

# VIVISUN <sup>SERIES</sup> 95™

MIL-S-22885/108

4 Pole Solderless  
QUIK-CONNECT™ Options



# VIVISUN<sup>SERIES</sup> 95<sup>TM</sup>

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## 4 Pole Solderless QUIK-CONNECT<sup>TM</sup> Options



Unsealed



Sealed

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Data and  
ordering  
information

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Designed and tested  
in accordance with  
MIL-S-22885/108



## SPECIFICATIONS

Two Series 95 solderless QUIK-CONNECT™ switch types (sealed and unsealed) designed and tested in accordance with MIL-S-22885/108 are being added to complement the widely used sunlight readable VIVISUN 20/20 product line. These new sealed and unsealed switches incorporate the same mechanical, electrical, visual and solderless QUIK-CONNECT™ features of the standard 2 pole Series 95. This design provides four poles per switch yet maintains the advantages of a removable plug for pre-installation wiring and servicing. The VIVISUN 20/20 DATA SHEET 95-1-86-3 REV. 1 offers complete details of features incorporated into this group of switches: features such as NVIS compatibility, EMI shielding, high impact shock, visible messages, low touch temperature, and easy installation.

### MECHANICAL FEATURES:

#### UNSEALED PUSHBUTTON SWITCH (TYPE V CONFIGURATION):

The Type V pushbutton switch configuration provides four poles (single or double break) with an easy to install 4 Pole CTS Connector (QUIK-CONNECT™) designed as a solderless common termination system.

**Package Dimensions:** The Type V construction, physical dimensions, and configuration conform to Figure 1.

**Unit Weight:** 38 grams (1.34 ounces) maximum including mounting sleeve and spacer, less connector.

**4 Pole Solderless QUIK-CONNECT™ Plug Weight:** 6 grams (0.21 ounce).

**Length:** Overall length 2.765" including the QUIK-CONNECT™ plug. Maximum depth behind the mounting plate is 2.58".

**Enclosure Design:** Unsealed.

**Housing Material:** Stainless Steel.

#### Wiring the 4 Pole Solderless QUIK-CONNECT™ Plug:

The connector is wired as a common termination system- but remains a removable plug on/plug off connector. See Figure 1 and Figure 5.

**Solderless Termination:** MIL-C-39029/22-192 sockets are crimped onto 20, 22 or 24 gauge wire without soldering.

**Loading Wires:** Wires with the MIL-C-39029/22-192 sockets crimped on are inserted and extracted from the 4 Pole solderless QUIK-CONNECT™ plug by use of an M81969/14-10 tool.

#### Mating the 4 Pole Solderless QUIK-CONNECT™ Plug:

No tool is needed to insert the plug into the switch housing but an extraction tool, Aerospace Optics P/N 18-234 is required to remove the plug.

**Type V (Unsealed) Switch Housing Assembly:** The 4 Pole solderless QUIK-CONNECT™ plug is not supplied with the Type V switch housing. It is ordered separately as Aerospace Optics P/N 18-240 (sealing plugs included).

