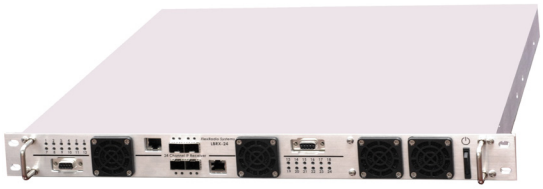
FlexRadio Systems®
Software Defined Radios

PRELIMINARY

LBRX-24

IF Receiver/Digitizer



PRODUCT FEATURES

- 24 Independent Receiver Channels
- 950 to 2150 MHz frequency range
- Independent selection of eight bandwidth and sample rate settings for each receiver
- Flexible RF input routing matrix
- Automatic or manual gain control
- Optional, per channel, wideband input power detection and alarms
- Up to 40Gb of IQ streaming output via four 10GbE SFP+ connections
- SDDS or VITA-49 streaming transport format
- Programmable target IP addresses per IQ stream
- System control via two separate 1GbE connections
- Built-in test equipment diagnostics
- “Fail-Soft” protection: 2 independent 12-channel receiver subsystems
- 1U tall 19” rack mount enclosure

OVERVIEW

The LBRX-24 IF receiver system employs FlexRadio Systems’ technology to simultaneously capture, digitize, and stream up to 24 channels of satellite or terrestrial IF signals in the 950 to 2150 MHz frequency range. Each of the 24 independent receiver/digitizers allows for selectable tuning frequencies, bandwidth, and sampling rates for maximum system flexibility. Streaming of IQ data and context packets of up to 40MHz per channel are accomplished via four 10GbE SFP+ connections on the LBRX-24 receiver. Additionally, remote and local control of the receiver system is established via an RS-232 or 1GbE connections.

The LBRX-24 employs a unique hierarchical RF input matrix allowing for optimal flexibility for mapping from four to twenty-four inputs to the digitizer channels. The input connector array, located on the rear of the unit is conveniently color coded to assist in operator setup and reconfiguration. Programmable automatic or manual gain control allows for maximum dynamic range of the desired signal. Additionally, independent selection of 8 bandwidth and sampling rate settings for each receiver allow the operator to yield the optimum capture passband to output stream configuration. An optional, per channel, wideband input power sensor and alarm can be added to warn of receiver front-end overload and improve system reliability.

IQ output streaming format is programmable to either VITA-49 or SDDS format on a per channel basis. Each IQ output stream can be targeted at a specific IP address. Strict timing accuracy is ensured on the LBRX-24 by using external 10MHz, 1PPS, and IRIG-B timecode references in concert during the digitizing and IQ processing.

The LBRX-24 uses a compact and energy efficient design that houses all 24 channels in a single 1U, 19” rack mount enclosure. The entire receiver system consumes <150W total in full operation. Built in Test (BITE) allows for quick setup and flexible operator maintenance, even from a remote location.

The design of the LBRX-24 provides for “Fail-Soft” protection: The system is comprised of two fully independent 12-channel receiver subsystems, allowing for quick system reconfiguration and redundancy in the field.

FlexRadio Systems, founded in 2003, is a leader in Software Define Radio (SDR) technology. The company has thousands of SDR tranceiver and receive-only systems deployed worldwide. FlexRadio is recognized worldwide for its high-performance PowerSDR™ software.

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PRELIMINARY

LBRX-24

DESCRIPTION	MIN	TYP	MAX	UNITS	Notes
Spur-free Dynamic Range (SFDR)	65dB				
Noise Figure		12		dB	
Intercept Point IP2	30			dB	per Tuner I.C. test procedures
Intercept Point IP3	0			dB	per Tuner I.C. test procedures
Image Rejection	40	>60		dBm	
Gain Adjustment Range	40		>60	dB	
Phase Noise (Reciprocal Mixing) @ 10KHz	90	97		dBc/Hz	dBc/Hz at 10 kHz
Phase Noise (Reciprocal Mixing) @ 1MHz	120	122		dBc/Hz	dBc/Hz at 1 MHz

Receiver Specifications

Channels	24 independently tunable receiver/digitizers
Frequency Range	950 to 2150MHz
Architecture	Direct conversion, quadrature downsampling to baseband
Inputs	Each receiver-digitizer may be routed to one of three inputs: dedicated RF input connector, its assigned 3-way splitter input, or its assigned six-way splitter input
Input Connectors	SMA Female
Channel Baseband Bandwidth	40MHz, 20MHz, 10MHz, 5MHz, 2.5MHz, 1.25Mz, 0.625MHz, 312.5 kHz
Channel Sampling Rate	60Msps, 30Msps, 15Msps, 7.5Msps, 3.75Msps, 1.875Msps, 937.5ksps, 468.75ksps
Optional Bandwidth	80MHz, 120Msps (with some restrictions)
ADC Resolution	14 bits, 12.3 bits effective

Ordering Information

LBRX - 24

VITA Open Standards, Open Markets

24 receiver/digitizers

LBRX-24-PS: Add wide band power sensors

Receiver Data Output

Data I/O Format	16 bits per sample, 32 bit I/Q sample frame. Packed into either SDDS or VITA-49 format. (independently selectable for each Receiver/ Digitizer)
Frequency Stability and Accuracy	Same as 10MHz inpt reference. All local oscillators and sampling clocks derived from 10MHz input reference
Local Control	via RS-232, DB-9 connector, 57,600 baud command line interface
Remote Control	via separate 1GbE connector for each 12 receiver bank
Remote Control Format	As defined in radio manual

Electrical

Input Voltage Range	85 to 265 VAC , single phase
Input Frequency Range	47 to 63 Hz
Input Power Requirement	150 Watts maximum

Mechanical

Height	1.75" (1RU) Nominal
Width	17.75", not including rack ears 19.0", including rack ears
Depth	18.25", including rear connectors and front handles
Depth Behind Rack Rails	17", including rear connectors
Weight:	16 lbs.

Retention of Data

All operational sampled data, frequency and bandwidths selected, and IP addresses of stream targets are in volatile memory and are lost/destroyed upon removal of power.

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