

# VSTx

## Ultra Compact SD COFDM Transmitter

### FEATURES

- Optimized for size
- Superior broadcast grade video
- Wide selection of video inputs
- MPEG4 Part-10/H.264
- Two mono audio channels
- Very low power consumption
- Customized versions
- Video, audio, data, and telemetry
- Easy to use

### OPTIONS

- Encryption
- Narrow band 1.25/2.5 MHz
- Many different connector options

### ACCESSORIES

- Booster PA to 2 Watts RF
- Wide selection of antennas

### APPLICATIONS

- Body worn, Civil, UAS, 3D, Robotic, and ISR systems
- Concealed applications
- Body video wire



The VSTx is an ultra small, low power, SD, COFDM, video/audio/data transmitter with standard selectable modulation bandwidths of 6, 7 and 8 MHz. The VSTx features superb H.264 SD encoding and operates in the standard 2k DVB-T COFDM mode.

The VSTx is available with two connector options. The first model features standard connectors for simple interfacing in the field. The VSTx can easily be used by agents in the field for body worn video wires and other applications. The second model features a small flex ribbon interface cable that is ideal for integration with cameras in very small, hidden locations.

The VSTx transmitter can be operated in 1.25 MHz or 2.5 MHz narrow bandwidth COFDM (NBCOFDM) modes. This mode uses the RF spectrum more efficiently, permitting more transmitters to be used simultaneously, or permitting their useful range to be extended. Narrow bandwidth also delivers extended usable range with no additional power output required. This saves battery power and extends runtimes.

A video test pattern generator built into the VSTx can be controlled externally using one of the top panel preset switches or programmed to turn on automatically if video input is lost.

The VSTx employs AES encryption to prevent unauthorized people from eavesdropping.

The VSTx will transmit images in a line of site environment for more than 200 meters. Further range can be achieved, depending on mode, frequency, power setting, and choice of antenna.

The VSTx requires little setup and is easy to use. Simply connect an antenna, apply power and video, and select a preset configuration. For advanced functions such as changing frequency plans, AES encryption keys, or unit naming, an easy-to-use administration software package is supplied. This software package allows an administrator to configure up to 16 custom presets. These presets can store as much or as little information as the administrator wishes. Access control permits the administrator to be fully confident that the end user cannot corrupt the configurations setup by the administrator.

### RF:

Base Model Number	Frequency (GHz)	RF Power (dBm)	DC Power (W)
13VST-13	1.200-1.400	13	4
13VST-20	1.200-1.400	20	6
18VST-13	1.755-1.850	13	4
23VST-13	2.200-2.400	13	4
47VST-13	4.400-5.000	13	5
83VST-13	8.100-8.500	13	7

(Other plans are available per user request.)

Tuning Step Size: 1MHz step size (others available)

Frequency Stability:  $\pm 10$ ppm

### Standby Mode:

Standby: No RF output

Normal: Instant on-frequency transmission

### Modulation Modes:

#### Modulation 1:

Modulation Formats: COFDM (DVB-T)

Carriers: 2k

Constellation: QPSK, 16 QAM, 64 QAM

Code Rate: 1/2, 2/3, 3/4, 5/6, 7/8

Guard Interval: 1/32, 1/16, 1/8, 1/4

Bandwidth: 6 MHz, 7 MHz, and 8 MHz

#### Modulation 2 (Optional):

Modulation Formats: COFDM (Proprietary)

Carriers: 2k

Constellation: QPSK

Code Rate: 1/2, 3/4

Guard Interval: 1/32

Bandwidth: 1.25MHz, 2.5MHz

(Other modulations available per user requirements.)

