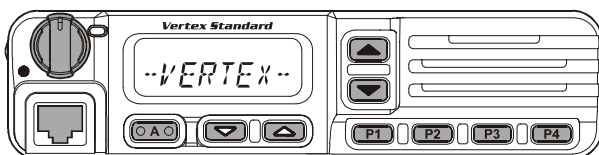




VX-2500

OPERATING MANUAL



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Congratulations!

You now have at your fingertips a valuable communications tool: a VERTEX STANDARD two-way radio! Rugged, reliable and easy to use, your VERTEX STANDARD radio will keep you in constant touch with your colleagues for years to come, with negligible maintenance downtime.

Please take a few minutes to read this manual carefully. The information presented here will allow you to derive maximum performance from your radio, in case questions arise later on.

We're glad you joined the VERTEX STANDARD team. Call on us anytime, because communications is our business. Let us help you get your message across.

NOTICE !

There are no owner-serviceable parts inside the transceiver. All service jobs must be referred to an authorized VERTEX STANDARD Service Representative. Consult your Authorized VERTEX STANDARD Dealer for installation of optional accessories.

SAFETY/WARNING INFORMATION

WARNING - DO NOT operate the VX-2500 radio when any person(s) (bystanders) outside the vehicle are within the distances shown in the chart at the bottom of this section.

Safety Training information:

Antennas used for this transmitter must not exceed an antenna gain of 0 dBd. The radio must be used in vehicle-mount configurations with a maximum operating duty factor not exceeding 50%, in typical Push-to-Talk configurations.

This radio is restricted to occupational use, work related operations only where the radio operator must have the knowledge to control the exposure conditions of its passengers and bystanders by maintaining the minimum separation distance shown below.

Failure to observe these restrictions will result in exceeding the FCC RF exposure limits.

Antenna Installation:

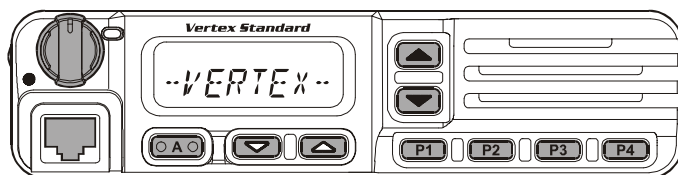
For rear deck trunk installation, the antenna must be located at least the following distance away from rear-seat passengers in order to comply with the FCC RF exposure requirements.

For roof top installations, the antenna must be placed in the center of the roof.

Radiated Frequency and Distance

| VX-2500V | VX-2500U (A) | VX-2500U (D) | VX-2500U (F) |
|------------------------|------------------------|------------------------|------------------------|
| 2.31 Feet (0.705 m) | 2.00 Feet (0.611 m) | 1.89 Feet (0.576 m) | 1.83 Feet (0.558 m) |

INTRODUCTION



The VX-2500 Series are full-featured FM transceivers designed for flexible mobile and base station business communications in the VHF or UHF Land Mobile bands. These transceiver are designed for reliable business communications in a wide variety of applications with a wide range of operating capability provided by their leading-edge design.

The 128-channel memories can each be programmed with an 8-character channel name.

Important channel frequency data is stored in EEPROM and flash memory on the CPU, and is easily programmable by dealers using a personal computer and the VERTEX STANDARD VPL-1 Programming Cable and CE52 Software.

The pages which follow will detail the many advanced features provided on the VX-2500 transceiver. After reading this manual, you may wish to consult with your Network Administrator regarding precise details of the configuration of this equipment for use in your application

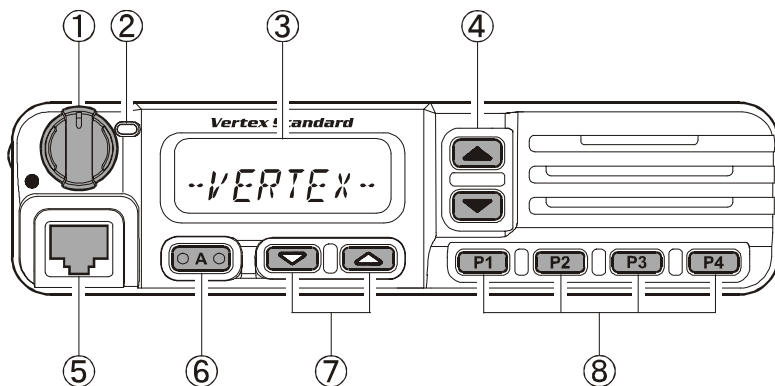
For North American Users Regarding 406 MHz Guard Band

