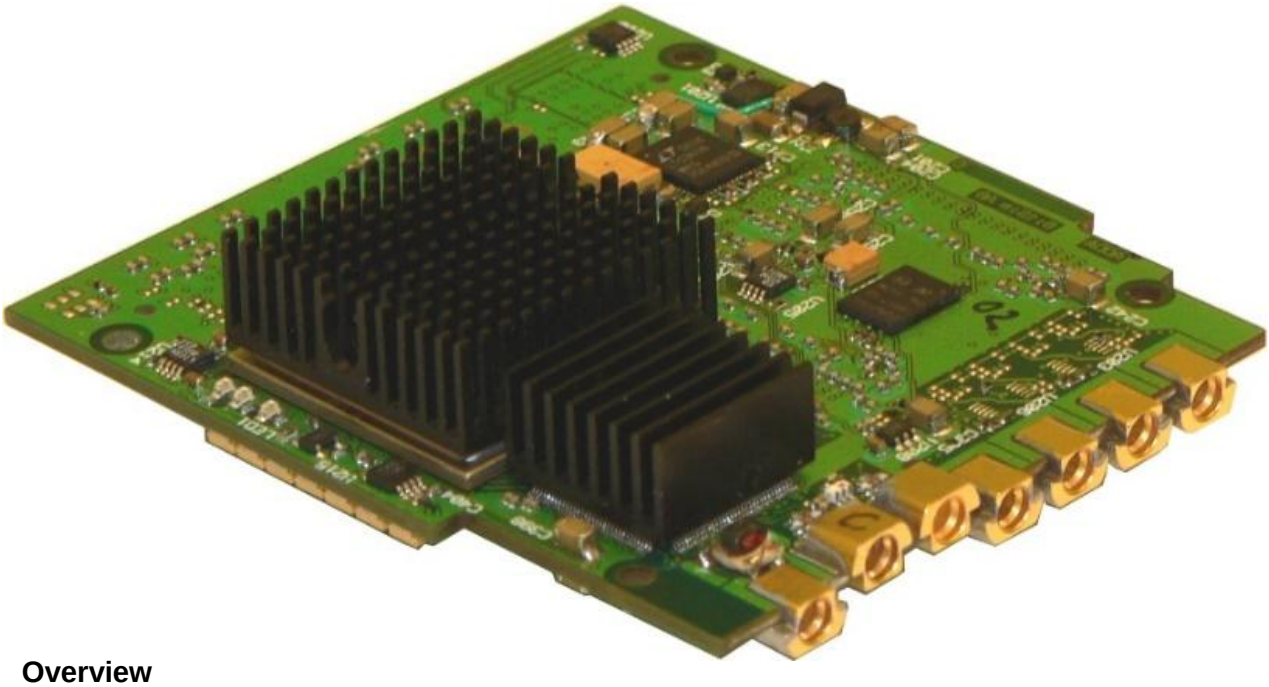
TECHBRIEF

ADDA 4.8 GHz Data Acquisition board

Modularized signal Acquisition and Generation Concept

A platform with integrated FPGA for high-speed low latency signal analysis



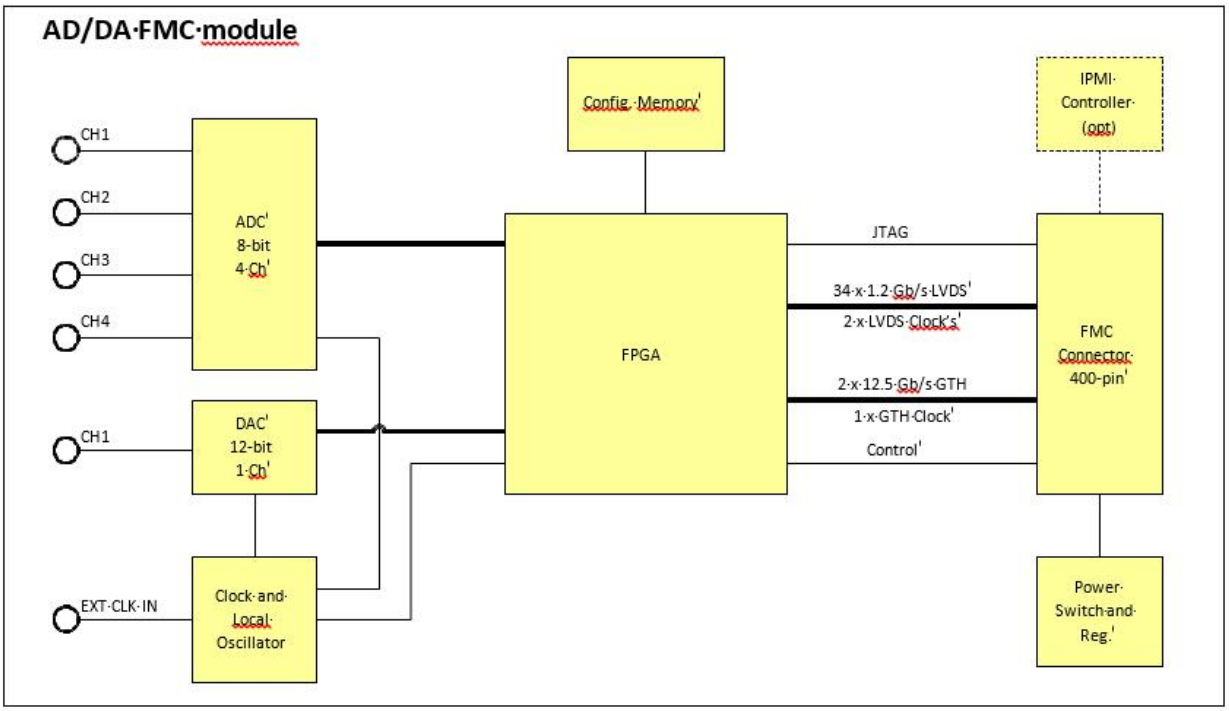
Overview

This top-of-the-line FMC module includes a 1, 2 or 4-channel 4.8 GSps ADC and a single channel DAC capable of up to 4.8 GSps.

It also includes a powerful FPGA with extensive resources in terms of logic, internal memory and I/O, a Xilinx Ultrascale with a built in MicroBlaze controller.

The board is powered through the FMC connector.

Block Diagram



Features

Analog input is quad 50 Ω AC-coupled, single ended through board-edge SMP connectors. The ADC (e2v EV8AQ160) can be configured to work in one of the following modes:

- Single channel, 8 bits @ 4.8 GSps
- Dual channels, 8 bits @ 2.4 GSps
- Four channels, 8 bits @ 1.2 GBps

Analog output is 50 Ω DC coupled, single ended through board-edge SMP connectors.

The DAC (Euvis MD662H) operates with a single analog output with 12 bit resolution @ 4.8 GSps.

The sampling clock can be either an external clock connected directly to the module or a local oscillator. ADC and DAC uses the same clock source but the sample frequency can be modified for both the ADC and the DAC individually.

The module has a high capacity Xilinx Ultrascale FPGA with plenty of resources for user signal processing. The FPGA is connected to both the ADC outputs (4 times 8 bits + clocks) and the DAC inputs (4 times 12 bits + clock). There are 40 LVDS pairs, capable of up to 1.25 Gbps, routed to the FMC connector on both the LA and the HA FMC pins. There are also six Multi Gigabit Transceivers routed to the FMC connector usable for e.g. PCIe, GbE, XAUI, Aurora etc.

The board, 2nd generation ADDA, is delivered with a BitBSP© Board Support Package. This includes VHDL I/O drivers and debug SW using an integrated MicroBlaze controller.

This boards adheres to ANSI/VITA 57.1 FPGA Mezzanine Card (FMC) Standard, 2010.