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Features

- Xilinx® Spartan®-6 XC6SLX150T-FG676
- 256 MB DDR2 SDRAM
- 16 MB Parallel NOR Flash
- 8 MB QSPI NOR Flash
- High Capacity SD Memory Card
- 6 CVBS or 3 S-Video video inputs
- 3 video inputs connected to the FPGA
- DVI video output
- Analog RGB video output
- Communication interfaces:
 - PCIe®
 - SATA
 - USB
 - MOST
 - SDIO
 - Parallel IO
 - CAN
 - LIN
 - RS232
 - JTAG
- 8 expansion connectors
- Access to Spartan-6 MGTs
- 4 Stereo audio inputs; Microphone input
- 2 Stereo audio outputs
- Touch display and LCD backlight controllers
- Software deliverables include:
 - Reference logicBRICKS FPGA designs
 - Free logiPCIECTRL IP core (no support)
 - Linux software drivers
 - Free USB firmware
 - Schematics and documentation
- Available hardware kits:
 - Base kit which includes the complete cabling and SW deliverables
 - Premier kit which includes the BeagleBoard-xM platform with the ARM® Cortex™-A8 based processor
 - Elite kit which includes the industrial PC with the Intel® Atom™ N270 processor
- Connectors for standard PC power supply

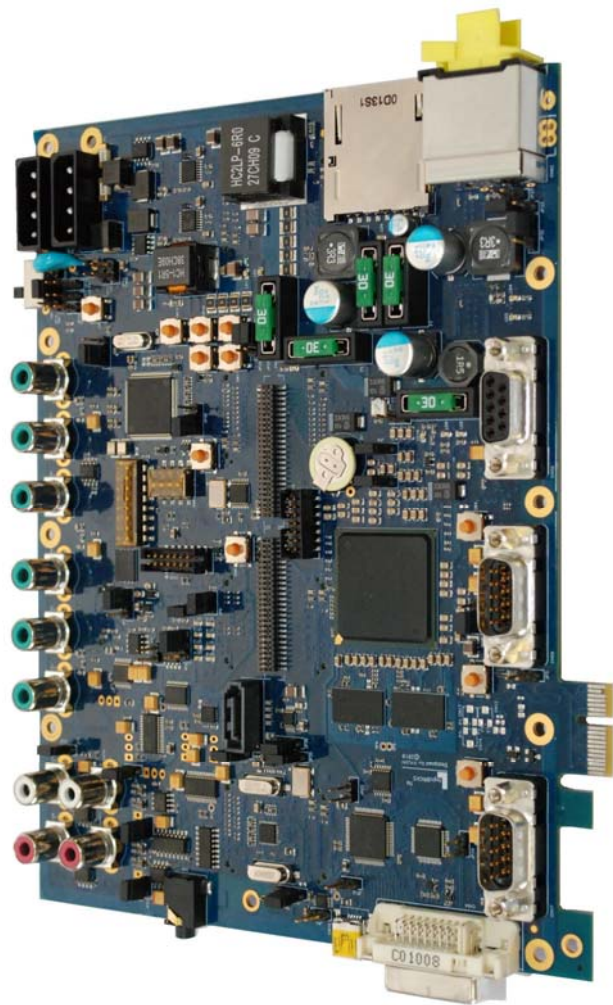


Figure 1: The logiCRAFT-CC Platform
(Expansion connectors on the opposite side)

