

STK hydraXC

Technical data for hydraXC

Features

- ⊕ Ethernet 10/100 M II - Interface
- ⊕ 2 independent memory banks
- ⊕ on board Flash
- ⊕ Real-Time Clock
- ⊕ 4 USB 2.0 ports, 480Mbit/s, (1 OTG, 2 type A, 1 type B full speed for system management controlling)
- ⊕ Two 120pin expansion connectors
- ⊕ On-board voltage regulator
- ⊕ Industrial temp. range
- ⊕ Board size 54 x 44mm

Interfaces

- ⊕ dedicated M II-Interface through 120pin connector
- ⊕ different Interfaces are free configurable, like:
 - CAN
 - RS232
 - TFT
 - GPIO
 - PWM

Delivered components for STK hydraXC:

- ⊕ TQM hydraXC
- ⊕ STK hydraXC
- ⊕ Power supply
- ⊕ pre-configured SD-Card
- ⊕ USB and serial cable
- ⊕ Manual
- ⊕ Application CD

Operating Systems

Embedded or Real-Time OS like:

- ⊕ µCLinux
- ⊕ Windriver VXWorks
- ⊕ Micrium µC/COS-II RTOS
- ⊕ eCOS
- ⊕ QNX Neutrino RTOS
- ⊕ MontaVista LSP
- ⊕ AT NucleusPLUS
- ⊕ Express Logic ThreadX
- ⊕ Others
- ⊕ Or Stand Alone (no O/S)

Reconfigurable Features

FPGA Processor IP-Cores like:

- ⊕ 32 Bit MicroBlaze
- ⊕ Sparc
- ⊕ OpenRisc 1000
- ⊕ 8051 Family
- ⊕ Others Soft-Cores
- ⊕ Silicon implemented PowerPC in Virtex®4FX- and VirtexII® Pro-Modules



TQM hydraXC

Applications

Together with the "TQM hydraXC" module the STK is ideal for fast and easy prototyping of all kind of signal and image processing as well as embedded processing, needed in a wide range of electronic industry applications, like Telecommunication, Industrial

Control, Measurement and Instrumentation, Medical Systems, Military and Avionics as well as Automotive applications.



The TQ Group - The entire world of electronics

Founded in 1994, the system supplier TQ Systems develops and produces electronic modules and systems according to customer specifications. In the corporate family, TQ Mechanics is responsible for mechanical production. TQ Components markets embedded systems and industrial PCs developed and produced by TQ systems. The TQ Group has over 450 employees. Overall sales attained EUR 51.2 million in business year 2004/2005.

TQ Components product line

One of the strengths of the company is self-developed embedded TQ modules. TQ offers an entire range of controllers: In addition to 16-bit and 32-bit Infineon modules, the product line

includes a wide selection of Freescale and Intel-based processor boards. The modules are distinguished by their small size and long-term availability, and they satisfy high quality standards. TQ's aim remains industry-compatibility and longevity.

EUBUS

Eubus GmbH in Munich, Germany offers system solutions and development services in the field of „Embedded Computing“, based on the most innovative FPGA technology.

With many years of experience and know how in the area of Programmable Logic, Eubus developed a state-of-the-art module family for the Embedded Market, called "hydraXC".

The hydraXC module family is a very innovative and compact Hardware Platform for Reconfigurable Computing, based on the Xilinx programmable logic technology.

With their experienced designers Eubus also offers extended Design Services and Support in the exiting field of flexible solutions for the entire electronic industry.

Eubus GmbH is a young and dynamic company founded 4 years ago. With 13 employees today the company achieved a very impressive growth rate over the years.

Eubus GmbH, Gollierstr. 70, 80339 München, Tel. 089-4522578-0, www.eubus.net



FPGA powered – That's it!