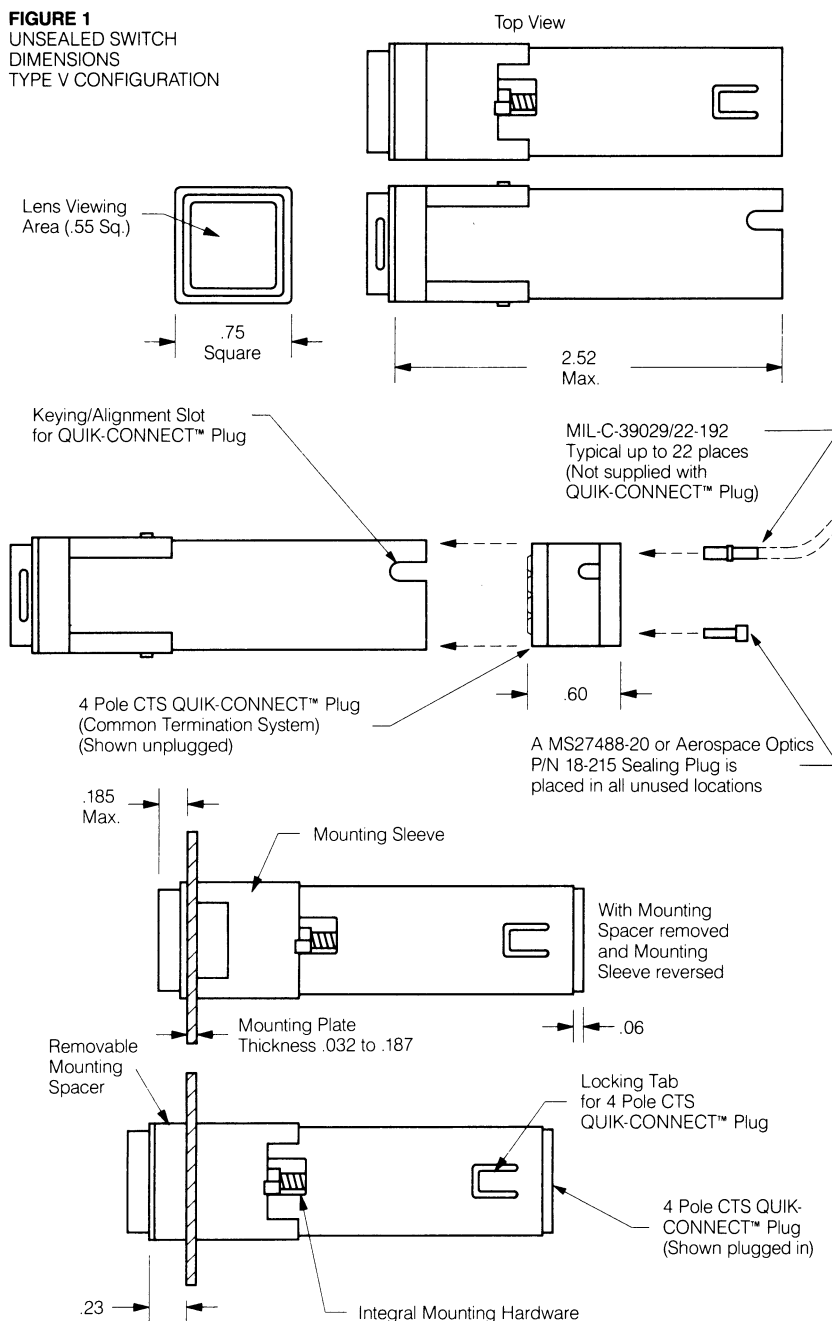
**Mounting Sleeve Material:** Stainless Steel.

**Mounting Cutout Dimensions:** See Figure 2 for mounting plate cutout dimensions for Type V (unsealed) switches.

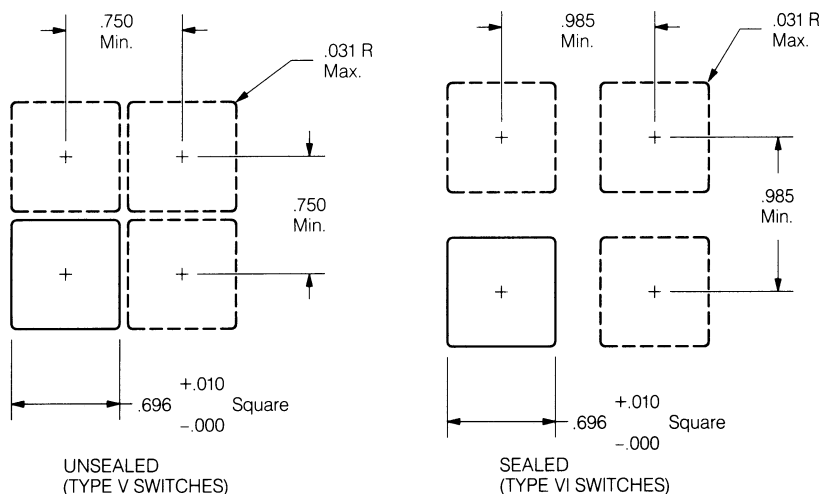
#### TYPE I, III, AND V CONFIGURATIONS (UNSEALED):

Type V configurations incorporate all the mechanical features of both Type I and Type III configurations (see VIVISUN 20/20 Series 95 Data Sheet 95-1-86-3 REV. 1) unless otherwise noted.