### MPEG Encoder:

#### Video:

Method: MPEG-4 Part 10/H.264

Video Coding: AVC

Video Input: Composite or SDI (optional)

NTSC: 720 x 480(4:2:0)

PAL: 720 x 576(4:2:0)

SD-SDI Input: ANSI/SMPTE 259M

### Audio:

Audio Coding: ISO/IEC 11172-3(Layer II)

Audio Sample Rate: 48kHz

Audio Channels: 1 Stereo, 2 Mono standard,

Audio Input: Line-Gain selectable  
Mic-Gain selectable 10k $\Omega$ , phantom power or external bias  
De-embedded from SDI

Tone: Level adjustable

### System:

Video Present: Remote Standby/Test Generator selectable

Test Generator (Dynamic): SMPTE CB(NTSC)/100% CB(PAL)  
16 Character ID (Match SDT sService name)

ASI Input: 1kHz Tone/Pulse  
Rate converted from  
Ompbs-Max modulation rate  
PCR retime stamp

Encryption (optional): AES block cipher, supporting key sizes of 32, 128 or 256 bit (FIPS PUB 197)

User Data: RS232 Side channel  
300-115k Baud

Remote Control: Remote RS232

Local Control: See Figure 5, 6, 7: Local Control Panels  
Preset: 16 user configurable presets through windows GUI

### Power Requirements:

Input Range: +9 to +18 VDC

Power Consumption: See table above

### Environmental:

#### Temperature Range:

Full Specification: -10 $^{\circ}$  to +65 $^{\circ}$ C

Storage: -40 $^{\circ}$  to +80 $^{\circ}$ C

Humidity: 0 to 95% non-condensing

### Altitude:

Operating: 20,000ft (6,000 m)

Storage: 50,000ft (15,000 m)

### Physical Characteristics:

Size (flex version excluding connectors):

0.3" H x 2.1" W x 1.6" D

0.762 x 5.334 x 4.064 cm

Weight (excluding connectors): 0.057981 lbs

(26.3g)

Size (connector version): 1.95" H x 2.1" W x 0.48" D

4.953 x 5.334 x 1.2192 cm

Weight: 0.100089 lbs

(45.4g)

