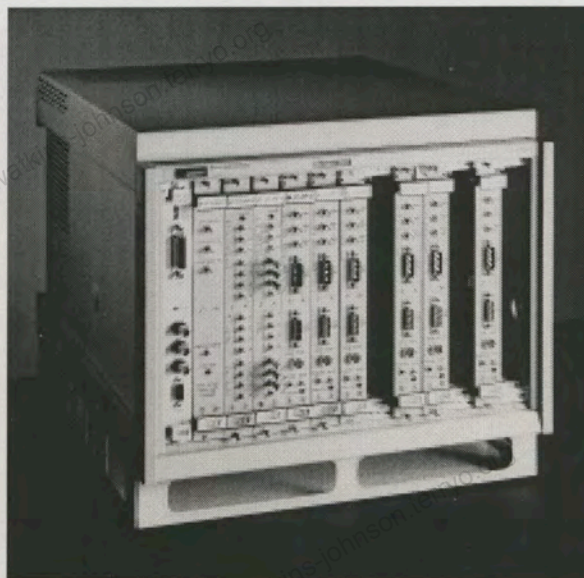
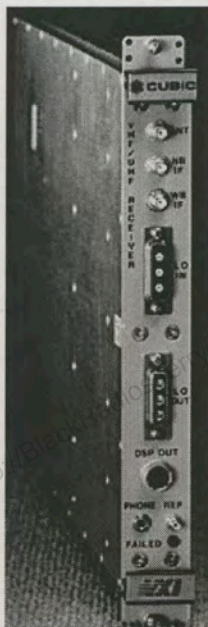


VXI-3250 LF/HF DSP Receiver



The VXI-3250 LF/HF receiver is a high performance computer-controlled 10 kHz to 30 MHz DSP receiver intended for use in a VXI chassis

FEATURES

- 10 kHz to 30 MHz tuning range
- 1 Hz tuning step size
- 3 ms typical tuning speed
- Los synthesizer phase noise
- 51 standard bandwidths
- ISB, LSB, USB, CW, AM & FM detection modes
- Third order intercept point of +30 dBm
- Quadrature digital IF output (I & Q)
- Capability to common local oscillators for multi-channel applications
- High MTBF: >11,000 hrs
- Up to 12 LF/HF receivers in a single chassis, or mix and match LF/HF and VHF/UHF in a single chassis
- Continuous self-test, BIT
- Single width - "C" size
- Rugged construction using surface mount technology



CUBIC. COMMUNICATIONS, INC.
A member of the Cubic Corporation family of companies

9535 Waples Street, San Diego, CA 92121-2953
PHONE: (619) 643-5800 FAX: (619) 643-5803

VXI-3250 LF/HF DSP RECEIVER SPECIFICATION

FREQUENCY

Frequency Range: 10 kHz to 30 MHz
Tuning Step Size: 1 Hz to 10 MHz
Synthesizer Tuning Speed (from receipt of the last command byte until within 1 kHz of the final frequency):
All modulation modes
 $\Delta f < 100$ kHz: 1.0 msec, typical
 $\Delta f < 1$ MHz: 1.5 msec, typical
 $\Delta f < 10$ MHz: 2.0 msec, typical
Receiver Tuning Time: 10 ms max:
Command Processing: 1.2 ms max
Synthesizer Tuning Time: 2 ms max
IF Settling Time: < 4 ms
AGC Attack Time (fast): 2 ms max.
Applicable in all modes with IF bandwidth 2 kHz or greater
Tuning Accuracy: External standard, 1 ppm of tuned frequency

DETECTION MODES

AM, FM - all bandwidths
USB, LSB, CW - bandwidths ≤ 6 kHz
ISB - 2.8 kHz bandwidth per sideband

SCAN AND SWEEP

Memory Channels: 250 programmable channels
Scan: up to 250 channels
Sweep: f1 and f2 at selected steps. Up to 125 sweep bands
Sweep and Scan Rate: 1 to 100 per second.
Adjustable Threshold: 1 dB increments

