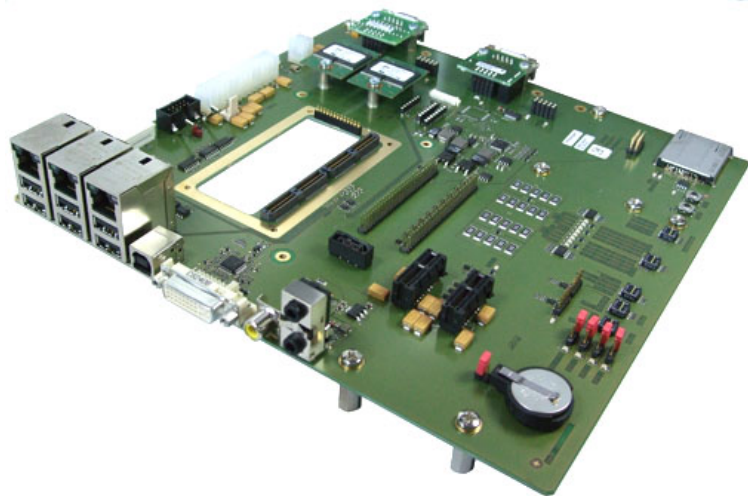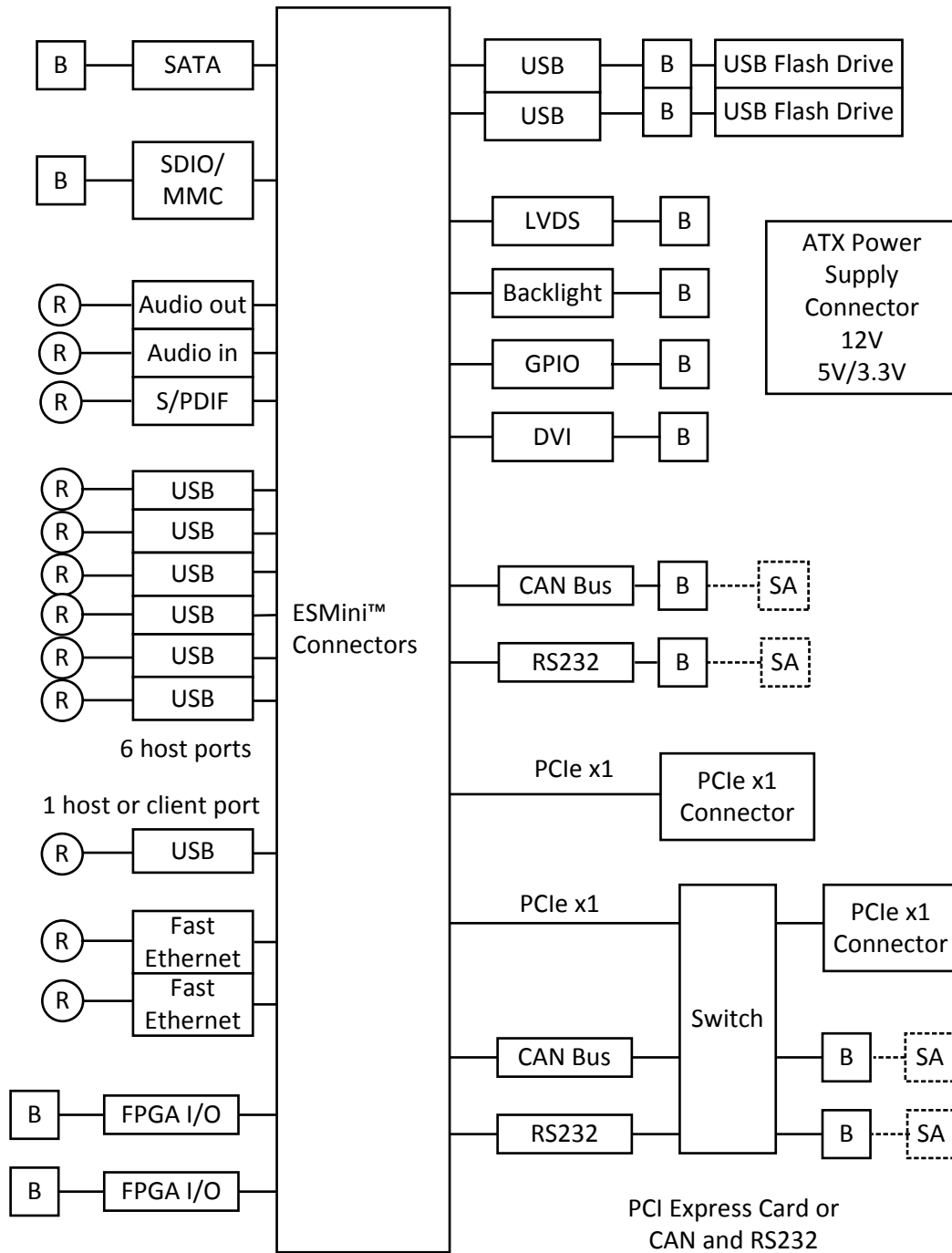# XC4 – ESMini™ COM Evaluation Carrier Board

- **MicroATX form factor**
- **1 ESMini™ computer-on-module slot**
- **2 PCI Express® x1 connectors**
- **2 GB USB Flash**
- **1 SATA**
- **LVDS, DVI**
- **HD audio in and out**
- **5 USB 2.0 Master, 1 USB 2.0 Client**
- **2 Fast Ethernet**
- **2x CAN bus, 2x RS232 via SA-Adapters™**
- **120 FPGA signals from ESMini™**

The XC4 is an evaluation and development platform that can be used together with any type of ESMini™ module. It provides physical interfaces and connectors for nearly all of the modern serial standard I/Os routable from the ESMini™ connectors to the carrier board. The XC4 comes with one ESMini™ slot and two PCI Express® card slots. The functionality of all connectors depends on the ESMini™ module used on the XC4. It corresponds to the standard microATX form factor and can therefore operate in a PC system. Additional 4 GB of USB-driven Flash disk for application storage complement the memory configuration that is already available on the ESMini™ module.

