



UHF FM

VX-2

VX-2200 Series

Service Manual

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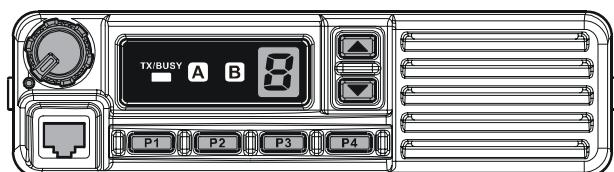
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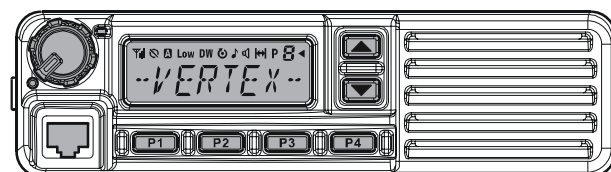
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VX-2100 Series



VX-2200 Series

Introduction

This manual provides the technical information necessary for servicing the VX-2100/-2200 Series Mobile Transceiver.

Servicing this equipment requires expertise in handling surface-mount chip components. Attempts by non-qualified persons to service this equipment may result in permanent damage not covered by the warranty, and may be illegal in some countries.

Two PCB layout diagrams are provided for each double-sided board in this transceiver. Each side of the board is referred to by the type of the majority of components installed on that side ("Side A" or "Side B"). In most cases one side has only chip components (surface-mount devices), and the other has either a mixture of both chip and leaded components (trimmers, coils, electrolytic capacitors, ICs, etc.), or leaded components only.

As described in the pages to follow, the advanced microprocessor design of the VX-2100/-2200 allows a complete alignment of this transceiver to be performed without opening the case of the radio; all adjustments can be performed from the personal computer, using with the Vertex Standard VPL-1 Programming Cable and CE82 Software.

While we believe the information in this manual to be correct, Vertex Standard assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated.

Important Note

This transceiver was assembled using Pb (lead) free solder, based on the RoHS specification.

Only lead-free solder (Alloy Composition: Sn-3.0Ag-0.5Cu) should be used for repairs performed on this apparatus. The solder stated above utilizes the alloy composition required for compliance with the lead-free specification, and any solder with the above alloy composition may be used.

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Specifications

General

Frequency Ranges:	400 - 470 MHz (Type A) 450 - 512 MHz (VTX, Type D) 450 - 520 MHz (EXP, Type D) 350 - 390 MHz (Type I)
Number of Groups:	1 groups (VX-2100 Series) 8 groups (VX-2200 Series)
Number of Channels:	8 channels (VX-2100 Series) 128 channels (VX-2200 Series)
Power Supply Voltage:	13.6 V \pm 15%
Channel Spacing:	12.5 / 25 kHz
Current Consumption (Approx.):	TX: 11 A (45 W) or 6 A (25 W), RX: 2.5 A, Standby: 250 mA
Operating Temperature Range:	-22 °F to +140 °F (-30 °C to +60 °C)
Frequency Stability:	Better than \pm 2.5 ppm
RF Input-Output Impedance:	50 Ω
Dimension (W x H x D):	6.5" x 1.8" x 6.1" inch (165 x 46 x 155 mm) (W/O knob)
Weight (Approx.):	2.87 lbs (1.3 kg)

Receiver (Measured by TIA/EIA-603-A)

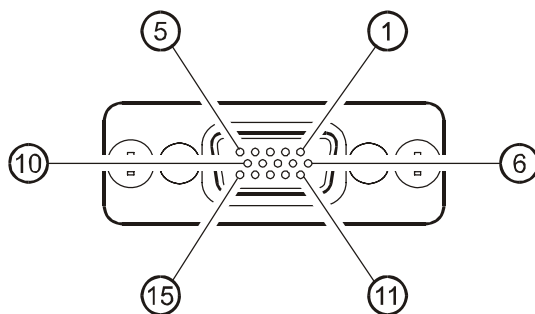
Sensitivity (12 dB SINAD):	0.25 μ V
Intermediate Frequency:	1st: 67.65 MHz, 2nd: 450 kHz
Adjacent Channel Selectivity:	73 dB (25 kHz) 65 dB (12.5 kHz)
Intermodulation:	73 dB (25 kHz) 70 dB (12.5 kHz)
Spurious & Image Rejection:	80 dB
Audio Output:	Internal: 4 W @18 Ω , 5% THD External: 12 W @4 Ω , 5% THD

Transmitter (Measured by TIA/EIA-603-A)

Output Power :	45 / 25 / 10 W (50 W) 25 / 12.5 / 5 / 1 W (25 W)
Modulation:	16K0F3E, 11K0F3E
Maximum Deviation:	\pm 5 kHz (25 kHz) \pm 2.5 kHz (12.5 kHz)
Audio Distortion:	< 3 % (@1 kHz)
Conducted Spurious Emission:	70 dB below carrier

Specifications subject to change without notice or obligation.

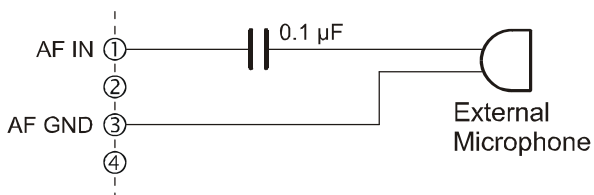
DSUB 15-pin Accessory Connector



Pin 1: AF IN (ANALOG INPUT)

External Microphone Input. Nominal input level is 6 mV at 600-ohm.

When connect the External Microphone to this port, insert a 0.1 μF coupling capacitor between the microphone and this port; as shown illustration.



Pin 2: AF OUT (ANALOG OUTPUT)

Low-level receiver output. Peak signal level is 150 mV at 600-ohm.

Pin 3: AF GND

Ground for all logic levels and power supply return.

Pin 4: DC OUT (13.6 V DC OUTPUT)

Switched 13.6V output for supplying power to an accessory.

Pin 5: RSSI (ANALOG OUTPUT)

A DC voltage proportional to the strength of the signal currently being received (Receiver Signal Strength Indicator) is provided on this pin. This low impedance output is generated by the receiver IF sub-system and buffered by an internal op-amp. Typical output voltages are 1 V (@No Signal Input) through 2.0 V (@50 dB Signal Input).

Pin 6: EXT PTT

Shorting this port to ground causes the transceiver to be placed in the Transmit mode, while opening the connection to this port returns the transceiver to the Receive mode. Opening voltage is 5 V, closed current approx. 5 mA.

Pin 7: TRX

This port is intended for controlling an external TX/RX switching circuit. When the transceiver is placed in the the Receiver mode, this port is 5 V. When the transceiver is placed in the the Transmit mode, this port reduce to 0 V.

Pin 8: IGN (IGNITION SENSE FEATURE)

The VX-2100/-2200 may be automatically be switched to the STND-BY mode when the vehicle's ignition key is turned on. Maximum current is 20 mA.

Pin 9 - 12: ACC1 - ACC4 (ACCESSORY PORT)

These port features can be programmed via the CE82 programmer. Each port is open collector output which can sink approx. 100 mA when active. Max. output 16V. When the input is selected, it becomes active between 2V and 16V.

Pin 13: ACC5 (ACCESSORY PORT)

The port 5 is available to set only for Output function, and active logic is the opposite side against the Port 1 ~ 4.

Max.output 5V, closed current approx. 1 mA.
(CMOS output)

Pin 14: ACC6 (ACCESSORY PORT)

The port 6 is available to set only for Input function, and active logic is the opposite side against the Port 1 ~ 4.

Max.input 5V. (CMOS input)

Pin 15: GND

Chassis ground