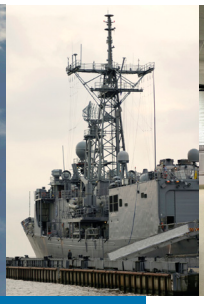
FlexRadio Systems®
Software Defined Radios

CDRX-1000

HF/IF Channelizing Digitizer

PRODUCT FEATURES

- Up to 10 channels fully phase synchronous receive capability
- 100kHz-100MHz RF channel input—can be used for direct RF or IF input
- Greater than 100dB of Two Tone 3rd order dynamic range at 100Hz spacing
- Gigabit Ethernet I/Q data output with automatic routing to multiple clients
- Phase Noise < –140dBc/Hz @ 10kHz
- Streaming I/Q data conforms to VITA-49 standard
- Extremely low power—less than 75W fully populated
- Remote control and diagnostics via Ethernet
- Built In Test Equipment (BITE) self-test
- Maximum deployment flexibility at minimal cost
- Commercial off-the-shelf (COTS) equipment

OVERVIEW

The CDRX-1000 channelizing digitizer provides up to ten synchronous, 200 kHz bandwidth receiver channels that deliver >100 dB two-tone, third order dynamic range while dissipating less than 75W. The CDRX-1000 is ideal for applications such as signal intelligence and exploitation, geolocation, and real-time signal analysis. Each of the eight channels may be tuned independently or synchronously over an input range of 100 kHz to 100 MHz and streamed as I/Q data over Gigabit Ethernet using the VITA-49 communications standard. The CDRX-1000 utilizes a patent pending quadrature sampling detector (FLEX-CMQSD™) technology that allows ultra high dynamic range with low power dissipation.

The CDRX-1000 provides up to 10 synchronous receivers that deliver >100dB IMD DR3 (100 Hz tone spacing, 500 Hz detection bandwidth) for less than 75W of power dissipation.

The CDRX-1000 is delivered in a 4U height system chassis that allows modular, plug-in configuration of 1 to 10 receiver channels. All modules connect to a passive backplane for ease of upgrade and maintenance. Built in test equipment (BITE) is included, providing self test and calibration functions. The chassis provides electromagnetic double shielding for maximum RF performance. The system may be powered from either AC line voltages or optional 12V DC input.

FlexRadio Systems, founded in 2003, is a leader in Software Defined Radio (SDR) technology. The company has thousands of SDR transceiver systems deployed worldwide that utilize similar technology to that incorporated in the CDRX-1000. FlexRadio is recognized worldwide for its high-performance PowerSDR™ software.

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CDRX-1000

DESCRIPTION	MIN	TYP	MAX	UNITS	Notes
Two Tone 3rd Order Dynamic Range	100	105		dB	100Hz tone spacing, 500Hz Detection Bandwidth, Pre-amp OFF
Intercept Point IP3 (Pre-amp OFF)	+30	+36		dB	100Hz tone spacing
Intercept Point IP3 (Pre-amp ON)	+14	+16		dB	100Hz tone spacing
Intercept Point IP2	+60			dBm	
Noise Figure (Pre-amp OFF)			20	dB	
Noise Figure (Pre-amp ON)			10	dB	
Image Rejection	80	100		dB	Single tone, any tone spacing (Requires wide band image rejection software)
Non-blocking Spurious Free Dynamic Range	120	125		dB	2kHz spacing
Phase Noise (Reciprocal Mixing)		-140		dBc/Hz	10kHz offset @ 14MHz

Receiver Specifications

Channels	1 to 10
Frequency Range	100kHz to 100 MHz in 250mHz steps(Undersampling above 71 MHz)
Conversion	Direct conversion quadrature baseband sampling (Flex-CMQSD™ technology)
Bandwidths	6 kHz, 15 kHz, 200 kHz
ADC Sampling Rate	200 ksps
ADC Resolution	24 bit
DDS Clock	1 GHz

Receiver Data Output

Data I/O Format	32-bits per channel streaming I/Q in VITA-49 format over UDP/IP
Data Output Transport	1000Base-T (Gigabit) Ethernet
Bandwidth per channel	13.5Mb/s
Streaming data target	Selectable by channel
Time Stamp Resolution	1ns
Control Interface	VITA-49 style TCP/IP
Firmware Updates	Update over Ethernet
Streaming Data I/O Connector	RJ45 Female
Control Connector	RJ45 Female

Integrated GPS Engine

GPS Receiver Type	12-Channel GPS L1, 1575.42MHz, C/A 1.023MHz Timing-Optimized Receiver
GPS Antenna Gain	Active Antenna, 18dB to 36dB gain
GPS Antenna Voltage	3V / 5V Selectable
GPS Antenna Connector	BNC Female
(GPS Antenna Not Included)	

Electrical

Input Voltage Range	85 - 265 VAC single phase or 120 - 370 VDC
Input Frequency Range	47 - 63 Hz
Input Power Requirement	75W Max
Input Fuse Rating	3A
Input Connector	IEC 60320 - C14 Panel Mount
Optional Low Voltage DC Input	12VDC ± 5%

Mechanical

RF Shielded Enclosure	Rack Mountable
Height	7" (4U Nominal Height)
Width	17.75" (Nominal 19" Rack Mounting)
Depth	17.75" (Including front panel SMA connectors)

Environmental

Operating Temp Range	0 °C to +40 °C
Optimal Performance Temp Range	+10 °C to +30 °C
Operating Humidity	5% to 95%

Ordering Information

CDRX - aa bb - c

- c: F Fixed base operation GPS; M Mobile operation GPS
- bb: CDRX Channel Count
- aa: 10 10 Slot Chassis; 32 32 Slot Chassis

(Example: CDRX-1008-F)

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