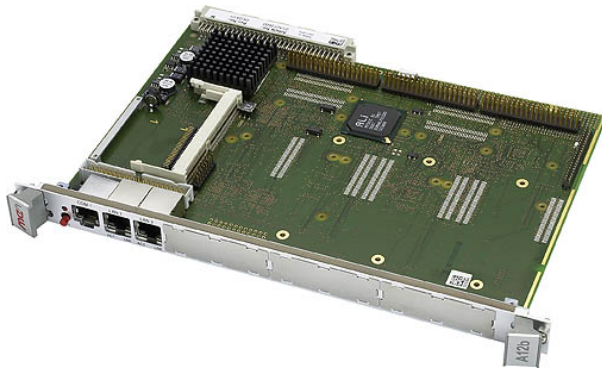


A12B - 6U VMEbus MPC8245 SBC / M-Module™



- PowerPC® MPC8245 / 300 MHz VMEbus master and slave
- 512 MB DRAM, CompactFlash®
- Dual 10/100-Mbit Fast Ethernet
- 4 COMs, USB, IDE, keyboard/mouse
- 3 M-Module™ slots
- MENMON™ BIOS for PowerPC® cards
- -40 to +85°C screened versions

The A12B 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 A12B 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 available for individual user-defined functions such as additional UARTs, a CAN bus interface, DSP functions etc.

In addition, the A12B CPU board can be equipped with M-Module™ mezzanine cards. M-Modules™ are recommended for real-world I/O like analog/binary process I/O and instrumentation I/O. 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.

Depending on the kind of I/O requirements, further standard versions of A12 are available for other mezzanine standards.

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.

The A12 single-board computer is partly compatible with the MVME2100 board by Motorola.

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 12Mbps/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 M-Module™ slots
 - Compliant with M-Module™ standard
 - Characteristics: D16, D32, A08, A24, INTA, INTC

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(E0):D16:A24:A16
 - Transfer rate max. 7MB/s
- Slave
 - D08(E0):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): 273g

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

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)

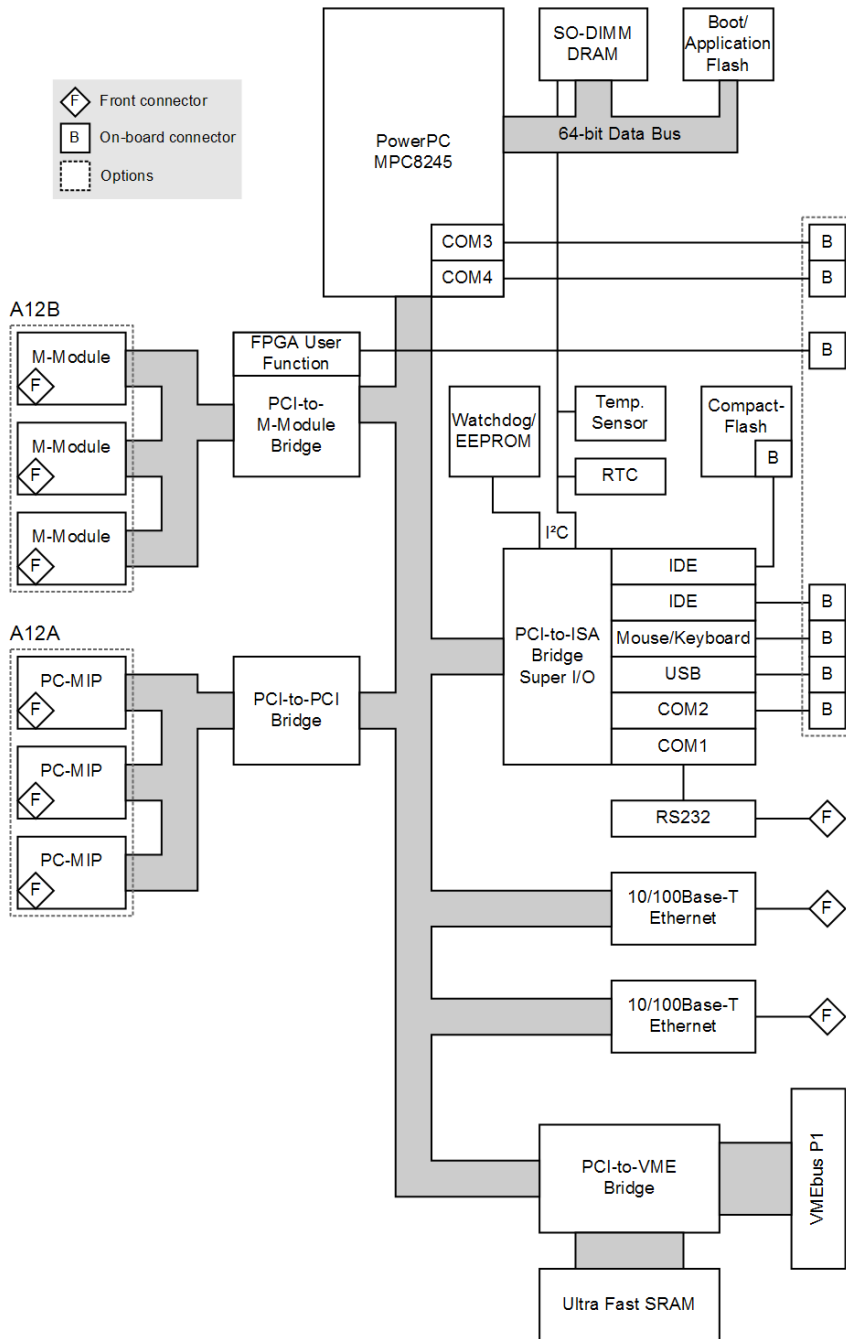
BIOS

- MENMON™

Software Support

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

Diagram



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

- 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

Related Hardware

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

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
- 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 A12B online data sheet under » www.men.de.

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