The U.S. Coast Guard and National Oceanographic and Atmospheric Administration have requested the cooperation of the U.S. Federal Communications Commission in preserving the integrity of the protected frequency range 406.0 to 406.1 MHz, which is reserved for use by distress beacons. Do not attempt to program this apparatus, under any circumstances, for operation in the frequency range 406.0 - 406.1 MHz if the apparatus is to be used in or near North America.

CONTROLS & CONNECTORS

Front Panel

Important! - All buttons located on the Front Panel are **Programmable Function (PF) Buttons**, configured according to your network requirements and programmed by your VERTEX STANDARD dealer. The instructions below a typically-configured radio.



① VOL/PWR Knob

Turn this control clockwise to turn the radio on and to increase the volume. Turn it counterclockwise into the click-stop to turn the radio off.

② BUSY/TX Indicator

Indicate transceiver Transmit/Receive Status

Steady Red: Transmitting in progress

Steady Green: Busy Channel

Blinking Green: Tone Squelch in defeated condition

③ LCD (Liquid Crystal Display)

The display includes an 8-character alpha-numeric section showing Group and Channel names, status and identity information, and error messages.

CONTROLS & CONNECTORS

④ [▼]/[▲] **Buttons** (Programmable Function Buttons)

Pressing either button changes the current channel (and displayed channel number or name). Holding a button for more than 1/2 second causes the function to repeat.

⑤ **Microphone Jack**

Connect the microphone plug to this jack.

⑥ [A] **Button** (Programmable Function Button)

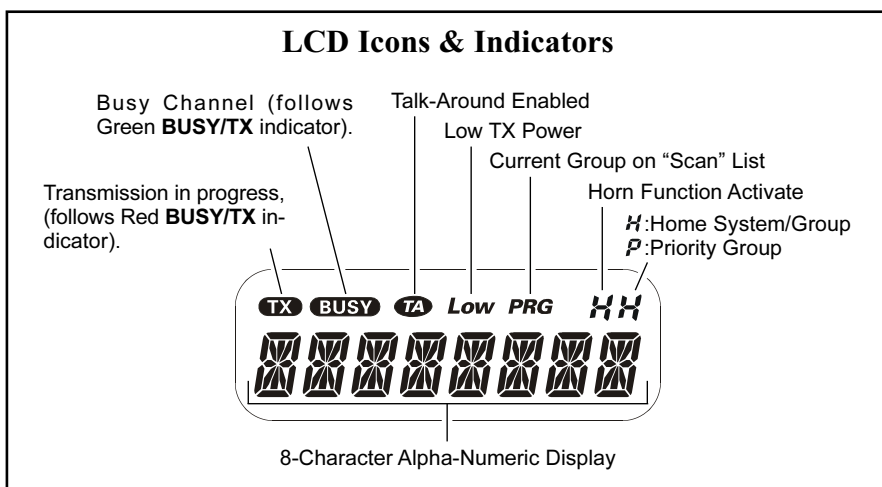
This button can be set up for special applications, such as High/Low power selection, Monitor, Talk-Around, etc, as determined by your network requirements and programmed by your VERTEX STANDARD dealer.

⑦ [▽]/[△] **Buttons** (Programmable Function Buttons)

Pressing either button changes the current group (and displayed group number or name). Holding a button for more than 1/2 second causes the function to repeat.

