**BittWare** a **molex** company

## RFX-8441
### PCIe RFSoC Board

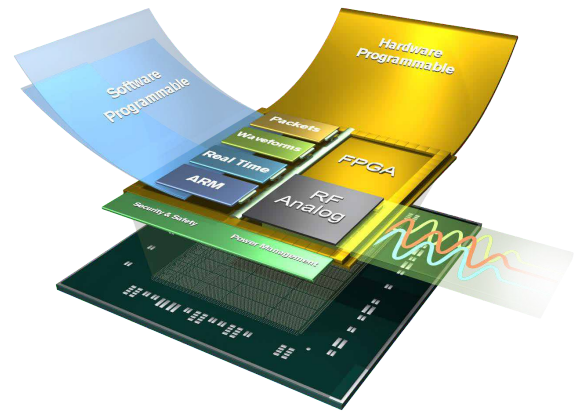**RFX** | **RFSoC** DATA ACQUISITION **BittWare** a molex company

# Zynq RFSoC PCIe Data Acquisition Card
## Seamlessly cross between analog and digital at up to gigahertz rates
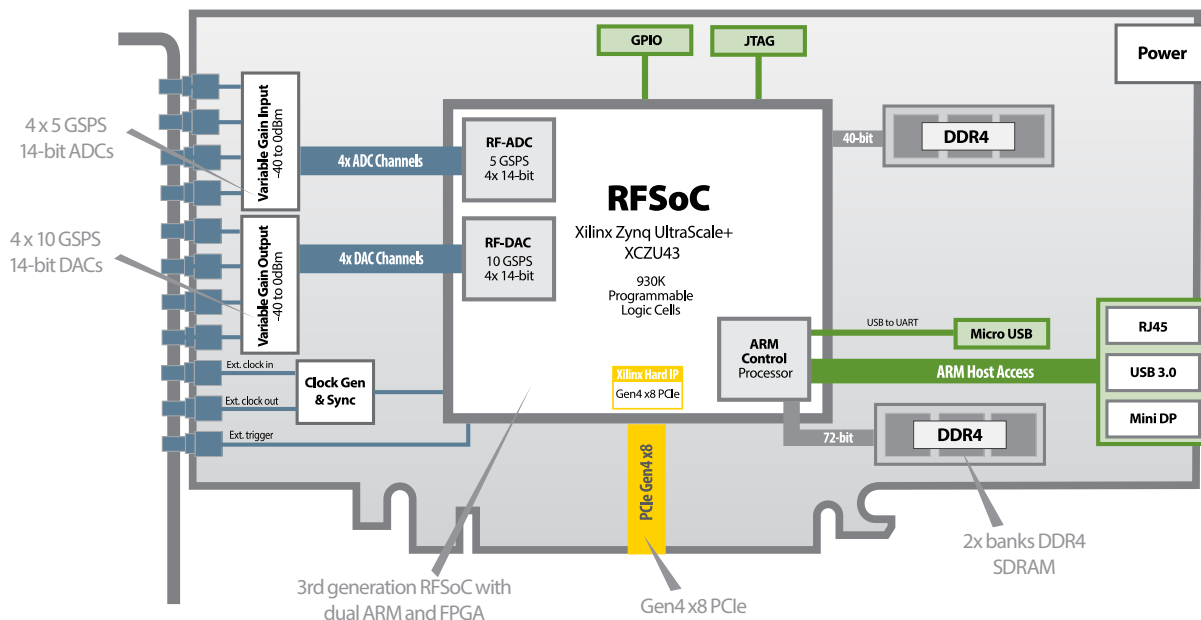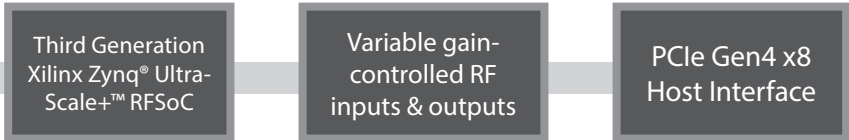
The BittWare RFX-8441 features the third generation Xilinx Zynq® UltraScale+™ RFSoC. This innovative PCIe data acquisition card is capable of addressing the entire sub-6 gigahertz (GHz) spectrum – a critical need for applications such as 5G, LTE wireless, phased array RADAR and satellite communications.

