

NORTH AMERICA LAND MOBILE RADIO PRODUCT GUIDE



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Portable Radio Selection Guide



VXD-720 Digital
Clear, Quality Analog/Digital Communications

Page 4

5.18 (H) x 2.5 (W) x 1.39 (D) inches



VX-920 Series
Dependable and Ready to Respond

Page 5

5.3 (H) x 2.3 (W) x 1.5 (D) inches



VX-820 Series
Maximum Performance for Less

Page 5

3.8 (H) x 2.3 (W) x 1.5 (D) inches

AUDIO PERFORMANCE

Work area is:

Very Loud	•	•	•
Moderately Loud	•		
Not Very Loud	•		
Quiet and Whispering Required	•	•	•

BATTERY LIFE

Radio needs to operate:

Over 20 hours		•	•
Up to 18 hours	•		
Up to 15 hours			

WATER RESISTANCE

Radio exposure:

Submersible up to 3 feet for 30 minutes	•	•	•
Some water - no submersion			
Dry only			

SAFETY

Radio must be able to:

Send special emergency alert	•	•	•
Monitor user working alone		•	•
Operate in hazardous environment		Optional	Optional
Monitor user angle			
Alert user when not in range		•	•

PRIVACY

Need for discreet communications:

Very important	•	Optional	Optional
Important		•	•
Not important			

CONVENIENCE

Radio needs to:

Record short audio messages			
Send text messages	•		
Operate in analog and digital modes	•		
Support hands-free voice transmit	•		
Make channel navigation easy			
Have a display to view channels or call select radios	•	•	•

BUDGET

List price per radio not to exceed:

Up to \$800	•	•	•
Up to \$500			
Up to \$300			

Digital Radio Series

VXD-720 PORTABLE, VXD-7200 MOBILE AND VXD-R70 REPEATER

Easily convert to digital with the VXD-720 conventional portable and VXD-7200 conventional mobile radios, providing the essential voice and text communications needed. The VXD digital radio series operates on the most widely-used Digital Mobile Radio (DMR) protocol, making it compatible to work with other DMR models and brands. The VXD Series can also be used with any existing analog two-way radios for an easy transition to new equipment and maximum return on investment.

With the conventional VXD-R70 repeater, get 100% continuous duty at 45 Watt VHF and 40 Watt UHF for easy integration into most repeater sites.

Digital Advantage:

- DMR ETSI Tier 2 TDMA Standard
- Double call capacity with one license
- Consistent, clear audio quality
- Longer battery life
- Integrated voice and text communications

KEY FEATURES

- 512 Channels/512 Groups
- 5 Watts VHF/4 Watts UHF (VXD-720)
- 45 Watts VHF/40 Watts UHF (VXD-7200)
- 5 programmable keys (VXD-720)
- 4 Programmable keys (VXD-7200)
- 40-Character alphanumeric scrolling display
- IP Rating: 57 (VXD-720)
- 500 mW Audio output (VXD-720)
- Voice activated transmit (VOX)
- Tri-color LED custom call alert
- Batteries:
 - 2200 mAh Li-Ion
 - 1300 mAh Ni-MH
- AMBE+2™ Digital vocoder
- 1,000 record contact list
- Text messaging (digital only)
- Basic privacy
- Radio to radio cloning (VXD-720)
- 26-Pin Accessory Connector (VXD-7200)
- PC Programming

Repeater:

- 16 Channels
- 45 Watts VHF/40 Watts UHF
- Multi-color LED status indicator
- Analog or Digital Mode
- AMBE+2™ Digital vocoder
- 26 Pin Accessory Connector
- EIA Rack Mount Size

SIGNALING

- Call Alert
- Emergency
- PTT ID
- MDC-1200® Analog Encode/Decode
- Selective radio inhibit (digital only)
- Radio check (digital only)
- Radio monitor (digital only)
- 2-Tone paging (analog only)

SCANNING

- Priority
- Dual Priority
- Scan Set
- Mixed Mode (digital only)

www.dodigitalright.com



VXD-720



VXD-7200



VXD-R70

Portable Radios

VX-820 SERIES AND VX-920 SERIES

The VX-820 Series is the smallest radio offered by Vertex Standard. The radios are unobtrusive and easy to wear all day and built with more enhanced features typically not found in other radios of this size.

The VX-920 Series is ready to respond with state-of-the-art engineering and a wide array of features, providing great value in its class for dependable communications.

- Ultra compact
- Submersible and weatherproof
- Long-lasting power for responsiveness
- Enhanced safety features
- Loud audio performance
- Exclusive ARTS™



VX-821

VX-829

VX-824



VX-921

VX-924

KEY FEATURES

- 512 Channels/32 Groups (VX-829, VX-824, VX-924)
- 48 Channels/3 Groups (VX-921)
- 16 Channels (VX-821)
- 5 Watts
- 9 Programmable keys (VX-829, VX-824)
- 3 Programmable keys (VX-821)
- 10 Programmable keys (VX-924)
- 4 Programmable keys (VX-921)
- 12-Character alphanumeric display (VX-829, VX-824, VX-924)
- IP Rating: 57
- 700 mW Audio output
- Whisper mode
- Componder
- Minimum volume control
- Clear Voice
- Audio Pitch Control (VX-920 Series)
- Direct channel recall
- Programmable 7-color LED alert
- Batteries:
 - 3000 mAh Li-Ion
 - 3000 mAh Li-Ion Intrinsically Safe*
 - 2000 mAh Li-Ion
 - 1150 mAh Li-Ion
- RX/TX Battery power save
- Auto-Range Transpond System (ARTS™)
- Manual squelch adjustment
- Intrinsically safe (option)*
- Voice inversion encryption (option)
- Rolling code encryption (option)
- Digital voice storage (option)
- Radio to radio cloning
- PC Programming

* Intrinsically Safe: Meets SGS requirements of ANSI/UL913 6th Edition for Class I, Division 1, Groups A-D, Class II, Groups E-G; and Class III for use in hazardous locations.

SIGNALING

- CTCSS/DCS Encode/Decode
- Multi 2-Tone Decode
- 2-Tone Encode/Decode
- 5-Tone Encode/Decode
- Remote Stun/Kill/Revive (5-tone)
- Emergency
- Lone Worker
- DTMF ANI
- DTMF Speed Dial (VX-829)
- DTMF Paging (option)
- GE-STAR® Encode (option)
- MDC-1200® ANI Enc/Dec (option)
- GE-STAR® Enc/Dec (option)

SCANNING

- Scan
- Priority
- Dual Watch
- Follow Me
- Talk Around
- Scan Set
- 32 Scan List

Portable Radios

VX-450 SERIES

For durable, on-the-job responsiveness, the VX-450 Series maximizes worker uptime with expanded safety applications and convenient built-in features designed for heavy duty use.

- Submersible and weatherproof
- Monitor worker safety
- Audio and voice responsiveness
- Expanded, built-in signaling for flexibility
- Easy-to-manage large group communications
- Exclusive ARTS II™



KEY FEATURES

- 512 Channels / 32 Groups
- 32 Channels / 2 Groups (VX-451)
- 5 Watts
- 9 Programmable keys (VX-459)
- 7 Programmable keys (VX-454)
- 3 Programmable keys (VX-451)
- 8 Character alphanumeric display (VX-459, VX-454)
- IP Rating: 57
- 700 mW Audio output
- Whisper mode
- Compander
- Clear voice
- Voice inversion encryption (on/off activation)
- Minimum volume control
- Batteries:
 - 2400 mAh Li-Ion
 - 1170 mAh Li-Ion
- RX/TX Battery power save
- Auto-Range Transpond System II (ARTS II™)
- Manual squelch adjustment
- Channel announce
- Voice activation (VOX)
- LTR® Trunking (option)
- Digital voice storage (option)
- Man down (option)
- Radio to radio cloning
- PC Programming

SIGNALING

- CTCSS/DCS Encode/Decode
- Dual 2-Tone Decode
- 2-Tone Encode/Decode
- 5-Tone Encode/Decode
- Remote Stun/Kill/Revive (5-tone)
- Emergency
- Lone Worker
- DTMF ANI
- DTMF Speed Dial
- DTMF Paging
- MDC-1200® Encode/Decode

SCANNING

- Scan
- Priority
- Dual Watch
- Follow Me
- Talk Around
- Scan Set
- 32 Scan List

VX-410/420 SERIES

The VX-410/420 Series intrinsically safe radios meet the SGS requirements of ANSI/UL913 6th Edition for use in Classes I, II, III, DIV I Groups A – G hazardous locations.

- Large group communications
- Discreet and secure
- Safety features not sacrificed
- Exclusive ARTS™



KEY FEATURES

- 32 Channels (16 channels / 2 groups)
- 5 Watts
- 6 Programmable keys (VX-420)
- 2 Programmable keys (VX-410)
- 8-Character alphanumeric display (VX-420)
- IP Rating: 54
- 500 mW Audio output
- Compander
- Battery: 1100 mAh Ni-Cd, Intrinsically Safe
- RX/TX Battery power save
- Auto-Range Transpond System (ARTS™)
- Digital voice storage (option)
- Voice inversion encryption
- Rolling code encryption (option)
- Radio to radio cloning
- PC Programming

SIGNALING

- CTCSS/DCS Encode/Decode
- Dual 2-Tone Decode
- 2-Tone Encode/Decode
- 5-Tone Encode/Decode
- Remote Stun/Kill/Revive (5-tone)
- Emergency
- Lone Worker
- DTMF ANI
- DTMF Speed Dial
- DTMF Paging (option)
- MDC-1200® Encode/Decode (option)
- GE-STAR® Encode (option)

SCANNING

- Scan
- Priority
- Dual Watch
- Follow Me
- Group
- Scan Set

Portable Radios

VX-350 SERIES

The “all-purpose” radio...the compact VX-350 Series gives you a wide range of operating capabilities and options without paying extra.

