

EMEA REGION LAND MOBILE RADIO PRODUCT GUIDE



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Portable Radio Selection Guide



VXD-720 Digital
Clear, Quality Analog/Digital Communications

Page 4

131.6 (H) x 63.5 (W) x 35.3 (D) mm



VX-920 Series
Dependable and Ready to Respond

Page 5

133 (H) x 57.5 (W) x 37.5 (D) mm



VX-820 Series
Maximum Performance for Less

Page 5

96.5 (H) x 57.5 (W) x 37.5 (D) mm

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 1 metre 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			ATEX Option
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		Option	Option
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	•	•	•

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)



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-921

VX-924



VX-821

VX-824

VX-829

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
- Comander
- Minimum volume control
- Clear Voice
- Audio Pitch Control (VX-920 Series)
- Direct channel recall
- Programmable 7-color LED alert
- Batteries:
 - 3000 mAh Li-Ion
 - 2000 mAh Li-Ion
 - 1500 mAh Li-Ion (VX-820 ATEX)
 - 1150 mAh Li-Ion
- RX/TX Battery power save
- Auto-Range Transpond System (ARTS™)
- Manual squelch adjustment
- Intrinsically safe (VX-820 ATEX)
- Voice inversion encryption (option)
- Rolling code encryption (option)
- Digital voice storage (option)
- Radio to radio cloning
- PC Programming

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

VX-820 ATEX SERIES: APPROVED FOR GAS PROTECTION

The VX-820 ATEX Series is Intrinsically Safe and certified to meet ATEX approval specifications for gas protection to use in explosive hazardous settings.

II	2	G	E	Ex	ib	IIC	T4
							T4 = Device surface temperature will not exceed 135°C
							IIC = Protection in the most explosive gas environment (hydrogen)
							ib = Type of intrinsic safety protection
							Ex = Explosive-proof equipment
							E = Certified to European ATEX Standard
							G = Gas
							2 = Likely hazardous atmosphere
							II = Group II "other" environments, (chemical industries, refineries, etc.)

Portable Radios

VX-450 SERIES

For durable, on-the-job responsiveness, the VX-450 Series maximises 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
- Comander
- 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)
- 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-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™



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

Portable Radios

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
 - 1200 mAh Ni-MH
- 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
- 5-Tone Encode/Decode (non-CE model)
- Emergency
- Lone Worker
- DTMFANI
- DTMF Speed Dial

SCANNING

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

VX-241 PMR446

The VX-241 PMR446 radio is an economical licence free radio providing long-lasting performance and reliability. The radio's small size is easy to carry and it supports the fundamental two-way radio functions needed without added cost.

- Easy to carry
- 8 Pre-programmed PMR 446 frequencies
- Exclusive ARTS™



VX-241 PMR446

KEY FEATURES

- 16 Channels
- 500 mW ERP TX output
- 2 programmable keys
- IP Rating: 54
- 500 mW Audio output
- Battery: 1380 mAh Li-Ion
- Battery power save
- Low battery alert
- Fixed antenna
- Manual squelch adjustment
- Time out timer (TOT)
- Busy channel lockout (BCLO)

SIGNALING

- CTCSS/DCS Encode/Decode

SCANNING

- Scan
- Follow Me

Mobile Radios

VX-5500 (NON-CE) AND VX-6000 (NON-CE)

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 (VX-5500)
- 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
- Compaander
- 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

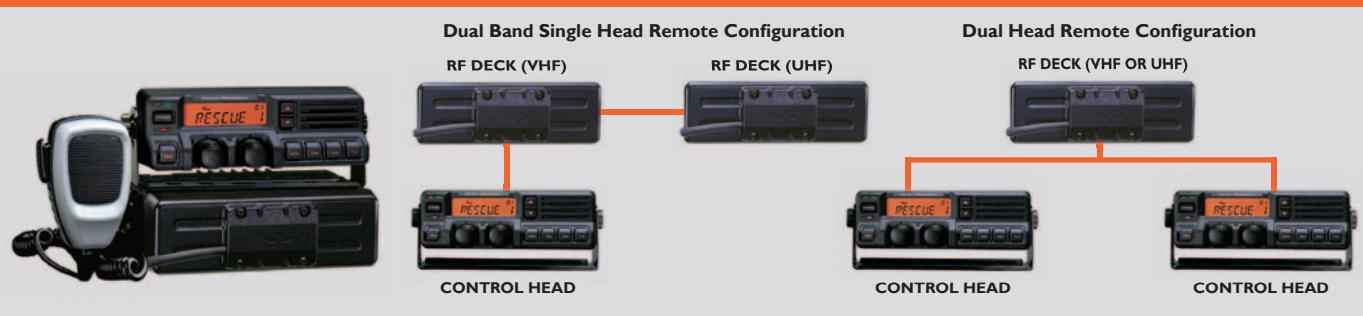
SIGNALING

- 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



Mobile Radios

VX-4500/4600

Optimise 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 / 25 Watts VHF (non-CE / CE)
- 45 Watts / 25 Watts UHF (non-CE / CE)
- 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 activation (VOX)
- Voice inversion encryption
- Auto Range Transpond System II (ARTS II™)
- Digital voice storage (option)
- Remote control head (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 / 25 Watts VHF (non-CE / CE)
- 45 Watts / 25 Watts UHF (non-CE / CE)
- 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

