ECS-CPCIs/FPGA

CompactPCI® Serial to EtherCAT® Slave Interface

Convert your CompactPCI Serial System into an EtherCAT Slave Device

- *Add EtherCAT Slave (ECS) functionality to your PC*
- *The EtherCAT Slave controller address space is directly mapped to the CompactPCI Serial address space.*

Simple Configuration and Rapid Application Development

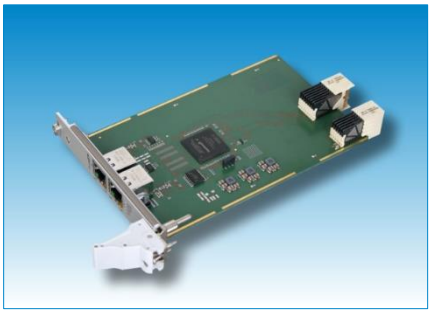
- *Easy configuration by esd's EtherCAT Master or other masters*
- *Sample EtherCAT Slave Information File (ESI file in XML format) is provided*
- *esd's EtherCAT Slave API library and sample code for rapid application development are included*

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.*

Customization on Request

- *20 of the LVTTL I/Os can be configured as 10 I/Os with 2.5 V level LVDS*
- *Other customized configurations are available on request.*



EtherCAT Slave Interface for PCI Express

The ECS-CPCIs/FPGA is an EtherCAT Slave Controller board designed for the CompactPCI Serial bus (CPCIs). It utilizes a Beckhoff IP-core, which is implemented in an Intel® FPGA and configured for 8 FMMUs, 8 Sync Managers, 60 kB DPRAM and 64-bit Distributed Clocks.

The FPGA connects between the CompactPCI Serial bus (CPCIs) and the two Ethernet interfaces in the front panel.

Versatile Application

Because of this simple hardware topology and the use of a "soft" controller the design offers a maximum of flexibility. The CPCIs 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 pin header connectors equipped on the ECS-CPCIs/FPGA 36 3.3 V LVTTL I/Os are available, including the signals from the EtherCAT Slave Controller: 2x Sync and 2x Latch for system synchronization.

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.

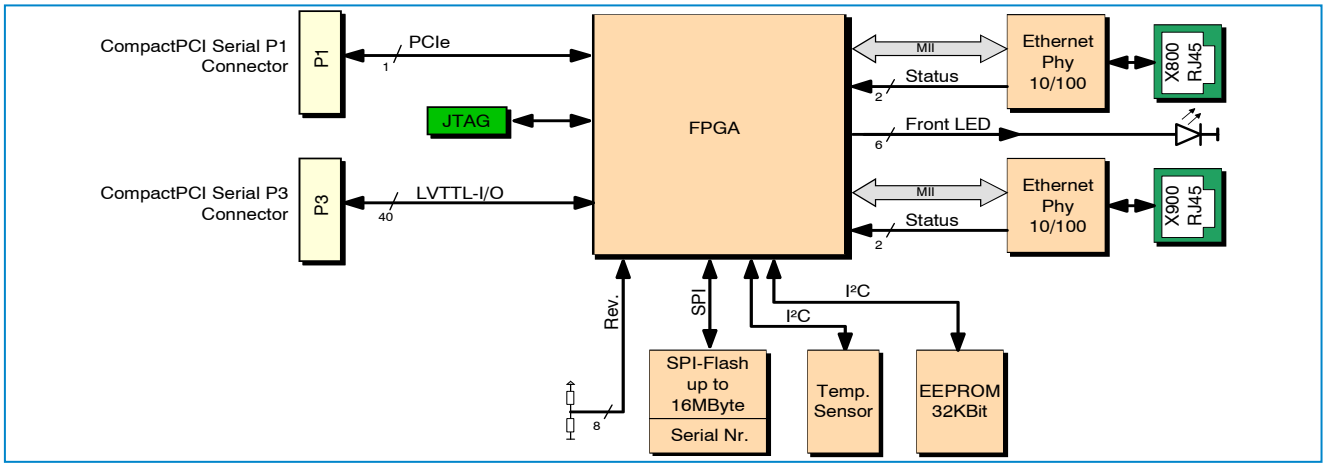
Customization on Request

Customized options are available for customized series production in reasonable quantities. Please contact our sales team for detailed information.

Related Products

The EtherCAT Slave card is also available in PCI Express form factor (ECS-PCIe/FPGA). For XMC and PMC systems similar boards are available (ECS-XMC/FPGA, ECS-PMC/FPGA).

(This product is under development. It will be available Q1 2022.)



Technical Specifications:

CompactPCI Serial:	
PCI	*PICMG CPCI-S.0 Rev. 1.0, PCI Express Rev. 1.0a, Link width 1x*
EtherCAT Slave Controller:	
ECS controller	*Beckhoff IP Core integrated in Cyclone® V 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:	
Power supply voltage	*12 V_{DC} ± 5%; derived from CPCIs P1 connector*
Power consumption	*Maximum 3.3 W*
Ambient temperature	*0 °C ... 65 °C*

General (Continued):	
Protection class	*IP20 in mounted position*
Relative humidity	*Max. 90 % (non-condensing)*
Dimensions	*160 mm x 100 mm x 20 mm*
Weight	*ca. 160g*

Order Information:		
Hardware		*Order No.*
ECS-CPCIs/FPGA	*CPCI Serial plug-in card with EtherCAT Slave IP-core in Intel FPGA, driver, Slave Stack Binary and documentation for Windows and Linux included*	*E.1108.02*

esd electronics gmbh
Vahrenwalder Str. 207
30165 Hannover / Germany

Phone: +49 (0) 511 3 72 98-0
Fax: +49 (0) 511 3 72 98-68
E-mail: info@esd.eu