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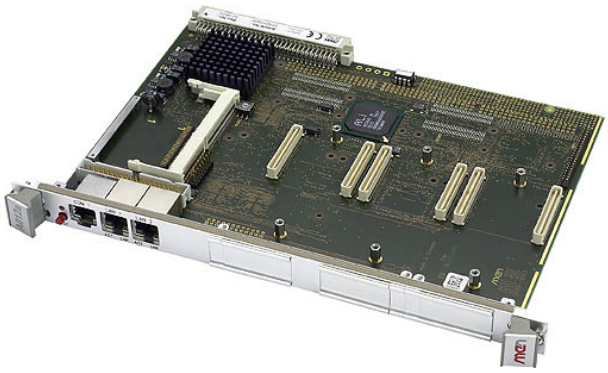
A12A - 6U VMEbus MPC8245 SBC / PC-MIP®



- **PowerPC® MPC8245 / 300 MHz**
- **1-slot VMEbus master and slave**
- **512 MB DRAM, CompactFlash®**
- **Graphics via PC-MIP®**
- **Dual 10/100-Mbit Fast Ethernet**
- **4 COMs, USB, IDE, keyboard/mouse**
- **3 PC-MIP® slots (Type I/II)**
- **MENMON™ BIOS for PowerPC® cards**

The A12A is a single-board computer for embedded applications based on the PowerPC® MPC 8245. It can be used as a master or slave in a VMEbus environment or as a stand-alone card. The A12 provides up to 1MB local dual-ported SRAM for slave access and communication between the local CPU and another VMEbus master.
The A12A comes with the MPC8245 PowerPC® with 300MHz clock frequency and a local 32-bit/33-MHz PCI data bus. It is a complete state-of-the-art SBC offering DRAM, Flash and CompactFlash® memory, dual Fast Ethernet, 4 COMs, USB, IDE and keyboard/mouse interfaces as well as an optional onboard hard disk. A software-loadable FPGA is optionally available for individual user-defined functions such as additional UARTs, a CAN bus interface, DSP functions etc.

In addition, the A12A CPU board can be equipped with PC-MIP® mezzanine cards. PC-MIP® is the format of choice for all types of workstation I/O such as graphics, Ethernet or additional serial lines. The modular combination of I/O functionality on a single-board computer allows to build up tailored control systems which appear as customized solutions based on standard components.
The A12 comes with MENMON™ support. This firmware/BIOS can be used for bootstrapping operating systems (from disk, flash or network), for hardware testing, or for debugging applications without running any operating system.
Depending on the kind of I/O requirements, further standard versions of A12 are availabe for other mezzanine standards.
The A12 single-board computer is partly compatible with the MVME2100 board by Motorola.

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Technical Data

CPU
- PowerPC®
  - MPC8245
  - 300MHz
  - Double precision FPU

Memory
- L1 Cache integrated in MPC8245
- Up to 512MB SDRAM system memory
  - One 144-pin SO-DIMM slot for SDRAM modules
  - 100MHz memory bus frequency
- 2MB Flash
- Serial EEPROM 2KB for factory settings
- CompactFlash® card interface
  - Via onboard IDE
  - Type I
  - True IDE

Mass Storage
- Parallel IDE (PATA)
  - One port for local CompactFlash®
  - One port for local hard-disk drive
  - Drive can be connected via ribbon cable or mounted directly on the CPU board using MEN adapter kit
  - Only one VMEbus slot needed even with hard disk

