

**Operating Instructions For  
Series VT22  
Video/Audio Transmitter**

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## Series VT22 Video/Audio Transmitter

### Operating Instructions

#### 1.0 INTRODUCTION

Congratulations on the purchase of your new SEMCO Series VT22 Transmitter. The model and serial number are located on the label affixed to the front of the unit.

#### WARNING

**TO PREVENT DAMAGE TO THE UNIT, MAINTAIN THE WARRANTY, AND REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. REFER ALL SERVICING AND MODIFICATION REQUIREMENTS TO QUALIFIED SEMCO PERSONNEL VIA THE CUSTOMER SERVICE HOTLINE, 1-800-995-0636, EXTENSION 188.**

#### 2.0 DESCRIPTION

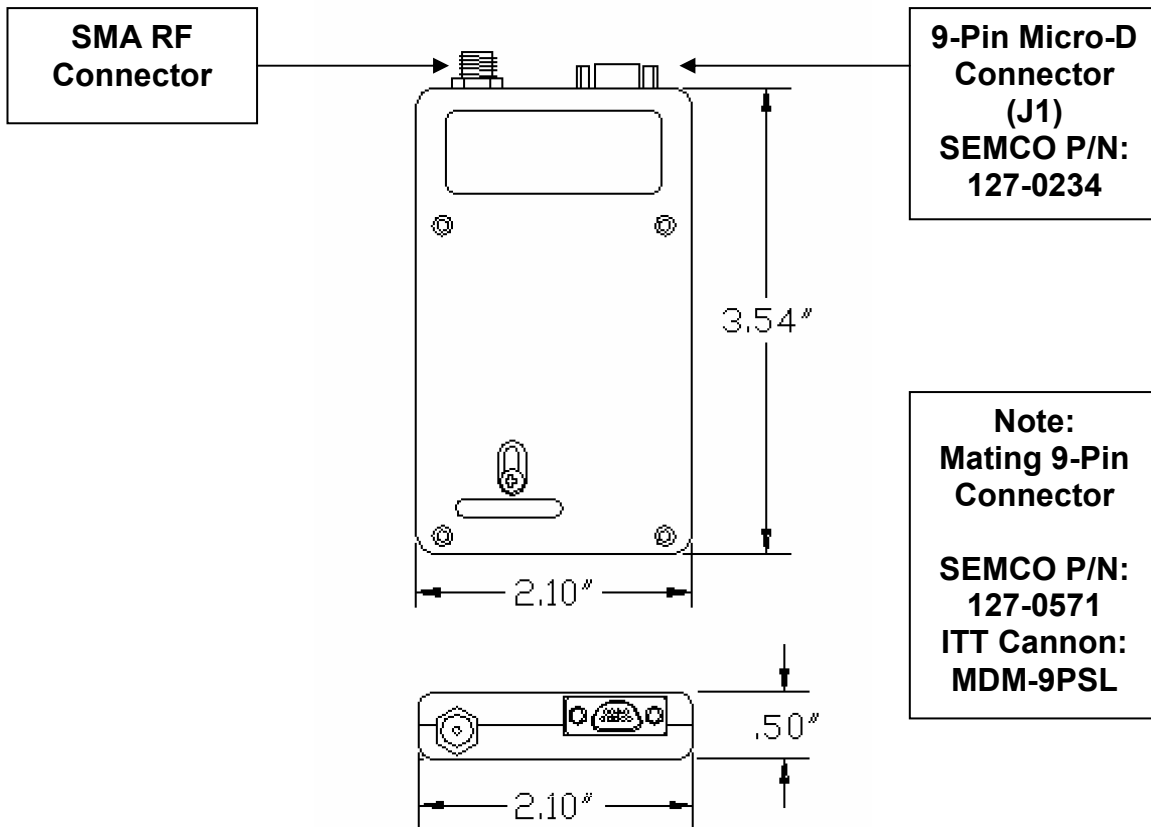
The Series VT22 Video/Audio Transmitter is a true FM, modular, all solid state unit available either as a fixed frequency or frequency agile microwave transmitter. The transmitter's small size and weight make it ideal for covert body-worn applications. This transmitter operates between either 1710-1850 MHz or 2450-2483.5 MHz with a nominal power output of 0.25 watts. The video transmitter is designed to transmit wide-band NTSC video signals (color or black & white). An audio sub-carrier between 5.5 MHz and 7.8 MHz is provided for transmission of audio. These transmitters are FCC Part 90 Type-Accepted, and are designed to be used in conjunction with a wide variety of antennas, including dual patch antenna system. Line of sight range is approximately 0.50 to 0.75 miles. Figure 1 depicts the VT22 Transmitter.



