

# VX-410E/420E SERIES

## VHF/UHF Portable Radios



- 5 WATTS POWER OUTPUT (SELECTABLE TO 1 WATT)
- 32 CHANNEL CAPABILITY (VX-410E/420E)
- 256 CHANNEL CAPABILITY (VX-420AE)
- 8-CHARACTER ALPHANUMERIC DISPLAY (VX-420E/420AE)
- MULTI-MODE SCAN (DUAL WATCH, PRIORITY, FOLLOW-ME)
- 5-TONE ENCODE/DECODE
- 2-TONE ENC/DEC (DUAL 2-TONE DEC)
- CTCSS / DCS ENCODE AND DECODE
- DTMF ANI/DTMF PAGING (REQUIRES OPTIONAL FVP-25)
- 2 PROGRAMMABLE SIDE FUNCTION BUTTONS
- 4 PROGRAMMABLE FRONT-PANEL FUNCTION BUTTONS (VX-420E/420AE)
- FRONT PANEL KEYPAD ILLUMINATION (VX-420E/420AE)
- 12.5/20/25 kHz BANDWIDTH (PROGRAMMABLE BY CHANNEL)
- COMPANDER INCLUDED (AVAILABLE ON WIDE AND NARROW CHANNELS)
- VOICE ENCRYPTION BUILT IN
- SMARTRUNK II™ OPERATION AVAILABLE
- VOICE STORAGE (OPTIONAL DVS-5 REQUIRED)
- ARTS™ (AUTO-RANGE TRANSPOND SYSTEM)
  - BCLO, BTLO AND TOT FUNCTIONS
  - RX POWER SAVE CIRCUIT
  - PC PROGRAMMABLE
  - RADIO-TO-RADIO CLONING
  - RUGGED CONSTRUCTION
  - LOUD, CLEAR AUDIO OUTPUT
  - MIL-STD 810 D/E/F
  - COMPACT CASE SIZE, LIGHT WEIGHT



VX-410E Series

VX-420E/AE Series

# VX-410E/420E SERIES

## VHF/UHF Portable Radios

The VX-410E/420E Series of 32-Channel and VX-420AE Series of 256-Channel VHF/UHF Portables features 5 Watts of Power Output and a host of leading-edge built-in features for demanding business/industry and public safety applications. Included as standard features are 5-Tone Encode/Decode, Dual 2-Tone Decode, 2-Tone Encode, Encryption, Voice Comander and Multi-mode Scanning. The VX-410E/420E/420AE may be programmed, by channel, for 12.5/20/25 kHz channel spacing and for simplex or split operation. The deluxe VX-420E/420AE version features an eight-character alphanumeric display, 4 additional programmable keys and illuminated keypad.

## HIGH PERFORMANCE

### 5 WATTS POWER OUTPUT

The VX-410E/420E/420AE Portables produce a full 5 Watts of power output, with an additional selection of 1 Watt available for increased battery life when higher power is not required.

### 12.5/20/25 kHz BANDWIDTH (PROGRAMMABLE BY CHANNEL)

When programming radios for use in different jurisdictions or geographical regions, the VX-410E/420E/420AE Portables may be programmed, channel by channel, for 12.5, 20, or 25 kHz channel spacing environments, with both bandwidth and deviation automatically set according to each channel's requirements.

### LEADING-EDGE DESIGN

Crafted with care for use in areas of severe RF pollution, the VX-410E/420E/420AE Portables include excellent adjacent-channel selectivity and immunity from Intermodulation, along with ETS-compliant  $\pm 1.5$  kHz frequency stability.

### LOUD 500 mW AUDIO OUTPUT

Ideal for reception in noisy environments, the VX-410E/420E/420AE Portables' high-powered audio is coupled to a large internal speaker, assuring solid copy throughout difficult crowd control, fire, or sporting-event operations.

### LONG-LIFE LITHIUM-ION BATTERY (2000 mAh)

The VX-410E/420E/420AE Portables may be equipped with advanced FNB-V67LI Lithium-Ion Battery Packs with 2000 mAh of capacity, for operating times of more than ten hours, even when using 5 Watts (5-5-90 duty cycle).

## VERSATILITY

### 32 CHANNEL OR 256 CHANNEL CAPACITY

The 32-channel capacity of the VX-410E/420E Portables includes quick access, and the channel-specific information loaded during programming minimizes the extra keystrokes required on competing models. Two banks of 16 channels each are provided for convenient channel access. The 256-Channel Capacity of the VX-420AE Series divides between 2 or 16 groups.



VX-410E/420E

### PROGRAMMABLE KEYS

Two buttons on the side panel of the VX-410E may be custom-programmed for specific functions needed in your application. The VX-420E/420AE additionally provides four front-panel programmable keys, for a total of six available custom buttons.

### TRUNKING CAPABILITY

Installation of the SmarTrunk™ module enables use of the VX-410E/420E/420AE on systems equipped for the trunking operation.



