mercury
systems®

MPS1202 Tactical, Application-Ready Spectrum Processing Subsystem

Ruggedized broadband subsystem for deployable hardware, software and firmware

- **100 MHz to 18 GHz wideband frequency coverage**

- **2 GHz IBW per channel**

- **2 ADC and 2 DAC 12-bit channels**

The MPS1202 is a ruggedized microwave and digital processing subsystem designed to operate in the most demanding environments. As new threats enter the electronic warfare spectrum, subsystems need to be ready to operate efficiently without losing reliability. Mercury's MPS1202 offers a tactical solution for broadband spectrum processing in a small, rugged form factor. Measuring only 7"L x 6"W x 7.62"H, the MPS1202 packs massive RF, FPGA and CPU processing for its size, as well as modular scalability.

Module Configurability

The MPS1202 can be customized with a range of 3U modules to create a specialized solution to meet unique requirements, without the cost of a fully custom implementation. Leverage two channels with 2 GHz IBW each with Mercury's RFM3202 microwave transceiver, supplying compatibility and wideband RF coverage from 2 to 18 GHz. Additionally, the DCM3220 digital transceiver supports the MPS1202 modularity by offering maximum spectral density and integrating multichannel digitization and low-latency FPGA processing on a single card.

STANDARD CONFIGURATION

RFM3202 Microwave Transceiver
- Two independent Rx/Tx channels (4 total)
- 2 GHz IBW, per channel
- 100 MHz to 18 GHz wideband frequency coverage

DCM3220 Digital Transceiver
- 2 ADC and 2 DAC 12-bit channels at 6.4 GSPS
- FPGA processors: Virtex® Ultrascale+™ VU7P
- Memory: 8 GB DDR4

LDS3517 Single Board Computer
- Intel® Xeon® Processor
- Ethernet switch fabric
- PCIe data and expansion plane

FMC Carrier Slot
- XMC solid state drive available

Configurable Chassis
- 4 slots of 3U VPX on 1" pitch
- VPX, VPX-REDI and OpenVPX compliant
- Module Compatibility: 3U VPX and OpenVPX card
- Accepts VPX-REDI card widths of 0.8" or 1".
- Technology: Embedded RuSHTM
- Quick custom-fabric mapping
- Front I/O mapping overlay

SPECIFICATIONS

FPGA Processing
- Ultrascale Plus VU7P
- Zynq ZU11EG

Data Planes:
- PCIe Gen 3
- And/or Vita 49.2

RFM3202 Microwave Transceiver
- Digitally tunable between 2 and 18 GHz
  - No band breaks
  - IF filtering
  - Preselector Filter bank for direct digitization below 2 GHz
- 2 GHz IBW
- Fully coherent, 2 Rx and 2 Tx channels

Backplane Interface:
- VITA 65.0 SLT-PAY-2F1F2U-14.2.1 slot profile
- 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
- 8-Core Intel Xeon D Processor
- Ultrascale KU095

Memory:
- 8 GB DDR4 (512M x 16)
- 16 GB DDR4

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

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

FPGA Power Supplies:
- +0.85 V @80 A core voltage for PR0
- +0.85 V @40 A 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
- Power: Integrated 400 W power supply

Physical and Environmental:
- MIL-STD-810F, DO-160E and MIL-STD-461E compliant
- Cooling: Cold plate base coupled conduction cooled
- Operating temperature range -40° C to +85° C
- Design: All-conditions environmental sealing
- Dimensions: 7"L x 6"W x 7.62"H

RFM3202 TRANSCEIVER SPECIFICATIONS
- Tunable RF Range: 2 GHz–18 GHz
- Noise figure: 15 dB Max @ Max Gain
- Gain: (max RF to IF) 30 dB Max
- Rx iP1dB: -9 dBm
- Rx iIP3: 0 dBm
- Tx oP1dB: +20 dBm
- Tx oIP3: +30 dBm

Standard ATCA Product Environmental Qualification levels			
Cooling Method		Air-Cooled	
Ruggedness		Rugged Level AI	Rugged Level A2
Notes			
Temperature	Operating	0°C to +40°C	-5°C to +40°C
	Storage	-40°C to +70°C	-40°C to +85°C
	Rate of Change	N/A	N/A
Humidity	Aggravated	10-95%, non-condensing	10-95%, non-condensing
Altitude	Operating	0-10,000 ft	0-10,000 ft
	Storage	0-30,000 ft	0-30,000 ft
Vibration	Random	N/A	N/A
	Sine	0.5 G Sine, 5 to 100 Hz, .25 Octave/min (1 hr/axis)	1 G Sine, 5 to 100 Hz, .25 Octave/min (1 hr/axis)
	Shock	Z-axis: 10g; X, Y-axis: 10g; 11 ms, 1/2-sine (3 pos, 3 neg)	Z-axis: 10g; X, Y-axis: 30g; 11 ms, 1/2-sine (3 pos, 3 neg)
Salt/Fog	N/A	N/A	
Required Flow Rate		Consult factory	Consult factory

Need more Help? Need a variant of this product?

For further information, please contact Mercury Systems at electronicwarfare@mrcy.com

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