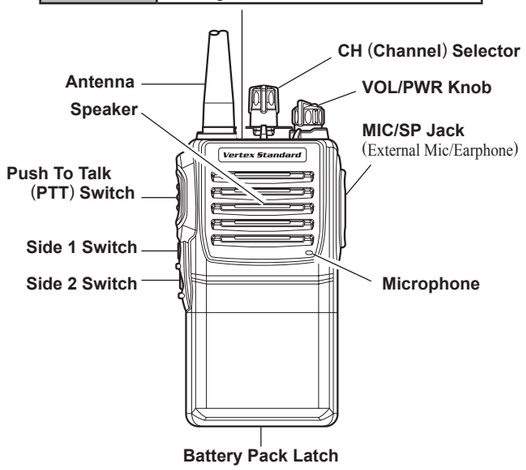
Vertex Standard

VX-230 Series
Operating Manual

Controls & Connectors

LED Indicator

Green	Monitor on (or Side 1 or Side 2 switch is activated)
Blinking Green	Busy Channel (or SQL off)
Glows Red	Transmitting
Blinking Red	Battery Voltage is Low
Yellow	Receiving a Selective Call



Vertex Standard LMR, Inc.

Accessories & Options

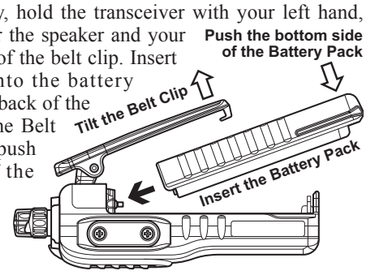
FNB-V103LI	7.4 V 1380 mAh Lithium-Ion Battery
FNB-V104LI	7.4 V 2300 mAh Lithium-Ion Battery
FNB-V131LI-UNI	7.4 V 1380 mAh Lithium-Ion Battery
FNB-V132LI-UNI	7.4 V 2300 mAh Lithium-Ion Battery
VAC-300	Desktop Rapid Charger (for FNB-V103LI/-V104LI)
VAC-6300	6-unit Multi Charger (for FNB-V103LI/-V104LI)
CD-58	Desktop Charger (for FNB-V131LI-UNI/-V132LI-UNI)
PA-55	AC Adapter (for CD-58)
VAC-6058	6-unit Multi Charger (for FNB-V131LI-UNI/-V132LI-UNI)
MH-37A4B	Earpiece/Microphone
MH-45B4B	Speaker/Microphone (Noise Cancelling)
MH-360S	Speaker/Microphone (Small Type)
MH-450S	Speaker/Microphone (Miniature Type)
VH-115S	Light weight headset w/ Boom mic
VH-215S	Light weight padded headset, Single Speaker
VH-225S	Light weight padded headset, Dual Speaker
VCM-2	Vehicle Charger Mount Adapter (for VAC-300)
DCM-1	Desktop Charger Bracket (for VAC-300)
ATV-8A	Rubber Antenna 134-151 MHz
ATV-8B	Rubber Antenna 150-163 MHz
ATV-8C	Rubber Antenna 161-174 MHz
ATV-6XL	Rubber Antenna 134-174 MHz (Untuned)
ATU-6A	Rubber Antenna 400-430 MHz
ATU-6B	Rubber Antenna 420-450 MHz
ATU-6C	Rubber Antenna 440-470 MHz
ATU-6D	Rubber Antenna 450-485 MHz
ATU-6F	Rubber Antenna 485-520 MHz
CLIP-18	Belt Clip
LCC-230	Leather Case
CE99	Programming Software
FIF-12	USB Programming Interface
CT-27	Radio to Radio Programming Cable
CT-106	PC Programming Cable (for FIF-12)

EC085U105

Before You Begin

Battery Pack Installation and Removal

❒ To install the battery, hold the transceiver with your left hand, so your palm is over the speaker and your thumb is on the top of the belt clip. Insert the battery pack into the battery compartment on the back of the radio while tilting the Belt Clip outward, then push the bottom side of the battery pack until the battery pack locks with the Battery Pack Latch.



