

EK01 - ESM Starter Kit with Tualatin Pentium III



- ◆ **Computing module ESM EM02:**
 - Tualatin ULP Pentium III / 933MHz or Celeron / 400MHz
 - 512MB SDRAM, CompactFlash slot
 - Graphics, Gigabit Ethernet, USB 1.1 (front)
 - COM, keyboard/mouse, (E)IDE, floppy (rear)
- ◆ **Carrier card EC01 (ATX-compatible format):**
 - 1 ESM slot, 3 PCI slots
 - USB 2.0, COM, IDE, floppy connector
- ◆ **Accessories:**
 - External PSU, PCI-104 adapter

Embedded System Modules are complete computers on a module. A final ESM-based embedded application consists either of a stand-alone ESM (the power supply connection being sufficient to operate the module), an ESM with an application-specific carrier card and/or an ESM with additionally plugged PCI-104 modules. The EK01 is a ready-to-use starter kit that allows evaluation of the functions of the EM02 Embedded System Module. The kit consists of the standard CPU module, DRAM memory, the carrier card with I/O connectors, an external PSU, and an adapter for mounting a PCI-104 module. The EK01 provides versatile mounting options and can also be installed in a standard PC (including a PCI-104 module). After evaluation, the design overhead for each application is limited to I/O. Depending on the application and quantity it may be necessary to develop a simple carrier card, choose PCI-based standard components, write software drivers for those additional functions, or design a housing. This minimal additional design effort can be carried out by the user or by MEN.

The EM02 is an ideal computing platform for embedded industrial PCs under Windows or Linux. It is

controlled by an Ultra-Low Power Tualatin Pentium III with 933MHz or an Ultra-Low Voltage Tualatin Celeron Processor with 400MHz. It provides 16KB L1 and 512KB/256KB L2 cache. The EM02 uses the Intel 815G chip set, including graphics. It provides one VGA connector, one USB 1.1 connector Type A and one Gigabit Ethernet interface at the front panel. It also provides 512MB of DRAM and a CompactFlash slot on board. As an alternative to onboard USB, legacy I/O is routed to the carrier board via the J2 system connector of the EM02. It includes a serial interface, (E)IDE, a floppy interface, as well as two PS/2 interfaces for keyboard and mouse.

The carrier board has an ATX-compatible format and provides the mechanical platform, the power supply and the I/O connectors. It comes with one ESM slot and three PCI slots, which allow the use of standard extension cards in the PC. It is equipped with USB 2.0 (front), a 9-pin D-Sub for an RS232 serial interface (front) and connectors for IDE and floppy. The ESM carrier also features an I2C EEPROM for the board ID and revision information.

DVI/TFT/video are not supported on the EK01 kit but are available on the EM02 itself for implementation as a hub interface on other (custom) carrier cards.

Technical Data

EC01 ESM Carrier Card

- One ESM slot
- J1 and J2 assembled
- I/O connectors
 - USB 2.0
 - RS232 COM interface
 - IDE connector
 - Floppy disk interface
 - PS/2 keyboard/mouse connector, via SA adapter
- PCI interface
 - Three PCI slots
 - 33MHz, 32-bit data bus, 5V V-I/O
- Reset button and power LED

EM02 ESM Module

- CPU: Celeron/400MHz or Pentium III/933MHz
- Graphics: VGA, connector at front panel
- Memory
 - 256MB or 512MB SO-DIMM SDRAM installed
 - CompactFlash interface
- Interfaces
 - 10/100/1000Base-T PCI Ethernet, RJ45 at front panel
 - USB 1.1, connector at front panel
- Mass storage: Fast IDE ports for IDE devices (40-pin, via EC01) and CompactFlash
- I/O Extension
 - Accessible on EC01
 - Keyboard
 - Mouse
 - COM1
 - Floppy
- PCI Interface
 - 32-bit/33-MHz PCI interface at PCI-104 connector J1
 - Support of one external master

Accessories

- External PSU
- Adapter for mounting of one PCI-104 module

Electrical Specifications

- Supply voltage/power consumption:
 - EC01: +24V (12V..36V), 1.6A; +24V on pin 1, GND on pin 2
 - EM02: +5V (4.85V..5.25V), 796mA (Celeron version)
 - EM02: +3.3V (3.2V..3.4V), 794mA (Celeron version)
- MTBF EM02: 165,000h @ 50°C

