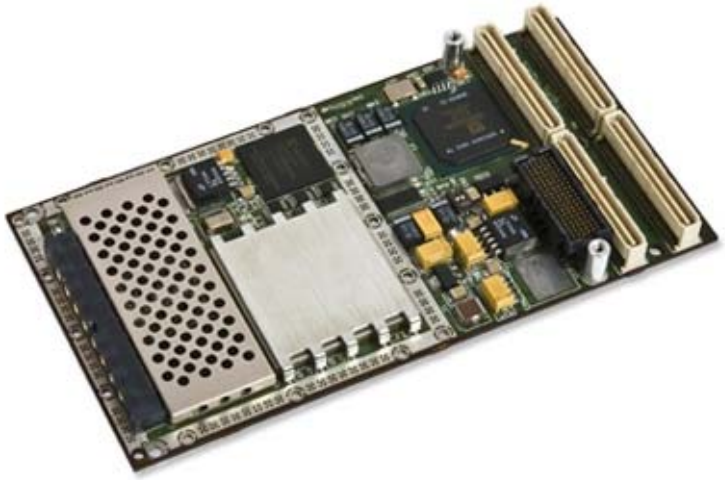
GE Fanuc
Intelligent Platforms



ICS-8551

Rugged 4/2-channel, 1.5/3 GHz ADC XMC Module with Virtex-4 FPGA

Features:

- 4 AC-Coupled Analog Inputs
- Fs ≤ 1.5 GHz 4-channel, or 3 GHz 2-channel (software selectable), 8-bit
- Xilinx Virtex-4 FPGA User Programmable FPGA (FX60 or FX100)
- TCXO @ 10 MHz
- 8-plug Samtec GRF1-J connector (Ruggedization Levels 1, 2 and 3)
- 8 Individual MMCX Coaxial Connectors (Ruggedization Levels 4 and 5)
- PCI 2.2 64-bit, 66 MHz Master/Target Burst Mode DMA capable
- VITA 42 (XMC) high-speed serial interface (single connector, 8 lanes)
- Pn4 LVDS or LVTTL signal levels
- ANSI/VITA 20-2001 conduction cooled PMC
- VxWorks, Linux and Windows software drivers

The ICS-8551 is a rugged 2 and 4 channel, 1.5/3 GHz ADC XMC module intended for Software Defined Radio (SDR) applications such as communications and radar in benign and hostile environments.

The combination of high performance ADC and FPGA resources allows VHF and UHF signals to be digitized and processed directly on the XMC module. Algorithms such as digital down conversion, FFT, and filtering can be developed to execute in the Virtex-4 FPGA, using the included Hardware Development Kit (HDK). The module is available in five levels of ruggedization, three for air-cooled environments and two for conduction cooled environments. Details of the environmental specifications are available from our web site.

The ICS-8551 HDK includes a default logic core, designed to provide minimum occupancy of the FPGA and to provide a basis for customers to program their own functionality. It includes an A/D interface and data buffering to the high-speed serial outputs and PCI Bus. Functions such as time stamping, digital down-conversion, filtering and Fast Fourier Transform can be implemented in the FPGA. For customers not wishing to implement their own DSP functions, we can provide either off-the-shelf DSP functions or our FPGA development team can design and implement specific functions to the customer's specification.

The ICS-8551 provides the user with up to eight lanes of high-speed serial I/O for communication with XMC equipped carrier cards such as the V4DSP at rates up to 3.125 GBytes/s. The 64/66 PCI interface provides sustained data rates in excess of 400 MBytes/s, while the Pn4 user I/O port allows the user to define direct point to point connections to the FPGA, eliminating interrupt latencies. The latter two interfaces may be used for applications in which the XMC interface cannot be used.

The front panel connectors are an 8-plug Samtec GRF1-J connector (for ruggedization levels 1, 2 and 3), or 8 individual MMCX connectors (for ruggedization levels 4 & 5).

