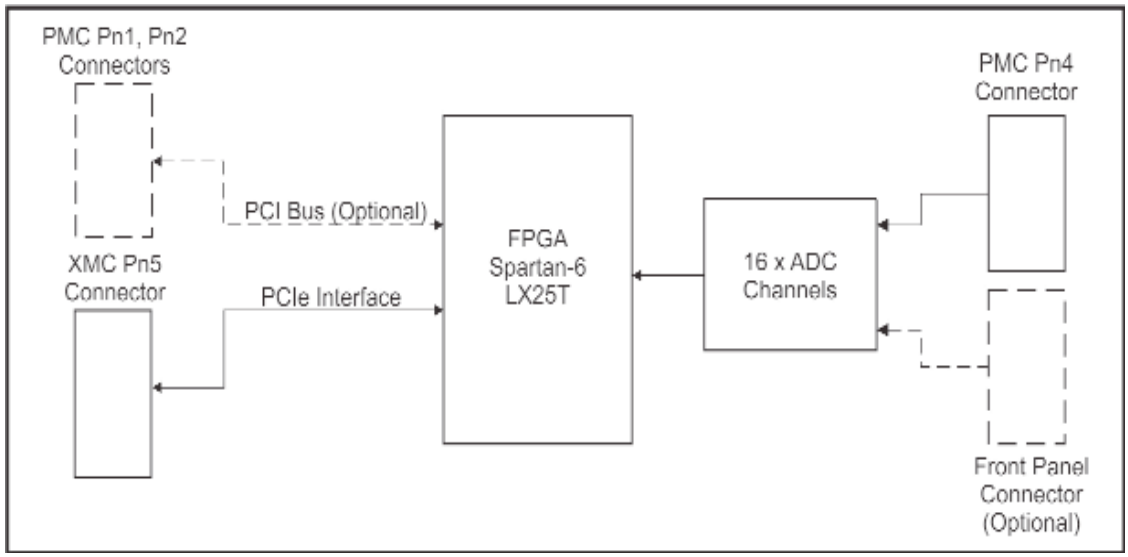
16-Channel Analog-to-Digital Converter XMC Adapter

The 16-Channel Analog-to-Digital Converter (ADC) XMC Adapter (ADC Adapter) offers sixteen 16-bit ADC channels routed to the Backplane I/O connector Pn4. The ADC channels are controlled by a Xilinx Spartan-6 Series FPGA that can be accessed via PCIe through the XMC connector. The ADC Adapter can also optionally be configured as a PMC Adapter, accessing the FPGA via PCI through PMC connectors.

The default adapter design complies with the XMC specification (ANSI/VITA 42.3-2006) and the Conduction-Cooled XMC (CCXMC) specification (ANSI/VITA 42.0-2005) and is available in ruggedised, industrial and commercial grade versions. The optional PMC Adapter configuration complies with the PMC specification (ANSI/VITA 32-199x) and the Conduction-Cooled PMC (CCPMC) specification (ANSI/VITA 20-2001). Versions with Front Panel I/O are also available as options in both XMC (ANSI/VITA 42.0-2005) and PMC (IEEE P1386.1) formfactors.

Architecture

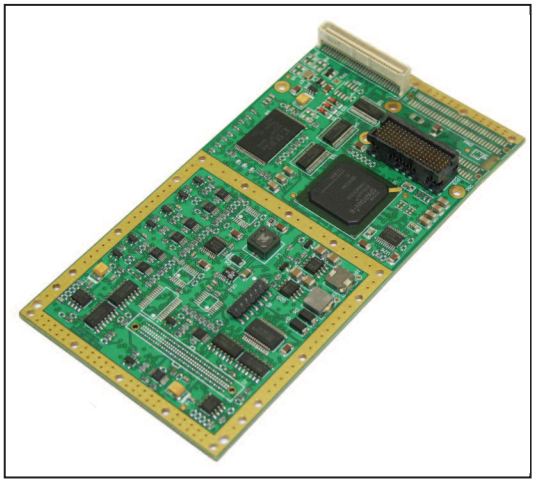
The ADC Adapter consists of a Xilinx Spartan-6 LX25T FPGA, with the XMC PCIe signals and optional PMC PCI signals routed to the FPGA. The FPGA can be configured to be user-programmable as an option. Sixteen ADC channels are routed to the Backplane I/O PMC connector or the optional Front Panel connector.



