ICS-1572A

ICS-1572A 2-Channel, 250 MHz 16-bit ADC, 2-Channel 500 MHz 16-bit DAC XMC Module

The ICS 1572A builds on the legacy of our industry-leading digital receiver families to bring a new transceiver to market with Xilinx Virtex-6 FPGA technology. Designed for communications, radar and test and measurement applications, it provides unsurpassed converter technology with industry-leading FPGA resources. The result is a cost-effective combination of size and performance in a single XMC site.

The ICS-1572A provides two 16-bit ADCs sampling synchronously at frequencies up to 250 MHz and two 16-bit DACs at up to 500 MHz. The ADC input pass band is 3 to 500 MHz (3dB) to allow for under-sampling applications.

A Xilinx Virtex-6 LX240T FPGA is provided for user-defined signal processing functions, giving greater capacity than previous generations; other Virtex-6 devices are available as options. The Virtex-6 device also provides a PCIe interface to the host system. Other protocols, such as sRIO can be provided on request.

The FPGA provides a powerful signal processing capability that can be loaded with standard functions such as wideband DDC, FFT and time stamping, or programmed by the user for any required function.

The product provides internal and external clock and trigger capability.

The Hardware Development Kit (HDK) provides support for users who wish to implement their own signal processing algorithms in the FPGA. Alternatively, our FPGA applications programming team can develop FPGA cores specific to customer needs.

A standard programmable wide band DDC core is provided with the HDK.

User I/Os may be directly connected to the FPGA via the XMC P16 connector providing an alternative high-speed data path to the module via Aurora or other protocols.

Memory resources consist of four DDR3 2Gbit (128MB x 16) SDRAMS attached to the FPGA for general purpose storage. The standard DDR3 memory design implements four FIFOs, but the memory may be used in different ways, or for additional scratchpad memory, if required.

The ICS-1572A can be used with any type of carrier card that will accept an XMC module, including VME, VPX, PCI and CompactPCI. When used with an appropriate DSP/processor carrier card, the ICS-1572A offers a powerful single slot solution for software radio applications, for example.

Software Development Kits (SDKs) are available for VxWorks, Linux and Windows operating systems. Each SDK includes operating examples in 'C'.

The product is ideally suited for demanding applications in military communications, 3G and 4G cellular base station development, signal intelligence, smart antenna, radar beam forming, wireless test and measurement and satellite ground stations.

FEATURES:

- 2 Transformer-coupled Analog Inputs, 16 bits, Fs ≤250 MHz per channel
- 2 Transformer-coupled Analog Outputs, 16 bits, Fs ≤500 MHz per channel
- Xilinx Virtex-6 LX240T User Programmable FPGA standard, other devices available as an option
- PCI-e x8 Master/Target Burst Mode DMA capable
- VxWorks, Linux and Microsoft® Windows® software drivers

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S Y S T E M S

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Specifications

Analog Input
- Two analog inputs, 16-bit, Fs ≤250 MHz, transformer-coupled, SSMC connectors
- S/(N+D) > 71 dBFs @ f in = 70 MHz @ 250 MSPS, typ.
- SFDR > 80 dBc @ f in = 70 MHz, typ.
- 50 Ohm input/output impedance
- Full scale input voltage 4.8 dBm (1.1 Vpp)
- Input signal bandwidth of 3 to 500 MHz (-3 dB point)
- Minimum input sample rate of 50 MHz/channel

Analog Output
- Two analog outputs, 16-bit, Fs ≤500 MHz, transformer-coupled, SSMC connectors
- SFDR > 74dBc @ 20.1MHz I/F
- Full scale output voltage 3.1 dBm (0.9 Vpp)
- Maximum output conversion rate of 500 MHz/channel

