# **PP1 – PCI-104 COM Module with MPC5200/B**

- PowerPC<sup>®</sup> MPC5200/B / 384 MHz
- 32-bit/33-MHz PCI
- Up to 128 MB SDRAM
- Up to 16 MB Flash
- Up to 64 KB FRAM
- 1 Fast Ethernet, dual UART
- Dual CAN with CANopen support
- MENMON<sup>™</sup> BIOS for PowerPC<sup>®</sup> cards
- -40 to +85°C with qualified components

The PP1 is controlled by an MPC5200/B PowerPC<sup>®</sup> that operates at 384 MHz. The complete PCI-104 module is exclusively available for -40 to +85°C operating temperature, as is the MPC5200 itself. The CPU consumes less than 1 W at 384 MHz.

The PP1 provides up to 128 MB SDRAM for data and 16 MB Flash memory for program storage as well as 64 KB FRAM. The bus interface is a 32-bit 33-MHz PCI bus. The PP1 provides two optically isolated RS232 and one Fast Ethernet interface at its front panel. Two CAN controllers are included in the MPC5200. The physical



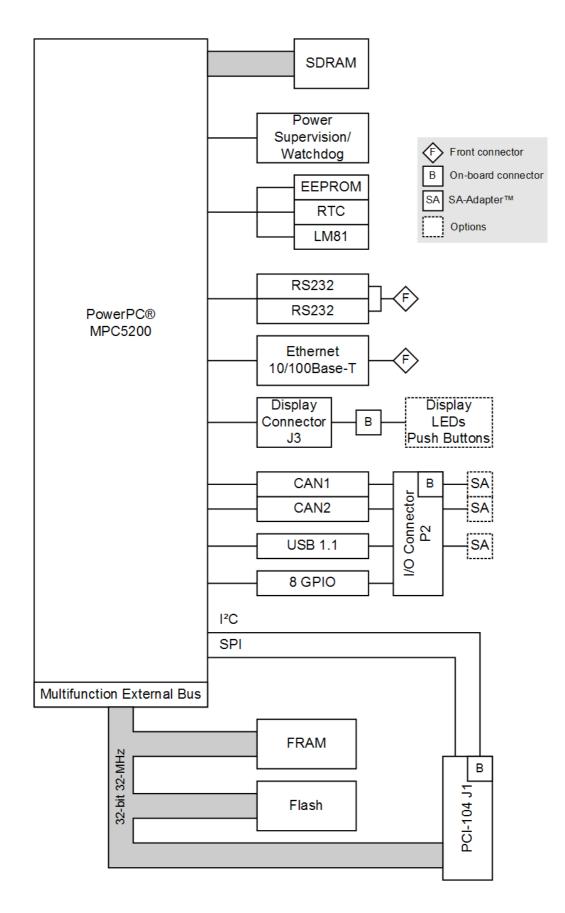
CAN interface can be located on SA-Adapters™ or on the carrier board. The board also features a real-time clock and watchdog.

The PP1 comes with MENMON<sup>™</sup> 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 PP1 is an industrial computer which is designed to operate under harsh environmental conditions. It complies with the PCI-104 specification and can be stacked with other PCI-104 boards or mounted on different types of carrier boards.



### Diagram



### **Technical Data**

СРИ	<ul> <li>PowerPC<sup>®</sup></li> <li>MPC5200 or MPC5200B</li> <li>384MHz</li> </ul>	
Memory	<ul> <li>Up to 128MB SDRAM system memory</li> <li>Soldered</li> <li>64MHz memory bus frequency</li> <li>16MB Flash</li> <li>64KB non-volatile FRAM</li> <li>Serial EEPROM 16kbits for factory settings</li> </ul>	
Ι/Ο	<ul> <li>Ethernet <ul> <li>10/100Base-T Ethernet</li> <li>9-pin D-Sub connector at front panel</li> </ul> </li> <li>Two RS232 UARTs (COM1/COM2) <ul> <li>One 9-pin D-Sub connector at front panel</li> <li>Data rates up to 115.2kbit/s</li> <li>512-byte transmit/receive buffer</li> <li>Handshake lines: none</li> </ul> </li> <li>USB <ul> <li>One USB 1.1 port</li> <li>Physical line interface via SA-Adapter<sup>™</sup> on I/O connector P2</li> <li>OHCI implementation</li> <li>Data rates up to 12Mbit/s</li> </ul> </li> <li>Two independent CAN interfaces <ul> <li>Physical line interface via SA-Adapter<sup>™</sup> on I/O connector P2</li> </ul> </li> <li>DHCI implementation <ul> <li>Data rates up to 12Mbit/s</li> </ul> </li> <li>Two independent CAN interfaces <ul> <li>Physical line interface via SA-Adapter<sup>™</sup> on I/O connector P2</li> </ul> </li> <li>Display interface <ul> <li>Four characters, 5 by 7 pixels</li> <li>For additional display adapter PCB (on request)</li> </ul> </li> <li>8 GPIO lines <ul> <li>Accessible via I/O connector P2</li> </ul> </li> </ul>	
Front Connections	<ul> <li>One Ethernet (D-Sub)</li> <li>Two RS232 UARTs COM1/COM2 (D-Sub)</li> </ul>	
PCI Interface	<ul> <li>32-bit/33-MHz PCI interface at PCI-104 connector J1</li> <li>V(I/O): +3.3V (not +5V tolerant)</li> <li>Compliant with PCI Specification 2.2</li> <li>Support of one external master</li> </ul>	
Miscellaneous	<ul> <li>Real-time clock</li> <li>Temperature sensor</li> <li>Three push buttons and LED on optional display PCB (on request)</li> </ul>	
Electrical Specifications	<ul> <li>Supply voltage/power consumption:</li> <li>+5V, ±5%, 100mA typ.</li> <li>+3.3V, ±5%, 900mA typ.</li> <li>MTBF: 450,000h @ 40°C (derived from MIL-HDBK-217F)</li> </ul>	
Mechanical Specifications	<ul><li>Dimensions: conforming to PCI-104 specification</li><li>Weight: 90g</li></ul>	

