 (from group I)		
	VIII	101/		
M22885/86-121(X) (4PDT momentary, RFI, W-terminals)	I	6		
	II	2 (from group I)		
	III	2 (from group I)		
	VII	2 (from group I)		
M22885/86-069(X) (2PDT alternate, non-RFI, S-terminals)		2	Visual and mechanical examination Operating characteristic	
M22885/86-053(X) (2PDT alternate, non-RFI, S-terminals)		2	Visual and mechanical examination Operating characteristic	

1/ Samples which have been submitted to other tests may be used.

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Quality assurance: Group B inspection shall be in accordance with MIL-PRF-22885 and table V herein.

TABLE V. Group B inspection.

PIN and number of sample units	Tests of MIL-PRF-22885 table XII as identified by sample numbers <u>1/</u>	Extent of approval
M22885/86-037 (10 sample units) 4PDT alternate	Sample numbers 1 through 10	All
M22885/86-121 (4 sample units) 4PDT momentary	Sample numbers 1, 2, 9, and 10	

1/ Ten pushbuttons (two for each color) shall be tested for color and luminance.

Custodians:
Navy - EC
DLA - CC

Preparing activity:
DLA - CC

(Project 5930-1716-15)