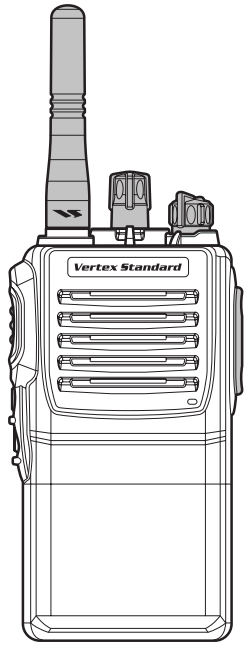
Vertex Standard

VX-241PMR446

(VX-241-G3-1)

Operating Manual



CE

Vertex Standard LMR, Inc.

Optional Accessories

FNB-V103LIA	7.4 V ⎓, 1380 mAh Lithium-Ion Battery
FNB-V104LIA	7.4 V ⎓, 2300 mAh Lithium-Ion Battery
CD-34	Rapid Charger
PA-42C/U※	AC Adapter (for CD-34)
VAC-6300	6-unit Multi Charger
MH-37A4B	Earpiece/Microphone
MH-45B4B	Speaker/Microphone (Noise Cancelling)
MH-360S	Speaker/Microphone (Small Type)
MH-450S	Speaker/Microphone (Miniature Type)
VC-25	VOX Headset
VCM-2	Vehicle Charger Mount Adapter
DCM-1	Desktop Charger Bracket
CLIP-18	Belt Clip
CE141	Programming Software
FIF-12	USB Programming Interface
CT-27	Radio to Radio Programming Cable
CT-42A	PC Programming Cable (CT-29 + CT-28)
CT-106	PC Programming Cable (for FIF-12)

※ "**C**" suffix is for use with 230 VAC (Type-C plug) and "**U**" suffix is for use with 230 VAC (Type-BF plug)

Availability of accessories may vary. Some accessories are supplied as standard per local requirements, while others may be unavailable in some regions. Consult your Vertex Standard Dealer for details regarding these and any newly-available options. Connection of any non-Vertex Standard approved accessory, should it cause damage, may void the Limited Warranty on this apparatus.

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.

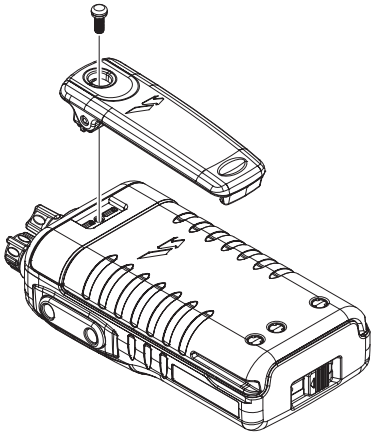
Supplied Accessories

FNB-V103LIA	7.4 V ⎓, 1380 mAh Lithium-Ion Battery
CD-34	Rapid Charger
PA-42C or **-42U**※	AC Adapter (for CD-34)
CLIP-18	Belt Clip

VX-241PMR446 Default Setting

Channel	Frequency No. (Frequency)	CTCSS/DCS (Tone No.)
1	1 ch (446.00625 MHz)	DCS 114 (76)
2	2 ch (446.01875 MHz)	DCS 115 (77)
3	3 ch (446.03125 MHz)	DCS 023 (60)
4	4 ch (446.04375 MHz)	DCS 025 (61)
5	5 ch (446.05625 MHz)	DCS 026 (62)
6	6 ch (446.06875 MHz)	DCS 071 (72)
7	7 ch (446.08125 MHz)	DCS 072 (73)
8	8 ch (446.09375 MHz)	DCS 073 (74)
9	1 ch (446.00625 MHz)	DCS 152 (86)
10	2 ch (446.01875 MHz)	DCS 155 (87)
11	3 ch (446.03125 MHz)	DCS 156 (88)
12	4 ch (446.04375 MHz)	DCS 162 (89)
13	5 ch (446.05625 MHz)	DCS 165 (90)
14	6 ch (446.06875 MHz)	DCS 205 (93)
15	7 ch (446.08125 MHz)	DCS 212 (94)
16	8 ch (446.09375 MHz)	DCS 223 (95)