- Easy-to-carry compact size
- Extended battery performance
- Safety features not sacrificed
- Prevent unauthorized use
- Exclusive ARTS™



VX-351

VX-354

KEY FEATURES

- 16 Channels
- 5 Watts
- 6 Programmable keys (VX-354)
- 2 Programmable keys (VX-351)
- 8-Character alphanumeric display (VX-354)
- IP Rating: 55
- 500 mW Audio output
- Whisper mode
- Battery: 2000 mAh Li-Ion
- RX/TX Battery power save
- Auto-Range Transpond System (ARTS™)
- Manual squelch adjustment
- Radio to radio cloning
- PC Programming
- Rolling Code Encryption (option)
- Voice Inversion Encryption (option)

SIGNALING

- CTCSS/DCS Encode/Decode
- Dual 2-Tone Decode
- 2-Tone Encode/Decode
- 5-Tone Encode/Decode
- Remote Stun/Kill/Revive (5-tone)
- Emergency
- Lone Worker
- DTMF ANI
- DTMF Speed Dial
- DTMF Paging (option)
- MDC-1200® ANI/ENI (option)
- GE-STAR® Encode (option)

SCANNING

- Scan
- Priority
- Dual Watch
- Follow Me
- Talk Around
- Scan Set

VX-231

Get cost-effective communications with a radio that delivers more features and performance in its class for maximum return on investment.

- Easy to carry
- Battery options for every budget
- Safety features not sacrificed
- More scanning options
- Exclusive ARTS™



VX-231

KEY FEATURES

- 16 Channels
- 5 Watts
- 2 Programmable keys
- IP Rating: 54
- 500 mW Audio output
- Batteries:
 - 2000 mAh Li-Ion
 - 1150 mAh Li-Ion
- RX/TX Battery power save
- Auto-Range Transpond System (ARTS™)
- Manual squelch adjustment
- Radio to radio cloning
- PC Programming

SIGNALING

- CTCSS/DCS Encode /Decode
- Dual 2-Tone Decode
- 2-Tone Encode/Decode
- Emergency
- Lone Worker
- DTMF ANI
- DTMF Speed Dial

SCANNING

- Scan
- Priority
- Dual Watch
- Follow Me
- Talk Around
- Scan Set

P25 Digital Radios

VX-P820/VX-P920 SERIES PORTABLES AND VX-7200 MOBILE



The VX-P820 Series is the world's smallest submersible P25 portable radio with more features built-in than found in other radios this size.

The VX-P920 Series is larger sized and ideally built for working with gloves. Both Series include APCO P25 interoperability and are designed to perform in the most demanding and critical conditions.

- Submersible and weatherproof portable radios
- Long-lasting power for responsiveness
- Enhanced safety features
- Loud audio performance



VX-P821

VX-P829

VX-P824



VX-P924

VX-P929



VX-7200

KEY FEATURES

Portables:

- 512 Channels / 32 Groups (LCD Portables)
- 16 Channels (VX-P821)
- 5 Watts
- 700 mW Audio output
- 10 Programmable keys (VX-P929)
- 8 Programmable keys (VX-P924)
- 9 programmable keys (VX-P829)
- 7 programmable keys (VX-P824)
- 3 Programmable keys (VX-P821)
- Programmable 3-position toggle key (VX-P920 series)
- IP Rating: 57
- Batteries:
 - 3000 mAh Li-Ion
 - 3000 mAh Li-Ion Intrinsically Safe*
 - 2000 mAh Li-Ion
 - 1150 mAh Li-Ion
- Direct channel recall (LCD models)
- Field programmable (VX-P829, VX-P929)
- Dual band receive (VX-P920 option)
- Intrinsically safe (option)*

Mobile:

- 501 Channels / 32 Groups
- 50 Watts VHF / 45 Watts UHF
- 5 Programmable keys
- Public address
- Horn alert
- Built-in emergency microphone
- D-Sub 15 Accessory connector

General:

- 12-Character alphanumeric display (LCD models)
- User set mode (LCD models)
- Minimum volume control
- PC Programmable

Analog Mode:

- Programmable 7-color LED alert (portables)
- RX/TX Battery power save (portables)
- Auto-Range Transpond System (ARTS™)
- Comander
- Audio pitch control (VX-P920 series)
- Busy Channel / Busy Tone Lock Out
- Time Out Timer (TOT)
- User selectable tone (all LCD models)
- Radio to radio cloning

P25 Digital Mode:

- AMBE+2™ Vocoder
- Caller ID (LCD models)
- RSSI Indicator and Audible Alert (Portable LCD models)
- Busy Channel Lock Out (BCLO)
- Time Out Timer (TOT)
- AES/DES Encryption (options)

* Intrinsically Safe: Meets SGS requirements of ANSI/UL913 6th Edition for Class I, Division 1, Groups A-D, Class II, Groups E-G; and Class III for use in hazardous locations.

SIGNALING

Analog Mode:

- CTCSS/DCS Encode / Decode
- Multi-2-Tone Decode
- 2-Tone Encode
- MDC-1200® Encode (PTT ID, Emergency ID)
- Lone Worker
- DTMF ANI

P25 Digital Mode:

- Selective calling
- Talk Group IDs (TGID)
- Network Access Codes
- Individual ID lists
- Paging Group lists

SCANNING

- Scan
- Priority
- Dual Watch
- Follow Me
- Follow Me / Dual Watch
- Talk Around
- Group (LCD models)

Mobile Radios

VX-5500 AND VX-6000

The VX-5500 provides flexible configuration and durability for demanding applications. Get reliability and easy expandability for networked, dual-band operation. Tailored communications and a maximum return for your investment.

With the VX-6000, get high output power and get your message across with high performance coverage.

Standard and dual control head packages available.

- Large channel capacity
- Durable design
- Dual-band multi-configurations
- Variety of safety alerts
- Loud, full-sounding audio
- Exclusive ARTS™



VX-5500



VX-6000

KEY FEATURES

- 250 Channels / 250 Dynamic Groups

VX-5500:

- 70 Watts Low Band
- 50 Watts VHF
- 45 Watts UHF

VX-6000:

- 120 Watts Low Band
- 110 Watts VHF
- 100 Watts UHF

- 7 programmable keys
- 8-Character alphanumeric display
- Comander
- Programmable minimum volume control
- Remote control head capable
- Multi-control head capable
- Key lock
- D-Sub 25 Pin Accessory Connector
- Public address/horn alert
- Auto Range Transpond System(ARTS™)
- Voice inversion encryption (option)
- Rolling code encryption (option)
- Voice storage (option)
- Radio to radio cloning
- PC Programming

SIGNALING

- CTCSS/DCS Encode/Decode
- 2-Tone Decode (option)
- 5-Tone Encode/Decode (option)
- DTMF ANI
- DTMF Paging (option)
- DTMF Speed Dial
- Emergency
- Remote Listen
- MDC-1200® Encode (option)
- GE-STAR® Encode (option)

SCANNING

- Scan
- Priority
- Dual Watch
- Group
- Scan Set

REMOTE MOUNT CONFIGURATIONS

Dual Band Single Head Remote Configuration

RF DECK (VHF)

RF DECK (UHF)



CONTROL HEAD

Dual Head Remote Configuration

RF DECK (VHF OR UHF)



CONTROL HEAD

CONTROL HEAD

Mobile Radios

VX-4500/4600

Optimize mobile communications packed with enhanced features and signaling performance for increased flexibility and worker safety.

- Expanded signaling and security
- Enhanced audio performance
- Variety of safety alerts
- Large group communications
- Exclusive ARTS II™



VX-4500



VX-4600

KEY FEATURES

- 512 Channels/32 Groups (VX-4600)
- 8 Channels (VX-4500)
- 50 Watts VHF/45 Watts UHF
- 6 programmable keys
- 8-Character alphanumeric display (VX-4600)
- 1-Character numeric display (VX-4500)
- RSSI Indicator (VX-4600)
- Direct channel entry (VX-4600)
- Programmable minimum volume control
- Whisper mode
- Comander
- Clear voice
- D-Sub 15 Pin Accessory Connector
- Public address
- Horn alert
- Manual squelch control
- Voice inversion encryption
- Auto Range Transpond System II (ARTS II™)
- Digital voice storage (option)
- LTR® Trunking (option)
- Radio to radio cloning
- PC Programming

SIGNALING

- CTCSS/DCS Encode/Decode
- 2-Tone Encode/Decode
- 5-Tone Encode/Decode
- MDC-1200® Encode/Decode
- Remote Stun/Kill/Revive (5-Tone)
- DTMF ANI
- DTMF Paging
- DTMF Speed Dial (VX-4600)
- Lone Worker
- Emergency

SCANNING

- Priority
- Dual Priority
- Follow Me
- Follow Me/Dual Watch
- Group
- Scan Set

VX-2100/2200

The VX-2100/2200 mobile radios provide reliability, extensive signaling features and enhanced channel capacity for maximum return on your investment.

Die-cast aluminum construction helps dissipate heat and absorbs vibration for durability.

- Compact size
- Broad channel capacity
- More scanning options
- Variety of safety alerts
- Exclusive ARTS™



VX-2100



VX-2200

KEY FEATURES

- 128 Channels/8 Groups (VX-2200)
- 8 Channels (VX-2100)
- 50 Watts VHF/45 Watts UHF
- 6 programmable keys
- 8-Character alphanumeric display (VX-2200)
- 1-Character numeric display (VX-2100)
- RSSI Indicator (VX-2200)
- Programmable minimum volume control
- D-Sub 15 Pin Accessory Connector
- Public address
- Horn alert
- Auto Range Transpond System (ARTS™)
- Voice inversion encryption (option)
- Rolling code encryption (option)
- Radio to radio cloning
- PC Programming

SIGNALING

- CTCSS/DCS Encode/Decode
- 2-Tone Encode/Decode
- 5-Tone Encode/Decode
- Remote Stun/Kill/Revive (5-Tone)
- DTMF ANI
- DTMF Paging
- DTMF Speed Dial
- Lone Worker
- Emergency
- MDC-1200® ANI Encode (option)
- GE-STAR® ANI Encode (option)

SCANNING

- Priority
- Dual Priority
- Follow Me
- Follow Me/Dual Watch
- Group
- Scan Set

Repeaters/Base Stations

VXR-9000

Available in 50 W or 100 W options, the VXR-9000 delivers the reliable performance and extended range needed. The slim-line design is crafted for easy installation and integration into most repeater sites.

- Large channel capacity with priority scan
- Power supply backup with alert
- Automatic command sequence
- Simplex/duplex capability

KEY FEATURES



- 32 Channels
- 50 Watts or 100 Watts
- 6 Dual-function programmable keys
- 2-Character numeric display
- Comander per channel
- CW ID Transmission
- CW Message
- Busy Channel Lock Out (BCLO)
- Busy Tone Lock Out (BTLO)
- D-Sub 25 pin accessory connector
- Automatic DC backup switching with alert
- EIA rack mount size
- Voice inversion encryption (option)

- Rolling code encryption (option)
- Duplexer (option)

SIGNALING

- CTCSS and DCS Encode/Decode
- Multi-Tone Decode

VXR-7000

Repeater/base station combination that is continuous-duty and cycle-rated.