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Specifications

Analog Input

- Four AC-coupled analog inputs
- 50 Ohm input impedance
- Software selectable full scale input, 0.236 dBm (650 mVpp) or 2.768 dBm (870 mVpp)
- Input signal bandwidth of 2 MHz-700 MHz (-3 dB point)
- Maximum sample rate of 1.5 GSPS/channel in 4 channel mode or 3.0 GSPS/channel in 2 channel mode
- Minimum sample rate of 200 MSPS
- Internal Sample Clock VCO locked to onboard 10 MHz TCXO or External Source
- Analog to digital resolution 8 bits
- Sampling on rising or falling edge of internal or external sample clock
- External Clock LVTTL or Sinewave compatible 0 dBm min., 20 dBm max.
- External trigger LVTTL
- External sync LVTTL
- External user LVTTL
- SINAD > 40 dB @ 748 MHz input frequency
- SFDR > 45 dB @ 748 MHz input frequency

General Specifications

- IEEE Std. P1386.1-2001 compatible PCI mezzanine card
- ANSI/VITA 20-2001 conduction-cooled PMC
- VITA 42 XMC compatible (single connector)
- VxWorks, Linux and Windows software device drivers

Onboard Resources

- Xilinx Virtex-4 FPGA FX60 or FX100
- TCXO @ 10 MHz
- 8-plug Samtec GRF1-J connector (Ruggedization levels 1, 2 and 3)
- 8 individual MMCX Coaxial Connectors (Ruggedization levels 4 and 5)

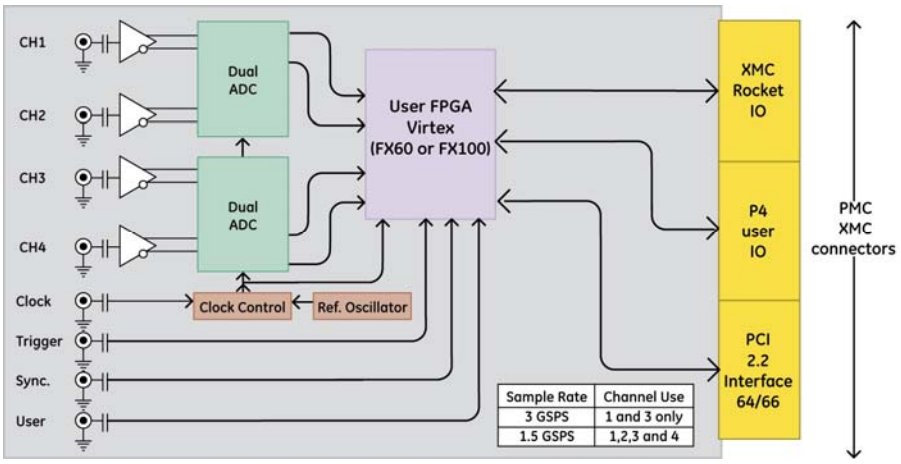
I/O Specifications

- PCI 2.2 64-bit, 66 MHz master/target burst mode DMA capable
- XMC interface, two channels, each with four lanes @ 3.125 GBytes/s VITA 42.0-200x
- All 64 user programmable I/O via Pn4 connector routed directly to FPGA
- Pn4 user definable LVDS or LVTTL signal levels

Environmental

- Five build levels available. Air and conduction cooled versions
- -40°C to +85°C operating temperature
- 95% non-condensing humidity

Block Diagram



Ordering Information

ICS-8551A-xOO
ICS-8551 with Virtex-4 FX60 FPGA *x = ruggedization level (1-5)*

ICS-8551A-xO1
ICS-8551 with Virtex-4 FX100 FPGA *x = ruggedization level (1-5)*

DRV-8551-VXW
Software device driver for VxWorks operating system

DRV-8551-LX
Software device driver for Linux operating system

DRV-8551-WIN
Software device driver for Windows operating system

DRV-8551-SCA
SCA compliant driver

HDK-8551
Hardware Development Kit for FPGA development by user, including a default core

About GE Fanuc Intelligent Platforms

GE Fanuc Intelligent Platforms is a leading global provider of embedded computing solutions for a wide range of industries and applications. Our comprehensive product offering includes many types of I/O, single board computers, high performance signal processors, fully integrated, rugged systems including flat panel displays, plus high speed networking and communications products. The company is headquartered in the U.S. and has design, manufacturing and support offices throughout the world. Whether you're looking for one of our standard products or a fully custom solution, GE Fanuc Intelligent Platforms has the breadth, experience and 24/7 support to deliver what you need. For more information, visit www.gefanucembedded.com.call 1-800-GE Fanuc.

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Additional Resources

For more information, please visit
the GE Fanuc Intelligent Platforms (Ottawa) web site at:

http://www.gefanucembedded.com

06.07 GFA-949 Rev.