Vertex Standard

VX-5500

OPERATING MANUAL
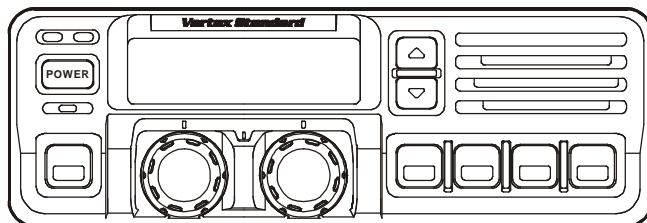
Congratulations!

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

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

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

NOTICE

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

Safety / Warning Information

WARNING - DO NOT operate the VX-5500V radio when someone (bystanders) outside the vehicle is within following range.

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 of following range.
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 range away from rear seat passengers and bystanders in order to comply with the FCC RF exposure requirements.
For roof top installation, the antenna must be placed in the center of the roof.

Radiated frequency and Distance

VX-5500V (C)
1.97 Feet (0.6 m)

VX-5500 Operating Manual
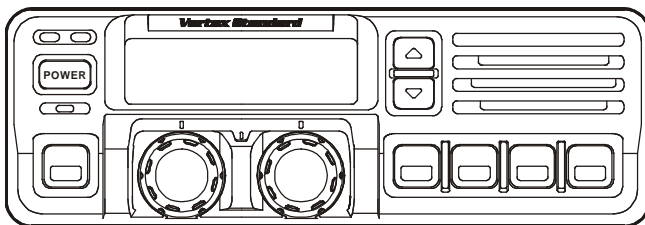
The VX-5500 Series are full-featured FM transceivers designed for flexible mobile and base station business communications in the VHF (50/10 Watts: programmable) Land Mobile Bands. Each model is designed for reliable business communications in a wide variety of applications, with a wide range of operating capability provided by its leading-edge design.

The 250-channels memories can each be programmed with a 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 CT-71 Programming Cable and CE49 Software.

The pages which follow will detail the many advanced features provided on the VX-5500 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.

CONTROLS & CONNECTORS

Front Panel
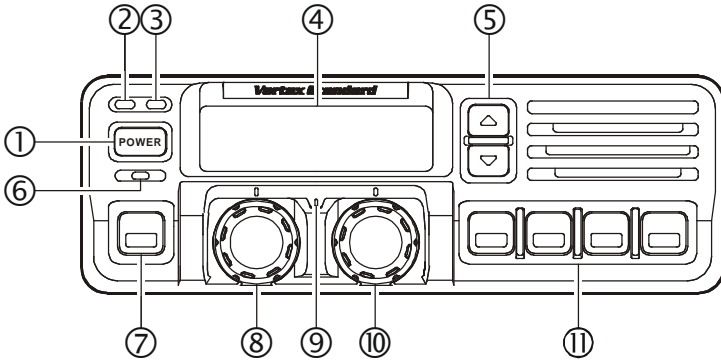
① **POWER Botton**

Press the button to turn the transceiver ON and OFF.
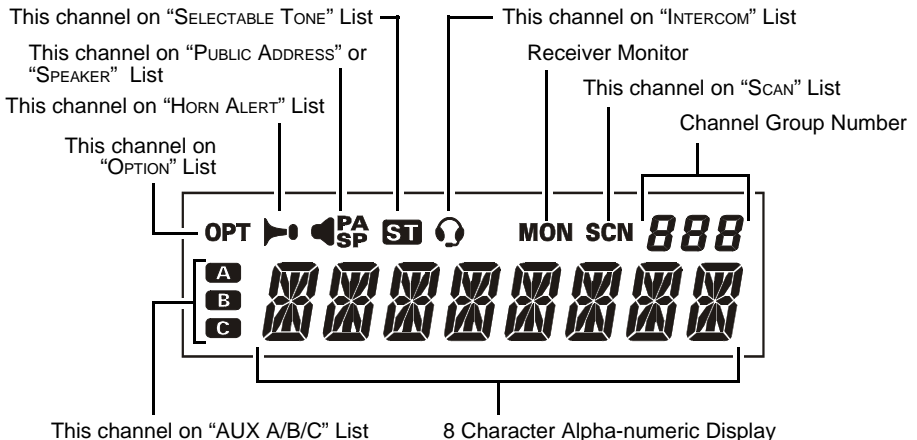
② **TX Indicator**

This lamp glows red when the radio is transmitting.

③ **BUSY Indicator**

This lamp glows green when the channel is busy.

④ **Liquid Crystal Display**

The display include an 8-character alpha-numeric section showing channel and group names, status and identity information, and error messages. Additional indicators on the display show priority channel assignments and scan include / exclude selection.

