

# VX-4000 SERIES

## VHF/UHF Mobile Radios



- 250 CHANNEL CAPACITY
- POWER OUTPUT: 70 W (LOW BAND), 50 W (VHF), 40 W (UHF)
- MIL- STD 810 C/D/E
- 12.5 / 25 kHz BANDWIDTH PROGRAMMABLE PER CHANNEL
- 2.5 kHz STEP FOR VHF/UHF
- LARGE 8-DIGIT ALPHANUMERIC DISPLAY
- 7 PROGRAMMABLE BACKLIT KEYS
- PRIORITY SCAN
- GROUP SCAN
- VOTING (RX SIGNAL STRENGTH) SCAN
- DUAL BAND CAPABILITY
- ONE RF DECK TO MULTI HEAD CAPABILITIES
- DTMF SIGNALING & DIALING FEATURES
- USER SELECTABLE TONES / CODES
- CTCSS / DCS ENCODE + DECODE
- EMERGENCY FUNCTIONS
- ENCRYPTION/ROLLING CODE ENCRYPTION
- RADIO TO RADIO CLONE FEATURE
- TALK AROUND
- BCLO, BTLO, AND TOT FUNCTIONS
- BUILT IN 25 PIN (DB-25) ACCESSORY CONNECTOR
- HEAVY-DUTY PUBLIC SAFETY
- MICROPHONE AVAILABLE





# VX-4000

SERIES

Reliability, ruggedness, and versatility: these are the essential elements in a successful communications system. Vertex Standard VX-4000 provides the features, performance, and toughness to get your message through under the most demanding public safety operating conditions. It's a perfect blend of rugged design, flexible signaling options, superb ergonomics, and expandability, making the VX-4000 series an outstanding choice for your future communications needs.

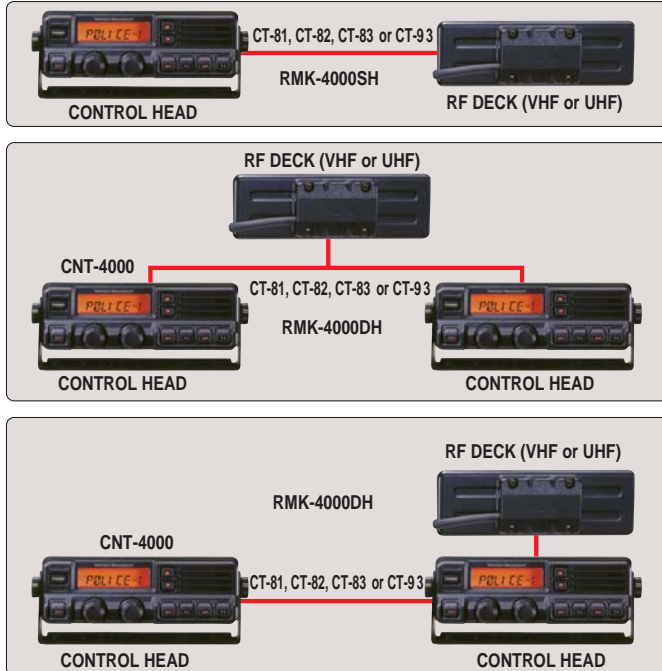


# VERSATILITY

## MULTI CONFIGURATION SYSTEM

### ONE RF DECK TO MULTIPLE HEAD CAPABILITIES

A single VX-4000 RF Deck may be controlled by two different Control Heads, allowing control of the radio from more than one location. Depending on the installation requirements, both Control Heads may be connected directly to the RF Deck, or the two Control Heads may be connected in a series "Daisy Chain" configuration.



### 250 CHANNEL CAPACITY

Huge 250-channel capacity may be partitioned into as many as 20 Memory Groups, with no limit on the number of channels in each Group. A single radio may therefore be programmed with channel sets for a number of different jurisdictions or organizations.