Applications

- Automotive
- Medical, Consumer, Industrial
- Defense/Aerospace, and others

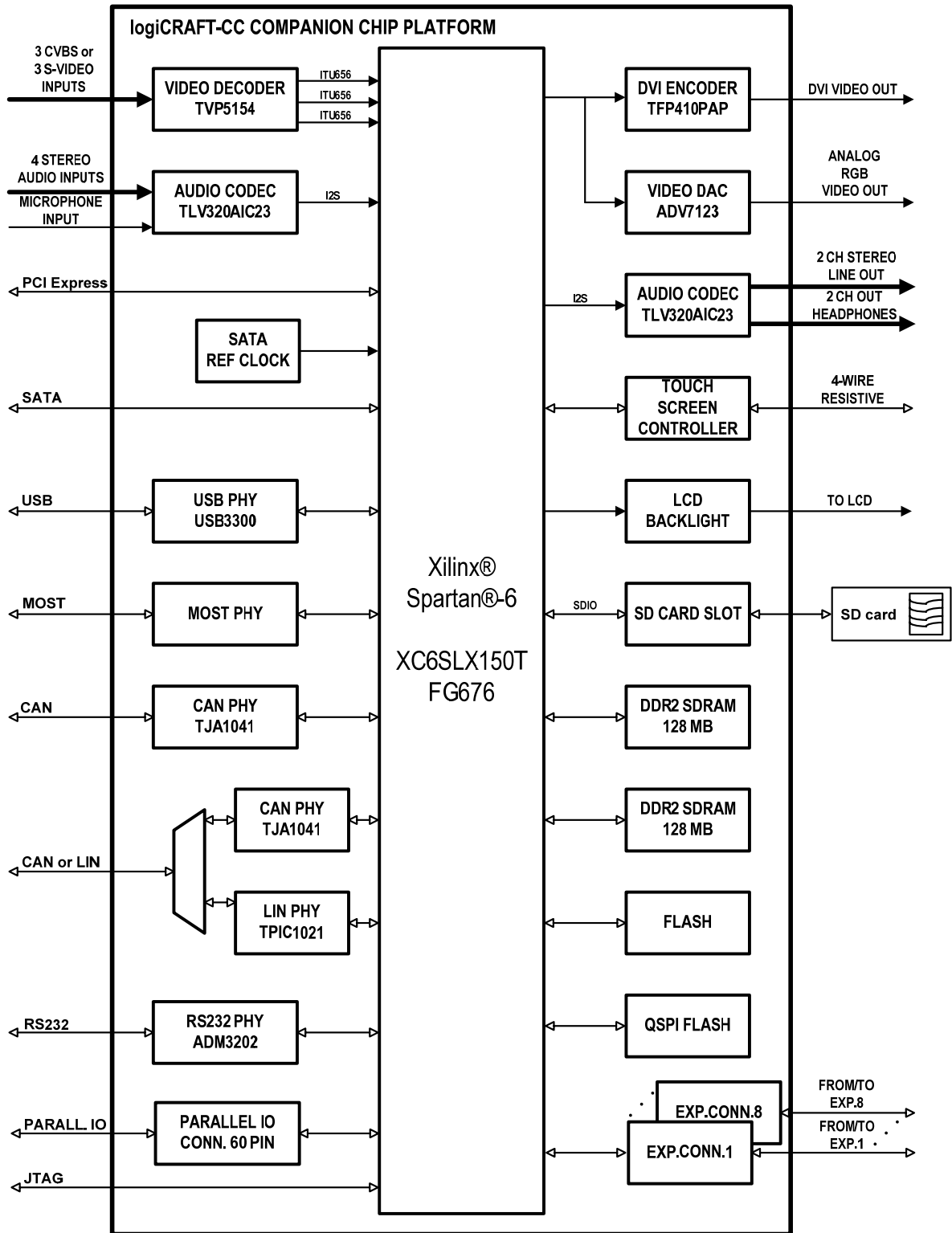


Figure 2: logiCRAFT-CC Block Diagram

General Description

The logiCRAFT-CC Companion Chip Platform is based on Xilinx Spartan-6 FPGA and highlights the flexibility of Xilinx FPGA based companion chips for popular embedded host processors.

Embedded designers can expand, upgrade and differentiate their systems by adding the FPGA to the host processor. FPGA companion chip functions include support for missing processor features and specialized interfacing. Additionally, high-speed processing can be offloaded from the base processor to the FPGA for maximum performance.

The logiCRAFT-CC demonstrates functionality of Xylon and Xilinx FPGA IP cores that can be mixed in different ways to support various companion chip functions. Xilinx Platform Studio and EDK implementation tools provide GUI based design framework that enables FPGA design with no hand coding. Xylon logicBRICKS IP cores are fully compatible with Xilinx implementation tools.

logicBRICKS IP cores have a rich software support to enable interfacing with the most complex embedded processors running different Operation Systems (OSs). Real companion chips must operate as seamlessly integrated peripherals controlled by the OS. The OS does not have to know about companion chip's hardware characteristics and all relevant IP cores must have software drivers compatible with the targeted OS. Currently Xylon provides Linux drivers for logicBRICKS IP cores.



Figure 3: logiCRAFT-CC Bottom – 8 Expansion Connectors

The logiCRAFT-CC Companion Chip Platform supports a wide variety of audio and video sources. Provided expansion slots (Figure 3) allow for developments of different daughter cards, which can further expand the rich platform's features set - <http://www.logicbricks.com/Solutions/Companion-Chip/Rapid-Prototyping.aspx>.