**FIGURE 1**  
UNSEALED SWITCH DIMENSIONS  
TYPE V CONFIGURATION



**FIGURE 2**  
RECOMMENDED MOUNTING PLATE CUTOUT DIMENSIONS  
FOR UNSEALED AND SEALED SWITCHES



## ELECTRICAL FEATURES:

Unless otherwise stated, all the electrical features incorporated in Type I and III configurations (unsealed) have been incorporated in Type V configurations (see Data Sheet 95-1-86-3 REV. 1).

**Switch Capacity:** Four pole double throw.

**Switch Contact Schematic:** The switch contact arrangements are either single break or double break. The double break allows two separate contact circuits or simply a single throw contact action. See Figure 3.

**Switch and Terminal Identification:** The switch poles are denoted as position H, J, K, and L. Switch terminals are marked 1, 2, 3, and 4. The lamp terminals are marked A, B, C, D, F, and G. See Figure 5 for exact terminal identification.

## VISUAL FEATURES/ENVIRONMENTAL CONDITIONS:

All visual features and environmental conditions as listed on the Data Sheet 95-1-86-3 REV. 1 which apply to Type I and III switch configurations (unsealed) also apply to Type V configurations.

## SEALED PUSHBUTTON SWITCH (TYPE VI CONFIGURATION):

All features listed in Data Sheet 95-1-86-3 REV. 1 for Type II and IV configurations (sealed) apply to Type VI configurations unless otherwise specified.

**Enclosure Design:** Dustproof/Dripproof/Watertight/Splashproof.

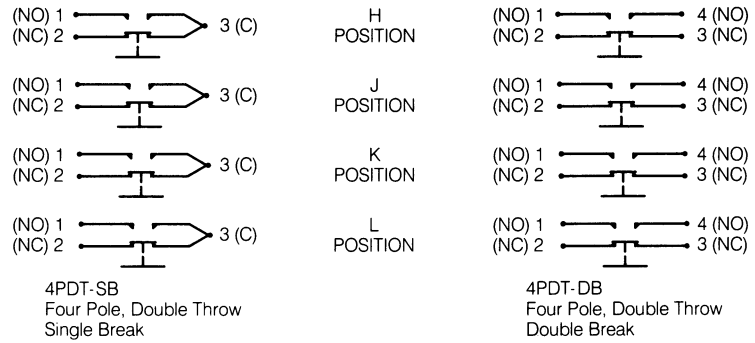
**Configuration:** The Type V configuration (unsealed) can be supplied optionally as a sealed pushbutton switch. The Type V switch with the sealed option is referred to as Type VI.

**Package Dimensions:** Type VI physical dimensions conform to Figure 6. Sealed cap dimensions are given in the Data Sheet 95-1-86-3 REV. 1.

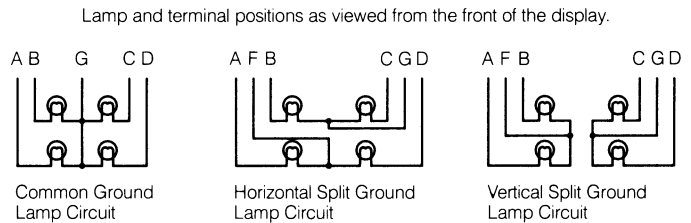
**Sealed Unit Weight:** 41 grams (1.45 ounces) maximum including mounting sleeve and spacer, less connector.