Mechanical Specifications

- Dimensions of EC01 PCB: 170mm x 150mm
- EM02 conforming to ESM specification (PCB: 149mm x 71mm)
- Weight
 - EC01: 200g (without floppy drive)

- EM02: 215g (incl. heat sink)

Environmental Specifications

- Temperature range (operation):
 - 0..+60°C
 - Industrial temperature range on request
 - Airflow: min. 10m³/h
- Temperature range (storage): -40..+85°C
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300m to + 3,000m
- Shock: 15g/11ms
- Bump: 10g/16ms
- Vibration (sinusoidal): 2g/10..150Hz

Safety

- PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

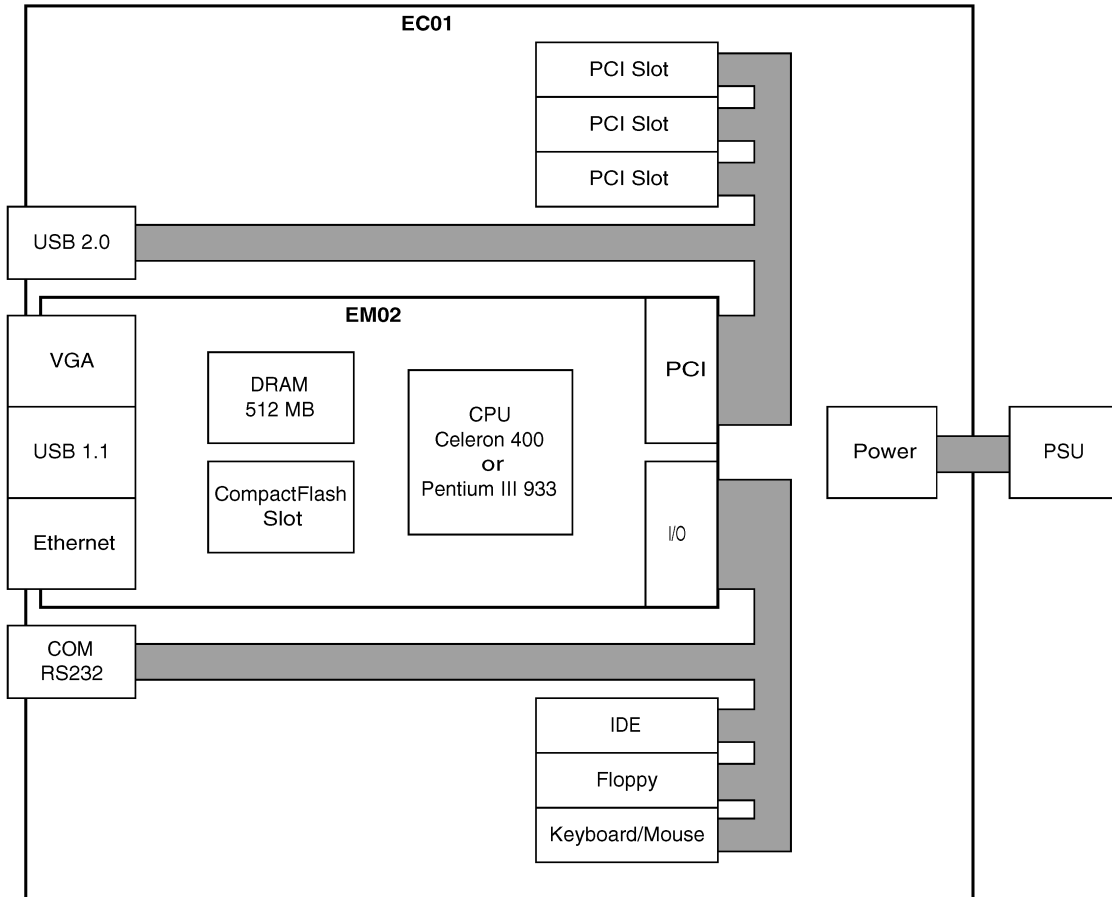
EMC

- Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst) with regard to CE conformity

