

ICS-8560

Rugged XMC/PMC Module Provides 400 MSPS DACs and Virtex-4 Processing Power

Features

- 2 AC-coupled analog outputs, 16-bit resolution (Analog Devices AD9726)
- $F_s \leq 200\text{MHz}$ (Single Data Rate mode), $F_s \leq 400\text{MHz}$ (Double Data Rate mode)
- Xilinx Virtex-4 FX60 or FX100 FPGA with multiple IP cores (incl. SDR 200 MHz, DDR 400 MHz)
- Hardware Development Kit included
- 8-connector Samtec GRF1-J connector (Ruggedization Levels 1 - 3)
- 8 individual MMCX connectors (Ruggedization Levels 4 & 5)
- Companion to V4DSP 6U VME FPGA & PowerPC Processor
- VxWorks, Linux and Windows software drivers

The ICS-8560 is a XMC/PMC form factor digital transmitter module intended for Software Defined Radio applications such as communications and radar in benign and hostile environments.

The combination of high performance FPGA and DAC resources allows VHF signals to be processed and converted directly on the XMC module. Algorithms such as digital up-conversion, waveform generation and interpolation can be developed for implementation 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-8560 HDK includes multiple default core designs, including a 200 MHz Single Data Rate (SDR) core and a 400 MHz Double Data Rate (DDR) core. These default logic cores, designed to provide minimum occupancy of the FPGA, include buffering from the data input interfaces and a D/A interface, and provide a basis for customers to program their own functionality. Input selection options include the XMC high speed serial inputs or the PCI bus.

The default HDK logic supports burst and continuous modes of operation as well as a test waveform generator.

The ICS-8560 provides the user with up to eight lanes of high-speed serial I/O via a single XMC connector (Pn5), which is directly connected to the RocketIO buffers of the Virtex-4 FPGA, providing transfer rates of up to 2.5 GBytes/s with XMC equipped carrier cards. The 64/66 PCI interface provides control of the module and can also be used for data transfer at sustained data rates in excess of 400 MBytes/s. The actual data rate that can be achieved will be dependent on system implementation. 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.

Optional front panel connectors include 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 Output

- Two AC-coupled analog outputs, AD9726, 16-bit
- 8-plug Samtec GRF1-J connector (Levels 1 - 3)
- 8 individual MMCX connectors (Levels 4 & 5)
- Max. conversion rate 400 MSPS
- 50 Ohm output impedance
- Output bandwidth 0.4 - 500 MHz (-3dB)
- Internal sampling clock 409.6 MHz VCXO with dividers
- Ext. clock LVTTTL or sine wave 0dBm min., 20dBm max., ≤ 400 MHz
- Ext. trigger LVCMOS, rising or falling edge
- SFDR 75dB typ. @ fOUT = 20 MHz, fDAC = 400 MHz
- THD -92 dB typ. @ fOUT = 1 MHz, fDAC = 400 MHz
- Cross-talk <-80dB

General Specifications

- VITA 42-2005 XMC compliant; Pn5 only, 8 lanes; four PMC connectors included (Pn1 - Pn4)
- ANSI/VITA 20-2001 conduction-cooled PMC

Onboard Resources

- Xilinx Virtex-4 FPGA (XC4VFX60 or XC4VFX100)
- IP cores (including SDR 200 MHz, DDR 400 MHz)

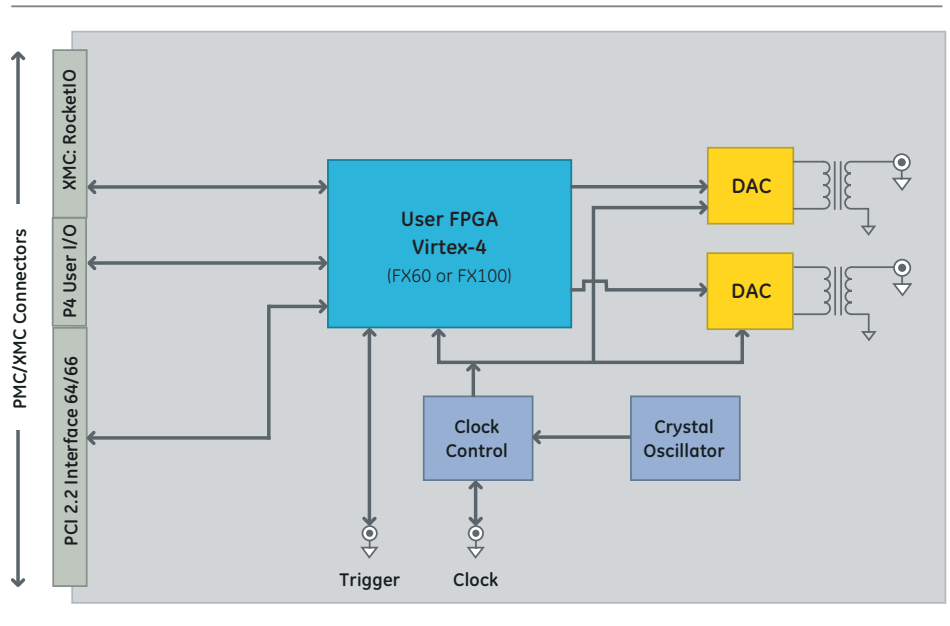
I/O Specifications

- PCI 2.2 64-bit, 66 MHz PCI bus interface, universal signaling
- XMC 8 lanes, 2.5 GBytes/s
- 32 user configurable LVDS I/O pairs directly connect P4 to FPGA

Environmental

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

Block Diagram



Ordering Information

ICS-8560A-xOO	ICS-8560 with Virtex-4 FX60 FPGA
ICS-8560A-xO1	ICS-8560 with Virtex-4 FX100 FPGA
	X = ruggedization levels (1-5)
DRV-8560-VXW	Software device driver for VxWorks operating system
DRV-8560-LX	Software device driver for Linux operating system
DRV-8560-WIN	Software device driver for Windows operating system
DRV-8560-SCA	SCA compliant driver

About GE Fanuc Intelligent Platforms Embedded Systems

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.gefanuc.com.

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Additional Resources

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

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