TQM hydraXC

Smallest, most universal Hardware Platform for Reconfigurable Computing



TQ components

<http://www.tq-group.com>

Schulstraße 29a, 82234 Weßling
 Tel: (+49) 8153 / 9308 - 333
 Fax: (+49) 8153 / 9308 - 134
 eMail: info@tq-components.com



TQM hydraXC

TQM hydraXC

Smallest, most universal Hardware Platform for Reconfigurable Computing

The hydraXC family is the smallest, most flexible and universal hardware platform on the market for Reconfigurable Computing. The core component of each hydraXC

module is an innovative Xilinx FPGA which provides highest computing flexibility on the smallest available footprint. You can choose and implement in all hydraXC modules many different softprocessors from 4 to 64bit whether it is the Xilinx 32bit MicroBlaze, a Sparc, an OpenRisc 1000, a 8bit 8051 family member or any other soft-

core processor. In addition, with our High-End modules TQM hydraXC you even have the power of a silicon implemented PowerPC (405) with up to 450MHz.

The hydraXC family comes with a 10/100 Base-T Ethernet interface (soon with 1Gbit Ethernet), three high speed USB 2.0 inter-

TQM hydraXC-Family

	TQM hydraXC-S3			TQM hydraXC-V4				TQM hydraXC-V2P-MGT		TQM hydraXC-V4-MGT			
FPGA Family	Spartan3			Virtex4				VirtexII-Pro		Virtex4			
FPGA Typ	XC3S1500	XC3S2000	XC3S4000	XC4VLX15	XC4VLX25	XC4VLX40	XC4VLX60	XC4VFX12	XC2VP4	XC2VP7	XC4FX20	XC4FX40	XC4FX60
Housing	FG676	FG676	FG676	FF668	FF668	FF668	FF668	FF668	FF672	FF672	FF672	FF672	FF672
Temperature Range	C,I	C,I	C,I	C,I	C,I	C,I	C,I	C,I	C,I	C,I	C,I	C,I	C,I
Speed grade	-4, -5 ⁵⁾			tbd				tbd		tbd			
Form factor	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	TQM8xx 54 x 44mm ²	Ext.	TQM8xx + Ext.	TQM8xx + Ext.
FPGA resources													
PowerPCs	-	-	-	-	-	-	-	1	1	1	1	2	2
MicroBlazes	≥1	≥1	≥1	≥1	≥1	≥1	≥1	≥1	≥1	≥1	≥1	≥1	≥1
MAC (10/100/1G)	-	-	-	-	-	-	-	2	-	-	2	4	4
CLBs	64 x 52	80 x 64	96 x 72	64 x 24	96 x 28	128 x 36	128 x 52	64 x 24	40 x 22	40 x 34	64 x 36	96 x 52	128 x 52
CLB - FF	26624	40960	55296	12288	21504	36864	53248	10944	6016	9856	17088	37248	50560
BRAMs	32	40	96	48	72	96	160	36	28	44	68	144	232
BRAM (kbits)	576	720	1728	864	1296	1728	2880	648	94	154	1224	2592	4176
Multiplier 18x18	32	40	96	-	-	-	-	-	28	44	-	-	-
DSP48 Slices	-	-	-	32	48	64	64	32	-	-	32	48	128
DCMs	4	4	4	4	8	8	8	4	4	4	4	8	12
Periphery													
MGTs	-	-	-	-	-	-	-	-	4	4	4	4	4
MGT Pins	User IO ¹⁾	User IO ¹⁾	User IO ¹⁾	User IO ¹⁾	User IO ¹⁾	User IO ¹⁾	User IO ¹⁾	User IO ¹⁾	16 ²⁾	16 ²⁾	16 ²⁾	16 ²⁾	16 ²⁾
USB 2.0	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾	3 + 1 ³⁾
MII (10/100)	1 ⁵⁾	1 ⁵⁾	1 ⁵⁾	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
RTC	1	1	1	1	1	1	1	1	1	1	1	1	1
SDRAM Bank1	0 - 64 MB			tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
SDRAM Bank2	0 - 64 MB			tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
NAND-Flash	0 - 128 MB			tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
SPI-Flash	8 MByte			tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
Configuration	ARM7			tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd

