BittWare a molex company

RFX-8440

PCIe RFSoC Board

Zynq RFSoC PCIe & Standalone Platform

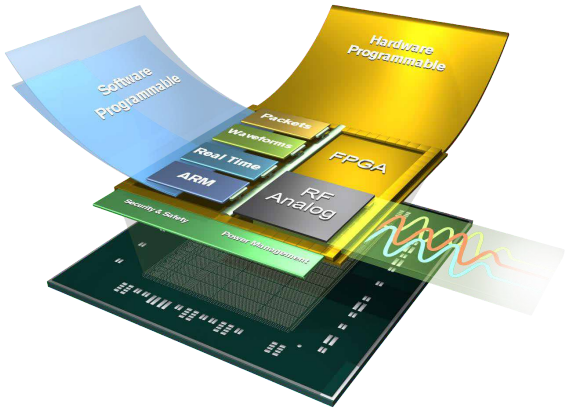
Seamlessly cross between analog and digital at up to gigahertz rates

The BittWare RFX-8440 data acquisition card features the third generation Xilinx Zynq® UltraScale+™ RFSoC. This innovative PCIe data acquisition card is capable of addressing a wide frequency spectrum – a critical need for applications such as 5G, LTE wireless, phased array RADAR and satellite communications.

The Xilinx Zynq® UltraScale+™ RFSoC integrates RF-class A/D and D/A converters into the Zynq® FPGA fabric and multi-core ARM processor subsystem, creating a multi-channel data conversion and processing solution on a single chip.

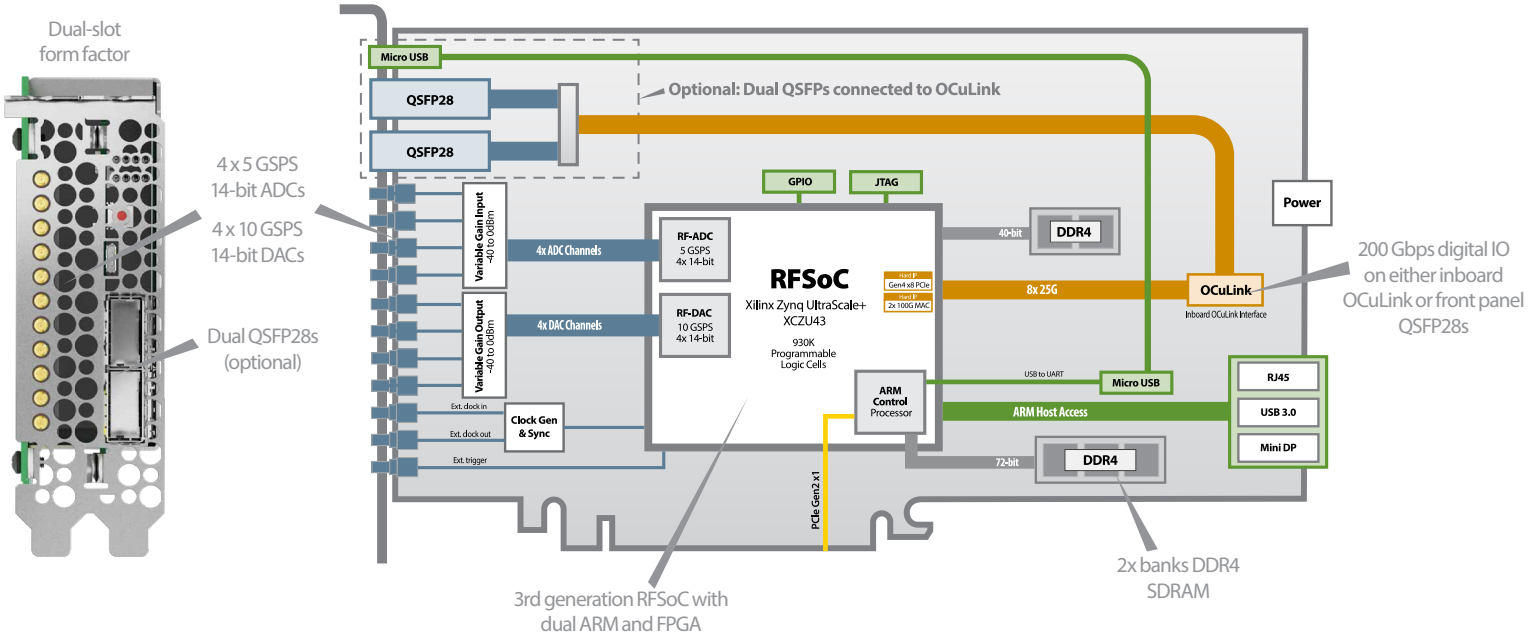
200 Gbps of digital I/O is available either on an inboard OCuLink port or connected to two front-panel QSFP28s. The OCuLink can be used for internal system connections such as NVMe storage or other BittWare FPGA cards for further processing. The QSFP28s can be used for connecting to external systems.