### 5/6-TONE AND DUAL 2-TONE SYSTEMS BUILT IN

For smooth integration into advanced radio systems, the VX-410E/420E Portables are equipped with 5/6-Tone Encode/Decode, as well as 2-Tone Encode/Decode, Dual 2-Tone Decode circuitry. In addition, DTMF ANI and DTMF Paging capability is also available through installation of the optional FVP-25 DTMF Pager Unit.

## EASY USER INTERFACE

### ADVANCED 8-CHARACTER ALPHANUMERIC DISPLAY

Providing an Alphanumeric Channel Label of up to 8 characters, the LCD display also provides convenient operating function icons to provide instant recognition of radio status.

### ERGONOMIC CONSTRUCTION

The carefully-engineered case construction features a gently rounded shape for a solid grip, whether the radio is wet or dry. Its over-sized keys are easy to activate, and the operating firmware has been carefully shaped by years of feedback from public safety, business, industry, and government users.

### KEY LOCK

A key may be programmed as a "Key Lock" control, to prevent inadvertent channel change or unwanted activation/deactivation of functions. This is especially valuable in surveillance operations, where the radio may be concealed and subject to accidental pressure on its keys.

### RADIO TO RADIO CLONE FEATURE

For quick programming of the VX-410E/420E/420AE radios for an emergency task force, the Clone feature allows copying of all channel and configuration data from one VX-410E/420E/420AE to another same radio, using the optional CT-27 Cloning Cable.

## SECURITY

### BUILT-IN ENCRYPTION

The built-in Encryption circuit provides security for your important public safety and private security communications, and it may be enabled at the time of radio programming by the dealer.

### OPTIONAL VOICE RECORDER

The optional DVS-5 Voice Recorder Unit allows you to record and store up to 120 seconds of incoming receiver audio, ideal for keeping an audible record of an important message. Audio may be saved either as a one-time 2-minute recording, or a constantly refreshing "last 120 seconds" recording may be made.

### SECURITY PASSWORD FEATURE (VX-420E/420AE Series)

The VX-420E/420AE Series provides a security password feature which can minimize the chance that your transceiver could be used by an unauthorized party. When the password feature is activated, the radio will ask for the four digit password to be entered when the radio is first turned on. You must enter the password from the keypad.



## DURABLE CONSTRUCTION

### ULTRA COMPACT

The VX-410E/420E/420AE Series Portables features and performance are housed in an ultra-rugged, compact case measuring only 58 (W) x 108.5 (H) x 30 (D) mm, and weighing about 300 g with FNB-V67LI Li-Ion Battery.

### MIL-STD RATED

Designed for use under the most demanding conditions, the VX-410E/420E/420AE Portables are built in compliance with MIL-STD 810 D/E/F specifications for reliable operation in environments including shock, vibration, high and low temperature, low pressure, rain, humidity, salt fog, and dust.



VX-410E Series

ACTUAL SIZE

VX-420E/420AE Series

## Specifications

	VHF		UHF	
	VX-414E/424E	VX-424AE	VX-417E/427E	VX-427AE
<b>General Specifications</b>				
Frequency Range	134-160 MHz (A) 146-174 MHz (C)	134-160 MHz (A) 146-174 MHz (C)	400-430 MHz (AS) 420-450 MHz (B) 440-470 MHz (CS)	400-430 MHz (AS) 440-470 MHz (CS)
Number of Channels	32 channel (16 channel x 2 banks)	256 channel (group 2~16)	32 channel (16 channel x 2 banks)	256 channel (group 2~16)
Channel Spacing	25/20/12.5 kHz			
Battery voltage	7.5 VDC			
Battery Life	W/FNB-V67LI(2000 mAh):12.5 hrs. (16 hrs. w/saver)		W/FNB-V67LI(2000 mAh): 11.5 hrs. (15 hrs. w/saver)	
Temperature Range	-30° C to +60° C			
Frequency Stability	±1.5 kHz			
Case size (W x H x D)	58 x 108.5 x 30 mm with FNB-83			
Weight (approx.)	300 g with FNB-V67LI, Antenna and Belt clip			
<b>Receiver Specifications</b>				
Sensitivity	20 dB SINAD 12 dB SINAD		-4 dB µV (EN) 0.25 µV (TIA/EIA)	-3 dB µV (EN) 0.25 µV (TIA/EIA)
Adjacent Channel Selectivity	70 dB / 70 dB / 60dB			
Intermodulation	65 dB			
Spurious response rejection	70 dB			
Hum & Noise	45 dB			
Audio output	500 mW @4 Ohm, 10 % THD			
<b>Transmitter Specifications</b>				
Power Output	5.0/1.0 W			
Modulation Limiting (EN)	±5.0 kHz at 25 kHz ±4.0 kHz at 20 kHz ±2.5 kHz at 12.5 kHz			
Type of emission	16K0F3E / 14K0F3E / 11K0F3E(TIA/EIA)			
Conducted Spurious Emissions	-36 dBm @≤ 1 GHz -30 dBm @> 1 GHz			
FM Noise	45 dB/45 dB/40dB			
Modulation distortion(@1 kHz)	3 %			

Measurements per: EN 300 086 standards unless noted above.  
Specifications are subject to change without notice or obligation.