I/O
- USB
  - One USB 1.1 port
  - Available via I/O connector
  - External PHY
  - Data rates up to 12Mbits/s
- Ethernet
  - Two 10/100Base-T Ethernet channels
  - RJ45 connector at front panel with two LEDs
- One RS232 UART (COM1)
  - RJ45 connector at front panel
  - 16-byte transmit/receive buffer
  - Handshake lines: CTS, RTS; DCD, DSR, DTR
- One UART (COM2)
  - Accessible via I/O connector
  - Physical interface using SA-Adapter™ via 10-pin ribbon cable on I/O connector
  - RS232..RS485, isolated or not: for free use in system (e. g. cable to front)
  - 16-byte transmit/receive buffer
  - Handshake lines: CTS, RTS; DCD, DSR, DTR; RI
- Two UARTs (COM3/COM4)
  - Accessible via I/O connector
  - Physical interface using SA-Adapter™ via 10-pin ribbon cable on I/O connector
  - RS232..RS485, isolated or not: for free use in system (e. g. cable to front)
  - Handshake lines: none
- PS/2 keyboard/mouse
  - Accessible via I/O connector
  - Requires external PHY

Mezzanine Slots
- Three PC-MIP® slots
  - Compliant with PC-MIP® specification
  - Type I/II slots

Miscellaneous
- Serial real-time clock with integrated 56-byte NVRAM
- Serial hardware watchdog in supervisory circuit
- Temperature sensor
- User LEDs (external)
- Hex switch for user settings

Local PCI Bus
- 32-bit/33-MHz, 3.3V V(I/O)
- Compliant with PCI Specification 2.2

VMEbus
- Slot-1 function with auto-detection
- Master
  - D08(EO):D16:A24:A16
  - Transfer rate max. 7MB/s
- Slave
  - D08(EO):D16:A24:BLT
  - Transfer rate max. 15MB/s
- Up to 1MB dual-ported fast SRAM
- Interrupter D08(O):I(7-1):ROAK
- Interrupt handler D08(O):IH(7-1)
- Single level 3 fair requester
- Single level 3 arbiter
- Bus timer

Electrical Specifications
- Supply voltage/power consumption:
  - +5V (-3%/+5%), 1.65 A typ.
  - ±12V (-5%/+5%), only used for mezzanines, tbd.
- MTBF: 63,000h @ 50°C (derived from MIL-HDBK-217F)

Mechanical Specifications
- Dimensions: standard double Eurocard, 233.3mm x 160mm
- Weight (without mezzanines and accessories): 275g

Environmental Specifications
- Temperature range (operation):
  - 0..+60°C or -40..+85°C
  - 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
- Conformal coating on request

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Technical Data

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)

BIOS
- MENMON™

Software Support
- Linux
- VxWorks®
- QNX®
- OS-9®
- For more information on supported operating system versions and drivers see Software.