RF SECTION

Input Impedance: 50 ohms, nominal
Input VSWR: 1.5:1 typical, 2.5:1 maximum at the tuned frequency
Sensitivity for 10 dB SINAD (above 1.6 MHz)
AM (6 kHz BW): -105 dBm, 50% modulation
FM (16 kHz BW): -98 dBm input, 5 kHz deviation, 400 Hz modulation: 20 dB SINAD
CW (500 Hz BW): -122 dBm
SSB (3 kHz BW), -113 dBm
Noise Figure: 15 dB (above 1.6 MHz)
RF Protection: up to 10 watts. Automatic reset. -50 dB reflective attenuation when protection active. Protection activates between +10 dBm and +20 dBm RF input
Preselector Specifications:

eight one-half octave bandpass preselector filters used from 1.6 to 30 MHz. Frequencies below 1.6 MHz are selected by LPF. Filter selection is automatic with tuned frequency selection.

AGC (fast attack selectable decay):

SSB & CW Attack Time:

Fast: < 2 ms for 50 dB change (sweep and scan only)

Nominal: < 10 ms for 50 dB change

Decay Time: selectable 0 ms to 4 sec nominal for 50 dB change

Dynamic Range: output level held within ± 1 dB over a 110 dB range

Threshold: set to -112 dBm

Dump: bus-controllable, time < 2 ms, used in sweep and scan only

AM: averaging attack and decay times 50 ms nominal for 50 dB change

MGC: bus-controllable over 127 dB in 1 dB nominal steps

IF SECTION

First IF: 40.456 MHz

Second IF: 456 MHz

Third IF: 24 MHz

Fourth IF (DSP): IF filters: 51 standard bandwidths from 100 Hz to 16 kHz, bus selectable

Shape Factor: 3 dB to 60 dB (better than 2:1, 400 Hz and above)

Inband Ripple: 1 dB maximum

INTERFERENCE IMMUNITY

IF Rejection: 100 dB

Image Rejection: 100 dB

Cross Modulation: unmodulated desired signal of -60 dBm together with a modulated (30% AM at 1 kHz) undesired signal of -10 dBm, spaced 100 kHz apart, will produce less than 10% cross modulation of the desired signal

Blocking: attenuation of a desired RF signal of -60 dBm, caused by an unmodulated unwanted signal of -10 dBm, spaced 100 kHz away, is less than 3 dB

Synthesizer Phase Noise: -110 dBc/Hz @ 1 kHz spacing, nominal

Oscillator Reradiation (up to to 1 GHz): -110 dBm

Spurious Responses: -120 dBm

equivqlent or less for -50 dBm input signals

General Spurious: five at no more than -110 dBm

Intermodulation Distortion:

Third Order Input Intercept Point: +30 dBm typical

Second Order Intercept Point:
1.6 MHz $< f < 30$ MHz: +60 dBm
0.1 MHz $< f < 1.6$ MHz: +45 dBm

Inband: -50 dBc minimum (two tones separated by 1 kHz or more, input level up to -20 dBm)

OUTPUTS

Second IF:

WBIF: 456 kHz, 20 kHz minimum BW

NBIF: 455 kHz with BW equal to selected receiver BW. Level -10 dBm \pm dB over AGC dynamic range

Digital I & Q: TTL (0 to +5V) serial, 3 MHz. Also available over VXI backplane

LO Outputs: 40.466 - 70.456 MHz, 40 MHz, 480 MHz

Video: demodulated FM, 2V peak-to-peak into 75 ohms (deviation equal to 30% of selected bandwidth)

Audio Line Output:

AM, CW, LSB, USB: 0 dBm ± 3 dB

USB: 0 dBm ± 3 dB

FM: 0.5 V/kHz AC coupled (4V peak-to-peak maximum)

Source Impedance: 600 ohms balanced pair, short circuit protected, less than 3% distortion at rated output

Headphone: 0 to 3V peak-to-peak, 8 ohm load impedance to front panel phone jack. Short circuit protected