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 / 25 Watts (non-CE / CE)
- 6 Dual-function programmable keys
- 2-Character numeric display
- Compander 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
- 19 inch 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
- 50 Watts / 25 Watts (non-CE / CE)
- 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

HF SSB Radios

VX-1210 (NON-CE)

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-1400 (NON-CE)

The 100 Watt VX-1400 supports both mobile and base station operations for integrated, affordable long-haul communications.

- Compact size
- Clear communications
- Enhanced noise reduction
- Large channel capacity



VX-1400

KEY FEATURES

- 512 Channels / 5 Groups
- 100 Watts
- 7 Programmable Keys
- 14-Character alphanumeric display
- Digital Signal Processing (DSP)
- Memory Channel (ITU Marine Channels preset)
- One-touch alert
- 2182 kHz channel programmable option for S1/S2 keys
- Voice guide announcing memory channel number
- Voice storage
- Clarifier
- Noise blanker
- Voice Activated Transmit (VOX)
- GPS input port
- Data modem port
- D-sub 25 pin accessory connector

- Automatic Link Establishment (ALE option)
- Voice encryption (option)
- External automatic antenna tuner (option)
- Remote control head (option)

SIGNALING

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

SCANNING

- Priority Scan

VX-1700 (NON-CE)

125 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
- 125 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

Accessories

ANTENNAS

MODEL	DESCRIPTION	SIZE (MM)	VX-231	VX-350	VX-450	VX-820	VX-820 ATEX	VX-920	VXD-720
ATV-8A	134-151 MHz	152.3	•	•		•	•	•	
ATV-15C	136-174 MHz	213.4							•
ATV-16A	136-150 MHz	139.7			•				
ATV-16B	150-162 MHz	139.7			•				
ATV-6B	150-163 MHz	88.9		•					
ATV-8B	150-163 MHz	152.3	•	•		•	•	•	
ATV-6C	161-174 MHz	88.9		•					
ATV-16C	162-174 MHz	139.7			•				
ATV-8C	161-174 MHz	152.3	•	•		•	•	•	
ATU-16B	400-420 MHz	160			•				
ATU-16BS	400-430 MHz	88.9			•				
ATU-6A	400-430 MHz	165.1	•	•		•	•	•	
ATU-14A	403-470 MHz	254							•
ATU-16C	420-450 MHz	152.3			•				
ATU-16D	450-470 MHz	142.2			•				
ATU-6DS	450-485 MHz	88.9	•	•		•	•	•	
ATU-6D	450-485 MHz	152.3	•	•		•	•	•	
ATU-6B	420-450 MHz	160	•	•		•	•	•	
ATU-6C	440-470 MHz	160	•	•		•	•	•	
ATU-14D	450-527 MHz	254							•
ATU-16DS	450-490 MHz	88.9		•	•				
ATU-16F	470-520 MHz	134.6			•				
ATU-6F	490-520 MHz	139.7	•						
ATV-16XL	VHF Untuned	177.8			•				
ATV-6XL	135-174 MHz Untuned	177.8	•	•		•	•	•	
ATL-2A	66-71 MHz	150						•	•
ATL-2B	70-76 MHz	150						•	•
ATL-2C	75-81 MHz	150						•	•
ATL-2D	81-88 MHz	150						•	•



VHF Stubby
ATV-6B



VHF
ATV-8B



VHF
Untuned
ATV-6XL



UHF
ATU-6A

BATTERIES

MODEL	DESCRIPTION	VX-241 PMR446	VX-231	VX-350	VX-450	VX-820	VX-820 ATEX	VX-920	VXD-720
FNB-V103LIA	1380 mAh Li-Ion	•	•						
FNB-V104LIA	2300 mAh Li-Ion		•						
FNB-V106	1200 mAh NiMH		•						
FNB-V96LIA	2300 mAh Li-Ion			•					
FNB-V112LI	1170 mAh Li-Ion				•				
FNB-V113LI	2400 mAh Li-Ion				•				
FNB-V86LIA	1380 mAh Li-Ion					•		•	
FNB-V100LIE	1500 mAh Li-Ion						•		
FNB-V87LIA	2300 mAh Li-Ion					•		•	
FNB-V92LI	3000 mAh Li-Ion					•		•	
FBA-34	6 AA Battery Case					•		•	
FNB-V116	1300 mAh NiMH								•
FNB-V117	2200 mAh Li-Ion								•



FNB-V92LI



FBA-34



FNB-V117



FNB-V104LIA

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.

