System-on-Chips and Device Servers

All hardware, software, tools and documentation from one source

AXIS®
COMMUNICATIONS

SYSTEM–ON–CHIPS AND DEVICE SERVERS

Axis has unique technology and development expertise to help you build powerful network applications. A whole suite of development tools required for rapid hardware and software development is available with reference designs and well established Linux based SDK. Axis system-on-chip family is well-proven with more than 4 million in use.

AXIS ETRAX SYSTEM–ON–CHIPS

Axis ETRAX SoCs family is powerful technology enabling design of high-performance and price competitive embedded devices, running the latest Linux kernels. Suited for use in a wide range of embedded systems, Axis ETRAX SoCs integrates a powerful CPU, MMU, Ethernet (10/100) controllers and many possibilities for device attachment. Axis ETRAX family is ideal for a wide range of embedded applications such as; industrial automation controllers, access control systems and security equipment.

DEVICE SERVERS

Axis development platforms and device servers are suitable for deployment running standard Linux with flexible storing capabilities, dual Ethernet, USB (host), serial connectors (RS-232, RS-485) and general I/O ports.

SOFTWARE

A freely available software development kit (SDK) which includes software distribution, cross-compiler and debugger; everything needed to set up a development environment on a Linux PC.

HARDWARE

Easy and quick development and deployment through the reference design library with Axis' accumulated experience and knowledge.

A COMPLETE PARTNER

Axis has a unique background in networking devices, designing powerful System-on-Chips and building embedded systems combined with deep competence in Linux. All hardware, software, tools and documentation are available from one source to work in harmony for building complete embedded products and solutions.
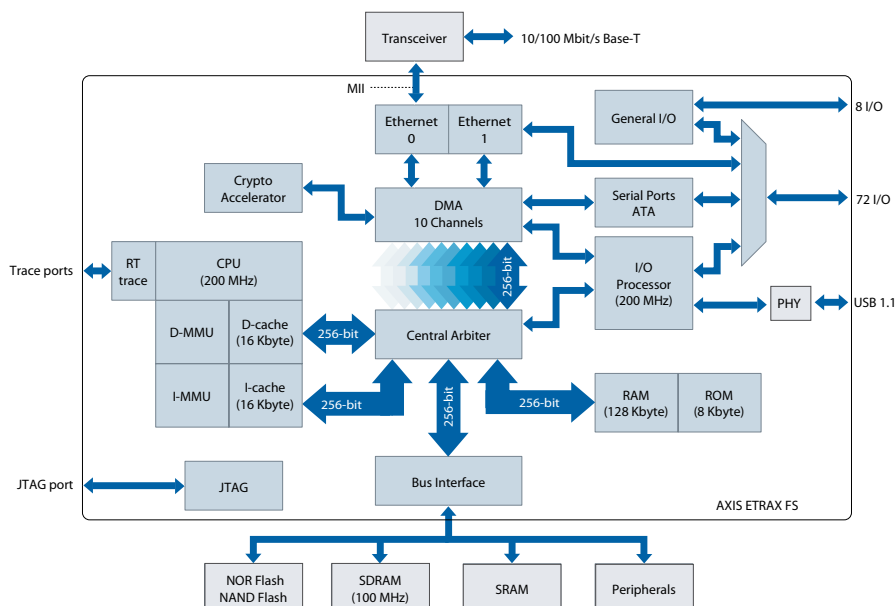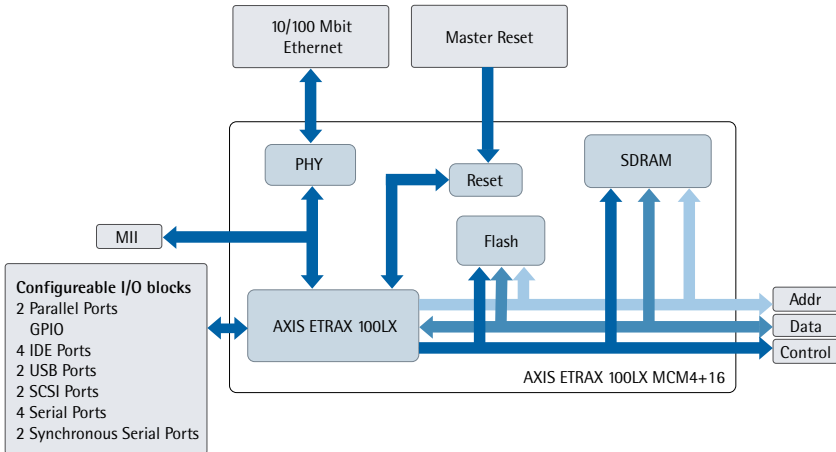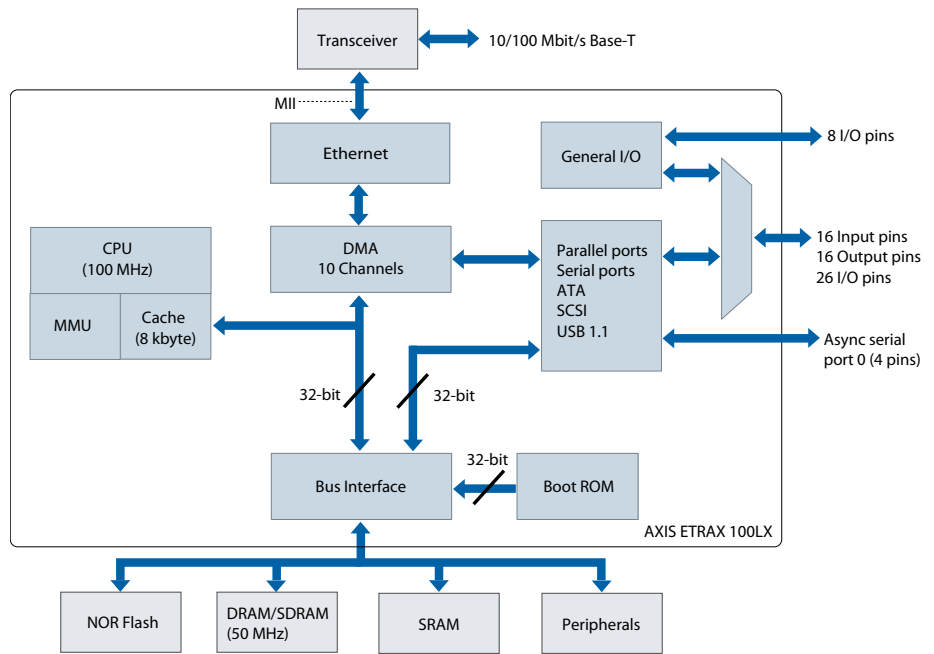
AXIS ETRAX FS

