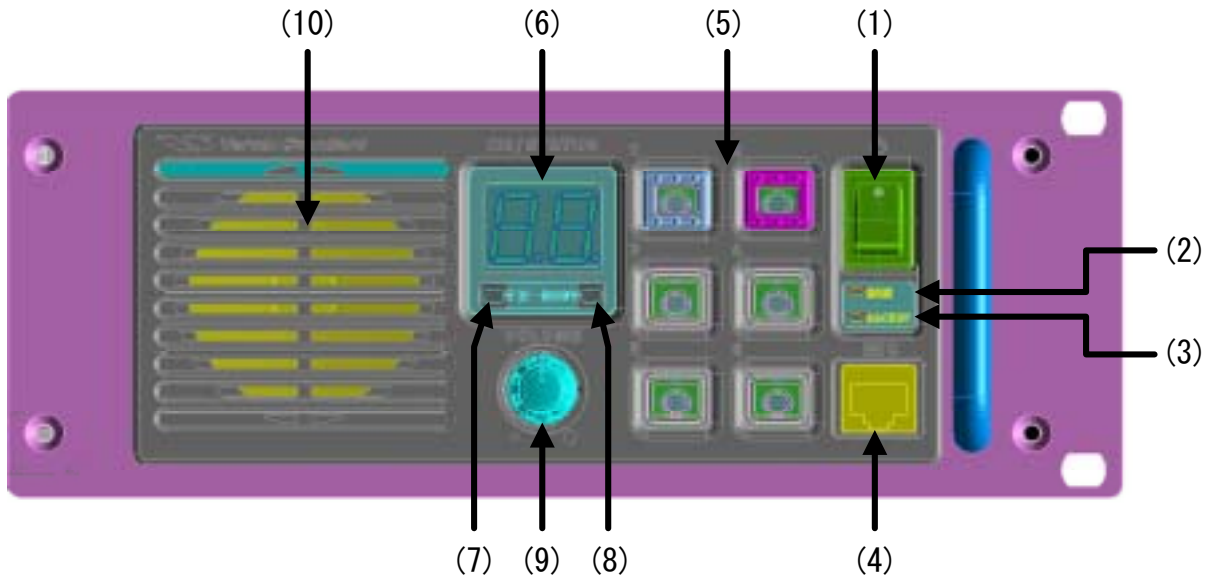


Front Panel



(1) Power Switch

Operate the switch to turn the repeater On and Off.

(2) Power Indicator (Main)

A green LED lights when the main power source is used.

(3) Power Indicator (Backup)

A red LED lights when the backup power source is used.

(4) Microphone Jack

Connect the microphone plug to this jack. This jack is also used for writing and reading channel frequency or other configurations via COM Port of PC on which the clone editor (CE60) is running.

(5) Programmable Function Key

Six push keys are programmable function key (PFK) which have orange indicator inside each of them. Each key can be programmed two functions for long push and short push.

(6) Numeric Display

The display is consisted of two digits seven-segment LED, which shows channel number when the repeater works normally. An error code is displayed in case the repeater has a trouble with it.

(7) TX Indicator

A red LED lights when the repeater is transmitting.

(8) Busy Indicator

A green LED lights when the receiving channel is busy.

