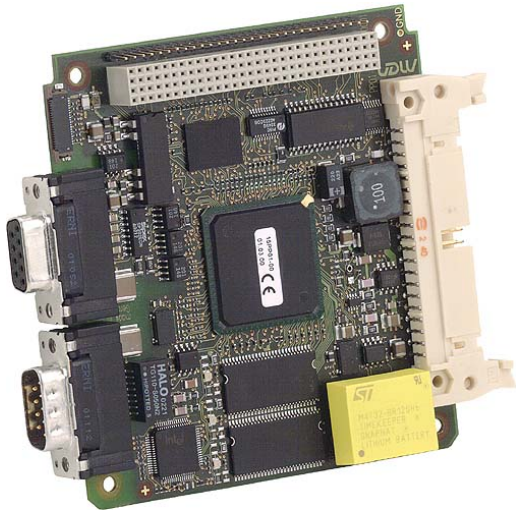


# PP1 - PCI-104 Module with MPC5200/B



- PowerPC® 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™ BIOS for PowerPC® cards
- -40 to +85°C with qualified components

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

## Technical Data

### CPU

- PowerPC®
  - MPC5200 or MPC5200B
  - 384MHz

### Memory

- Up to 128MB SDRAM system memory
  - Soldered
  - 64MHz memory bus frequency
- 16MB Flash
- 64KB non-volatile FRAM
- Serial EEPROM 16kbits for factory settings

### I/O

- Ethernet
  - 10/100Base-T Ethernet
  - 9-pin D-Sub connector at front panel
- Two RS232 UARTs (COM1/COM2)
  - One 9-pin D-Sub connector at front panel
  - Data rates up to 115.2kbits/s
  - 512-byte transmit/receive buffer
  - Handshake lines: none
- USB
  - One USB 1.1 port
  - Physical line interface via SA-Adapter™ on I/O connector P2
  - OHCI implementation
  - Data rates up to 12Mbits/s
- Two independent CAN interfaces
  - Physical line interface via SA-Adapters™ on I/O connector P2
- Display interface
  - Four characters, 5 by 7 pixels
  - For additional display adapter PCB (on request)
- 8 GPIO lines
  - Accessible via I/O connector P2

### Front Connections

- One Ethernet (D-Sub)
- Two RS232 UARTs COM1/COM2 (D-Sub)

### PCI Interface

- 32-bit/33-MHz PCI interface at PCI-104 connector J1
- V(I/O): +3.3V (not +5V tolerant)
- Compliant with PCI Specification 2.2
- Support of one external master

### Miscellaneous

- Real-time clock
- Temperature sensor
- Three push buttons and LED on optional display PCB (on request)

### Electrical Specifications

- Supply voltage/power consumption:
  - +5V, ±5%, 100mA typ.
  - +3.3V, ±5%, 900mA typ.
- MTBF: 450,000h @ 40°C (derived from MIL-HDBK-217F)

### Mechanical Specifications

- Dimensions: conforming to PCI-104 specification
- Weight: 90g

### Environmental Specifications

- Temperature range (operation):
  - -40..+85°C
  - Airflow: min. 10m<sup>3</sup>/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