A multi-processor System-on-Chip, AXIS ETRAX FS offers networking flexibility and security in form of encryption. It has a programmable I/O processor and 200 MIPS RISC CPU for flexible device attachment. Dual 10/100 Mbit/s full duplex Ethernet MAC together with hardware support for IP checksum calculation makes the ETRAX FS ideal for networking high performance devices.

AXIS ETRAX 100LX

AXIS ETRAX 100LX is a well-proven System-on-Chip for embedded systems and device networking. Extensive memory options, 100 MIPS RISC CPU and multiple device interfaces make AXIS ETRAX 100LX ideal for designers of embedded Linux applications.

AXIS ETRAX 100LX MCM4+16

AXIS ETRAX 100LX MCM4+16 is a complete Linux system on a chip, integrating the AXIS ETRAX 100LX, 4 MB Flash, 16 MB SDRAM and an Ethernet transceiver within a standard ETRAX hardware design. Optimal miniaturizeation, easy intergration, simplified design and deployment are among the many benefits offered in this SoC.

Axis System-on-Chip selection guide

	AXIS ETRAX 100LX	AXIS ETRAX 100LX MCM4+16	AXIS ETRAX FS[1]
Package	256 pin PBGA	256 pin PBGA	256 pin PBGA
Size	27 x 27 mm	27 x 27 mm	27 x 27 mm
CPU	100 MIPS 32-bit RISC	100 MIPS 32-bit RISC	200 MIPS 32-bit RISC
Cache memory	8 kB on-chip	8 kB on-chip	2x16 kB on-chip
Memory		16 MB RAM, 4 MB Flash	128 kB RAM
Memory Management Unit (MMU)	4 GB / user process	4 GB / user process	4 GB / user process
Ethernet controller	Single 10/100 Mbit/s	Single 10/100 Mbit/s	Dual 10/100 Mbit/s
Direct Memory Access (DMA)	10 DMA channels w. 64 byte FIFO, 200 MB/s total peek	10 DMA channels w. 64 byte FIFO, 200 MB/s total peek	10 DMA channels w. 64 byte FIFO, 1.6 GB/s total peek
Serial interfaces	4 asynchronous, 2 synchronous	4 asynchronous, 2 synchronous	4 asynchronous, 2 synchronous
ATA Interfaces	4 EIDE ports/ATA-2	4 EIDE ports/ATA-2	4 EIDE ports/ATA-2
USB Interfaces	2 USB 1.1 ports	2 USB 1.1 ports	See I/O processor
SCSI Interfaces	2x8-bit wide or 1x16-bit wide	2x8-bit wide or 1x16-bit wide	
Parallel Interfaces	2 Parallel ports	2 Parallel ports	
I/O processor (capable of microcode-based implementations of various I/O protocols)			Serial[2], parallel[2], PC Card/Cardbus/PCI, USB 1.1 Host, USB 2.0 FS/HS host and device[2], SCSI[2], ATA/EIDE[2]
Bus Interfaces & Memory Controllers	SDRAM, EDO DRAM, SRAM, EPROM, NOR FlashPROM	SDRAM, SRAM, EPROM, NOR FlashPROM	SDRAM, SRAM, EPROM, NOR FlashPROM, NAND FlashPROM
On-Chip Debug			In circuit debug with JTAG
Hardware Accelerated Encryption			AES, DES, 3DES, SHA-1, MD-5 and IP checksum