- Push to talk instant transmit
- Local or remote operating capability
- Emergency alert functions
- Uninterrupted power supply



KEY FEATURES

- 16 Channels
- 10 to 50 Watts (adjustable)
- 8-Character ANI/ENI display
- 2-Character numeric display
- Community repeater operation up to 16 tones
- CW ID Transmission
- Busy Channel Lockout (BCLO)
- Busy Tone Lockout (BTLO)
- Time out Timer, Hang Timer, Guard Timer
- D-Sub 25 pin accessory connector
- Automatic DC Power Supply Backup
- Line Interface Port
- PC Programmable

SIGNALING

- CTCSS and DCS Encode/Decode
- Multi-Tone Decode
- 5-Tone Encode/Decode
- DTMF Encode/Decode

VXR-1000

Cross-band mobile repeater is a cost-effective addition to a mobile fleet that provides portable radios extended range in low-coverage areas using the high output power of mobile radios. Get dependable coverage throughout your system without the costly addition of site equipment.



KEY FEATURES

- 16 Channels
- 5 Watts
- First-on-scene logic with priority sampling
- Directly communicate with portable radios
- Auto Range Transpond System (ARTS™)
- D-Sub 9 pin accessory connector
- Voice inversion encryption
- PC Programmable

SIGNALING

- CTCSS and DCS Encode/Decode

BSC-5000

Designed for use with the VX-5500 or VX-6000 mobile radios for more choices in Base Station configurations. The console and mobile combination gives you a choice of bands and power ranges.



KEY FEATURES

- Built-in 30 Amp DC Power Supply
- DC Back-up power connectivity
- 12 Watt front audio speaker
- LCD Date/Time Indicator

HF SSB Radios

VX-1210

20-Watt portable manpack radio designed for field communications when contact at all times is a must. Simple to operate, it is a self-contained HF station for both voice and non-voice operating modes.

- High-capacity Li-Ion battery
- Large group communications
- Integral noise blanker
- Automatic antenna tuning



VX-1210

KEY FEATURES

- 500 Channels
- 20 Watt / 5 Watt (J3E/A1A/F1B)
- 10 Watt / 2.5 Watt (H3E)
- 3 Programmable Keys
- 8-Character alphanumeric display
- Built-in Noise Blanker
- SSB/CW,AM, Data operating modes
- Call Alert / Hailer (multiple tones)
- CW Semi Break-in
- Time Out Timer (TOT)
- Battery Status Monitor
- Field programmable
- Variable Split Band Voice Scrambler (option)

VX-1700

100 Watt radio designed to operate as a mobile radio or as a base station for long-haul land mobile communications.



VX-1700

KEY FEATURES

- 200 Channels / 5 Groups
- 100 Watt (A1A, J2B, J3E)
- 31 Watt / 25 Watt AM Carrier (A3E)
- 4 Programmable Keys
- 6-Character alphanumeric display
- Built-in Noise Blanker
- CW Side Tone Function
- CW Semi Break-in
- Voice Activated Transmit (VOX)
- Display Dimmer
- Automatic Link Establishment (ALE option)
- Variable Split Band Voice Scrambler (option)

SIGNALING

- SELCALL
- TELCALL
- Message Call
- Position Request Call
- Position Send Call
- Beacon Request Call

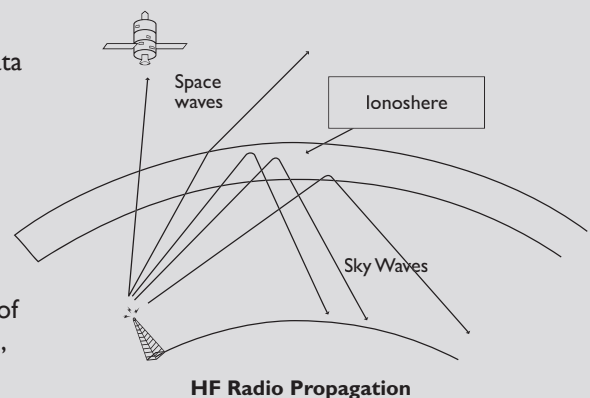
WHY USE HF SSB RADIOS?

HF: High Frequency range 3-30 MHz

SSB: Single Sideband – compression method used to transmit voice or data into a more compact signal.

Coverage: HF SSB transceivers are used for very long range communication with limited to no impact from buildings or obstructions such as mountains. HF radio waves can cover large distances based on propagation of the radio signal transmitted.

Reliability: HF SSB radios often are used as an alternate emergency communications back-up solution. The HF radio signals bounce off a layer of charged particles in the Earth's atmosphere, known as the ionosphere, and, depending on conditions, it can operate at times when other modes of communication fail.



ARTS™ and ARTS II™ Auto-Range Transpond System

When constant communication is critical, ARTS lets you know your connection status.

Designed with user safety in mind when you need to be in contact at all times. ARTS is exclusively available in Vertex Standard radios and informs users when a radio gets out of range from contact with another ARTS-equipped radio.

How ARTS Works

ARTS is a Dealer-activated feature that is programmable by channel, that permits radios operating on the same frequency to monitor each other's range in pre-programmed intervals. There is no limit to the number of radios that can operate together, and it also works through a repeater system.

ARTS uses automatic polling whereby the radio automatically transmits once every 55 seconds (or 25 seconds as set by the Dealer) in an attempt to "shake hands" with another ARTS-equipped radio. When a radio receives an incoming ARTS signal, a short beep will sound and a message will be briefly displayed on LCD radios ("IN" or "IN RANGE"). If a user is out of range for more than two minutes, a short triple-beep will sound and a message will appear on LCD radios ("OUT" or "OUT RANGE").

When back in range and a proper handshake is made during polling, the audible alert will sound and "IN" or "IN RANGE" message will appear again on LCD radios to notify the user.

Whether you talk or not, the polling every 55 seconds (or 25 seconds) will continue.

Operating Modes

- TX/RX* – radio transmits and receives polling signals.
- TX only – radio transmits polling signals only to connect with other radios.
- RX only – radio receives polling signals only to be notified when in range.

ARTS is most commonly used in TX/RX mode to fully monitor connection status. Radios will be alerted when out of communication range and vice versa.

Once you move back in range, as soon as the other radio transmits an ARTS signal, a short beep will sound and "IN" or "IN RANGE" will be displayed again for two seconds.

ARTS II™ for Easier Monitoring by Radio ID

ARTS II leverages MDC-1200® signaling to provide easier monitoring. A user can see exactly which radio is in range and the number of total radios in range. ARTS II is programmable by channel and the user can actively monitor connection status with a press of a button.

Note: ARTS II only works with other ARTS II programmed radios.

USES FOR ARTS

Search and Rescue

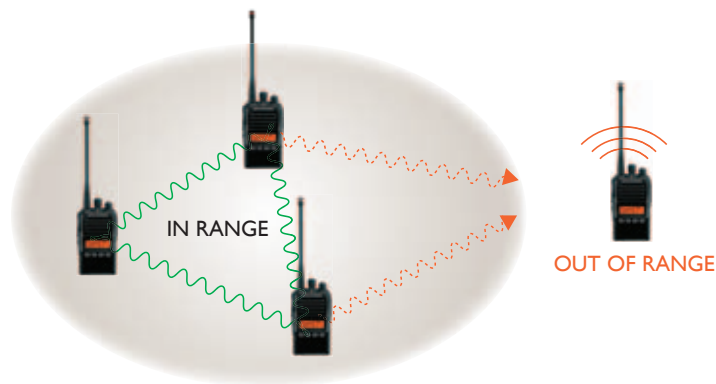
Using ARTS-equipped radios, field response teams who are called out to complete remote search and rescue operations are equipped to maintain contact with base operations. With ARTS activated, field teams will be alerted when they are out of range from base. The radio will transmit a triple beep to indicate when a unit is out of range, and then beep when the team re-coordinates within range to help maintain contact with base operations at all times.

Remote Worker Safety

Individuals who are working remotely and need to remain in contact with base operations can activate ARTS on their radio to be notified when out of communication range making it easier and more efficient for remote workers to remain in contact hassle-free.

*VX-231 includes only TX/RX mode.

TX/RX Mode Example



Watch a video demonstration and view frequently asked questions at www.vertexstandard.com/lmr in the resources section.

ANTENNAS

MODEL	DESCRIPTION	SIZE (INCHES)	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820 VX-P820	VX-920 VX-P920	VXD-770
ATV-8A	134-150 MHz	6	•	•		•		•	•	
ATV-6A	134-151 MHz	4						•		
ATV-16A	136-150 MHz	5.5					•			
ATV-15C	136-174 MHz	8.4								•
ATV-10A	145-155 MHz, High Gain	10.5	•	•	•	•		•	•	
ATV-10B	150-160 MHz, High Gain	10.5	•	•	•	•		•	•	
ATV-16B	150-162 MHz	5.5					•			
ATV-6B	150-163 MHz	3.5		•	•	•		•	•	
ATV-8B	150-163 MHz	6	•	•	•	•		•	•	
ATV-10C	155-165 MHz, High Gain	10.5	•	•	•	•		•	•	
ATV-6C	161-174 MHz	3.5		•	•	•		•	•	
ATV-16C	162-174 MHz	5.5					•			
ATV-8C	162-174 MHz	6	•	•	•	•		•	•	
ATV-10E	165-175 MHz, High Gain	10.5	•	•	•	•		•	•	
ATU-16B	400-420 MHz	6.3					•			
ATU-16BS	400-430 MHz	3.5					•			
ATU-6A	400-430 MHz	6.5	•	•	•	•		•	•	
ATU-14A	403-470 MHz	10								•
ATU-6AS	410-430 MHz	3.5		•	•	•		•	•	
ATU-16C	420-450 MHz	6					•			
ATU-16D	450-470 MHz	5.6					•			
ATU-6DS	450-485 MHz	3.5	•		•	•		•	•	
ATU-6D	450-485 MHz	6	•	•	•	•		•	•	
ATU-16DS	450-490 MHz	3.5					•			
ATU-14D	450-512 MHz	10								•
ATU-16F	470-512 MHz	5.3					•			
ATU-6F	490-512 MHz	5.5	•	•				•	•	
ATV-16XL	VHF Untuned	7					•			
ATV-6XL	VHF Untuned	7	•	•	•	•		•	•	
ATW-1A	134-151 MHz/450-520 MHz	9.06						•	•	
ATW-1B3	134-163 MHz/450-520 MHz	9.06						•	•	
ATW-1C	161-174 MHz/450-520 MHz	9.06						•	•	