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.

Accessories

CHARGERS

MODEL	DESCRIPTION	VX-241 PMR446	VX-231	VX-350	VX-450	VX-820	VX-820 ATEX	VX-920	VXD-770
VAC-300 C/U	Desktop, Rapid Rate 230-240 V	•	•	•					
VAC-921 C/U	Desktop, Rapid Rate, 230-240 V					•		•	
VAC-920 C/U EX	Desktop, Rapid Rate, 230-240 V						•		
VAC-20 C/U	Desktop, 3 hour, 230-240 V		•						
VAC-450 C/U	Desktop, Rapid Rate, 100-240 V				•				
VAC-40 C/U	Single Unit, Rapid Rate, 120/130 VAC								•
VAC-6020 C/U	6 Unit, 100-240 V (for FNB-V106 NiMH)		•						
VAC-6030 C/U	6 Unit, Rapid Rate								•
VAC-6450 C/U	6 Unit, 100-240 VAC				•				
VAC-6300 C/U	6 Unit, Rapid Rate, 230-240 V (for FNB-V95 and FNB-V96)		•	•					
VAC-6920 C/U	6 Unit, Rapid Rate, 100-240 VAC					•		•	
VAC-6921 C/U EX	6 Unit, 100-240 V						•		
VCM-2	Vehicle DC Charger Mounting Adaptor Kit for VAC-300 and VAC-920	•	•	•		•		•	
VCM-3	Vehicle Charger Mounting Adaptor Kit for VAC-20		•						
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-2 / VCM-3

SPEAKER MICROPHONES

MODEL	DESCRIPTION	VX-241 PMR446	VX-231	VX-350	VX-450	VX-820	VX-820 ATEX	VX-920	VXD-770
MH-360S	Compact Speaker	•	•	•	•				
MH-450S	Standard Speaker	•	•	•	•				
MH-45B4B	Noise Cancelling Speaker	•	•	•	•				
MH-66A4B	Submersible Speaker				•				
MH-50D7A	Noise Cancelling with Toggle					•	•	•	•
MH-66A7A	Submersible, Noise Cancelling Speaker					•	•	•	•
MH-66B7A	Submersible Speaker, 2 Programmable Keys and Audio Attenuator Switch					•	•	•	•



MH-360S



MH-45B4B



MH-50D7A



MH-450S



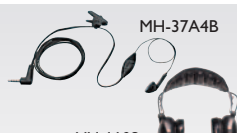
MH-66A7A



MH-66B7A

HEADSET AND EARPIECE MICROPHONES

MODEL	DESCRIPTION	VX-241 PMR446	VX-231	VX-350	VX-450	VX-820	VX-920	VXD-770
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-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					•	•	•



MH-37A4B



VH-110S



VH-130S



VH-115S



VH-111

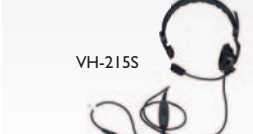
VH-131



VC-25



VH-120S



VH-215S



VH-121

BELT CLIPS AND LEATHER CASES

MODEL	DESCRIPTION	VX-241 PMR446	VX-231	VX-350	VX-450	VX-820	VX-820 ATEX	VX-920	VXD-720
CLIP-17A	Swivel Belt Clip								
CLIP-17B	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, Belt Loop								•
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-451	Leather Case, Belt Loop (FNB-VI 12LI)				•				
LCC-451H	Leather Case, Belt Loop (FNB-VI 13LI)				•				
LCC-451S	Leather Case, Swivel Belt Loop (FNB-VI 12LI)				•				
LCC-451SH	Leather Case, Swivel Belt Loop (FNB-VI 13LI)				•				
LCC-454/459	Leather Case, Belt Loop (FNB-VI 12LI)				•				
LCC-459H	Leather Case, Belt Loop (FNB-VI 13LI)				•				
LCC-459S	Leather Case, Swivel Belt Loop (FNB-VI 12LI)				•				
LCC-459SH	Leather Case, Swivel Belt Loop (FNB-VI 13LI)				•				
LCC-820	Leather Case, Belt Loop					•			
LCC-820S	Leather Case, Swivel Belt Loop					•			
LCC-820S/TT	Leather Case, Swivel Belt Loop for VX-829					•			
LCC-920S	Leather Case, Swivel Belt Loop							•	
LCC-920S/TT	Leather Case, Swivel Belt Loop for VX-929							•	
LCC-920TT	Leather Case, Belt Loop for VX-929							•	



