



CPU MODULES

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AXEL

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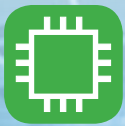


Hardware features

Peripherals

Software

CPU	Texas Instruments AM335x ARMv7 @ up to 1 GHz	Freescale iMX6 single/dual ARM Cortex A9 core @ 1.2 GHz	Xilinx Dual ARM Cortex A9 ZYNQ with FPGA @ 800 MHz
RAM	Up to 512 MB @ 333 MHz	Up to 4 GB @ 533 MHz	Up to 1 GB DDR3 @ 533 MHz
FLASH	Up to 2 GB NAND	Up to 2 GB NAND	Up to 512 MB NAND
TEMPERATURE RANGE	Industrial (-40÷85° C), Commercial (0÷70° C)		
CONNECTORS	1 x 204 pin SO-DIMM	1 x 204 pin SO-DIMM	3x140 pin
PHYSICAL DIMENSIONS	67.5 x 38.3 mm	67.5 x 43 mm	85 x 50 mm
NETWORK	Fast Ethernet 10/100 Mbps, optional RGMII interface	Fast Ethernet 10/100/1000 Mbps	Fast Ethernet 10/100 Mbps, optional RMII interface
USB	Up to 2 2.0 OTG ports	1 OTG 2.0 port 1 Host 2.0 port	Up to 2 2.0 OTG ports
CAN	2 CAN ports	1 CAN port (with PHY)	Up to 2 CAN
SERIAL	Up to 6 UARTS Up to 3 I2C Up to 2 SPI	Up to 5 UARTS Up to 3 I2C Up to 3 SPI	Up to 2 UARTS Up to 6 I2C Up to 6 SPI
VIDEO	24 bit, up to 2048x2048 LCD interface	24 bit RGB parallel port, LVDS and HDMI interfaces	N.A.
USER INPUT	Touch screen controller	Touch screen controller	N.A.
ADDITIONAL FEATURES	<ul style="list-style-type: none"> - GPIOs - 8 x 12 bit ADC - EEPROM - 3D graphics accelerator - Up to 3 x SDIO interfaces 	<ul style="list-style-type: none"> - GPIOs - 8 x 8 keypad controller - Up to 3 x SDIO interfaces 	<ul style="list-style-type: none"> - GPIOs - Artix-7 FPGA with 56k cells, 100k flip-flops, 560 KB RAM - 2 x SDIO interfaces
OPERATING SYSTEM	Linux with Xenomai real-time extension	Linux with Xenomai real-time extension or AMP with dual core O.S. Linux + FreeRTOS	AMP configuration with dual core O.S. Linux + FreeRTOS
PLC	LogicLab multitask PLC runtime (down to 500 µs cycle time)	LogicLab dual core multitask PLC runtime (down to 250 µs cycle time)	LogicLab dual core multitask PLC runtime (down to 100 µs cycle time)
HMI	PageLab HMI runtime	PageLab HMI runtime	N.A.
FIELDBUSES	Dual CANopen master/slave Modbus RTU master/slave Modbus TCP master/slave	CANopen master/slave Modbus RTU master/slave Modbus TCP master/slave EtherCAT (on request)	Dual CANopen master/slave Modbus RTU master/slave Modbus TCP master/slave EtherCAT (on request)
SERVICES	TCP/IP with static IP or DHCP Samba (Windows) file sharing WEB server (interfacing PLC data) FTP/TFTP server VNC server (remote desktop)		



CPU MODULES



SOFTWARE SOLUTIONS FOR THE INDUSTRIAL AUTOMATION

Ready-to-use automation

Axel CPU modules offer an **immediate solution** to the users of industrial automation systems. Out of the box, Axel modules provide a powerful hardware platform, a **real-time** execution environment, and high quality **PLC IEC 61131-3** and **HMI software tools**. The **full set of hardware resources and peripherals** (network, CAN, USB, video, memories, etc.) the module is equipped with ensures an almost unlimited range of applicability.

Linux operating system with **Xenomai realtime extension** supplies a wide range of software services (file system, network, removable disks, etc.) which are essential in an up-to-date automation system. Also multi-core AMP configurations with Linux and FreeRTOS are available for very high performances systems having strict determinism requirements.

Connectivity and control

TCP/IP networking together with DHCP, DNS, FTP server, WEB server, VNC server (remote desktop) embedded software services allow to connect the module to the **local network (LAN) and to the Internet** in order to configure, test, debug, and validate the system remotely. Embedded **fieldbus stacks**, that is **Modbus RTU, Modbus TCP/IP, CANopen, and EtherCAT**, are the foundation of a distributed automation system, supplying out-of-the-box connectivity to a wide range of industrial devices.

No porting costs and licenses

Adopting Axel CPU modules means to obtain immediately **PLC and HMI run-times** and **fieldbus stacks** without facing any porting or development cost: the module price includes both PLC and HMI run-time licenses and fieldbus stacks. LogicLab and PageLab **development tools are free** and freely distributable.

Modular, flexible, extensible

Both hardware and software architectures have been conceived in a scalable and modular way. Fully equipped module connectors allows to interface also specific devices (FPGA, memories, peripherals) besides dedicated peripherals (UART, CAN, USB, LCD, Ethernet, etc.) by means of **parallel, I²C, and SPI buses**. The software architecture designed by Axel makes very easy to **interface custom software modules** written in C/C++ and the PLC and HMI run-times. The **toolkit** provided by Axel includes all the software tools and the documentation required to simply and quickly realize device drivers and custom software modules.

LOGIC LAB



PAGE LAB