REFERENCE INPUT

10 MHz external standard, 0 dBm ± 10 dB, 50 ohms

CONTROL

The receiver is a VXI Message Based Servant

RELIABILITY

MTBF: 11,000 hours. Calculated based on "Naval Sheltered" (NS) as defined in MIL-HDBK-217F

VXI-3250 LF/HF DSP RECEIVER SPECIFICATION

MAINTAINABILITY

Mean-time-to-repair (MTTR) of not more than 30 minutes at the unit replacement level

POWER REQUIREMENTS

+12 VDC	@1100 mA
-12 VDC	@500 mA
+5 VDC	@1200 mA
-5.2 VDC	@60 mA

FRONT PANEL CONNECTORS

ANT:	SMA
WBIF:	SMA
NBIF:	SMA
REF IN:	SMB
LO IN:	Sub D tricoaxial male
LO OUT:	Sub D tricoaxial female
DSP OUT:	12-pin circular receptacle
PHONE:	1/8" phone plug

FRONT PANEL INDICATOR

"FAILED" Red LED

ENVIRONMENTAL DATA

Operating High Temperature:
MIL-STD-810E, Method 501.3,
Procedure II, Table 501.3-I (ambient
air conditions), maximum test
temperature 50°C, one cycle
Operating Low Temperature:
MIL-STD-810E, Method 502.3,
Procedure II, Temperature 0°C

Storage High Temperature:

MIL-STD-810E, Method 501.3,
Procedure I, Temperature 71°C, one
cycle

Storage Low Temperature:

MIL-STD-810E, Method 502.3,
Procedure I, Temperature -40°C for
12 hours

Humidity: MIL-STD-810E, Method
507.3, Procedure I-Natural, Table
507.3-I, five cycles total

Shock: MIL-STD-810E, Method
516.4, Procedure VI

Vibration: MIL-STD-810E, Method
514.4, Procedure I, Category 9,
Figure 514.4-15

EMI/EMC

Equipment designed to intent of the
applicable requirements of MIL-STD
461/462 as a guide

DESIGN AND CONSTRUCTION

MIL-STD-2036, Paragraph 5.1.4 as a
guideline

Workmanship: MIL-HBK-454,
Requirement 9 as a guideline

Interchangeability: All identical units,
assemblies and replacement parts are
physically, electrically and function-
ally interchangeable