1) Pins on HydraTQ-PPC-MGT are dedicated
2) 2 x 4 + 8 GND
3) 3 x User (HighSpeed); 1 x Config (FullSpeed)

4) -4 only in commercial temperature range
5) Depend on user application, STK has one

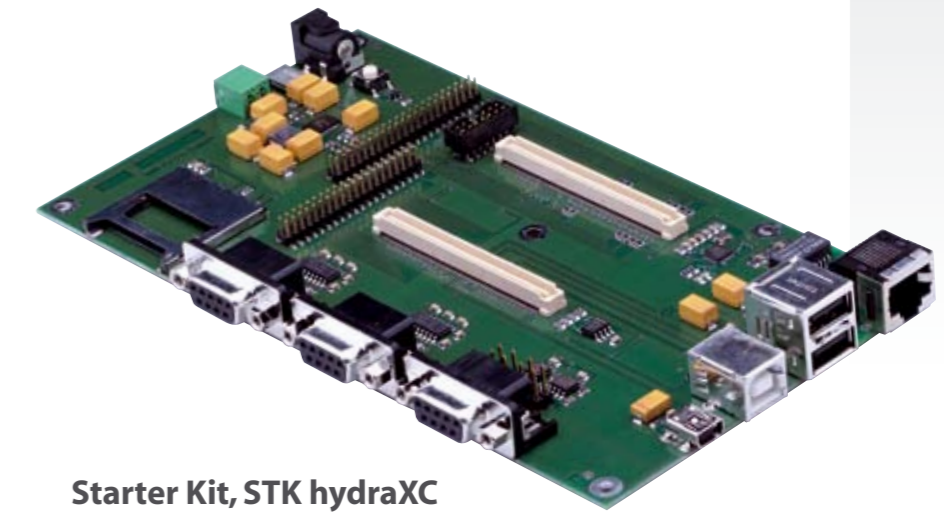
faces, host/device (OTG), with up to 480 Mbps as well as on-board SDRAM and Flash memories. Also on the hydraXC is a Real-Time Clock, 2 status LEDs and configurable regulators for VCCIO and Vref to achieve different I/O-standards in four independent banks.

complex DSP designs, 10/100 Base-T Ethernet applications (soon with 1Gbit Ethernet), system management processing, high speed USB designs, very high speed Finite State Machines (FSM) and other high speed designs with or without a processor.

The TQM hydraXC comes in a TQ-standard package in a size of 54 x 44mm. The TQM hydraXC product philosophy makes you independent from standard processor suppliers and protects designs when a processor might become obsolete and perhaps unavailable. The TQM hydraXC modules are ideal for Digital SignalProcessing (DSP) and Embedded Processing in a wide range of electronic industry applications, like in Telecommunication, Industrial Control, Measurement and Instrumentation, Medical Systems, Military and Avionics as well as Automotive applications.