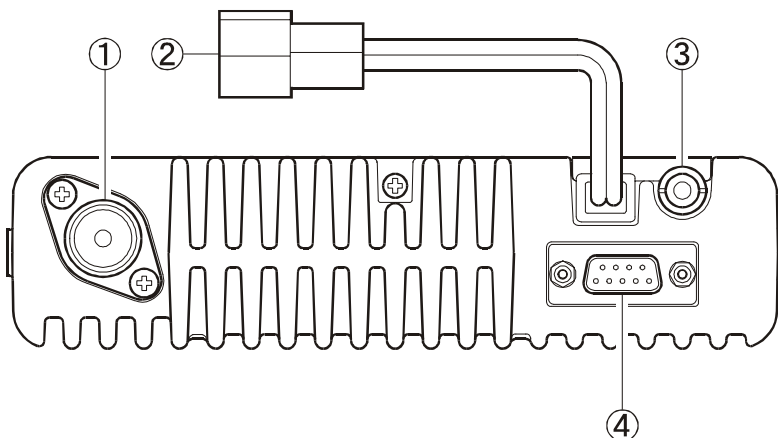
⑧ [P1] - [P4] **Buttons** (Programmable Function Buttons)

These buttons can be set up for special applications, such as High/Low power selection, Monitor, Talk-Around, etc, as determined by your network requirements and programmed by your VERTEX STANDARD dealer.



CONTROLS & CONNECTORS

Rear Panel



① Antenna Socket

The 50-Ohm coaxial feedline to the antenna must be connected here, using a type-M (PL-259) plug.

② 13.8V DC Cable Pigtail with Connector

The supplied DC power cable must be connected to this 2-pin connector. Use only the supplied fused cable, extended if necessary, for power connection.

③ External Speaker Jack

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

Caution: Do not connect either wire of this line to ground, and be certain that the speaker has adequate capability to handle the audio output (4 W) from the radio.

④ D-Sub 9-Pin Accessory Connector

External TX audio line input, PTT (Push To Talk), Squelch, and external RX audio line output signals may be obtained from this connector for use with accessories such as data transmission/reception modems, etc.

BASIC OPERATION OF THE TRANSCEIVER

Important! - Before turning on the radio the first time, confirm that the power connections have been made correctly and that a proper antenna is connected to the antenna jack.

Switching Power ON/OFF

- Turn the **VOL/PWR** knob turn on the radio. The display will become illuminated.
- Press the [▼]/[▲] button to choose the desired operating channel. A channel name will appear on the display. If you want to select an operating channel from a different group, press the [▽]/[△] button to select the group you want *before* selecting the operating channel.

Setting the Volume

- Turn the **VOL/PWR** knob clockwise to increase the volume, and counterclockwise to decrease it.

Transmitting

- To transmit, monitor the channel and make sure it is clear.

THIS IS AN FCC REQUIREMENT!

Press the **PF** button which is programmed to the Monitor feature to listen for channel activity.

- When receiving a call, transmit only after the incoming call ends. The radio cannot receive a call and transmit simultaneously.
- Press the **PTT** switch.
- If the channel is clear, the **BUSY/TX** indicator will glow red. The radio is now transmitting. While holding in the **PTT** switch, speak across the face of the microphone in a clear and normal voice. For best transmission, hold the microphone about 1-1/2 to 2 inches away from your mouth. Release the **PTT** switch to receive.
- If the Busy Channel Lockout feature has been programmed on a channel, the radio will not transmit when a carrier is present. Instead, the radio will generate a continuous low-pitched tone while the **PTT** switch is pressed. Release the **PTT** switch and wait for the channel to be clear of activity.
- If CTCSS or Digital Coded Squelch (DCS) Lockout has been programmed on a channel, the radio can transmit only when there is no carrier being received or when the carrier being received includes the correct CTCSS tone or DCS code.

BASIC OPERATION OF THE TRANSCEIVER

Automatic Time-Out Timer










If the selected channel has been programmed for automatic time-out, you must limit the length of each transmission. While transmitting, a beep will sound 10 seconds before time-out. Another beep will sound just before the deadline; the “TX” indicator will disappear and transmission will cease soon thereafter. To resume transmitting, you must release the **PTT** switch and wait for the “penalty timer” to expire (if you press the **PTT** switch before this timer expires, the timer restarts, and you will have to wait another “penalty” period)

ADVANCED OPERATION

Programmable Function (PF) Buttons

The VX-2500 includes nine Programmable Function (PF) Buttons. The PF button functions can be customized, via programming by your VERTEX STANDARD dealer, to meet your communications/network requirements. Some features may require the purchase and installation of optional internal accessories. The possible PF button programming features are illustrated below, and these functions are explained on the pages to follow.