Swivel Belt Clips



Leather Case Swivel Belt Loop



Belt Clip



Leather Case Belt Loop



Belt Clip

PROGRAMMING AND INSTALLATION

MODEL	DESCRIPTION	VX-241 PMR446	VX-231	VX-350	VX-450	VX-820	VX-820 ATEX	VX-920	VXD-720	VX-2100	VX-2200	VX-4500	VX-4600	VX-5500	VX-6000	VXD-7200	VXR-7000	VXR-9000	VXD-R70	VX-1210	VX-1400	VX-1700	
CN-2A	SMA to BNC Adaptor				•				•														
CN-3	SMA to BNC Adaptor		•	•		•		•															
CT-4	Radio-to-Radio Programming Cable										•												
CT-27	Radio-to-Radio Cloning Cable	•	•	•	•																		
CT-72	Cloning Cable													•	•								
CT-88	Alignment cable for FIF-8													•	•								
CT-104A	Programming Cable (use with FIF-10A or FIF-12)									•	•					•		•				•	
CT-105	Programming Cable (use with FIF-10A or FIF-12)													•	•								
CT-106	Programming Cable (use with FIF-10A or FIF-12)	•	•	•	•																		
CT-108	Programming Cable (use with FIF-10A or FIF-12)						•	•	•														
CT-116	Radio-to-Radio Programming Cable					•	•	•															
CT-124A	Firmware Cable (requires FIF-8)					•	•	•															
CT-124B	Firmware Cable (requires FIF-12)					•	•	•															
CT-150	Programming Cable Front Accessory Connector															•							
CT-151	Programming Cable Rear Accessory Connector															•							
CT-153	Cloning Cable: Portable to Mobile				•							•							•				
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											•	•	•	•						•	•	
CT-62	Programming Cable																						•
SVC-1200	Service Kit (programming and alignment)																			•			
FIF-8	Firmware Writer					•	•	•						•	•								

Accessories

OPTION BOARDS

MODEL	DESCRIPTION	VX-350	VX-450	VX-820	VX-820 ATEX	VX-920	VX-2100	VX-2200	VX-4500	VX-4600	VX-5500	VX-6000	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										•	•	

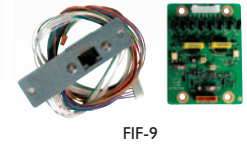
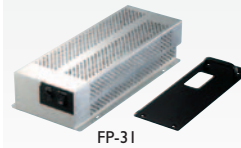
OTHER MOBILE RADIO ACCESSORIES

MODEL	DESCRIPTION	VX-2100	VX-2200	VX-4500	VX-4600	VX-5500	VX-6000	VXD-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-53A8A	Noise Cancelling DTMF Heavy-Duty Microphone for CNT-5000					•	•	
MH-53A7A	Heavy Duty Noise Cancelling Microphone					•	•	
MH-53B7A	Heavy Duty Noise Cancelling DTMF Microphone					•	•	
MH-53C7A	Heavy Duty Microphone					•	•	
MH-53A8J	Heavy Duty Noise Cancelling 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	Mobile Mounting Bracket					•		
MMB-77	Mobile Mounting Bracket						•	
MMB-79	Mobile Mounting Bracket						•	
VX-2100 Bracket	Mobile Mounting Bracket	•						
Bracket	Mobile Mounting Bracket		•					
MMB-88	Base plate for CNT-5000					•	•	
MMB-93	Low Profile Trunion Kit							•
MMB-94	High Profile Trunion Kit							•
MMB-95	Key Lock Trunion Kit							•
MMB-96	In-Dash (DIN) Mounting Kit							•
DTT-1	Desktop Tray without Speaker							•
RMK-4000B	Cover Plate: RF Deck for Remote Configurations					•	•	
RMK-4000H	Cover Plate: Control Head					•	•	
RMK-5000B	Cover Plate: RF Deck used with CNT-5000					•	•	
POWER SUPPLY AND DC CABLES								
FP-1030A	External Power Supply, 13.8V DC 25 A, non-CE with Euro plug	•	•	•				•
VX-2200 DC	12V DC lead	•						
VX-4500 DC	External 12V DC lead		•					
VXD-7200DC	External 12V DC lead to GPN6145B power supply							•
E-DC-27	Power Cable to Battery, 3 m, 15 amp							•
E-DC-28	Power Cable to Battery, 6 m, 20 amp							•
REMOTE CABLES								
CT-148	Ignition Sense Cable							•
CT-149	Mobile Rear Accessory Connector Universal Cable							•
CT-156	Remote Mount Cable (3 m)			•				
CT-157	Remote Mount Cable (5 m)			•				
CT-158	Remote Mount Cable (7 m)			•				
RMK-4600	Remote Mount Kit			•				
CT-81	Remote Cable for RMK-4000 series (6 m), RF Deck to Control Head					•	•	
CT-82	Remote Cable for RMK-4000 series (2.5 m), RF Deck to Control Head					•	•	
CT-83	Remote Cable for RMK-4000 series (0.6 m), RF Deck to RF Deck					•	•	
CT-93	Remote Cable for RMK 4000 series (10 m), RF Deck to Control Head					•	•	