Accessories

BATTERIES

MODEL	DESCRIPTION	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820 VX-P820	VX-920 VX-P920	VXD-720
FNB-V103LI	1150 mAh Li-Ion	•							
FNB-V104LI	2000 mAh Li-Ion	•							
FNB-V96LI	2000 mAh Li-Ion		•						
FNB-V57IS	1100 mAh Ni-Cd IS			•	•				
FNB-V94	1800 mAh NiMH			•	•				
FBA-25A	6 AA Battery Case			•	•				
FNB-V112LI	1170 mAh Li-Ion					•			
FNB-V113LI	2400 mAh Li-Ion					•			
FNB-V86LI	1150 mAh Li-Ion						•	•	
FNB-V87LI	2000 mAh Li-Ion						•	•	
FNB-V92LI	3000 mAh Li-Ion						•	•	
FNB-V92LIIS	3000 mAh Li-Ion IS						•	•	
FBA-34	6 AA Battery Case						•	•	
FNB-V116	1300 mAh NiMH								•
FNB-V117	2200 mAh Li-Ion								•



FNB-V92LI



FBA-34



FNB-V117



FNB-V104LI

Li-Ion

Lithium Ion offers the best power-to-weight ratio, no memory effect and has slow loss of charge when not in use. Low toxicity, should be recycled.

Ni-MH

Nickel Metal Hydride has more energy density than Ni-CD with slightly less cycle life. Low toxicity, should be recycled.

Ni-CD

Nickel Cadmium has moderate energy density, use when long life, high discharge rate and extended temperature range is important. High toxicity, proper disposal required.

IS

Intrinsically Safe per SGS requirements. See specifications for complete details.

CHARGERS

MODEL	DESCRIPTION	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820 VX-P820	VX-920 VX-P920	VXD-720
VAC-300 B/C	Desktop, Rapid Rate 120/230 VAC	•	•						
VAC-801 B/C	Desktop, Rapid Rate 120/230 VAC (FNB-V57IS or FNB-V94)			•	•				
VAC-921 B/C	Desktop, Rapid Rate, 120/240 VAC						•	•	
VAC-20 B/C	Desktop, 3 hour, 120/230 VAC (FNB-V57IS or FNB-V94)			•	•				
VAC-450 B/C	Desktop, Rapid Rate, 120/230 VAC					•			
VAC-40 B/C	Single Unit, Rapid Rate, 120/130 VAC								•
VAC-6020 B/C	6 Unit, 100-240 VAC			•					
VAC-6450	6 Unit, 100-240 VAC					•			
VAC-6810 B	6 Unit, Rapid Rate, 100/240 VAC			•					
VAC-6300 B/C	6 Unit, Rapid Rate, 120/240 VAC	•	•						
VAC-6800 B/C	6 Unit, Rapid Rate, 120/240 VAC			•	•				
VAC-6920 B/C	6 Unit, Rapid Rate, 120/240 VAC						•	•	
VAC-6030 B/C	6 Unit, Rapid Rate								•
VCM-1	Vehicle DC Charger Mounting Adaptor			•	•				
VCM-2	Vehicle DC Charger Mounting Adaptor Kit	•	•			•	•	•	
VCM-3	Vehicle Charger Mounting Adaptor Kit			•	•				
VCM-4	Vehicle DC Charger Mounting Adaptor					•			



Single Unit VAC-40



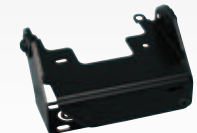
Desktop Unit VAC-300



6 Unit Charger VAC-6300



Vehicle Charger Mounting Adaptor VCM-1



Vehicle Charger Mounting Adaptor VCM-2 / VCM-3

SPEAKER MICROPHONES

MODEL	DESCRIPTION	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820 VX-P820	VX-920 VX-P920	VXD-720
MH-360S	Compact Speaker	•	•	•	•	•			
MH-450S	Standard Speaker	•	•	•	•	•			
MH-45B4B	Noise Cancelling Speaker	•	•	•	•	•			
MH-66A4B	Submersible Speaker					•			
MH-50D7A	Standard Speaker with Toggle						•	•	
MH-66A7A	Submersible, Noise Cancelling Speaker						•	•	•
MH-66B7A	Submersible Speaker, 2 Programmable Keys and Audio Attenuator Switch						•	•	



HEADSET AND EARPIECE MICROPHONES

MODEL	DESCRIPTION	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820 VX-P820	VX-920 VX-P920	VXD-720
MH-37A4B	Ear Piece (RX/TX)	•	•	•	•	•			
VC-25	Voice Activated (VOX) Headset	•	•	•	•	•			
MH-81A4B	Voice Activated (VOX) Headset	•	•	•	•	•			
VH-110S	Heavy-Duty Dual Muff	•	•	•	•	•			
VH-120S	3-Wire Mini Lapel Mic Surveillance Kit	•	•	•	•	•			
VH-130S	2-Wire Palm PTT Surveillance Kit	•	•	•	•	•			
VH-130	2-Wire Palm PTT Surveillance Kit					•			
VH-225S	Dual Muff Padded Headset	•		•	•	•			
VH-115S	Behind-the-Head, Lightweight	•	•	•	•	•			
VH-215S	Single Muff Padded Headset	•	•	•	•	•			
VH-111	Heavy-Duty Dual Muff						•	•	
VH-121	3-Wire Mini Lapel Mic Surveillance Kit						•	•	•
VH-131	2-Wire Palm PTT Surveillance Kit						•	•	
VH-115L	Behind the Head, Lightweight						•	•	



HEADSET MICROPHONE STYLES

STYLE	KEY FEATURES
Voice Activated	Hands free communication for efficiency without handling radio. Hear conversations without disturbing others.
Behind the Head	Hands free communication with ability to hear other sounds and nearby conversations.
Single Muff	Wear on either ear. Hands free communication with ability to hear other sounds and nearby conversations.
Dual Muff	Covers both ears to minimize ambient noise.
Heavy-Duty Dual Muff	For use in high noise environments for improved hearing clarity and protection. Noise Reduction Rating = 24dB.
3-Wire Mini Surveillance	Earpiece, Microphone and Push-To-Talk are separate for discreet, hands-free communication. Clear tube earpiece design helps maintain low profile.
2-Wire Mini Surveillance	Earpiece, Microphone and Push-To-Talk are combined for discreet, hands-free communication. Clear tube earpiece design helps maintain low profile.
Earpiece	Hands-free, light-duty use. PTT lapel microphone for convenient transmit. Use in low-noise environments and to maintain professional appearance.

BELT CLIPS AND LEATHER CASES

MODEL	DESCRIPTION	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820 VX-P820	VX-920 VX-P920	VXD-720
CLIP-17A	Swivel Belt Clip							•	
CLIP-17B	Swivel Belt Clip						•		
CLIP-17C	Swivel Belt Clip			•	•				
CLIP-18	Belt Clip	•	•						
CLIP-20	Belt Clip					•			
CLIP-21	Belt Clip								•
CLIP-820	Belt Clip						•		
CLIP-920	Belt Clip							•	
CSC-96	Nylon Case								•
LCC-351	Leather Case, Belt Loop	•	•						
LCC-351S	Leather Case, Swivel Belt Loop	•	•						
LCC-354	Leather Case, Belt Loop		•						
LCC-354S	Leather Case, Swivel Belt Loop		•						
LCC-410	Leather Case, Belt Loop			•					
LCC-410S	Leather Case, Swivel Belt Loop			•					
LCC-420	Leather Case, Belt Loop				•				
LCC-420S	Leather Case, Swivel Belt Loop				•				
LCC-451	Leather Case, Belt Loop (FNB-V112LI)						•		
LCC-451H	Leather Case, Belt Loop (FNB-V113LI)						•		
LCC-451S	Leather Case, Swivel Belt Loop (FNB-V112LI)						•		
LCC-451SH	Leather Case, Swivel Belt Loop (FNB-V113LI)						•		
LCC-454/459	Leather Case, Belt Loop (FNB-V112LI)						•		
LCC-459H	Leather Case, Belt Loop (FNB-V113LI)						•		
LCC-459S	Leather Case, Swivel Belt Loop (FNB-V112LI)						•		
LCC-459SH	Leather Case, Swivel Belt Loop (FNB-V113LI)						•		
LCC-820	Leather Case, Belt Loop						•		
LCC-820H	Leather Case, Belt Loop (FNB-V92LI)						•		
LCC-820S	Leather Case, Swivel Belt Loop						•		
LCC-820S/TT	Leather Case, Swivel Belt Loop for VX-829						•		
LCC-820SH	Leather Case, Swivel Belt Loop for VX-824 (FNB-V92LI)						•		
LCC-820SH/TT	Leather Case, Swivel Belt Loop for VX-829 (FNB-V92LI)						•		
LCC-920H	Leather Case, Belt Loop for VX-921 (FNB-V92LI)							•	
LCC-920H/TT	Leather Case, Belt Loop (FNB-V92LI)							•	
LCC-920S	Leather Case, Swivel Belt Loop							•	
LCC-920S/TT	Leather Case, Swivel Belt Loop for VX-929							•	
LCC-920SH	Leather Case, Swivel Belt Loop for VX-924 (FNB-V92LI)							•	
LCC-920SH/TT	Leather Case, Swivel Belt Loop for VX-929 (FNB-V92LI)							•	
LCC-920TT	Leather Case, Belt Loop for VX-929							•	