With the product development, manufacturing, quality and lifecycle management capabilities of the Molex group behind it, the RFX-8440 is an enterprise-class product ideal for rapid prototyping as well as volume deployment in end user systems.



key features

- Third Generation Xilinx Zynq® Ultra-Scale+™ RFSoC
- Variable gain-controlled RF inputs & outputs
- **200 Gbps** Digital I/O

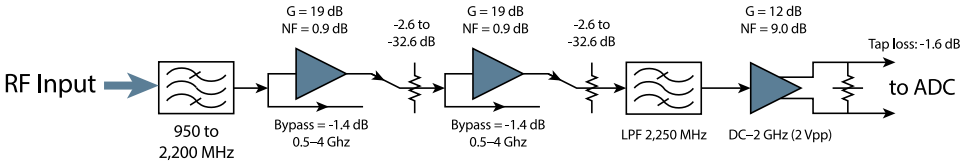


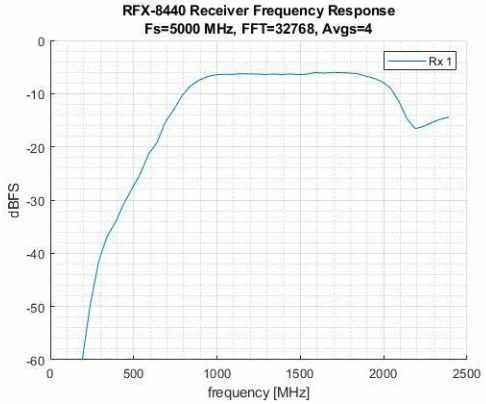
Analog Front End Options

The default configuration for the analog front end targets L-band (1GHz to 2GHz). We also offer other configurations that remove several stages to provide a direct connection with baluns supporting up to 4 GHz. Contact us for other options.

Option 1: L-Band

This option includes several signal conditioning components including variable gain.

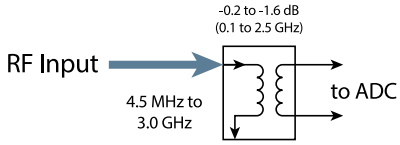


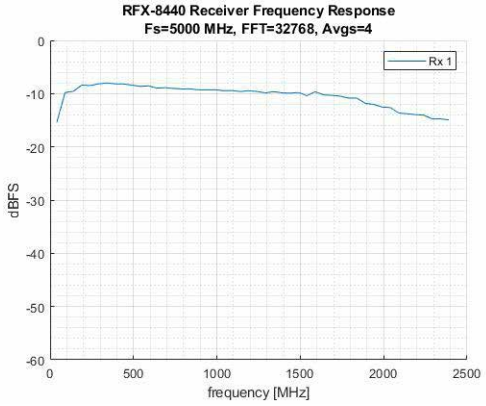


L-Band Frequency Response

Option 2: Direct 3 GHz Balun

This option eliminates amplifier distortion and the L-band signal conditioning.

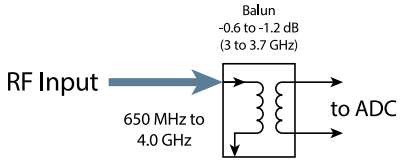




3GHz Frequency Response

Option 3: Direct 4 GHz Balun

Similar to Option 2, but with an extended input range to 4 GHz.



Board Specifications

FPGA	• Zynq UltraScale+ RFSoC
	  • XCZU43 in an E1156 package
	  • Core speed grade -2
	• Contact BittWare for other FPGA options

Analog	• Several analog configurations available:
	  • L-Band 1GHz - 2GHz: Includes several signal conditioning components including variable gain
	  • Direct 3 GHz Balun: Eliminates amplifier distortion and the L-band signal conditioning
	  • Direct 4 GHz Balun: Similar to 3GHz option, but with an extended input range to 4 GHz
	  • Contact BittWare for additional options
	• 4 x 5 GSPS 14-bit ADCs: -40 to 0 dBm (default, L-band only)
	• 4 x 10 GSPS 14-bit DACs: -40 to 0 dBm (default)
	• Programmable clocks
	• External reference and triggers
	• SSMC style connectors

On-board flash	• Flash memory for booting FPGA • Flash memory for ARM bootloader and OS image
External memory	• 16GB DDR4 processing system (ARM) memory with ECC • 8GB DDR4 programmable logic memory with ECC

External digital interfaces	• Processing system
	  • PCIe Gen2 x1
	  • RJ45 Ethernet
	  • USB UART, USB 3.0
	  • Mini DisplayPort
	• Programmable logic:
	  • Up to 200 Gb/s available via:
	  • Option 1: inboard OCuLink
	  • Option 2: Front panel 2x QSFP28
	  • Xilinx Hard IP support for dual 100GbE and PCIe Gen4

Cooling	• Standard: double-width passive heatsink • Contact BittWare for other cooling options
Electrical	• On-board power derived from 6-pin AUX connector or optionally from 12V PCIe slot connection • Power dissipation is application dependent • Typical max power consumption 50W
Environmental	• Operating temperature: 5°C to 35°C
Quality	• Manufactured to IPC-A-610 Class 2 • RoHS compliant • CE, FCC & ICES approvals
Form factor	• ¾-length, standard-height PCIe dual-slot card (x16 mechanical) • Supports standalone operation • RFX-8440 can be ordered as a TeraBox™ integrated server platform

Development Tools

FPGA development	BittWare provides a basic data capture and replay example utilizing the major interfaces of the product. Xilinx Vivado development tools are fully supported for development of custom designs.

Deliverables

- RFX-8440 Analog Data Acquisition Card
- Data capture and relay example - Full source code
- 1-year hardware warranty

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BittWare
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Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Molex:
RFX-8440-0001