Additional Information

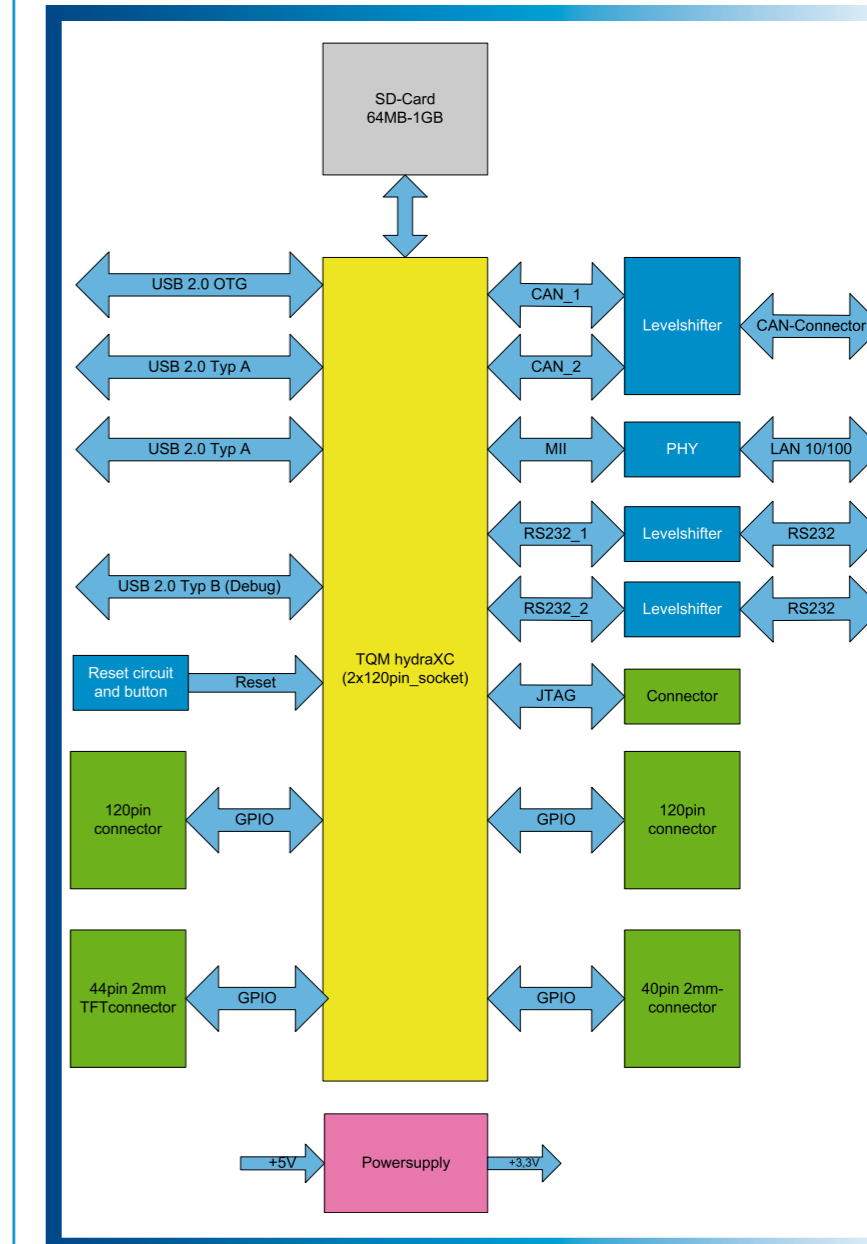
- Standards All Modules are delivered with a preconfigured μ Linux OS and a precompiled 32Bit MicroBlaze-Softprocessor
- System Management with FPGA Configuration, VCCIO- and Vref-configuration
- Processor Non-Volatile Secure Storage
- Development Boards are available for all Modules
- TQM hydraXC Customer specific modules are available upon request
- Service Design Service and Support can be provided by experienced FPGA Designers



Starter Kit, STK hydraXC

STK hydraXC-

Block diagram



Starter Kit, STK hydraXC

For the "TQ hydraXC" module there is also a Starter Kit available, called "STK hydraXC", which helps you to start and test your own design immediately within a wide range of applications.