This channel on "SELECTABLE TONE" List

This channel on "PUBLIC ADDRESS" or "SPEAKER" List

This channel on "HORN ALERT" List

This channel on "OPTION" List

This channel on "INTERCOM" List

Receiver Monitor

This channel on "SCAN" List

Channel Group Number

This channel on "AUX A/B/C" List

8 Character Alpha-numeric Display

⑤ **▲/▼ Button**

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

⑥ **SQC Indicator**

This lamp glows orange when incorrect position at the setting of CE49.

⑦ **Programmable Function Button (PF button)**

This button can be set up for special applications, such as high/low power selection, monitor, dimmer, talk-around, and call alert function, as determined by your network requirements and programmed by your VERTEX STANDARD dealer.

⑧ **VOLUME Knob**

This knob sets the volume of the receiver.

⑨ **EMERGENCY Microphone**

The emergency microphone is located behind this small slit. When the emergency feature is activated, this Microphone is enabled.

⑩ **CHANNEL Selector Knob**

This knob select the operating channel.

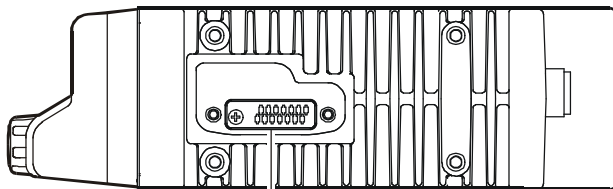⑪ **Programmable Function Button (PF button)**

This button can be set up for special applications, such as high/low power selection, monitor, dimmer, talk-around, and call alert function, as determined by your network requirements and programmed by your VERTEX STANDARD dealer.

Side Panel

Microphone Jack (It is on both sides.)
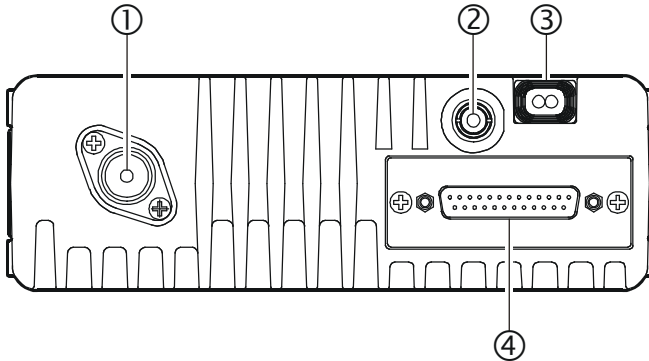Connect the microphone plug to this jack.

Microphone Jack

CONTROLS & CONNECTORS

REAR (Heatsink)

① **Antenna Socket**
The 50-ohm coaxial feedline to the antenna must be connected here, using a type-M (PL-259) plug.

② **External Speaker Jack**
An external loudspeaker may be connected to this 2-contact, 3.5-mm mini-phone jack.
Caution: Do not connect this line to ground, and be certain that the speaker has adequate capability to handle the audio output from the VX-5500.

③ **13.8-V DC Cable Pigtail w/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.

④ **DSUB 25-Pin Accessory Connector**
External TX audio line input, PTT (Push To Talk), Squelch, and external RX audio line output signal may be obtained from this connector for use with accessories such as data transmission/reception modems, ets.

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

Push the **POWER** switch turn on the radio. The display will become illuminated. The radio will start up on the last channel used prior to shut-down during the previous operating session.

Turn the **CHANNEL** selector knob to choose the desired operating channel. A channel name will appear on the display. If you want to select the operating channel from a different Memory Channel Group, press the **UP** (▲) or **DOWN** (▼) button to select the Memory Channel Group you want before selecting the operating channel.

Setting the Volume

Turn the **VOLUME** knob clockwise to increase the volume, and counterclockwise to decrease it. If no signal is present, press and hold in the **MON** button more than 1/2 seconds; background noise will now be heard, and you may use this to set the **VOLUME** knob for the desired audio level. Press and hold the **MON** button more than 1/2 seconds to quiet the noise and resume normal (quiet) monitoring.

Transmitting

To transmit, wait until the "**BUSY**" indicator is off (the channel is not in use), and press the **PTT** (Push-To-Talk) switch on the side of the microphone (the "**TX**" indicator will appear or the "**TX**" indicator will glow red). While holding in the **PTT** switch, speak across the face of the microphone in a clear, normal voice level, and then release the **PTT** switch to receive.

