WOLFJAW Lite-3000

The WOLFJAW Lite-3000 is a high-performance integrated compute/sensor system that is suitable for a variety of applications ranging from Radar to Software Defined Radio (SDR). The system is a unique combination of RF tuners, precision GPS, A/Ds, FPGA and third generation Intel Core i7 processor.

The unit is equipped with dual Midwest Microwave MT-3001-LP tuners with a tuning range of 30-3000MHz with selectable IF filters of 1.5, 5, and 25MHz. The tuners feed a pair of 250MS/s, 16-bit A/D converters which stream their digitized data to a Xilinx Kintex-7 FPGA for processing. The default configuration of the FPGA is an 8- channel digital down converter (DDC) with independently configurable channels (tuning, decimation, filters, etc) for SDR applications. Each A/D may feed any DDC channel for maximum flexibility. The output of the DDCs is bundled in VITA 49 formatted packets and transferred via Direct Memory Access (DMA) into the host's memory for processing by the Core i7 processor.
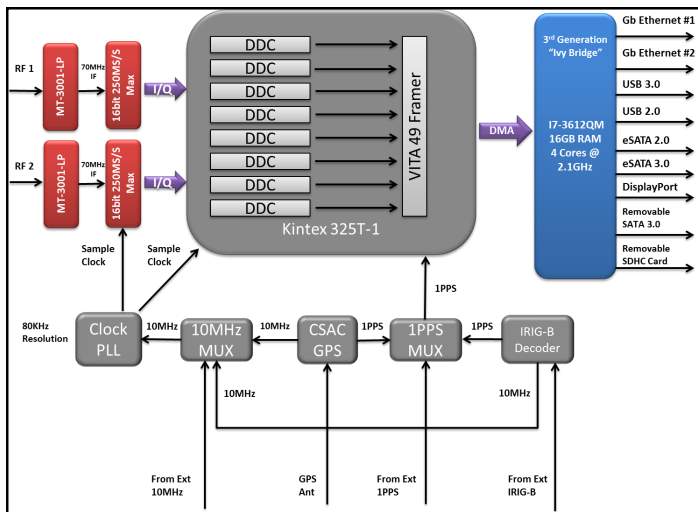
The clock and timing source used by the system is selectable and can be chosen from the internal GPS, external 10MHz/1PPS or external IRIG-B source. The flexibility in timing sources enables stacking of systems or the use of other external time source such as a 1U rack mount GPS unit.

The system features a 16-character x 2-line backlit OLED display with buttons and LEDs for status and control which are sealed for operation in a harsh environment. System power is controlled via a PC-style soft power button (red). The LEDs, LCD and 3 black buttons are programmable via the provided software for application level usage.
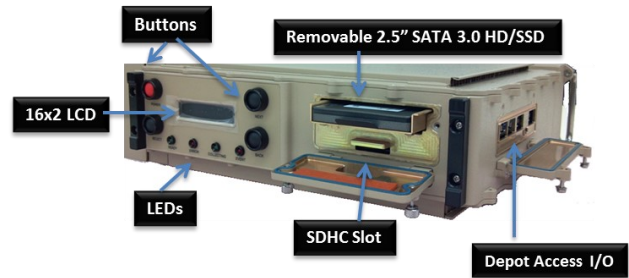
Standard PC I/O ports are located behind a sealed access door and are intended for use in a lab/office environment.

All operational I/O ports on the rear of the unit are mil circular or standard SMA connectors. The Ethernet and USB 2.0 connector accepts standard RJ-45 and mini-USB 2.0 connectors in addition to threaded circular connections.
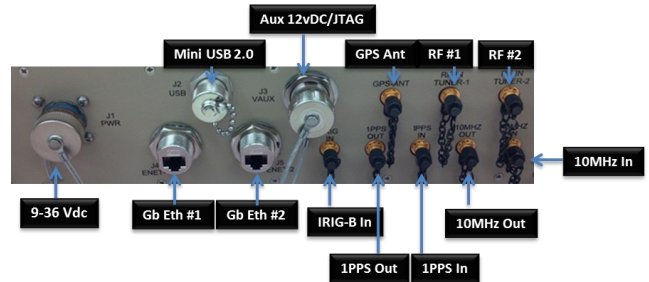
The system accepts a DC input power range of 9-36V and is shipped with a 110V AC wall power brick and a 4-position battery cable. The cable is designed for MIL BA-5590 single use or BA-2590 rechargeable batteries. Maximum power consumption is measured at <110 watts at 12V DC with typical applications consuming in the 80 watt range.

The WOLFJAW Lite is fully integrated and tested, ready for development. Components are subjected to rigorous screening followed by a 24 hour system level burn-in with signal injection.

The customized CentOS 6.3 operating system is pre-loaded with the necessary device drivers and application server to reduce software development time. Interfaces are provided in both Python and C++ including examples to illustrate use.

The system is delivered as a kit ready for immediate use. The kit includes antennas, batteries, charger, power brick and associated cables in a rugged water proof case.

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BLACK RIVER SYSTEMS COMPANY

Physical Specification

Dimensions	3.65"H x 11.04"W (includes handles) x 13.94"L
Voltage	9-36V DC
Power Max	110Watts @ 12V
Power Typical	80Watts @ 12V
Weight	13.48 lbs

OS & Software

Operating System	CentOS 6.3
Server Software	WJLite Server/ System Controller
SDR Framework	pre-loaded REDHAWK 1.8.4

Processor / IO Ports

Processor Model	Core i7 – 3612QM, 4c @ 2.1 GHz
Chipset	Intel QM77
Memory	16GB DDR3, ECC
I/O Ports (Mil circular connectors)	
	2x Gb Ethernet 1x Mini USB 2.0
I/O Ports (depot access door)	1x DisplayPort 1x USB 3.0 1x eSATA 3.0 1x eSATA 2.0
SMA	2xRF in, 1x GPS Ant 10MHz I/O, 1 PPS I/O IRIG B-2000

Dual MMS MT-3001-LP Tuners

Frequency range	30-3000MHz
Tuning Resolution	1 KHz steps
IF Frequency	70MHz
IF Bandwidths	1.5, 5, 25MHz
Gain	30dB nom above RF input

A/D Converters

Device	Intersil ISL216P25
Resolution	16-bit
Sample Rate	10 – 250 MHz
PLL Resolution	80kHz Tuning Resolution
SFDR 70MHz carrier	91 dB
ENOB	11.8 bits

GPS

Device	Jackson Labs CSAC
1 PPS Accuracy	+- 15ns to UTC RMS (1-Sigma) GPS Locked in Position hold mode
Frequency Accuracy	Better than +- 2E-010 after 3 minutes operation with GPS lock
Holdover Stability	<+-2µ over 24 hour period @+25c (after 20 minutes with lock)
Phase Noise	10Hz -90dBc/Hz, 100Hz -125dBc/Hz, 1KHz -145dBc/Hz
Warm up	< 2 minutes

FPGA

Device	Xilinx Kintex 7 325T-1
Logic Cells	326K
Flip-Flops/Slices	407K/50K
DSP48E1 Elements	840
Clock Rate	200MHz

Removable Storage

Hard Disk	1x SATA 3.0 , 2.5" , 256GB Commercial SSD (included with system)
Flash Card	1x SDHC card slot

Included Accessories

Power Brick	110-240V AC , 250W
Battery Cable	4 position BA-5590/BA-2590

Accessories Kit

Case	Pelican 1600
Antennas	1x L1 GPS
	2x Omni-Directional
Batteries	2x BA-2590 rechargeable BA-2590 Charger

For more information please contact:

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