

MODEL 6200 VLF/HF RECEIVER

SERIES 6200



FEATURES

- Sealed membrane keyboard front panel with illuminated LCD display.
- Easy to operate.
- Tuneable in 10Hz steps.
- Rugged construction.
- Built-in test equipment (B.I.T.E.).
- NATO Codified
- Frequency coverage 10kHz to 30MHz.
- Independent sideband operation in 2U size.
- Non-volatile 99 channel memory, with scan and sweep facilities.
- Remote control facility.

Frequency Coverage

1600kHz to 30MHz in 10Hz increments.
10kHz to 30MHz /A and /F options.

Reception Modes and Variants

AM, USB, LSB, CW : /2 variant.
AM, USB, LSB, CW, ISB : /3 variant.
FSK : /K option.

Reception Bandwidths

SSB/ISB	-6dB 300Hz to 2700Hz -60dB -400Hz and 3400Hz
Wide	-6dB $\pm$ 3kHz -60dB $\pm$ 10kHz
Intermediate	-6dB $\pm$ 1.2kHz -60dB $\pm$ 1.9kHz
Special	To customer order. Up to 2 additional filters (/C option).

RF Selectivity

Wideband over specified range on all but /A option which has sub-octave filters above 1600kHz.

BFO

$\pm$ 2.4kHz in 100Hz steps derived from master oscillator.

Stability

On /X option all frequencies derived from internal master oscillator giving 0.1ppm stability over -10°C to $+50^{\circ}\text{C}$.
Option for 8720kHz external standard with no internal standard fitted (/S option).

Search Tuning

Frequency selection by tuning knob with any step in range 10Hz to 99.99kHz (10Hz increments) or with automatic variable rate with 10Hz resolution.
Frequency can also be directly entered via numeric keyboard with 10Hz resolution.

Stored Channels

A maximum of 99 channels can each be stored with frequency, mode, bandwidth, AGC, RF sensitivity and BFO offset settings. On /B option receivers, the selected antenna can be stored and on /T option receivers, the scan start and stop times. Channel contents can be interrogated and changed without interruption of the signal being received. A lithium battery backed up RAM retains the contents of all channel memories in excess of 10 years without the external supply.

Scanning

Any number of the 99 stored channels can be automatically scanned with a dwell time on each channel or between 0.1 and 9.9 seconds (0.1 second steps). If squelch is selected, the scan will halt on channels with signals above the set threshold and remain there for a hang period after the signal ceases. This hang period can be set between 0 and 9 seconds (1 second steps). At all times, the scan position can be altered using the main control knob and can be stepped on or halted using the rear panel hold scan/sweep input. On /T option receivers, selection of channels by time of day or week is also provided.

Sweeping

Automatic tuning using the selected step can be performed using the frequencies stored in adjacent channel memories as limits. The receiver remains on each step for the selected dwell period. If a step of 5kHz or more and squelch are selected, the sweep will halt on steps with signals above the set threshold, and remain there for a hang period after the signal ceases. This hang period can be set between 0 and 9 seconds (1 second steps). At all times, the sweep position can be altered using the main control knob and can be stepped on or halted using the rear panel hold scan/sweep input.

BITE (Built In Test Equipment)

In BITE mode, tests can be made using internally fitted test equipment to aid fault finding, general test and maintenance procedures. In all modes, the BITE monitors various parameters and provides immediate indication of a potential fault which can be investigated in BITE mode, providing fault finding to module level.

Remote Control

All major functions, except audio gain, can be controlled and interrogated using 1200 Baud asynchronous data at RS232c level. Standard modems (V22 or V23), multiplexers, line drivers and RS422a adapters can be used to provide control over half or full duplex, two or four wire links as required.

Squelch

Audio squelch is derived from carrier/sidband level, with squelch threshold level adjustable from the front panel. Twin bargraph meters are provided to simultaneously display squelch and signal levels.

RF Attenuation

Attenuation of 0dB, 10dB, and 30-50dB is available.

Antenna Input

50 Ohm unbalanced input, BNC connector. Overload protection is provided for continuous application of an emf of 50V rms from a 50 Ohm source. Internal reed relay controlled (by contact to ground) from associated transmitter open circuits receiver antenna input during transmission.

Audio Output

External Loudspeaker : 1W maximum into 4 or 8 Ohms.
Internal Monitor speaker : 1W maximum.
Line : 20mW maximum into 600 Ohms.
Headphones : 10mW maximum into Low/Medium impedance.

