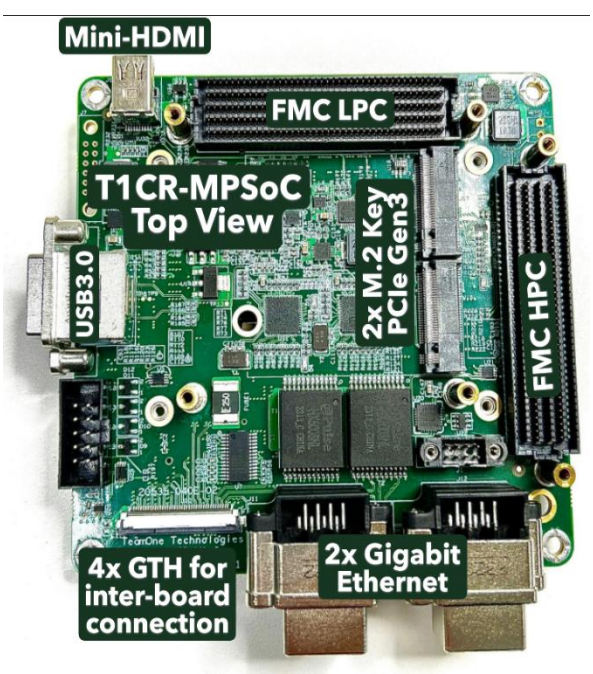
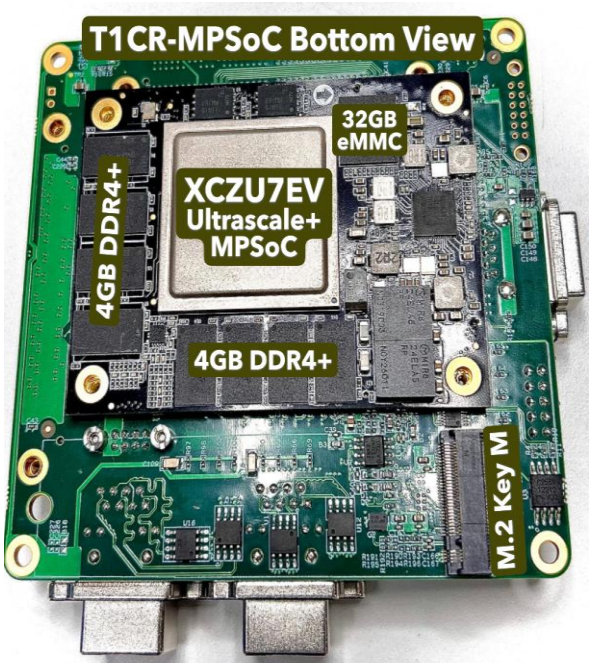
T1CR-MPSoC Product Kits

Unlocking Advanced Embedded Solutions

Experience the future of embedded design with Teamone's T1CR-MPSoC Product Kits. Built around the powerful Xilinx Ultrascale+ MPSoC XCZU7EV, these kits provide a highly scalable, flexible, and rugged platform with optimized power consumption for your most demanding applications. Accelerate your development from concept to deployment across diverse industries.





The Core of Innovation: Xilinx Ultrascale+ MPSoC XCZU7EV

At the heart of every T1CR-MPSoC Product Kit lies the Xilinx Ultrascale+ MPSoC XCZU7EV. This sophisticated System-on-Chip (SoC) seamlessly integrates a high-performance Processing System (PS) with extensive Programmable Logic (PL), offering an unparalleled synergy of software-driven intelligence and hardware-accelerated performance. This architecture is crucial for applications requiring real-time responsiveness, massive parallel processing, and adaptable connectivity.