### EMC

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

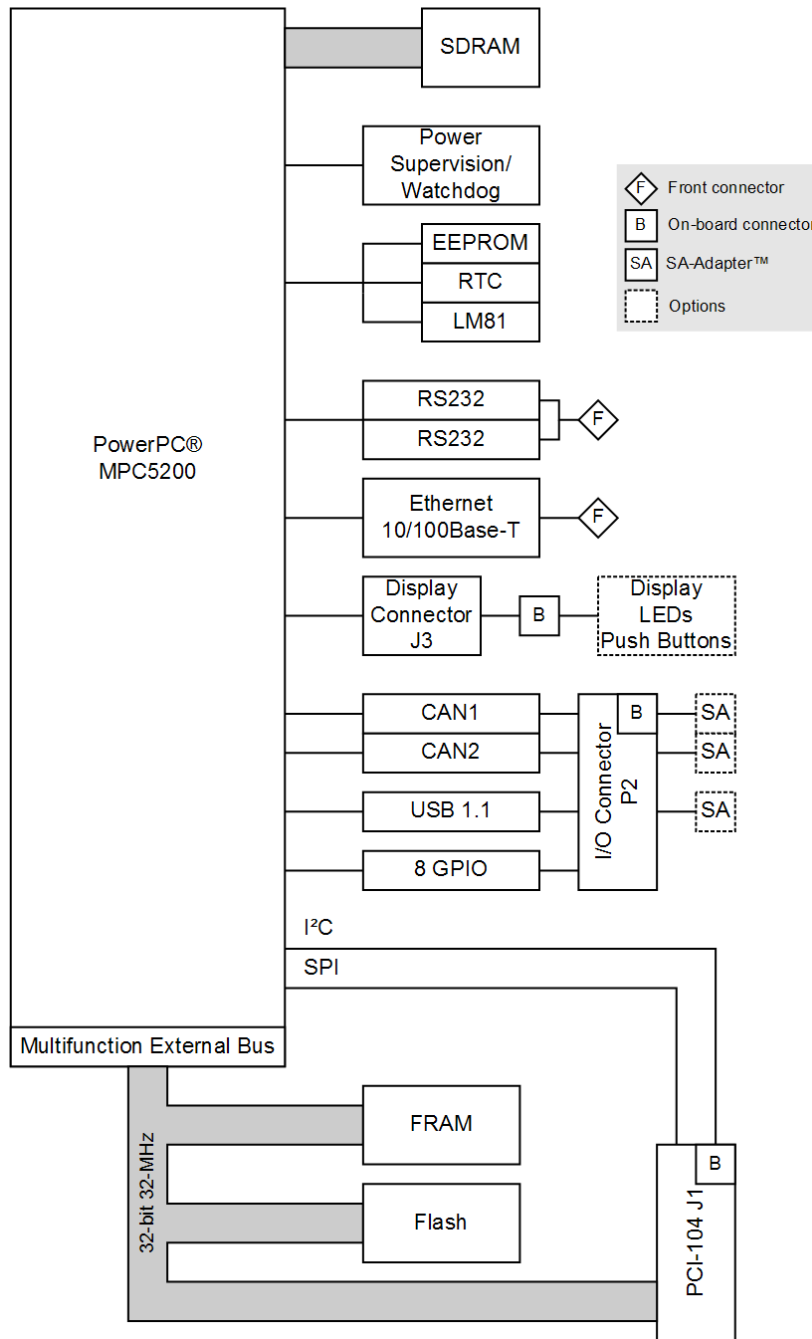
### BIOS

- MENMON™

### Software Support

- VxWorks®
- Linux
- CANopen firmware (Vector Informatik)
- CANopen support: MEN Driver Interface System (MDIS™ for Windows®, Linux, VxWorks®, QNX®, OS-9®)
- MSCAN/Layer2 support: MEN Driver Interface System (MDIS™ for Windows®, 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	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

#### CPU

- MPC5200 or MPC5200B, 384 MHz

#### Memory

- System RAM
  - 32 MB, 64 MB or 128 MB
- Flash
  - 2 MB, 4 MB, 8 MB or 16 MB
- FRAM
  - 0 KB, 32 KB or 64 KB

**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

- 15PP01-00** MPC5200/384MHz, 32MB SDRAM, 16MB Flash, 64KB FRAM, -40..+85°C with qualified components
- 15PP01-05** MPC5200/384MHz, 128MB SDRAM, 16MB Flash, 64KB FRAM, -40..+85°C with qualified components
- 15PP01-07** MPC5200 Rev. B / 384MHz, 128MB SDRAM, 16MB Flash, 64KB FRAM, -40..+85°C with qualified components

### Miscellaneous

- 0501-0002** Ethernet adapter D-Sub to RJ45 receptacle (cable 10cm)
- 0501-0003** Y-adapter RS232 D-Sub connector to dual D-Sub connector (cable 10cm)
- 05PP01-00** SA-Adapter™ kit for PP1 with 2 CAN and 1 USB 1.1 incl. cables; operation temperature -40..+85°C
- 08EK04-00** PCI-104 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: OS independent

- 13Z015-06** MDIS4™/2004 driver (MEN) for 16Z029\_CAN (MSCAN/Layer2)
- 13Z016-06** MDIS4™/2004 driver (MEN) for 16Z029\_CAN (CANopen master)

### Software: VxWorks

- 10PP01-60** VxWorks® 5.4..5.5 BSP (MEN) for PP1
- 10PP01-61** VxWorks® 6.1 BSP (MEN) for PP1

### Software: Firmware/BIOS

- 14PP01-00** MENMON™ (Firmware) for PP1 (binary code)

### Documentation

- 20PP01-00** PP1 User Manual
- 20PP01-ER** PP1 Errata
- 21MENM-00** MENMON™ 2nd Edition User Manual

## Contact Information

### Germany

MEN Mikro Elektronik GmbH  
 Neuwieder Straße 5-7  
 90411 Nuremberg  
 Phone +49-911-99 33 5-0  
 Fax +49-911-99 33 5-901  
 E-mail info@men.de  
 www.men.de

### France

MEN Mikro Elektronik SA  
 18, rue René Cassin  
 ZA de la Châtelaine  
 74240 Gaillard  
 Phone +33 (0) 450-955-312  
 Fax +33 (0) 450-955-211  
 E-mail info@men-france.fr  
 www.men-france.fr

### USA

MEN Micro, Inc.  
 24 North Main Street  
 Ambler, PA 19002  
 Phone (215) 542-9575  
 Fax (215) 542-9577  
 E-mail sales@menmicro.com  
 www.menmicro.com

### Diamond Point International (Europe) Ltd

Suite 13, Ashford House, Beaufort Court  
 Sir Thomas Longley Road, Rochester, Kent, ME2 4FA, UK  
 Phone 01634 300900 - Fax 01634 722398 - Email sales@dpie.com – Web www.dpie.com www.dpieshop.com



[www.dpie.com](http://www.dpie.com)

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