

SI-9105

Falcon Receive System

The SI-9105 Falcon receiver system provides state-of-the-art RF and DSP performance between 20 and 6000 MHz. The system houses either 4, 8, 12 or 16 channels all in a 2U x 19-inch x 23-inch rack-mount chassis using less power and at lower cost per channel than earlier receiver systems. Superlative dynamic range, tuning speed and phase noise performance significantly exceeds industry standards.

The Falcon provides dynamically selectable independent or phase-coherent operation. Its low phase tracking makes the receiver an ideal solution for direction finding or beam forming applications.

High-performance analog-to-digital converters (ADCs) sample signals at a 128-MHz rate. Per-digitization filters of 40, 25, 10 or 3 MHz can be selected to maximize the ADC performance in difficult signal environments.

The Falcon's DSP modules provide extensive digital signal processing (DSP) capabilities utilizing multiple Xilinx Virtex 5 field programmable arrays (FPGAs), digital downconverters (DDCs) based in an application-specific integrated circuit (ASIC), and large high-speed memory devices.

The default configuration includes DDC channelization and filtering, digital IF delay memory, and demodulation for CW, USB, LSB, AM or FM signals. Additionally, the Falcon's hardware and firmware designs are configurable and expandable to allow for the use of Leonardo DRS's

latest DSP intellectual property (IP) to include special digital filters, fast fourier transforms (FFTs) and advanced wireless demodulation capabilities.

The Falcon's processed digital outputs are formatted as industry standard Vita Radio Transport (VRT) packets. The transported VRT packets include precision time-stamped digital IF (ADC) output data (either delayed or in real time), digital-down-converter (DDC) output data or demodulation output data from the FPGA demodulation functions. The data outputs are via four fiber optic 10GBASE-SR Ethernet interfaces. Control of the system is achieved utilizing a 1000Base-T Ethernet port.



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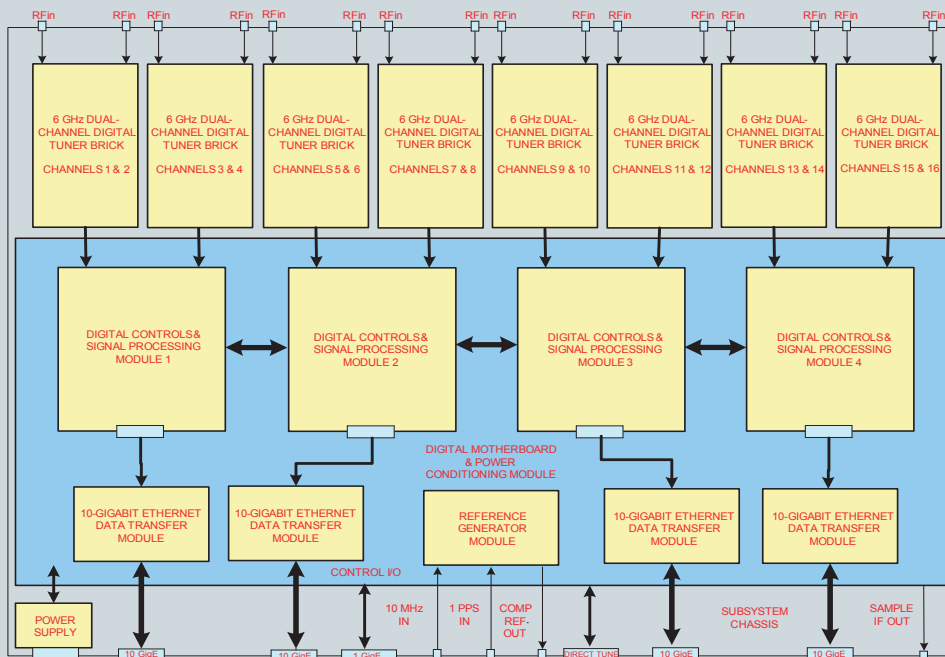
CAPABILITIES

- HF/VHF/UHF tuning range
- 16 independent or phase-coherent RF channels per system
- 50 microsecond tuning speed
- FPGA-based signal processing functions including channelization, demodulation, and VRT data formatting
- Supports advanced functions such as search, direction finding and beam forming
- Supports user-defined programming of FPGA signal processing resources for customer application development
- Gigabit Ethernet interface for control/command and 10-Gigabit Ethernet interfaces for high-speed data transfer

SPECIFICATIONS

PARAMETER	DESCRIPTION
Input Frequency Range	20 MHz to 6.0 GHz (tunable to 2 MHz)
Settling Time	50 microseconds maximum
Demodulation Formats	CW, USB, LSB, AM, and FM
Demodulation Channels	64 (16 per quad)
DDC Channels	288 maximum
Digital IF Output Format	Real or complex, VRT encoded over 10 Gigabit Ethernet
SWAP	
Power Consumption	600 Watts maximum
Weight	38 lbs. maximum
Size	2U, 19-inch wide, 23-inch deep rack-mount
ENVIRONMENTAL	
Operating Temperature Range	-20°C to +55°C, 10,000 ft.
Storage (non-operating) Temperature Range	-40°C to +85°C
Humidity	0 to 95% non-condensing

SI-9105 FALCON BLOCK DIAGRAM OF A 16-CHANNEL SYSTEM



Airborne & Intelligence Systems

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