Selecting Groups and Channels

❍ Press the **UP** (▲) or **DOWN** (▼) button (repeatedly, if necessary) to select a different group of channels.
❍ Turn the **CHANNEL** selector knob to select a different channel *within the current group.*
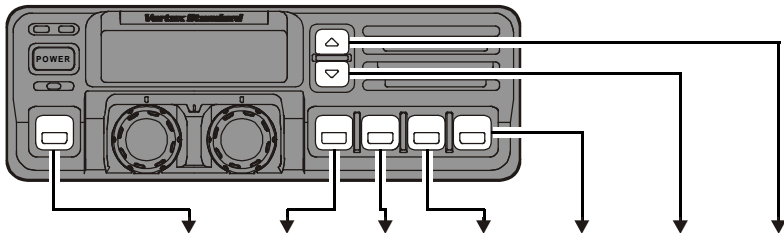
Automatic Time-Out Timer

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 five 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** and wait for the "penalty timer" to expire (if you press the **PTT** before this timer expires, the timer restarts, and you will have to wait another "penalty" period)

ADVANCED OPERATION

Programmable Function Button (PF button)

The VX-5500 includes the seven **Programmable Function Buttons (PF button)**. 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 at the below, and their functions are explained on page 8.

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

Functions	Programmable Function Button (PF button)													
	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec
None														
SCAN (SCN)														
Dual Watch														
Call/Reset														
Talk-Around (TA)														
Alpha Numeric (A/N)														
DIMMER (DIM)														
Emergency (EMG)														
Horn Alert (HA)														
Home Channel (HOM)														
Intercom (IC)														
Low Power (LOW)														
GRP UP														
GRP DWN														
CH UP														
CH DWN														
AUX A														
AUX B														
AUX C														
Public Address (PA)														
Monitor (MON)														

ADVANCED OPERATION

Functions	Programmable Function Button (PF button)													
	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec	<1.5 sec	>1.5 sec
RCL														
Selectable Tone (ST)														
SP*														
Squelch Level (SQL)														
Compander														
Encryption** (OPT)														

* requires RMK-4000   ** requires Encryption Unit

Channel Scan

The Scanning feature is used to monitor multiple signals 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.

To activate scanning:

❍ Press the assigned **PF** button of the "**Scan**" momentarily to activate scanning.

❍ The scanner will search the channels, looking for active ones; it will pause each time it finds a channel on which someone is speaking.

To stop scanning

❍ Press the assigned **PF** button of the "**Scan**".

❍ Operation will revert to the channel to which the **CHANNEL** selector knob is set.

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:

❒ Current channel ("Talk Back")

❒ "Last Busy" channel

❒ "Priority" channel

❒ "Home" channel

❒ "Scan Start" channel

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 of the "**Dual Watch**".

❍ 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 of the "**Dual Watch**".

❍ Operation will revert to the channel to which the **CHANNEL** selector knob is set.

ADVANCED OPERATION

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 (or 55) seconds (the interval is programmed by Dealer) in an attempt to Shake hands with the other station.

If you move out of range for more than one minutes, your radio senses that no signal has been received, a ringing beeper will sound. If you subsequently move back into range, as soon as the other station transmits, your beeper will sound.

The PF Button Function
The **PF** (Programmable Function) button can be programmed by the dealer to provide two of the other functions described below.

To activate the primary Accessory function, press the **PF** button momentarily. To access the secondary Accessory function (which may include the Alarm), press and hold the **PF** button for 1.5 seconds or longer.

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

Talk-Around
The feature causes the assigned **PF** button of the "**Talk-Around**" to select simplex operation on semi-duplex channels: the transmit frequency becomes the same as the receive frequency (regardless of any programmed offset for the channel).

Note:This feature has no effect on simplex channels. After pressing the button, "**-TAKARD-**" *is displayed on the LCD.*

Alpha Numeric
Press the assigned **PF** button of the "**Alpha Numeric**" to switch the display between the Group/Channel number, and the Group/Channel name (alphanumeric). A tone will sound each time you switch between numerical and alphanumerical display.

DIM
Press the assigned **PF** button of the "**DIM**" to adjust the brightness of the display and key backright.

ADVANCED OPERATION

EMG (Emergency)

Press the assigned **PF** button of the "**EMG**" to initiate an emergency call (requires ANI board). When an emergency call is made, not tone is emitted and the display does not change. To end the emergency call, turn the transceiver power OFF.

HA (Horn Alert)

Press the assigned **PF** button of the "**HA**" to turn the Horn Alert function ON or OFF. If you receive a call from the base station with 2Tone or DTMF signaling, horn alert will activate.

When you turn Horn Alert ON, a tone will sound and " ▶● " appears on the display.

Home (Home Channel)

Press the assigned **PF** button of the "**Home**" to select the pre-programmed Home Channel. Press it again to return to the previous channel. If used while scanning, pressing this key a second time will change to the revert channel.