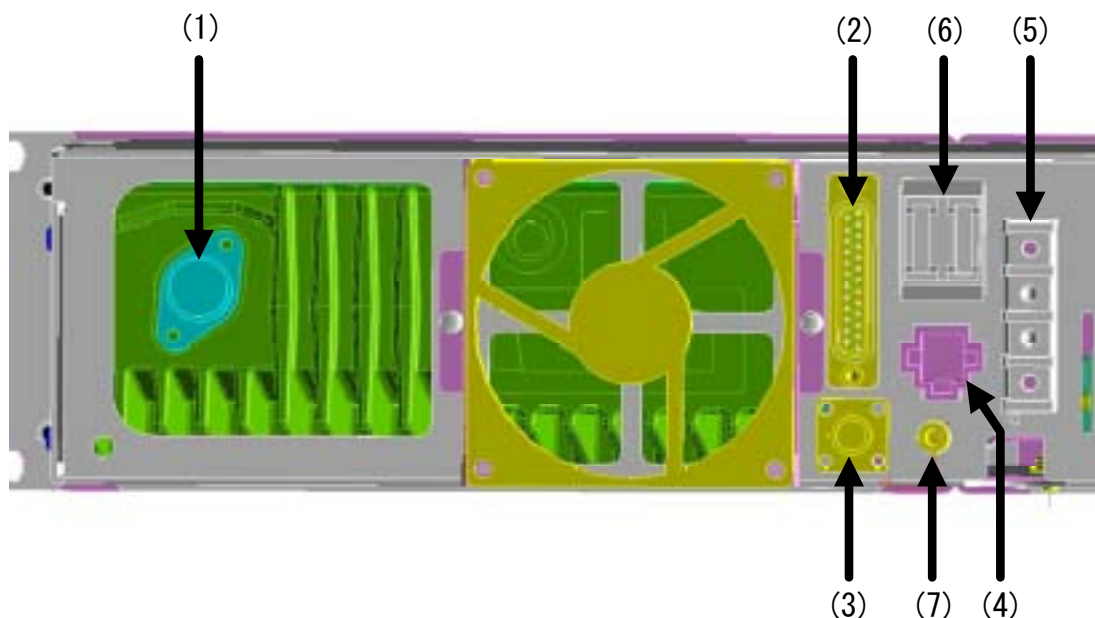
(9) Volume Knob

Volume knob to adjust the output level of front speaker and external speaker jack on the back panel.

(10) Speaker

Internal Speaker.

Rear Panel



(1) Antenna Connector for Transmission

The 50-ohm coaxial feedline to the antenna for transmission must be connected here, using Type-N coaxial connector.

(2) DSUB 25-pin Accessory Connector

DB-25 connector allows the repeater to be remote-controlled by external controller. Analog signals, such as TX_AF_IN, DISC_OUT, RSSI, and so on, are input and output. Furthermore, this repeater has eight port programmable input/output feature (PIO) for various control (or being controlled). Each port can be programmed their function, input or output, and its logic (output only).

(3) Antenna Connector for Reception

The 50-ohm coaxial feedline to the antenna for reception must be connected here, using Type-BNC coaxial connector.

(4) Main Power Source Connector

A power supply for main power source should be connected here.

(5) Backup Power Source Terminals

A power supply for backup power source, such as rechargeable battery should be connected here. When the repeater is working by main power source, a trickle charge current is present here.

(6) Circuit Protection Fuse

Two 15A blade fuses for main and backup power source.

(7) External Speaker Jack

3.5 mm 2-pin external speaker jack. Recommended load impedance is from 4 ohm to 16 ohm. The output level varies in accordance with the position of volume knob on the front panel.

The VXR-9000 repeater is provided with a 25-pin DB-25F female connector for interconnections to accessories. Use a DB-25M 25-pin male connector to connect accessories to the repeater. The pins on the accessory

connector are explained in detail as follows:

Pin 1: **GND**

Chassis ground for all logic levels and power supply return.

Pin 2: **GND**

Chassis ground for all logic levels and power supply return.

Pin 3: **+13.6 V** [Power Supply]

This pin provides 13.6 Volts, 1.0 A, regulated DC from the repeater supply. Use a 1 A fuse in the external device's DC line to prevent damage to the repeater.

Pin 4,6,8,10,12,16,19,25: **Programmable I/O_0~7**

this repeater has eight port programmable input/output feature (PIO) for various control (or being controlled). Each port can be programmed their function, input or output, and its logic (output only).

Pin 5: **TX AF IN** [Analog Transmitter Input]

(Voice Band: 300 ~ 3,000 Hz)

Approximately 0.254 V_{rms} audio input on this pin will produce full system deviation at 1 kHz (± 5 kHz deviation with 25 kHz channel spacing, ± 2.5 kHz deviation with 12.5 kHz channel spacing). Input impedance is 600 Ω . This audio is injected before the splatter filter stage, so excess signal input levels are clipped.

Use shielded cable to connect to this pin, and connect the shield to **GND**.

Pin 7: **TONE IN** [Transmitter Input]

(Sub-audible Band: 6 ~ 250 Hz)

Applying a 0.1 V_{rms} sub-audible tone produces 10% of full system deviation. The input impedance is 600 Ω , and has a flat response characteristic (repeater deviation is constant for a given signal level over the frequency range of 6 ~ 250 Hz). Injecting too high a voltage here causes over-deviation of CTCSS or DCS, degrading performance. Use shielded cable to connect to this pin, connecting the shield to **GND**.

Pin 9: **TX ATT**

This output is intended for controlling an external coaxial switching relay. It is an open collector output which can sink approx. 10 mA when active. This signal only switches if the repeater has been programmed

Pin 11: **DISC OUT** [Analog Output]

(*Wide-Band: 0 ~ 3,000 Hz*)

Received signals with full system deviation produce 1 V_{p-p} audio at this pin. The output impedance is 600 Ω, and is extracted before the de-emphasis and squelch circuitry. Use shielded cable to connect to this pin, and connect the shield to **GND**.

