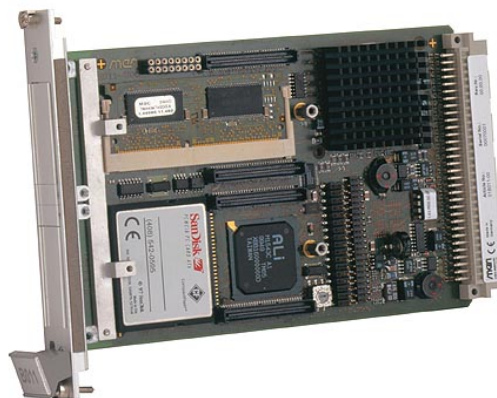


# B11 – 3U VMEbus MPC8245 CPU Board

- **PowerPC® MPC8245 up to 400 MHz**
- **1-slot VMEbus master/slave**
- **1 MB ultra-fast DPRAM**
- **512 MB DRAM, CompactFlash®**
- **Graphics via PC-MIP®**
- **Ethernet via PC-MIP®**
- **2 COMs, IDE, USB, keyboard/mouse**
- **PC-MIP® slots**
- **MENMON™ BIOS for PowerPC® cards**
- **-40 to +85°C screened versions**



The B11 is a high-speed PowerPC® based VMEbus SBC with complete single-board computing functionality. It is optimized for industrial requirements in control and instrumentation in terms of functionality, environmental conditions and cost. The CPU card is especially prepared for all types of industrial qualification such as extended temperature range (-40..+85°C), shock, vibration, humidity etc. The computing core of the B11 is the MPC8245 processor with its internal PowerPC® 603 that speeds up to 400MHz clock frequency. The Single-Board Computer is equipped with one SO-DIMM SDRAM slot, a CompactFlash® slot and soldered boot Flash. This guarantees maximum flexibility in memory configuration. The B11 hosts two serial interfaces, IDE

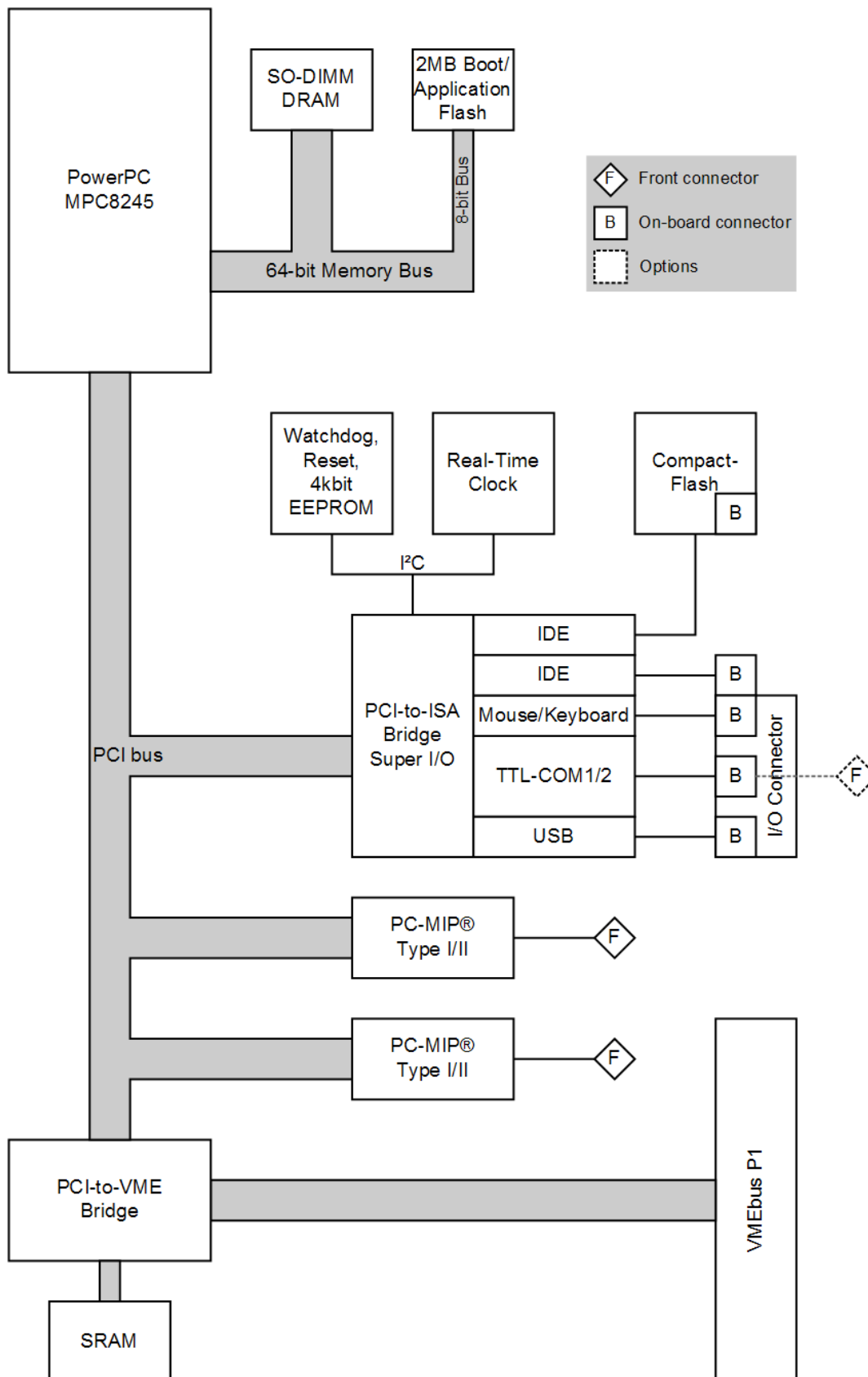
hard-disk controller, keyboard, mouse and USB as well as a real-time clock and watchdog. Two local PC-MIP® mezzanine slots are available for flexible and individual workstation I/O extensions such as Ethernet, graphics, SCSI, additional serial lines, field busses etc.