### PRIORITY SCAN

The VX-4000's versatile scanning system includes a Priority Scan function, which provides scanning of all channels (or channels within a Memory Group) while maintaining a priority watch on a particularly important channel. Scanning will halt immediately, and operation will revert to the Priority Channel if activity is detected on the Priority Channel.

### GROUP SCAN

To provide more efficient scanning, the VX-4000 provides capability for scanning only within a particular Memory Group. The channels you need to scan therefore will be checked more times per minute, ensuring that important calls are not missed.

### VOTING (RECEIVED SIGNAL STRENGTH) SCAN

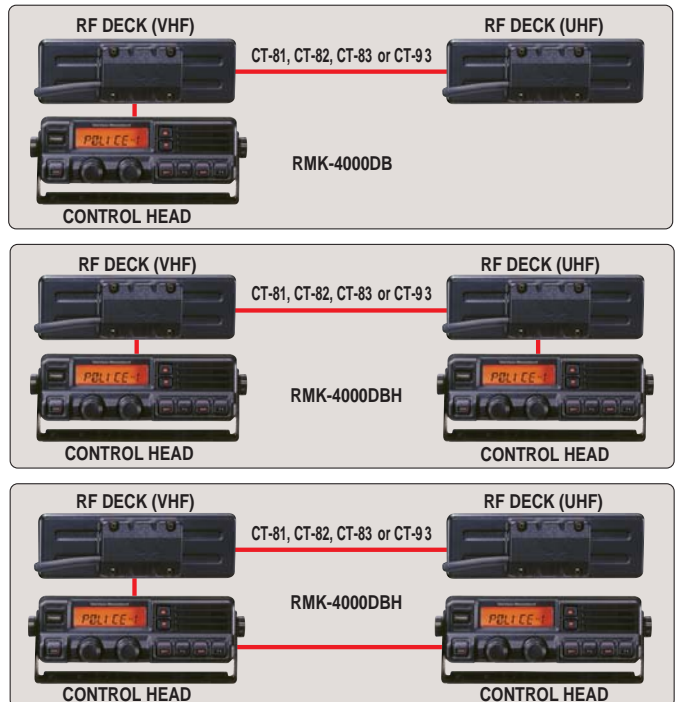
In areas of heavy channel loading, or in areas where interference from distant systems is often received, the VX-4000 may be set up to respond only to signals exceeding a prescribed signal level.

### DTMF SIGNALING & DIALING FEATURES

When used with the optional MH-53B7A DTMF Microphone, the VX-4000 may be configured for both manual and Speed Dial DTMF calling. All versions provide programmable PTT ANI for business or fleet applications.

### DUAL BAND CAPABILITY

Two VX-4000 Control Heads and RF Decks, on different bands, may be networked to allow multi-band operation. VHF, UHF, or VHF Low Band radios may be combined to meet complicated communications requirements involving federal, state, and local government and/or forestry operations.



### CTCSS / DCS ENCODE + DECODE

Field programming of the CTCSS tones or DCS codes is available, allowing access to multiple systems or quick configuration for multi-jurisdictional operations.

### USER SELECTABLE TONES / CODES

High-performance Encoder/Decoder circuits for both CTCSS and Digital Code Squelch are provided for access to tone/code controlled systems.

### BUILT IN 25 PIN (DB-25) ACCESSORY CONNECTOR

The VX-4000 includes a built-in standard DB-25 connector, for ease of integration of the radio into your communications system. The DB-25 connector includes a number of logic status lines, Squelch state and level indicators, and Data I/O connections. Horn Alert and other accessories also can be connected through the DB-25 connector.



### INTERNAL ACCESSORY INTERFACING

The VX-4000 Series is easily interfaced to 3rd-party accessories. The optional CN-6 Interface Unit provides a quick interconnection platform for signaling, control, and other accessory boards used in public safety environments.





## HIGH PERFORMANCE

### WIDE-BAND COVERAGE

Coverage beyond typical frequency limits allows programming in "guard band" channel allocations, and ensures compatibility for programming in a wide variety of locations.