For further details, contact your VERTEX STANDARD dealer. For future reference, check the box next to the function that has been assigned to each PF button on your particular radio, and keep it handy.

| Function | Programmable Function (PF) Buttons | | | | | | | | |
|--------------|---|---|---|---|---|---|---|---|--|
| |  |  |  |  |  |  |  |  |  |
| None | | | | | | | | | |
| Group Up | | | | | | | | | |
| Group Down | | | | | | | | | |
| Channel Up | | | | | | | | | |
| Channel Down | | | | | | | | | |
| Monitor | | | | | | | | | |
| Scan | | | | | | | | | |
| Dual Watch | | | | | | | | | |
| Priority Set | | | | | | | | | |
| Scan A/D | | | | | | | | | |
| Home | | | | | | | | | |
| Home Set | | | | | | | | | |
| Phone | | | | | | | | | |
| Tx Low Power | | | | | | | | | |
| Talk-around | | | | | | | | | |
| Horn | | | | | | | | | |
| Call/Reset | | | | | | | | | |
| Emergency | | | | | | | | | |
| Lighting | | | | | | | | | |
| LCD Invert | | | | | | | | | |
| Display Alt. | | | | | | | | | |
| Key Lock | | | | | | | | | |
| Short Cut #1 | | | | | | | | | |
| Short Cut #2 | | | | | | | | | |
| Short Cut #3 | | | | | | | | | |
| Short Cut #4 | | | | | | | | | |

ADVANCED OPERATION

Description of Operating Functions

GROUP UP/GROUP DOWN (GROUP SELECTION)

The VX-2500 is capable of separating its 128 memory channels into any of 10 groups. There is no limit as to the number of channels which may be assigned to each group. The Dealer will have made the group assignment at the time of channel programming.

- Press the assigned **PF** button (generally the [▽]/[△] button) to change the group. Once the desired group is reached, press the **PF** button which is assigned to the Channel Up/Channel Down feature (generally the [▼]/[▲] button) to select the desired channel within the selected group.

CHANNEL UP/CHANNEL DOWN (CHANNEL SELECTION)

Press the assigned **PF** button (generally the [▼]/[▲] button) to select a different channel within the current group.

MONITOR

Press the assigned **PF** button momentarily to cancel CTCSS- and DCS-controlled squelch; the **BUSY/TX** indicator will blink green. Press and hold this button for 1.5 seconds to hear background noise (unmute the audio); the **BUSY/TX** indicator will glow green.

ADVANCED OPERATION

SCAN

The Scanning feature is used to monitor multiple channels programmed into the transceiver. While scanning, the transceiver will check each channel for the presence of a signal, and will stop on a channel if a signal is present.

- Press the assigned **PF** button to activate scanning.
- The scanner will search the channels of each channel, looking for active ones; it will pause each time it finds a channel on which someone is speaking.
- Press the assigned **PF** button again to disable scanning. Operation will revert to the programmed *revert channel*.

Note: Your dealer may have programmed your radio to stay on one of the following channels if you press the **PTT** switch during scanning pause:

- “Last Busy” Channel
- “Home” Channel
- “Scan Start” Channel
- Current channel (“Talk Back”)

SCAN A/D (ADD/DELETE)

- Press the assigned **PF** button to delete the current channel from Scanning. Alternatively, press and hold the assigned **PF** button for 2 seconds to delete the current channel from Scanning.
- When you delete a channel, the “**PRG**” icon will disappear on the LCD. To restore a particular channel to your scanning list, press and hold in the assigned **PF** button again for 2 seconds; the “**PRG**” icon will appear on the LCD.

DUAL WATCH

The **Dual Watch** feature is similar to the **Scan** feature, except that only two channels are monitored:

- The current operating channel; and
- The “Priority” channel.

To activate Dual Watch:

- Press the assigned **PF** button.
- The scanner will search the two channels; it will pause each time it finds a channel on which someone is speaking.

To stop Dual Watch:

- Press the assigned **PF** button.

ADVANCED OPERATION

PRIORITY SET

To set up a “Dual Watch” frequency pair using the “Dual Watch” feature, select a channel using the assigned **PF** button (generally the [▼]/[▲] button). Now press the assigned **PF** button; pressing the assigned **PF** button locks the current channel as the User-assigned Priority Channel, and “**P**” icon will appear on the LCD.