## Accessories & Options

 <b>MH-45B4B</b> Speaker/Microphone	 <b>MH-37A4B</b> Earpiece/Microphone	 <b>VC-25</b> VOX Headset
 <b>FVP-25</b> DTMF Pager Unit	 <b>FVP-35</b> Rolling Code Encryption Unit	 <b>DVS-5</b> Digital Voice Storage Unit
 <b>VME-100</b> ANI Encoder Unit	 <b>VMDE-200</b> ANI Encoder/Decoder Unit	 <b>MDC1200</b> Digital ANI Encoder Unit
 <b>FNB-V67LI</b> 7.4V 2000 mAh Lithium-Ion Battery	 <b>FNB-83</b> 7.2V 1400 mAh Ni-MH Battery Pack	 <b>FBA-25A</b> Alkaline Battery Case (6 x AA size)
 <b>VAC-10B/C/U*</b> Desktop Rapid Charger (for FNB-83)	 <b>VAC-810B/C/U*</b> Desktop Rapid Charger (for FNB-V67LI)	 <b>VAC-6810</b> 6-Unit Multi Charger (for FNB-V67LI)
 <b>VCM-3</b> Vehicular Charger Mounting Adapter for VAC-10	 <b>VCM-1</b> Mobile Mounting Bracket for VAC-800/810	 <b>CT-27</b> Cloning Cable (Set-to-Set Cloning)

\*B for 120 VAC / C for 220-240 VAC / U for 230 VAC

Programming Cable	USB	FIF-10/A + CT-106
	RS-232C	CT-29 + CT-28
Programming Software	CE64 (for VX-410A/E, 420AE) CE78 (for VX-420AE)	

### ANTENNA LIST

UHF	ATU-6A	400-430 MHz	
	ATU-6C	440-470 MHz	
VHF	ATV-6A	134-151 MHz/3.5"	ATV-10A 145-155 MHz HIGH GAIN
	ATV-6B	150-163 MHz/3.5"	ATV-10B 150-160 MHz HIGH GAIN
	ATV-6C	161-174 MHz/3.5"	ATV-10C 155-165 MHz HIGH GAIN
	ATV-6XL	VHF UNTUNED	ATV-10E 165-175 MHz HIGH GAIN
	ATV-8A	134-151 MHz	
	ATV-8B	150-163 MHz	
	ATV-8C	161-174 MHz	

## Applicable MIL-STD

Standard	MIL 810D Methods/Procedures	MIL 810E Methods/Procedures	MIL 810F Methods/Procedures
Low Pressure	500.2/Procedure I, II	500.3/Procedure I, II	500.4/Procedure I, II
High Temperature	501.2/Procedure I, II	501.3/Procedure I, II	501.4/Procedure I, II
Low Temperature	502.2/Procedure I	502.3/Procedure I, II	502.4/Procedure I, II
Temperature Shock	505.2/Procedure I	505.3/Procedure I	505.4/Procedure I, II
Rain	506.2/Procedure I, II	506.3/Procedure I, II	506.4/Procedure I, III
Humidity	507.2/Procedure II, III	507.3/Procedure II, III	507.4/Procedure I
Salt Fog	509.2/Procedure I	509.3/Procedure I	509.4/Procedure I
Dust	510.2/Procedure I	510.3/Procedure I	510.4/Procedure I, III
Vibration	514.3/Procedure Cat. 10	514.4/Procedure Cat. 10	514.5/Procedure Cat. 10
Shock	516.3/Procedure I, IV	516.4/Procedure I, IV	516.5/Procedure I, IV



**VERTEX STANDARD CO., LTD.**

4-8-8 Nakameguro, Meguro-ku, Tokyo 153-8644, Japan

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<http://www.vxstd.com>



Midgårdsvägen 20, S-973 34 LULEÅ  
Tel: 0920-22 24 10, Fax: 0920-22 24 20  
E-Mail: [info@vianetab.se](mailto:info@vianetab.se)  
Gsm: 070-545 14 52, 070-545 17 81

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**VERTEX STANDARD** <http://www.vertexstandard.com>

### US Headquarters

10900 Walker Street, Cypress, CA 90630, U.S.A.

Phone +1 714-827-7600

### YAESU EUROPE B.V.

P.O. Box 75525, 1118 ZN Schiphol, The Netherlands

Phone +31 20-5005270

### YAESU UK LTD.

Unit 12, Sun Valley Business Park, Winnall Close

Phone +44 196 286 6667

Winchester, Hampshire, SO23 0LB, U.K.

**VERTEX STANDARD HK LTD.** <http://www.vxstd.com.hk>

Unit 5, 20/F., Seaview Centre, 139-141 Hoi Bun Road,  
Kwun Tong, Kowloon, Hong Kong

Phone +852 2732 2288

**VERTEX STANDARD AUSTRALIA PTY. LTD.**

Normanby Business Park, Unit 14/45 Normanby Road  
Notting Hill 3168, Victoria, Australia

<http://www.vxstd.com.au>  
Phone +61 3 95182100