Swivel Belt Clips



Belt Clip



Belt Clip



Leather Case Swivel Belt Loop



Leather Case Belt Loop

PROGRAMMING AND INSTALLATION

MODEL	DESCRIPTION	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820	VX-920	VX-P820	VX-P920	VXD-770	VX-2100	VX-2200	VX-4500	VX-4600	VX-5500	VX-6000	VX-7200	VXD-7200	VXR-1000	VXR-7000	VXR-9000	VXD-R70	VX-1210	VX-1700
CN-2	SMA to BNC Adaptor										•														
CN-3	SMA to BNC Adaptor	•		•	•																				
CT-4	Radio-to-Radio Programming Cable													•											
CT-27A	Radio-to-Radio Cloning Cable	•		•	•	•																			
CT-28A	Pigtail Cable for CT-29A Cable	•	•	•	•																				
CT-29A	Programming Cable	•	•	•	•																				
CT-65	Direct Connect Interface Cable																			•					
CT-68	Duplexer Installation Kit																					•			
CT-70	Programming Cable (Requires VPL-1)															•	•								
CT-72	Cloning Cable															•	•								
CT-88	Alignment cable for FIF-8															•	•								
CT-104A	Interface Cable for FIF-10A											•	•					•					•		
CT-105	FIF-10 Interface Cable															•	•								
CT-106	FIF-10 Cable	•	•	•	•	•																			
CT-108	PC Programming Cable (for FIF-10, FIF-10A or FIF-12)						•	•	•																
CT-109	PC Programming Kit (cable and adaptor)						•	•	•																
CT-110	Firmware Writing Cable (use with FIF-8)						•	•	•																
CT-115	Programming Cable (requires VPL-1)						•	•	•																
CT-116	Radio-to-Radio Programming Cable						•	•	•																
CT-124A	Firmware Cable (requires FIF-8)		•	•	•																				
CT-124B	Firmware Cable (requires FIF-10A)		•	•		•																			
CT-127	Keyloader adapter cable. Requires CT-129									•															
CT-128	Keyloader adapter cable. Requires CT-129																	•							
CT-129	Keyloader interface cable for KVL-3000+ Use with CT-127 or CT-128									•								•							
CT-150	Programming Cable Front Accessory Connector																		•						
CT-151	Programming Cable Rear Accessory Connector																			•				•	
CT-153	Cloning Cable						•							•											
CT-154	VXD Series Mobile Front Programming Cable																		•						
CT-155	VXD Series Programming Cable										•														
FIF-12	USB Interface for PC Programming (replaces FIF-10A)	•	•	•	•	•	•	•	•			•	•	•	•	•	•	•				•			
VPL-1	PC Programming Cable											•				•	•	•			•	•	•		
CK-10	Field Programming Key for VX-P829/VX-P929									•															
CK-11	Field Programming Key																								•
SVC-1200	Service Kit (programming and alignment)																							•	
FIF-8	Firmware Writer		•	•	•		•	•	•							•	•								

OPTION BOARDS

MODEL	DESCRIPTION	VX-231	VX-350	VX-410	VX-420	VX-450	VX-820	VX-920	VX-P920	VX-2100	VX-2200	VX-4500	VX-4600	VX-5500	VX-6000	VX-7200	VXR-9000
FVP-25	Voice Inversion Encryption and DTMF Paging		•	•	•		•	•						•	•		•
DVS-5	Digital Voice Storage (120 seconds)			•	•		•	•									
DVS-8	Digital Voice Storage (120 seconds)						•							•			
DVS-9	Man Down and Digital Voice Storage (120 seconds)						•							•			
FVP-35	Rolling Code Encryption		•	•	•		•	•			•			•	•		
FVP-36	Voice Inversion Encryption		•				•	•									•
VMDE-200	MDC-1200® Encode/Decode						•	•									
VME-100	MDC-1200® Digital ANI		•	•	•		•	•			•			•	•		
FIF-7A	Mobile Interface Board for FVP-25, FVP-35													•	•		
CN-6	Connector Board for Third-Party Options													•	•		
SRX-3D	Dual Band RX. Adds UHF to VHF radio 450-512 MHz													•			
SRX-3H	Dual Band RX. Adds UHF to VHF radio 380-450 MHz													•			
SRX-4	Dual Band RX. Adds VHF to UHF radio 135-174 MHz													•			

OTHER MOBILE RADIO ACCESSORIES

MODEL	DESCRIPTION	VX-2100	VX-2200	VX-4500	VX-4600	VX-5500	VX-6000	VXD-7200	VX-7200
CONTROL HEADS									
CNT-5000	Compact Motorcycle Control Head						•	•	
CNT-6000	Control Head for Multi Configurations						•	•	
DC NOISE FILTERS									
LF-1	Plug-in Line Filter	•				•			•
LF-6	DC Line Filter			•					
MICROPHONES AND SPEAKERS									
MD-12A8J	Desktop Microphone	•						•	•
MH-53A7A	Noise Cancelling Microphone						•	•	
MH-53A8A	Noise Cancelling DTMF Heavy-Duty Microphone for CNT-5000						•	•	
MH-53B7A	Noise Cancelling Microphone with DTMF Keypad						•	•	
MH-53C7A	Heavy Duty Microphone						•	•	
MH-67A8J	Standard Microphone	•	•				•	•	
MH-75A8J	16 Key DTMF Microphone								•
MLS-100	External Speaker, 12 Watt Peak	•	•	•	•	•	•	•	•
MOUNTING BRACKETS AND COVER PLATES									
MMB-75	Mobile Mounting Bracket	•				•			
MMB-76	Locking Mobile Mounting Bracket					•			
MMB-77	Locking Mobile Mounting Bracket						•		
MMB-79	Mobile Mounting Bracket						•		
MMB-85	Quick Release Mobile Bracket								•
MMB-88	Base plate for CNT-5000					•			
MMB-93	Bracket – Low Profile							•	
MMB-94	Bracket – High Profile							•	
MMB-95	Bracket with Key Lock							•	
MMB-96	Bracket (In Dash DIN)							•	
POWER SUPPLY AND DC CABLES									
E-DC-26	Power Supply Cable, 12V								•
E-DC-27	Power Cable, 15 Amp, 10 feet								•
E-DC-28	Power Cable, 20 Amp, 20 feet								•
E-DC-29	Battery Back-up Cable								•
FP-1023	External Power Supply, 23 Amp	•				•			•
CT-96PS	Ignition Sense Cable								•
CT-148	Ignition Sense Cable								•
E-DC-22	DC Cable, 30 feet						•		•
E-DC-23	DC Cable, 30 feet						•		•
REMOTE CABLES									
CT-156	Remote Mount Cable (9 ft 10 in)		•						
CT-157	Remote Mount Cable (16 ft 5 in)		•						
CT-158	Remote Mount Cable (22 ft 11.5 in)		•						
RMK-4600	Remote Mount Kit		•						
CT-81	Remote Cable for RMK-4000 series (20 ft), RF Deck to Control Head						•	•	
CT-82	Remote Cable for RMK-4000 series (8 ft), RF Deck to Control Head						•	•	
CT-83	Remote Cable for RMK-4000 series (2 ft), RF Deck to RF Deck						•	•	
CT-93	Remote Cable for RMK 4000 series (30 ft), RF Deck to Control Head						•	•	
CT-149	Rear accessory connector cable								•
MISCELLANEOUS									
DTT-1	Desktop Tray								•
Parts Item	Cover Plate: RF Deck for Remote Configurations					•	•		
Parts Item	Cover Plate: Control Head					•	•		
Parts Item	Cover Plate: Motorcycle Control Head					•	•		



Accessories

REPEATER/BASE STATION ACCESSORIES

MODEL	DESCRIPTION	VXR-1000	VXR-7000	VXR-9000	VXD-R70	BSC-5000
DUPLEXERS						
VXD-60UD	Internal Duplexer, 50 Watt UHF 440-470 MHz		•	•		
VXD-60VC	Internal Duplexer, 50 Watt VHF 148-160 MHz		•	•		
MICROPHONES AND SPEAKER						
MD-11B8J	Base Station Microphone					•
MD-12A8J	Desktop Microphone		•	•		•
MLS-100	External Speaker (12 Watt Peak)	•				
POWER SUPPLY						
FP-31	Internal Power Supply (50 Watt Only)			•		
REMOTE CABLE						
CT-103	Cable Connection to Tone Panel					•
RF POWER AMPLIFIERS						
VPA-9000UD	UHF Power Amplifier 450-490 MHz (100 Watt Only)			•		
VPA-9000VC	VHF Power Amplifier 148-174 MHz (100 Watt Only)			•		
MISCELLANEOUS						
FAN-1	Cooling Fan					•
FIF-9	Remote Control Interface Unit			•		
WMB-1	Wall Mount Kit				•	
MR-3	Rack Mount Assembly 19 inches (4 U)		•			
MR-4	Rack Mount Assembly 19 inches (3 U)		•			



HF SSB ACCESSORIES

MH-53C7A

MODEL	DESCRIPTION	VX-1210	VX-1700
ANTENNAS			
ATU-1210	Internal Antenna Tuner	•	
FC-30	Automatic Antenna Tuner (for coaxial lines)		•
FC-40	Antenna Coupler		•
FHA-27	Folding Whip Antenna (10 feet), Requires GN-1210 Adaptor	•	
GN-1210	Goose Neck Antenna Adaptor for FHA-27	•	
YA-007FG	Mobile Antenna		•
YA-30	Broadband T2FD Dipole Base Station Antenna	•	•
YHA-61	Whip Antenna (5 feet)	•	
BATTERIES			
FNB-66LI	14.4 V Li-Ion Battery		•
CHARGERS			
CD-17	Rapid Charger 16.8V, 1450 mA (requires PA-26 B/C)	•	
PA-26 B/C	Rapid Charger Power Supply 24V DC, 1.1 A		•
MICROPHONES			
MD-100A8X	Desktop Microphone		•
MH-31A8J	Hand Microphone		•
MH-50B7A	Speaker Microphone	•	
MLS-100	External Speaker (12 Watt Peak)		•
MOUNTING BRACKETS			
MHG-1	Carrying Handle		•
MMB-89	One-Touch Mobile Bracket		•
POWER SUPPLY			
FP-1030A	30 A, 110V		•
OPTION BOARDS			
ALE-1	Automatic Link Establishment Unit		•
DSV-1200	D-Sub 9 Accessory Connector Attachment	•	