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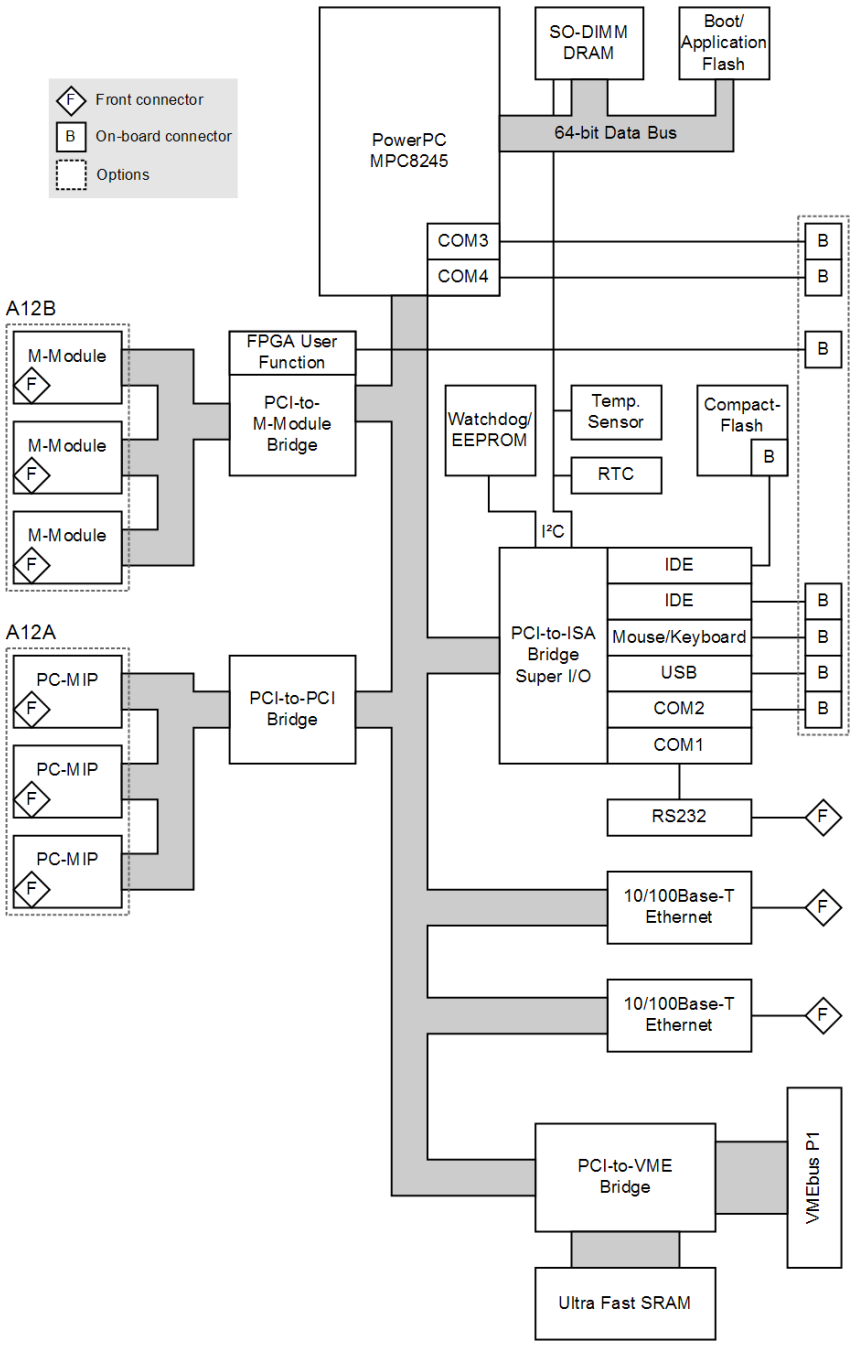
Diagram



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Configuration & Options

Standard Configurations

Article No.	CPU Type	Clock	System RAM	CFlash	Boot Flash	Mezzanine Slots	Operation Temperature
01A012A00	MPC8245	300 MHz	0 MB	0 MB	2 MB	3 PC-MIP®	0..+60°C
01A012B00	MPC8245	300 MHz	0 MB	0 MB	2 MB	3 M-Modules™	0..+60°C
01A012B01	MPC8245	300 MHz	0 MB	0 MB	2 MB	3 M-Modules™	-40..+85°C
01A012C00	MPC8245	300 MHz	0 MB	0 MB	2 MB	2 PMC	0..+60°C

Options

CPU
- MPC8245, 300 MHz

Memory
- System RAM
  - 64 MB, 128 MB, 256 MB or 512 MB
- CompactFlash®
  - 0 MB up to maximum available
- Boot Flash
  - 2 MB

SA-Adapters™
- Up to three SA-Adapters™ for UART functions (COM2..COM4)
- RS232, RS422, RS485

Mezzanine Slots
- 2 PMC
- 3 PC-MIP®
- 3 M-Modules™

Operation Temperature
- 0..+60°C
- -40..+85°C

Please note that some of these options may only be available for large volumes. Please ask our sales staff for more information.

Ordering Information

Standard Hardware

01A012A00	MPC8245/300MHz, 2MB Flash, 3 PC-MIP slots, 0..+60°C

Related Hardware

01A012B00	MPC8245/300MHz, 2MB Flash, 3 M-Module slots, 0..+60°C
01A012B01	MPC8245/300MHz, 2MB Flash, 3 M-Module slots, -40..+85°C screened
01A012C00	MPC8245/300MHz, 2MB Flash, 2 PMC slots, 0..+60°C

