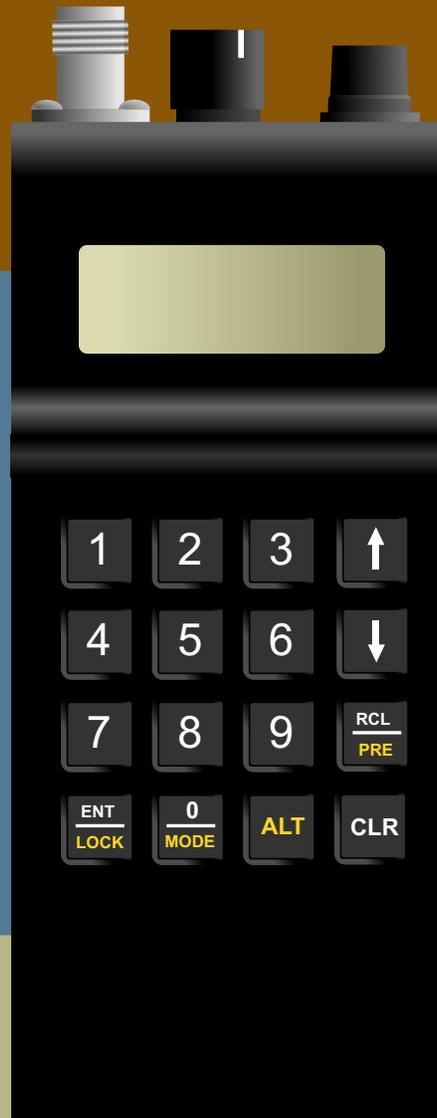


MVR-V1e

MVR-V1e Video Receiver User's Guide

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COASTAL DEFENSE INC.

