

IC-MPS-XMCa

AMD Zynq™ UltraScale+™ MPSoC XMC board

- XMC
- AMD Zynq™ UltraScale+™ MPSoC ZU4CG
- 4 * Ethernet 1G BASE-T ports
- RS232/422, CAN, USB ports
- SerDes to Pn5 and Pn6 connectors



Overview

The **IC-MPS-XMCa** is a XMC FPGA card based on the AMD Zynq™ UltraScale+™ ZU4CG MultiProcessor SoC.

The AMD UltraScale™ MPSoC architecture combines a feature-rich 64-bit quad-core or dual-core Arm® Cortex®-A53, a dual-core Arm® Cortex®-R5F based Processing System (PS) and an UltraScale Programmable Logic (PL) in a single device. Multiple processing engines enable the optimization of functions across an entire application, with programmable hardware providing further performance and safety handling.

The **IC-MPS-XMCa** delivers unmatched compute density and a large range of interfaces. It is an ideal solution to extend the communication capacity and the processing power of a carrier board.

Attached to the carrier through a x2 PCIe Gen3 link (*), the processing system of the **IC-MPS-XMCa** provides:

- 4 * Ethernet 1G BASE-T ports
- 2 * RS232/422 ports
- 1 * CAN port
- 2 * USB 2.0 ports
- 12 * GPIOs

Two additional Serdes (one from PL, one from PS) on P6 can be used to implement additional protocols. This can be used, for example, to implement one sFPDP link or to take advantage (for a version of the board populate with an EG device) of the additional graphics capabilities.

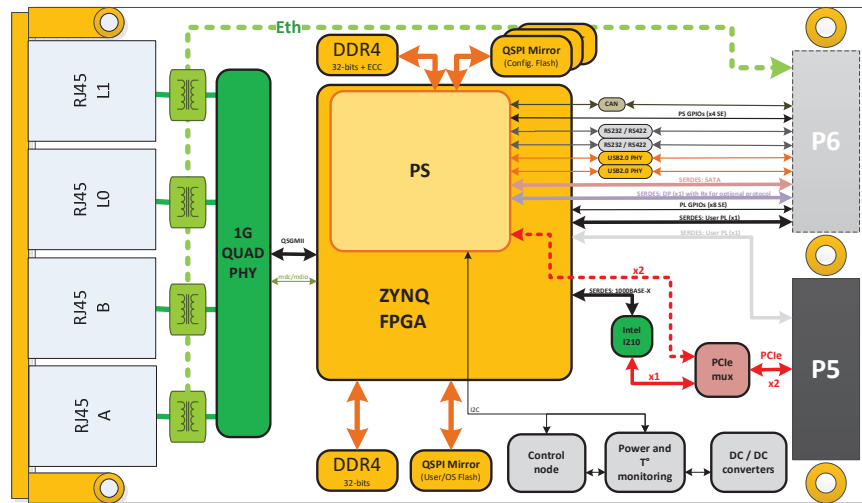
(*) As an alternate version, the **IC-MPS-XMCa** board can be seen from the carrier as Network Interface Controller offering a 1000BASE-X Ethernet port attached to the PL.

This open heterogeneous processing platform will be the basis of your development to provide the functions of a communication gateway in an ultra compact format, filtering and securing your interfaces and many others.

Our IC-RBP-XMCa board implementing Ethernet redundancy functions is an illustration of what can be done, based one the **IC-MPS-XMCa**.

The **IC-MPS-XMCa** is available in air-cooled and conduction-cooled versions (-40°C to 75°C).