### POWER OUTPUT: 70 W (LOW BAND), 50 W (VHF), 40 W (UHF)

Providing a solid 50 Watts of VHF power output (Low Band: 70 Watts; UHF: 40 Watts), the VX-4000's construction includes a massive, die-cast outer case which doubles as the heatsink. And the Automatic Power Control (APC) circuit ensures stable power output over a very wide range of ambient temperatures.

### 12.5/25 kHz BANDWIDTH PROGRAMMABLE PER CHANNEL

The VX-4000 may be programmed with Wide or Narrow operating bandwidths, channel by channel, to conform to your local channel environment. Ideal for multi-jurisdiction operations.

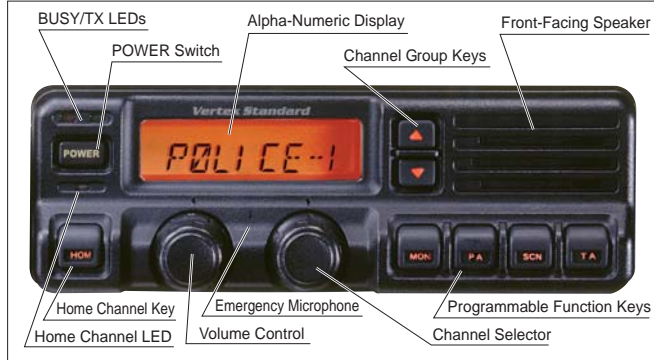
### 2.5 kHz STEP FOR VHF/UHF

Ensuring full compatibility with all channel loading requirements, the VX-4000's synthesizer provides 2.5 kHz resolution. Channel programming therefore is straightforward in all configuration situations.

## EASY USER INTERFACE

### LARGE 8-DIGIT ALPHANUMERIC DISPLAY

Providing indication of either the channel number or an Alphanumeric Channel Label of up to 8 characters, the LCD display utilizes large, bold characters on its high-intensity backlit amber LED display to provide excellent visibility over a wide range of viewing angles and in difficult lighting situations.



### 7 PROGRAMMABLE BACKLIT KEYS

The front panel keys may be programmed by the dealer for a variety of operating functions, allowing customization of the front panel functions to your unique requirements. The keys are illuminated from behind, as well, for easy viewing at night.

### LOUD 5W/10W AUDIO OUTPUT

The VX-4000's high-powered audio (5 Watts standard, 10 Watts optional) is coupled to a large, front-facing speaker, producing high-quality, crisp audio that will punch through even in the noisy environments experienced by public safety officers.

### STATUS QUICK-CHECK (SQC) FEATURE

The VX-4000 can be programmed to include the Status Quick Check (SQC) feature, which allows the user to check the configuration of all controls, keys, and knobs on the radio. This enables the operator to avoid missing important communications in the event that a control or switch is set to the wrong position.

### RADIO TO RADIO CLONE FEATURE

For quick programming of VX-4000 radios for an emergency task force, the Clone feature allows copying of all channel and other configuration data from one VX-4000 to another, using the optional CT-72 Cloning Cable.



## SECURITY

### EMERGENCY FUNCTIONS

The VX-4000 may be programmed to transmit an Emergency DTMF ANI burst, with or without a live microphone engaged, to alert the dispatcher to an emergency situation requiring assistance to the user.

### ENCRYPTION

The FVP-25 Encryption Unit or FVP-35 Rolling code encryption Unit provides security for your important public safety and private security communications, and it also includes a DTMF Paging function for selective calling.

### INTERNAL EMERGENCY MICROPHONE (Patent Pending)

In an emergency situation, the VX-4000 can transmit using an internal microphone should the regular microphone become damaged or otherwise unusable.