155 Orchard Hill Lane, Mill Hall PA 17751
Ph. 570-748-3844
Info@gocdi.com | www.gocdi.com



MVR-VIe



MVR-VIe



**CR123 Battery Adapter
PNM403**



**Rechargeable Battery
PNM401**



**Battery Charger
PNM402**



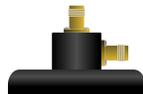
**Vuzix Tac-Eye
PNV221**



**Wearable Multi-Band
Antenna
PNA301**



**Android Tablet
PNV223-NEX7**



**Vehicle Antenna Mount
PNA304**



**Vehicle Antenna Mount
Cable
PNC112**



**High-Gain Flex Antenna
PNA303**



**MVR-VIe to Vuzix
PNC114**



**MVR-VIe to RJ45
PNC115**



**AC Adapter
PNC104**



**MBTR Battery
Adapter
PNC106**



**BA5590 Adapter
PNC103**



**Vehicle Adapter
PNC102**



**Pelican Case
PNP601**



Manuals/Guides

MVR-VIe Front View



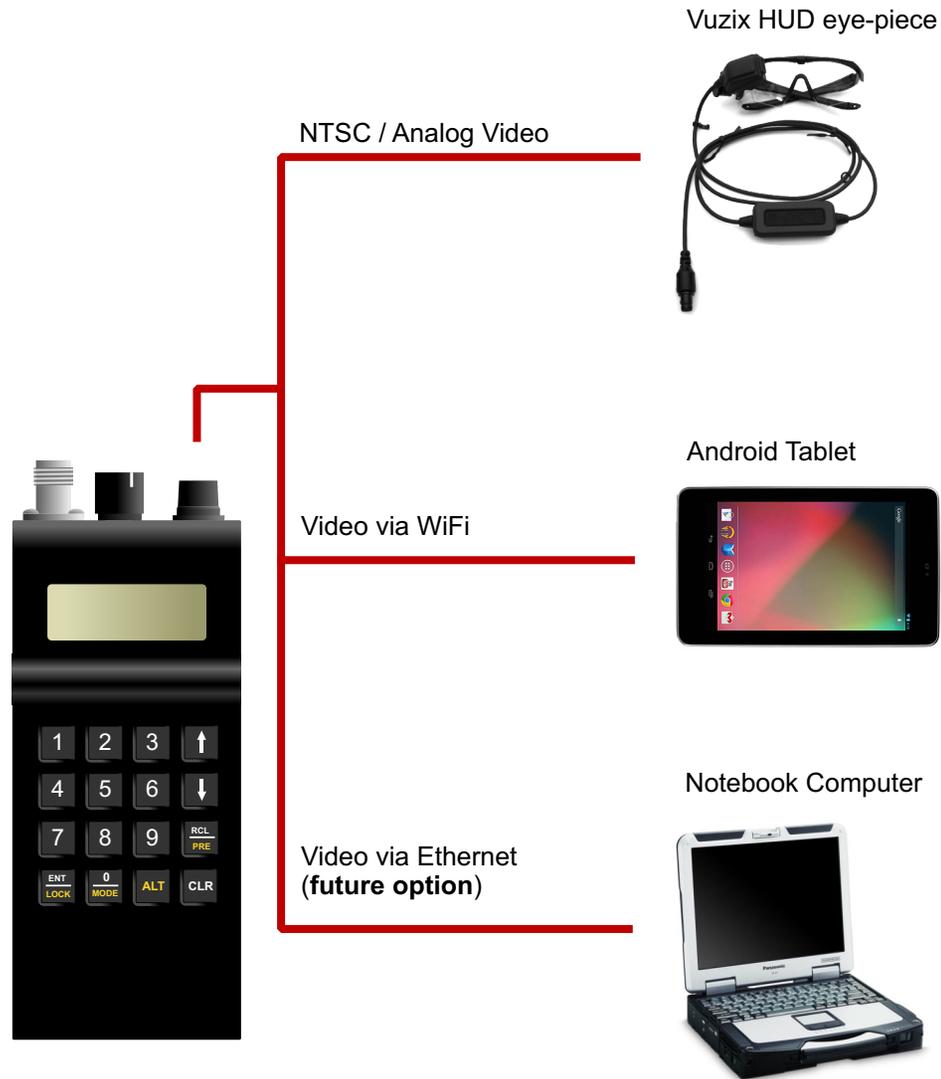
Figure 1

Quick Guide

- ① *antenna connector (TNC)*
- ② *power/backlight knob:*
Position 1 - no backlight
Position 2 - low backlight
Position 3 - high backlight
- ③ *interface connector:* analog video display; ethernet ; WiFi transceiver
- ④ *LCD display*
- ⑤ *numeric keypad:* key in frequency in MHz (1800, 4400 etc.) + **ENT**
- ⑥ *Scan Up / Down:* **ALT** + **↑** to scan up; **ALT** + **↓** to scan down
- ⑦ *Recall / Preset:* **RCL** + number (0 to 9) recalls preset frequency; **ALT** + **Pre** + number (0 to 9) stores currently displayed frequency
- ⑧ *Clear key:* clears status messages and returns to normal display
- ⑨ *ALT key:* allows use of secondary (yellow) key function
- ⑩ *Enter / Lock key:* **ALT** + **Lock** locks/disables the keypad
- ⑪ *Mode key*

-  Weak Signal
-  Strong Signal
-  Low Battery
-  Battery Full
-  Keypad Locked

Video Display Options



Interconnect

connection to Vuzix eyepiece



Vuzix Tac-Eye



MVR-V1e to Vuzix PNC114



connection to tablet



Android Tablet

connection via internal WiFi



Interconnect

connection to laptop via Ethernet

Notebook Computer



MVR-V1e to RJ45
PNC115



Streaming Video to Tablet via WiFi



Step 1: Connecting to the MVR-VIe Wifi

1. Go to the tablet " **Settings** ".
2. Select " **WiFi** ".
3. Connect to " **test** " to connect to MVR-VIe Wifi.

Step 2: Running the Video Player

1. Run the VLC for Android app.
2. Go to the VLC app menu and select " **Directories** " .
3. Scroll through the files and select " **vlc_sdp_mvr.sdp** " .

