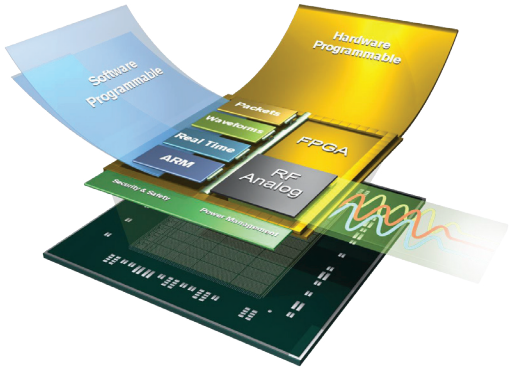
BittWare a molex company

RFX-8440A

PCIe RFSoC Card

RFSoC Data Acquisition Card

Seamlessly cross between analog and digital at up to S-Band rates



The BittWare RFX-8440A data acquisition card features the third generation AMD Zynq® UltraScale+™ RFSoC. This data acquisition solution 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 RFX-8440A transfers digital data over OCuLink or QSFP at twice the rate of RFSoC cards that move data only over PCIe.

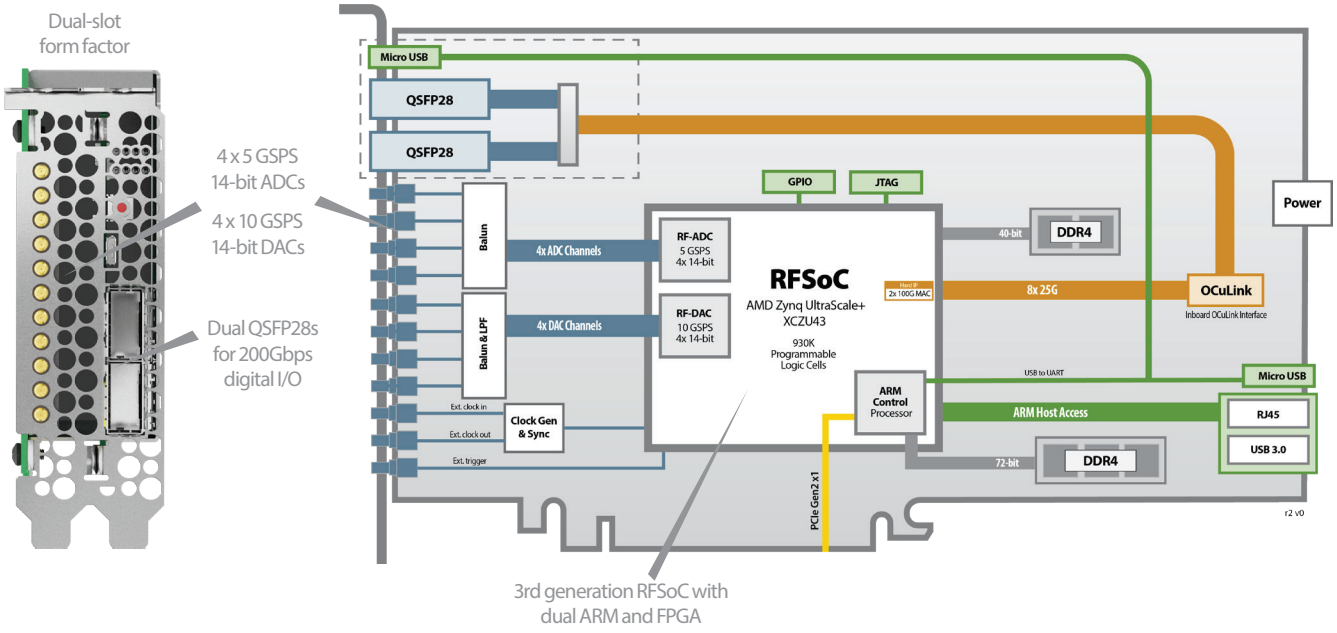
The RFX-8440A does not require any power or signals from a PCIe slot. This allows deployment of a stand-alone RFX-8440A near an antenna where it converts analog data into a long-range optics, exchanging packets with a distant data center. Alternatively, it can be installed into a server PCI slot if needed. In this configuration it is wired to a dual 100 GbE NIC or to a separate FPGA card like our IA-440i. BittWare can deliver the RFX-8440A in a standard server or a chassis enclosure which provides power, cooling and interface to the RFX-8440A via RJ45.

The AMD 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 on the FPGA side of the RFSoC. That is twice the bandwidth of RFSoC implementations that depend upon PCIe for data transfer. This I/O is available through two QSFP28 cages, the most popular connector between chassis. Customers have implemented transports using Aurora, Ethernet MAC frames, and UDP.

key features

- Third Generation AMD Zynq® Ultra-Scale+™ RFSoC
- **Standalone** Capable
- **200 Gbps** Digital I/O

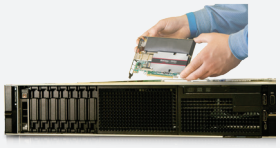


Additional Services

Take advantage of BittWare's range of design, integration, and support options

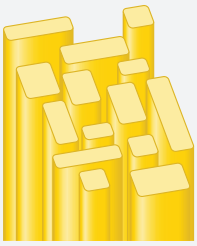
Customization

Additional specification options or accessory boards to meet your exact needs.



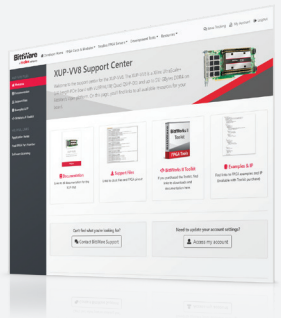
Server Integration

Available pre-integrated in our TeraBox servers in a range of configurations.



IP and Solutions

Our portfolio of IP and solutions reduce risk for development and deployment.

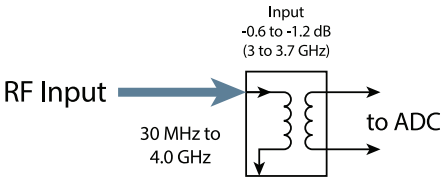


Service and Support

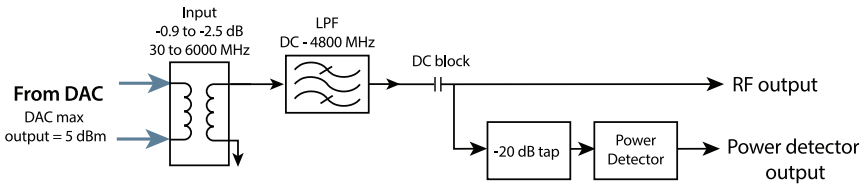
BittWare Developer Site provides online documentation and issue tracking.

Analog Front End Block Diagram

The RFX-8440A provides a direct connection supporting inputs up to 4 GHz.



Transmit Side Block Diagram



Board Specifications

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

Analog	• Direct 4 GHz input • 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
	• Programmable logic:
	  • Up to 200 Gb/s available via front panel 2x QSFP28
	  • AMD 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 • 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, UKCA & 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

Sales Part Numbers

RFX-8440-0014	RFX-8440A card with 4 GHz input with QSFP28 mezzanine

Development Tools

FPGA development	BittWare provides a basic data capture and replay example utilizing the major interfaces of the product. AMD 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

To learn more, visit **www.BittWare.com**

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