## DURABLE CONSTRUCTION

### DIE-CAST CONSTRUCTION ALUMINUM CHASSIS/ENCLOSURE

The one-piece die-cast enclosure for the VX-4000 doubles as its chassis, yielding extreme strength for resistance against shock and vibration. This uniquely rugged construction ensures that specifications and functionality will be maintained for many years, despite the shock, vibration, and other abuse typically experienced by radios in public safety use.



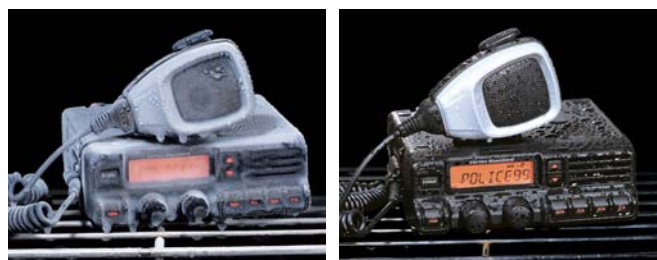
### HIGH-RELIABILITY CONSTRUCTION

The ABS front panel is sealed by a robust O-ring, and all switches are covered by U-shaped silicone rubber gaskets to protect the internal circuitry from dust, humidity, salt fog, and driving rain.



### WATER-SHIELD MICROPHONE CONNECTION

The multi-pin microphone connector on the side of the VX-4000, sealed for protection against weather, provides a convenient connection point for the available microphones. Its gold-plated contacts ensure many years of reliable service.



### OTHER FEATURES:

- TALK AROUND
- BCLO, BTLO, AND TOT FUNCTIONS

## Accessories & Options

						
<p><b>RMK-4000SH</b> Remote Kit for Single Transceiver</p>	<p><b>MH-25B7A</b></p>	<p><b>MH-53C7A</b></p>	<p><b>MH-53A7A</b></p>	<p><b>MH-53B7A</b></p>	<p><b>MLS-100</b></p>	
	<p>Standard Microphone</p>	<p>Heavy Duty Microphone</p>	<p>Heavy Duty Noise Canceling Microphone</p>	<p>Heavy Duty Noise Canceling DTMF Microphone</p>	<p>Mobile Loud Speaker (12 W Peak Power)</p>	
						
<p><b>RMK-4000DH</b> Remote Kit for Dual-Head Installations</p>	<p><b>CT-93</b> Cable for RMK-4000 33 ft (10 m)</p>	<p><b>F2D-8</b> 2-Tone Decode Unit (Requires FIF-7)</p>	<p><b>F5D-14</b> 5-Tone ENC/DEC Unit (Requires FIF-7)</p>	<p><b>VTP-50</b> VX-Trunk Unit (Requires FIF-7)</p>	<p><b>FVP-25</b> Encryption/DTMF Pager Unit (Requires FIF-7)</p>	
						
<p><b>RMK-4000DB</b> Remote Kit for Dual Band Installations</p>	<p><b>CT-81</b> Cable for RMK-4000 20 ft (6 m)</p>	<p><b>MDC1200</b> Digital ANI Encoder Unit (Requires FIF-7)</p>	<p><b>FVP-35</b> Rolling Code Encryption Unit (Requires FIF-7)</p>	<p><b>FIF-7</b> Interface Board for F2D-8, F5D-14, VTP-50, FVP-25</p>	<p><b>CN-6</b> Interface Board for Accessories</p>	
						
<p><b>RMK-4000DBH</b> Remote Kit for Dual Band plus Dual Head Installations</p>	<p><b>CT-82</b> Cable for RMK-4000 8 ft (2.5 m)</p>	<p><b>FP-1023</b> External Power Supply (13.8 V, 23 A)</p>	<p><b>MMB-75</b> Mobile Mounting Bracket</p>	<p><b>MMB-76</b> Locking Mobile Mounting Bracket</p>		
						
<p><b>CNT-4000</b> Control Head</p>	<p><b>RF DECK w/ MMB-75</b> RF Deck for Multi Band Operation</p>	<p><b>LF-1</b> Line Filter</p>	<p><b>CT-70</b> Radio Programming Cable (Requires VPL-1)</p>	<p><b>CT-71</b> Radio to PC Programming Cable</p>	<p><b>CT-72</b> Radio to Radio Programming Cable</p>	<p><b>CE49</b> Programming Software</p>

Various accessories listed may not be available in some countries.

