

Q-PLC1 PAYLOAD COMPUTER



The Xiphos Q-PLC1 is a high-performance payload computer for demanding SmallSat and spacecraft edge-processing applications. Built around the Q9 processor SOM with an AMD Versal AI Core adaptive SoC, it combines CPU and real-time processing, FPGA logic, AI/ML acceleration, high-speed networking, PCIe expansion, and onboard storage in a rugged, radiation-robust platform. Xiphos takes care of space radiation and environmental qualification, BSP, and Linux so you can focus on your mission software, AI model, and logic deployment.



FEATURE HIGHLIGHTS

NEXT GENERATION PERFORMANCE AND ROBUSTNESS

The Q-PLC1 is built around the Xiphos Q9 processor SOM. The AMD/ Xilinx Versal AI Core processor provides significant processing power, robustness, and flexibility to meet the needs of the most demanding edge compute applications.

AI/ML PROCESSING

AI/ML engines provide 101 TOPS and 8 TFLOPs of performance, making it ideal for aerospace applications with high workloads.

FLEXIBILITY FOR YOUR MISSION

The Q-PLC1 is flexible enough to meet your needs across diverse mission profiles, payload types, and processing requirements. Whether your first mission needs AI/ML processing or not, the Q-PLC1 ensures your hardware baseline is ready when the mission needs AI.

Its flexible PCIe interfaces support high-speed peripherals and optical payloads and provide future-proofing. Multiple 10 Gigabit Ethernet interfaces ensure the growing throughput needs of payload subsystems are met. The reconfigurable 3v3 GPIO and LVDS pins allow for custom interfaces.

XIPHOSGUARD

Robustness features for your spacecraft:

- Triple mode redundancy in Control FPGA
- EDAC-protected RAM
- Upset and multi-current monitoring
- Overcurrent protection (multiple)
- FPGA bit-stream scrubbing
- Software robustness/ watchdog

SOFTWARE DEVELOPMENT

To support software development on Linux workstations, Xiphos provides an Application Development Kit, with standard Linux libraries for C/C++. If you've previously developed code for Linux desktop and server applications, you can easily port it to the Q-PLC1. Access Q-PLC1 hardware and logic interfaces through standard Linux and Xilinx kernel drivers or custom drivers provided by Xiphos.

LOGIC DEVELOPMENT

Logic development uses standard Xilinx development tools. Xiphos, Xilinx, and many third party vendors also provide a wide range of compatible reusable logic cores for Xilinx FPGAs.

APPLICATIONS

- The Q-PLC1 offers ideal mix of compute resources and high speed I/O for the most demanding payload applications on SmallSat buses.
- Edge AI/ML processing
- Payload processing and storage hub
- Onboard image processing
- Mass memory applications & Cloud storage
- 5G Direct-to-Device (D2D) network applications
- Synthetic Aperture Radar (SAR) processing
- High-speed data transfers and storage
- Hyper/multispectral compression
- Image registration and alignment
- High resolution camera interfacing and control
- Convolutional neural networks