1) This product is classified as a dual-use product according to Regulation (EC) No. 1334/2000 and is subject to export control if exported from the European Union, United States of America, Australia, Japan, Canada, New Zeeland, Norway and Switzerland   2) The I/O protocol is not yet implemented

DEVICE SERVERS

Axis developer boards and device servers with Linux 2.4/2.6, approved for industrial use, are cost efficient platforms both for development and deployment of embedded Linux applications.

Axis developer boards

AXIS 88 Developer Board containing ETRAX FS is ideal for use as the embedded deployment platform in your own enclosure.

AXIS 82+ Developer Board containing ETRAX 100LX chip facilitates rapid development of embedded applications.

Axis device servers

Axis device servers are fully programmable units with a unique combination of large and flexible storage features and easily configurable device interface connectors. Equipped with Linux operating system and a full open-source SDK, providing developers with a kick-start to deployment.

AXIS 89 Device Server is compliant with both industrial and light industrial commercial standards, making it ideal for robust deployment products in rugged environments. AXIS 89 comes with secure hardware accelerated wire-speed cryptography and general I/o ports.

AXIS 83+ Device Server has dual Ethernet, USB (host) and serial (RS-232, RS-485). The aluminum casing (included with wall mounting brackets) makes it suitable for use both in office and industrial environments.

Axis developer boards and device servers selection guide

	AXIS 82+/83+	AXIS 88/89[6]
CPU	AXIS ETRAX 100LX MCM4+16	AXIS ETRAX FS
CPU speed	100 MIPS	200 MIPS
Ethernet interfaces	2x10/100 Mbit/s[1]	2x10/100 Mbit/s
Hardware crypto accelerator		200 MBit/s
Memory	32 MB RAM 8 MB FLASH ROM	32 MB RAM 32 MB FLASH[2] ROM
Storage Expansion		Yes via MMC (FLASH)
RS-232 ports[3]	2, 230 kBaud	3 (4)[4], 230 kBaud
RS-485 ports	1, 1.85 MBaud	1 (0)[4], 1.85 MBaud
User configurable I/O	0	4
Temperature sensor	0	1
MMC slots	0	1
USB host ports	1x USB 1.1	1x USB 1.1
Power supply voltage	9-24 V AC (or DC)	8-20 V DC
Operating conditions	5 - 50 °C 8-80% RH (non condensing)	5 - 50 °C 8-80% RH (non condensing)
Dimensions (HxWxD) and weight	41 x 140 x 118 mm[5] 420 g[5]	41 x 140 x 118 mm[5] 445 g[5]
Approvals	CE, UL and c-UL[5]	CB, CE, UL and c-UL[5]

1) The secondary Ethernet port is limited to a theoretical maximum of 12 Mbit/s   2) 28 MB is free for user applications
3) Maximum speed supported by transceiver chips   4) Either three RS232 ports and one RS-485 port, or four RS-232 ports only
5) Values apply to the device servers AXIS 83+ and AXIS 89   6) This product is classified as a dual-use product according to
Regulation (EC) No. 1334/2000 and is subject to export control if exported from the European Union, United States of America,
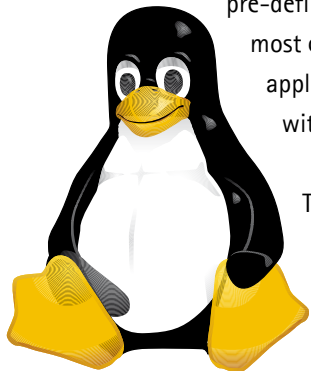Australia, Japan, Canada, New Zeeland, Norway and Switzerland

SOFTWARE DEVELOPMENT KIT (SDK)

Axis offers a suite of development tools in the form of a software development kit for the Axis ETRAX SoCs family. SDK consists of software distribution, cross-compiler and debugger; everything needed to set up a development environment on a Linux PC. The software distribution contains all source code for the Axis ETRAX SoC which is cross-compiled on any PC running Linux. With SDK, software development for Axis ETRAX SoCs is as simple as developing applications for any Linux system.