The non-transparent PCI-to-VME bridge is a very fast and cost-competitive in-house design. Using a dual-ported SRAM, the B11 speeds up to a transfer rate of 7MB/s for master single cycle operations and up to 13MB/s for slave burst operations.

Despite the full functionality of the B11 and even with 2 PC-MIP® slots, the complete CPU card needs only one 3U slot in a VMEbus system.

The B11 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.

# Diagram



## Technical Data

<b>CPU</b>	<ul style="list-style-type: none"> <li>■ PowerPC® <ul style="list-style-type: none"> <li>□ MPC8245</li> <li>□ 300MHz</li> </ul> </li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>■ 32KB L1 Cache integrated in MPC8245</li> <li>■ Up to 256MB SDRAM system memory <ul style="list-style-type: none"> <li>□ One 144-pin SO-DIMM slot for SDRAM modules</li> </ul> </li> <li>■ 2MB Flash</li> <li>■ Serial EEPROM 2KB for factory settings</li> <li>■ CompactFlash® card interface <ul style="list-style-type: none"> <li>□ Via onboard IDE</li> <li>□ Type I</li> <li>□ True IDE</li> </ul> </li> </ul>
<b>Mass Storage</b>	<ul style="list-style-type: none"> <li>■ Fast IDE ports <ul style="list-style-type: none"> <li>□ One IDE hard-disk/CD-ROM port via onboard connector</li> <li>□ One IDE port for local CompactFlash®</li> </ul> </li> </ul>
<b>I/O</b>	<ul style="list-style-type: none"> <li>■ USB <ul style="list-style-type: none"> <li>□ One USB 1.1 port</li> <li>□ Accessible via I/O connector</li> <li>□ OHCI implementation</li> <li>□ Data rates up to 12Mbit/s</li> </ul> </li> <li>■ Two UARTs (COM1/COM2) <ul style="list-style-type: none"> <li>□ Accessible via I/O connector</li> <li>□ Physical interface using SA-Adapter™ via 10-pin ribbon cable on I/O connector</li> <li>□ RS232..RS485, isolated or not: for free use in system (e.g. cable to front)</li> <li>□ 16-byte transmit/receive buffer</li> <li>□ Handshake lines: CTS, RTS; DCD, DSR, DTR; RI</li> </ul> </li> <li>■ PS/2 keyboard/mouse <ul style="list-style-type: none"> <li>□ Accessible via I/O connector</li> </ul> </li> </ul>
<b>Mezzanine Slots</b>	<ul style="list-style-type: none"> <li>■ Two PC-MIP® slots <ul style="list-style-type: none"> <li>□ Compliant with PC-MIP® specification</li> <li>□ Type I/II slots</li> </ul> </li> </ul>
<b>Miscellaneous</b>	<ul style="list-style-type: none"> <li>■ Real-time clock</li> <li>■ Watchdog and hardware monitor for onboard temperature control</li> <li>■ Hex switch for user settings</li> </ul>
<b>Local PCI Bus</b>	<ul style="list-style-type: none"> <li>■ 32-bit/33-MHz, 3.3V V(I/O)</li> <li>■ Compliant with PCI Specification 2.1</li> </ul>