### **Technical Data**

Environmental Specifications	<ul> <li>Temperature range (operation): <ul> <li>-40+85°C</li> <li>Airflow: min. 10m<sup>3</sup>/h</li> </ul> </li> <li>Temperature range (storage): -40+85°C</li> <li>Relative humidity (operation): max. 95% non-condensing</li> <li>Relative humidity (storage): max. 95% non-condensing</li> <li>Altitude: -300m to + 3,000m</li> <li>Shock: 15g/11ms</li> <li>Bump: 10g/16ms</li> <li>Vibration (sinusoidal): 2g/10150Hz</li> <li>Conformal coating on request</li> </ul>
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	
Software Support	<ul> <li>VxWorks<sup>®</sup></li> <li>Linux</li> <li>MSCAN/Layer2 support: MEN Driver Interface System (MDIS<sup>™</sup> for all supported operating systems)</li> <li>For more information on supported operating system versions and drivers see Downloads.</li> </ul>

## **Configuration & Options**

### **Standard Configurations**

Article No.	СРИ Туре	Clock	System RAM	Flash	FRAM	Operation Temperature
15PP01-00	MPC5200	384 MHz	32 MB	16 MB	64 KB	-40+85°C
15PP01-05	MPC5200	384 MHz	128 MB	16 MB	64 KB	-40+85°C
15PP01-07	MPC5200B	384 MHz	128 MB	16 MB	64 KB	-40+85°C

### Options

СРИ	MPC5200 or MPC5200B, 384 MHz
Memory	<ul> <li>System RAM</li> <li>32 MB, 64 MB or 128 MB</li> <li>Flash</li> <li>2 MB, 4 MB, 8 MB or 16 MB</li> <li>FRAM</li> <li>0 KB, 32 KB or 64 KB</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**

OS01-0003       Y-adapter RS232 D-Sub connector to dual D-Sub connector (cable 10cm)         OBEK04-00       PC-L104 evaluation kit: Mini ATX carrier board, PP1 with PowerPC® MPC5200/384MHz, 128MB DRAM, 16MB Flash, 64KB FRAM, 1 Fast Ethernet, 2 COMs, 0.+60°C; incl. external PSU, SA-Adapter™ kit for 2 CAN and 1 USB 1.1         Software: Linux       This product is designed to work under Linux. See below for potentially available separate software packages from MEN.         10EM01-90       Linux BSP (MEN) for EM1, EM1A, EM1N, EK6, EK6N, F12, F12N and PP1 under ELinOS 5.0 (rpm for direct installation in ELinOS)         This product is designed to work under Linux. See below for potentially available separate software packages from MEN.         10EM01-90       Linux BSP (MEN) for EM1, EM1A, EM1N, EK6, EK6N, F12, F12N and PP1 under ELinOS 5.0 (rpm for direct installation in ELinOS)         This product is designed to work under Linux Sysgo.com.       132015-06         MDIS5T <sup>TM</sup> low-level driver sources (MEN) for 16Z029_CAN (MSCAN/Layer2)         Software: VxWorks®       This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please to to the corresponding software data sheets.         10PP01-60       VxWorks® 6.1 BSP (MEN) for PP1         132015-06       MDIS5T <sup>TM</sup> low-level driver sources (MEN) for 16Z029_CAN (MSCAN/Layer2)         Software: Firmware/BIOS       MENMONT <sup>TM</sup> (Firmware) For PP1 (binaty fortocol stack. The corresponding driver software environments.         Software: Firmware/BIOS       MENMONT <sup>TM</sup> (Firmware) For PP	Standard PP1 Models	15PP01-07				
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S.0 (rpm for direct installation in ELinOS)         This product is designed to work under ELinOS Embedded Linux by SYSCO. For more information and product support=         132015-06       MDIS5™ low-level driver sources (MEN) for 162029_CAN (MSCAN/Layer2)         Software: VXWorks®       This product is designed to work under VXWorks®. For details regarding supported/unsupported board functions please =         IOPP01-60       VXWorks® 5.45.5 BSP (MEN) for PP1         10PP01-61       VXWorks® 6.1 BSP (MEN) for PP1         132015-06       MDIS5™ low-level driver sources (MEN) for 162029_CAN (MSCAN/Layer2)         Software: Firmware/BIOS       MENMON™ IS MUST™ inware/BIOS for PowerPC® platforms.         14PP01-00       MENMON™ (Firmware) for PP1 (binary code)         MENMON™ IS abed on MDIS™ (MEN Driver Interface System), which makes the hardware ready for use under Windows÷ Linux, VXWorks®, QNX®, QS-9® and other software environments. You can find more information on the vector CANopen tools at www.vector-informatik.de.         For operating systems not mentitere contact HEUS       Compare Chart >= USA         Documentation       Compare Chart >= USA         QPP01-ER       PP1 Errata	Software: Linux	•	igned to work under Linux. See below for potentially available separate software packages			
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MENMON<sup>™</sup> User Manual

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