

Eclipse RF™ Products

SYS6315 Sensor Subsystem



The SYS6315 is a 4U, 19-inch rack mount ultra-wideband Sensor Subsystem.

Part of a family of software-defined radios, the SYS6315 provides 15 OpenVPX slots for Radio Frequency (RF) receivers and processing cards housed within a 19-inch rack mount, air-cooled chassis. The front loaded card cage allows for easy maintenance without removing the chassis from the rack. A nominal configuration includes 14 RF channels with 80 MHz of instantaneous bandwidth, three single board computers, and two graphic processing units. All cards are conduction cooled.

Key features and benefits

- Modular, open system architecture complies with VITA-46, -48, -49 and -67 standards, enabling interoperability among platforms and systems
- 14 independent 80 MHz RF channels for:
 - Independent operation for staring or scanning with up to 1,120 MHz of instantaneous bandwidth
 - Grouped for up to eight phase coherent RF channels to support direction finding
- Three single board computers with third generation Intel® Core™ i7 processors and high-speed PCIe connections
- Optional two graphic processing units providing 640 cores of NVIDIA® Maxwell™ graphics processing power
- Hosts a software baseline built on open architecture principles that supports emerging standards such as REDHAWK, TOA, OMS, SOSA, JICD 4.2, and VITA-49

Tuner RF specifications

- 20 MHz - 6 GHz tune range
- 10/80 MHz instantaneous bandwidth enables signal isolation, narrow and wideband tuning
- RF tuning resolution 1 MHz via first local oscillator (LO)
- Analog IF bandwidth selectable 80/10 MHz (80/40, 60/10, 60/40 MHz optionally available)
- Input impedance 50 ohms
- Voltage standing wave ratio less than 2.5:1
- Preselection: 20 MHz to 90 MHz pre-selector bypass, 0.1-20 MHz, 20-30 MHz and 30-90 MHz
- 90MHz to 6 GHz suboctave preselectors
- Max input level + 24 dBm
- Image rejection > 80 dB
- IF rejection > 80 dB
- LO re-radiation < -90 dBm
- Noise figure 14dB typical, 16 dB maximum 2MHz to 6 GHz
- Third-order intercept
- In-band of final IF (IIP3) +3 dBm typical
- Second-order intercept +50 dBm typical
- Single tone spurious –free dynamic range> 77 dB with tone at -1 dBFS
- Internal spurious < -100 dBm
- Coherency distribution of first and second LOs

Physical specifications

Physical dimensions	6.94-inch height X 19-inch width X 18-inch length
Weight	60 pounds
Power	1204 Watts
Cooling	Front to back forced air cooling 50 degrees Celsius maximum inlet temperature
Network interface	Ethernet RF connection Maintenance port

Tuner digital specifications

- Wideband data 16-bit real or 32-bit complex at selected sample rate
- Filtered narrowband 16-bit IQ serial at sample rate determined by selected bandwidth
- Output sample rate set by selected re-sampler (100, 80, 40 and 12.8 cMSPS)
- 32 narrowband digital down converter (DDCs) each accessible by either RF channel (bandwidths >1.2 MHz may reduce)
- Gain control, automatic gain control, and manual gain control modes
- Fast attack, slow decay, freeze, dump-attack freeze
- Manual setting
- Attenuation range 45 dB in 1 dB steps
- Delay memory 250 MB per input channel
- Sync Input/Output (I/O) daisy chained distribution optional
- Timing coherency analog to digital (A/D) sample coherency provided by LO daisy chaining

Single board computer specifications

- Intel third-generation core i7 processor
 - i7-3612QE (quad core) at 2.1 GHz
- Dual-channel double data rate type 3 (up to 16 GB) at 1333 MHz with error-correcting code
- Up to 32 GB NAND flash
- Multiple peripheral component interconnect express (PCIe) fabric backplane configurations
 - x16 peripheral component interconnect express (PCIe) GEN 2 option (no XMC)
 - 4x PCIe GEN 2 with DMA/NTB capability, also GEN 1 x1 PCIe
- 1x XMC site with I/O
- 2x 10/100/1000BaseT
- 2x RS-232/422 COM ports
- 2x SATA (6 Gb/s)
- VITA65 OpenVPX compatible
 - MOD3-PAY-2F2T-16.2.5-3
 - MOD3-PAY-2F-16.2.7-1
- Windows®, Linux® and Real-Time OS support
- Five levels of ruggedization

Graphics processor specifications

- NVIDIA® GM107 GPU
 - NVIDIA® Maxwell architecture
 - 640 processor cores
 - 128-bit memory bus
 - 2 Gbytes GDDR5 SDRAM
- PCIe: 16-lane PCIe Gen 3 capable (x16/x8/x4) VITA65 OpenVPX compatible

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