**Mounting Cutout Dimensions:** See Figure 2 for mounting plate cutout dimensions for Type VI (sealed) switches.

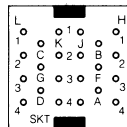
**FIGURE 3**  
SWITCH CIRCUIT SCHEMATIC FOR 4 POLE  
SOLDERLESS QUIK-CONNECT™ SWITCHES



**FIGURE 4**  
LAMP CIRCUIT SCHEMATIC



**FIGURE 5**  
SWITCH POLES, LAMP TERMINALS AND IDENTIFICATION  
FOR 4 POLE SOLDERLESS QUIK-CONNECT™ PLUG



### Notes:

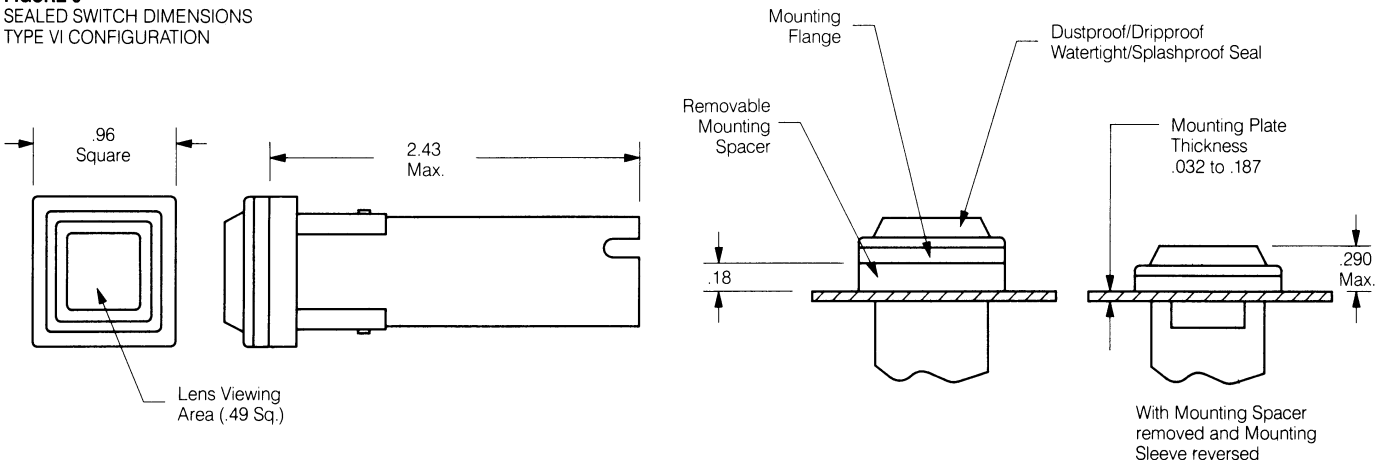
- All 4 Pole solderless QUIK-CONNECT™ switches have identical switch pole and lamp terminal arrangement identification.
- All 4 Pole solderless QUIK-CONNECT™ plugs come with MS27488-20 or Aerospace Optics P/N 18-215 sealing plugs (not installed).
- All unused locations of the 4 Pole solderless QUIK-CONNECT™ plugs are filled with the MS27488-20 or Aerospace Optics P/N 18-215 sealing plug.
 

**Example:** A 4 pole/single break/common ground switch will require 5 MS27488-20 or Aerospace Optics P/N 18-215 sealing plugs (1 plug in location F of the lamp circuit and 1 plug each in location 4 of poles H, J, K, and L).

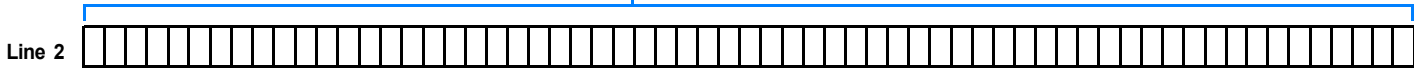
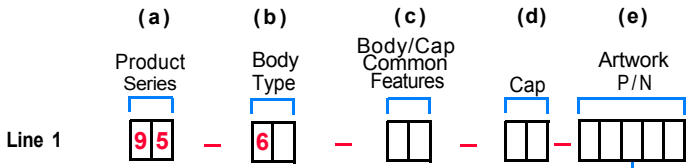
If less than 4 poles are used, a MS27488-20 or Aerospace Optics P/N 18-215 sealing plug is placed in the unused switch pole locations.