❒ To remove the battery, turn the radio off and remove any protective cases. Slide the Battery Pack Latch on the bottom of the radio, then slide the battery downward and out from the radio while holding the Belt Clip.

> ⚠ *Caution* ⚠
> **Do not attempt to open any of the rechargeable Lithium-Ion packs, as they could explode if accidentally short-circuited.**

Low Battery Indication

As the battery discharges during use, the voltage gradually becomes lower. When the battery voltage becomes to low, substitute a freshly charged battery and recharge the depleted pack. When the battery voltage is low, the LED indicator on the top of the radio will blink ***red***. Furthermore, if your Dealer sets the "Low Battery Alert" feature into the transceiver, an alert beeper will sound when the battery voltage is low.

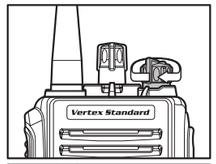
Operation

Preliminary Steps

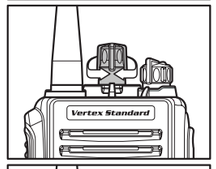
❒ Install a charged battery pack onto the transceiver, as described previously.
❒ Screw the supplied antenna onto the Antenna jack. Never attempt to operate this transceiver without an antenna connected.
❒ If you have a Speaker/Microphone, we recommend that it not be connected until you are familiar with the basic operation of the **VX-230**.

Operation Quick Start

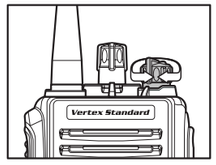
❒ Turn the top panel's **VOL/PWR** knob clockwise to turn on the radio on.



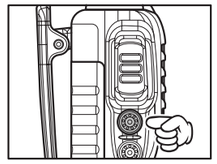
❒ Turn the top panel's **CH** selector knob to choose the desired operating channel.



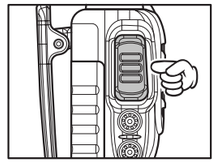
❒ Rotate the **VOL/PWR** knob to set the volume level. If no signal is present, press and hold in the **Programmable** key assigned to ***"SQL OFF"*** for more than one second; background noise will now be heard, and you may use this to set the **VOL/PWR** knob for the desired audio level.



❒ Press and hold in the **Programmable** key assigned to ***"SQL OFF"*** for more than one second (or press the key twice) to quiet the noise and resume normal (quiet) monitoring.



❒ To transmit, monitor the channel and make sure it is clear. **THIS IS AN FCC REQUIREMENT!**
❒ To transmit, press and hold in the **PTT** switch. Speak into the microphone area of the front panel grille (lower right-hand corner) in a normal voice level. To return to the Receive mode, release the **PTT** switch.
Do not transmit the radio without an antenna connected.



❒ If a Speaker/Microphone is available, remove the plastic cap and its two mounting screws from the right side of the transceiver, then insert the plug from the Speaker/Microphone into the **MIC/SP** jack; secure the plug using the screws supplied with the Speaker/Microphone. Hold the speaker grille up next to your ear while receiving. To transmit, press the **PTT** switch on the Speaker/Microphone, just as you would on the main transceiver's body.

⚠ ***Note:*** Save the original plastic cap and its mounting screws. They should be re-installed when not using the Speaker/Microphone.

Operating Temperature Range
(For European User)

Operation:–20 °C to +55 °C
Battery Charging:+10 °C to +40 °C
(Turn the radio off while charging the battery)

Safety Training Information

This Radio has been tested and complies with the Federal Communications Commission (FCC) RF exposure limits for Occupational Use/Controlled exposure environment. In addition, it complies with the following Standards and Guidelines:

❒ FCC 96-326, Guidelines for Evaluating the Environmental Effects of Radio-Frequency Radiation.
❒ FCC OET Bulletin 65 Edition 97-01 (1997) Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
❒ ANSI/IEEE C95.1-1992, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz.
❒ ANSI/IEEE C95.3-1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields-RF and Microwave.