Connections with host processors can be realized through parallel IO expansion ports, PCIe®, SATA, USB, and other industry standard communication interfaces. Provided interfaces support easy interfacing with host processors of different complexity. For instance, simpler processors can be interfaced by the parallel IO bus, while the most complex embedded processors can use the PCIe or the USB interface.

Xylon currently provides the logiCRAFT-CC in three different kits (see section Package Content). Some kits include referent platforms based on the Intel® Atom™ N270 processor and ARM® Cortex™-A8 based processor, which assure a full out-of-box experience.

Linux logicBRICKS Drivers

Xylon provides several Linux drivers for logicBRICKS IP cores. Drivers are carefully partitioned and designed to assure a high level of portability to other OSES by isolating highly reusable code. Figure 4 describes the structure of Xylon Linux drivers.

logicBRICKS hardware functionality is supported by generic driver functions implemented in the Generic Peripheral Device Driver. This generic driver is a part of standard logicBRICKS IP deliverables and can be used independently on selected host processor or the OS.

The OS Device Driver has different OS dependent parts, such as OS functions, OS data types, etc. The OS dependent parts are separated from the Generic Peripheral Device Driver. The setup border assures re-usability of the generic driver.

Bus access implementations are also very OS dependent, since the OS defines communication interfaces for specific bus interfaces, such as the PCIe or the USB. Because of the OS dependency, the Xylon Generic Peripheral Device Driver does not include the bus access part, and communicates with the OS defined bus communication interface.

The described logicBRICKS drivers' structure makes the driver porting to different OSs much easier.

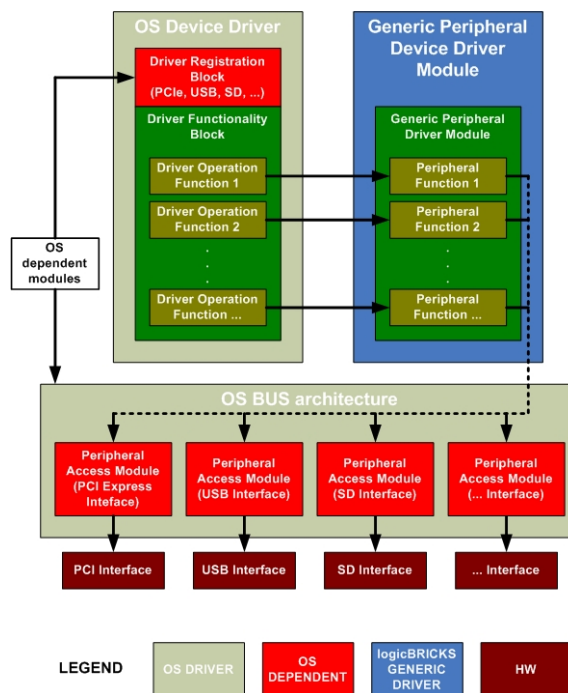


Figure 4: logicBRICKS Linux Drivers' Structure

Package Content

The logiCRAFT-CC-Base kit is an excellent entry level platform designed for customer looking to add FPGA companion chip to the preferred host processor. This kit includes the standard logiCRAFT-CC cabling set: power supply, PCIe extender cable, USB cable, SD extender cable, and 2x open-end parallel cable for the logiCRAFT-CC extender connector. The kit includes common deliverables for all logiCRAFT-CC kits: the PCIe and the USB reference FPGA designs, evaluation logicBRICKS IP cores, Linux drivers for the logicBRICKS IP cores, Linux applications (video frame grabber, etc.) and the documentation. Find more about the logiCRAFT-CC-Base kit: <http://www.logicbricks.com/Solutions/Companion-Chip/logiCRAFT-CC-Kits/logiCRAFT-CC-Base-Contents.aspx>