**Example:** A 4 pole/single break/common ground switch utilizing only 3 poles will require 8 MS27488-20 or Aerospace Optics P/N 18-215 sealing plugs (1 each in locations 1, 2, 3, and 4 of the unused switch pole, 1 each in location 4 of the 3 active switch poles, and 1 plug in location F of the lamp circuit).
- 'SKT' identifies the socket side.
- H, J, K, and L identify each switch pole.
- A, B, C, D, F, and G identify the lamp circuit terminations (see figure 4).
- 1, 2, 3, and 4 identify the switch contact termination.

**FIGURE 6**  
SEALED SWITCH DIMENSIONS  
TYPE VI CONFIGURATION



# HOW TO ORDER VIVISUN 20/20 SERIES 95 4 POLE SOLDERLESS QUIK-CONNECT™ SWITCHES



Line 2 provides the detailed artwork description of legend position, color, character height and specific legends to be displayed with the corresponding legend position. When two or more legend positions (see Table 6) are to display information, a semicolon separates the legend information for each position. When two or more lines of characters (see Table 9) are to be used in one legend position, the individual lines are separated by a comma.

**To specify a Series 95 4 Pole Solderless QUIK-CONNECT™ Switch, determine the basic part number as follows:**

- Step 1:** From Table 1. Insert '6' into the third position of the basic 13 digit part number.
- Step 2:** Select the desired switch poles and contact material from Table 2. Insert the appropriate designation number or letter into the fourth position of the basic 13 digit part number.
- Step 3:** Select the desired enclosure design and EMI shielding option as listed in Table 3. Insert the appropriate designation number into the fifth position of the basic 13 digit part number.

Sealed and unsealed switches are specified by a basic 13 digit part number which is comprised of (a) 2 digits to define the Aerospace Optics SERIES 95 product line, (b) 2 digits to define the body type, (c) 2 digits to define features that apply to both the body and the pushbutton cap, (d) 2 digits to define the pushbutton cap, and (e) a 5 digit artwork part number. Line 2 is provided to define the exact artwork used in the cap.

**NOTE:** Artwork 5 digit part number is assigned by Aerospace Optics to abbreviate and designate customer legend and color information specified on line 2.

- Step 4:** Select the pushbutton cap actuation and lamp circuit configuration from Table 4. Insert the designation number into the sixth position of the 13 digit part number.
- Step 5:** Select the desired pushbutton legend style from Table 5. Insert this character into the seventh position of the 13 digit number. Insert the lamp type designation number into the eighth position of the part number (see Table 7).
- Step 6:** Complete the part number by using Tables 6, 8, 9 and the example on page 4.