CHARACTERISTICS

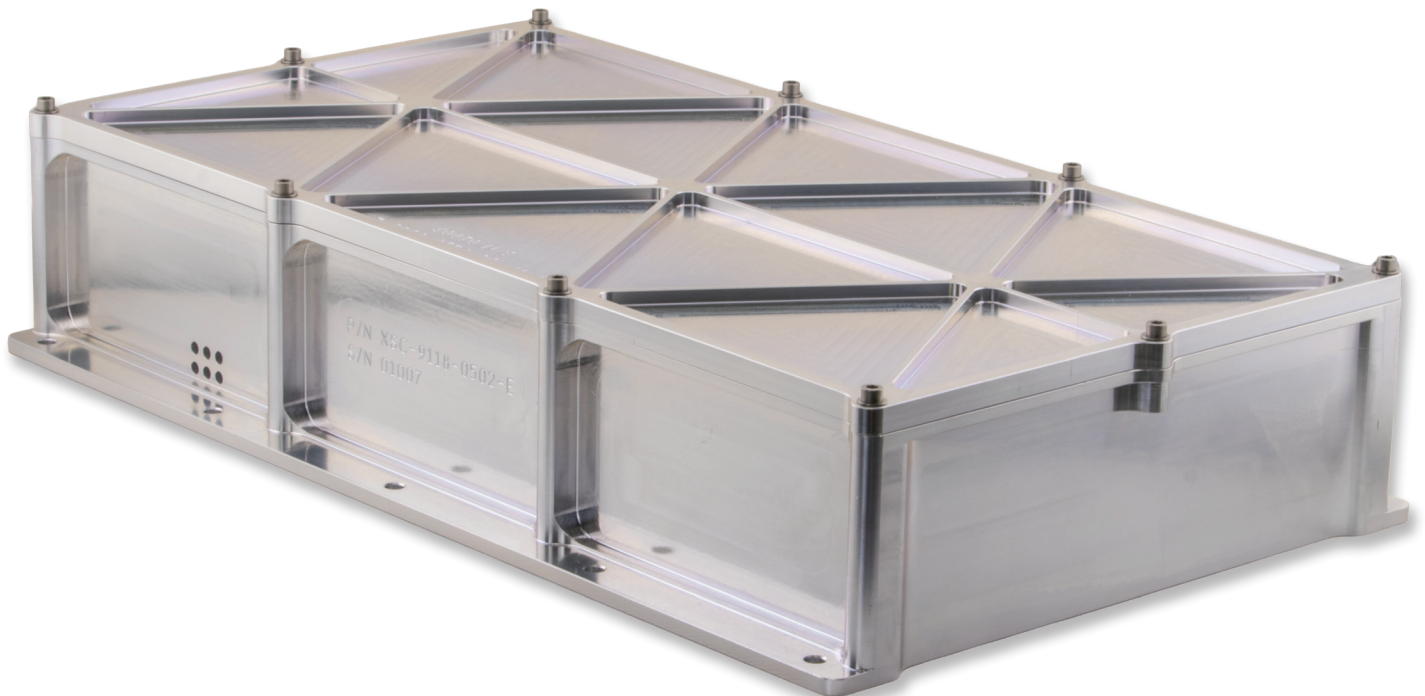
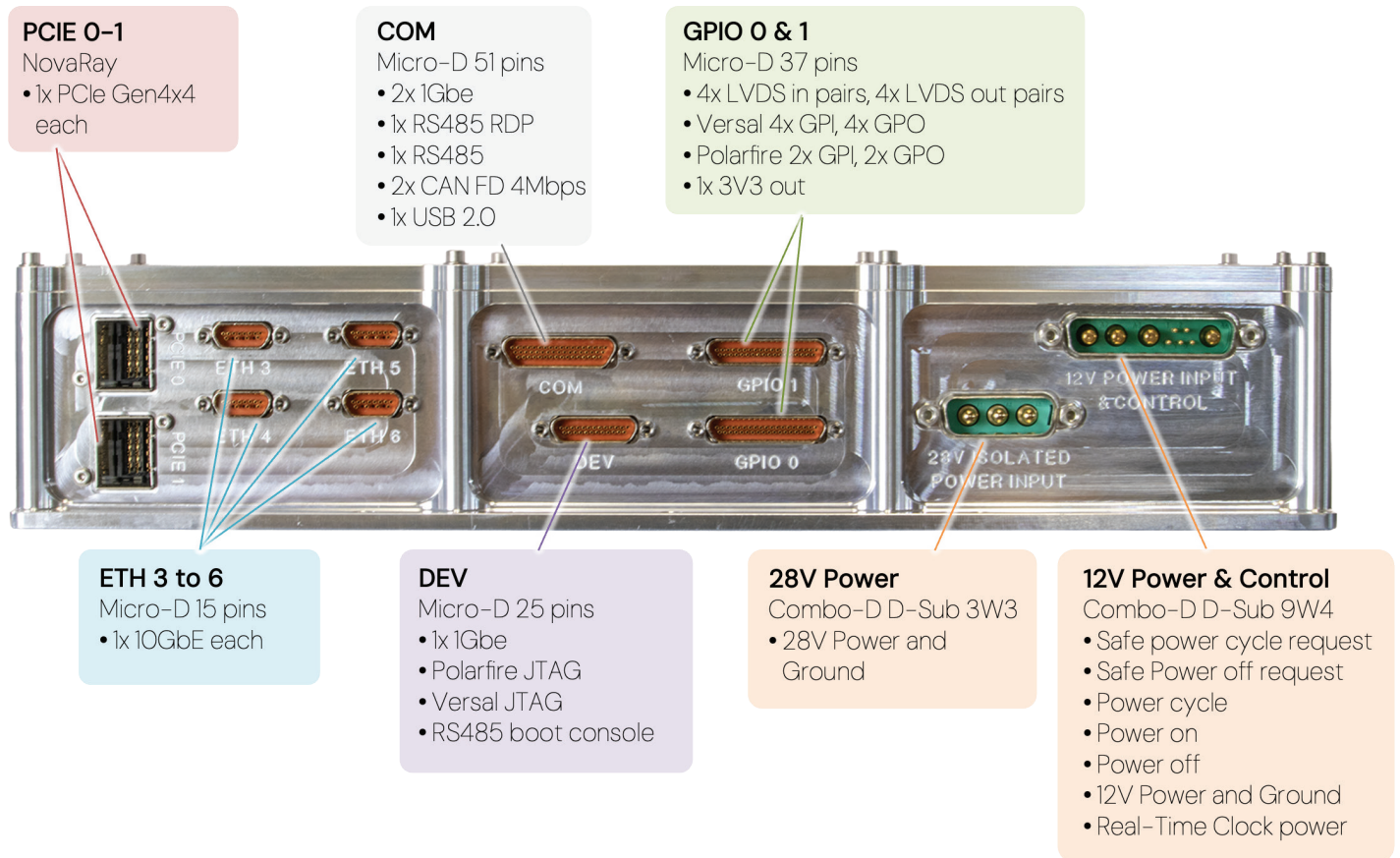
Model:	Q-PLC1
Environmental Characteristics	
Temperature (operating)	-40 to +60 °C
Size	316 mm x 184 mm x 64.4 mm
Weight	2.7 kg
Power	Q-PLC1 12 V • 10 – 14 V, 15 – 100 W Q-PLC1 28V • 16 – 36V, 15 – 115 W
Power Functions (Fire Codes)	• Safe power cycle request • Safe Power off request • Power cycle • Power on • Power off
Memory	
Memory	• 16 GB LPDDR4 DRAM, PS and PL-accessible (1x bank Data, 1x bank ECC) • 1 GB (4x 256 MB) QSPI Flash (NOR) • 2x SSD, 1 TB each, on independent buses • 16 MB MRAM for critical telemetry/state data
MPSoC	
Model	AMD Versal™ AI Core Series VC2602 Adaptive SoC
Application Processing Unit	Dual core ARM Cortex A72 Application Processing Unit at up to 1.7 GHz
Real-Time Processing Unit	Dual core ARM Cortex R5F Real-Time Processing Unit at up to 750 MHz
AI Engines	• 152 AI Engine-ML Tiles • 101 TOPS and 8 TFLOPs
System Logic Cells	820,000
Flip Flops	750,000 FF
Look-up Tables	375,000 LUT
DSP Slices	984