IC (Intercom)

This feature requires dual head configuration. Press the assigned **PF** button of the "**IC**" to turn the intercom feature ON or OFF. While ON, you can press the PTT switch to communicate to another control head operator without transmitting over the air. When you press this key, a tone sounds and "🎧" appears on the display. The intercom can be used even while scanning and receiving a call

Low Power

Press the assigned **PF** button of the "**Low Power**" to set the radio's transmitter to the "Low Power" mode.
Press this key again to return to "High Power" operation when in difficult terrain.

GRP UP/DWN

Press the assigned **PF** button of the "**GRP UP**" or "**GRP DWN**" to select a different group of channels.

CH UP/DWN

Press the assigned **PF** button of the "**CH UP**" or "**CH DWN**" to select a different channel within the current group.

AUX A/B/C

Press the assigned **PF** button of the "**AUX A**", "**AUX B**", or "**AUX C**" to turn the output port (respectively).

PA (Public Address)

Press the assigned **PF** button of the "**PA**" to use the transceiver as a PA amplifier. When you enable this function, a tone sounds and "◀**PA**" appears on the display. The public address can be used even while scanning and receiving a call.

ADVANCED OPERATION

MONI (Monitor)

Press the assigned **PF** button of the "**MONI**" momentarily to cancel CTCSS and DCS signaling squelch; the "**MON**" icon appears on the display. Press and hold this key for 1/2 seconds to hear background noise (unmute the audio); the **MON** icon blinks on the display.

RCL (Channel Recall)

During scan, you can press the assigned **PF** button of the "**RCL**" to select the last called channel.

ST (Selectable Tone)

Press the assigned **PF** button of the "**Selectable Tone**", then rotate the CHANNEL selector knob to select a 2-Tone.

SP

Press the assigned **PF** button of the "**SP**" to switch "Front panel", "Front panel & Body" and "Body" speaker. When "Body" is selected, a tone sounds and the "◀ **SP**" icon appears on the display. You can use this function while scanning and receiving a call. However, all audio will be emitted from the PA speaker.

SQL (Squelch Level)

You can manually adjust the squelch level using this function:

1. Press the assigned **PF** button of the "**SQL**". A tone sounds and SQL appears on the display with the current squelch level.
2. Rotate the CHANNEL selector knob to select the desired level.
3. Press the this key. A tone sounds and the display returns to the normal channel.

COMP (Compander)

Press the **PF** button assigned to the "**COMP**" function to turn the "Compander" IC ON or OFF.

This IC contains two variable gain circuits configured for compressing and expanding the dynamic range of the radio's transmitted and received audio signal.

When you enable this function, the signal-to-noise radio can be improved by reducing the transmitted audio dynamic range.

Encryption (Option)

When the Voice Scrambler feature is enabled, pressing the assigned **PF** button of the "**Encryption**" toggles the Scrambler on and off.

OPTIONAL ACCESSORIES

MH-25B7A	Microphone
MH-53C7A	Heavy Duty Microphone
MH-53A7A	Heavy Duty Microphone w/Noise Canceler
MH-53B7A	Heavy Duty DTMF Microphone w/Noise Canceler
CE49	Programming Software
CT-70	Radio Programming Cable (Requires VPL-1)
CT-71	Radio to PC Programming Cable
CT-72	Radio to Radio Programming Cable
CT-81	Cable for RMK-4000 (6 m)
CT-82	Cable for RMK-4000 (2.5 m)
CT-83	Cable for RMK-4000 (0.6 m)
CNT-6000	Control Head
RF DECK	RF Deck w/MMB-79 (for Dual Band Installations)
RMK-4000SH	Remote Kit (for Single Transceiver)
RMK-4000DH	Remote Kit (for Dual-Head Installations)
RMK-4000DB	Remote Kit (for Dual Band Installations)
RMK-4000DBH	Remote Kit (for Dual Band plus Dual Head Installations)
F2D-8	2-Tone Decode Unit (Requires FIF-7)
F5D-14	5-Tone ENC-DEC Unit (Requires FIF-7)
VTP-50	VX-Trunk Unit (Requires FIF-7)
FVP-25	Encryption/DTMF pager Unit (Requires FIF-7)
FP-1030	External 30A Power Supply
MLS-100	Mobile Loud speaker (12 W Peak Power)
MMB-79	Mobile Mounting Bracket
MMB-77	Locking Mobile Mounting Bracket
FIF-7	Inter face Board (for F2D-8, F5D-14, VTP-50, FVP-25)
CN-6	Inter face Board (for Accessories)

Note:

Vertex Standard