

VX-410/420 SERIES

VHF/UHF Portable Radios



- **FREQUENCY RANGE**
 - VHF: 146 - 174 MHz
 - UHF: 450 - 490 MHz
- **5 W POWER OUTPUT**
(SELECTABLE TO 1 W)
- **32 CHANNEL CAPABILITY**
- **8-CHARACTER ALPHANUMERIC DISPLAY (VX-420)**
- **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 FUNCTION BUTTONS**
(SIDE) ON BOTH VX-410 AND VX-420
- **4 PROGRAMMABLE FRONT-PANEL FUNCTION BUTTONS (VX-420)**
- **FRONT PANEL KEYPAD ILLUMINATION (VX-420)**
- **12.5/20/25 kHz BANDWIDTH**
(PROGRAMMABLE BY CHANNEL)
- **COMPANDER INCLUDED (AVAILABLE ON WIDE AND NARROW CHANNELS)**
- **VOICE ENCRYPTION BUILT IN (NOT AN OPTIONAL MODULE!)**
- **SmarTrunk II™ OPERATION AVAILABLE**
- **VOICE STORAGE (OPTIONAL DVS-5 REQUIRED)**
- **ARTS™ (AUTO-RANGE TRANSPOND SYSTEM)**
 - BCLO, BTLO AND TOT FUNCTIONS
 - TX/RX POWER SAVE CIRCUIT
 - PC PROGRAMMABLE
 - RADIO-TO-RADIO CLONING
 - RUGGED CONSTRUCTION
 - LOUD, CLEAR AUDIO OUTPUT
 - MIL-STD 810 D/E/F
 - INTRINSICALLY SAFE (IS) OPTION
 - COMPACT CASE SIZE, LIGHT WEIGHT

VX-410 Series

VX-420 Series



VX-410/420 SERIES

VHF/UHF Portable Radios

The VX-410/420 Series of 32-Channel VHF/UHF Portables features 5 W 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 Dual 2-Tone Decode, 2-Tone Encode/Decode, 5-Tone Encode/Decode, Encryption, Voice Comander, and Multi-mode Scanning. The VX-410/420 may be programmed, by channel, for 12.5/20/25 kHz channel spacing, and for simplex or split operation.

The deluxe VX-420 version features an eight-character alphanumeric display, 4 additional programmable keys and illuminated keypad. Both the VX-410 and VX-420 are available in Intrinsically Safe versions, and all are built with legendary Vertex ruggedness and unmatched cost-performance.

HIGH PERFORMANCE

5 W POWER OUTPUT

The VX-410/420 Portables produce a full 5 W of power output, with an additional selection of 1 W 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-410/420 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-410/420 Portables include excellent adjacent-channel selectivity and immunity from Intermodulation, along with TIA-compliant ± 2.5 ppm frequency stability.

LOUD 500 mW AUDIO OUTPUT

Ideal for reception in noisy environments, the VX-410/420 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 (1600 mAh)

The VX-410/420 Portables may be equipped with advanced FNB-V67 Lithium-Ion Battery Packs with 1600 mAh of capacity, for operating times of up to ten hours or more, even when using 5 W (5-5-90 duty cycle).

VERSATILITY

32 CHANNEL CAPACITY

The 32-channel capacity of the VX-410/420 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.

PROGRAMMABLE "SOFT" KEYS

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

TRUNKING OPERATION AVAILABLE

Installation of the SmarTrunk II™ module enables use of the VX-410/420 on systems equipped for Trunking operation.



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

For smooth integration into advanced radio systems, the VX-410/420 Portables are equipped with 2-Tone Encode/Decode, Dual 2-Tone Decode, as well as 5/6-Tone Encode/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 Soft key may be programmed as a Key Lock control, to prevent inadvertent channel change or unwanted activation/de-activation 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-410/420 radios for an emergency task force, the Clone feature allows copying of all channel and configuration data from one VX-410/420 to another, 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 Storage 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-420 Series)

The VX-420 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.



VX-410 Series

ACTUAL SIZE

VX-420 Series

DURABLE CONSTRUCTION

ULTRA COMPACT

The VX-410/420 Series Portables features and performance are housed in an ultra-rugged, compact case measuring only 2.3" (W) x 4.3" (H) x 1.2" (D), and weighing less than a pound with the standard FNB-V57 Battery.

MIL-STD RATED

Designed for use under the most demanding conditions, the VX-410/420 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.

INTRINSICALLY SAFE (IS) VERSIONS AVAILABLE

The VX-410/420 Portables are also available in Intrinsically Safe (IS) versions, for leading-edge communications capability in hazardous operating situations. Included in the IS certification for the VX-410/420 is approval for use in dangerous hydrogen and acetylene environments.