⚠ **WARNING**: This radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as ***Occupational Use Only***, meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is not intended for use by the ***General Population*** in an uncontrolled environment.

⚠ **CAUTION**: To ensure that your expose to RF electromagnetic energy is within the FCC allowable limits for occupational use, always adhere to the following guidelines:

❍ **Please read this manual carefully to become familiar with the features of this transceiver.**
❍ **Do not transmit the radio without an antenna connected.**
❍ **This radio is NOT approved for use by the general population in an uncontrolled environment. This radio is restricted to occupational use, work related operations only where the radio operator must have the knowledge to control its RF exposure conditions.**
❍ **When transmitting, hold the radio in a vertical position with its microphone 1 to 2 inches (2.5 to 5 cm) away from your mouth and keep the antenna at least 1 inch (2.5cm) away from your head and body.**
❍ **The radio must be used with a maximum operating duty cycle not exceeding 50 %, in typical Push-to-Talk (PTT) configurations. DO NOT transmit for more than 50 % of total radio use time (50 % duty cycle). Transmitting more than 50 % of the time can cause FCC RF exposure compliance requirements to be exceeded.**
To keep the Body Worn configuration with the Vertex Standard CLIP-18 belt-clip, reduce the maximum operating duty cycle still more.
The radio is transmitting when the red LED on the top of the radio is illuminated. You can cause the radio to transmit by pressing the PTT button.
❍ **When operate the radio with the Vertex Standard CLIP-18 belt-clip, make the transmission time as short as possible, to keep the Body Worn configuration.**
❍ **Always use the FNB-V103LI, FNB-V104LI, FNB-V131LI-UNI or FNB-V132LI-UNI Lithium-Ion Battery.**
❍ **Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.**
❍ **Perform the battery charging where the ambient temperature range +50 °F to +104 °F (10 °C to +40 °C). Charge out of this range could cause damage to the battery pack.**
❍ **Battery Pack shall not be exposed to excessive heat such as sunshine, fire or the like.**
❍ **Always use Vertex Standard authorized accessories. Vertex Standard shall not be liable for any damage or accidents such as fire, leakage or explosion of batteries, etc., caused by the malfunction of non-Vertex Standard accessories.**
❍ **This radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as occupational use only, meaning it must be used only during the course of employment by individuals aware of hazardous, and the ways to minimize such hazardous. This radio is not intended for use by the General Population in an uncontrolled environment.**

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates with the FCC RF exposure limits of this radio.

Electromagnetic Interference/Compatibility
During transmissions, this radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so.
Do not operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, health care facilities, aircraft, and blasting sites.

FCC LICENSE INFORMATION
This radio operates on communications frequencies which are subject to FCC (Federal Communications Commission) Rules and Regulations. FCC Rules require that all operators using Private Land Mobile radio frequencies obtain a radio license before operating their equipment.

Key Functions

The **VX-230** provide [**Side 1**] and [**Side 2**] keys. These Programmable (**PF**) keys functions can be customized (set to other functions), 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** key features are illustrated below, and their functions are explained in the next chapter. For further details, contact your **VERTEX STANDARD** dealer.

For future reference, check the box below to each function that has been assigned to the **PF** key on your particular radio, and keep it handy.

Function	Programmable Key [Press / Press & Hold]		Function	Programmable Key [Press / Press & Hold]	
	[Side 1]	[Side 2]		[Side 1]	[Side 2]
None	/	/	TA (Talk Around)	/	/
Mon (Monitor)	/	/	TX Save Disable	/	/
SQL Off	/	/	Reset	/	/
SQL Set	/	/	Call	/	/
Low Power	/	/	Call 2	/	/
Scan	/	/	Call 3	/	/
Follow-Me Scan	/	/	Speed Dial	/	/
Scan Set	/	/	Lock	/	/
DW (Dual Watch)	/	/	Emergency	–/	–/
TA Scan	/	/	Lone Worker	–/	–/

Mon (Monitor)

Press (or Press and hold) the assigned **PF** key momentarily to disable the Tone squelch. When disables the Tone squelch, the LED indicator on the top of the radio will glow green.