REPEATER ACCESSORIES

MODEL	DESCRIPTION	VXR-7000	VXR-9000	VXD-R70
DUPLEXERS				
VXD-60UD	Internal Duplexer, UHF 440-480 MHz	•	•	
VXD-60VC	Internal Duplexer, VHF 148-160 MHz	•	•	
MICROPHONES AND SPEAKER				
MD-12A8J	Desktop Microphone	•	•	
MH-67A8J	Hand Microphone	•	•	
POWER SUPPLY				
FP-31	Internal Power Supply (25 Watt CE only)		•	
FP-31EXP	Internal Power Supply (50 Watt non-CE only)		•	
E-DC-29	Battery back-up cable			•
INTERNAL COAX CABLE				
CT-68	Antenna cable with mounting screws for use with internal duplexer	•		
RF POWER AMPLIFIERS				
VPA-9000UD	100W UHF Power Amplifier 450-490 MHz (non-CE)		•	
VPA-9000VC	100W VHF Power Amplifier 148-174 MHz (non-CE)		•	
MISCELLANEOUS				
FIF-9	600 Ohm 4-Wire Line Interface E+M		•	
MR-3	Rack Mount Assembly 19 inches (4 U)	•		
MR-4	Rack Mount Assembly 19 inches (3 U)	•		
WMB-1	Wall Mount Kit			•



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.

Accessories

HF SSB ACCESSORIES

MODEL	DESCRIPTION	VX-1210	VX-1400	VX-1700
ANTENNAS				
ATU-1210	Internal Antenna Tuner	•		
FC-30	Automatic Antenna Tuner (for coaxial lines)		•	•
FC-40	Antenna Tuner (for wire/whip antennas)		•	•
FHA-27	Folding Whip Antenna (3 m), 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	•	•	•
YA-31	Dipole or Wire (end fed) Antenna	•	•	•
YHA-61	Whip Antenna (1.5 m)	•		
BATTERIES				
FNB-66LI	14.4V Li-Ion Battery	•		
CHARGERS				
CD-17	Rapid Charger 16.8V, 1450 mA (requires PA-26 C)	•		
PA-26 C/U	Rapid Charger Power Supply 24V DC, 1.1 A (Euro 2-pin / UK 3-pin)	•		
MICROPHONES				
MD-100A8X	Desktop Microphone			•
MH-31A8J	Hand Microphone		•	•
MH-50B7A	Speaker Microphone	•		
MH-67A8J	Standard Microphone		•	
MH-77A8J	Water Resistant Keypad Microphone (IP 54)		•	
MH-77B8J	Water Resistant Microphone (IP 54)		•	
MD-12A8J	Desktop Microphone		•	•
MLS-100	External Speaker (12 Watt Peak)		•	•
MOUNTING BRACKETS				
MHG-1	Carrying Handle			•
MMB-89	One-Touch Mobile Bracket			•
RMK-1400	Remote Mount Kit (IP 54)		•	
MMB-92	Mounting Bracket		•	
CT-81	Remote Mount Cable (6 m)		•	
CT-82	Remote Mount Cable (2.5 m)		•	
CT-83	Remote Mount Cable (0.6 m)		•	
CT-93	Remote Mount Cable (10 m)		•	
CT-139	Accessory Cable for RX/TX Interface		•	
POWER SUPPLY				
FP-1030A	13.8V DC 25 A, non-CE with Euro plug		•	•
VX-1400DC	12V DC Lead		•	
VX-1700DC	12V DC Lead			•
OPTION BOARDS				
ALE-1	Automatic Link Establishment Unit			•
ALE-2	Automatic Link Establishment Unit		•	
DSV-1200	D-Sub 9 Accessory Connector Attachment	•		



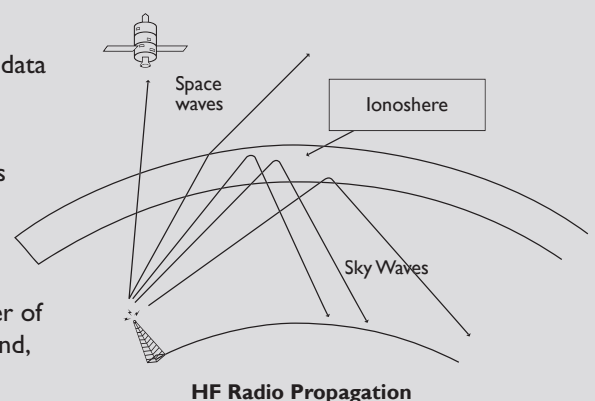
WHY USE HF SSB RADIOS?

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.