Intermediate Frequencies

45MHz 1st IF
1.4MHz 2nd IF

Power Supply

100V/130V and 200V/260V AC 40Hz-60Hz single phase.
A.C. consumption 30VA maximum.
Operation from a 19-32V DC supply (negative ground) will continue in the absence of an AC supply. DC current consumption approximately 1.8A at 19V to 1A at 32V.

Environmental

Operational temperature: -15° to $+55^{\circ}\text{C}$
Storage temperature: -20°C to $+70^{\circ}\text{C}$
Relative humidity: 95% at $+40^{\circ}\text{C}$

Mounting Styles (19" rack mounting)

Height 88mm (2U)
Width 483mm (19 inches)
Depth 440mm (intrusion into rack including cable)
Weight 12kg

Sensitivity (400kHz to 30MHz)

AM: 1.8 μ V emf input 60% modulated at 1kHz, for 10dB Sinad (S+ N/N) at line output, with 6kHz selectivity.
SSB: 0.6 μ V emf input with 1kHz audio output, for 10dB Sinad (S+ N/N) at line output, with 2.4kHz selectivity.
CW: 0.4 μ V emf input with 1kHz audio output, for 10dB Sinad (S+ N/N) at line output, with 2.4kHz selectivity.

These correspond to a noise figure of 12dB.

AGC

Less than 4dB Change in audio output for 100dB increase in input level above AGC threshold (typically +3dB μ V emf). Choice of three time constants in addition to manual gain to suit mode selected.

Image

100dB (1st)
80dB (2nd)

IF Rejection

100dB.

Intermodulation (in-band)

The level of third order intermodulation products produced by two in-band signals of +90dB μ V emf will be at least 45dB below the level of either signal.

Intermodulation (out-of-band)

With a wanted signal +10dB μ V emf producing standard output, two unwanted signals adjusted to produce a third order intermodulation product equal to standard output at the wanted frequency, must be greater than +90dB μ V emf when at least 30kHz removed from the wanted frequency. This is equivalent to a third order intercept point of +17dBm.

With a wanted signal of +10dB μ V emf producing standard output, two unwanted signals adjusted to produce a second order intermodulation product equal to standard output at the wanted frequency, must be greater than +80dB μ V emf when each is approximately half the wanted frequency. This is equivalent to a second order intercept point of +37dBm. This figure is increased for wanted frequencies above 1600kHz when the sub-octave preselector is fitted (/A option receivers).

Cross Modulation

With a wanted signal of +60dB μ V emf producing standard output, an unwanted signal, of level +100dB μ V emf at 20kHz off-tune, modulated 30% at 1kHz, will produce an output at least 30dB below standard output.

Reciprocal Mixing

The level of a signal 20kHz removed from the tuned frequency will be at least +95dB μ V emf to produce a noise signal equivalent to 0dB μ V emf at the tuned frequency (USB/LSB/ISB modes).

Blocking

With a wanted signal +60dB μ V emf, output will be affected by less than 3dB by an interfering signal 20kHz off-tune at level +110dB μ V emf.

Antenna Radiation

The level of radiated signals at the antenna socket will be less than 2 μ V pd across 50 Ohms.

MTBF

At least 30,000 Hours to BT HRD4 (British Telecom).

Options (Standard Options are F and X)

- /A Frequency coverage 10kHz - 30MHz with sub-octave preselector above 1600kHz.
- /B With 8 bit parallel data output, indicating selected antenna number (enabling control of antenna selecting switches or other similar equipment). This output can be factory programmed to provide other status/control signals if required. When supplied with /T option, time scan output control signals are provided. This is not available with option A.
- /C With additional customer specified filters to a maximum of two, normally 300Hz / 1kHz.
- /F Wideband input giving operation 10kHz to 30MHz (reduced performance below 400kHz).
- /I With 1.4MHz intermediate frequency output (not available on ISB variants).
- /K With internal FSK demodulator, providing FSK demodulation for frequency shifts from 85Hz to 1100Hz and corresponding keying speeds up to 300 bauds, at RS232c output level.
- /S External standard operation.
- /T With real time clock allowing channel scanning by time of day or week
- /X High stability internal master oscillator.
- /Z Noise Blanker (N/A on ISB Variants)

Note: /I & /S are mutually exclusive, as are /Z & /K and /X & /S.

Ancillary Equipment

Remote Control Systems
External Frequency Standards
Antennas
Bench Cabinet



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