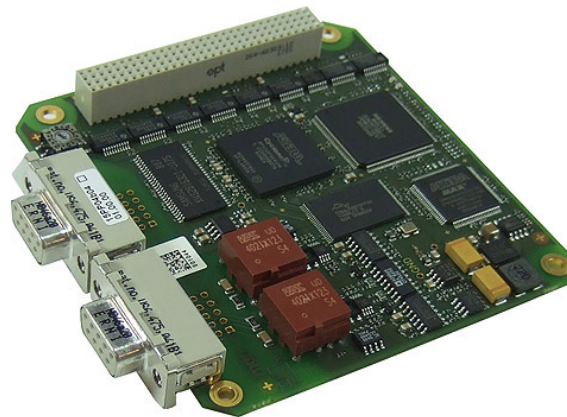


# PP4 – PCI-104 COM Module with MVB Interface

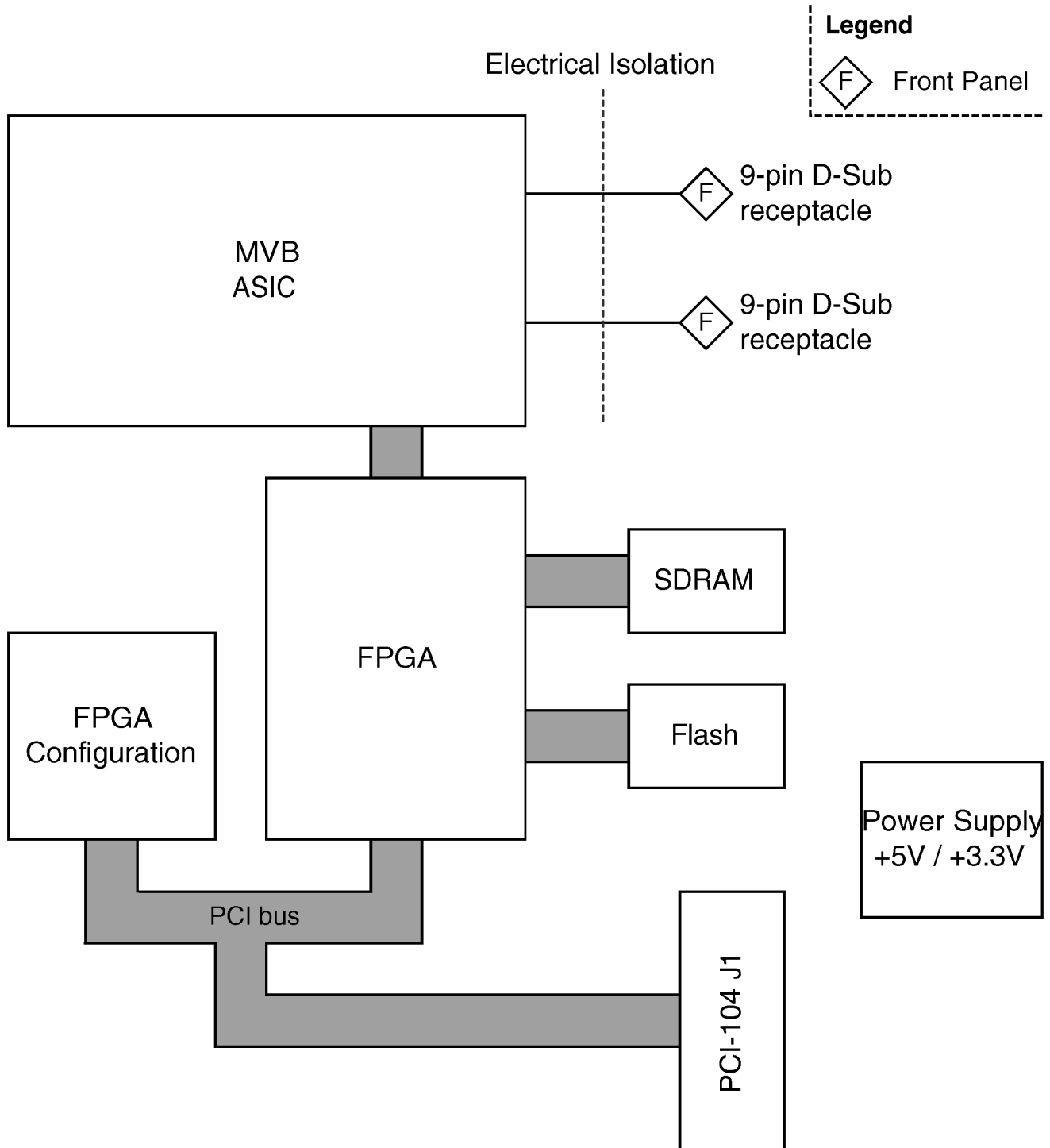
- **32-bit/33-MHz PCI target**
- **MVB transmitter/receiver**
- **Master and slave interface**
- **1 redundant channel**
- **Isolated EMD (optionally ESD and OGF)**
- **Up to 16 MB SDRAM, 2 MB Flash**
- **-40 to +85°C with qualified components**
- **Conformal coating**



The PP4 is an optically isolated MVB (Multifunction Vehicle Bus) transmitter and receiver interface with EMD (Electrical Middle Distance medium) physical interface. Versions with ESD (Electrical Short Distance medium) and OGF (Optical Glass Fiber medium) are available on request. As part of the TCN (Train Communication Network) railway standard IEC 61375 the PP4 is designed to operate under harsh environmental conditions in accordance with EN 50155, e.g. -40 to +85°C, humidity etc. (standard versions with conformal coating).