Clock/Trigger
- Sampling on rising edge of internal or external sample clock
- External trigger LVTTL/LVCMOS 2.5V tolerance, software selectable Rising/Falling edge
- External sync. LVTTL/LVCMOS 2.5V tolerance, software selectable Rising/Falling edge
- External clock LVTTL/Sinewave compatible, -3 dB min. ~ +6 dBm max.
- Programmable Internal sample clock oscillator with 1Hz resolution

General
- IEEE std. 1386.1-2001. Vita 42.0-2008, Vita 42.3-2006 XMC compatible
- VxWorks, Linux and Windows software drivers

Onboard Resources
- Xilinx Virtex-6 LX240T user programmable FPGA
- Contact factory for other Virtex 6 FPGA options
- 1 GByte of DDR3 SDRAM in four banks (x64)
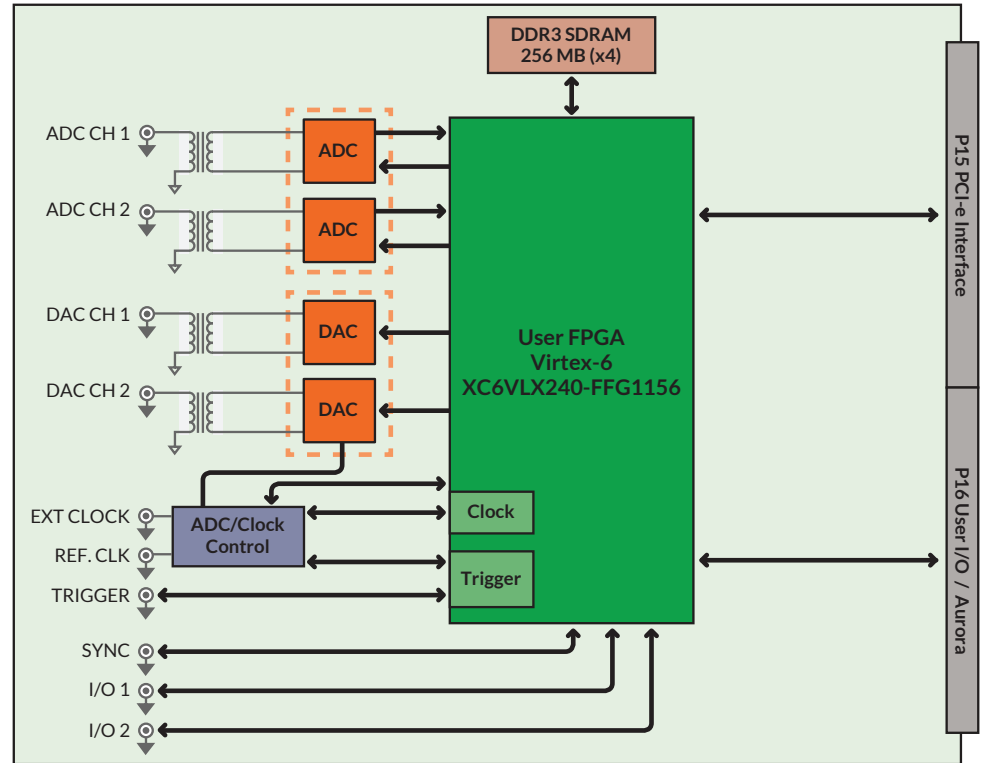- SSMC connectors for I/O

I/O Specifications
- PCI-e x8 Master/Target Burst Mode DMA capable (P15)
- 8-lane user-defined GMT/Aurora interface (P16)

Environmental
- Operating temperature, 0°C to +55°C
- Storage temperature, -40°C to +85°C
- 95% non-condensing humidity

Block diagram

Ordering information

ICS-1572A-100	ICS-1572A, ADC and DAC
ICS-1572A-SDK-VXW	Software Development Kit for VxWorks operating system
ICS-1572A-SDK-LX	Software Development Kit for Linux operating system
ICS-1572A-SDK-WIN	Software Development Kit for Windows operating system
SPR418A-108	Recommended PCIe carrier for ICS-1572A

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