

961 HF telephone interface

The Barrett 961 HF telephone interface (phone patch) interfaces a Barrett 530, 550, 930 or 950 transceiver to the telephone network, allowing HF stations to be connected to subscribers on the telephone network and visa versa.

A caller on the HF network indicates to the HF base station operator the telephone number required. The HF base station operator dials the number on the line connected to the 961 interface unit, using the telephone connected to the 961. When the telephone subscriber answers, the HF base station operator switches the 961 to "CONNECT", the automatic VOX is activated and the call between the HF network station and the telephone subscriber proceeds, the HF transmitter being keyed by the telephone subscribers voice. At the completion of the call the HF base station operator switches the 961 to "DISCONNECT".

The unit is packaged in a compact desk-top enclosure designed to fit under a standard telephone set so that no desk space is lost. Front panel switches are widely-spaced to allow easy one-hand operation; front panel indicators make the Barrett 961's operational status simple to monitor. All connections to the radio system and telephone line are made via the unit's rear panel connectors.

The Barrett 961 uses a unique adaptive hybrid to convert the four-wire audio from the transmitter and receiver to the two-wire audio for the phone line. This hybrid represents a true technological breakthrough to the problem of interfacing an HF radio network to a telephone system.

Conventional hybrids used in all existing phone patches can provide good balance at only one frequency into a complex impedance such as a telephone line. As a result, signals leak across conventional hybrids at all other frequencies causing oscillation in full duplex systems and unreliable VOX (Voice Operated Xmit (transmit) operation in half-duplex systems.

The Barrett 961 solves these problems with an adaptable hybrid implemented via digital signal processing (DSP). It automatically matches any phone line at all voice frequencies simultaneously to provide a broadband null. The result is no signal leakage, giving reliable VOX operation with no oscillation in full duplex systems.

Furthermore, the interface continually checks the phone line so that changing line impedances due to weather or other factors are automatically compensated.

The HF transmitter may be either keyed manually with a front-panel switch, or automatically by phone line voice

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signals via a built-in VOX circuit. The Barrett 961's VOX is a DSP voice recognition type which offers high sensitivity to voice signals, has excellent reliability and does not clip or miss the first syllable.

The unit has been designed to be easy to set up and use. Neither the VOX nor the hybrid require any adjustments, and setting the transceiver interface-levels is easy, with a convenient set-up mode and peak level indicator provided on the front panel.

FEATURES

DSP based automatic adaptive hybrid that balances the telephone line continually with no adjustments, eliminating oscillation in full duplex circuits, false VOX tripping and time consuming setup.

Designed for full-duplex, half-duplex, or simplex operation.

Compact desk-top package fits under a standard telephone Set.

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Output level to phone line	Nominally -9dBm (Adjustable -12 to -6dBm in 3dB steps)
Input level from phone line	Nominally -9dBm (Adjustable -12 to -6dBm in 3dB steps)
Frequency response	300 to 3200 Hz \pm 2dB
Output impedance to phone line	600 Ω
VOX sensitivity	16 \pm 2dB below phone line input level setting (e.g. -25 dBm at a -9dBm line level setting)
VOX hang time	1 Second or 1.5 Seconds, internally adjustable
Hybrid balance/adaptation speed	-30dB over 300 to 3200Hz BW within 1.25 sec, measured with a white noise source into 600 Ω
Ultimate hybrid balance	-50dB measured with a single tone
Hybrid impedance matching capability	0 to infinity Ω complex
Phone line connections terminal block.	RJ-11C connector

Transceiver interface

Input impedance	Balanced 600 Ω or 50K Ω
Input level	-20 to + 10 dBm, front panel adjustable
Output impedance	600 Ω , balanced
Output level	-20 to +10 dBm, front panel adjustable
Frequency response	300 to 3200 Hz \pm 2dB
VOX key output	Low Level Relay Contacts, 60VA max
Switching speed	5 msec
TX audio delay (Standard)	12 msec

General

Local telephone set connections	RJ-11C connector
Indicators	"Power on", "Peak Level", "Keyed", "Ready"
Front panel controls	"VOX/Manual Switch", "PTT Key Switch", "Connect/Disconnect Switch", "Power On/Off Switch"
Input power	+11 to +15VDC (12VDC Nominal)
Input current	200mA @ +12.6V input
Size	4.3 x 17.8 x 22.9 cm
Weight	1.8kg

Environmental

Operating temperature	-20 $^{\circ}$ C to +55 $^{\circ}$ C
Storage temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Humidity	Up to 95% @ 55 $^{\circ}$ C
Shock	MIL-STD-810D, method 516.3 procedure VI
Vibration	MIL-STD-810D, method 514.3 Category



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