Vertex Standard

VXR-1000

OPERATING MANUAL

The VXR-1000 Series is designed to provide extended handheld coverage by repeating transmissions in both directions through an existing high power mobile radio.

Reliability is assured by a highly integrated surface mount circuit design and a aluminum extrusion chassis. Important channel frequency data is stored in EEPROM, and is easily programmable by dealers using a personal computer and the Vertex Standard VPL-1 Programming Cable and CE-22 Software.

Please take a few minutes to read this manual carefully. The information presented here will allow you to derive maximum performance from your VXR-1000. After reading it, keep the manual handy for quick reference, in case questions arise later on.

We're glad you joined the Vertex Standard team. Call on us any time, because our business is communications. Let us help you get your message across.

This device complies with Part 15 of the FCC rules. Operation is subject to the condition that this device does not cause harmful interference.

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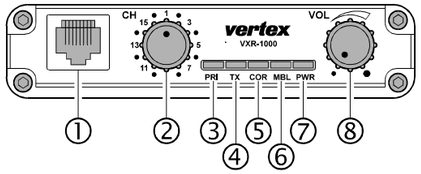
CONTROLS & CONNECTORS

Front Panel



① Microphone Jack

Connect the microphone plug to this jack.

② CHANNEL Selector Knob

This knob selects the operating channel.

③ PRI Indicator

When on, "**PRI**" indicates that the unit is at priority count zero and will repeat all transmissions.

④ TX Indicator

When on, "**TX**" indicates that the repeater is transmitting to the handheld.

⑤ COR Indicator

This lamp *blinks* red when the VXR-1000 is receiving a signal from a handheld, and *glows* red while the VXR-1000 is receiving a sub-audible tone from the handheld.

⑥ MBL Indicator

This lamp *blinks* red when the Mobile is receiving signal from repeater or base, and glows red while the Mobile is transmitting to the repeater or base.

⑦ PWR Indicator

This is the main "POWER ON" indicator for the VXR-1000.

⑧ VOLUME Knob

This knob adjusts the receiver volume.

ERROR MESSAGE	
No Channel Data (Operating Channel is Vacant)	**TX**, **COR**, and **PWR** indicators Blinks
ARTS Out of Range	**PWR** indicator Blink

HARDWARE SETTINGS

JP1004: Controls the output impedance of the transmit audio line to the mobile radio.
Short: low-Z (600 Ω); open: high-Z (4.7 kΩ) *

JP1005: Controls the maximum drive level of the transmit audio output to the mobile.
Short: low level output (0-100 mV)*; open: high level output (0-5 V).

JP1001/1002/1003: Polarity of Power supply control.
Default setting: active high (JP1003: short).

VR1001: Mobile Microphone level

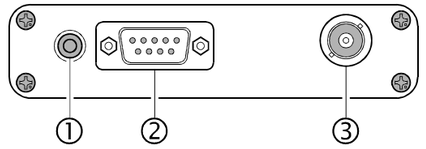
VR1002: Mobile RX Audio (External Modulation level)

VR1007: Mobile TX Audio (output level)

* default setting

The VXR-1000 has a fixed 3 minute time-out timer for base to handheld transmissions. If the mobile COR is active for more than 3 minutes it will send a error blip and cease transmission until the mobile COR is inactive.

Rear Panel



① EXT SP (External Speaker)

An external loudspeaker may be connected to this 2-contact, 3.5-mm mini-phone jack.

② DSUB 9-Pin Accessory Connector

External TX audio line-input, PTT, external RX audio line-output, and other signals may be obtained from this connector for use with accessories.

PIN ASSIGNMENT			
Pin 1	GND	Pin 2	Mobile Transmit Audio
Pin 3	Power Supply Control	Pin 4	Mobile PTT Output
Pin 5	Vcc (13.8 V DC)	Pin 6	Moble Receive Audio
Pin 7	Mobile COR Detect	Pin 8	Mobile Microphone Audio
Pin 9	Mobile TX Detect / Mobile Micophone PTT		

③ Antenna Socket

The Antenna socket is a standard 50 Ω BNC antenna connector.

