



CoaXPress OBR

OnBoard Recorder based on PolarFire® SoC & CoaXPress

OBR handles high data rate missions by combining high-speed CoaXPress acquisition with FPGA-based deterministic processing, a large ECC-protected burst buffer and high-throughput multi-drive storage. The philosophy is straightforward: Capture at the speed of the sensor, Buffer without losing data, Store continuously & Protect the data throughout the pipeline. Built around the Microchip PolarFire SoC, the architecture provides a flexible platform that can evolve from today's CXP-based imaging systems toward future high-speed custom serial payload interfaces.

KEY FEATURES

- **Processor:** Microchip PolarFire SoC MPFS460T
- **High-speed inputs:** 8 × configurable SERDES
- **Supported interfaces:** CXP-3 / CXP-6 / CXP-12 / custom serial
- **Design-point input processing:** 25 Gbps
- **Representative payload rate:** 23.1 Gbps
- **Burst buffer:** 128 Gbit / 16 GB
- **Total memory architecture:** 144 Gbit
- **Memory protection:** ECC
- **Sustained DDR4 bandwidth:** 12.8 GB/s
- **NVMe storage:** 2 × U.2, PCIe Gen2 x2
- **SATA storage:** 4 × U.2 SATA III
- **Aggregate storage write:** 3.5 GB/s
- **High-Capacity Mass Storage:** 2 × U.2 NVMe
- **Example 5-second / 25 Gbps burst:** 125 Gbit / ~15.6 GB
- **Mass Storage:**
 - 2 × U.2 NVMe (PCIe Gen2 x2 each, ~0.8 GB/s per drive)
 - 4 × U.2 SATA III (~0.5 GB/s per drive)
 - Aggregate sustained write: ~3.5 GB/s



CoaXPress

CoaXPress originated as a high-speed imaging interface and is particularly well suited to applications where large volumes of camera data need to move with predictable latency. The interface supports high-speed downstream data together with lower-speed control communication. CoaXPress can also carry power over coax in appropriate implementations. For spacecraft applications, the most interesting characteristic is its ability to provide a simple, scalable physical interface for very high-rate imaging data. With CXP-12 providing up to 12.5 Gbps per connection, multiple links can be aggregated to support substantially higher payload data rates.

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