Key Product Features:

- **Dual-Domain Memory Architecture:**
    - **4 GB (64-bit) PS DDR4 SDRAM:** Dedicated to the ARM® processing system for operating systems, application software, and high-level control.
    - **4 GB (64-bit) PL DDR4 SDRAM:** Optimized for the programmable logic, enabling high-bandwidth data buffering and processing for custom IP and accelerators.
- **Robust Non-Volatile Storage:**
    - **64 MB QSPI Flash:** Secure and fast boot-up for the MPSoC.
    - **32 GB eMMC Flash:** Ample storage for system images, application data, and user files.
- **High-Speed Interconnects:**
    - **PCIe® Gen3 ×8 (PL):** Provides an ultra-high-bandwidth interface directly to the programmable logic, ideal for integrating external accelerators like GPUs or high-performance NVMe storage.
    - **PCIe® Gen2 ×4 (PS):** Offers versatile expansion capabilities for the processing system.
- **Cutting-Edge Gigabit Transceivers:**
    - **4 x PS-GTR (up to 6 Gbps):** High-speed serial links from the processing system for diverse communication protocols.
    - **16 x PL GTH (up to 12.5 Gbps):** Industry-leading transceivers within the programmable logic, critical for demanding applications such as high-resolution video streams (e.g., SDI), high-speed networking, and custom data links.

- **Extensive User I/Os:**
    - **52 PS MIOs:** General-purpose I/Os for flexible peripheral interfacing.
    - **180 FPGA I/Os (46 HD + 134 HP):** Abundant programmable I/Os to connect to a vast array of sensors, actuators, and custom hardware.
- **Industrial-Grade Design:**
    - **Operating Temperature:** Robust performance across a wide range of -40°C to +85°C, suitable for harsh industrial and automotive environments.
    - **Single 12V Supply:** Simplified power integration for streamlined system design.
    - **Compact Form Factor:** Measuring 100 x 100 mm, ensuring easy integration into space-constrained enclosures.

Benefits of FPGA & MPSoC Integration:

- **Scalability:** Adapt your solution to evolving performance demands. The reconfigurable FPGA allows for rapid iteration and optimization of hardware accelerators, while the multi-core MPSoC scales software processing.
- **Flexibility:** Implement custom logic, algorithms, and interfaces tailored to your precise application needs, far beyond the limitations of fixed-function processors.
- **Ruggedness:** Designed for mission-critical applications, our kits withstand challenging operating conditions, ensuring long-term reliability.
- **Low Power Consumption:** Leverage the power efficiency of the Ultrascale+ architecture and intelligent power management features, reducing operational costs and enabling portable solutions.

