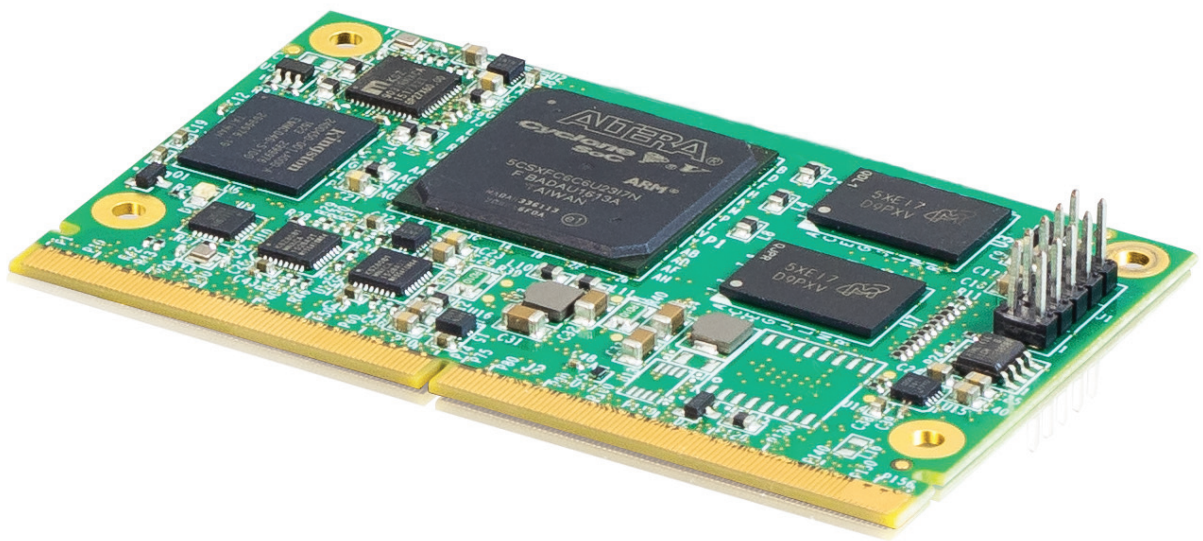


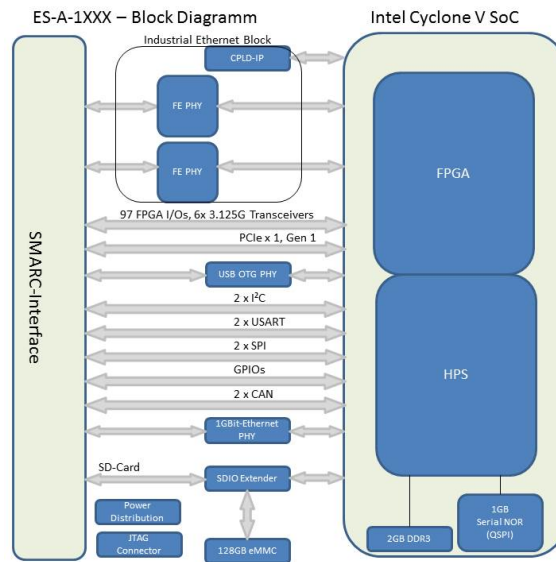


Intel Cyclone® V SoC-based SMARC-Modules

ES-A1025, ES-A1040, ES-A1085, ES-A1110

- Ready to use high-complex FPGA and ARM-CPU platform
- Rich I/O and feature set
- Optional multi-protocol Industrial Ethernet slave function including FPGA-IP and Linux OS support
- Standard SMARC® 314-pin connector
- 10+ year product life cycle

Intel Cyclone® V SoC-based SMARC-Modules ES-A1025, ES-A1040, ES-A1085, ES-A1110



Description

The ES-A1XXX is a ready to use Computer-on-Module (CoM) based on Intel/Altera Cyclone® V SoC with optional ready to use Industrial Ethernet IP blocks. The SoC integrates a Single- or Dual-Core ARM Cortex®-A9 processor (HPS), peripherals and memory controllers with a large FPGA fabric.