Model:	Q-PLC1
Control FPGA	
	Microchip PolarFire
Operating System	
	Yocto Linux BSP (LTS distribution)
Real Time Clock	
	• RTC with sleep & wake up on alarm/interrupt • Dedicated power pin for external battery
Interfaces	
	• See diagram on next page

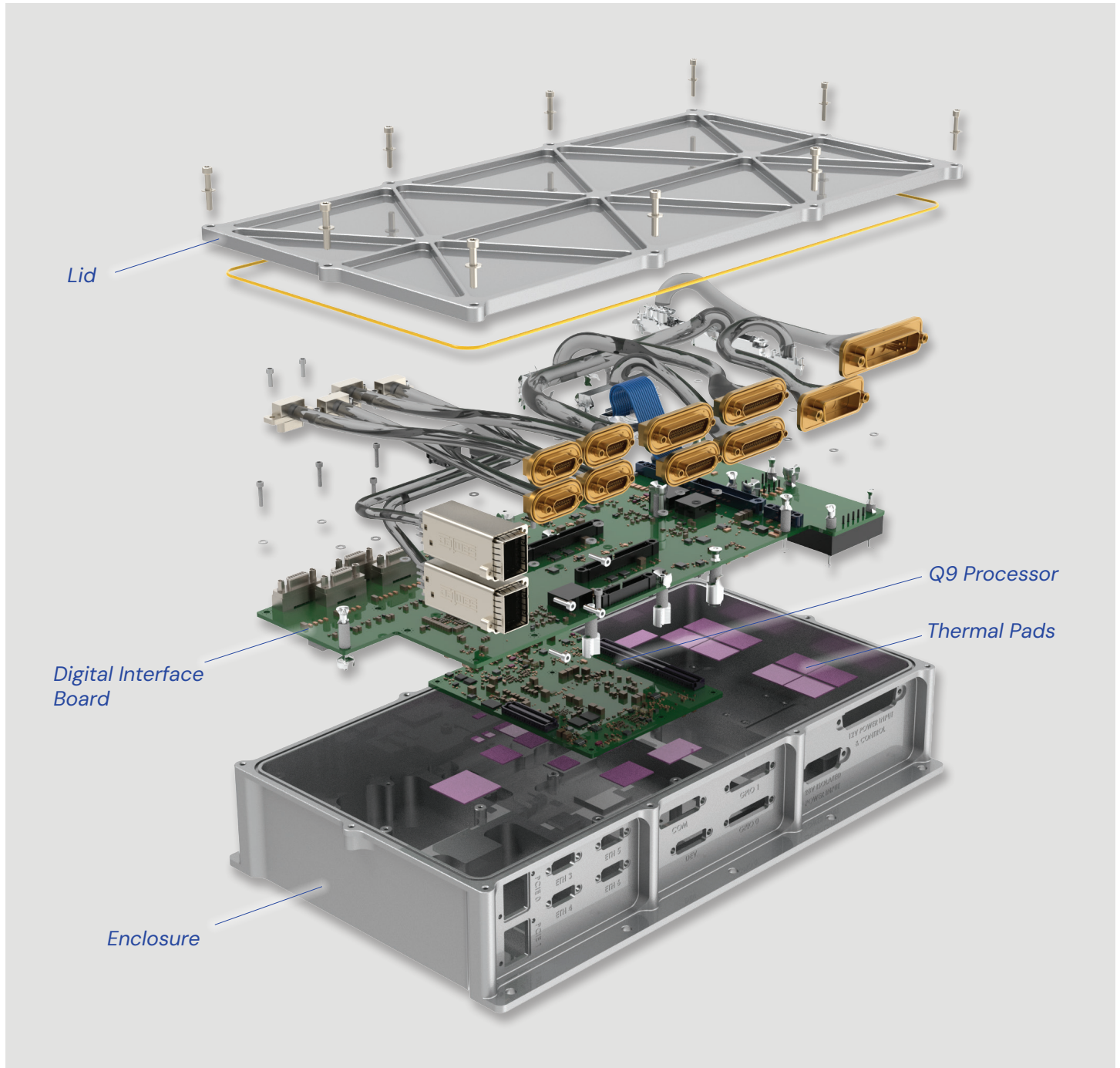
ENGINEERING MODEL (EM) VS. FLIGHT MODEL (FM) OPTIONS

	EM	FM
IPC Class	Class 2	Class 3
Acceptance Temperature Range	Room Temperature	Flight Levels, -40 to +60 °C
Conformal Coating Available	No	Yes
EIDP Available	No	Yes
Extended Warranty Available	No	Yes
Accessories Supplied	Yes	No