Memory

0751-0023	CompactFlash card, 2 GB, Type I, -40..+85°C, fixed bit set
0751-0025	CompactFlash card, 512 MB, Type I, -40..+85°C, removable
0751-0026	CompactFlash card, 256 MB, Type I, -40..+85°C, removable
0751-0027	CompactFlash card, 1 GB, Type I, -40..+85°C, fixed bit set
0751-0031	CompactFlash card, 4 GB, Type I, -40..+85°C, fixed bit set
0751-0032	CompactFlash card, 8 GB, Type I, -40..+85°C, fixed bit set
0752-0027	256MB DRAM 0..+60°C for 01A012x00
0752-0028	512MB DRAM 0..+60°C for 01A012x00
0752-0046	64MB DRAM 0..+60°C for 01A012x00
0752-0047	128MB DRAM 0..+60°C for 01A012x00
0752-0126	64MB DRAM -40..+85°C for 01A012x01
0752-0127	128MB DRAM -40..+85°C for 01A012x01
0752-0128	256MB DRAM -40..+85°C for 01A012x01
0752-0129	512MB DRAM -40..+85°C for 01A012x01

SA-Adapters

08SA01-00	RS232, not optically isolated, 0..+60°C
08SA02-00	RS422/485, half duplex, optically isolated, 0..+60°C
08SA02-01	RS422/485, full duplex, optically isolated, 0..+60°C
08SA02-07	RS422/485, full duplex, optically isolated, -40..+85°C screened
08SA03-00	RS232, optically isolated, 0..+60°C
08SA03-01	RS232, optically isolated, -40..+85°C screened

Systems & Card Cages

0700-0012	VME 19" 4U/84HP rack-mount enclosure for 6U cards (horizontal), 8-slot backplane, 350W open frame wide-range PSU, 2 fans, prepared for rear I/O

Miscellaneous

05A012-00	Mounting kit for 2.5" hard disk (9.5mm adapter) for A12, D3, SC13
05A012-01	Mounting kit for 2 SA adapters for A12/A15/D3, incl. 6U 1-slot VME or CompactPCI front panel incl. ribbon cable, without SA adapters
05AD67-00	IDE mounting kit 44-pin to 44-pin; 50.8 mm; installation kit for Kahlua Box or A12, A15, D3 with AD67, temperature range: -40..+85°C
05F006-00	RS232 interface cable RJ45 to 9-pin D-Sub (1 COM to 1 COM), 2m
05M000-17	25 mounting screw sets to fix M-Modules on carrier boards
0710-0028	Industrial PATA hard disk, 2.5", 80GB, 24hours/7days, for on-board mounting (hard disk mounting kit may be required additionally), -30..+85°C qualified
08AD67-01	I/O extension 19" 6U 4HP incl. 1 USB connector, 1 keyboard connector, 1 mouse connector; prepared for 3 SA adapters, prepared for HDD 2.5", reset, abort, 0..+60°C

Software: Linux

13Z014-90	Linux device driver (MEN) for PCI-to-VME bridge on A12, A13, A14, A15 and B11

Software: VxWorks

10F001N60	VxWorks BSP (MEN) for A15, F1N, B11, A12, D3, SC13 and Kahlua Box

Software: QNX

10F001N40	QNX BSP (MEN) for F1N, B11, A12, A15, D3, SC13 and Kahlua Box

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Ordering Information

Software: OS-9

10F001N01	OS-9(000) V.2.2/3.x BSP (object code, MEN) for F1N, B11, A12, D3, SC13 and Kahlua Box
10F001N02	OS-9(000) V4.2 BSP (object code, MEN) for F1N, B11, A12, A15, D3, SC13 and Kahlua Box

Software: Firmware/BIOS

14A012-00	MENMON (Firmware) for A12, D3 and SC13 (object code)

Documentation

20A012-00	A12 User Manual
21APPN003	Application Note: Using P1/P501 Graphics on MEN 824x/ALI boards under ELinOS
21MENM-00	MENMON 2nd Edition User Manual

For the most up-to-date ordering information and direct links to other data sheets and downloads, see the A12A online data sheet under » www.men.de.

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