Specifications

HF SSB RADIOS

	VX-1210	VX-1400	VX-1700
GENERAL			
Frequency Range	RX: 0.5 – 30 MHz; TX: 1.6 – 30 MHz	RX: 30 kHz – 30 MHz; TX: 1.6 – 30 MHz	RX: 30 kHz – 30.0000 MHz; TX: 1.600 – 30.0000 MHz
Channels	500	512	200
Emission Type	A1A(CW); J3E(LSB/USB); H3E(AM); F1B(AFSK)	A1A (CW); J3E (LSB/USB); A3E (AM); H3E (2182 kHz only); J2B (FSK/AFSK)	A1A(CW); J3E(LSB/USB); A3E(AM); J2B (USB/LSB)
Power Requirements	DC 14.4V Lithium-ion Battery	DC 13.8V ±15%	DC 13.8V ±15%, negative ground
Frequency Synthesizer Steps	–	10 Hz	10 Hz, 100 Hz, 1 kHz
Frequency Stability	–	± 0.5 ppm	± 1 ppm (-10° C to +55° C) TYP
Channel Spacing	10 Hz	–	–
Current Consumption	RX: 500 mA (saver off), 100 mA (saver on) TX: 5 A (20 W), 3 A (5 W)	RX, no signal: 1 A TX, max: 23 A	Standby: 25 mA; RX, no signal: 1.0 A; RX: 1.5 A TX: 22 A (125 W output)
Operating Temperature Range	-30° C to +60° C	-20° C to +60° C	-10° C to +55° C
Antenna Impedance	50 Ohms (unbalanced)	50 Ohms, Unbalanced	50 Ohms
Dimensions (W x H x D)	193 x 74 x 274 mm w/o knobs	178 x 60 x 268 mm w/o projection (knobs and fans)	241 x 99 x 285 mm
IP Rating	–	IP 54 (front panel only with MH-77 connected)	–
Weight (Approx.)	3.2 kg w/FNB-66LI	3.4 kg	4.3 kg
RECEIVER			
Circuit Type	Double Conversion Super Heterodyne	Double Conversion Superheterodyne	–
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)	10 dB S/N 0.5 – 1.6 MHz: 0.71 µV (A1A/J2B/J3E); 0.5 – 1.6 MHz: 7.93 µV (A3E); 1.6 – 30 MHz: 0.16 µV (A1A/J2B/J3E); 1.6 – 30 MHz: 1.00 µV (A3E)	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)	2.2 kHz/4.5 kHz (J2B/J3E/A3E Narrow) 500 Hz / 1.2 kHz (A1A Narrow); 6 kHz / 20 kHz (A3E) (-6 dB / -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	80 dB	Better than 80 dB
Audio Output	At least 1.5 W @ 4 Ohms @ 10% THD	10 W into 4 Ohms @ 5% THD (J3E/A1A)	2.2 Watts into 8 Ohms @ 10% THD
Audio Impedance	4 – 32 Ohms	–	4 – 16 Ohms (8 Ohms Nominal)
Conducted Radiation	–	–	Less than 4000 µW
TRANSMITTER			
Output Power	20W / 5W (J3E/A1A/F1B), 10W / 2.5W (H3E)	100 W (J2B/J3E/A1A) 3 steps selectable: Low/Mid/High, adjustable (100 W - 10 W) by 1 W step 25 W – 2.5 W AM carrier (A3E) (@ 13.8V, 250 C)	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)	PSN Type Modulator (SSB); Low-Level (Early Stage) (AM)	J3E: PSN type modulator A3E: Low-level (early stage)
Spurious Radiation	–	- 42 dB (1.8 – 30 MHz); - 36 dB (1.6 – 1.8 MHz, Harmonics)	-50 dB (Harmonics)
Carrier Suppression	55 dB	J3E: -45 dB @ 100 W (PEP)	J3E: Better than 50 dB below peak output
Undesired Sideband Suppression	55 dB @ 1.5 kHz tone	50 dB @ 1.5 kHz tone, 100 W (PEP)	Better than 60 dB below peak output
Spurious Emissions	-56 dB or better	–	-56 dB
Occupied Bandwidth	–	A1A: less than 0.5 kHz J2B/J3E/H3E: less than 3.0 kHz; A3E: less than 6.0 kHz	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)	<-6 dB (300 – 2400 Hz)	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)	200 – 10 k Ohms, (600 Ohms Nominal)