Block Diagram



Main features

Processor unit

- Zynq™ UltraScale+™ MPSoC ZU4CG

Memory

- 1 * 2GB DDR4
- 2 * 128MB SPI boot flash (one for recovery)

Programmable logic (PL)

- 1 * 2GB DDR4 memory
- 2 * 128MB NOR flash for bitstreams storage
- 1 * 128MB NOR flash free for user

XMC Pn5

- 1 PCIe x2 port attached to the processor or (alternate configuration) to an Ethernet NIC
- For custom carriers only, 1 * SERDES is connected to the Programmable Logic

XMC Pn6

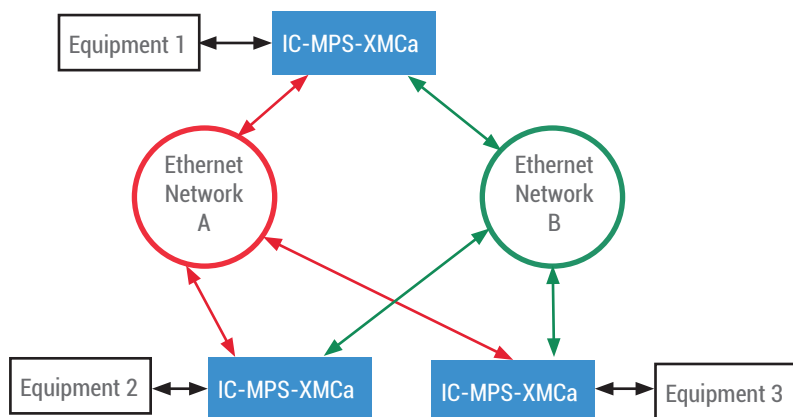
- 1 * PL SERDES lanes
- 8 * PL SE GPIOs
- 4 * PS SE GPIOs
- 2 * PS RS232/422 ports
- 1 * PS CAN port
- 2 * PS USB 2.0 ports
- Optional 4 * Ethernet 1G BASE-T through Q-PHY connected to PL (for conduction-cooled boards)

Front panel (only for AC-cooled boards)

- 4 * Ethernet 1G BASE-T ports on RJ45 through Q-PHY connected to PL (exclusive with rear option)
- PS console port on USB-C (with provided adapter)
- FPGA JTAG port on USB-C (with provided adapter)

Case study

The **IC-RBP-XMCa** board illustrates a use case of the **IC-MPS-XMCa** board to implement a double attached node in a PRP network. Please refer to the [IC-RPB-XMCa](#) board for more information.



- Each **IC-MPS-XMCa** is attached to two independent networks (A and B)
- Each frame is duplicated on the sending side and transmitted over both networks
- on the receiving side, the first incoming frame from one or both networks, is forwarded to the receiver (equipment 1, 2 or 3) and the duplicate is discarded by the **IC-MPS-XMCa**.
- The duplicates are transparent to any equipment 1, 2 or 3, part of the networks.
- The **IC-MPS-XMCa** provides network statistics and generates supervision events with the network management application.

Grades

Criterion	Coating	Operation Temperature	Rec. Airflow	Oper. HR% no cond.	Storage Temperature	Sinusoidal Vibration	Random Vibration	Shock 1/2 Sin. 11ms
Standard	Optional	0 to 55°C	1 .. 2 m/s	5 to 90%	-45 to 85°C	2G [20..2000]Hz	0.002g ² /Hz [10..2000]Hz	20G
Extended	Yes	-20 to 65°C	2 .. 3 m/s	5 to 95%	-45 to 85°C	2G [20..2000]Hz	0.002g ² /Hz [10..2000]Hz	20G
Rugged	Yes	-40 to 75°C or 85°C (*)	2 .. 5 m/s	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.05g ² /Hz [10..2000]Hz	40G
Conduction-Cooled 71°C	Yes	-40 to 71°C at the thermal interface (*)	-	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.05g ² /Hz [10..2000]Hz	40G
Conduction-Cooled 85°C	Yes	-40 to 85°C at the thermal interface (*)	-	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.1g ² /Hz [10..2000]Hz	40G

(*) : Temperature grades are subject to availability according to IC products. Please consult us.

All information contained herein is subject to change without notice.
 All product names, trademarks and registered trademarks are property of their respective owners.
 SOSA™ and logo design are trademarks of The Open Group in the United States and other countries.

For more information, please contact:



3, rue Félix Le Dantec
 29000 QUIMPER
 Tel. +33 (0)2 98 57 30 30
 Fax. +33 (0)2 98 57 30 00
 info@interfaceconcept.com