Operation



Example:

Frequency 5550 MHz
C-Band

NOTE: Enter the frequency in MHz.

Keypad Operation

Enter Frequency: for example 1820 MHz



Store Frequency: for example **Store** 1820 MHz in **Preset 3**



Recall Frequency: for example **Recall** 1820 MHz from **Preset 3**



Increment Frequency: for example **Increment** 1820 MHz by 1 MHz



Decrement Frequency: for example **Decrement** 1820 MHz by 1 MHz



Scan Up: for example **Scan Up** from 1820 MHz



Scan Down: for example **Scan Down** from 1820 MHz



Lock Keypad:



Unlock Keypad:



Clear Display or Entry:



1. Introduction

The MVR-VIe is a four-band video receiver. The receiver works over the following four bands:

L-Band	1700 MHz – 1900 MHz
S-Band	2200 MHz – 2500 MHz
C1-Band	4400 MHz – 5000 MHz
C2-Band	5250 MHz – 5858 MHz

2. Functional Description

Refer to Figure 1 for the location of connectors and switches

2.1 Connectors

The antenna connector is labeled [1] as shown in Figure 1 on page 3. It is a type TNC connector.

The multi-function video/programming connector is labeled [3] as shown in Figure 1. The standard cable supplied with the receiver interfaces to the VUZIX eyepiece. This cable provides power and video to the eyepiece. See the "Tac-Eye LT Display System Users Guide" for more information on the VUZIX eyepiece.

The video output is standard NTSC analog video. Adapter cables to other display devices are available.

The programming function is covered in a separate document.

2.2 Power Switch

The power switch is labeled [2] as shown in Figure 1. It is a four-position rotary switch. Full CCW is OFF. The first click CW is ON with no backlight. The next two clicks CW are on with low and high backlight respectively. Both the keypad and LCD backlights have a high and low setting, and are controlled by the same switch.

2.3 Battery Latch

The receiver is designed to operate from a Thales MBTR or Harris battery pack. To release the battery pack from the receiver, push up the latch, on the right side of the unit.

2.4 Keypad and LCD Display

The keypad and LCD are the user interface to the receiver. The keypad is used to control the receiver and the LCD display indicates operational status. The display is described in Section 3 and the keypad in Section 4 below.

3. LCD Display

The LCD display is a 2-line by 12-column (2 X 12) alpha-numeric display. A maximum of 12 characters can be displayed on each of the two lines. Characters are letters (capital and lower-case), numbers, and standard and user defined symbols.

The top row displays frequency, battery level and signal strength.

Value is displayed as a four-digit frequency in MHz. The signal strength is displayed as bars, from zero (two dashes) to four bars.

Battery capacity is displayed as an icon, described below. Battery voltage is displayed as volts. The battery icon represents approximate remaining battery capacity, and is based on battery voltage. The icon is either completely filled in, two-thirds filled, one-third filled, or outline only. The following is a list of voltages that correspond to the four battery icon states:

Icon 3/3:	Vbatt > 11.7 volts
Icon 2/3:	Vbatt > 11.3 volts
Icon 1/3:	Vbatt > 10.9 volts
Icon 0/3:	Vbatt < 10.9 volts

Note that the icon will blink when the battery voltage is below 10.5 volts.

The second row displays receiver mode and lock status. Lock status is an icon and receiver mode is a two character abbreviation described above. The frequency band is displayed in the second row, below the frequency on the first row.

Power-On Display

Three successive screens are displayed at power-on, approximately two seconds apart. Note in the following paragraph text displayed in the two lines is separated by square brackets; for example [Line 1] [Line 2].

The first screen is the company name; "[Coastal] [Defense, Inc]".
The second screen is the equipment type; "[MVR-VI] [Digital Receiver]".
The third screen displays the firmware revision and the date of the version.