*100 W when using FC-30

Specifications

REPEATERS

	VXR-7000	VXR-9000
GENERAL		
Frequency Range	VHF: 136 – 150 MHz; 150 – 174 MHz UHF: 400 – 430 MHz; 420 - 450 MHz; 450 – 480 MHz	VHF: 134 – 160 MHz; 146 – 174 MHz UHF: 400 – 430 MHz; 440 – 470 MHz
Channels	16	32
Power Supply Voltage	200 / 240 V AC \pm 10% 50/60 Hz or 13.8 V DC	13.6 V DC \pm 10%
Channel Spacing	12.5 / 20 / 25 kHz	12.5 / 20 / 25 kHz
Operating Temperature Range	-30° C to +60° C	-30° C to +60° C
Frequency Stability	\pm 2.5 ppm	1.5 ppm, 1.0 ppm (30 min. after wake up)
RF Input-Output Impedance	50 Ohms	50 Ohms
Dimensions (W x H x D)	325 x 115 x 391.5 mm	483 x 88 x 343 mm
Weight (Approx.)	10 kg	9.7 kg
RECEIVER		
Sensitivity 20dB SINAD	-2 dB μ V emf	-4 dB μ V emf
Adjacent Channel Selectivity	70 dB / 60 dB	70 dB / 60 dB
Intermodulation	70 dB	70 dB
Spurious and Image Rejection	70 dB	70 dB
Audio Output	4 W @ 4 Ohms 10% THD	4 W @ 4 Ohms
TRANSMITTER		
Output Power	5 to 25 W (CE) 50 W (non-CE)	25 / 10 / 5 W
Duty Cycle	100% (non-CE 50 W) 50% (CE 25 W)	50%
Modulation	16K0G3E, 8K50G3E	16K0F3E, 11K0F3E
Maximum Deviation	\pm 5.0 kHz / \pm 2.5 kHz	\pm 5.0 kHz / \pm 2.5 kHz
Audio Distortion	< 2.5% @ 1kHz	< 2.5% @ 1kHz
Spurious Emission	-36 dBm @ \leq 1 GHz, -30 dBm @ $>$ 1 GHz	-36 dBm @ \leq 1 GHz, -30 dBm @ $>$ 1 GHz
Microphone Sensitivity		5 mV
Hum and Noise	-	> 50 dB (wide), > 45 dB (narrow)

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	7.5V nominal	13.6V DC ±20%	100 – 240V AC (13.6V 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	-30° C to +60° C	-30° C to +60° C	-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)	131.5 x 63.5 x 36.2 mm (w/FNB-V117LI)	51 x 175 x 206 mm	132.6 x 482.6 x 296.5 mm
Weight (Approx.)	375 g (w/FNB-V117LI) 430 g (w/FNB-V116)	1.8 kg	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 – 520 MHz	VHF: 134 – 174 MHz UHF: 400 – 470 MHz, 450 – 520 MHz	Low Band: 37 – 50 MHz VHF: 148 – 174 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: 12.5 / 25 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: 2.5 / 5 / 6.25 kHz	VHF/UHF: 2.5 / 5 / 6.25 kHz
Current Consumption	TX: 11 A (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) RX: 2.1 A; Standby: 600 mA	TX: 25 A (VHF); 28 A (UHF) RX: 2.2 A; Standby: 600 mA
Operating Temperature Range	-30° C to +60° C	-30° C to +60° C	-30° C to +60° C	-30° C to +60° C
Frequency Stability	Better than ±2.5 ppm	±2.5 ppm	Low Band: Better than ±5 ppm VHF: Better than ±2 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)	165 x 45 x 155 mm	165 x 45 x 155 mm	178 x 60 x 195 mm	178 x 60 x 301 mm
Weight (Approx.)	1.3 kg	1.25 kg	2.2 kg	6.9 kg
RECEIVER				
Sensitivity 20dB SINAD	-4 dB µV emf / -2 dB µV emf	0.25 µV	0.25 µV	0.25 µV
Adjacent Channel Selectivity	VHF: 75 / 68 dB UHF: 70 / 65 dB	75 / 70 dB	Low Band: 85 dB VHF: 85 / 80 dB	VHF: 85 / 80 dB UHF: 85 / 77 dB
Intermodulation	68 dB	75 dB / 65 dB	Low Band: 80 dB VHF: 80 / 75 dB	VHF/UHF: 80 / 75 dB
Spurious and Image Rejection	68 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	25 / 12.5 / 5 / 1 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	VHF: 110 W adjustable to 50 W UHF: 100 W adjustable to 50 W
Modulation	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E	Low Band: 16K0F3E VHF: 16K0F3E, 11K0F3E	VHF / UHF: 16K0F3E, 11K0F3E
Maximum Deviation	±2.5 / ± 4.0 / ± 5.0 kHz	±5.0 kHz / ±2.5 kHz	Low Band: 5 kHz VHF: 5.0 / 2.5 kHz	VHF/UHF: 5.0 / 2.5 kHz
Audio Distortion	< 3% @ 1kHz	< 3% @ 1kHz	< 2% @ 1kHz	< 2% @ 1kHz
Spurious Emission	70 dB below carrier -36 dBm @ ≤ 1 GHz, -30 dBm @ > 1 GHz	70 dB below carrier	80 dB below carrier	80 dB below carrier
Hum and Noise	-	45 dB / 40 dB	-	-



