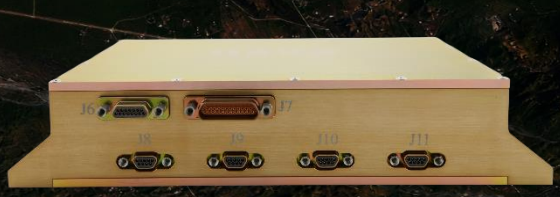
CAVU AEROSPACE

TYPHOON EDGE



SoC Supervised space edge AI computer | Pair of PolarFire FPGA & NVIDIA JETSON ORIN AGX

Typhoon Edge combines a 248-TOPS Jetson AGX Orin Industrial accelerator with a PolarFire SoC MPFS460T trusted supervisor in a conduction-cooled flight unit. It provides independent high-bandwidth camera & PCIe ingress, protected high-rate storage, deterministic control, recoverable AI processing & autonomous degraded-mode operation.

KEY FEATURES

- **Microchip PolarFire SoC FPGA** — two variants: MPFS250T (254k LE) & MPFS460T (461k LE)
- Full 75 W **Jetson AGX Orin** Industrial operating mode with 248 TOPS, 64 GB ECC LPDDR5 and 204.8 GB/s memory bandwidth.
- PolarFire SoC MPFS460T authority for power, reset, watchdog, payload custody, telemetry, FDIR and deterministic FPGA preprocessing.
- Independent direct PCIe x8 and PCIe x4 customer ports, each operating up to PCIe 4.0 lane rat
- Two four-lane Jetson CSI-2 inputs and one PolarFire camera CSI-2 / auxiliary-LVDS input.
- Copper Camera Link HS plus Camera Link Base/Medium/Full acquisition.
- External 10GbE copper, native PolarFire 1GbE and dual SpaceWire.
- Dedicated 1 TB system NVMe and a 1.92 TB baseline client-removable U.2 mission SSD.
- 12 V to 18 V DC input, 150 W maximum, with protected power entry.
- Conduction cooling through heat pipes to the spacecraft cold plate; operation in vacuum without
- Signed A/B software releases, supervised updates and automatic rollback.

SPEC.

- **Compute**: Jetson AGX Orin Industrial; 248 TOPS; CUDA and TensorRT application support
- **Trusted control**: PolarFire SoC MPFS460T; deterministic FPGA processing and independent supervision
- **External PCIe**: Direct x8 and independent direct x4 root-port interfaces
- **Camera**: 2 × four-lane CSI-2 to Jetson; 1 × CSI-2 / Auxiliary LVDS to PolarFire; Camera Link HS; Camera Link Base/Medium/Full
- **Network**: 1 × external 10GbE copper; 1 × PolarFire native 1000BASE-T
- **SpaceWire**: 2 independent links
- **Storage**: 64 GB Jetson eMMC; 1 TB system NVMe; 1.92 TB removable U.2 mission NVMe; Redundant PolarFire non-volatile stores
- **Service**: Rugged Jetson update/recovery USB-C; PolarFire JTAG/USB/debug UART

BUDGET

- **Power**: 12 V DC nominal; 12 V to 18 V DC continuous; 150 W maximum; PolarFire subsystem 5.5 W to 10 W
- **Heat dissipation**: 35 W to 125 W estimated operating range; 150 W worst-case cold-plate design load
- **Cooling**: Conduction through internal spreaders and heat pipes; 150 W cold-plate heat rejection
- **Dimensions**: 220 mm × 130 mm × 46 mm
- **Mass**: 1.8 kg baseline; 2.0 kg max with mission U.2 SSD and protective caps
- **Environment**: -40 °C to +85 °C operation; -55 °C to +125 °C storage

W: CavuAerospace.UK

T: +44 (0) 1786 628002

E: Sales@CavuAerospace.UK

12 Scion House, Stirling University Innovation Park, United Kingdom, FK9 4NF

SOSA Sensor Open Systems Architecture®

Microchip Authorized Design Partner

☑ **PolarFire** for deterministic process, sensor interfacing, data handling & programmable acceleration.

☑ **NVIDIA Jetson** Orin for advanced GPU computing and AI inference.

☑ Together in **Typhoon-Edge**, they provide a highly capable space-based edge intelligence.

COMPUTE & MEMRY

Subsystem	Resource	Released spec.
Jetson AGX Orin Industrial	AI performance	248 TOPS; 2,048-core NVIDIA Ampere GPU with 64 Tensor Cores; 2 × NVDLA v2 and PVA v2
Jetson AGX Orin Industrial	CPU	12-core Arm Cortex-A78AE v8.2 64-bit CPU
Jetson AGX Orin Industrial	Working memory	64 GB 256-bit LPDDR5 with inline ECC; 204.8 GB/s
Jetson AGX Orin Industrial	Module storage	64 GB eMMC 5.1
Jetson AGX Orin Industrial	Module power envelope	15 W to 75 W; Typhoon Edge supports the full 75 W operating mode
PolarFire SoC MPFS460T	Processor subsystem	4 × 64-bit U54 application cores plus 1 × E51 monitor core; >4,000 DMIPS combined
PolarFire SoC MPFS460T	FPGA fabric	461k logic elements; 1,420 math blocks; flash-based, live at power-up and no configuration-memory scrubbing required
PolarFire SoC MPFS460T	High-speed fabric	20 SerDes transceivers up to 12.7 Gb/s; two PCIe endpoint/root-port blocks
PolarFire SoC MPFS460T	On-chip fabric memory	3,564 kbit µSRAM and 32,256 kbit LSRAM
PolarFire SoC MPFS460T	Fabric memory	8 GB user-visible DDR4 with SECDED ECC; 9 GB physical, 72-bit interface
PolarFire SoC MPFS460T	MSS memory	4 GB LPDDR4, 32-bit interface

STORAGE

Storage tier	Capacity / interface	Operational use
Jetson module eMMC	64 GB eMMC 5.1	Recovery image, boot support and controlled module-resident content
System NVMe	1 TB onboard NVMe; dedicated PCIe C1 x1	Jetson operating system, applications and A/B software staging
Mission U.2 NVMe	1.92 TB baseline; 2.5-inch, 15 mm, SFF-8639, PCIe x4 NVMe, 25 W class	Mission payload, raw-data journal and logs; client-removable through retained screwed lid
PolarFire pSLC eMMC	2 × approximately 80 GB user-visible	Independent Linux/application stores and redundant payload banks
PolarFire QSPI NOR	2 × 512 Mbit	Primary and redundant trusted boot payloads
PolarFire MRAM	4 Mbit	Boot pointer, monotonic counters, FDIR event log and rescue-state data

W: CavuAerospace.UK

T: +44 (0) 1786 628002

E: Sales@CavuAerospace.UK

12 Scion House, Stirling University Innovation Park, United Kingdom, FK9 4NF

SOSA® Sensor Open Systems Architecture®

MICROCHIP Authorized Design Partner