The PP4 provides master and slave functionality and has one redundant MVB channel (double line attachment configuration) accessible via two 9-pin D-Sub connectors. It is based on the Siemens ASIC MVBCS1 and on an on-board FPGA. The functional device classes 1, 2, 3 and 4 of the MVB can be configured. The isolation voltage is 1500VDC/1000VAC. The PP4 provides 16 MB SDRAM for data and 2 MB Flash memory for different purposes, all permanently soldered. It complies with the PCI-104 specification and can be stacked with other PCI-104 boards or mounted on different types of carrier boards. The bus interface is a 32-bit, 33-MHz PCI bus.

# Diagram



## Technical Data

<b>MVB Multifunction Vehicle Bus Interface</b>	<ul style="list-style-type: none"> <li>■ Interface implemented in ASIC and FPGA</li> <li>■ Electrical Middle Distance (EMD) medium <ul style="list-style-type: none"> <li>□ RS485/422 transceiver</li> </ul> </li> <li>■ Option: ESD (Electrical Short Distance medium) and OGF (Optical Glass Fiber medium), on request</li> <li>■ Accessible on two 9-pin D-Sub front connectors</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>■ 16MB SDRAM system memory <ul style="list-style-type: none"> <li>□ Traffic Memory for MVB interface</li> </ul> </li> <li>■ 2MB Flash <ul style="list-style-type: none"> <li>□ For FPGA configuration data</li> </ul> </li> </ul>
<b>PCI Interface</b>	<ul style="list-style-type: none"> <li>■ 32-bit/33-MHz PCI interface at PCI-104 connector J1</li> <li>■ PCI signaling voltage (VI/O): 3.3V (5V tolerant)</li> </ul>
<b>Miscellaneous</b>	<ul style="list-style-type: none"> <li>■ Two yellow onboard LEDs to signal MVB activity</li> </ul>
<b>Electrical Specifications</b>	<ul style="list-style-type: none"> <li>■ Isolation voltage: 1500V DC / 1000V AC between isolated side and digital side</li> <li>■ Supply voltage/power consumption: <ul style="list-style-type: none"> <li>□ +5V, ±5%, 140mA typ.</li> <li>□ +3.3V, +3.3V..+3.6V, 300mA</li> </ul> </li> <li>■ MTBF: 498,000 @ 40°C (derived from MIL-HDBK-217F)</li> </ul>
<b>Mechanical Specifications</b>	<ul style="list-style-type: none"> <li>■ Dimensions: conforming to PCI-104 specification</li> <li>■ Weight: 72g</li> </ul>
<b>Environmental Specifications</b>	<ul style="list-style-type: none"> <li>■ Temperature range (operation): <ul style="list-style-type: none"> <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/10..150Hz</li> <li>■ Conformal coating (standard)</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>■ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers</li> </ul>
<b>EMC</b>	<ul style="list-style-type: none"> <li>■ Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)</li> </ul>
<b>Software Support</b>	<ul style="list-style-type: none"> <li>■ MEN Driver Interface System (MDIS™ for Windows®, Linux, VxWorks®, QNX®, OS-9®)</li> <li>■ The PP4 together with these drivers supports MVB slave functionality only, it is to be used together with an MVB bus administrator.</li> <li>■ <a href="#">For more information on supported operating system versions and drivers see Downloads.</a></li> </ul>

## Configuration & Options

### Standard Configurations

Article No.	Interface	System RAM	Flash	Operation Temperature	Remark
15PP04B00	EMD	16 MB	2 MB	-40..+85°C	Conformal coating

### Options

<b>Interface</b>	<ul style="list-style-type: none"> <li>■ EMD</li> <li>■ ESD</li> <li>■ OGF</li> </ul>
<b>MVB Connectors</b>	<ul style="list-style-type: none"> <li>■ Two 10-pin onboard connectors instead of 9-pin D-Sub connectors at the front</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>■ System RAM                             <ul style="list-style-type: none"> <li>□ 16 MB</li> </ul> </li> <li>■ 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>■ -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 PP4 Models</b>	<b>15PP04B04</b>	MVB bus interface, (EMD Electrical Middle Distance), 1 redundant channel, 16MB SDRAM, 2MB Flash, 5V tolerant PCI side, optional connector position, -40..+85°C with qualified components, conformal coating
<b>Software: Linux</b>	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	<b>13PP04-06</b>	MDIS5™ low-level driver sources (MEN) for PP4
<b>Software: Windows®</b>	This product is designed to work under Windows®. See below for potentially available separate software packages from MEN.	
	<b>13PP04-70</b>	MDIS4™/2004 / MDIS5™ Windows® driver (MEN) for PP4
<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>13PP04-06</b>	MDIS5™ low-level driver sources (MEN) for PP4
<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>13PP04-06</b>	MDIS5™ low-level driver sources (MEN) for PP4
<b>Software: OS-9®</b>	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>13PP04-06</b>	MDIS5™ low-level driver sources (MEN) for PP4

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

<b>Documentation</b>	Compare Chart PCI-104 modules » <a href="#">Download</a>
	<b>20PP04-00</b> PP4 User Manual

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