**Figure 1**  
**Series VT22 Video/Audio Transmitter**

#### 3.0 SYSTEM OPERATION

The VT22 transmitter has two (2) connectors; a 9-Pin Micro-D electrical connector and a SMA RF connector. The 9-Pin connector is provided for Video/Audio/Power In. The SMA connector is provided for RF Output. Refer to Figure 2.



**Figure 2**  
**Diagram of VT22 Transmitter**

### 3.1 Instructions

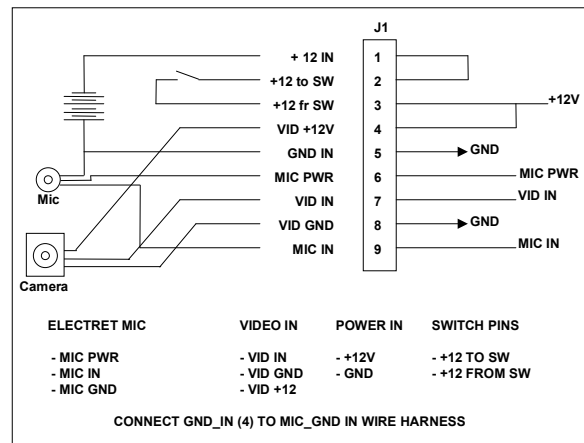
**Step 1** - Attach antenna to the RF OUTPUT (SMA Connector) of the transmitter. Be careful not to over-torque the connectors.

**Step 2** - Attach mating connector to the 9-Pin Micro-D connector (J1). Figure 3 depicts the connector interface diagram.

**NOTE:**

Mating connectors are available directly from the manufacturer or through SEMCO. Two versions are available, one with fly-away leads and one without.

- with leads: SEMCO P/N 127-0234, ITT Cannon P/N MDM-9SCBR
- without leads: SEMCO P/N 127-0571, ITT Cannon P/N MDM-9PSL



**Figure 3**  
**VT22 Connector Interface Diagram**

**Step 3 -** Frequency Agile Transmitters, Only. Locate and loosen the small screw next to the recessed cover plate on the transmitter housing (see Figure 4).

**NOTE:**

**Do not remove the screw or cover plate may fall into transmitter housing.**

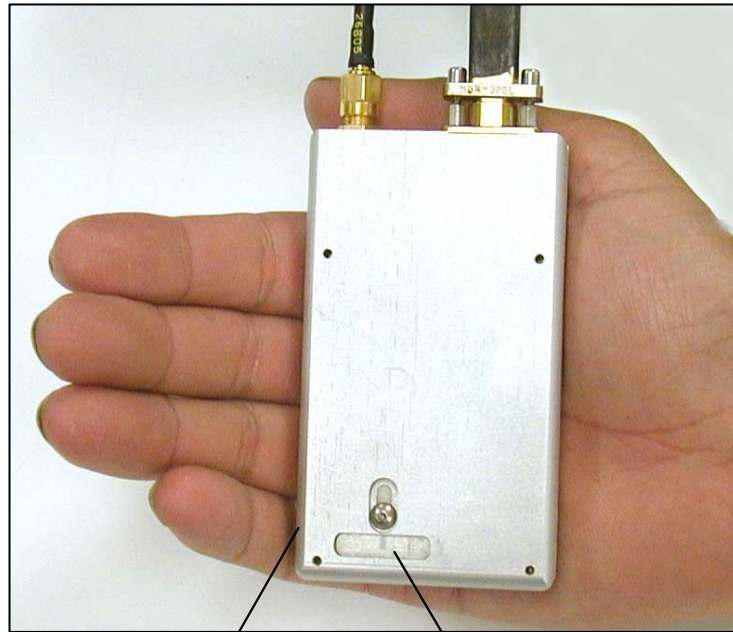
**Step 4-** Slide the recessed cover plate back to expose the frequency select switch.