Using the FPGA's configurable logic, the ES-A1XXX enables unlimited possibilities to add customized accelerators and virtually any peripheral set giving the developer the power and flexibility to design the optimal solution for his application.

Optional EtherCat and/or Profinet Slave-IP can be integrated on the ES-A1XXX including Linux OS and FPGA IP. This lowers the tremendous complexity and shortens time to market, reduce costs and lowers the development and market introductions risks exponentially.

The ES-A1XXX uses a standard SMARC® Interface supported by key industry vendors offering compatibility with other vendors platforms and future hardware upgrade options. ARM-CPU and FPGA signals are routed to the interface as per SMARC® standard definitions, yet FPGA interfaces can be freely configured according to user application.

Typical Verticals

Industrial Automation:

EtherCat/Profinet Controller

Test & Measurement:

Data Acquisition

Medical:

Small HMI, I/O-Controller

Transportation:

Rugged HMI

Avionics:

Network Controller

Intel Cyclone® V SoC-based SMARC-Modules

ES-A1025, ES-A1040, ES-A1085, ES-A1110

Technical Information

Processor (HPS)	- Intel Cyclone V SoC - SE and SX variants available - ARM Cortex A9 - Single or Dual Core - CPU clock: 800Mhz, 925MHz 32-KB instruction and 32-KB data L1 caches per core - L2 Cache: Shared 512KB - Per core: - NEON™ SIMD coprocessor - Floating Point Unit VFPv3
Memory	- Up to 2GB DDR3, 32bits wide @ 400Mhz with ECC Optional 128MB up to 1GB NOR Flash 4GB up to 128GB eMMC
FPGA Capabilities	- From 25KLE up to 110KLE 97 free I/Os 6x 3.125G transceivers - PCIe Gen1 x1 and x4 - Industrial Ethernet Block (optional) - EtherCAT and Profinet Master/Slave firmware by Softing (www.softing.com) - Linux OS support 2x Fast Ethernet ports for Industrial Ethernet - Industrial Ethernet clock distribution - Built-in authentication EPLD 3x High speed AXI Bridges
HPS Connectivity	1Gbit Ethernet - USB 2.0 Host or single USB OTG port - SD Card interface - Two I²C buses - Up to 2 USART ports (TX, Rx, CTS, RTS) - Up to two SPI buses - Up to two CAN interfaces - GPIOs
OS-Support	- Linux Kernel Rev. 4.7 - Yocto 2.0 Jethro - Debian 7.0
Debug	On board JTAG interface
Form Factor	- Dimensions: 82mm x 50mm (3.22 x 1.96 inch) - Standard SMARC 314 edge connector
Power	Single input power 5V DC +- 5%

Intel Cyclone® V SoC-based SMARC-Modules

ES-A1025, ES-A1040, ES-A1085, ES-A1110

Ordering Information

Article	Part.-No.	Description
ES-A1110-SE-CT	30003E-00-01-01	SMARC 1.1 module based on Intel Cyclone® V SoC - SE with 110KLE, 1GB DDR3, 4GB eMMC, 1GBit-Ethernet, Commercial Temperature 0 °C to +70 °C
ES-A1110-SX-ET	30011E-02-01-01	SMARC 1.1 module based on Intel Cyclone® V SoC - SX with 110KLE, 1GB DDR3, 4GB eMMC, 1GBit-Ethernet, Extended Temperature -40 °C to +85 °C
ES-BASE	31000E-00-01-01	SMARC module evaluation carrier for ES-A1XXX, SD Card-, HSMC-, PCIe-Slot, JTAG/ICE interface, 1GBit Ethernet, UART, USB, 2 x Fast Ethernet ports for Industrial Ethernet

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