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Modular control system XCS 2000

The XCS 2000 system is a powerful control platform that was developed with a focus on dual use. On the one hand, it serves as an extremely flexible Rapid Control Prototyping (RCP) tool for research and development. On the other hand, it serves as a compact control unit (embedded control) for industrial applications, so that the results from research and development can be implemented quickly and cost-effectively in a product.



XCS2000_Flyer_060521.pdf (English / 155 kB)

XCS 2000 Overview.pdf (English / 2.7 MB)

These are the outstanding features of the XCS 2000 family:

- Two 100 MHz floating point DSPs guarantee highest performance.
- Direct simulation of the hardware under Matlab/Simulink or PSpice.
- Hardware functions are implemented as modules in an FPGA.
- Up to 32 analog channels with simultaneous sampling.
- Extensive interface modules available.
- Each interface module has its own CPLD for maximum flexibility.
- Ethernet module with 7 channel online oscilloscope function.
- Extensive software libraries for convenient programming.
- Open system with plenty of scope for your own extensions.

These components are available for the XCS 2000 family:

XCP 2000 - Processor Module:
The core component of the XCS 2000 family is the powerful XCP 2000 DSP card, which was specially designed to control complex power electronic systems and regulate highly dynamic drive applications. The extensive **floating point arithmetic** and the very good C++ language support can drastically reduce development times. In order to be able to use the system universally, a modular, easy-to-configure system was designed. This allows the user

XCS 1000

Universal control platform

SHARC floating point DSP, 64 digital inputs/outputs, up to 64 analog inputs or outputs with 100 kS/s each, expandable FPGA implementation, extensive communication options, and much more

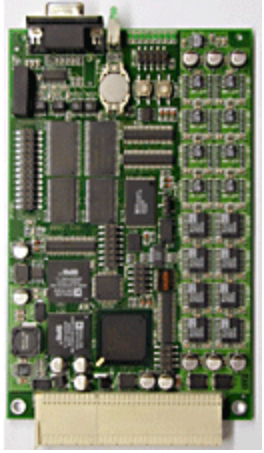
Problem solving

Support in development

We provide you with our know-how in the development, troubleshooting and consulting of power converters and drives.

to integrate a wide variety of new functions by rearranging or expanding the standard function blocks provided by the FPGA. To support this modularity, powerful libraries with numerous I/O and control functions have been developed for the XCP 2000 in C++ and VHDL.

A **sophisticated bus concept** allows the communication DSP independent access to the internal registers and memory of the control DSP as well as to the external peripherals. This concept enables **real-time monitoring** of all control signals and internal variables without slowing down or interrupting the control routines. In addition, command values and other specific parameters can be changed online, for example to evaluate the system response to a setpoint jump.



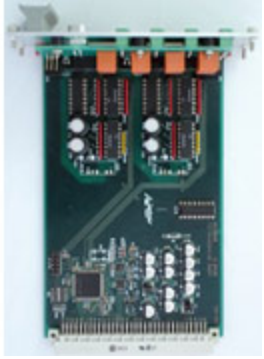
XCS 2000 / XCS 2010 System Case:
The user can choose between two different sized housings with the corresponding backplane. The large XCS 2000 system with its 3+4 module slots allows a very high degree of flexibility for laboratory use or for controlling complex systems. It has a 4x20 character display for convenient diagnostics and system interaction. The XCS 2010 system with its 2+2 slots and its very compact design is designed for simpler control tasks. Both systems have an intelligent backplane concept that is particularly well equipped for future expansions.



XCI 2000 4-phase inverter control module:
The XCI 2000 is the universal link between the XCP 2000 DSP card on the one hand and the inverter power section on the other. The base card provides 8 digital switching outputs and 8 digital error inputs. In addition, 4 pairs of analog input signals are recorded and filtered. This means that 4 currents, the intermediate circuit voltage, temperature and other parameters of an inverter can be measured analogously. In addition to the base board, we offer various front panels that distribute the signals from the XCI 2000 to different connectors. As standard, various SkiiP® power modules from SEMIKRON can be controlled 1:1 using a ribbon cable. For a small additional charge, we are also happy to develop new front modules according to customer requirements.



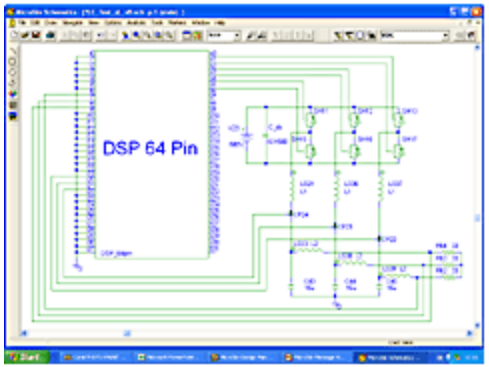
XCI 2010 opto- and relay I/O module:
When controlling power systems, there are always tasks where a relay output or a galvanically isolated digital input is required quickly, such as pre-charging the intermediate circuit or disconnecting the power supply. The XCI 2010 module is designed for these applications to easily control up to 4 relays and to provide galvanically isolated digital I/O lines.



XCI 2020 Universal I/O Module:
With the XCI 2020 you can quickly gain an insight into the DSP and the quality of the control. 8 analog outputs are provided, which are addressed directly by the D/A converters of the XCP 2000. With the available adapter cables, any internal variables of the DSP program can be displayed and evaluated on an oscilloscope. The XCI 2020 also has fast digital inputs, which are ideal for recording position sensor signals, for example.



XCM 2000 simulation models:



With the XCM 2000 simulation models you can experience the full performance of the XCS 2000 family. Check your controls in the simulation before you endanger your expensive performance hardware with a software error. Our models are a replica of the hardware functions of the XCP 2000 processor module with their properties, such as PWM, AD/DA, port functions. Using our libraries you can program the system comfortably. It does not matter whether you have written the program code for the simulation or for use on the real hardware: with our libraries you can achieve both functions with the same program code. Only two different compilers are used to translate your program for the respective purpose.

XCM 2010 PSpice Model:

The XCM 2010 model is suitable for use with PSpice 8.0 and, most recently, PSpice 10.0 from Cadence. The XCS 2000 system integrates seamlessly into your circuit simulation.

XCM 2020 Matlab/Simulink model:

The Matlab/Simulink package from Mathworks is well-known and proven for all types of simulations, and we offer an interface to it with our XCM 2020 model. Insert our model into your existing and familiar simulation environment and optimize your converter topology quickly and efficiently.

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