**Step 5 -** Holding the transmitter as shown in Figure 4 with the transmitter connectors pointing up, enter the proper code starting with position 1 on the extreme left of the 14 pin dip switch. A logic 0 is entered when each switch position is moved up (toward the transmitter connectors). A logic 1 is entered when each switch position is moved down (away from the transmitter connectors). Enter the frequency desired by selecting the corresponding switch position logic as shown in Table 1 or Table 2, as applicable to the transmitter P/N (VT22ML - 1710-1850 MHz; VT22MS - 2400-2500 MHz).

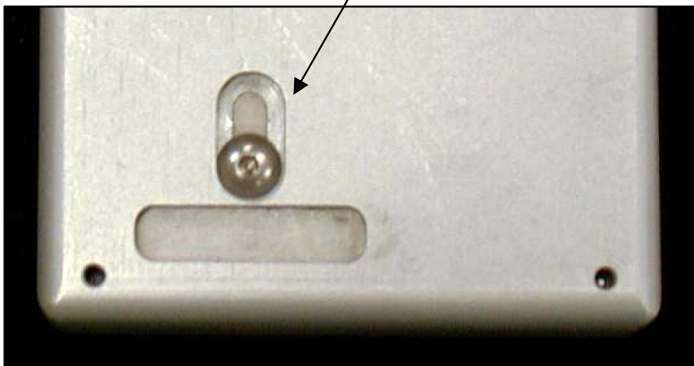
**NOTE:**

**Always use a hard wooden, plastic or metal object when setting the dip switch positions. Never use a soft material (such as a felt tip or pencil lead) in order to avoid introducing foreign material into the transmitter circuitry.**

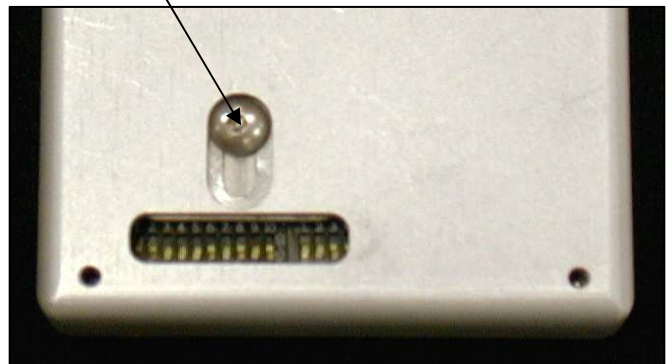
**Step 6 -** Slide the transmitter cover plate back into position and tighten the screw.