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.

With the product development, manufacturing, quality and lifecycle management capabilities of the Molex group behind it, the RFX-8441 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 | PCIe Gen4 x8 Host Interface |



GPIO | JTAG | Power

4 x 5 GSPS 14-bit ADCs

Variable Gain Input −40 to 0dBm

4x ADC Channels

RF-ADC
5 GSPS
4x 14-bit

40-bit — DDR4

4 x 10 GSPS 14-bit DACs

Variable Gain Output −40 to 0dBm

4x DAC Channels

RF-DAC
10 GSPS
4x 14-bit

**RFSoC**
Xilinx Zynq UltraScale+
XCZU43

930K
Programmable
Logic Cells

Ext. clock in
Ext. clock out
Ext. trigger

Clock Gen & Sync

Xilinx Hard IP
Gen4 x8 PCIe

ARM Control Processor

USB to UART — Micro USB

ARM Host Access

RJ45
USB 3.0
Mini DP

PCIe Gen4 x8

72-bit — DDR4

3rd generation RFSoC with dual ARM and FPGA

Gen4 x8 PCIe

2x banks DDR4 SDRAM

# 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.
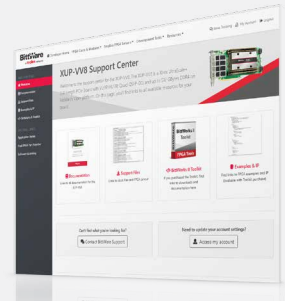
### Server Integration
Available pre-integrated in our [TeraBox servers](#) in a range of configurations.

### Application Optimization
Ask about our services to help you port, optimize, and benchmark your application.

### Service and Support
BittWare Developer Site provides online documentation and issue tracking.

## Board Specifications

| | |
|---|---|
| FPGA | • Zynq UltraScale+ RFSoC<br>  • XCZU43 in an E1156 package<br>  • Core speed grade -2<br>• Contact BittWare for other FPGA options |
| Analog | • Optimized for L Band: 1GHz - 2GHz<br>  • Other analog configurations available; contact BittWare<br>• 4 x 5 GSPS 14-bit ADCs<br>  • -40 to 0 dBm (default)<br>• 4 x 10 GSPS 14-bit DACs<br>  • -40 to 0 dBm (default)<br>• Programmable clocks<br>• External reference and triggers<br>• SSMC style connectors |
| On-board flash | • Flash memory for booting FPGA<br>• Flash memory for ARM bootloader and OS image |
| External memory | • 16GB DDR4 processing system (ARM) memory with ECC<br>• 8GB DDR4 programmable logic memory with ECC |
| External digital interfaces | • Processing system<br>  • RJ45 Ethernet<br>  • USB UART<br>  • USB 3.0<br>  • Mini DisplayPort<br>• Programmable logic:<br>  • PCIe x8 electrical with Xilinx Hard IP support for PCIe Gen4 |

| | |
|---|---|
| Cooling | • Standard: double-width passive heatsink<br>• Contact BittWare for other cooling options |
| Electrical | • On-board power derived from 6-pin AUX connector or optionally from 12V PCIe slot connection<br>• Power dissipation is application dependent<br>• Typical max power consumption 50W |
| Environmental | • Operating temperature: 5°C to 35°C |
| Quality | • Manufactured to ISO9001:2015 IPC-A-610-Class III<br>• RoHS compliant<br>• CE, FCC & ICES approvals |
| Form factor | • ¾-length, standard-height PCIe dual-slot card (x16 mechanical, x8 electrical)<br>• Supports standalone operation<br>• RFX-8441 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-8441 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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