

# ECS-PMC/FPGA

## PMC EtherCAT® Slave Interface

EtherCAT®



### Convert your PMC System into an EtherCAT Slave Device

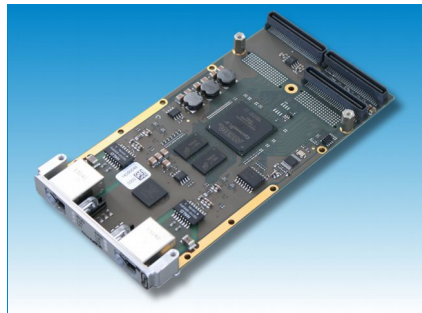
- Add EtherCAT Slave (ECS) functionality to your PMC equipped base board
- The EtherCAT Slave Controller address space is directly mapped to the PCI Express® address space.

### 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 PMC

The ECS-PMC/FPGA is an EtherCAT Slave Controller board in a IEEE 1386.1 (PMC) 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 PMC P11 and P12 connector and the two Ethernet interfaces on the front panel. The additional EtherCAT signals SYNC and Latch are available 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 PMC 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

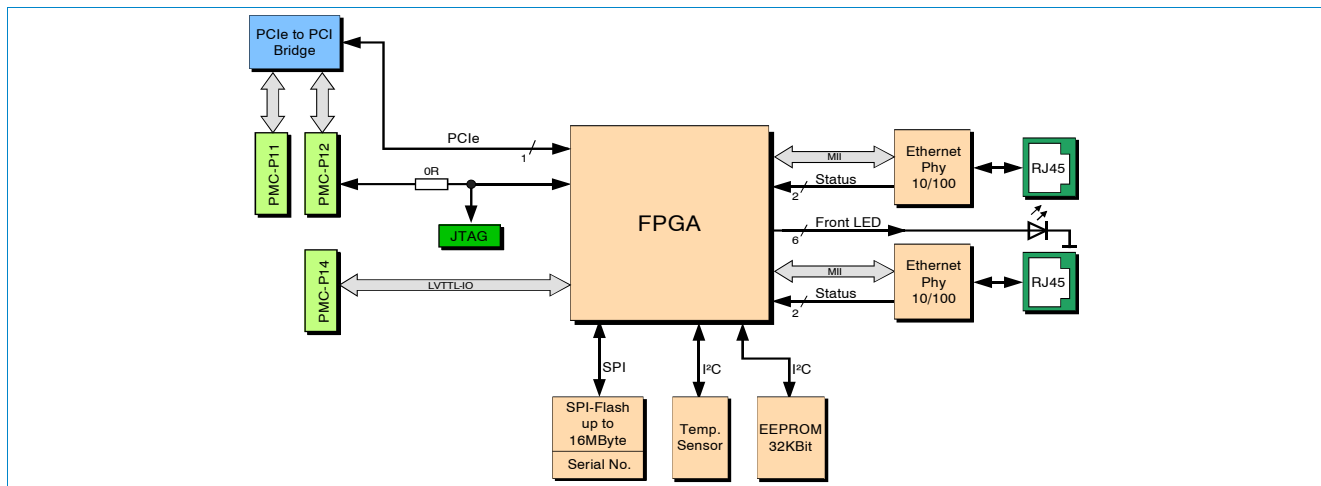
Via connector PMC-P14 equipped on the ECS-PMC/FPGA 16 3.3 V LVTTTL I/Os are available, including the signals from the EtherCAT Slave Controller: 2x Sync and 2x Latch.

### 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 board is also available with XMC interface (ECS-XMC/FPGA; order no. E.1102.02) 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:

PMC Interface:	
PMC	PMC according to IEEE Std 1386.1-2001, connectors: P11, P12, P14
PCI	PCI bus according to PCI Local Bus Specification 3.0, 32 bit 66 MHz, 3.3 V (5 V tolerant), PCI bus master capability
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 PMC connectors
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	100 g

Order Information:		
Designation		Order No.
ECS-PMC/FPGA	PMC EtherCAT Slave board, incl. driver, ECS-Stack as binary and manual for Windows and Linux	E.1104.02