Pin 13: **GND**

Chassis ground for all logic levels and power supply return.

Pin 14: **GND**

Chassis ground for all logic levels and power supply return.

Pin 15: **RSSI** [Analog Output]

A DC voltage proportional to the strength of the signal currently being received (**R**eceiver **S**ignal **S**trength **I**ndicator) 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 voltages are graphed as follows:

Pin 17: **COAX. SW** [Logic Output (Active Low)]

This output is intended for controlling an external coaxial switching relay. It is an open collector output which can sink approx. 10 mA when active. This signal only switches if the repeater has been programmed for "**SIMPLEX**" mode. If programmed for "**DUPLEX**," the signal remains open (high impedance) at all time.

Pin 18: **RXD LOW**

[Digital Output for DATA Communications]

(*300 ~ 3,000 Hz*)

This pin is an output for low speed receiving data signals (typically 1200 bps), with the data being extracted

after the de-emphasis and low pass filter stages.

Pin 20: **RXD HIGH**

[Digital Output for DATA Communications]

(Max.: 5 kHz)

This pin is an output for high speed receiving data signals (typically 9600 bps), with the data being extracted immediately after the discriminator prior to any de-emphasis).

Pin 21: **NSQ DET**

This is an open-collector, active-low output capable of sinking about 10 mA. It indicates that the receiver squelch is open. If the squelch control is properly set, this indicates a carrier on the receiver channel.

Pin 22: **TXD LOW**

[Digital Input for DATA Communications]

(300 ~ 3,000 Hz)

This pin is intended to be used as a low speed digital data signal input to the repeater (typically 1200 bps). This digital data signal is injected before transmitter pre-emphasis and limiting stage, so excess signal input levels are clipped.

Pin 23: **EXT PTT**

This input is internally pulled up to 5 VDC. When pulled low by an external device, it keys the repeater transmitter while the repeater is operating in the **BASE** mode. Avoid voltage in excess of 5 V on this pin, or internal damage to the microprocessor on the repeater CNTL Unit may result.

Pin 24: **TXD HIGH**

[Digital Input for the DATA Communications]

(0 ~ 5 kHz)

This pin is intended to be used as a high speed digital data signal input to the repeater (typically 9600 bps). This digital data signal is injected after transmitter splatter filter stage.

• **Programmable Function Key**

Six push keys are programmable function (PF) key which have orange indicator inside each of them. Each key can be programmed two functions for long push and short push. The PF key functions can be customized, via programming by your VERTEX STANDARD dealer, to meet your communications/network requirements. Some features may require the purchase and installation of optional internal accessories. The possible PF key programming features are illustrated below, and these functions are explained on the pages to follow.

For further details, contact your VERTEX STANDARD dealer. For future reference, check the box next to the function that has been assigned to each PF key on your particular radio, and keep it handy.

Function	PF1		PF2		PF3		PF4		PF5		PF6	
	1>	1<	1>	1<	1>	1<	1>	1<	1>	1<	1>	1<
CH Down												
CH Up												
Compander												
CTCSS/DCS Enc												
CTCSS/DCS Dec												
CW ID												
Two Tone Dec												
CW ID Signal												
CW Message 1												
CW Message 2												
CW Message 3												
CW Message 4												
CW Message 5												
CW Message 6												
CW Message 7												
CW Message 8												
DC Power Save												
Encryption												
Encryption Code												
Key Lock												
Local PTT												
Monitor												
Monitor M												
Multi Tone												
Panel Indicator												
Remote												
Repeat												
Reset												
Scan												

Squelch												
Test Tone												
Test Tone M												
TOT												
Transmit												
TX Power Mid												
TX Power Low												

CH Down

Press (or Press and hold) the assigned PF key of the “CH Down” to switch the lower operating channel.

CH Up

Press (or Press and hold) the assigned PF key of the “CH Up” to switch the higher operating channel.

Compander

Press (or Press and hold) the assigned PF key of the “Compander” to turn the “Compander” IC “ON” or “OFF.”

The “Compander” IC contains two variable gain circuits configured for compressing and expanding the dynamic range of the repeater’s transmitted and received audio signal. When you enable this function, the signal-to-noise ratio can be improved by reducing the transmitted audio dynamic range.

CTCSS/DCS Enc

Press (or Press and hold) the assigned PF key of the “CTCSS/DCS Enc” to turn the CTCSS/DCS Encoder “ON” or “OFF.”

CTCSS/DCS Dec

Press (or Press and hold) the assigned PF key of the “CTCSS/DCS Dec” to turn the CTCSS/DCS Decoder “ON” or “OFF.”

CW ID

Press (or Press and hold) the assigned PF key of the “CW ID” to turn the CW ID “ON” or “OFF.”