Note: The receiver always powers on at the last frequency entered before powering off. There is a five-second delay before the frequency is stored; this is to prevent constant writing of the frequency to internal memory during scan and frequency change operations.

4. Keypad

There are two ways to describe the operation of the MVR-VI keypad; one is the keystrokes required to implement a function and the second is the function of each key. Both are described below.

The following function labels are abbreviated on the keypad:

ENT	Enter
ALT	Alternate (key function)
PRE	Pre-set (a frequency)
RCL	Recall (a pre-set frequency)



Note: for the rest of this document [] represents an individual key and [] [] represents a key sequence. For example [ENT] represents the "Enter" key and [1] [8] [0] [0] [ENT] represents the sequence of the "1", "8", "0", "0" keys followed by the "Enter" key.

Receiver Function Implementation

Change Frequency; Direct Entry

For direct entry of a frequency, key in the four digit frequency followed by the Enter key. For example, to enter 1820 MHz, key in the sequence [1] [8] [2] [0] [ENT].

1820 MHz



Band selection is automatic, keying in the frequency selects the band. It is possible to enter more than four digits for frequency, but only the last four digits entered are displayed.

The frequency is not changed until the "Enter" key is pressed and a valid new frequency is recognized. If the frequency is invalid, an error message will be displayed prompting the operator to press the "Clear" key.

Note the "Clear" key can be pressed at any time. The display will indicate the last valid frequency entered.

Clear 

Increment Frequency

To increment the frequency by 1 MHz, press and release the "Up Arrow" key. Note that when the highest frequency of a band is reached, the next push of the "Up Arrow" will select the lowest frequency of the same band. For example, L-Band is 1700 MHz – 1900 MHz and S-Band is 2200 MHz – 2500 MHz. If the frequency displayed is 1900 MHz and the up arrow key is pressed, the receiver will tune to 1700 MHz, it will not jump bands to 2200 MHz.

To increment the frequency by more than 1 MHz, press and hold the "Up Arrow" key. The frequency will continue incrementing for as long as the key is held down. The frequency increments at a faster rate the longer the key is held down. As in the case of a single push (as described above), when the highest frequency of a band is reached the next frequency selected will be the lowest frequency of the same band.

Arrow Up 

Decrement Frequency

To decrement the frequency by 1 MHz, press the "Down Arrow" key. Note that when the lowest frequency of a band is reached, the next push of the down arrow will select the highest frequency of the same band. For example, L-Band is 1700 MHz – 1900 MHz and S-Band is 2200 MHz – 2500 MHz. If the frequency displayed is 2200 MHz and the down arrow key is pressed, the receiver will tune to 2500 MHz, it will not jump bands to 1900 MHz.

To decrement the frequency by more than 1 MHz, press and hold the "Down Arrow" key. The frequency will continue decrementing for as long as the key is held down. The frequency decrements at a faster rate the longer the key is held down. As in the case of a single push (as described above), when the lowest frequency of a band is reached the next frequency selected will be the highest frequency of the same band.

Arrow Down 

Scan Up In Frequency

To scan up in frequency, press the "Alternate" key, followed by the "Up Arrow" key. The receiver will tune up to the next frequency that meets the signal strength threshold requirement. As in the case when incrementing the frequency (as described above), when the highest frequency of a band is reached the receiver will tune to the lowest frequency of the same band. To stop the scan, press the Clear key.

Note: the scanning algorithm uses received signal strength to determine the frequency to tune. Due to the nature of the transmitted video signal, it can be hard to distinguish the peak level that corresponds to the center frequency. After the scan stops, it may be necessary to manually tune up or down one or two MHz to find the transmit frequency.

Note: Scan Up and Scan Down are frequency mode functions only.

Scan Down  + 

Scan Down In Frequency

To scan down in frequency press the "Alternate" key, followed by the "Down Arrow" key.

