



VPU-11

Manual Revision: 2006-11-01

Covers Software Revisions:
VPU-11: 1.0

SPECIFICATIONS

Operating Voltage	+5.5-15 VDC
Operating Current	2.5 mA
Operating Temperature	-30 - +60 C
Frequency Response	280-3600 Hz
Audio Output Impedance	10KΩ
Input Level	25-400 mV (rms)
Input Impedance	60KΩ
Frequency Error	<0.25%
Device Gain or Loss	Unity

PRODUCT PROGRAMMING

The VPU-11 is only programmable at the factory. The VPU-11 can be factory programmed for any inversion frequency from 2000 to 4096 Hz. The VPU-11 comes standard on 3276 Hz, unless requested to program otherwise.

HARDWARE INSTALLATION

Be certain to follow standard anti-static procedures when handling any of Midian's products.

Black – Ground – Connect to the nearest ground point.

Red - +5.5 – 15 VDC – Connect to switched B+ in the radio.

Orange – RX Input – Connect after the CTCSS high-pass filter in radios using CTCSS or DCS. Failure to do so will cause the CTCSS to be inverted from a low to a high frequency. Other signaling tones that might be used on the system should be decoded before the scrambler input. The audio path should be broken with this lead connected to the break point closest to the discriminator.

Violet – RX Output – Connect to the break point described in the RX Input on the side closest to the speaker.

White – TX Input – Connect to the radio modulator circuit before the insertion point for CTCSS or other tone signaling. The audio path is broken and this lead is connected to the break point closest to the microphone.

Green – TX Output – Connect to the break point described in TX Input on the side closest to the modulator.

Yellow – RX/TX Select – Selection of the RX or TX path is provided via this lead. A ground from the PTT switch will select TX & releasing the ground will select RX.

Brown – Mode Input – Connect to a momentary switch for selection of scramble or clear modes. If connecting to a latched switch, install JU1 on the VPU-11. With JU1 installed, grounding this input selects clear mode.

RADIO PROGRAMMING

The VPU-11 is a generic module that wires into most radios. Any radio specific programming, if available, would be found on any Application Notes available for those radios. You may visit our website or call us for application notes.

TECHNICAL NOTES

Pre-emphasis/De-emphasis: The scrambler should be installed before pre-emphasis and after de-emphasis.

If installed after pre-emphasis and before de-emphasis, the recovered audio may be noisier due to the amplification of the noise.

If installed before pre-emphasis and before de-emphasis, recovered audio will be de-emphasized (bassy).

If installed after pre-emphasis and after de-emphasis, recovered audio is pre-emphasized (tinny).

OPERATION

Mode Selection:

Momentary Switch: If using a momentary switch press and release the switch and the unit will toggle from one mode to another. The unit will power up in clear mode unless JU-1 is installed in which case it will power up in scramble mode.

Latched Switch: If using a latched switch JU-1 must be installed on the VPU-11. When the switch is taken to ground the unit will be in the clear mode.

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