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D3B - 6U CompactPCI® MPC8245 SBC / M-Module™

- **PowerPC® MPC8245 with 603e core**
- **1-slot CompactPCI® system slot**
- **512 MB DRAM, CompactFlash®**
- **Dual Fast Ethernet**
- **4 COMs, USB, IDE, keyboard/mouse**
- **3 M-Module™ slots**
- **MENMON™ BIOS for PowerPC® cards**

The D3 is a single-board computer for embedded applications based on the MPC 8245 PowerPC®. It can be used in a CompactPCI® system slot or as a stand-alone card.

The D3 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.

In addition, the D3B 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 D3 are availabe for other mezzanine standards.

The D3 comes with MENMON™ support. MENMON™ is a sort of BIOS which can be used for bootstrapping operating systems (from disk, flash or network), for hardware testing, or for debugging applications without running any operating system.

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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
- IDE port for hard disk drives
  - Drive can be connected via ribbon cable or mounted directly on the CPU board using MEN adapter kit
  - Only one CompactPCI® bus slot needed even with hard disk
- One IDE port for local CompactFlash®

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
- Keyboard/mouse
  - PS/2 compatible
  - External adapters for line drivers required

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

CompactPCI® Bus
- Compliance with CompactPCI® Core Specification PICMG 2.0 R3.0
- System slot
- 32-bit/33-MHz PCI-to-PCI bridge
- V(I/O): +3.3V (+5V tolerant)

Electrical Specifications
- Supply voltage/power consumption:
  - +5V (-3%/+5%), 1.65A typ.
  - ±12V for mezzanines only, 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): 315g

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

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

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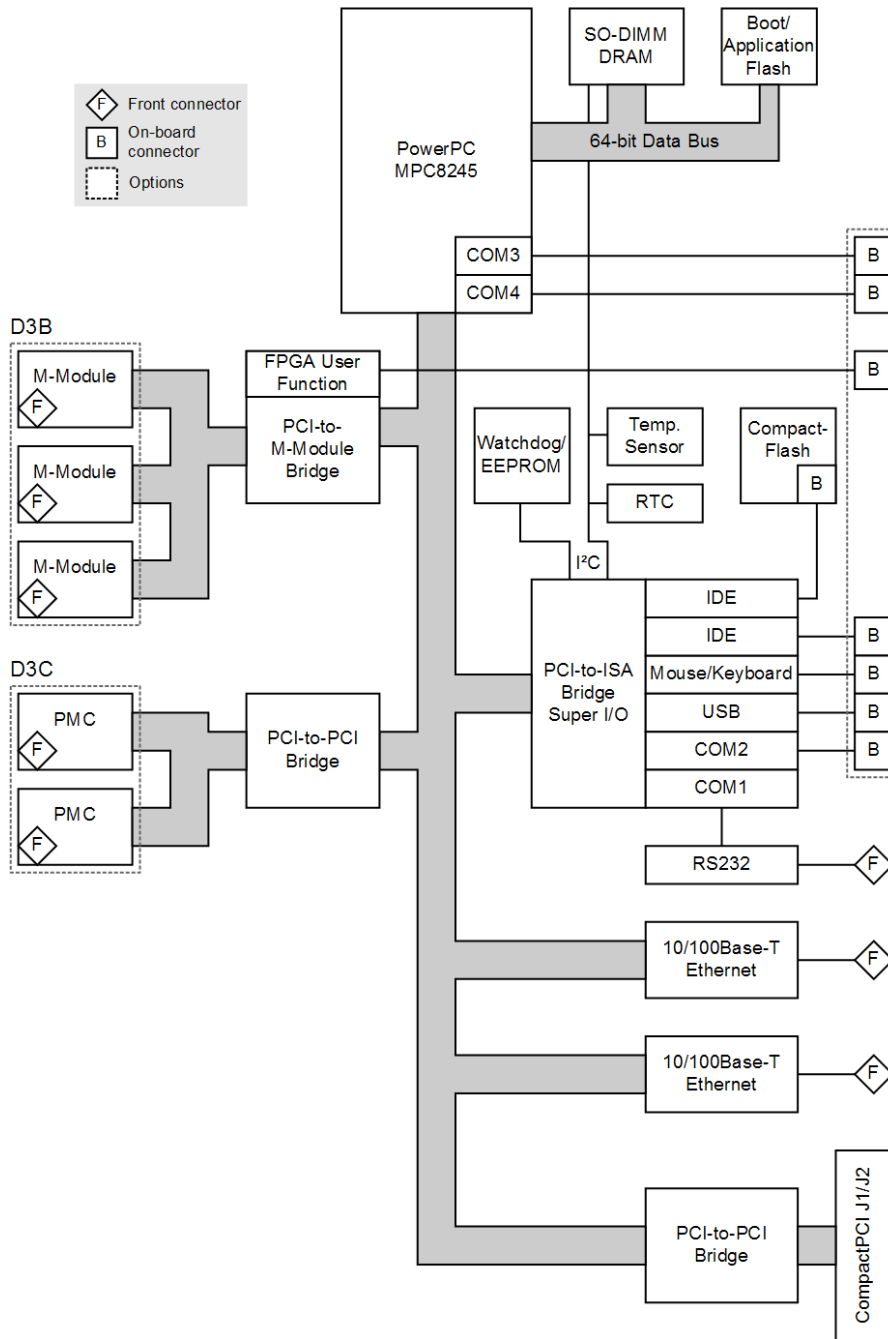
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Technical Data

EMC
- Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)

Software Support
- MENMON™
- 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

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Standard Configurations

Article No.	CPU Type	Clock	System RAM	CFlash	Boot Flash	Mezzanine Slots	Operation Temperature
02D003A00	MPC8245	300 MHz	0 MB	0 MB	2 MB	3 PC-MIP®	0..+60°C
02D003A01	MPC8245	300 MHz	0 MB	0 MB	2 MB	3 PC-MIP®	-40..+85°C
02D003B00	MPC8245	300 MHz	0 MB	0 MB	2 MB	3 M-Modules™	0..+60°C
02D003B01	MPC8245	300 MHz	0 MB	0 MB	2 MB	3 M-Modules™	-40..+85°C
02D003C00	MPC8245	300 MHz	0 MB	0 MB	2 MB	2 PMC	0..+60°C
02D003C01	MPC8245	300 MHz	0 MB	0 MB	2 MB	2 PMC	-40..+85°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.

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Ordering Information

Standard Hardware

02D003B00 MPC8245/300MHz, 2MB Flash, 3 M-Module slots, 0..+60°C

02D003C00 MPC8245/300MHz, 2MB Flash, 2 PMC slots, 0..+60°C

02D003C01 MPC8245/300MHz, 2MB Flash, 2 PMC slots, -40..+85°C screened

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

0752-0048 64MB DRAM 0..+60°C for 02D003x00

0752-0049 128MB DRAM 0..+60°C for 02D003x00

0752-0050 256MB DRAM 0..+60°C for 02D003x00

0752-0132 512MB DRAM -40..+85°C for 02D003x01

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

0701-0030 CompactPCI 19" 3U/84HP rack-mount enclosure for 6U cards (horizontal), 6-slot backplane, system slot left, 250W ATX 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: 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

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)

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Ordering Information

Documentation

20D003-00   D3 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 D3B online data sheet under » www.men.de.

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