SQL Off

Press (or Press and hold) the assigned **PF** key to disable the Noise and Tone squelch. Again press (or Press and hold) the assigned **PF** key to resume normal (quiet) Noise and Tone squelch action.

SQL Set

You can manually adjust the squelch level using this function. Press the assigned **PF** key to toggle the squelch threshold level "High" and "Low".

Low Power

Press (or Press and hold) the assigned **PF** key to set the radio's transmitter to the "Low Power" mode, thus extending battery life. Press (or Press and hold) the assigned **PF** key again to return to "High Power" operation when in difficult terrain. When the radio's transmitter is set to "Low Power" mode, the LED indicator on the top of the radio will glow green.

Scan

The Scanning feature is used to monitor multiple channels programmed into the transceiver. While scanning, the radio 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 (or Press and hold) the assigned **PF** key.
  The scanner will search the channels, looking for active ones; it will pause each time it finds a channel on which someone is speaking. When the scanner is activated, the LED indicator on the top of the radio will glow green.
- ❒ To stop scanning:
  Press (or Press and hold) the assigned **PF** key.
  Operation will revert to the channel to which the **CH** knob is set.

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

Part 15.21: Changes or modifications to this device not expressly approved by Vertex Standard could void the user's authorization to operate this device.

Follow-Me Scan

"Follow-Me" Scan feature checks a ***User-assigned*** Priority Channel regularly as you scan the other channels. Thus, if only Channels 1, 3, and 5 (of the 8 available channels) are designated for "Scanning," the user may nonetheless any channel as the "User-assigned" Priority Channel via the "Follow-Me" feature.

Press the assigned **PF** key to activate "Follow-Me" scanning, then turn the **CH** selector knob to the channel which you want to designate as the "User-Assigned Priority Channel". When the scanner stops on an "active" channel, the User-assigned Priority Channel will automatically be checked every few seconds (interval programmed by your Dealer).

Scan Set

Press (or press and hold) the assigned **PF** key to delete the Current Memory Channel from the Scanning List. When you delete a channel from the Scanning List, a low tone beep will sound. To restore a particular channel to your Scanning List, press (or press and hold) the assigned **PF** key again; a high tone beep will sound.

DW (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 (or Press and hold) the assigned **PF** key.
  The scanner will search the two channels; it will pause each time it finds a channel on which someone is speaking. When the Dual Watch feature is activated, the LED indicator on the top of the radio will glow green.
- ❒ To stop Dual Watch:
  Press (or Press and hold) the assigned **PF** key.
  Operation will revert to the channel to which the **CH** knob is set.

TA Scan

Press the assigned programmable key to toggle the TA (Talk Around) scan feature "On" and "Off."

While TA scan is proceeding, the **VX-230** will search both the transmit and receive frequencies (and the LED indicator on the top of the radio will glow green). When a signal is encountered on the receive frequency, the **VX-230** will pause until the signal disappears.

When a signal is encountered on the transmit frequency, the **VX-230** will check for activity on the receive frequency every few seconds (interval programmed by your Dealer).

TA (Talk Around)

Press (or Press and hold) the assigned **PF** key 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.

When the "TA" function is activated, the LED indicator on the top of the radio will glow green.

TX Save Disable

Press (or Press and hold) the assigned **PF** key to disable the Transmit Battery Saver, if you are operating in a location where high power is almost always needed.

The Transmit Battery Saver helps extend battery life by reducing transmit power when a very strong signal from an apparently nearby station is being received. Under some circumstances, though, your hand-held radio may not be heard well at the other end of the communication path, and high power may be necessary at all times.