INTERFACES

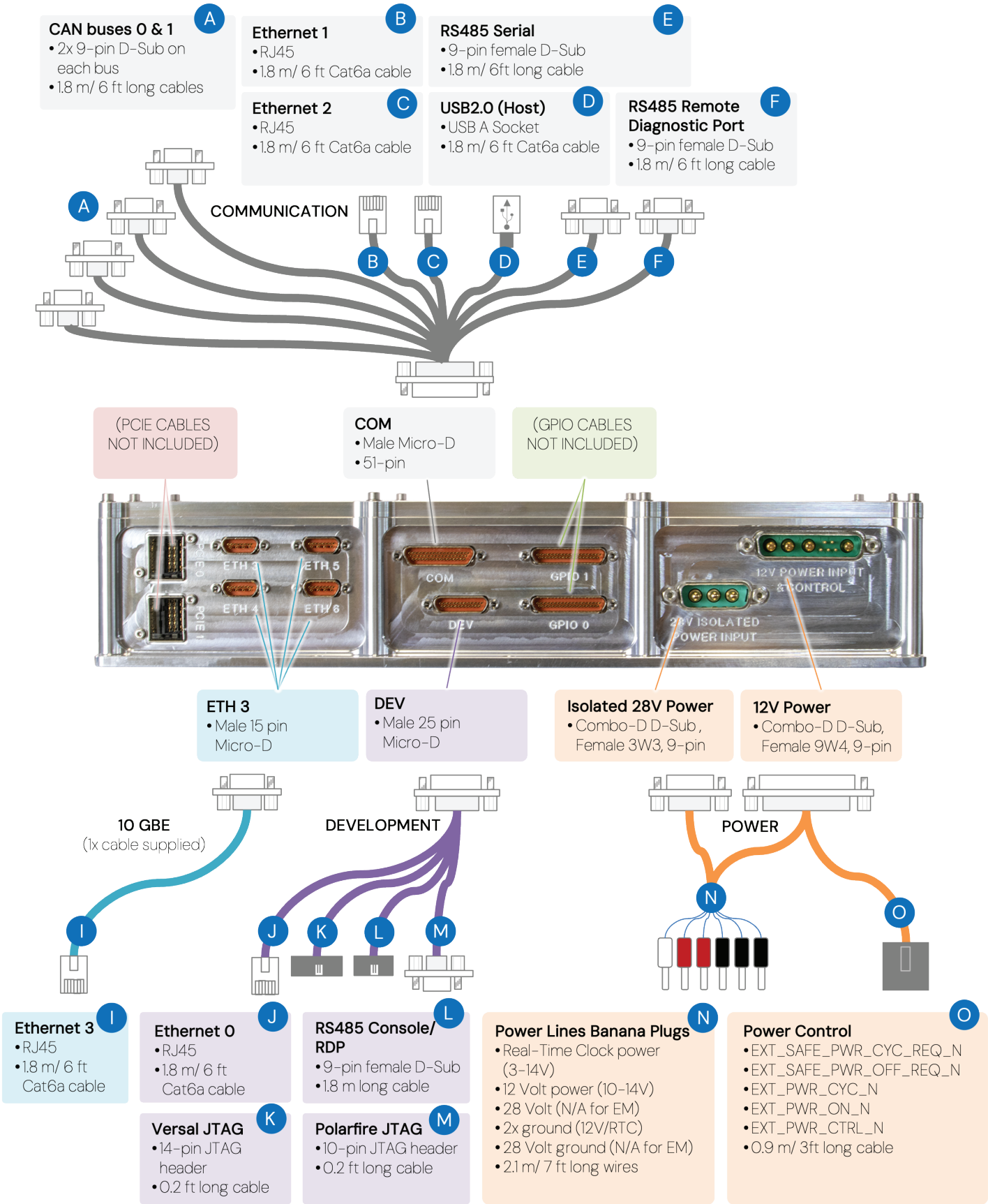


ANATOMY OF A Q-PLC1

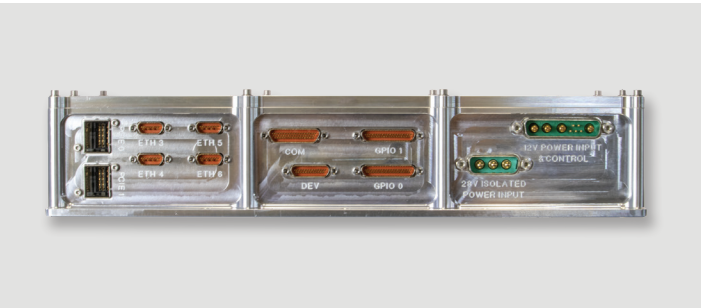
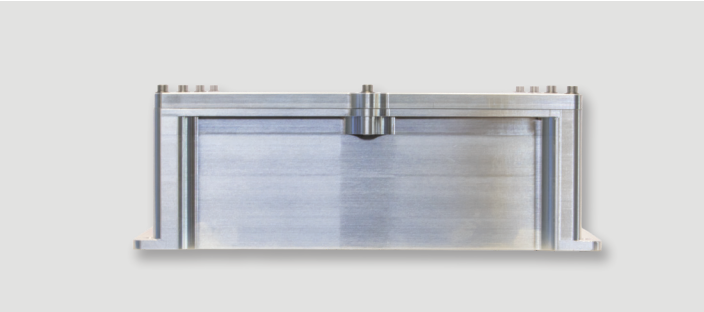
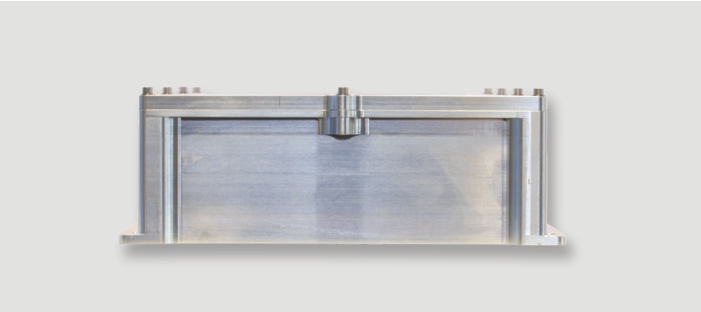
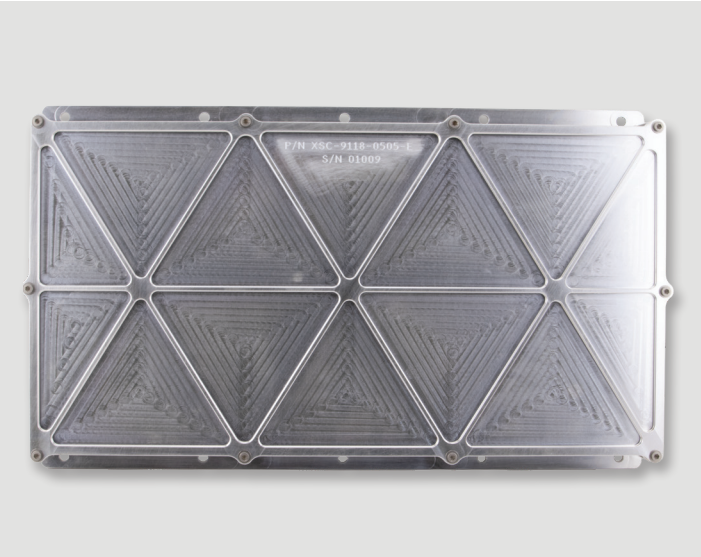
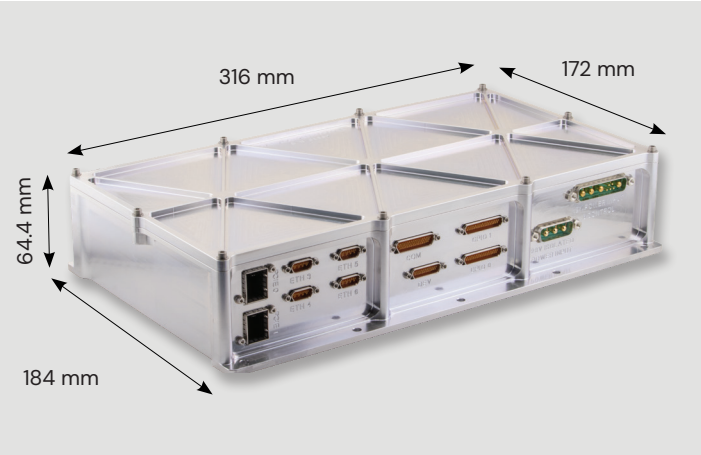


EM SUPPLIED TEST CABLE HARNESSES

Engineering Models include the following harnesses:



MECHANICAL VIEWS



ORDERING INFORMATION



We offer several standard configurations. Use the QR code at right to be taken to the Q-PLC1 product page to [request a quote](#).

Q-PLC1 28V

- Standard flight model configuration. This model supports unregulated 28V input and provides EMI filtering.

Q-PLC1 12V

- This model is often used as an engineering model but may also be used for flight for customers desiring to power the Q-PLC1 at 12 volts.

Configuration	Q-PLC1 12 V	Q-PLC1 28 V
EM Uncoated Part Numbers	XS009-10002-001-01-A	XS009-10002-002-01-A
FM Conformal Coated Part Numbers	XS009-10001-001-01-A	XS009-10001-002-01-A
Input Voltage Range	10 – 14 V	16 – 36 V
Maximum Power Consumption	100 W	115 W
Power EMI Filtering	No	Yes



WHY CHOOSE XIPHOS?

