

ECS-XMC/FPGA

XMC EtherCAT® Slave Interface

EtherCAT®



Convert your XMC System into an EtherCAT Slave Device

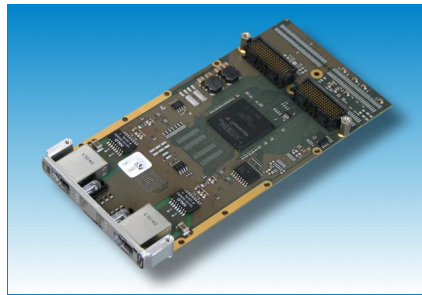
- Add EtherCAT Slave (ECS) functionality to your XMC equipped base board
- The EtherCAT Slave Controller address space is directly mapped to the PCI Express® address space.

Simple Configuration and Rapid Application Development

- Easy Configuration by esd's EtherCAT Master or other masters
- Sample EtherCAT Slave Information File (ESI file in XML format) is provided
- esd's EtherCAT Slave API library and sample code for rapid application development are included

Bus Master Support

- The FPGA contains Bus Master DMA support to offload the CPU from copying the output process image data into the host memory. This is utilized by the esd EtherCAT Slave Stack



EtherCAT Slave Interface for XMC

The ECS-XMC/FPGA is an EtherCAT Slave Controller board in a VITA 42.3 (XMC) form factor. It utilizes a Beckhoff IP-core which is implemented in an Altera® FPGA and configured for 8 FMMUs, 8 Sync Managers, 60 kB DPRAM and 64 bit Distributed Clocks. Other configurations are available on request.

The FPGA connects between the PCI Express bus on the XMC P15 connector and the two Ethernet interfaces on the front panel.

The additional EtherCAT signals SYNC and Latch are available on the secondary XMC connector P16, soldering pads or optionally on the PMC I/O connector P14.

Versatile Application

Because of this simple hardware topology and the use of a "soft" controller the design offers a maximum of flexibility.

The XMC system can act as an I/O node. An EtherCAT master can use several EtherCAT protocols like CoE, FoE and EoE to communicate with this EtherCAT slave device.

SYNC/Latch I/Os and Share I/Os

Via connector XMC-P16 equipped on the ECS-XMC/FPGA 20 3.3 V LVTTTL I/Os are available, including the signals from the EtherCAT Slave Controller: 2x Sync and 2x Latch.

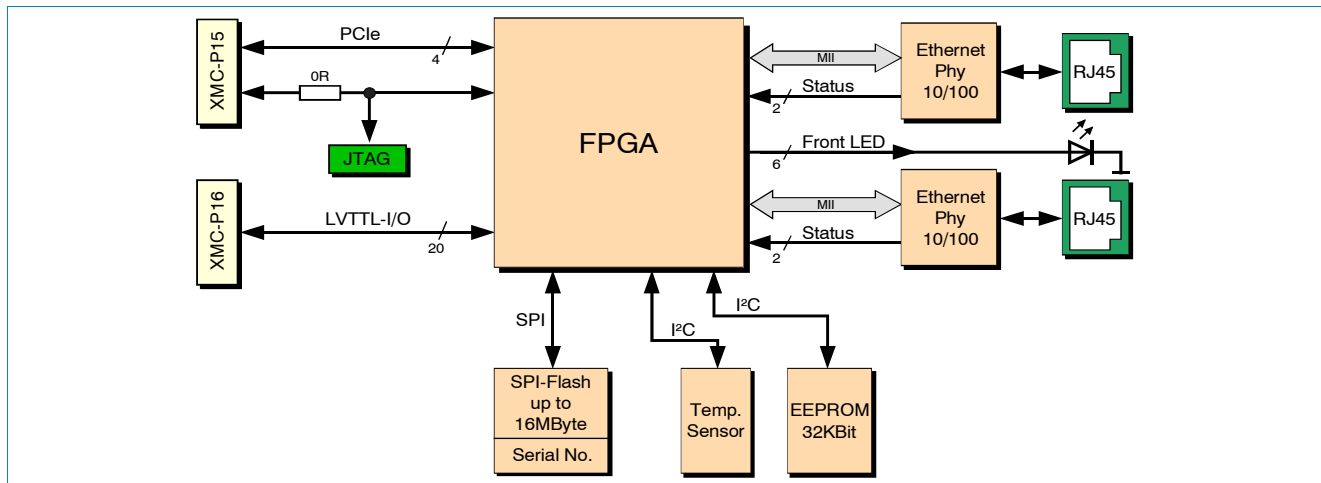
On request the 20 XMC I/Os can be configured as 10 I/Os with 2.5 V level LVDS.

Software Support

Device drivers for Windows® and Linux® with documentation and EtherCAT slave examples are included in the scope of delivery. Drivers for other operating systems, especially real-time operating systems, are available on request.

Related Products

The EtherCAT Slave card is also available with PMC interface (ECS-PMC/FPGA; order no. E.1104.02) or with PCI Express® interface (ECS-PCIe/FPGA; order no. E.1106.02). The PCIe card is also available as low profile version (ECS-PCIe/FPGA-LP; order no. E.1106.04).



Technical Specifications:

XMC Interface:	
PCIe endpoint	FPGA
PCIe port	According to PCI Express Specification R1.0a
Lanes	Up to Quad Lane PCIe Link
Form factor	VITA™ 42.3 (XMC)
Connectors	P15 and P16
EtherCAT Slave Controller:	
ECS controller	Beckhoff IP Core integrated in FPGA + 2x MII Phy (Micrel KSZ8081MNX)
ECS interface	2x RJ45, 100BASE-TX, 100 Mbit/s, according to IEEE 802.3, electrically isolated
LEDs	Error, Run, Link/Activity per channel, 2x User LEDs

General:	
Supply voltage	3.3 V DC from XMC connectors
Power consumption	$P_{MAX} = 3 W$
Ambient temperature	Operational: 0...65 °C
Relative humidity	Max. 90 % (non-condensing)
Dimensions [mm]	149 mm x 74 mm x 10 mm without front panel (length x width x height)
Weight	90 g
Order Information:	
Designation	Order No.
ECS-XMC/FPGA	XMC EtherCAT card, incl. driver, ECS-Stack as binary and manual for Windows and Linux
	E.1102.02