

SYS6305 Integrated Sensor Platform

Eclipse SIGINT Products



The **SYS6305** is a fully integrated, application-ready hardware platform that supports a number of integrator-developed sensor modes, such as signal search, direction finding, geo-location, beamforming, demodulation, and copy.

The sensor platform is based on a 3U, 5-slot, conduction-cooled VPX chassis that houses two Eclipse RXR6322 or RXR6332 receivers, one REF6301 GPS-based reference, one Intel Core i7-based single board computer, and a plug-in VPX power supply. The two receivers provide four RF input channels, which are phase coherent and can be used in either a commutated switched baseline or N-channel mode. An internal RF distribution unit on the REF6301 supports these two modes of operation for spectral and spatial processing applications.

The SYS6305 is a standard product offering in the R6000 series of SIGINT modules and integrated sensor platforms. Eclipse has been delivering high-performance, open standards based products to the SIGINT market for more than 25 years.

Key features and benefits

- The SYS6305 is optimized for size, weight, and power to support a large number of deployments from ships and wide-body aircraft to autonomous vehicles, manned, and unattended sensors
- The SYS6305 is a fully integrated, tested and deployed sensor platform based on the latest open standards, such as VITA-46, 48, 49, 65 and 67. Open standards protect the customers' investment and ease of integration through interoperability and technology insertion
- The computer environment fully supports software baselines built on the latest open standards, such as REDHAWK, TOA, OMS, SOSA, JICD 4.2 and VITA-49
- Two RXR6322 VHF/UHF or two RXR6332 HF receivers share the same local oscillator to support four channel phase coherent processing
- The REF6301 incorporates a GPS engine that disciplines an oven-controlled crystal oscillator (OXCO), which provides an extremely low phase noise 10 MHz reference signal with a 1 PPS timing pulse
- The RDM6300 on the REF6300 reference provides input connections for nine VHF and five UHF receive antennas – this non-blocking RFD connects each of its input ports to any of the four RF input ports across the two receivers to support commutation or a fixed N-channel collection mode

SYS6305 specifications

Refer to the RXR6322 and RXR6332 datasheets for more information on compatible receivers
Refer to the REF6301 datasheet for more information on the compatible reference/RFD module

Radio frequency (RF)

RF inputs	4 – 2 per RXR6322 receiver
Frequency range	100 kHz to 6 GHz
Tune resolution	1 MHz analog Sub-Hz in re-sampler DDCs
Input impedance	50 Ohms
VSWR	Less than 2.5:1
Pre-selection	14 pre-selection filters
Maximum input level	+24 dBm
Gain	30 dB typical
LO re-radiation	< -90 dBm
Noise figure	16 dB maximum, 14 dB typical, 13 dB typical at maximum gain
Third-order intercept	
In band of final IF (IIP3)	+ 15 dBm at 15 dB gain, + 25 dBm at maximum attenuation
Out of band	+30 dBm typical at 0 dB attenuation, two tone
Second-order intercept	+ 50 dBm minimum, +60 dBm typical

Data and control interface

Control/status	PCIe or 1 Gig-E
Data plane	PCIe or 1 Gig-E
Sync I/O	Backplane daisy chain (optional use)
Coherency	LO and timing distribution for coherent operation of multiple receivers (N channel)

Digital specifications

Wideband data format	16-bit real or 16-bit I&Q complex
Filtered narrowband	16-bit I&Q complex
Output sample data rate	Set by selected re-sampler (80, 40, 12.8 cMsps)
Consult factory for options	
IF bandwidths (DDC outputs)	500 Hz to 2 MHz (>2 MHz with reduction in number of available DDCs)
Wideband gain control modes	Attenuation range 45 dB with 1 dB steps Fast attack, slow decay, freeze, dump-attack-freeze, manual
Signal demods	AM, FM, USB, LSB, CW, OOK u/a-law TDM output, FFT options
Delay memory	250 Mbytes/channel

Internal reference

(Refer to REF6301 datasheet)

Frequency accuracy	10 MHz, 1 part in 1 x 10 ⁻¹⁰ (typical instantaneous)
Amplitude	7 dBm +/- 2 dB
Harmonics	-30 dBc maximum
Non-harmonic spurious	-80 dBc maximum
Source VSWR	1.5:1 max (50 Ohms)

Size, weight and power

Size	5.73 inches wide x 8.5 inches length x 9 inches height
Weight	15 pounds
Power dissipation	260 Watts
Temperature	Operational from -20 to +70 degrees Celsius at module rails

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