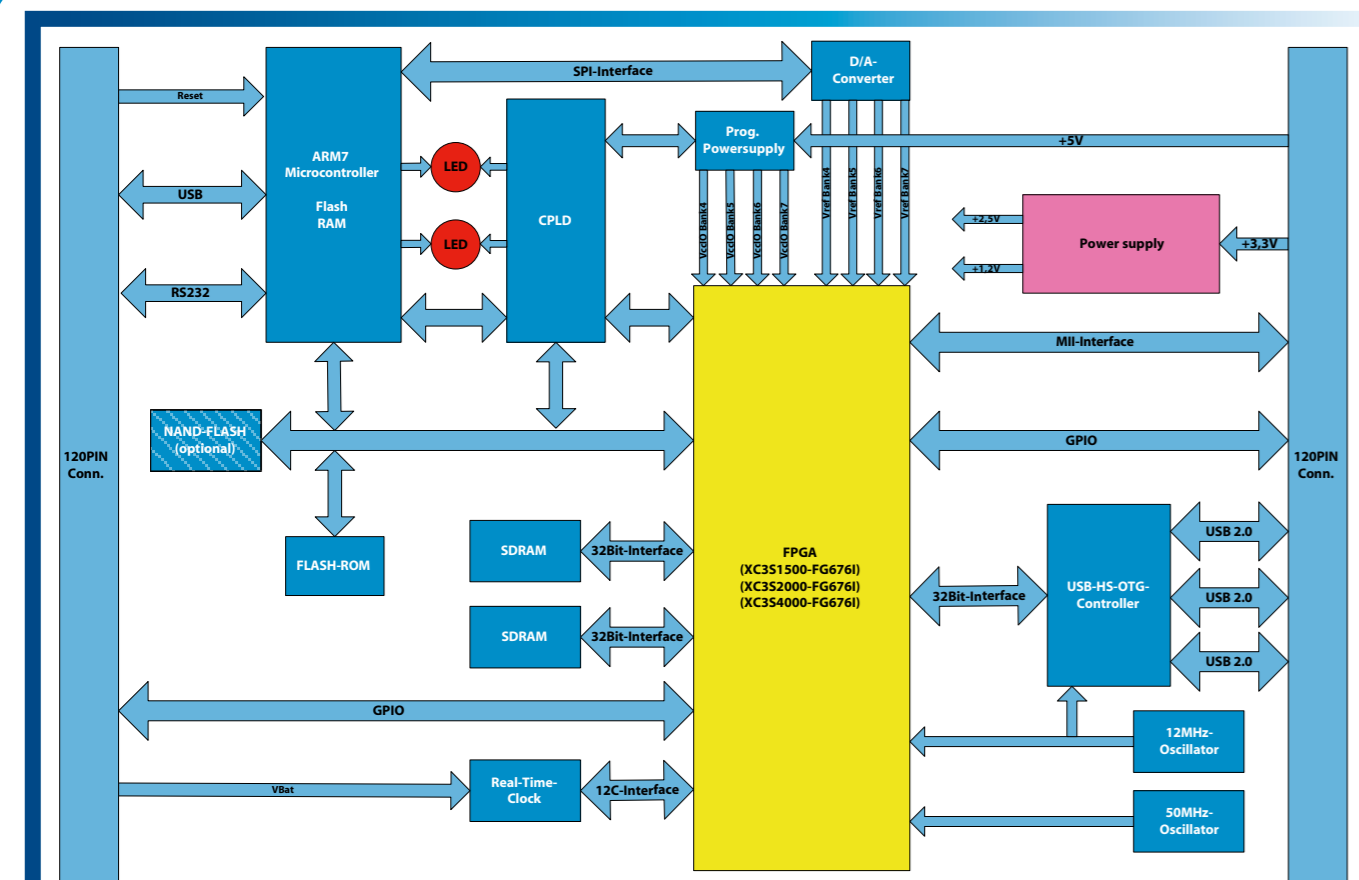
The STK hydraXC provides you an Ethernet interface, 2 RS232 connectors, two 120pin GPIO connectors for your own fast and flexible design ideas, 2 independent CAN interfaces, a SD-Card reader, a 44pin 2mm TFT connector (TQ TFT-Standard) and a 40pin 2mm connector for GPIO (i.e. for debugging).

In addition the STK hydraXC comes with 4 USB connectors (1 USB 2.0 OTG, high speed / 2 USB 2.0 type A, high speed / 1 USB 2.0 type B, full speed for debugging and configuration), plus a 10/100 PHY, Transformer and RJ45 connector for network applications, a 5V power supply connection, a reset button and a JTAG interface.

The board has a size of 178 x 97mm.

The "TQ hydraXC" modules itself are based on a Xilinx Spartan-3 or Virtex-4 FPGA and are delivered with pre-configured uLinux operating system and a pre-compiled 32 Bit MicroBlaze Softprocessor.

TQM hydraXC-Block diagram



TQM8xx with XILINX FPGA