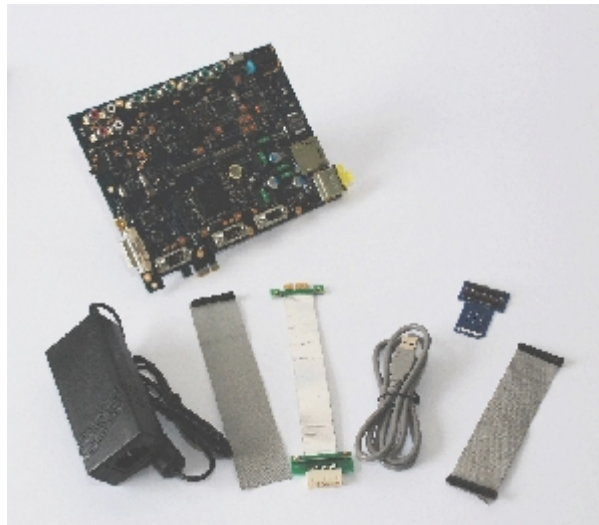


Figure 5: The logiCRAFT-CC-Base kit

The logiCRAFT-CC-Premier kit includes the popular BeagleBoard-xM open development platform with the ARM Cortex-A8 based processor (TI's OMAP™). The BeagleBoard runs the Linux based Ubuntu OS, and the on-board host processor handles the FPGA companion chip through the USB interface.

Xylon delivers the SD memory card with the Ubuntu OS, as well as the Linux demo applications.

Find more about the logiCRAFT-CC-Premier kit: <http://www.logicbricks.com/Solutions/Companion-Chip/logiCRAFT-CC-Kits/logiCRAFT-CC-Premier-Contents.aspx>

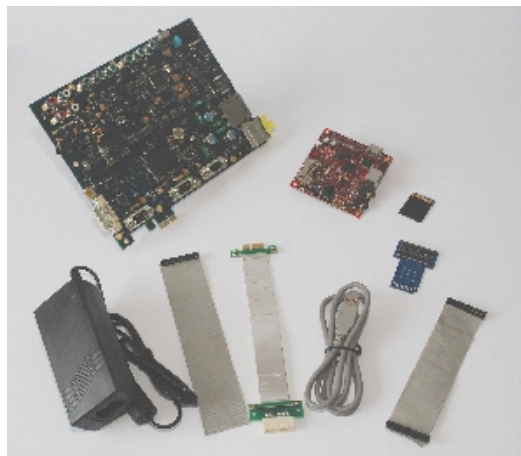


Figure 6: The logiCRAFT-CC-Premier kit

The logiCRAFT-CC-Elite kit includes an industrial PC with the Intel Atom N270 processor. This kit assures a full out-of-box experience. The provided industrial PC runs the Linux based Ubuntu operating system (OS). Kit users can use the FPGA device on the logiCRAFT-CC board as a peripheral integrated with the Intel Atom N270 processor. The FPGA companion chip can be interfaced by either the PCI Express or the USB interface.

Xylon delivers the bootable USB stick with the Ubuntu OS for the industrial PC, as well as the Linux demo applications.

Find more about the logiCRAFT-CC-Elite kit: <http://www.logicbricks.com/Solutions/Companion-Chip/logiCRAFT-CC-Kits/logiCRAFT-CC-Elite-Contents.aspx>



Figure 7: The logiCRAFT-CC-Elite kite

Recommended Design Experience

The user should have experience in the following areas:

- Xilinx design tools
- Linux or other OS
- C programming
- Good HW/SW designing practices

The logicBRICKS IP cores are fully supported by the Xilinx Platform Studio and the EDK and can be used without any particular skills beyond general Xilinx tools knowledge.

Related Xylon Products

Xylon logicBRICKS IP cores can be evaluated on Xylon logiCRAFT-CC platform, which demonstrates modularity on all levels: software, board, FPGA, and IP cores. The platform makes an excellent development tool appropriate for the development of different embedded systems, including systems with strong graphics capabilities.

To learn more about Xylon logicBRICKS IP cores and hardware development platforms, contact Xylon or visit the web:

Email: support@logicbricks.com

URL: <http://www.logicbricks.com/logicBRICKS-IP-Library.aspx>

The logiCRAFT-CC platform can be expanded by Xylon's daughter cards:

logiCC-FMB FM Radio and Bluetooth daughter card:

URL: <http://www.logicbricks.com/Products/logiCC-FMB.aspx>

logiCC-VI Analog & HDMI & DVI Video Input daughter card:

URL: <http://www.logicbricks.com/Products/logiCC-VI.aspx>

Ordering Information

This product is available directly from Xylon. Please visit our web shop or contact Xylon for pricing and additional information:

Email: sales@logicbricks.com

URL: www.logicbricks.com

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Related Information

Xilinx Programmable Logic

For information on Xilinx programmable logic or development system software, contact your local Xilinx sales office, or:

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Revision History

Version	Date	Note
1.00.	04.08.2010	First official release
2.00	09.09.2010	Updates related to latest PCB revision (0610)
2.10	31.01.2011	Updates related to the logiCRAFT-CC HW kits: Base, Premier and Elite