Faster Time to Launch Using COTS Processing With Heritage

FLIGHT-PROVEN PROCESSORS:

Space-hardened, COTS-based computing solutions deployed across hundreds of commercial, civil and defense missions.

HIGH PERFORMANCE:

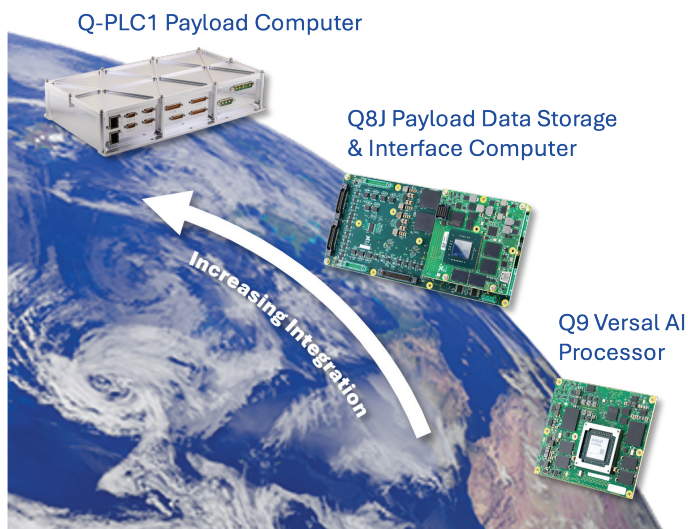
Products offer impressive processing, networking, RF and storage performance by leveraging state-of-the-art commercial devices.

COST-EFFECTIVE PERFORMANCE:

Delivers high performance and reliability at a fraction of the cost of traditional space processors.

SCALABLE SOLUTIONS

Flexibility across the design stack ensures the right level of integration for your use case.



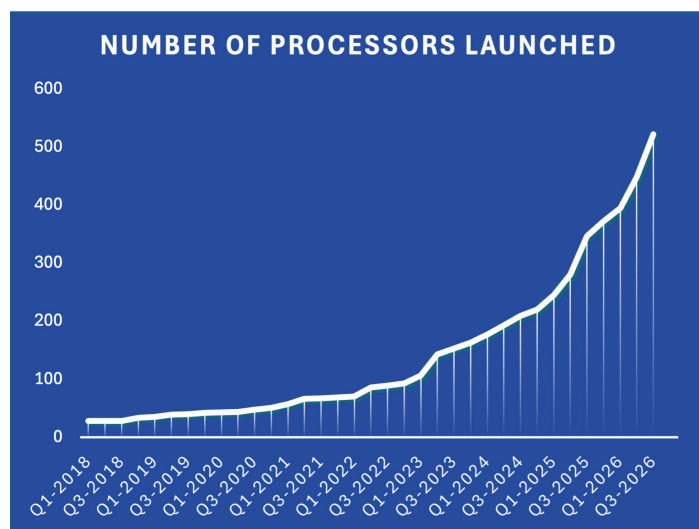
ABOUT XIPHOS

Xiphos, based in Montreal and part of Epiq Solutions since 2023, has over 20 years of experience delivering thousands of low-SWaP-C COTS-based processor cards for space applications including satellites, landers, rovers, and space stations. Known for high reliability, radiation tolerance, and strong customer support, Xiphos specializes in compact processing solutions using cutting-edge processors for commercial, scientific, and military missions.

IMPRESSIVE HERITAGE:

We've been a new space company for more than 20 years and have delivered many thousands of cards. In that time, we've accumulated a LOT of experience that you get to benefit from when you partner with us.

As of August 2026, our cumulative Q-Card time on orbit stands at more than 750 years.



COMPACT, EFFICIENT, FLEXIBLE:

Ideal for spacecraft, unmanned systems, and robotics requiring small size, low power, and adaptability.

CERTIFIED QUALITY:

AS9100 and ISO 9001:2015 certified; explore our FPGA-based multiprocessors, SoCs, and advanced subsystems.

ENHANCED COTS SOLUTIONS

Optimizes the cost & performance trade while still providing radiation robustness

OPEN ARCHITECTURE DESIGNS

Enables development across a variety of toolkits

SHORTER LEAD TIMES

Shipping 500+ processors annually

13th August, 2026