For a first evaluation of the functions and performance of the ESMini™ module of choice we strongly recommend to use the XC4. Further useful accessories include an external PSU.

Diagram

B — SATA		
B — SDIO/MMC		
R — Audio out		
R — Audio in		
R — S/PDIF		

USB — B — USB Flash Drive
USB — B — USB Flash Drive

LVDS — B
Backlight — B
GPIO — B
DVI — B

ATX Power Supply Connector 12V 5V/3.3V

ESMini™ Connectors

R — USB
R — USB
R — USB
R — USB
R — USB
R — USB

6 host ports

1 host or client port

R — USB

R — Fast Ethernet
R — Fast Ethernet

B — FPGA I/O
B — FPGA I/O

CAN Bus — B ----- SA
RS232 — B ----- SA

PCIe x1 — PCIe x1 Connector

PCIe x1 — PCIe x1 Connector

CAN Bus — Switch

RS232 — Switch — B ----- SA

Switch — B ----- SA

PCI Express Card or CAN and RS232

Legend

(R) Rear I/O connector

[SA] SA-Adapter

[B] Onboard connector

Technical Data

ESMini™ Carrier Card	■ One ESMini™ slot ■ P1 and P2 assembled
Memory	■ One SATA connector ■ Two 2GB USB Flash disks included in the delivery 　□ Via two USB onboard connectors ■ One SDIO/MMC slot
Graphics	■ One DVI rear connector ■ One LVDS ZIF connector 　□ For direct connection of an LVDS display ■ One LVDS backlight 10-pin connector
I/O	■ Six USB 2.0 host connectors, one USB 2.0 client connector 　□ Only five host connectors can be used when the client connector is used ■ 10/100Base-T Ethernet 　□ Two interfaces on RJ45 connectors ■ HD Audio 　□ Audio in 　□ Audio out 　□ S/PDIF out ■ RS232 　□ Two onboard connectors 　□ Physical interface via SA-Adapters™ 　□ Only one if a second PCI Express® card is plugged ■ CAN Bus 　□ Two onboard connectors 　□ Physical interface via SA-Adapters™ 　□ Only one if a second PCI Express® card is plugged ■ GPIO 　□ 120 FPGA signals from ESMini™ on two 60-pin connectors 　□ Four user-defined GPIO/LED signals on four 3-pin headers
PCI Express®	■ Two PCIe® x1 connectors
Miscellaneous	■ Battery holder ■ Power button ■ Reset button
Electrical Specifications	■ Supply voltage/power consumption: 　□ ATX standard power supply via 24-pin connector and 4-pin connector ■ MTBF: tbd @ 40°C according to IEC/TR 62380 (RDF 2000)
Mechanical Specifications	■ Dimensions: 244 mm x 244 mm (conforming to microATX standard) ■ Weight: 474 g (without ESMini™ module)
Environmental Specifications	■ Temperature range (operation): 　□ 0..+60°C 　□ Airflow depending on ESMini™ module ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +2,000 m ■ Bump: 10 g/16 ms ■ Conformal coating on request
Safety	■ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

Ordering Information

Standard XC4 Models	**08XC04-00**	Evaluation and development board for all ESMini™ modules, 0..+60°C, incl. 2 GB USB Flash Disk and SA-Adapters™ for 1 RS232 and 1 CAN bus
Related Hardware	**15MM01-00**	Intel® Atom™ Z510, 1.1 GHz, 512MB RAM, 1 Fast Ethernet, 1 CAN, -40..+85°C Tcase screened
	15MM01-01	Intel® Atom™ Z530, 1.6 GHz, 1GB RAM, 2 Fast Ethernet, 2 CAN, -25..+85°C Tcase screened
	15MM02-00	Intel® Atom™ E680T, 1.6 GHz, 1GB DDR2 DRAM, 2 Gigabit Ethernet, 1 CAN, 4 COM, with J1 and J2, -40..+85°C with qualified components, with cover and frame
	15MM50-00	MPC5123, 400 MHz, 256 MB DRAM, 32 MB Flash, 128 KB FRAM, 1 Fast Ethernet, 4 CAN bus, 2 COM, 6 USB, 1 SDHC, display interface, AC'97, 6 PSC, -40..+85°C screened
SA-Adapters™	**08SA01-00**	RS232, not optically isolated, 0..+60°C
	08SA02-00	RS422/485, half duplex, optically isolated, 0..+60°C
	08SA02-01	RS422/485, full duplex, optically isolated, 0..+60°C
	08SA03-00	1 RS232, optically isolated, 0..+60°C
	08SA08-00	CAN ISO high-speed, optically isolated, 0..+60°C
	08SA22-00	IBIS master SA-Adapter™, -40..+85°C screened
	08SA22-01	IBIS slave SA-Adapter™, -40..+85°C screened
	08SA25-00	GPS receiver, isolated, -40..+85°C screened
	08SA26-00	RS422 with 15-pin D-Sub connector, with handshake signals (RTS, CTS, DCD, DTR), coated, -40..+85°C screened
Miscellaneous Accessories	**0712-0019**	Standard ATX PSU, 350 W, 0..+40°C
Documentation	**20XC04-ER**	XC4 Errata
	20XC04-00	XC4 User Manual

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