The receiver will tune down to the next frequency that meets the signal strength threshold requirement. As in the case when decrementing the frequency (as described above), when the lowest frequency of a band is reached the receiver will tune to the highest frequency of the same band. To stop the scan, press the Clear key.

The notes following "Scan Up in Frequency" apply to Scan Down.

Scan Up  + 

Store a Pre-set Frequency

To store a pre-set frequency, press the "Alternate" key, followed by the "Pre-set" key followed by one of the number keys. For example, to store the current frequency as Pre-Set #3, the key sequence is:

Store Pre-set  +  + 

Recall a Pre-set Frequency

To recall a pre-set frequency, press the "Recall" key followed by one of the number keys. For example, to recall the frequency stored as Pre-Set #3, the key sequence is:

Recall Pre-set  + 

Lock/Unlock the Keypad

The key sequence toggles the keypad between locked and unlocked mode. The receiver powers up with the keypad unlocked. Pressing [ALT] [LOCK] once will toggle the keypad to locked mode. Pressing [ALT] [LOCK] a second time will toggle the keypad back to unlocked mode. Note that when the keypad is locked, the only keys or key sequences recognized is:

Lock/Unlock  + 

Key Functions

Alternate Key Function

Three keys on the keypad have two functions. The primary function is outlined in White and the alternate function is outlined in Yellow; the "Alternate" key is Yellow.

Pressing the "Alternate" key before pressing one of the three dual-function keys selects the alternate function.

Up Arrow Key Function

The "Up Arrow" key has three functions. (1) Pressing and releasing the key increments the selected frequency in 1 MHz steps by 1. (2) Pressing and holding the key causes the frequency to continuously increment. (3) Pressing the "Alternate" key before the "Up Arrow" keys puts the receiver in Scan Mode. These three modes of operation are described above. Note that in all three modes, when the highest frequency of a band is reached the receiver will tune to the lowest frequency of the same band.

Down Arrow Key Function

The "Down Arrow" key has three functions. (1) Pressing and releasing the "Down Arrow" key decrements the selected frequency in 1 MHz steps by 1. (2) Pressing and holding the key causes the frequency to continuously decrement. (3) Pressing the "Alternate" key before the "Down Arrow" keys puts the receiver in Scan Mode. These three modes of operation are described above. Note that in all three modes, when the lowest frequency of a band is reached the receiver will tune to the highest frequency of the same band.

Recall/Pre-set Key Function

The "Recall/Pre-set" key is a dual-function key. The primary function is to recall a pre-set frequency select. If the "Alternate" key is pressed first, the secondary function is implemented; this is storing the pre-set frequency select.

Clear Key Function

The "Clear" key resets the display to the current frequency and band, and resets any key sequence back to the starting point. For example, if the sequence [1] [9] [5] is entered, the display will show 195 on the New Frequency line. If the "Clear" key is pressed next, the display will reset to indicate the current frequency and band.

If an invalid frequency is entered, an error message will be displayed. Pressing the "Clear" key will remove the error message.

Number Key Functions

The function of the number keys is to enter the desired frequency; for example the key sequence [1] [8] [2] [0] [ENT] will tune the receiver to 1820 MHz. Band selection is automatic. If the receiver is tuned to 1820 MHz (L Band) and the sequence [2] [1] [8] [0] [ENT] is keyed, the receiver will switch to S-Band and tune to 2180 MHz. The only exception is the Zero key, which has two functions as described below.

Enter/Lock Key Function

The primary function of the Enter/Lock key is the "Enter" function. This is used to validate a number sequence when directly entering a frequency; an example of a number sequence is [1] [8] [2] [0] [ENT].

The secondary function of this key is to toggle the keypad between locked and unlocked modes. If the keypad is unlocked, [ALT] [LOCK] will lock the keypad and the "lock" icon will appear in the bottom right corner of the display. If the keypad is locked, [ALT] [LOCK] will unlock the keypad and the "lock" icon will be cleared.



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