<p><b>TABLE 1</b> Termination</p>	<p style="text-align: center;"><u>Termination Type</u> <b>4 Pole solderless QUIK-CONNECT™</b> (See note)</p> <p style="text-align: center;"><u>Designation</u> 6</p> <p style="text-align: center;">For additional termination styles see Data Sheet 95-1-86-3 REV. 1</p>	<p>Note: The 4 Pole solderless QUIK-CONNECT™ designation number 6 is used to order the 4 Pole solderless QUIK-CONNECT™ switch/indicator only. The 4 Pole solderless QUIK-CONNECT™ plug is ordered separately to permit wiring harness manufacture without the necessity of the switch/indicator. The 4 Pole solderless QUIK-CONNECT™ plug is ordered as P/N 18-240.</p>																			
<p><b>TABLE 2</b> Switch Poles and Contact Material</p>	<p style="text-align: center;"><u>Switch Poles</u> 4PDT-SB 4PDT-DB</p>	<p style="text-align: center;"><u>Contact Material</u> <u>Silver</u>      <u>Gold Plate</u> A                      F C                      H</p> <p style="text-align: center;">For 2 Pole, 1 Pole, and Indicator configurations see Data Sheet 95-1-86-3 REV.1</p>																			
<p><b>TABLE 3</b> Enclosure Design and EMI</p>	<p>1 - Unsealed 2 - Dripproof/Watertight/Splashproof 3 - Dripproof, etc. with High Impact Shock</p>	<p>4 - Unsealed with EMI Shielding 5 - Dripproof, etc. with EMI Shielding 6 - Dripproof, etc. with High Impact Shock and EMI Shielding</p>																			
<p><b>TABLE 4</b> Cap Actuation and Lamp Circuit</p>	<p style="text-align: center;"><u>Lamp Circuit</u> Common Ground Split Ground Horizontal Split Ground Vertical</p>	<p style="text-align: center;"><u>Actuation</u> <u>Momentary</u>      <u>Alternate*</u>      <u>Indicator</u> 1                      4                      7 2                      5                      8 3                      6                      9</p> <p style="text-align: center;">*High Impact Shock is not available in Alternate Action</p>																			
<p><b>TABLE 5</b> Pushbutton Legend Style</p>	<p style="text-align: center;">Standard Designation      NVG Designation</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 5px;"></div> </div> <p style="text-align: center;">B      C      D      E      F      G      J      H K      L      M      N      P      Q      R      S</p>																				
<p><b>TABLE 6</b> Legend Position</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">2 3</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">4 5 3</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">4 5 6 7</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">2 6 7</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">8 9</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">4 9 6</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">8 5 7</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">1</div> </div>																				
<p><b>TABLE 7</b> Lamp Type</p>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Type</th> <th>Lamp P/N</th> <th>Voltage</th> <th>Current (amps)</th> <th>Rated Life (hours)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>17-043</td> <td>5</td> <td>.060</td> <td>6,500</td> </tr> <tr> <td>2</td> <td>03-014*</td> <td>5</td> <td>.115</td> <td>40,000</td> </tr> <tr> <td>6</td> <td>14-104**</td> <td>28</td> <td>.024</td> <td>16,000</td> </tr> </tbody> </table> <p style="text-align: center;">*MS-24515 **MS-3338</p>	Type	Lamp P/N	Voltage	Current (amps)	Rated Life (hours)	1	17-043	5	.060	6,500	2	03-014*	5	.115	40,000	6	14-104**	28	.024	16,000
Type	Lamp P/N	Voltage	Current (amps)	Rated Life (hours)																	
1	17-043	5	.060	6,500																	
2	03-014*	5	.115	40,000																	
6	14-104**	28	.024	16,000																	

TABLE 8 Color	R - Red	Y - Yellow	G - Green	TABLE 9 Character Capacity per Legend Position	Character Size	Character Height	Lines/ Characters	Legend Position per Table 6			
	W - White	B - Blue			1*	.125	<b>Lines Per Position</b>	3	1	1	3
	J - NVIS green B				2*	.109	<b>Characters Per Line</b>	6	6	3	3
	K - NVIS yellow				3	.072	<b>Lines Per Position</b>	3	1	1	3
	V - Visible white with blue white night legend lighting (Futura)				4	.156	<b>Characters Per Line</b>	7	7	3	3
N - Visible white with red night legend lighting (Futura)						<b>Lines Per Position</b>	5	2	2	5	
L - Visible white with NVIS green B night legend lighting (Futura)						<b>Characters Per Line</b>	8	8	4	4	
						<b>Lines Per Position</b>	2	1	1	2	
						<b>Characters Per Line</b>	4	4	2	2	

\*Note: Visible white legends using Futura Medium Condensed lettering (Style V, N & L-per Table 8) have one less character per line for character sizes 1 and 2.

