

## **Spartan®-6 FPGA Industrial Ethernet Kit FAQ**

### **General Questions:**

#### **Q: What is the Spartan®-6 FPGA Industrial Ethernet Kit?**

*A: The Spartan-6 FPGA Industrial Ethernet Kit is a comprehensive design tool for rapid prototyping and development of leading edge industrial applications in connectivity, industrial control, and embedded processing. The kit comes with a daughter card that supports multiple real-time industrial Ethernet protocols and legacy serial connectivity, as well as Xilinx ISE® Design Suite: Embedded Edition. The kit is a complete development environment that includes hardware, software and reference files, enabling OEMs and engineers to produce designs with shorter cycles and fewer resources.*

#### **Q: Who makes the Spartan-6 FPGA Industrial Ethernet Kit?**

*A: The Spartan-6 FPGA Industrial Ethernet Kit is manufactured and distributed worldwide by Avnet Electronics.*

#### **Q: When is the Spartan-6 FPGA Industrial Ethernet Kit available?**

*A: The Spartan-6 FPGA Industrial Ethernet Kit is open for order entry on March 2<sup>nd</sup>, 2010 from the [Avnet website](#). General availability will begin April 2010.*

#### **Q: Who is the kit designed for?**

*A: The Spartan-6 FPGA Industrial Ethernet Kit is designed for industrial OEM designers looking to use FPGAs for industrial Ethernet implementation and designers of motor control systems. Additionally, this kit is useful for any customer using or evaluating the Spartan-6 family of FPGAs.*

#### **Q: What are the key features of the Spartan-6 FPGA Industrial Ethernet Kit?**

*A: Key features of the Industrial Ethernet Kit (Avnet Part# AES-S6Spartan-6 FPGA Industrial Ethernet Kit-LX150T-G) include:*

- *Avnet Spartan-6 LX150T Development Board (Avnet Part#: AES-S6DEV-LX150T-G)
  - *Equipped with Xilinx Spartan-6 LX150T FPGA (-3 speed grade)*
  - *Two FMC LPC expansion slots**
- *Industrial Networking Daughter Card (Avnet Part# AES-FMC-ISMNET-G)
  - *Dual Port 10/100 Ethernet (IEEE1588 Capable PHY) Interfaces*
  - *Dual CAN PHY Interface*
  - *Legacy Serial Interface (RS-232, RS-485)**

- *Software and Tools*
  - *Xilinx ISE® Design Suite: Embedded Edition DVD (Full License, device-locked for Spartan-6 LX150T FPGA)*
- *Documentation*
  - *Welcome Letter (Print version)*
  - *Getting Started Guide (Print version)*
  - *Hardware User Guide (Softcopy only)*
- *Cables and Power*
  - *Xilinx Platform Cable USB-II JTAG programming cable*
  - *CAT-5 Ethernet cables (2)*
  - *USB-A to USB-B cable*
  - *12V@5A Power Supply (including US/UK/Europe AC cords)*
- *Downloadable Reference Designs/Demos*
  - *EtherCAT slave bitstream*
  - *MicroBlaze™ Processor with MPMC*

**Q: What are the hardware board specifications?**

*A: Spartan-6 LX 150T-based development base board equipped with*

- *Xilinx Spartan-6 FPGA Part#: XC6SLX150T-3FGG676*
- *Serial GTP Interfaces*
  - *PCIe® x1 and x4 HW Support*
  - *SFP Connector*
  - *SATA Connector*
  - *2x general purpose GTP ports via FMC*
  - *GTP clock input via SMA connectors*
- *Dual LPC FMC Slots*
- *Memory*
  - *128 MB DDR3 SDRAM*
  - *32 MB Parallel Flash*
- *SD Card Slot*
- *10/100/1G Ethernet PHY*
- *USB 2.0 PHY*
- *USB to RS-232 serial bridge*
- *LCD Panel Interface (ALI)*
- *DB9 RS-232 serial port*
- *General Purpose User I/Os*
  - *LEDs*
  - *Push buttons*
  - *DIP switches*
- *RoHS-compliant*

A: *FMC-interfaced Industrial Networking daughter card equipped with*

- *Dual Port 10/100 Ethernet (IEEE1588 Capable PHY)*
- *Dual CAN PHY Interface*
- *Legacy Serial Interface*
  - *RS-232*
  - *RS-485*
- *General purpose user I/Os*
  - *LEDs*
  - *Push buttons*
  - *DIP switches*
- *Supports PMod expansion cards*
- *RoHS-compliant*