HOME

- Press the assigned **PF** button to recall the pre-programmed Home group/channel. When you recall the Home group/channel, the “**H**” icon will appear on the LCD.
- Press this button again to return to previous group/channel; the “**H**” icon will disappear on the LCD.

HOME SET

Press and hold the assigned **PF** button to store the current group/channel to the Home register.

PHONE

Press the assigned **PF** button to dial the Dealer pre-programmed Auto-Dial telephone number. The DTMF tones sent during the dialing sequence will be heard in the speaker.

TX LOW POWER

Press the assigned **PF** button to set the radio’s transmitter to the “Low Power” mode. Press this button again to return to “High Power” operation when in difficult terrain.

TALK AROUND

Press the assigned **PF** button to activate the Talk Around feature when you are operating on duplex channel systems (separate receive and transmit frequencies, utilizing a “repeater” station). The Talk Around feature allows you to bypass the repeater station and talk directly to a station that is nearby. This feature has no effect when you are operating on “Simplex” channels, where the receive and transmit frequencies are already the same.

Note that your dealer may have made provision for “Talk Around” channels by programming “repeater” and “Talk Around” frequencies on two adjacent channels. If so, the key may be used for one of the other Pre-Programmed Functions.

ADVANCED OPERATION

HORN

When the Horn feature is enabled, a tone will sound from the speaker if you receive a call (with appropriate DTMF signaling) from the base station.

- Press and hold in the assigned **PF** button to disable the Horn feature. When you disable the Horn feature, the “**H**” icon will disappear from the LCD.
- Press and hold in this button again to activate the Horn feature; the “**H**” icon will appear on the LCD.

CALL/RESET

When this feature is programmed and a selective call has been received, press the assigned **PF** button to reset the flashing indicator and mute the receiver; otherwise press the assigned **PF** button to sent your radio’s identification code (ANI) to the dispatcher.

EMERGENCY

The VX-2500 includes an “Emergency” feature which may be useful if you have someone monitoring on the same frequency as your transceiver’s channel.

Press the assigned **PF** button to initiate an emergency call. For further details contact your VERTEX STANDARD dealer.

LIGHTING

Press the assigned **PF** button to turn off the display lamp. Press the assigned **PF** button again to turn on the display lamp.

LCD INVERT

Press the assigned **PF** button to invert the LCD display to backward-facing readout. Press the assigned **PF** button again to return the LCD display to forward-facing readout.

DISPLAY ALT.

Press the assigned **PF** button to switch the LCD display between the *group* alphanumeric tag and the *channel* alpha-numeric tag.

KEY LOCK

Press and hold in the assigned **PF** button for 2 seconds to lock the front panel buttons; this can be enabled to prevent radio settings from being disturbed.

ADVANCED OPERATION

SHORT CUT #1 – SHORT CUT #4

Press the assigned **PF** button to recall the Dealer pre-programmed channel directly.

ARTS (Auto Range Transpond System)

This system is designed to inform you when you and another ARTS-equipped station are within communication range.

During ARTS operation, your radio automatically transmits for about 1 second every 25 seconds (the interval is programmed by the Dealer) in an attempt to shake hands with the other station.

If you move out of range for more than two minutes, your radio senses that no signal has been received; a ringing beeper will sound, and “OUT OF SERVICE” will scroll on the LCD. If you subsequently move back into range, as soon as the other station transmits, your beeper will sound, and “IN SERVICE” will scroll on the LCD.

DTMF Paging System

This system allows paging and selective calling, using DTMF tone sequences.

When your radio is paged by a station bearing a tone sequence which matches yours, your radio’s squelch will open and the alert ringer will sound. The three-digit code of the station which paged you will be displayed on your radio’s LCD.

OPTIONAL ACCESSORIES

| | |
|-----------------|--------------------------------------|
| FVP-25 | Encryption Unit |
| FP-1023A | External Power Supply |
| MLS-100 | Mobile Loudspeaker (12 W Peak Power) |
| LF-1 | Line Filter |
| MH-700D | DTMF Back-lit Microphone |
| MH-25A8J | Microphone |

Availability of accessories may vary; some accessories are supplied standard per local requirements, others may be unavailable in some regions.

Check with your VERTEX STANDARD Dealer for changes to this list.

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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