### Block Diagrams:

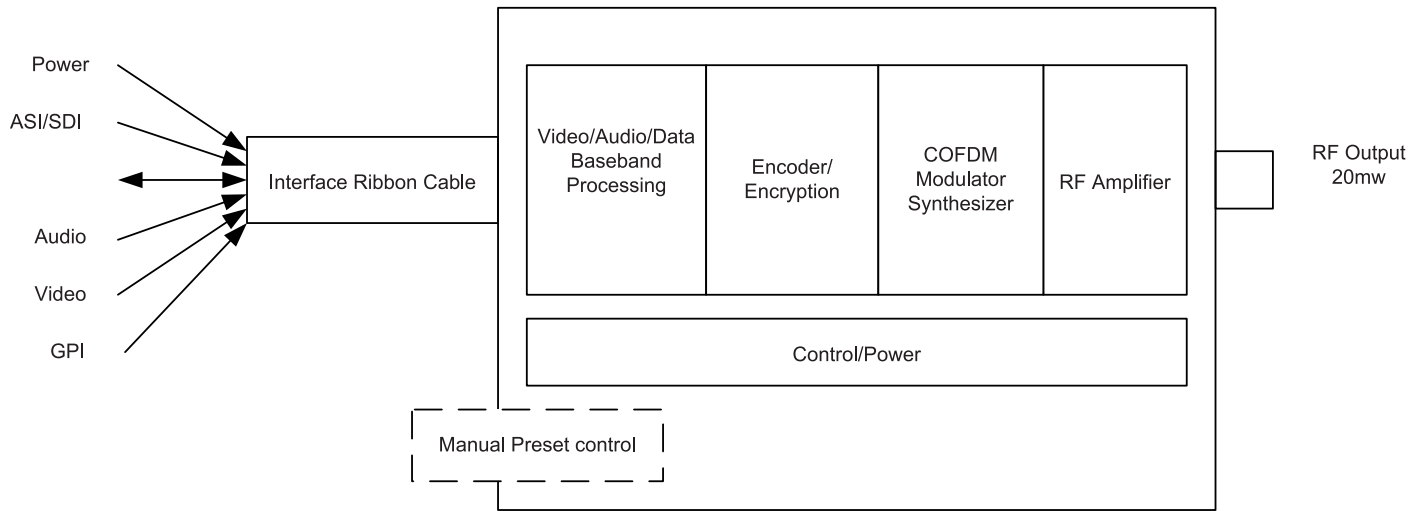


Figure 1: VSTx with Flex Cable

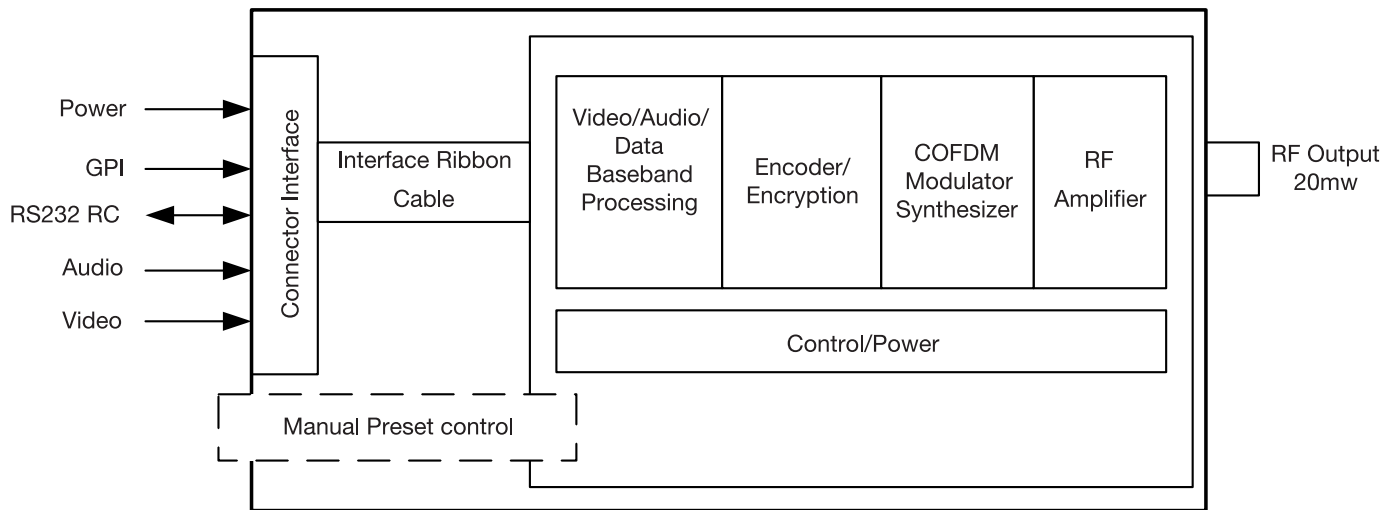


Figure 2: VSTx with Connectors

# VSTx

## Ultra Compact SD COFDM Transmitter

### Outline Drawings:

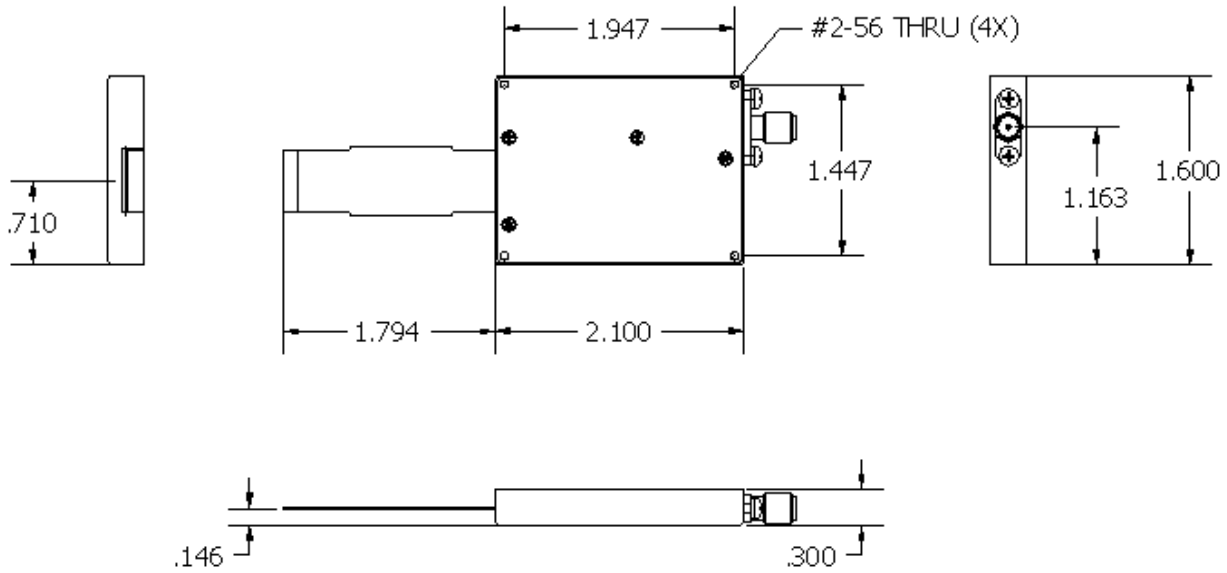


Figure 3: VSTx Outline Drawing with Flex Interface

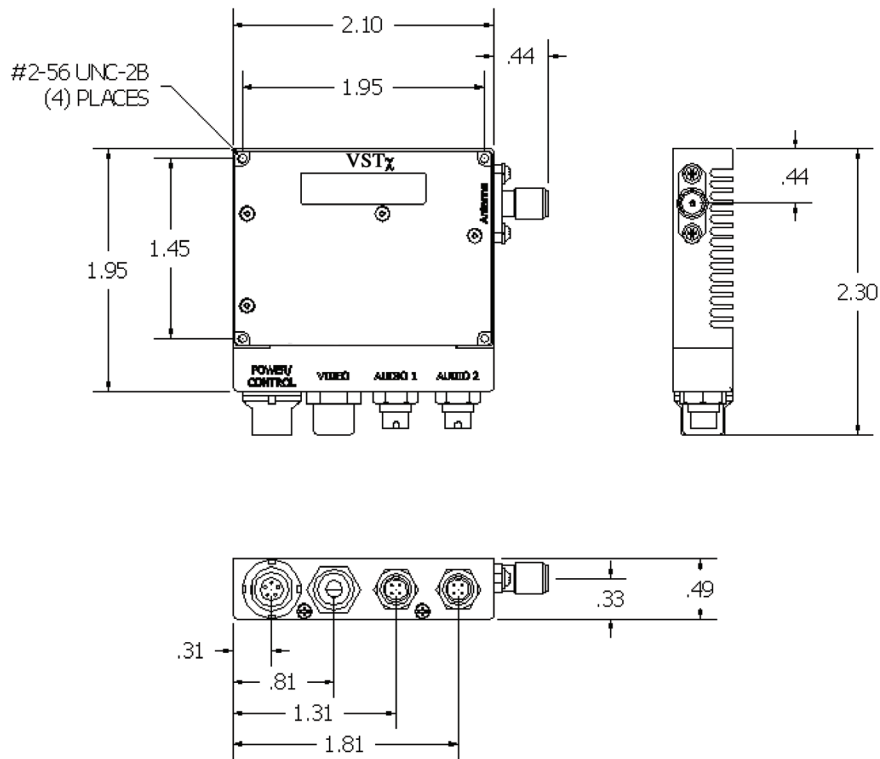


Figure 4: Outline of the VSTx with Connectors

### Controls:

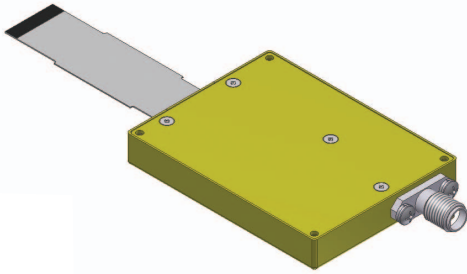


Figure 5: No Controls-U1

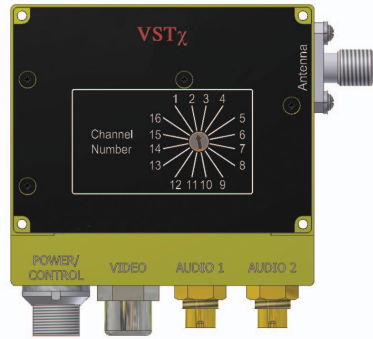


Figure 6: Rotary Control -U2



Figure 7: Push Button Control-U3

### Connectors:

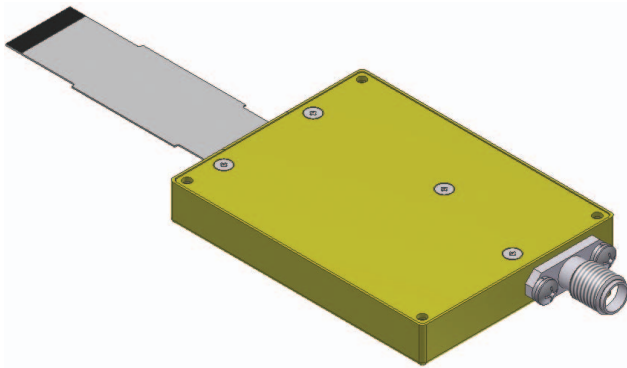


Figure 8: Flex Interface-C1

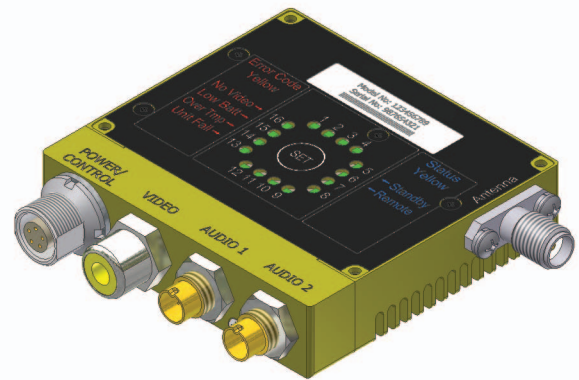


Figure 9: Connector Interface-C2

Flex interface - C1	
