

Eclipse RF™ Products

SYS8304 Application-Ready Subsystem

The SYS8304 is an ultra-high dynamic range software-defined receiver (SDR)/transmitter in our 8000 line of radio frequency (RF) application-ready subsystems.

The base configuration of the SYS8304 consists of:

- Software defined radio (SDR) transceiver (RXT8313)
- Filter multiplexer (RFD8001)
- Field programmable gate array (FPGA) processor (CPU0019)
- Power supply module

This modular line replaceable unit (LRU) has 730MHz of receive and transmit instantaneous bandwidth and is capable of receiving and transmitting signals from 20MHz to 1050MHz. The LRU hosts the RXT8313 transceiver and RFD8001 filter multiplexer that together enable a remarkable instantaneous spur free dynamic range and low noise figure RF sensor for VHF/UHF applications.

A 3U VPX FPGA processor enables self-contained advanced signal processing on the edge. This LRU supports hardware-accelerated software defined radio with both processed and raw I/Q data products provided to an external processor unit over high-speed networking.



The SYS8304 is a 4-Slot 3U VPX ultra-high dynamic range software defined receiver/transmitter.

Key features

- Low-band frequency range 20MHz to 1,050MHz
- 1 Ultra-high dynamic range multi-octave, 730MHz IBW receive channel comprised of 8 coherent ADCs allows for ultra-high dynamic range in the presence of high amplitude signals.
- Offers unprecedented IP2 of >110dBm
- 1 High-dynamic range transmit channel
- 1 Wideband channel allows for up to 1,000MHz of instantaneous bandwidth.
- 1 High gain, narrowband channel for 250MHz of instantaneous bandwidth from 850MHz to 1,100MHz.
- Configurations possible for standard 28VDC input or 270VDC Input
- High-speed optical interface supports up to 3x100 gigabit ethernet
- External PA/antenna controls – highly adaptable to any hardware with programmable external interface IO standards – RS485, LVPECL, LVCM

Specifications

HDR RF Rx

RF Frequency Range	20MHz – 1050MHz
Gain	16dB Typical
Gain Atten. Control	0-31dB, 1dB steps
IIP3	16dBm Typical
IIP2	>110dBm Typical
NF	9 dB Typical
2 Tone SFDR	-84dBc @ -7dBFS (IM3) -136dBc @ -7dBFS (IM2)
Max Power (Op.)	+10dBm
Max Power (Survivable)	100W Peak, 50W CW

Wideband RF Rx

RF Frequency Range	20MHz – 1,050MHz
Gain	0dB Typical
Gain Atten. Control	0-31dB, 1dB steps
IIP3 / IIP2	+30dBm / +44dBm Typical
NF	23dB Typical

Narrowband RF Rx

RF Frequency Range	850MHz – 1,100MHz
Gain	34dB Typical
Gain Atten. Control	LNA Bypass
IIP3	-3dBm Typical
NF	2.8dB Typical

FPGA Specifications

FPGAs	Kintex Ultrascale+ KU09 Virtex Ultrascale+ VU13P Virtex Ultrascale+ ZU7EV
Backplane Interconnect	1GbE, 40Gb Dataplane
Digital Channelization	Yes ¹
Pulse Param. Est.	PW, Frequency, MoP, etc.
Decimation	Configurable Decimation from RF Lookback Memory

External Interfaces

Optical	10/100GBASE-SR
Coaxial	1 HDR Input, 1 NB Input, 1 Tx Out, 1 Cal Out, 10/100M Ref Clk, 1 PPS
Power	28V or 270V
PA/ANT Controls	6x RS485, 2x LVPECL, 3x LVCMOS

Mechanical and Environmental

Size	5.0" x 6.9" x 12.3"
Power	180W
Weight	20 lbs
Operating Temperature	-40C to 85C with baseplate temp held to +45C
Vibration	21GRMS X,Y,Z ¹

HDR RF Tx (1x)

RF Frequency Range	5MHz – 1,300MHz
Output Power	0dBm
Gain Control	0-30dB, 1dB steps

¹Consult factory for additional information

For more information contact:

BAE Systems
17111 Waterview Pkwy
Dallas, Texas 75252

T: 972 699 8580

W: baesystems.com/eclipse

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