ADC Adapter Block Diagram

Features

- Xilinx Spartan-6 XC6SLX25T FPGA
- 4-Lane PCIe interface (XMC)
- Optional 32-bit, 33/66 MHz PCI Bus (PMC)
- Sixteen 16-bit ADC channels



ADC Adapter

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Board-Level

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Specifications

FPGA	Xilinx Spartan-6 XC6SLX25T
PCIe	4-Lane PCIe, 2,5 GHz PCIe Electrically : PCI Express Rev. 2.0
PCI (Optional)	32-bit, 33/66 MHz Electrically : PCI Rev. 2.2; 3,3 V or 5 V signalling
ADC	16 x 16-bit ADC channels, sampling rate up to 600 KSps per channel Routed to Backplane connector or Front Panel as an option for air-cooled versions

Reliability

MTBF	Figures according to MIL-HDBK-217F, Parts Stress Method		
	Commercial Grade	Ground Benign, Controlled, 25 C	780 000 hours
	Industrial Grade	Ground, Mobile, 45 C Naval, Sheltered, 40 C Airborne, Inhabited Cargo, 55 C Airborne, Uninhabited Cargo, 70 C Airborne, Rotary Wing, 55 C Airborne, Inhabited Fighter, 55 C Airborne, Uninhabited Fighter, 70 C	95 000 hours 225 000 hours 103 000 hours 33 000 hours 32 000 hours 82 000 hours 27 000 hours
	Ruggedised Grade	Ground, Mobile, 45 C Naval, Sheltered, 40 C Airborne, Inhabited Cargo, 55 C Airborne, Uninhabited Cargo, 70 C Airborne, Rotary Wing, 55 C Airborne, Inhabited Fighter, 55 C Airborne, Uninhabited Fighter, 70 C	103 000 hours 245 000 hours 110 000 hours 37 000 hours 36 000 hours 88 000 hours 29 000 hours

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Environmental Specifications

Grade	Commercial	Industrial	Ruggedised
Temperature - Operating - Storage	 0 C to +55 C -40 C to +85 C	 -15 C to +75 C -40 C to +85 C	 -40 C to + 85 C -55 C to +125 C
Humidity	0% - 90%	0% - 95%	0% - 95%
Shock	N/A	30 g peak for 11 ms	40 g peak for 11 ms
Vibration - Sine - Random	 2 g (peak) at 10 Hz to 100 Hz 0,04 g²/Hz at 15 Hz to 2 kHz	 10 g (peak) at 5 Hz to 2 kHz 0,1 g²/Hz at 15 Hz to 2 kHz	 10 g (peak) at 5 Hz to 2 kHz 0,1 g²/Hz at 15 Hz to 2 kHz

Physical Characteristics

Formfactor	Dimensions	Connectors	Mass
XMC (ANSI/VITA 42.0-2005)	149,00 mm x 74,00 mm (+ 0,0 / -0,5 mm), conforming to VITA 42 height envelope	Pn5	60 g +/- 10 g
CCXMC (ANSI/VITA 42.0-2005)	143,75 mm x 74,00 mm (+ 0,0 / -0,5 mm), conforming to VITA 42 height envelope	Pn5, Pn4	85 g +/- 10 g
PMC (IEEE P1386.1)	149,00 mm x 74,00 mm (+ 0,0 / -0,5 mm), conforming to VITA 20 height envelope	Pn1, Pn2	60 g +/- 10 g
CCPMC (ANSI/VITA 20-2001)	143,75 mm x 74,00 mm (+ 0,0 / -0,5 mm), conforming to VITA 20 height envelope	Pn1, Pn2, Pn4	85 g +/- 10 g

Part Selector

Part Designation	Formfactor	I/O	Cooling	Grade
CCII/ADDA/XMC/002/BP/CC	CCXMC	Backplane	Conduction	Ruggedised
CCII/ADDA/XMC/002/BP/COM	CCXMC	Backplane	Air	Commercial
CCII/ADDA/XMC/002/BP/IND	CCXMC	Backplane	Air	Industrial
CCII/ADDA/XMC/002/BP/RGD	CCXMC	Backplane	Air	Ruggedised
CCII/ADDA/XMC/002/FP/COM	XMC	Front Panel	Air	Commercial
CCII/ADDA/XMC/002/FP/IND	XMC	Front Panel	Air	Industrial
CCII/ADDA/XMC/002/FP/RGD	XMC	Front Panel	Air	Ruggedised
CCII/ADDA/PMC/002/BP/CC	CCPMC	Backplane	Conduction	Ruggedised
CCII/ADDA/PMC/002/BP/COM	CCPMC	Backplane	Air	Commercial
CCII/ADDA/PMC/002/BP/IND	CCPMC	Backplane	Air	Industrial
CCII/ADDA/PMC/002/BP/RGD	CCPMC	Backplane	Air	Ruggedised
CCII/ADDA/PMC/002/FP/COM	PMC	Front Panel	Air	Commercial
CCII/ADDA/PMC/002/FP/IND	PMC	Front Panel	Air	Industrial
CCII/ADDA/PMC/002/FP/RGD	PMC	Front Panel	Air	Ruggedised

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