Belt Clip Installation



⚠ Important Notice ⚠

General

- **Please read this manual carefully to become familiar with the features of this transceiver.**
- **When transmitting, hold the radio in a vertical position with its microphone 2.5 to 5 cm away from your mouth and keep the antenna at least 2.5cm away from your head.**
- **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 RF exposure compliance requirements to be exceeded.**
  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 or by using the VOX headset, model VC-25.
- **Always use the FNB-V103LIA Lithium-Ion Battery.**
- **Perform the battery charging where the ambient temperature range +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.**

Operating Temperature Range

- **Operation**: –25 °C to +55 °C
- **Battery Charging**: +10 °C to +40 °C

For the Li-Ion Battery Pack

CONTAINS LITHIUM-ION BATTERY. MUST BE RECYCLED OR DISPOSED OF PROPERLY.

Li-ion

- **Never short-circuit the connection terminals on the battery or charger!**
- **Do not attempt to open the battery pack, as personal injury or damage to the battery pack could occur if a cell or cells become accidentally short-circuited.**
- Before using a battery pack for the first time, charge it completely. Do not attempt charge a pack with the incorrect charger, as this can damage or shorten the life of the pack.
- When a battery pack is not used for a long time, please remove it from the transceiver. Also, while in storage, the charge will drain slightly over time and the battery should be recharged 50 % each six months.
- When carefully maintained, a pack should be useful for about 300 charge/discharge cycles.
- The following abuses can shorten the useful life of the battery,and should be avoided:
  - ✗ Exceeding the specified temperature limits;
  - ✗ Overcharging with an incorrect charger, or charging for too long;
  - ✗ Shorting the terminals, or using the pack with equipment not designed for it;
  - ✗ Reversing charge polarity. Use only the proper charger. If this is tampered with or another charger is used, permanent damage may result;
  - ✗ Submersing the battery in water, or attempting to open the battery casing.
- **After storage, the battery should be returned to room temperature before use. It may first function at reduced capacity, but should return to full capacity after several complete charge/discharge cycles.**
- **Replace the pack if charge life becomes very short.**

Vertex Standard

Declaration of Conformity

Motorola Solutions Germany GmbH declares under its sole responsibility that the products, to which this declaration relates, conform to the applicable essential requirements of the following Directives(s) of the Council of the European Community on the approximation of the laws of the Member States:
1999/5/EC on Radio Equipment and Telecommunications Terminal Equipment

Product:
Brand Name: Vertex Standard
Model Number: VX-241-G3-1
Frequency Range:
PMR446 446.05625MHz - 446.09375MHz
TX Power Level: 0.5W
Channel Spacing: 12.5kHz

Placed on Market by:
Motorola Solutions Germany GmbH, 0-13507 Berlin, Germany.

Conformity:
Harmonized standards used to demonstrate conformity:

Radio Equipment, Article 3(2):
EN300296-2 V1.3.1

EMC, Article 3(1)b:
EN301 489-1 V1.9.2, EN301 489-5 V1.3.1

Safety, Article 3(1)a:
EN60950-1 :2006/A11 :2009/A1 :2010/A12:2011/AC:2011
ICNIRP(1998) General Population/Uncontrolled Exposure Limits

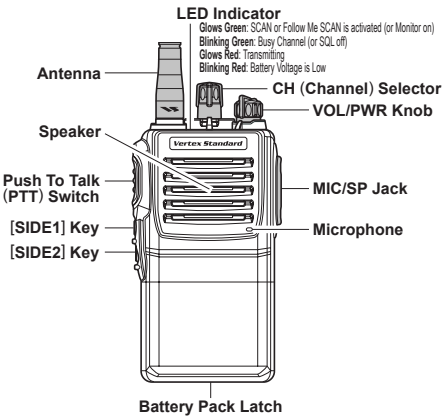
Year of first application of CE mark: 2012

The essential radio test suites, as defined in the quoted harmonized standards, have been performed.