Specifications

HF SSB RADIOS

	VX-1210	VX-1700
GENERAL		
Frequency Range	RX: 0.5 – 30 MHz; TX: 1.6 – 30 MHz	RX: 30 kHz – 30.0000 MHz; TX: 1.600 – 30.0000 MHz
Channels	500	200
Emission Type	A1A(CW); J3E(LSB/USB); H3E(AM); F1B(AFSK)	A1A(CW); J3E(LSB/USB); A3E(AM); J2B (USB/LSB)
Power Requirements	DC 14.4V Lithium-ion Battery	DC 13.8V ±15%, negative ground
Frequency Synthesizer Steps	–	10 Hz, 100 Hz, 1 kHz
Frequency Stability	–	± 1 ppm (+14° F to +131° F / -10° C to +55° C) TYP
Channel Spacing	10 Hz	–
Current Consumption	RX: 500 mA (saver off), 100 mA (saver on) TX: 5 A (20W), 3 A (5W)	Standby: 25 mA; RX, no signal: 1.0 A; RX: 1.5 A TX: 22 A (125W output)
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	+14° F to +131° F (-10° C to +55° C)
Antenna Impedance	50 Ohms (unbalanced)	50 Ohms
Dimensions (W x H x D)	7.6 x 2.9 x 10.8 inches (193 x 74 x 274 mm) w/o knobs	9.5 x 3.9 x 11.2 inches (241 x 99 x 285 mm)
Weight (Approx.)	7.1 lbs (3.2 kg) w/FNB-66LI	9.5 lbs (4.3 kg)
RECEIVER		
Circuit Type	Double Conversion Super Heterodyne	–
Intermediate Frequency	47.055 MHz & 10.7 MHz	1st: 45.274 MHz, 2nd: 24 kHz
Sensitivity	0.25 µV (J3E / A1A, 10 dB S/N)	0.5 – 1.6 MHz: 1.41 µV (A1A/J2B/J3E); 8 µV (A3E) 1.6 – 30 MHz: 0.16 µV (A1A/J2B/J3E); 1 µV (A3E) Squelch: 0.5 – 1.6 MHz: 2.5 µV 1.6 – 30 MHz: 2 µV
Selectivity	2.4 kHz / 5.0 kHz (-6/-60 dB)	A1A(W), J2B(W), J3E: > 2.2 kHz @ -6 dB; < 4.5 kHz @ -60 dB A1A(N), J2B(N): > 500 Hz @ -6 dB; < 2.0 kHz @ -60 dB A3E: > 6 kHz @ -6 dB; < 20 kHz @ -60 dB
Clarifier Adjustment Range	±200 Hz (J3E/A1A/F1B), ±400 Hz (H3E)	–
IF and Image Rejection	80 dB	Better than 80 dB
Audio Output	At least 1.5W @ 4 Ohms @ 10% THD	2.2 Watts into 8 Ohms @ 10% THD
Audio Impedance	–	4 – 16 Ohms (8 Ohms Nominal)
Conducted Radiation	–	Less than 4000 µW
TRANSMITTER		
Output Power	20W / 5W (J3E/A1A/F1B), 10W / 2.5W (H3E)	125 Watts (A1A, J2B, J3E @ 1.6000 – 3.9999 MHz)* 100 Watts (A1A, J2B, J3E @ 4.0000 – 30.0000 MHz) 31 Watts AM Carrier (A3E @ 1.6000 – 3.9999 MHz) 25 Watts AM Carrier (A3E @ 4.0000 – 30.0000 MHz)
Duty Cycle	25% voice	RX: TX = 4 min. : 1 min.
Modulation	Balanced Modulator (SSB: J3E) Early Stage / Low Level (AM: H3E)	J3E: PSN type modulator A3E: Low-level (early stage)
Spurious Radiation	–	-56 dB (Harmonics)
Carrier Suppression	55 dB	J3E: Better than 50 dB below peak output
Undesired Sideband Suppression	55 dB @ 1.5 kHz tone	Better than 60 dB below peak output
Spurious Emissions	-56 dB or better	-56 dB
Occupied Bandwidth	–	A1A: less than 0.5 kHz; J3E: less than 3.0 kHz; A3E: less than 6.0 kHz
Audio Response (J3E)	350 – 2650 Hz (-6 dB)	Not more than -6 dB from 400 Hz – 2500 Hz
3rd Order IMD	-31 dB	–
Microphone Impedance	2K Ohms, condenser type	200 – 10 k Ohms, (600 Ohms Nominal)

*100W when using FC-30

REPEATERS

	VXR-1000	VXR-7000	VXR-9000
GENERAL			
Frequency Range	VHF: 150 – 174 MHz UHF: 450 – 470 MHz	VHF: 134 – 150 MHz; 150 – 174 MHz UHF: 400 – 430 MHz; 450 – 480 MHz	VHF: 134 – 160 MHz; 148 – 174 MHz UHF: 400 – 430 MHz; 450 – 490 MHz
Channels	16	16	32
Power Supply Voltage	13.8V DC	115 / 230V AC ±10% 50/60 Hz or 13.8V DC	13.6V DC ± 10%
Channel Spacing	VHF: 15 / 30 kHz UHF: 12.5 / 35 KHz	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)
Frequency Stability	±2.5 ppm	±2.5 ppm	1.5 ppm, 1.0 ppm (30 min. after wake up)
RF Input-Output Impedance	50 Ohms	50 Ohms	50 Ohms
Dimensions (W x H x D)	4.4 x 1.0 x 5.4 inches (111 x 25.4 x 136 mm)	12.8 x 4.5 x 15.4 inches (325 x 115 x 391.5 mm)	19 x 3.5 x 13.5 inches (483 x 88 x 343 mm)
Weight (Approx.)	14.1 oz (400 g)	22 lbs (10 kg)	21.4 lbs (9.7 kg) (50W model)
RECEIVER			
Sensitivity 12dB SINAD	VHF: 0.30 µV UHF: 0.35 µV	0.35 µV	VHF: 0.25 µV UHF: 0.3 µV
Adjacent Channel Selectivity	-	80 dB / 74 dB	VHF: 85 dB / 79 dB UHF: 84 dB / 77 dB
Intermodulation	60 dB	75 dB	VHF: 83 dB / 81 dB UHF: 82 dB / 80 dB
Spurious and Image Rejection	60 dB	90 dB	90 dB
Audio Output	1 W @ 8 Ohms	4 W @ 4 Ohms	4 W @ 4 Ohms
TRANSMITTER			
Output Power	5/2.5/1/0.5 W	10 to 50 W (adjustable)	50 / 25 / 10 W (100 W optional)
Duty Cycle	-	100%	50%
Modulation	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E
Maximum Deviation	±5.0 kHz / ±2.5 kHz	±5.0 kHz / ±2.5 kHz	±5.0 kHz / ±2.5 kHz
Audio Distortion	< 5% @ 1 kHz	< 2.5% @ 1kHz	< 2.5% @ 1kHz
Conducted Spurious Emission	60 dB below carrier	Better than 75 dB below carrier	80 dB below carrier



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- Spec Sheets
- Brochures
- Fact Sheets
- Videos
- FCC Narrowbanding

www.vertexstandard.com/lmr

Specifications

P25 RADIOS

	VX-P820 SERIES	VX-P920 SERIES	VX-7200
GENERAL			
Frequency Range	VHF: 134 – 174 MHz UHF: 380 – 450 MHz, 400 – 470 MHz, 450 – 512 MHz	VHF: 134 – 174 MHz UHF: 380 – 450 MHz, 400 – 470 MHz, 450 – 512 MHz	VHF: 134 – 174 MHz UHF: 380 – 450 MHz, 400 – 470 MHz, 450 – 512 MHz
Channels	512 (VX-P829, VX-P824) 16 (VX-P821)	512	501
Power Supply Voltage	7.4V DC ± 20%	7.4V DC ± 20%	13.6V DC ± 15%
Channel Spacing	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz
PLL Steps	VHF: 1.25/2.5 / 5 / 6.25 kHz UHF: 5 / 6.25 kHz	VHF: 1.25/2.5 / 5 / 6.25 kHz UHF: 5 / 6.25 kHz	VHF: 1.25/2.5 / 5 / 6.25 kHz UHF: 5 / 6.25 kHz
Battery	3000 mAh Li-Ion (IS option) 2000 mAh Li-Ion 1150 mAh Li-Ion	3000 mAh Li-Ion (IS option) 2000 mAh Li-Ion 1150 mAh Li-Ion	–
Battery Life 5-5-90 duty with saver			
FNB-V92LI	21 hrs	21 hrs	–
FNB-V87LI	14 hrs	14 hrs	
FNB-V86LI	9.5 hrs	9.5 hrs	
Current Consumption	–	–	TX: 1.1 A, RX: 2.5 A, Standby: 0.4 A
IP Rating	IP 57	IP 57	–
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)
Frequency Stability	±2.5 ppm	±2.5 ppm	±2.5 ppm
Dimension (H x W x D)	3.8 x 2.3 x 1.5 inches (96.5 x 57.5 x 37.5 mm) (w/FNB-V86LI)	5.3 x 2.3 x 1.5 inches (133 x 57.5 x 37.5 mm) (w/FNB-V86LI)	6.5 x 1.7 x 6.1 inches (165 x 43 x 155 mm)
Weight (Approx.)	10.9 oz (310 g) (w/FNB-V86LI, Belt Clip)	13.4 oz (380 g) (w/FNB-V86LI, Belt Clip)	3.1 lbs (1.4 kg)
RECEIVER			
Sensitivity	12 dB SINAD: 0.25 µV (VHF); 0.32 µV (UHF) Digital 5% BER: 0.25 µV (VHF); 0.32 µV (UHF) Digital 1% VER: 0.35 µV (VHF); 0.40 µV (UHF)	12 dB SINAD: 0.25 µV (VHF); 0.32 µV (UHF) Digital 5% BER: 0.25 µV (VHF); 0.32 µV (UHF) Digital 1% VER: 0.35 µV (VHF); 0.40 µV (UHF)	12 dB SINAD: 0.25 µV (VHF); 0.32 µV (UHF) Digital 5% BER: 0.25 µV (VHF); 0.32 µV (UHF) Digital 1% VER: 0.35 µV (VHF); 0.40 µV (UHF)
Adjacent Channel Selectivity (W/N)	75 / 70 dB	75 / 70 dB	80/ 75 dB (VHF), 80 / 72 dB (UHF)
Intermodulation	75 / 70 dB	75 / 70 dB	80 dB
Hum and Noise	48 / 42 dB	48 / 42 dB	–
Spurious and Image Rejection	80 dB (VHF); 75 dB (UHF)	80 dB (VHF); 75 dB (UHF)	90 dB (VHF), 85 dB (UHF)
Audio Output	700 mW @ 16 Ohms 5% THD	700 mW @ 16 Ohms 5% THD	Internal: 2W @ 32 Ohms, 5% THD External: 12W @ 4 Ohms, 5% THD
TRANSMITTER			
Output Power	5 / 2.5 / 1 / 0.25 W	5 / 2.5 / 1 / 0.25 W	VHF: 50 / 25 / 10 W UHF: 45 / 25 / 10 W
Modulation	Analog: 16K0F3E, 11K0F3E Digital: 8K10F1D / 8K10F1E	Analog: 16K0F3E, 11K0F3E Digital: 8K10F1D / 8K10F1E	Analog: 16K0F3E, 11K0F3E Digital: 8K10F1D / 8K10F1E
Spurious Emission	70 dB	70 dB	70 dB
FM Hum and Noise (W/N)	46 / 40 dB	46 / 40 dB	46 / 40 dB
Audio Distortion	<3% @ 1 kHz	<3% @ 1 kHz	<3% @ 1 kHz