Expand Your Capabilities: Versatile Connectivity via FMC Modules

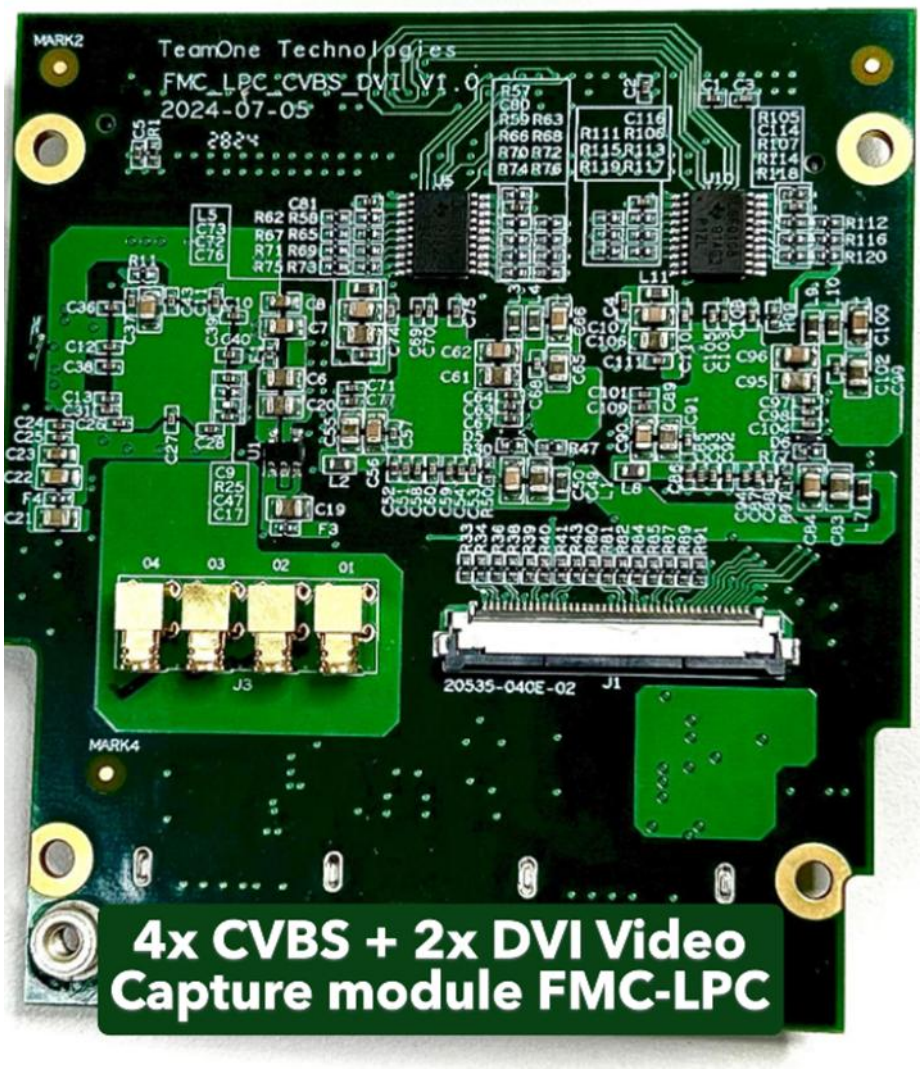
The T1CR-MPSoC Product Kits are engineered for maximum expansion and adaptability through industry-standard FMC (FPGA Mezzanine Card) connectors. These interfaces enable seamless integration with a comprehensive ecosystem of off-the-shelf (COTS) and customized daughter cards, dramatically extending the functionality of your core system.

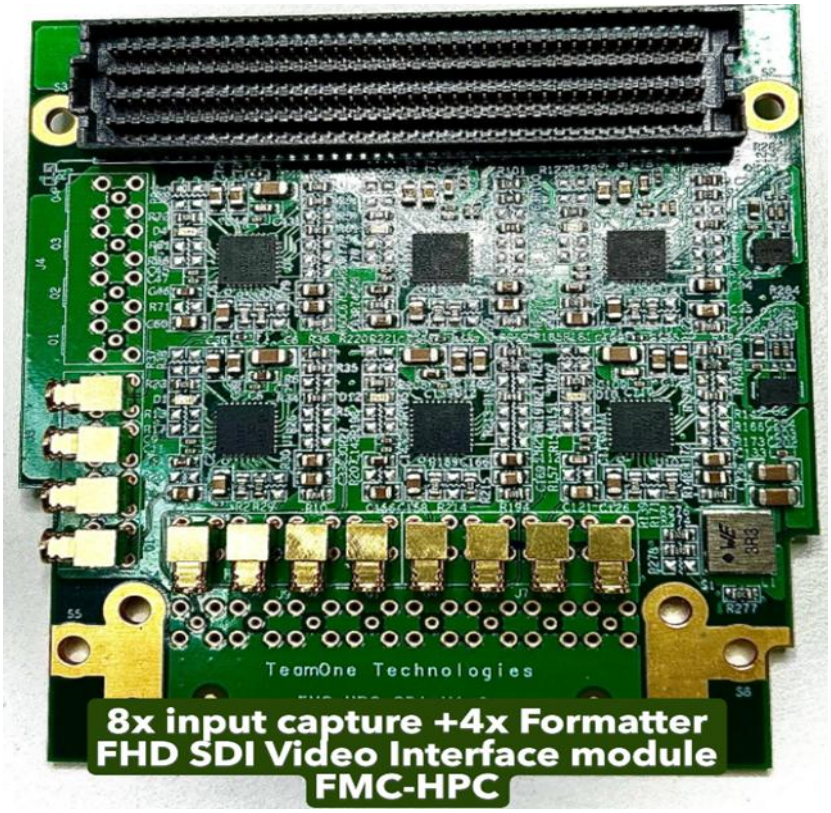
- **FMC HPC (High Pin Count) Connector:** Offers a high-bandwidth interface, supporting 8 x GTH (Gigabit Transceiver) lanes, a large number of user I/Os, and I2C. This connector is ideal for:
    - **High-Speed Video Processing:** Integrating specialized SDI, CVBS, or DVI interface cards for professional video input/output and processing pipelines.
    - **High-Performance Data Acquisition:** Connecting to advanced ADCs and DACs for high-fidelity signal processing in demanding applications.
    - **Custom Communication Protocols:** Implementing bespoke high-speed communication links.
- **FMC LPC (Low Pin Count) Connector:** Provides a versatile interface for general-purpose I/O expansion and I2C. This connector is perfect for:
    - **Sensor Integration:** Connecting various sensors for environmental monitoring or data collection.
    - **Control Systems:** Interfacing with actuators and low-speed peripherals.
    - **Audio Processing:** Adding audio codecs and interfaces.