Document:
Reference: 8ER-213066-0C-O
Keeper: Motorola Solutions Germany GmbH
Am Borsigturm 130, D-13507 Berlin, Germany

EC112U101

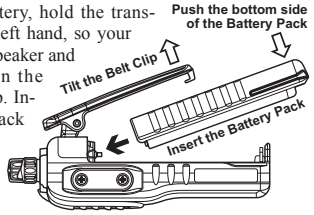
CONTROLS & CONNECTORS



BEFORE YOU BEGIN

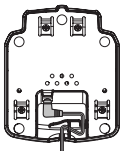
BATTERY PACK INSTALLATION AND REMOVAL

❒ 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.

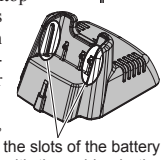


❒ To remove the battery, turn the radio off and remove any protective cases. Slide the Battery Pack Latch on the bottom of the radio, then slide the battery downward and out from the radio while holding the Belt Clip.

BATTERY CHARGE



1. Insert the DC plug from the optional **PA-42** AC Adapter into the DC jack on the bottom side of the optional **CD-34** Desktop Rapid Charger, then plug the **PA-42** AC Adapter into the AC line outlet.
2. Turn the transceiver "off", then insert the transceiver into the **CD-34** Desktop Rapid Charger while aligning the slots of the battery pack with the guides in the nest of the **CD-34**; refer to the illustration below for details on proper positioning of the battery pack.



3. If the transceiver is inserted correctly, the LED indicator will glow red. A fully-discharged pack will be charged completely in approximately 2.5 hours.

Align the slots of the battery pack with the guides in the nest of the **CD-34** Desktop Rapid Charger.

4. The LED indicator will change to green when charging is nearing completion. The battery pack becomes fully charged approximately 30 minutes later.
5. When charging is completed, remove the transceiver from the **CD-34** Desktop Rapid Charger, and unplug the **PA-42** AC Adapter from the AC line outlet.

Important Notes!

❍ Do not connect an improper AC Adapter to the **CD-34** Desktop Rapid Charger. Use only the optional **PA-42** AC Adapter.

❍ Disconnect the transceiver from the **CD-34** Desktop Rapid Charger, and unplug the **PA-42** AC Adapter from the AC line outlet, when charging is completed.

❍ The **PA-42** AC Adapter and/or **CD-34** Desktop Rapid Charger will generate a moderate amount of heat during the charging process. This is a normal condition.

❍ The **PA-42** AC Adapter and **CD-34** Desktop Rapid Charger is designed for charging only, and is not designed for operation (transmission/reception) of the transceiver.

❍ Periodically wipe the charging terminals in the nest of the **CD-34** Desktop Rapid Charger, using a dry cloth, to ensure good connections between the charger and battery.

Caution!!

❍ When charging a battery pack alone (not attached to the transceiver), do not allow any metal object to short the terminals on the battery pack.

❍ Do not allow any metal objects to short the terminals in the nest of the **CD-34** Desktop Rapid Charger, as a short-circuit could cause overheating of the charger circuitry.

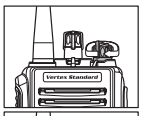
CAUTION!

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

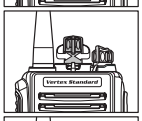
OPERATION

OPERATION QUICK START

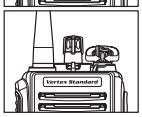
❒ Turn the top panel's **VOL/PWR** knob clockwise to turn on the radio.



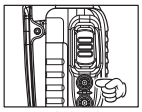
❒ Turn the top panel's **CH** selector knob to choose the desired operating channel.



❒ Rotate the **VOL/PWR** knob to set the volume level. If no signal is present, press and hold in the [**SIDE 1**] key (default: [**MONI/SQL OFF**] key) 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.

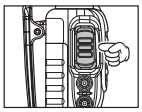


❒ Press and hold in the [**SIDE 1**] key (default: [**MONI/SQL OFF**] key) for more than one second (or press the key twice) to quiet the noise and resume normal (quiet) monitoring.

