



FRN8497 HF Vocoder Unit

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1. General

The FRN8497 is a new, robust, digital voice coder (vocoder) for use over narrowband radio that uses a digital encryption standard. The FRN8497 can also be ordered with the FVN5522 option, which provides an encryption algorithm based on the new AES encryption standard.

The FRN8497 is compatible with all the MICOM HF radios, as well as with many other types of HF, VHF and UHF radio equipment.

The FRN8497 connects to the radio set through a single 44-pin connector located on its rear panel. All the commands pass via an RS-232 serial I/O interface included in this connector. This connector also supports connection to a second serial I/O port, which may be used as a “pass-through” between the terminal unit and another serial I/O device. The second serial I/O port is included in another 15-pin connector located on the FRN8497 rear panel.

Front panel connectors are used to connect to a local dynamic handset. The POWER ON switch also includes a volume control for a local dynamic headset.

The FRN8497 unit operates on 12VDC, provided by the radio through the 44-pin connector.

2. Main Characteristics

1. Uses a widely used, internationally accepted standard, which is also acceptable by USA and European Armed Forces.
2. User data rates: 1200 bps.
3. Automatically detects user data rate.
4. Vocoder for digital voice, with unique emergency voice message.
 - Digital voice provides best-quality voice.
 - Provide a very robust voice link.
 - Push & Talk: allows to start talking immediately.
5. Optional voice encryption using the AES (Advanced Encryption Standard) standard algorithm (order FVN5522 option).
6. Advanced technology: uses two 16-bit DSPs and a 8-bit microprocessor controller.

3. Front Panel Indicator LEDs

The FRN8497 front panel includes six LEDs that indicate the operational status of the vocoder. The status indications provided by the LED are as follows:

Designation	Color	When ON, indicates:
POWER	● Green	Vocoder is ready for use
EMERG	● Green	Vocoder is currently in the EMERGENCY VOICE mode
TX	● Red	The transmitter is ON (data is being sent)
RX	● Yellow	The receiver is ON (data is being received)
ENCRYPT (optional)	● Green	Vocoder is currently in the ENCRYPTION ENABLE mode
ERROR	● Red	Receive error detected and currently being corrected

4. Radio/Vocoder I/O Connection

The radio is connected to the 44-pin connector P1 on the rear panel of the FRN8497. The connector pins functions needed for connection to the FRN8497 are as follows:

Pin	Function	Comments
4	Rx audio input from FRN8497 to radio, + wire	0 dBm, 600 Ω
5	Rx audio input from FRN8497 to radio, - wire	
6	TX audio output from radio to FRN8497, + wire	0 dBm 600 Ω
7	TX audio output from radio to FRN8497, - wire	
9	PTT output to radio	5V, maximum 100 mA 0V – Active PTT
11	Supply voltage input	13.8 VDC, 250 mA
18	Ground	

5. Serial Port Connections

The computer is connected to the 15-pin connector P3 on the rear panel of the FRN8497. The connector pins functions are as follows:

Pin	Function
3	Ground
4	RXD input (RS-232 levels)
5	TXD output (RS-232 levels)
10	+3.3V input voltage

6. Technical Specifications

DSP Processor	16-bit DSP TMS320VC5416 @ 160MHz
Control	8-bit control processor C8051F127@ 41.472MHz
Memory	Flash memory, loaded via serial I/O port or JTAG
Data Port	Serial RS-232 control/data port, supports data rates up to 115200 bps
Power	10 to 18VDC, maximum 250 mA
Indicators	STBY, EMRG, TX, RX, ENCRYPT, ERR
Radio I/O Lines	RX audio, TX audio, PTT
Cabinet	Black aluminum alloy
Connection to Radio	44-pin D-type male connector
Weight	1.5 kg
Dimensions (W × H × L)	178 mm × 60 mm × 250 mm