FUNCTIONAL DESCRIPTION

When the user leaves the vehicle, they activate their mobile radio via its front panel or a separate switch. When the mobile radio is receiving a signal, the VXR-1000 will begin transmitting on the hand-held's receive frequency. The user is able to hear and respond to all radio traffic, including other hand-helds on the same frequency. The repeater jumpers and potentiometers are custom-configured for use with the particular mobile radio to which it will be connected. The CE-22 software is used to program the repeater for the required operating parameters.

TRUNKING OPERATION

When the radio is connected to a trunking mobile you wish to access the system from your handheld radio, key the handheld briefly then release the PTT key. The radio will attempt to acquire a voice channel on the trunking system by keying the mobile for 200 mS and monitoring the "on-air detect" line from the mobile. If the VXR-1000 does not see the radio transmit at all (system is busy), it will send a low tone to the handheld to alert you that the system is busy. The radio will automatically retry every 5 seconds and send a "busy" tone to the handheld with each unsuccessful attempt, to indicate progress of the call attempt. If unsuccessful after 30 seconds, the radio will transmit an "intercept" tone to alert the handheld that the call attempt failed.

When the VXR-1000 detects that the mobile is transmitting, it will continue to monitor the "on-air detect" line until the transmitter remains keyed for at least 250 mS to determine if the radio is merely handshaking or retrying. After successful acquisition of a voice channel, it will continue to hold the mobile's PTT active for 2 seconds and transmit a "go-ahead" blip to the handheld. You may then key their handheld to speak on the voice channel. If you do not key up within the 2-second period, the radio will un-key the mobile and send the "intercept" tone, as before.

SPECIFICATIONS

GENERAL

Frequency Range:	150 - 174 MHz (VXR-1000V) 450 - 470 MHz (VXR-1000U)
Number of Channels:	16 Channels
Channel Spacing:	12.5/25 kHz
Supply Voltage:	13.8V DC
Ambient Temperature Range:	–30 °C to +60 °C
Frequency Stability:	2.5 ppm
RF Input-Output Impedance:	50 Ω
Audio Output Impedance:	8 Ω
Case Size (WHD):	111 x 25.4 x 136 mm
Weight:	400 g

RECEIVER

Circuit Type:	Double Conversion Superheterodyne
Sensitivity (EIA 12dB SINAD):	0.30 µV (VXR-1000V) 0.35 µV (VXR-1000U)
20 dB Quieting:	0.40 µV (VXR-1000V) 0.45 µV (VXR-1000U)
Squelch Threshold:	0.2 µV to 2 µV
Adjacent Channel Selectivity:	60 dB
Intermodulation Rejection:	60 dB
Spurious and Image Rejection:	60 dB
Conducted Spurious Emissions:	–57 dBm
Audio Output:	1 W into 8 Ω w/<5% THD
Hum and Noise:	40 dB

TRANSMITTER

Power Output:	5.0/2.5/1.0/0.5 W
Modulation:	16K0F3E /11K0F3E
Maximum Deviation:	±5 kHz/2.5 kHz
Conducted Spurious Emissions:	60 dBc
FM Hum and Noise:	40 dB

OPTIONAL ACCESSORIES

MH-53$_{A8J}$	Microphone
MLS-100	External Loudspeaker
VPL-1	Programming Cable
CE-22	Programming Software (for IBM PC/compatibles only)
FRB-4	Programming Interface Box
T9101411	Radio-to-Radio Cloning Connection Cable (used with the **FRB-4** Programming Interface Box)

WARRANTY POLICY

Vertex Standard warrants, to the original purchaser only, its Vertex Standard manufactured communications products against defects in materials and workmanship under normal use and service for a given period of time from the date of purchase.

Limited Warranty Details:

- North America customers (USA and Canada):
  http://www.vertexstandard.com/lmr/warranty-terms.aspx
- Customers outside of North America:
  Contact the authorized dealer in your country.

NOTICE

There are no user-serviceable points inside this transceiver. All service jobs must be referred to your Authorized Service Center or Network Administrator.