Specifications			
	VX-4000L	VX-4000V	VX-4000U
<b>General Specifications</b>			
Frequency Range	29.7-37 MHz (A) 37-50 MHz (B)	134-160 MHz (A) 148-174 MHz (C)	400-430 MHz (A) 450-490 MHz (D) 480-512 MHz (F)
Number of Channels	250 Channels		
Channel Spacing	20 kHz	12.5/25/30 kHz	
PLL Steps	5/6.25 kHz	2.5/5/6.25 kHz	2.5/5/6.25 kHz
Power Supply Voltage	13.8 VDC $\pm$ 20 %		
Current Consumption			
STBY	400 mA		
RX	2.1 A		
TX	12 A		
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)		
Frequency Stability	Better than $\pm$ 5 ppm	Better than $\pm$ 2.5 ppm	
RF Input-Output Impedance	50 Ohms		
Audio Output Impedance	4 Ohms		
Dimensions	7"(W) X 2.4"(H) X 7.7"(D) (178 X 60 X 195 mm)		
Weight	4.9 lb. (2.2 kg)		
<b>Receiver Specifications</b> Measurements made per EIA standard TIA/EIA-603			
Circuit Type	Double-conversion Super-heterodyne		
Sensitivity(EIA 12 dB SINAD)	0.25 $\mu$ V	0.25 $\mu$ V	
Adjacent Channel Selectivity	85 dB	85 dB/ 75 dB (25 kHz/12.5 kHz)	80 dB/ 70 dB (25 kHz/12.5 kHz)
Intermodulation	75 dB	76 dB	
Spurious and Image Rejection	85 dB	90 dB	
Audio Output	5 W @ 4 Ohms w/ 3 % THD 10 W @ 4 Ohms w/ 3 % THD (Optional MLS-100)		
<b>Transmitter Specifications</b> Measurements made per EIA standard TIA/EIA-603			
Power Output	70 W Adjustable to 30 W	50 W Adjustable to 5 W	40 W Adjustable to 5 W
Modulation	16K0F3E	16K0F3E , 11K0F3E	
Maximum Deviation	5 kHz	5.0 / 2.5 kHz	
Conducted Spurious Emissions	70 dB Below Carrier		
Audio Distortion (@1 kHz)	<3 %		

Measurements per EIA standards unless noted above. Specifications subject to change without notice or obligation.

### Applicable MIL-STD

Standard	MIL 810C Methods/Procedures	MIL 810D Methods/Procedures	MIL 810E Methods/Procedures
Low Pressure		500.2/Procedure 2	500.3/Procedure 2
High Temperature	501.1/Procedure 1, 2	501.2/Procedure 1, 2	501.3/Procedure 1, 2
Low Temperature	502.1/Procedure 1	502.2/Procedure 1, 2	502.3/Procedure 1, 2
Temperature Shock	503.1/Procedure 1	503.2/Procedure 1	503.3/Procedure 1
Solar Radiation	505.1/Procedure 1	505.2/Procedure 1	505.3/Procedure 1
Rain*		506.2/Procedure 1, 2	506.3/Procedure 1, 2
Humidity	507.1/Procedure 2	507.2/Procedure 2	507.3/Procedure 2
Salt Fog		509.2/Procedure 1	509.3/Procedure 1
Dust		510.2/Procedure 1	510.3/Procedure 1
Vibration	514.2/Procedure 8, 10	514.3/Procedure 1 Cat. 10	514.4/Procedure 1 Cat. 10
Shock	516.2/Procedure 1, 5	516.3/Procedure 1, 4	516.4/Procedure 1, 4

\*Control Head Only



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