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Specifications

PORTABLE RADIOS

	VX-241 PMR446	VX-231	VX-350 SERIES
GENERAL			
Frequency Range	8 pre-programmed PMR446 frequencies 446.00625 MHz – 446.09375 MHz	VHF: 134 - 174 MHz UHF: 400 - 470 MHz, 450 - 520 MHz	VHF: 134 – 174 MHz UHF: 400 – 470 MHz
Channels	16	16	16
Power Supply Voltage	7.4V DC±20%	7.4V DC±20%	7.4V DC±20%
Channel Spacing	12.5 kHz	12.5/20/25 kHz	12.5/20/25 kHz
PLL Steps	6.25 kHz	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
Battery Options	1380 mAh Li-Ion	2000 mAh Li-Ion 1380 mAh Li-Ion	2000 mAh Li-Ion
Battery Life (5-5-90 duty) with Battery Saver	FNB-V103LIA: 19 hrs	FNB-V104LI: 16.5 hrs FNB-V103LIA: 9.0 hrs	FNB-V96LI: 15.5 / 15 hrs
IP Rating	IP 54	IP 54	IP 55
Operating Temperature Range	-25° C to +55° C	-30° C to +60° C	-30° C to +60° C
Frequency Stability	±2.5 ppm	±2.5 ppm	±2.5 ppm
RF Input-Output Impedance	Fixed Antenna	50 Ohms	50 Ohms
Dimension (H x W x D)	110 x 58 x 30mm	110 x 58 x 30 mm (w/ FNB-V103LIA)	105 x 58 x 33 mm (w/FNB-96LI)
Weight (Approx.)	270 g (w/FNB-V103LIA)	285g (w/FNB-V103LIA, Antenna, Clip)	310 g (w/FNB-V96LI, ANT, clip)
RECEIVER			
Sensitivity 20 dB SINAD	26.5 dBµV emf	-3 dBµV emf	-3 dBµV emf
Adjacent Channel Selectivity	55 dB	70 dB	70 / 60 dB
Intermodulation	60 dB	70 dB	65 dB
Spurious and Image Rejection	65 dB	65 dB	70 dB
Audio Output	500 mW @ 4 Ohms 5% THD	500 mW @ 4 Ohms 5% THD	500 mW @ 4 Ohms 10% THD
TRANSMITTER			
Output Power	500 mW ERP	5 / 1 W	5 / 1 W
Modulation	11K0F3E	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E
Spurious Emissions	-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 / 40 dB	45 / 40 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-820 ATEX SERIES	VX-920 SERIES
GENERAL			
Frequency Range	VHF: 134 - 174 MHz UHF: 400 - 470 MHz, 450 - 520 MHz	VHF: 134 - 174 MHz UHF: 400 - 470 MHz, 450 - 520 MHz*	MidBand: 66 - 88 MHz VHF: 134 - 174 MHz UHF: 400 - 470 MHz, 450 - 520 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 2000 mAh Li-Ion 1500 mAh Li-Ion (ATEX) 1150 mAh Li-Ion	3000 mAh Li-Ion 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-V100LIEIX: 16.5 / 16 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	-30° C to +60° C	-30° C to +60° C -10° C to +55° C (ATEX)	-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)	109 x 58.5 x 34 mm (w/FNB-V112LI)	96.5 x 57.5 x 37.5 mm (w/FNB-86LI) 96.5 x 57.5 x 41 mm (w/FNB-V100LIEIX)	133 x 57.5 x 37.5 mm (w/FNB-V86LI)
Weight (Approx.)	296 g (w/FNB-V112LI, Belt Clip) 340 g (w/FNB-V113LI, ANT, Belt Clip)	310 g (w/FNB-V86LI, Belt Clip) 335 g (w/FNB-V100LIEIX, ANT, Belt Clip)	370 g (w/FNB-V86LI, ANT, Clip)
RECEIVER			
Sensitivity 20 dB SINAD	-4 / -2 dB µV emf	-4 / -2 dB µV emf	-4 / -2 dB µV emf
Adjacent Channel Selectivity	70 / 65 dB	75 / 65 dB	75 / 65 dB
Intermodulation	70 / 65 dB	65 dB	65 dB
Spurious and Image Rejection	70 dB	75 dB 70 dB (ATEX)	80 / 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 1 / 0.5 W (ATEX)	5 / 2.5 / 1 / 0.25 W
Modulation	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E	16K0F3E, 11K0F3E
Spurious Emissions	70 dB below carrier	70 dB	70 dB -36 dBm @ ≤ 1 GHz, -30 dBm @ > 1 GHz (EN)
FM Hum and Noise	45 / 40 dB	45 / 40 dB	45 / 40 dB
Audio Distortion	< 3 % @1kHz	< 3 % @1kHz	< 3 % @1kHz

*Not available in VX-820 ATEX Series

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. 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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Tokyo, Japan

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PRODUCT BENEFITS

- Easy to carry, compact portable radios
- Full-featured radios for the price
- Safety features built-in all radio options
- Loud, clear audio quality and full coverage
- Easy-to-manage large group communications
- Submersible, weatherproof radio models

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- VX-P820 Series: World's smallest submersible P25 radio
- ARTS™ and ARTS II™: Exclusive Auto-Range Transpond System to monitor communications connectivity

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