Specifications		Accessories & Options	
VX-414/424 VHF		VX-417/427 UHF	
General			
Frequency Range	146-174 MHz	450-490 MHz	
Number of Channels	32 channel (16 channel x 2 Groups)		
Channel Spacing	25/20/12.5 kHz		
Battery Life	W/FNB-V67LI(1600mAh): 10hrs. (13hrs. w/saver) W/FNB-V57(1100mAh): 7hrs. (8.8hrs. w/saver)	W/FNB-V67LI(1600mAh): 9.5hrs. (12hrs. w/saver) W/FNB-V57(1100mAh): 6.5hrs. (8hrs. w/saver)	
Battery voltage	7.5 VDC ±20 %		
Temperature Range	-22° F to +140° F (-30° C to +60° C)		
Case size (W x H x D)	2.3 x 4.3 x 1.2 inches with FNB-V57 (58 x 108.5 x 30 mm with FNB-V57)		
Weight (approx.)	10.6 oz (300 g) with FNB-V67LI, Antenna and Belt clip		
Receiver Measurements made per EIA standard TIA/EIA-603			
Circuit Type	Double-conversion Super-heterodyne		
IFs	50.85 MHz & 450 kHz		
12-dB SINAD Sensitivity	< 0.25µV		
Squelch Sensitivity	< 0.20µV		
Adjacent Selectivity	> 70 dB (25/20 kHz) / > 65 dB (12.5 kHz)		
Intermodulation	> 70 dB		
Spurious Rejection	> 70 dB		
Image Rejection	> 70 dB		
FM Hum and Noise	> 45 dB		
AF Output	0.5 W @ 4 Ohms, 5 % THD		
Transmitter Measurements made per EIA standard TIA/EIA-603			
Power Output	5.0/1.0 W (Selectable)		
Frequency Stability	better than ±2.5 ppm		
Modulation System	16K0F3E / 11K0F3E		
Maximum Deviation	±5.0 kHz (25 kHz) / ±2.5 kHz (12.5 kHz)		
FM Noise	> 45 dB		
Spurious Emission	70 dB below carrier		
AF Distortion (@1 kHz)	< 3 %		
Microphone Type	2-k Ohms condenser		

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

 MH-45B4B Speaker/Microphone	 Speaker/ Microphone MH-360S Miniature type MH-450S Small type	 MH-37A4B Speaker/Microphone
 VC-25 VOX Headset	 FVP-25 DTMF Pager Unit	 FVP-35 Rolling Code Encryption Unit
 DVS-5 Digital Voice Storage Unit	 VME-100 MDC1200®/GE-STAR® ANI Encoder Unit	 VMDE-200 MDC1200®/GE-STAR® ANI Encoder/Decoder Unit
 MDC1200 MDC-1200® ANI Encoder Unit	 FNB-V94 7.2V 1800 mAh Ni-MH Battery Pack	 FNB-V67LI 7.4V 1600 mAh Lithium-Ion Battery
 FNB-83 7.2V 1400 mAh Ni-MH Battery Pack	 FNB-V57 7.2V 1100 mAh Ni-Cd Battery Pack	 FNB-V57IS 7.2V 1100 mAh Ni-Cd Intrinsically Safe (IS) Battery
 FBA-25A Alkaline Battery Case (6 x AA size)	 VAC-10B/C* Desktop Charger (for FNB-V57/V57IS/V94/83)	 VAC-800B/C* Desktop Rapid Charger (for FNB-V57/V57IS) VAC-810B/C* Desktop Rapid Charger (for FNB-V67LI)
 VAC-6800 6-Unit Multi Charger (for FNB-V57/-V57IS) VAC-6810 6-Unit Multi Charger (for FNB-V67LI)	 VAC-6010 6-Unit Multi Charger (for FNB-V57/V57IS/83/V94)	 VCM-1 Mobile Mounting Bracket for VAC-800/810
	 CT-27A Cloning Cable (Set-to-Set Cloning)	 VH-115S Lightweight headset w/ Boom VH-215S Lightweight Padded headset, Single Speaker VH-225S Lightweight Padded Headset, Dual Speaker CLIP-17C Swivel Belt Clip

*B for 120 VAC / C for 220-240 VAC

Programming Cable	USB	FIF-10/A + CT-106
	RS-232C	CT-29 + CT-28
Programming Software	CE64	

■ ANTENNA LIST

UHF	ATU-6D	450-485 MHz		
	ATU-6DS	450-485 MHz/3.5"		
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	500.2/Procedure I, II	500.3/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, II	502.3/Procedure I, II	502.4/Procedure I, II
Temperature Shock	503.2/Procedure I	503.3/Procedure I	503.4/Procedure I, II
Rain	506.2/Procedure II	506.3/Procedure II	506.4/Procedure I, III
Humidity	507.2/Procedure II, III	507.3/Procedure II, III	507.4
Salt Fog	509.2	509.3	509.4
Dust	510.2/Procedure I	510.3/Procedure I	510.4/Procedure III
Vibration	514.3/Procedure Cat. 10	514.4/Procedure Cat. 10	514.5/Procedure Cat. 24
Shock	516.3/Procedure I	516.4/Procedure I	516.5/Procedure I

Intrinsically Safe Information

The VX-410/420 Intrinsically Version, equipped with any of optional units, meets the requirements of ANSI/UL913 6th Edition for Class I, Division 1, Groups A-D; Class II, Groups E-G; and Class III for hazardous locations.



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