**Frequency Select Switch  
Closed**



**Frequency Select Switch  
Open**



**Figure 4  
Video Transmitter Frequency Selection**

**Table 1**  
**VT22ML Video Transmitter Frequency Switch Settings**

<b>VT22ML Frequency Chart</b>			
<b>FREQUENCY</b>	<b>BINARY</b>	<b>FREQUENCY</b>	<b>BINARY</b>
1710.0	00111010101100	1734.0	00110001101100
1710.5	10111010101100	1734.5	10110001101100
1711.0	01111010101100	1735.0	01110001101100
1711.5	11111010101100	1735.5	11110001101100
1712.0	00000110101100	1736.0	00001001101100
1712.5	10000110101100	1736.5	10001001101100
1713.0	01000110101100	1737.0	01001001101100
1713.5	11000110101100	1737.5	11001001101100
1714.0	00100110101100	1738.0	00101001101100
1714.5	01100110101100	1738.5	10101001101100
1715.0	01100110101100	1739.0	01101001101100
1715.5	11100110101100	1739.5	11101001101100
1716.0	00010110101100	1740.0	00011001101100
1716.5	10010110101100	1740.5	10011001101100
1717.0	01010110101100	1741.0	01011001101100
1717.5	11010110101100	1741.5	11011001101100
1718.0	00110110101100	1742.0	00111001101100
1718.5	10110110101100	1742.5	10111001101100
1719.0	01110110101100	1743.0	01111001101100
1719.5	11110110101100	1743.5	11111001101100
1720.0	00001110101100	1744.0	00000101101100
1720.5	10001110101100	1744.5	10000101101100
1721.0	01001110101100	1745.0	01000101101100
1721.5	11001110101100	1745.5	11000101101100
1722.0	00101110101100	1746.0	00100101101100
1722.5	10101110101100	1746.5	10100101101100
1723.0	01101110101100	1747.0	01100101101100
1723.5	11101110101100	1747.5	11100101101100
1724.0	00011110101100	1748.0	00010101101100
1724.5	10011110101100	1748.5	10010101101100
1725.0	01011110101100	1749.0	01010101101100
1725.5	11011110101100	1749.5	11010101101100
1726.0	00111110101100	1750.0	00110101101100
1726.5	10111110101100	1750.5	10110101101100
1727.0	01111110101100	1751.0	01110101101100
1727.5	11111110101100	1751.5	11110101101100
1728.0	00000001101100	1752.0	00001101101100
1728.5	10000001101100	1752.5	10001101101100
1729.0	01000001101100	1753.0	01001101101100
1729.5	11000001101100	1753.5	11001101101100
1730.0	00100001101100	1754.0	00101101101100
1730.5	10100001101100	1754.5	10101101101100
1731.0	01100001101100	1755.0	01101101101100
1731.5	11100001101100	1755.5	11101101101100
1732.0	00010001101100	1756.0	00011101101100
1732.5	10010001101100	1756.5	10011101101100
1733.0	01010001101100	1757.0	01011101101100
1733.5	11010001101100	1757.5	11011101101100

VT22ML Frequency Chart			
FREQUENCY	BINARY	FREQUENCY	BINARY
1758.0	00111101101100	1782.0	00110111101100
1758.5	10111101101100	1782.5	10110111101100
1759.0	01111101101100	1783.0	01110111101100
1759.5	11111101101100	1783.5	11110111101100
1760.0	00000011101100	1784.0	00001111101100
1760.5	10000011101100	1784.5	10001111101100
1761.0	01000011101100	1785.0	01001111101100
1761.5	11000011101100	1785.5	11001111101100
1762.0	00100011101100	1786.0	00101111101100
1762.5	10100011101100	1786.5	10101111101100
1763.0	01100011101100	1787.0	01101111101100
1763.5	11100011101100	1787.5	11101111101100
1764.0	00010011101100	1788.0	00011111101100
1764.5	10010011101100	1788.5	10011111101100
1765.0	01010011101100	1789.0	01011111101100
1765.5	11010011101100	1789.5	11011111101100
1766.0	00110011101100	1790.0	00111111101100
1766.5	10110011101100	1790.5	10111111101100
1767.0	01110011101100	1791.0	01111111101100
1767.5	11110011101100	1791.5	11111111101100
1768.0	00001011101100	1792.0	00000000111100
1768.5	10001011101100	1792.5	10000000111100
1769.0	01001011101100	1793.0	01000000111100
1769.5	11001011101100	1793.5	11000000111100
1770.0	00101011101100	1794.0	00100000111100
1770.5	10101011101100	1794.5	10100000111100
1771.0	01101011101100	1795.0	01100000111100
1771.5	11101011101100	1795.5	11100000111100
1772.0	00011011101100	1796.0	00010000111100
1772.5	10011011101100	1796.5	10010000111100
1773.0	01011011101100	1797.0	01010000111100
1773.5	11011011101100	1797.5	11010000111100
1774.0	00111011101100	1798.0	00110000111100
1774.5	10111011101100	1798.5	10110000111100
1775.0	01111011101100	1799.0	01110000111100
1775.5	11111011101100	1799.5	11110000111100
1776.0	00000111101100	1800.0	00001000011100
1776.5	10000111101100	1800.5	10001000011100
1777.0	01000111101100	1801.0	01001000011100
1777.5	11000111101100	1801.5	11001000011100
1778.0	00100111101100	1802.0	00101000011100
1778.5	10100111101100	1802.5	10101000011100
1779.0	01100111101100	1803.0	01101000011100
1779.5	11100111101100	1803.5	11101000011100
1780.0	11100111101100	1804.0	00011000011100
1780.5	10010111101100	1804.5	10011000011100
1781.0	01010111101100	1805.0	01011000011100
1781.5	11010111101100		