Specifications

DIGITAL RADIOS

	VXD-720 PORTABLE	VXD-7200 MOBILE	VXD-R70 REPEATER
GENERAL			
Frequency Range	VHF: 136 – 174 MHz UHF: 403 – 470 MHz, 450 – 512 MHz	VHF: 136 – 174 MHz UHF: 403 – 470 MHz, 450 – 512 MHz	VHF: 136 – 174 MHz UHF: 403 – 470 MHz, 450 – 512 MHz
Channels	512	512	16
Power Supply Voltage	7.5 V nominal	13.6 V DC ±20%	100 – 240 V AC (13.6 V DC)
Channel Spacing	12.5 / 25 kHz	12.5 / 25 kHz	12.5 / 25 kHz
Battery	2200 mAh Li-Ion 1300 mAh Ni-MH	–	–
Battery Life 5-5-90 duty with battery saver FNB-V117LI FNB-V116	19 hrs (digital) / 13.5 hrs (analog) 11 hrs (digital) / 8 hrs (analog)	–	–
Current Consumption	–	TX @ 1-25 W: 11.0 A max TX @ 25 – 40 W: 14.5 A max RX: 2 A max, Standby: 0.81 A max	Standby: 1 A (1 A DC typical) TX Low Power: 3 A (7.5 A DC typical) TX High Power: 4 A (12 A DC typical)
IP Rating	IP 57	–	–
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)
Frequency Stability	±0.5 ppm	±0.5 ppm	±0.5 ppm
Duty Cycle	–	–	100%
Dimension (H x W x D)	5.18 x 2.5 x 1.39 inches (131.5 x 63.5 x 36.2 mm) (w/FNB-V117LI)	2.01 x 6.89 x 8.11 inches (51 x 175 x 206 mm)	5.22 x 19 x 11.67 inches (132.6 x 482.6 x 296.5 mm)
Weight (Approx.)	13.17 oz (375 g) (w/FNB-V117LI) 15.2 oz (430 g) (w/FNB-V116)	4.0 lbs 1.8 kg	31 lbs 14 kg
RECEIVER			
Sensitivity	Analog 12 dB SINAD: 0.35 µV 0.22 µV typical Digital: 5% BER: 0.3 µV	Analog 12 dB SINAD: 0.35 µV 0.22 µV typical Digital: 5% BER: 0.3 µV	Analog 12 dB SINAD: 0.35 µV 0.22 µV typical Digital: 5% BER: 0.3 µV
Adjacent Channel Selectivity	TIA603: 60 dB @ 12.5 kHz, 70 dB @ 25 kHz TIA603C: 45 dB @ 12.5 kHz, 70 dB @ 25 kHz	TIA603 VHF: 65 dB @ 12.5 kHz, 80 dB @ 25 kHz TIA603 UHF: 65 dB @ 12.5 kHz, 75 dB @ 25 kHz TIA603C VHF: 50 dB @ 12.5 kHz, 80 dB @ 25 kHz TIA603C UHF: 50 dB @ 12.5 kHz, 75 dB @ 25 kHz	
Intermodulation	70 dB	VHF: 78 dB, UHF: 75 dB	VHF: 78 dB, UHF: 75 dB
Spurious Rejection	70 dB	VHF: 80 dB, UHF: 75 dB	VHF: 80 dB, UHF: 75 dB
Audio Output	500 mW	3 W (Internal), 7.5 W (External @ 8 Ohms) 13 W (External @ 4 Ohms)	–
Audio Distortion	–	3% Typical	3% Typical
Hum and Noise	-40 dB @ 12.5 kHz; -45 dB @ 25 kHz	-40 dB @ 12.5 kHz; -45 dB @ 25 kHz	-40 dB @ 12.5 kHz; -45 dB @ 25 kHz
Conducted Spurious Emission	-57 dBm	-57 dBm	-57 dBm
TRANSMITTER			
Output Power	VHF: 5 W / 1 W; UHF: 4 W / 1 W	VHF: 1 – 25 W, 25 – 45 W UHF (403 – 470 MHz): 1 – 25 W, 25 – 40 W UHF (450 – 512 MHz): 1 – 40 W	VHF: 1 – 25 W, 25 – 45 W UHF (403 – 470 MHz): 1 – 25 W, 25 – 40 W UHF (450 – 512 MHz): 1 – 40 W
Modulation Limiting	±2.5 kHz @ 12.5 kHz ±5.0 kHz @ 25 kHz	±2.5 kHz @ 12.5 kHz ±5.0 kHz @ 25 kHz	±2.5 kHz @ 12.5 kHz ±5.0 kHz @ 25 kHz
Conducted/Radiated Emission	-36 dBm < 1 GHz; -30 dBm > 1 GHz	-36 dBm < 1 GHz; -30 dBm > 1 GHz	-36 dBm < 1 GHz; -30 dBm > 1 GHz
FM Hum and Noise	-40 dB @ 12.5 kHz; -45 dB @ 25 kHz	-40 dB @ 12.5 kHz; -45 dB @ 25 kHz	-40 dB @ 12.5 kHz; -45 dB @ 25 kHz
Adjacent Channel Power	–	60 dB @ 12.5 kHz; 70 dB @ 25 kHz	60 dB @ 12.5 kHz; 70 dB @ 25 kHz
Audio Distortion	3%	3%	3%
FM Modulation	11K0F3E; 16K0F3E	11K0F3E; 16K0F3E	11K0F3E; 16K0F3E
4FSK Digital Modulation	12.5 kHz Data Only: 7K60FXD 12.5 kHz Data & Voice: 7K60FXE	12.5 kHz Data Only: 7K60FXD 12.5 kHz Data & Voice: 7K60FXE	12.5 kHz Data Only: 7K60FXD 12.5 kHz Data & Voice: 7K60FXE
Digital Protocol	ETSI TS 102 361-1,-2,-3	ETSI TS 102 361-1,-2,-3	ETSI TS 102 361-1,-2,-3

Specifications

MOBILE RADIOS

	VX-2100/2200	VX-4500/4600	VX-5500	VX-6000
GENERAL				
Frequency Range	VHF: 134 – 174 MHz UHF: 400 – 470 MHz, 450 – 512 MHz	VHF: 134 – 174 MHz UHF: 400 – 470 MHz, 450 – 512 MHz	Low Band: 29.7 – 37 MHz; 37 – 50 MHz VHF: 134 – 160 MHz, 148 – 174 MHz UHF: 450 – 490 MHz	Low Band: 37 – 50 MHz VHF: 148 – 174 MHz UHF: 450 – 490 MHz
Channels	128 (VX-2200) 8 (VX-2100)	512 (VX-4600) 8 (VX-4500)	250	250
Power Supply Voltage	13.6 V DC ± 15%	13.6 V DC ± 20%	13.6 V DC ± 15%	13.4 V DC ± 15%
Channel Spacing	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz	Low Band: 20 kHz VHF/UHF: 12.5 / 25 kHz	Low Band: 20 kHz VHF/UHF: 12.5 / 25 kHz
PLL Steps	VHF: 2.5 / 5 / 6.25 kHz UHF: 5 / 6.25 kHz	VHF: 1.25/2.5 / 5 / 6.25 kHz UHF: 5 / 6.25 kHz	Low Band: 5 / 6.25 kHz VHF/UHF: 2.5 / 5 / 6.25 kHz	Low Band: 5 / 6.25 kHz VHF/UHF: 2.5 / 5 / 6.25 kHz
Current Consumption	TX: 11 A (50 W, 45 W), 6 A (25 W) RX: 2.5 A, Standby: 200 mA	TX: 11 A RX: 2.5 A, Standby: 200 mA	TX: 15 A (Low Band); 12 A (VHF); 13 A (UHF) RX: 2.1 A; Standby: 600 mA	TX: 22 A (Low Band); 25 A (VHF); 28 A (UHF) RX: 2.2 A; Standby: 600 mA
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)
Frequency Stability	Better than ±2.5 ppm	±2.5 ppm	Low Band: Better than ±5 ppm VHF/UHF: Better than ±2 ppm	Low Band: Better than ±5 ppm VHF/UHF: Better than ±2 ppm
RF Input-Output Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Dimension (H x W x D)	6.5 x 1.8 x 6.1 inches (165 x 45 x 155mm)	6.5 x 1.8 x 6.1 inches (165 x 45 x 155mm)	7 x 2.4 x 7.7 inches (178 x 60 x 195mm)	7 x 2.4 x 11.9 inches (178 x 60 x 301 mm)
Weight (Approx.)	2.87 lbs (1.3 kg)	2.8 lbs (1.25 kg)	4.9 lbs (2.2 kg)	15.4 lbs (6.9 kg)
RECEIVER				
Sensitivity 12dB SINAD	0.25 µV	0.25 µV	0.25 µV	0.25 µV
Adjacent Channel Selectivity	VHF: 75 / 65 dB UHF: 70 / 65 dB	75 / 70 dB	Low Band: 85 dB VHF: 85 / 80 dB UHF: 85 / 77 dB	Low Band: 85 dB VHF: 85 / 80 dB UHF: 85 / 77 dB
Intermodulation	73 / 70 dB	45 / 40 dB	Low Band: 80 dB VHF/UHF: 80/ 75 dB	Low Band: 80 dB VHF/UHF: 80/ 75 dB
Spurious and Image Rejection	90 dB / 80 dB	85 / 80 dB	90 dB	90 dB
Audio Output	Internal: 4 W @ 18 Ohms, 5% THD External: 12 W @ 4 Ohms, 5% THD	Internal: 4 W @ 20 Ohms External: 12 W @ 4 Ohms, <5% THD	Internal: 5 W @ 4 Ohms, 3% THD External: 10 W @ 4 Ohms, 3% THD	Internal: 5 W @ 4 Ohms, 3% THD External: 10 W @ 4 Ohms, 3% THD
TRANSMITTER				
Output Power	VHF: 50 / 25 / 10 W (50 W) 25 / 12.5 / 5 / 1 W (25 W) UHF: 45 / 25 / 10 W (45 W) 25 / 12.5 / 5 / 1 W (25 W)	VHF: 50 / 25 / 12.5 / 5 W UHF: 45 / 25 / 12.5 / 5 W	Low Band: 70 W adjustable to 30 W VHF: 50 W adjustable to 5 W UHF: 45 W adjustable to 5 W	Low Band: 120 W adjustable to 50 W VHF: 110 W adjustable to 50 W UHF: 100 W adjustable to 50 W
Modulation	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E	Low Band: 16K0F3E VHF / UHF: 16K0F3E, 11K0F3E	Low Band: 16K0F3E VHF / UHF: 16K0F3E, 11K0F3E
Maximum Deviation	±5.0 kHz / ±2.5 kHz	±5.0 kHz / ±2.5 kHz	Low Band: 5 kHz VHF/UHF: 5.0 / 2.5 kHz	Low Band: 5 kHz VHF/UHF: 5.0 / 2.5 kHz
Audio Distortion	< 3% @ 1kHz	< 3% @ 1kHz	< 2% @ 1kHz	< 2% @ 1kHz
Conducted Spurious Emission	70 dB below carrier	70 dB below carrier	80 dB below carrier	80 dB below carrier