SOFTWARE DISTRIBUTION

The software distribution contains complete source code and a build system to produce firmware for Axis ETRAX SoCs. The proven build system allows for easy and flexible configuration of hardware options and software applications. A number of pre-defined configurations are available for the most commonly used system designs. Adding application specific software is made easy with the modularity of the build system.

The target firmware features Linux 2.6 with full MMU support, standard glibc or uClibc library, shared libraries, Linux and POSIX threads and various applications. The Linux kernel includes device drivers for ETRAX interfaces such as Ethernet, serial and parallel ports, general purpose I/O, USB and IDE.

CROSS-COMPILER

The CRIS architecture used in AXIS ETRAX 100LX and AXIS ETRAX FS is supported by the GNU Compiler Collection (GCC) distributed by the Free Software Foundation (FSF). The assembler, linker and other CRIS tools are included as part of the official GNU binutils sources. The complete compiler distribution package is available for download from Axis' website.

DEBUGGER

The standard Linux debugger (GDB) and the GDB server are available for ETRAX based platforms. GDB runs on the Linux PC and the program being debugged runs on the Axis ETRAX SoC system. GDB communicates with the GDB server on the target system via RS-232 or TCP/IP. The GDB server is included in the software distribution and easily enabled in the build system configuration. Kernel mode debug is also supported.
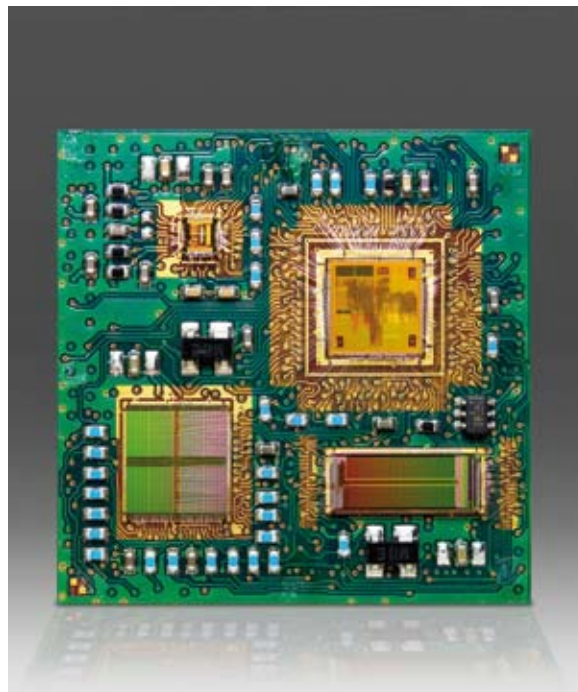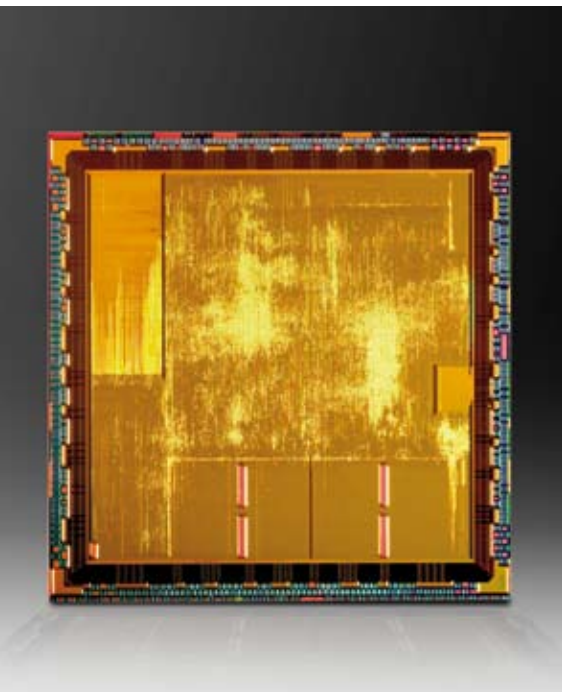
About Axis

Axis is an IT company offering network video solutions for professional installations. The company is the global market leader in network video, driving the ongoing shift from analog to digital video surveillance. Axis products and solutions focus on security surveillance and remote monitoring, and are based on innovative, open technology platforms.

Axis is a Swedish-based company, operating worldwide with offices in 18 countries and cooperating with partners in more than 70 countries. Founded in 1984, Axis is listed on the Nordic List, Mid Cap and Information Technology exchanges. For more information about Axis, please visit our website at www.axis.com.

http://developer.axis.com/

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