VT22ML Frequency Chart			
<b>FREQUENCY</b>	<b>BINARY</b>	<b>FREQUENCY</b>	<b>BINARY</b>
1805.5	11011010011100	1830.0	00110010011100
1806.0	00111000011100	1830.5	10110010011100
1806.5	10111000011100	1831.0	01110010011100
1807.0	01111000011100	1831.5	11110010011100
1807.5	11111000011100	1832.0	00001010011100
1808.0	00000100011100	1832.5	10001010011100
1808.5	10000100011100	1833.0	01001010011100
1809.0	01000100011100	1833.5	11001010011100
1809.5	11000100011100	1834.0	00101010011100
1810.0	00100100011100	1834.5	10101010011100
1810.5	10100100011100	1835.0	01101010011100
1811.0	01100100011100	1835.5	11101010011100
1811.5	11100100011100	1836.0	00011010011100
1812.0	00010100011100	1836.5	10011010011100
1812.5	10010100011100	1837.0	01011010011100
1813.0	01010100011100	1837.5	11011010011100
1813.5	11010100011100	1838.0	00111010011100
1814.0	00110100011100	1838.5	10111010011100
1814.5	10110100011100	1839.0	01111010011100
1815.0	01110100011100	1839.5	11111010011100
1815.5	11110100011100	1840.0	00000110011100
1816.0	00001100011100	1840.5	10000110011100
1816.5	10001100011100	1841.0	01000110011100
1817.0	01001100011100	1841.5	11000110011100
1817.5	11001100011100	1842.0	00100110011100
1818.0	00101100011100	1842.5	10100110011100
1818.5	10101100011100	1843.0	01100110011100
1819.0	01101100011100	1843.5	11100110011100
1819.5	11101100011100	1844.0	00010110011100
1820.0	00011100011100	1844.5	00010110011100
1820.5	10011100011100	1845.0	10010110011100
1821.0	01011100011100	1845.5	11010110011100
1821.5	11011100011100	1846.0	00110110011100
1822.0	00111100011100	1846.5	10110110011100
1822.5	10111100011100	1847.0	01110110011100
1823.0	01111100011100	1847.5	11110110011100
1823.5	11111100011100	1848.0	00001110011100
1824.0	00000010011100	1848.5	10001110011100
1824.5	10000010011100	1849.0	01001110011100
1825.0	01000010011100	1849.5	11001110011100
1825.5	11000010011100	1850.0	00101110011100
1826.0	00100010011100		
1826.5	10100010011100		
1827.0	01100010011100		
1827.5	11100010011100		
1828.0	00010010011100		
1828.5	10010010011100		
1829.0	01010010011100		
1829.5	11010010011100		