Software Support

- Phoenix BIOS
- Windows
- Linux
- QNX
- VxWorks

Diagram



Related Products

Standard Hardware

08EK01-01	ESM evaluation kit: Mini ATX carrier board EC01 with 1 ESM slot, 3 PCI slots, floppy interface; ESM EM02 with ULP Pentium III / 933MHz, graphics, Gigabit Ethernet, USB; temperature range: 0..+60°C; incl. external PSU and adapter for mounting of one PCI-104 module - 512MB DRAM installed, CompactFlash not installed (08EK01-01 = EC01-03 + EM02-04)
08EK01-02	ESM evaluation kit: Mini ATX carrier board EC01 with 1 ESM slot, 3 PCI slots, floppy interface; ESM EM02 with ULV Pentium III Celeron/ 400MHz, graphics, Gigabit Ethernet, USB; temperature range: 0..+60°C; incl. external PSU and adapter for mounting of one PCI-104 module - 512MB DRAM installed, CompactFlash not installed (08EK01-02 = EC01-03 + EM02-07)
08EK01-03	ESM evaluation kit: Mini ATX carrier board EC01 with 1 ESM slot, 3 PCI slots, floppy interface; ESM EM02 with ULV Celeron 650MHz, graphics, Gigabit Ethernet, USB; temperature range: 0..+60°C; incl. external PSU and adapter for mounting of one PCI-104 module - 512MB DRAM installed, CompactFlash not installed (08EK01-03 = EC01-03 + EM02-09)
15EM02-04	EM02, ESM - Embedded System Module, ULP Pentium III / 933MHz, CompactFlash slot, 512MB DRAM installed, graphics, Gigabit Ethernet, USB; PCI-104 stackable; temperature range: 0..+60°C
15EM02-07	EM02 for ESM Kit EK01-02, ESM - Embedded System Module, ULV Celeron / 400MHz, CompactFlash slot, 512MB DRAM installed, graphics, Gigabit Ethernet, USB; temperature range: 0..+60°C
15EM02-09	EM02 for ESM Kit EK01-03, ESM - Embedded System Module, ULV Celeron / 650MHz, CompactFlash slot, 512MB DRAM installed, graphics, Gigabit Ethernet, USB; temperature range: 0..+60°C

Please refer to our ESM - Embedded System Modules compare chart for a selection of further single-board computers with different processors and on-board functionality.

Accessories

0751-0006	CompactFlash card, 512MB, Type I, 0..+60°C
0751-0008	CompactFlash card, 64MB, Type I, 0..+60°C
0751-0009	CompactFlash card, 128MB, Type I, 0..+60°C
0751-0012	CompactFlash card, 256MB, Type I, 0..+60°C
0751-0018	CompactFlash card, 256MB, Type I, -40..+85°C
0752-0096	512MB DRAM 0..+60°C for 15EM02-04 (08EK01-01)
0752-0156	512MB DRAM 0..+60°C for 15EM02-07 (08EK01-02)

Related Products

0752-0166 512MB DRAM 0..+60°C for 15EM02-09 (08EK01-03)

For more functions realized with SA adapters, see the listing on MEN's website. You can also view our SA adapter compare chart for a quick overview of different functions. Please contact sales to make sure that these SA adapters can be used in the board configuration you are looking for.

Software

This MEN board is designed to work in a Microsoft Windows environment. For additional Windows driver packages provided or recommended by MEN please refer to the ordering numbers below.

QNX software for this MEN board is available from QNX (www.qnx.com). For QNX BSP and driver support provided by MEN please refer to the ordering numbers below.

VxWorks software for this MEN board is available from WindRiver Systems. For VxWorks BSP and driver support provided by MEN please refer to the ordering numbers below.

This board is an MEN product running Linux. For Linux BSP and driver support provided by MEN please refer to the ordering numbers below.

13EM02-70 Windows 2000/XP graphics driver (Intel graphics driver for 815 chipset) for A13, EM02 (ESM kit EK01)

13EM02-71 Windows 2000/XP network driver (Intel) for A13 and EM02 (ESM kit EK01) - only for 933MHz versions!

Documentation

20ABMX-00 Phoenix BIOS user manual

20EK01-00 EK01 user manual, includes EM02 user manual (20EM02-00)

For the most up-to-date ordering information and direct links to other data sheets and downloads, see the EK01 online data sheet under www.men.de. --> [Click here!](#)

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