DIMENSIONS AND WEIGHT

Size: VXI size C, single width

Weight: <5 lbs

FINISH

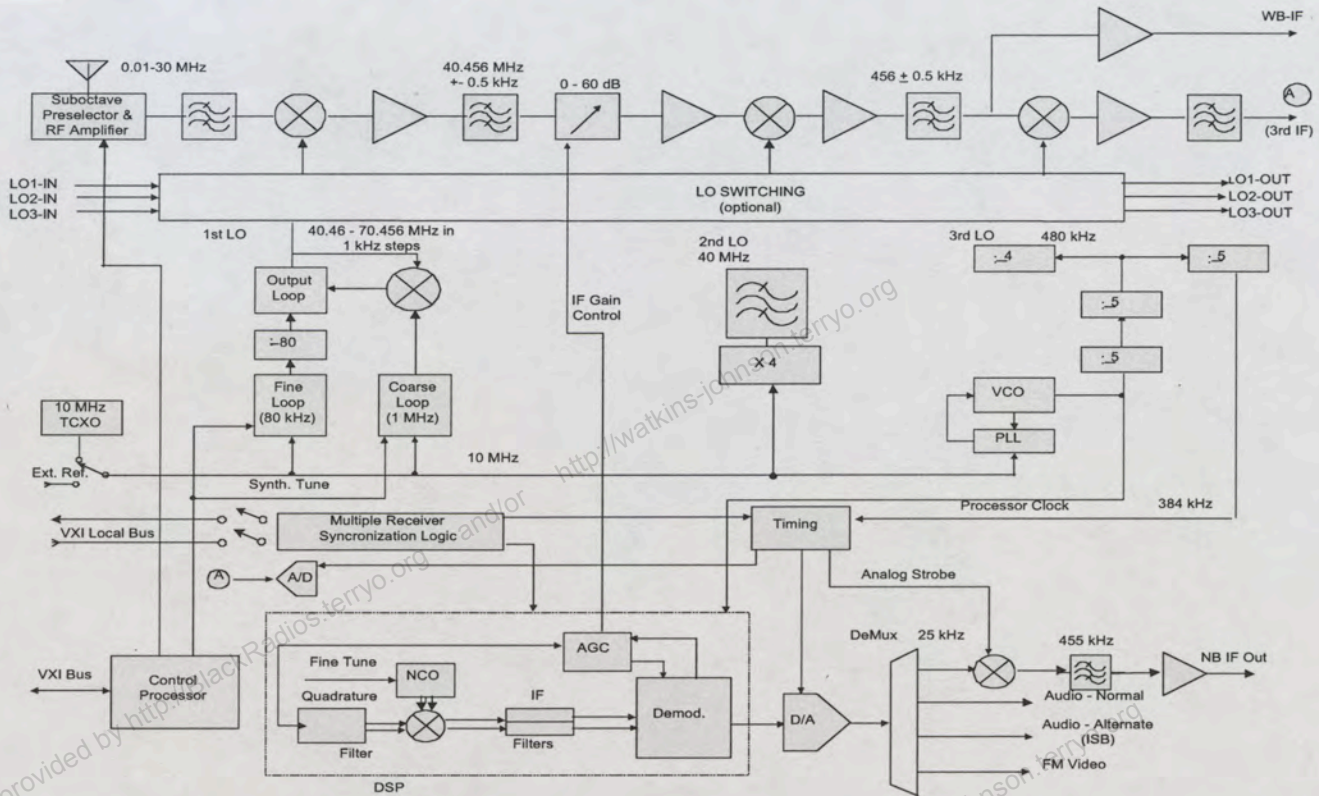
Front Panel: FED-STD-595 chip
26307, semi-gloss grey enamel
Chassis: corrosion protected following
guidelines established in
MIL-HBK-454, Requirement 15
Handles and Silkscreen Markings:
matte black

C40 OPTION:

*The C40 interface option allows
connection and monitoring of the I&Q
data with an external C40 interface
unit. The 32-bit serial data is con-
verted into four 8-bit parallel bytes.
When the receiver has data for the C40
interface unit, it invokes the strobe
line. When the C40 unit is ready to
receive the data, it invokes the ready
line. This cycle continues until all of
the data is transferred.*

NOTE: Applicable to bandwidths less
than 200 kHz

VXI-3250 LF/HF DSP RECEIVER SPECIFICATION



The VXI-3250 receiver is a triple-conversion superheterodyne design in which the final IF filtering and demodulation are accomplished with digital signal processing (DSP) for superior accuracy and flexibility. The three intermediate frequencies (IFs) are 40.456 MHz, 456 kHz and 24 kHz. Having the first IF above the entire tuning range assures spurious-free reception. At the third IF, the signal is converted to digital form. A digital signal processor chip then provides fine tuning, IF filtering to the selected bandwidth, and AM, FM or product detection according to the operating mode. Fifty-one bandwidths are offered from 100 Hz to 16 kHz. The demodulated signals are converted back to analog form for output to headphones or balanced lines.

For DF applications, the digital functions of sampling and processing can be synchronized for up to eight VXI-3250 receivers in the VXIbus chassis.

Ordering Information

Model	Part Number	Description
VXI-3250	2802-1000-4	LF/HF Digital Comm/Surv. Receiver, 10 kHz - 30 MHz
VXI-3250	2802-1000-7	LF/HF Digital Comm/Surv. Receiver, 10 kHz - 30 MHz with 30 kHz Option
IFR-01	2800-2016-1	Internal Frequency Reference Option
COMPORT-01	2800-1101-1	C-40 Communications Port Option

Specifications subject to change without prior notice

Printed in U.S.A. Copyright 4/96



CUBIC COMMUNICATIONS, INC.
A member of the Cubic Corporation family of companies

9535 Waples Street, San Diego, CA 92121-2953
PHONE: (619) 643-5800 FAX: (619) 643-5803