**Table 2**  
**VT22MS Video Transmitter Frequency Switch Settings**

<b>VT22MS Frequency Chart</b>			
<b>FREQUENCY</b>	<b>BINARY</b>	<b>FREQUENCY</b>	<b>BINARY</b>
2400.0	0000011010010	2424.0	00001111010010
2400.5	1000011010010	2424.5	10001111010010
2401.0	0100011010010	2425.0	01001111010010
2401.5	1100011010010	2425.5	11001111010010
2402.0	0010011010010	2426.0	00101111010010
2402.5	1010011010010	2426.5	10101111010010
2403.0	0110011010010	2427.0	01101111010010
2403.5	1110011010010	2427.5	11101111010010
2404.0	00010011010010	2428.0	00011111010010
2404.5	10010011010010	2428.5	10011111010010
2405.0	01010011010010	2429.0	01011111010010
2405.5	11010011010010	2429.5	11011111010010
2406.0	00110011010010	2430.0	00111111010010
2406.5	10110011010010	2430.5	10111111010010
2407.0	01110011010010	2431.0	01111111010010
2407.5	11110011010010	2431.5	11111111010010
2408.0	00001011010010	2432.0	00000000110010
2408.5	10001011010010	2432.5	10000000110010
2409.0	01001011010010	2433.0	01000000110010
2409.5	11001011010010	2433.5	11000000110010
2410.0	00101011010010	2434.0	00100000110010
2410.5	10101011010010	2434.5	10100000110010
2411.0	01101011010010	2435.0	01100000110010
2411.5	11101011010010	2435.5	11100000110010
2412.0	00011011010010	2436.0	00010000110010
2412.5	10011011010010	2436.5	10010000110010
2413.0	01011011010010	2437.0	01010000110010
2413.5	11011011010010	2437.5	11010000110010
2414.0	00111011010010	2438.0	00110000110010
2414.5	10111011010010	2438.5	10110000110010
2415.0	01111011010010	2439.0	01110000110010
2415.5	11111011010010	2439.5	11110000110010
2416.0	0000111010010	2440.0	00001000110010
2416.5	1000111010010	2440.5	10001000110010
2417.0	0100111010010	2441.0	01001000110010
2417.5	1100111010010	2441.5	11001000110010
2418.0	0010111010010	2442.0	00101000110010
2418.5	1010111010010	2442.5	10101000110010
2419.0	0110111010010	2443.0	01101000110010
2419.5	1110111010010	2443.5	11101000110010
2420.0	00010111010010	2444.0	00011000110010
2420.5	10010111010010	2444.5	10011000110010
2421.0	01010111010010	2445.0	01011000110010
2421.5	11010111010010	2445.5	11011000110010
2422.0	00110111010010	2446.0	00111000110010
2422.5	10110111010010	2446.5	10111000110010
2423.0	01110111010010	2447.0	01111000110010
2423.5	11110111010010	2447.5	11111000110010
<b>VT22MS Frequency Chart</b>			
<b>FREQUENCY</b>	<b>BINARY</b>	<b>FREQUENCY</b>	<b>BINARY</b>
2448.0	00000100110010	2472.0	00001010110010

2448.5	10000100110010	2472.5	10001010110010
2449.0	01000100110010	2473.0	01001010110010
2449.5	11000100110010	2473.5	11001010110010
2450.0	00100100110010	2474.0	00101010110010
2450.5	10100100110010	2474.5	10101010110010
2451.0	01100100110010	2475.0	01101010110010
2451.5	11100100110010	2475.5	11101010110010
2452.0	00010100110010	2476.0	00011010110010
2452.5	10010100110010	2476.5	10011010110010
2453.0	01010100110010	2477.0	01011010110010
2453.5	11010100110010	2477.5	11011010110010
2454.0	00110100110010	2478.0	00111010110010
2454.5	10110100110010	2478.5	10111010110010
2455.0	01110100110010	2479.0	01111010110010
2455.5	11110100110010	2479.5	11111010110010
2456.0	00001100110010	2480.0	00000110110010
2456.5	10001100110010	2480.5	10000110110010
2457.0	01001100110010	2481.0	01000110110010
2457.5	11001100110010	2481.5	11000110110010
2458.0	00101100110010	2482.0	00100110110010
2458.5	10101100110010	2482.5	10100110110010
2459.0	01101100110010	2483.0	01100110110010
2459.5	11101100110010	2483.5	11100110110010
2460.0	00011100110010	2484.0	00010110110010
2460.5	10011100110010	2484.5	10010110110010
2461.0	01011100110010	2485.0	01010110110010
2461.5	11011100110010	2485.5	11010110110010
2462.0	00111100110010	2486.0	00110110110010
2462.5	10111100110010	2486.5	10110110110010
2463.0	01111100110010	2487.0	01110110110010
2463.5	11111100110010	2487.5	11110110110010
2464.0	0000010110010	2488.0	0000110110010
2464.5	1000010110010	2488.5	1000110110010
2465.0	00100010110010	2489.0	0100110110010
2465.5	11000010110010	2489.5	1100110110010
2466.0	00100010110010	2490.0	0010110110010
2466.5	10100010110010	2490.5	1010110110010
2467.0	01100010110010	2491.0	0110110110010
2467.5	11100010110010	2491.5	1110110110010
2468.0	00010010110010	2492.0	0001110110010
2468.5	10010010110010	2492.5	1001110110010
2469.0	01010010110010	2493.0	0101110110010
2469.5	11010010110010	2493.5	1101110110010
2470.0	00110010110010	2494.0	0011110110010
2470.5	10110010110010	2494.5	1011110110010
2471.0	01110010110010	2495.0	0111110110010
2471.5	11110010110010	2495.5	1111110110010



**Appendix A**  
**Series VT 22 Data Sheet**