Manufacturer	Hirose Electronics
Model Number	w(10)
Composite Video	Multi pin
SD-SDI/ASI	Multi pin
Audio	Multi pin
RS232 Control	Multi pin
RS232 Data	Multi pin
Power	Multi pin
RF Output	SMA

Connector Interface - C2	
Composite Video	RCA
Audio	Telocate
RS232 Control	Lemo
Power	Lemo
RF Output	SMA

### Ordering Information:

Select Base Model Number:

Base Model Number	Frequency (GHz)
13VST-13	1.200-1.400
18VST-13	1.755-1.850
23VST-13	2.200-2.400
47VST-13	4.400-5.000
83VST-13	8.100-8.500

### Interface Options:

Select one:

Category	Option Code	Item
UI Options User interface	U1	Blank Cover
	U2	Rotary Switch Cover
	U3	Button and LED Cover

### Connector Options:

Select one:

Options	Signal Interface	C1	Flex Cable
		C2	Discrete Connectors

### Transmitter Options:

Select as many as apply:

Concatenate option codes to form part number. Example of part number generation: 23VST-13-U2-C2-B-M02

Category	Option Code	Item
Transmitter Options Encryption	B1	AES Encryption 32 bit
	B2	AES Encryption 128 bit
	B3	AES Encryption 256 bit
Transmitter Options Modulation Encoding	M02	COFDM Modulation (DVB-T)
	M05	1.25MHz/2.5MHz Narrowband COFDM Modulation

### Accessories:

Select as many as apply:

Category	Accessory Code	Item
Accessories Documentation	VST-ACC-MAN	VSTx Documentation
Accessories Cables	VST-ACC-C	Mating Connector Kit
Accessories Misc	VST-ACC-VB	Velcro Belt Kit



IMT reserves the right to make changes to specifications of products described in this datasheet at any time without notice and without obligation to notify any person of such changes.  
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