Teamone Advantage: COTS and Custom FMC Solutions

Teamone goes beyond providing the core T1CR-MPSoC Kit. We understand that every application is unique. Therefore, we offer:

- **Comprehensive COTS FMC Card Portfolio:** Access a wide selection of readily available FMC cards for common applications, minimizing your development time and accelerating prototyping.
- **Custom FMC Card Design by Teamone:** For highly specialized requirements, our experienced engineering team at Teamone can design and develop **custom FMC HPC or LPC modules** tailored precisely to your application's needs, ensuring optimal performance and seamless integration with your T1CR-MPSoC system.




TeamOne Technologies
8x input capture +4x Formatter
FHD SDI Video Interface module
FMC-HPC


TeamOne Technologies
FMC_LPC_SERIAL_IO_V1.0
2024-07-06
16x DIO + 4x RS232/422
FMC-LPC Module
20535-040E-02

Broad Application Versatility:

The T1CR-MPSoC Product Kits are the ideal foundation for a diverse range of cutting-edge applications:

- **Industrial Control Systems:** Enabling real-time control, precise automation, and robust data acquisition in harsh industrial environments.
- **Advanced Video Processing:** From high-resolution video streaming and encoding to real-time image analytics and enhancement.
- **Video AI and Machine Learning Inference:** Accelerating complex deep learning models for intelligent video analytics, object detection, and autonomous systems.
- **Automotive Control:** Developing sophisticated ADAS (Advanced Driver-Assistance Systems), in-vehicle infotainment, and mission-critical vehicle control units.
- **Medical Imaging:** High-speed data capture and processing for advanced diagnostic and therapeutic devices.
- **Defense & Aerospace:** Rugged and reliable computing solutions for critical embedded systems.

Integrated Connectivity and Peripherals:

The T1CR-MPSoC Product Kits come equipped with a rich set of integrated interfaces to jumpstart your development:

- **Dual M.2 M Key (PCIe):** For high-speed NVMe SSDs and direct connection to external GPUs, enhancing AI/ML and graphics capabilities.
- **Dual Gigabit Ethernet:** Robust network connectivity.
- **USB 3.0 & USB 2.0:** Flexible host and device connectivity.
- **Dual CAN Bus:** Essential for automotive and industrial network communication.

- **Multiple UART (RS232/RS485/RS422):** For reliable serial communication in diverse environments.
- **Panel FPC Connector:** Direct interface for displays, including integrated USB 3.0, Ethernet, CAN, and UART for streamlined panel integration.
- **JTAG:** Standard debug and programming interface.
- **I2C & FRAM:** For configuration and non-volatile data storage.

Teamone: Your Partner in Embedded Innovation

At **Teamone**, we are committed to providing comprehensive solutions that empower our clients. Our T1CR-MPSoC Product Kits, combined with our expertise in COTS and custom FMC card development, ensure you have the tools and support to bring your most ambitious embedded designs to fruition.

Contact our sales team today to discover how the T1CR-MPSoC Product Kits can accelerate your project's success.