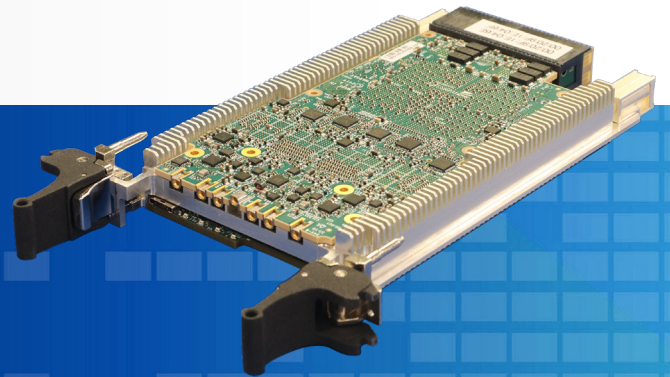# EnsembleSeries™ DCM3220

Configurable, low-latency, coherent 3U OpenVPX Rx/Tx module

- **Compact 3U OpenVPX form factor**

- **Multi-channel, highly configurable Rx/Tx module**

- **Multi-board coherency with internal clock generation**

- **High IBW, high analog I/O frequency, low latency**

- **Integrated FPGA processing**

The DCM3220 digital transceiver is a multi-channel, highly configurable Rx/ Tx module with integrated FPGA processing. Optimized for high performance in SWaP-constrained environments, it offers low-latency, high instantaneous bandwidth and high analog input/output frequency. This versatile digital transceiver is available with rear I/O and is compliant to OpenVPX (VITA 65) to enable rapid system integration.

Coherent Operation

To enable modular direction finding and beam forming applications, the DCM3220 digital Rx/Tx module offers sub-sample coherency optimized to minimize the phase deviation between ports. Additionally, the digital transceiver includes the hardware to enable multi-board coherency through factory-level configuration. This technology integrates clock generation and distribution hardware with proprietary phase alignment algorithms to achieve a scalable, coherent solution.

Specifications

OpenVPX Packaging
OpenVPX (VITA 65) encompasses: VITA 46.0, 46.3, 46.4, 46.6, 46.11 and VITA 48.1, 48.2 (REDI)

Data Planes
PCIe Gen 3
And/or Vita 49.2

Backplane Interface
VITA 65.0 SLT-PAY-2F1F2U-14.2.1 slot profile

Processor
Virtex® Ultrascale+™ VU7P FPGA
Zynq ® Ultrascale+™ ZU11EG MPSoC
7,488 DSP slices

Memory
8 GB DDR4 (512M x 16)

ADC
Two 12-bit ADC channels up to 6.4 GSPS
FS IP power across first 3 nyquist zones @ 5 GSPS: +5dBm to +15dBm, typ.

DAC
Two 12-bit DAC channels up to 6.4 GSPS
FS OP power across first 3 nyquist zones @ 5 GSPS: -2dBm to -25dBm, typ.

FPGA Power Supplies
+0.85V @80A core voltage for PR0
+0.85V @40A core voltage for ZYNQ

Configurable Options
Vita 67 rear I/O

Security
System security engineering ready

Other
Integrated IPMI controller
Manufactured in an AS9100D facility

Mercury Systems is a leading commercial provider of secure sensor and safety-critical processing subsystems. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.

ACQUIRE   DIGITIZE   PROCESS   STORAGE   EXPLOIT   DISSEMINATE
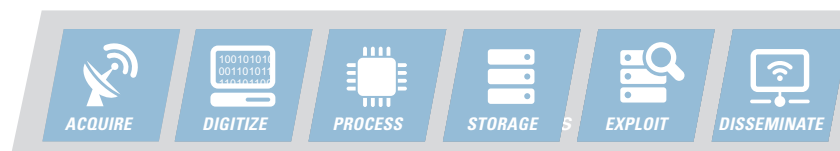
Low-latency ADC/DAC Performance

Mercury's low-latency ADC/DAC products are developed to support EW applications that require real-time IF digitization and processing in harsh environments. Two 12-bit ADC channels offer individual sampling rates up to 6.4 GSPS. On the transmit side, two 12-bit, LVDS-based DACs can operate up to 6.4 GSPS. Each of these DACs have convenient, user-selectable output modes to provide multinyquist signal projection.

Optimized for EW systems, these highly configurable Rx/Tx modules deliver excellent spectral purity and efficiency, coherent multi-channel functionality and exceptional LPOI (low probably of intercept) signal detection capability. The customizable architecture can support a variety of applications including DRFM systems, beamforming, and SIGINT.

Advanced FPGA Functionality

Each digitized stream is passed into a Virtex® Ultrascale+™ VU7P FPGA. Behind VU7P lies a Zynq® Ultrascale+™ ZU11EG MPSoC with 8 GB of external DDR4 memory; offering further data processing and control prowess.

Mercury's digital Rx/Tx modules are built around our EchoCore® FPGA IP to provide basic infrastructure functionality right out of the box. EchoCore IP allows customers to focus on their application while building upon the groundwork provided.

Mercury uses a simple AXI4-Stream interface for the data plane with AXI4-Stream switches for routing data within the FPGA and to external interfaces, such as PCIe. Our customers can utilize their tool of choice, such as parameterizable Xilinx IPs, HLS, or RTL to generate signal processing algorithms. The cores are then instantiated into a reserved user block and compiled into the FPGAs.

Need more help? Need a variant of this product?

Contact Mercury's Mixed Signal Engineering team at: digital.rf@mrcy.com or visit www.mrcy.com/mixed-signal-processing for a detailed listing of OpenVPX products.

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