**EXAMPLE**



Visible white with blue white night legend lighting  
Green Symbol

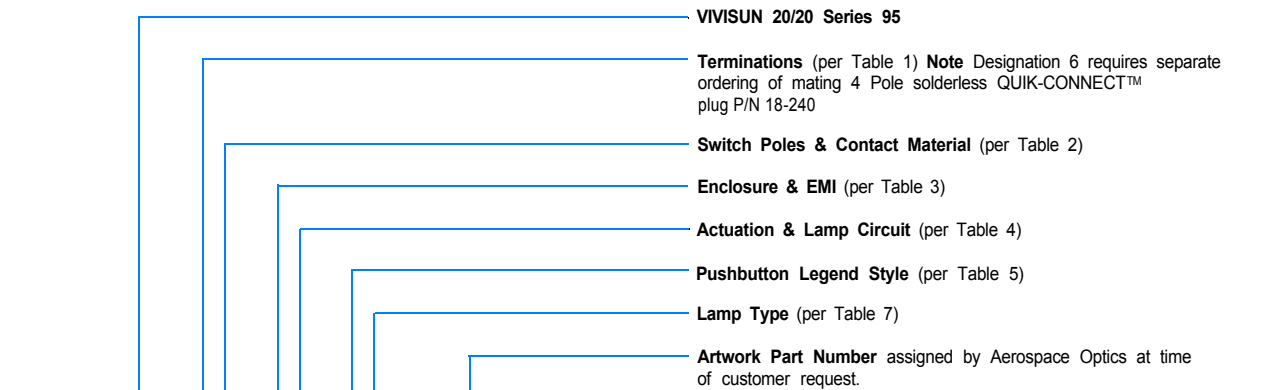
**1. How to order a typical VIVISUN 20/20 Series 95 4 Pole solderless QUIK-CONNECT™ switch having the following features:**

- \* Solderless Common Termination System (CTS)
- \* 2 poles (double break and gold plated contacts)
- \* Alternate action
- \* Split ground horizontal lamp circuit
- \* Low power 5 volt lamps (P/N 17-043)
- \* Legend Style B

**2. How to order 4 Pole solderless QUIK-CONNECT™ plug and extraction tool for the solderless 4 Pole Common Termination System (CTS):**

- To order the 4 Pole solderless QUIK-CONNECT™ plug: P/N 18-240  
Note: Solderless QUIK-CONNECT™ plug will be supplied with sealing plugs for installation in any unused locations.
- To order extraction tool for removing the 4 Pole solderless QUIK-CONNECT™ plug: P/N 18-234

**Note: This requires ordering two separate components (4 Pole solderless QUIK-CONNECT™ switch and 4 Pole solderless QUIK-CONNECT™ plug)**



Line 1: 9 5 - 6 H - 1 5 - B 1 - 5 0 3 8 8

Line 2: ( 2 V 3 H F A U D I O , X F E R ; 3 G O / / / / )

- Parenthesis to start artwork description
- Legend position per Table 6
- Color per Table 8
- Character size per Table 9
- Legend on first line "HF AUDIO"
- Insert comma between 1st and 2nd lines
- Legend on second line "XFER"
- Insert semicolon between legend positions
- Legend position per Table 6
- Color per Table 8
- Character size per Table 9 Note: Code 0 designates non-standard symbols
- Legend on first line "////"
- Parenthesis to denote end of artwork

**HOW TO ORDER SPARE COMPONENTS**

- To order typical spare Series 95 VIVISUN 20/20 pushbutton cap only: (from example above)  
9 5 - X X - 1 5 - B 1 - 5 0 3 8 8  
Insert X's in body type spaces to denote push button cap only.
- To order typical spare VIVISUN Series 95 4 Pole solder QUIK-CONNECT™ body only: (from example above)  
9 5 - 6 H - 1 5
- To order spare 4 Pole solderless QUIK-CONNECT™ plug only: (from example above) 18-240
- To order typical spare lamps only: 17-043 (lamp type 1 from example above and Table 7)

**NOTE:** For repeat orders of the switch, only the 13 digit part number on line 1 is required.



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Supplement No. 1

Data Sheet No. **95-1-86-3 REV. 1**