**Q: What are the software tools specifications?**

- *ISE Design Suite: Embedded Edition (device-locked for the Spartan-6 LX150T FPGA)*
  - *ISE Foundation Software*
    - *Project Navigator*
    - *Plan-ahead™ Design Analysis Tool – Streamlined design processes between synthesis and place-and-route as well as providing intuitive IO planning*
    - *Timing Driven Place and Route –Optimal quality of results with advanced implementation algorithms*
    - *SmartGuide™ - Industry's fastest incremental implement runtimes*
    - *SmartXplorer Technology – Optimal quality of results with multiple implementation runs*
    - *ISE Simulator – Integrated RTL simulation environment*
    - *ChipScope™ Pro and ChipScope Pro Serial IO Toolkit – On-chip design verification for logic and serial connectivity analysis and measurement.*
  - *Platform Studio*
    - *Embedded Development Kit (EDK)*
    - *Software Development Kit (SDK)*

**Q: What are the documentation & accessories specifications?**

Documentation:

- *Welcome Letter – Introduction to kit and components*
- *Getting Started Guide – Complete instructions enabling you to evaluate and modify designs included in your evaluation kit*
- *Hardware User Guide – Detailed guide providing information about the hardware included in your kit*

Cables and Power Supply:

- *Xilinx Platform Cable USB-II JTAG programming cable*
- *CAT-5 Ethernet cables (2)*
- *USB-A to USB-B*
- *12V@5A Power Supply (including US/UK/Europe AC cords)*

**Q: What is the price for the Spartan-6 FPGA Industrial Ethernet Kit?**

*A: The Spartan-6 FPGA Industrial Ethernet Kit complete with hardware, daughter card, and tools, is priced at \$1,895 retail price. Note that the Xilinx ISE Design Suite: Embedded Edition and other reference design files included in the kit come at no charge. Registration required. No volume discounts are available.*

**Q: Are there any special promotions associated with the Spartan-6 FPGA Industrial Ethernet Kit?**

*A: There are no price promotions planned at this time.*

**Q: What silicon version of the Spartan-6 LX150T FPGA is currently installed on the Spartan-6 FPGA Industrial Ethernet Kit? Production or ES?**

*A: Initial kits will ship with early silicon (ES) designated devices. Production grade silicon will ship with the kit once the XC6SLX150T is released to production (please confirm availability with your local authorized Xilinx sales representative or distributor).*

**Q: What speed grade of Spartan-6 LX150T FPGA is on the board?**

*A: Kits will ship with -3C speed/temp grade devices.*

**Q: What are the configuration options for the Spartan-6 FPGA Industrial Ethernet Kit?**

*A: The Spartan-6 FPGA Industrial Ethernet Kit can be configured either via JTAG or Xilinx Platform Flash.*

**Q: The Spartan-6 FPGA Industrial Ethernet Kit ships with Device-Locked ISE Software. Can I use the software for other Xilinx devices?**

*A: The ISE Design Suite: Embedded Edition software is device-locked to the Spartan-6 LX150T, and is included as a full feature software package targeted only to the Spartan-6 LX150T. It will place and route and generate bitstreams for this device only.*

**Q: What software do I need to run these reference designs and where do I get it?**

*A: You need ISE Embedded Edition. A full, device-locked version is included with the kit to load and run any Spartan-6 LX150T FPGA development.*

*A: To run the reference design you will need to follow the instructions provided within the Getting Started Guide for setting up and running the kit.*

**Q: Where do I get more information?**

*A: Please check back to the Spartan-6 FPGA Industrial Ethernet Kit product page found at [www.xilinx.com/S6IEK](http://www.xilinx.com/S6IEK)*

**Questions Related to the Spartan-6 LX150T Base Board:**

**Q: What is the size of the on-board DDR3?**

*A: The base board contains 128MB DDR3 SDRAM (Micron MT41J64M16 DDR3) device rated at 1066 MT/s.*

**Q: What connector does this FMC use on the baseboard?**

*A: The low pin count (LPC) connector is used on the Spartan-6 FPGA Industrial Ethernet Kit base board, based on FMC Specification Vita 57.*

**Questions Related to the Industrial Networking FMC daughter cards:**

**Q: Why are there two Ethernet connectors?**

*A: Several Industrial Ethernet protocols use a daisy-chain topology to pass on data packets from one device to another.*

**Q: Can I use this same card for other Industrial Ethernet protocols?**

*A: Yes. This daughter card uses a standard MAC/PHY devices designed to work with various protocols such as EtherCAT, PROFINET, Ethernet Powerlink, and SERCOS III.*

**Questions Related to IP:**

**Q: Does the kit include IP cores EtherCAT, PROFINET, Ethernet POWERLINK, SERCOS III?**

*EtherCAT IPCore : EtherCAT IPCore is available from Beckhoff Automation ([www.beckhoff.com](http://www.beckhoff.com)) . Users must first request for a Vendor ID from the EtherCAT Technology Group (ETG) consortium ([www.ethercat.org](http://www.ethercat.org)) , then an evaluation license agreement is required from Beckhoff*

*The current EtherCAT IPCore v. 2.03b has been synthesized within Spartan-3 , Spartan-6, Virtex-5 and Virtex-6 families of FPGA devices. It has been hardware validated only on the Spartan-6 LX150T.*

*All Other Protocol IP Cores: Other IP cores are still in development or evaluation. Please contact your local sales representative for roadmap information.*