When CW ID is set to “ON,” superimpose your station’s callsign (determined from your VERTEX STANDARD dealer) via CW every transmitting.

Two Tone Dec

Press (or Press and hold) the assigned PF key of the “Two Tone Dec” to turn the 2-Tone Decoder “ON” or “OFF.”

CW ID Single

Press (or Press and hold) the assigned PF key of the “CW ID Single” to send your station’s callsign (determined from your VERTEX STANDARD dealer) manually.

CW Message 1 - CW Message 8

Press (or Press and hold) the assigned PF key of the “CW Message 1 - 8” to send the pre-programmed CW message (determined from your VERTEX STANDARD dealer) manually.

DC Power Save

Press (or Press and hold) the assigned PF key of the “DC Power Save” to turn the DC Power Save feature “ON” or “OFF.”

When DC Power Save is set to “ON,” activate the various power save feature (determined from your VERTEX STANDARD dealer) while the repeater operate from the battery or other DC source.

Encryption

Press (or Press and hold) the assigned PF key of the “Encryption” to turn off the Voice Encryption Unit temporarily.

Encryption Code

Press (or Press and hold) the assigned PF key of the “Encryption Code” to select the Encryption Code (determined from your VERTEX STANDARD dealer).

Key Lock

Press (or Press and hold) the assigned PF key of the “Key Lock” to lock the front panel keys (except “Key Lock” key); this can be enabled to prevent repeater settings from being disturbed.

Local PTT

Press (or Press and hold) the assigned PF key of the “Local PTT” to switch the PTT button which is connected to the front panel Microphone Jack “ON” and “OFF.”

Monitor

Press (or Press and hold) the assigned PF key of the “Monitor” to cancel the squelch circuit (CTCSS, DCS, and Noise), to hear the any signal present on the current channel.

Monitor M

Disable the squelch circuit (CTCSS, DCS, and Noise) while pressing the assigned PF key of the “Monitor M,” hear the any signal present on the current channel temporarily.

Multi Tone

Press (or Press and hold) the assigned PF key of the “Multi Tone” to switch the Tone Table between “Main” and “Sub.”

Panel Indicator

Press (or Press and hold) the assigned PF key of the “Panel Indicator” to turn the Front Panel Illumination “ON” and “OFF.”

Remote

Press (or Press and hold) the assigned PF key of the “Remote” to toggle the operating mode between the “Remote” mode and “Local” mode.

When the “Remote” mode is selected, the repeater operates according to the control instructions received from the external device (connected to the ACC jack on the rear panel). While in the “Local” mode, the repeater operates according to the control data programmed into the repeater.

Repeat

Press (or Press and hold) the assigned PF key of the “Repeat” to toggle the operating mode between the “Repeater” mode and “Base Transceiver” mode.

For normal operation, set this key to the “Repeat” mode. When the “Base Transceiver” mode is selected, you can speak into the microphone to use this repeater as a transceiver.

Reset

Press (or Press and hold) the assigned PF key of the “Reset” to clears all settings to defaults.

Scan

Press (or Press and hold) the assigned PF key of the “Scan” to start scanning.

To stop scanning, press (or Press and hold) this key again.

The scanning feature is used to monitor multiple channels programmed into the repeater.

Squelch

Press (or Press and hold) the assigned PF key of the “Squelch” to cancel CTCSS and DCS signaling squelch, to hear the signal present without CTCSS/DCS tone on the current channel.

Test Tone

Press (or Press and hold) the assigned PF key of the “Test Tone” to transmit the Test Tone Signal (determined from your VERTEX STANDARD dealer).

Press (or Press and hold) this key again to stop the Test Tone Signal sending.

Test Tone M

Transmit the Test Tone Signal (determined from your VERTEX STANDARD dealer) while press and holding the assigned PF key of the “Test Tone M.”

TOT

Press (or Press and hold) the assigned PF key of the “TOT” to turn the Time-Out Timer feature “ON” or “OFF.”

When the TOT is set to “ON,” the repeater return to “receive” mode automatically after a preset time period (determined from your VERTEX STANDARD dealer) of continuous transmission.

Transmit

Press the assigned PF key of the “Transmit” to transmit the radio, release it to receive.

TX Power Mid

Press (or Press and hold) the assigned PF key of the “TX Power Mid” to set the transmitter power to “Mid” mode.

Press (or Press and hold) this key again to return to “High Power” operation.

TX Power Low

Press (or Press and hold) the assigned PF key of the “TX Power Low” to set the transmitter power to “Low” mode.

Press (or Press and hold) this key again to return to “High Power” operation.