<b>VMEbus</b>	<ul style="list-style-type: none"> <li>■ Slot-1 function with auto-detection</li> <li>■ Master <ul style="list-style-type: none"> <li>□ D08(EO):D16:A24:A16:RMW</li> <li>□ Transfer rate max. 7MB/s</li> </ul> </li> <li>■ Slave <ul style="list-style-type: none"> <li>□ D08(EO):D16:A24:BLT</li> <li>□ Transfer rate max. 30MB/s</li> </ul> </li> <li>■ Interrupter D08(O):I(7-1):ROAK</li> <li>■ Interrupt handler D08(O):IH(7-1)</li> <li>■ Single level 3 fair requester / arbiter</li> <li>■ Bus timer, arbitration timer</li> <li>■ Utility functions</li> </ul>
<b>Electrical Specifications</b>	<ul style="list-style-type: none"> <li>■ Supply voltage/power consumption: <ul style="list-style-type: none"> <li>□ +5V (-3%/+5%), 6W</li> </ul> </li> <li>■ MTBF: 124,000h @ 50°C (derived from MIL-HDBK-217F)</li> </ul>

## Technical Data

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### Mechanical Specifications

- Dimensions: standard single Eurocard, 100mm x 160mm
- Weight: 138g

### Environmental Specifications

- Temperature range (operation):
  - 0..+60°C or -40..+85°C
  - Airflow: min. 10m<sup>3</sup>/h
- Temperature range (storage): -40..+85°C
- Relative humidity range (operation): max. 95% non-condensing
- Relative humidity range (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

### 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 Downloads.](#)

## Configuration & Options

### Standard Configurations

Article No.	CPU Type	Clock	System RAM	CFlash	Boot Flash	Operation Temperature
01B011-00	MPC8245	300 MHz	0 MB	0 MB	2 MB	0..+60°C
01B011-01	MPC8245	300 MHz	0 MB	0 MB	2 MB	-40..+85°C
01B011-03	MPC8245	400 MHz	0 MB	0 MB	2 MB	0..+60°C

### Options

<b>CPU</b>	<ul style="list-style-type: none"> <li>■ Type                             <ul style="list-style-type: none"> <li>□ MPC8245</li> </ul> </li> <li>■ Clock                             <ul style="list-style-type: none"> <li>□ 300 MHz</li> <li>□ 400 MHz</li> </ul> </li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>■ System RAM                             <ul style="list-style-type: none"> <li>□ 64 MB, 128 MB, 256 MB or 512 MB</li> </ul> </li> <li>■ CompactFlash®                             <ul style="list-style-type: none"> <li>□ 0 MB up to maximum available</li> </ul> </li> <li>■ Boot Flash                             <ul style="list-style-type: none"> <li>□ 2 MB</li> </ul> </li> </ul>
<b>Operation Temperature</b>	<ul style="list-style-type: none"> <li>■ 0..+60°C</li> <li>■ -40..+85°C</li> </ul>