Specifications

PORTABLE RADIOS

	VX-231	VX-350 SERIES	VX-410/420 SERIES (IS)
GENERAL			
Frequency Range	VHF: 134 - 174 MHz UHF: 400 - 470 MHz, 450 - 512MHz	VHF: 134 - 174 MHz UHF: 380 - 470 MHz, 450 - 512 MHz	VHF: 146 - 174 MHz UHF: 450 - 490 MHz
Channels	16	16	32
Power Supply Voltage	7.4V DC±20%	7.4V DC±20%	7.5V DC±20%
Channel Spacing	12.5/20/25 kHz	12.5/20/25 kHz	12.5/20/25 kHz
PLL Steps	VHF: 2.5/5/6.25 kHz UHF: 5/6.25 kHz	VHF: 1.25 /2.5 /5 /6.25 kHz UHF: 5 / 6.25 kHz	VHF: 2.5/6.25 kHz UHF: 5/6.25 kHz
Battery Options	2000 mAh Li-Ion 1150 mAh Li-Ion	2000 mAh Li-Ion	1100 Ni-CD IS
Battery Life (5-5-90 duty) with Battery Saver	FNB-V104LI: 16.5 hrs FNB-V103LI: 9.0 hrs	FNB-V96LI: 15.5 / 15 hrs	FNB-V57IS: 8.8 / 8 hrs
IP Rating	IP 54	IP 55	IP 54
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)
Frequency Stability	±2.5 ppm	±2.5 ppm	±2.5 ppm
RF Input-Output Impedance	50 Ohms	50 Ohms	50 Ohms
Dimension (H x W x D)	4.3 x 2.3 x 1.2 inches (110 x 58 x 30 mm) (w/ FNB-V103LI)	4.1 x 2.3 x 1.3 inches (105 x 58 x 33 mm) (w/FNB-96LI)	4.3 x 2.3 x 1.16 inches (108.5 x 58 x 29 mm) (w/FNB-V57IS)
Weight (Approx.)	10.1 oz (285g) (w/FNB-V103LI, Antenna, Clip)	10.9 oz (310 g) (w/FNB-V96LI, ANT, clip)	12.7 oz (360 g) (w/FNB-V57IS, ANT, Clip)
RECEIVER			
Sensitivity 12 dB SINAD	0.25µV typical	0.25µV	0.25µV
Adjacent Channel Selectivity	65 / 60 dB 25 kHz / 12.5 kHz	65 / 60 dB	70/ 65 dB
Intermodulation	65 / 60 dB 25 kHz / 12.5 kHz	65 / 60 dB	70 dB
Spurious and Image Rejection	65 dB	65 dB	70 dB
Audio Output	500 mW @ 4 Ohms 5% THD	500 mW @ 4 Ohms 10% THD	500 mW @ 4 Ohms 5% THD
TRANSMITTER			
Output Power	5 / 1 W	5 / 1 W	5 / 1 W
Modulation	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E
Conducted Spurious Emissions	65 dB below carrier	65 dB below carrier	70 dB below carrier
FM Hum and Noise	45 / 40 dB	45 / 40 dB	45 dB
Audio Distortion	< 3 % @1kHz	< 3 % @1kHz	< 3 % @1kHz

WHAT IS AN IP RATING?

Ingress Protection is a classification rating of the degrees of protection provided against the intrusion of solid objects, dust, water, etc.

IP Rating: First Digit Ingress Protection is a classification rating of the degrees of protection provided against the intrusion of solid objects, dust, water, etc.

IP Rating: Second Digit Ingress Protection is a classification rating of the degrees of protection provided against the intrusion of solid objects, dust, water, etc.

FIRST DIGIT

LEVEL	OBJECT SIZE PROTECTED AGAINST	EFFECTIVE AGAINST
5	Dust Protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact
6	Dust Tight	No ingress of dust; complete protection against contact

SECOND DIGIT

LEVEL	PROTECTED AGAINST	DETAILS
3	Spraying Water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Splashing Water	Water splashing against the enclosure from any direction shall have no harmful effect.
5	Water Jets	Water projected by a nozzle against enclosure from any direction shall have no harmful effects.
6	Powerful Water Jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects.
7	Immersion Up to 1 meter	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).
8	Immersion Beyond 1 meter	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer; NOTE: Normally, this will mean that the equipment is hermetically sealed. However, with certain types of equipment, it can mean that water can enter but only in such a manner that produces no harmful effects.

Specifications

PORTABLE RADIOS

	VX-450 SERIES	VX-820 SERIES	VX-920 SERIES
GENERAL			
Frequency Range	VHF: 134 - 174 MHz UHF: 450 - 512MHz	VHF: 134 - 174 MHz UHF: 400 - 470 MHz, 450 - 512 MHz	VHF: 134 - 174 MHz UHF: 400 - 470 MHz, 450 - 512 MHz
Channels	512 (VX-459/VX-454) 32 (VX-451)	512 (VX-829/VX-824) 16 (VX-821)	512 (VX-924) 48 (VX-921)
Power Supply Voltage	7.5V DC±20%	7.4V DC±20%	7.4V DC±20%
Channel Spacing	12.5/20/25 kHz	12.5/20/25 kHz	12.5/20/25 kHz
PLL Steps	VHF: 1.25 /2.5 /5 /6.25 kHz UHF: 5 / 6.25 kHz	VHF: 1.25 /2.5 /5 /6.25 kHz UHF: 5 / 6.25 kHz	VHF: 1.25 /2.5 /5 /6.25 kHz UHF: 5 / 6.25 kHz
Battery Options	2400 mAh Li-Ion 1170 mAh Li-Ion	3000 mAh Li-Ion (IS option) 2000 mAh Li-Ion 1150 mAh Li-Ion	3000 mAh Li-Ion (IS option) 2000 mAh Li-Ion 1150 mAh Li-Ion
Battery Life (5-5-90 duty) with Battery Saver	FNB-V113LI: 18.5 / 18 hrs FNB-V112LI: 9.5 / 9.2 hrs	FNB-V92LI: 23 / 21.5 hrs FNB-V87LI: 16 / 15 hrs FNB-V86LI: 9.5 hrs	FNB-V92LI: 23 / 21.5 hrs FNB-V87LI: 16 / 15 hrs FNB-V86LI: 9.5 hrs
IP Rating	IP 57	IP 57	IP 57
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)	-22° F to +140° F (-30° C to +60° C)
Frequency Stability	±2.5 ppm	±2.5 ppm	±2.5 ppm
RF Input-Output Impedance	50 Ohms	50 Ohms	50 Ohms
Dimension (H x W x D)	4.29 x 2.3 x 1.34 inches (109 x 58.5 x 34 mm) (w/FNB-V112LI)	3.8 x 2.3 x 1.5 inches (96.5 x 57.5 x 37.5 mm) (w/FNB-86LI)	5.3 x 2.3 x 1.5 inches (133 x 57.5 x 37.5 mm) (w/FNB-V86LI)
Weight (Approx.)	10.9 oz (310 g) (w/FNB-V112LI, Belt Clip)	10.9 oz (310 g) (w/FNB-V86LI, Belt Clip)	13.0 oz (370 g) (w/FNB-V86LI, ANT, Clip)
RECEIVER			
Sensitivity 12 dB SINAD	0.25µV / 0.32µV	0.25µV / 0.32µV	0.25µV / 0.32µV
Adjacent Channel Selectivity	70/ 65 dB	75 / 70 dB	75 / 70 dB
Intermodulation	45 / 40 dB	75 / 70 dB	75 / 70 dB
Spurious and Image Rejection	70 dB	75 dB	75 dB
Audio Output	700 mW (internal @ 16 Ohms, 5% THD) 500 mW (external @ 4 Ohms, 5% THD)	700 mW @ 16 Ohms 5% THD	700 mW @ 16 Ohms 5% THD
TRANSMITTER			
Output Power	5 / 2.5 / 1 / 0.25 Watt (selectable by channel)	5 / 2.5 / 1 / 0.25 W	5 / 2.5 / 1 / 0.25 W
Modulation	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E
Conducted Spurious Emissions	70 dB below carrier	70 dB	70 dB
FM Hum and Noise	45 / 40 dB	45 / 40 dB	45 / 40 dB
Audio Distortion	< 3 % @1kHz	< 3 % @1kHz	< 3 % @1kHz



ESTABLISHED IN 1956

OUR FOCUS

At Vertex Standard, we challenge ourselves to find a better way to build two-way radios that do more for less to effectively meet the needs of our customers around the world.

Known for compact, reliable, full-featured radios that are built to last, Vertex Standard radios are Japanese designed and engineered to exacting standards. Customers using Vertex Standard radios immediately recognize the quality and value they get for their money.

OUR PROMISE

Our number one goal is achieving superior satisfaction by delivering products and service that exceed expectations. With an industry-leading 3 year warranty on every radio, count on Vertex Standard for radios that are built to last and provide more features for a better return on investment.

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