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
- Coherence distribution of first and second LOs

Physical specifications

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

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) at1333 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