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

## Ordering Information

<b>Standard B11 Models</b>	<b>01B011-00</b>	MPC8245/300MHz (from hardware rev. 01.xx), 2MB Flash, 0..+60°C
	<b>01B011-01</b>	MPC8245/300MHz (from hardware rev. 01.xx), 2MB Flash, -40..+85°C screened
	<b>01B011-03</b>	MPC8245/400MHz, 2MB Flash, 0..+60°C
<b>Memory</b>	<b>0751-0042</b>	CompactFlash® card, 4 GB, Type I, fixed bit set, -40..+85°C
	<b>0751-0053</b>	CompactFlash® card, 2 GB, Type I, fixed bit set, -40..+85°C
	<b>0751-0055</b>	CompactFlash® card, 8 GB, Type I, fixed bit set, -40..+85°C
	<b>0751-0058</b>	CompactFlash® card, 16 GB, Type I, fixed bit set, -40..+85°C
	<b>0752-0031</b>	256MB DRAM 0..+60°C for 01B011-00
	<b>0752-0210</b>	256MB DRAM -40..+85°C for 01B011-01
<b>SA-Adapters™</b>	You can find a more detailed overview of possible carrier board/SA-Adapter™ combinations along with software support in our <a href="#">option matrix (PDF)</a> .	
	<b>08SA01-00</b>	RS232, not optically isolated, 0..+60°C
	<b>08SA01-03</b>	For F1N/B11: RS232, not optically isolated, for direct mounting on CPU board, 0..+60°C (N.B.: Standard adapters can only be mounted using MEN's mounting kit)
	<b>08SA02-00</b>	RS422/485, half duplex, optically isolated, 0..+60°C
	<b>08SA02-01</b>	RS422/485, full duplex, optically isolated, 0..+60°C
	<b>08SA02-07</b>	RS422/485, full duplex, optically isolated, -40..+85°C screened
	<b>08SA03-00</b>	RS232, optically isolated, 0..+60°C
	<b>08SA03-01</b>	RS232, optically isolated, -40..+85°C screened
<b>Systems &amp; Card Cages</b>	MEN delivers turn-key systems completely installed (hardware, operating system, accessories), wired and tested. Different rack sizes, power supplies and backplanes on request. For details please contact your local sales representative.	
<b>Software: Linux</b>	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	This product is designed to work under ELinOS Embedded Linux by Sysgo. For more information and product support please contact <a href="http://www.sysgo.com">www.sysgo.com</a> .	
	<b>13Z014-90</b>	Linux device driver (MEN) for PCI-to-VME bridge on A12, A13, A14, A15, A17, A19, A20 and B11
<b>Software: VxWorks®</b>	This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	<b>10F001N60</b>	VxWorks® BSP (MEN) for A15, F1N, B11, A12, D3, SC13 and Kahlua Box
<b>Software: QNX®</b>	This product is designed to work under QNX®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	<b>10F001N40</b>	QNX® BSP (MEN) for F1N, B11, A12, A15, D3, SC13 and Kahlua Box

## Ordering Information

### Software: OS-9®

This product is designed to work under OS-9®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.

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

### Software: Firmware/BIOS

**MENMON™** is MEN's firmware/BIOS for PowerPC® platforms.

<b>14B011-00</b>	MENMON™ (Firmware) for B11 (object code)
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### Software: Miscellaneous

XiBase9, a graphical user interface for Linux and OS-9® from XiSys, is running on the MEN graphics controller PC-MIP® and PMC modules P1, P17 and P517 in combination with the PowerPC®-based single-board computers A11, A12, D3, F1N, B11 and SC13 (further SBCs on request). For more information, purchase and support please go to [www.xisys.de](http://www.xisys.de).

For operating systems not mentioned here [contact MEN sales](#).

### Documentation

Compare Chart 3U VMEbus CPU and I/O cards [Download](#)

<b>20B011-00</b>	B11 User Manual
<b>21APPN003</b>	Application Note: Using P1/P501 Graphics on MEN 824x/ALI boards under ELinOS

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