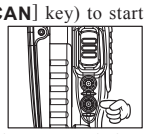


❒ To transmit, monitor the channel and make sure it is clear.

❒ 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.



❒ Press the [**SIDE 2**] key (default: [**SCAN**] key) to start scanning. If and when the scanner encounters a signal strong enough to open the squelch, the scanner will remain halted for as long as there is carrier present on the channel. After the carrier drops at the end of the other station's transmission, scanning will resume.



❒ 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.*

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 becomes to low, the LED indicator on the top of the radio will blink ***red*** and an alert beeper will sound.

PROGRAMMABLE KEY FUNCTIONS

The **VX-241PMR446** provide [**SIDE 1**] and [**SIDE 2**] keys. These "Programmable" keys functions can be customized (set to other functions) via the **CE141** Programming Software. The possible Programmable key features are illustrated below, and their functions are explained below. For further details, contact your Vertex Standard dealer.

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

FUNCTION	PROGRAMMABLE KEY (PRESS / PRESS AND HOLD)	
	[SIDE1] KEY	[SIDE2] KEY
Monitor	/	/
SQL Off	/	/
Scan	/	/
Follow-Me Scan	/	/

PROGRAMMABLE KEY DEFAULT SETTING

	[SIDE1] KEY	[SIDE2] KEY
PRESS KEY	Monitor	Scan
PRESS & HOLD KEY	SQL Off	---

PROGRAMMABLE KEY FUNCTIONS

MONITOR

Press (or Press and hold) the assigned **Programmable** key to disable the CTCSS- and DCS-controlled squelch; the LED indicator on the top of the transceiver will glow green.

SQL OFF

Press (or Press and hold) the assigned **Programmable** key to hear background noise (unmute the transceiver); the LED indicator on the top of the transceiver will blink green.

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.

❒ **To activate scanning:**
Press (or Press and hold) the assigned **Programmable** 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.

❒ **To stop scanning:**
Press (or Press and hold) the assigned **Programmable** key again.

FOLLOW-ME SCAN

The "Follow-Me" Scan feature checks a User-assigned Priority Channel regularly as you scan other channels. Thus, if only Channels 1, 3, and 5 (of the 8 available channels) are designated for "Scanning," the user may nonetheless assign Channel 2 as the "User-assigned" Priority Channel via the "Follow-Me" feature.

To activate "Follow-Me" scanning, first select the channel you want to designate as the "User-Assigned Priority Channel" and press (or press and hold) the assigned **Programmable** key. When the scanner stops on an "Active" channel, the User-assigned Priority Channel will automatically be checked every few seconds; if activity is found on the User-assigned Priority Channel, the radio will switch between it and the Dealer-Assigned Priority Channel, if any.

ADVANCED FEATURE

You may set the following features in each operating channel via the **CE141** Programming Software independently.

DIAL SCAN

When set the CH selector knob to the channel which a Dial Scan feature was assigned, the scanner begins automatically.

PRIORITY CHECK

The Priority Check feature checks a User-assigned Priority Channel every five seconds, when the scanner stopped on the channel except the User-assigned Priority Channel.

TIME-OUT TIMER (TOT)

The TOT feature provides a safety switch, which limits transmission time to a pre-programmed value. This will conserve battery power by limiting the length of transmissions. When your transmission time is within 10 seconds of the Time-Out Timer expiration, an alert bell will provide an audible warning from the speaker.

BUSY CHANNEL LOCK-OUT (BCLO)

The BCLO feature prevents the radio's transmitter from being activated if a signal strong enough to break through the "noise" squelch is present.

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 2 minutes, your radio senses that no signal has been received, three short beeper will sound. If you subsequently move back into range, as soon as the other station transmits, a short beeper will sound.

POWER SAVE

The Power Save feature puts the transceiver to sleep for a time interval, periodically "waking it up" to check for activity. If somebody is talking on the channel, the transceiver will remain in the "active" mode, then resume its "sleep" cycles when the signal drops. This feature significantly reduces quiescent channel battery drain.