Reset

Press (or Press and hold) the assigned **PF** key to silence the receiver and reset for another call, when a communication is finished.

Call

Press (or Press and hold) the assigned **PF** key to send a programmed 2- or 5-Tone sequential tone.

Call 2, Call 3

Press (or Press and hold) the assigned **PF** key to send a 5-Tone sequential tone group which is pre-defined.

Speed Dial

Your Dealer may have a pre-programmed Auto-Dial telephone number memory into your radio. Press (or Press and hold) the assigned **PF** key to send the pre-programmed Auto-Dial telephone number. The DTMF tones sent during the dialing sequence will be heard in the speaker.

Lock

Press (or Press and hold) the assigned **PF** key to lock the **CH** knob, **PF** keys, and **PTT** switch. The precise lockout configuration is programmed by your **VERTEX STANDARD** dealer.

Emergency

The **VX-230** series includes an "Emergency" feature, which may be useful, if you have someone monitoring on the same frequency as your transceiver's channel. For further details contact your **VERTEX STANDARD** dealer.

Lone Worker

Press and hold the assigned **PF** key to toggle the Lone Worker feature "ON" and "OFF."

The Lone Worker feature will emit an audible alarm for 30 seconds at one second intervals when the Lone Worker Timer has expired. If the user does not reset the timer by pressing the **PTT** switch, the radio switches to the Emergency mode.

Important Notice 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.

Warning - Frequency band 406 - 406.1 MHz is reserved for use ONLY as a distress beacon by the US Coast Guard and NOAA. Under no circumstance should this frequency band be part of the pre-programmed operating frequencies of this radio.

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.

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.

Model Reference

Model	Frequency	TX Power
VX-231-D0-5	134 - 174 MHz	5W
VX-231-G6-5	400 - 470 MHz	5W
VX-231-G7-5	450 - 520 MHz	5W

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 55 seconds in an attempt to shake hands with the other station.

If you are out of range for more than two 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.

Disposal of your Electronic and Electric Equipment

Products with the symbol (crossed-out wheeled bin) cannot be disposed as household waste.
Electronic and Electric Equipment should be recycled at a facility capable of handling these items and their waste by products.
In EU countries, please contact your local equipment supplier representative or service center for information about the waste collection system in your country.

Attention in Case of Use

This transceiver works on frequencies which are not generally permitted.

For frequency allocation, apply for a licence at your local spectrum management authority.

For actual usage contact your dealer or sales shop in order to get your transceiver adjusted to the allocated frequency range.

List of the practicable area					
AUT	BEL	BGR	CYP	CZE	DEU
DNK	ESP	EST	FIN	FRA	GBR
GRC	HUN	IRL	ITA	LTU	LUX
LVA	MLT	NLD	POL	PRT	ROU
SVK	SVN	SWE	CHE	ISL	LIE
NOR	–	–	–	–	–

Vertex Standard — Declaration of Conformity

We, YAESU UK Ltd. declare under our sole responsibility that the following equipment complies with the essential requirements of the Directive 1999/5/EC.

Type of Equipment:	FM Transceiver
Brand Name:	VERTEX STANDARD
Model Number:	VX-231-D0-5 / VX-231-G6-5
Manufacturer:	Vertex Standard Co., Ltd.
Address of Manufacturer:	4-8-8 Nakameguro Meguro-Ku, Tokyo 153-8644, Japan

Applicable Standards:
This equipment is tested and conforms to the essential requirements of directive, as included in following standards.

Radio Standard:	EN 300 086-2 V1.3.1
EMC Standard:	EN 301 489-01 V1.8.1 EN 301 489-05 V1.3.1
Safety Standard:	EN 60950-1: 2006 +A11: 2009 +A1: 2010

The technical documentation as required by the Conformity Assessment procedures is kept at the following address:

Company: YAESU UK Ltd.
Address: Unit 12, Sun Valley Business Park, Winnall Close
Winchester, Hampshire, SO23 0LB, U.K.

Printed in China