

FEATURES

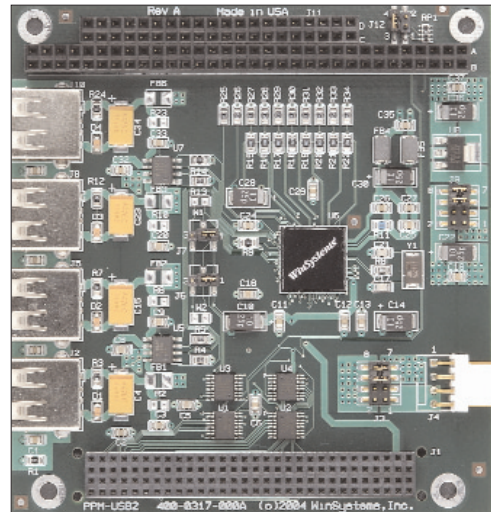
- USB 2.0 supported on PC/104-Plus module which is 40 times greater speed than USB 1.1
- NEC uPD720101 host controller supports simultaneous operation of multiple high-performance devices
- OHCI host and EHCI Host Compliant Cores that are USB 2.0 (480 Mbps) and USB 1.1/USB 1.0 (12 Mbps) compliant
- Root hub and 4 downstream facing ports onboard
- All downstream ports handle low-speed (1.5 Mbps), full-speed (12 Mbps), and high-speed (480 Mbps) transactions
- Supports hot insertion/removal
- Each port with overcurrent and inrush protection
- Supports 32-bit 33MHz PC/104-Plus host interface compliant with PCI Rev. 2.2
- Power connector for supplemental +5V if required
- LED on each port for visual status
- PC/104-Plus compliant board
- Onboard 3.3V regulator
- Supports 5V or 3.3V PC/104-Plus Bus
- Low power
- Single +5V supply
- Operates from -40° to +85°C

The PPM-USB2 is a high-speed, 4-port PC/104-Plus Universal Serial Bus (USB 2.0) compliant module. This add-in module is 40 times faster than USB 1.x implementations and supports signaling up to 480 Megabits per second (Mbps). It is based upon the NEC uPD720101 USB 2.0 host controller that is supported by a wide range of operating systems including Windows and Linux.

FUNCTIONAL CAPABILITY

USB 2.0 - USB 2.0 is the next generation of the USB 1.x specification. It contains no large-scale protocol changes, yet enables a data transfer rate of 480 Mbps using existing USB 1.1-compliant cables and connectors. This is almost a 40-times faster data rate and surpasses the data transfer rate of the IEEE1394 Firewire specification (400 Mbps).

In USB 2.0, a high-speed (HS) transfer rate (480 Mbps) has been added to the existing full-speed (FS: 12 Mbps) and low-speed (LS: 1.5 Mbps) categories. LS devices include keyboards, mouse devices, joysticks, and other peripherals that operate at a low communications rate. FS devices cover a wide range of fields, including storage-related devices such as CD-ROMs, floppy disk drives, PC card interfaces as well as printers and cameras.



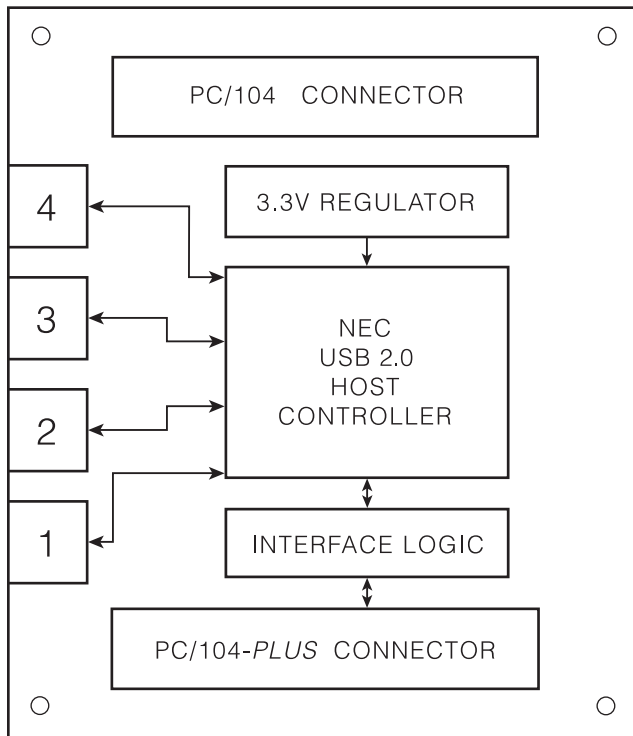
With the HS capability, applications are open to high-speed network peripherals such as storage, imaging, video, and communication devices.

For the most current information on Hi-Speed USB, go to www.usb.org/developers.

USB 2.0 Host Controller - The PPM-USB2 module uses the NEC uPD720101 USB 2.0 Host Controller. It complies with the Universal Serial Bus Specification revision 2.0 and Open Host Controller Interface (OHCI) Specification for full-/low-speed signaling and Intel's Enhanced Host Controller Interface (EHCI) Specification for high-speed signaling. The controller also provides a direct Peripheral Component Interconnect (PCI) to the PC/104-Plus bus.

The 720101 architecture is optimized to deliver both high-performance and PCI bus efficiency with the lowest power and smallest size. There are two OHCI controller cores for full-/low-speed signaling and one EHCI host controller for high-speed signaling. A root hub with 4 downstream facing ports is shared by the OHCI and EHCI controller cores. All downstream facing ports can handle high-speed (480 Mbps), full-speed (12 Mbps), and low-speed (1.5 Mbps) transactions.

Port Protection - Each port has overcurrent and in-rush protection provided by two National Semiconductor LM3526 power switches. One LM3526 protects Ports 1 and 2 while the other protects Ports 3 and 4.



PPM-USB2 BLOCK DIAGRAM

Each device is a dual stage design including a thermal protection circuit. During a short-circuit/over-current event, the switch dissipating excessive heat is turned off, allowing the second switch to continue to function uninterrupted. Therefore, a fault on one channel will not affect the other. No fuses are required since protection is done electronically.

The PPM-USB2 supports hot insertion and removal. A 1 mS delay on the fault flag output prevents erroneous overcurrent reporting caused by inrush currents during hot-plug events.

Power Connector - Each USB port can supply up to 500mA each. A 4-pin, right angle power connector is on the PPM-USB2 to support supplemental +5V if required.

USB Connection - The PPM-USB2 ports are accessed via four individual USB 2.0 Type A connectors.

Monitor LEDs - Four light emitting diodes (LEDs) are on the PPM-USB2 to provide a visual indication of the status of each port. A red LED indicates that the individual USB connector is powered. When the LED is off, it indicates a power-fault condition.

PC/104-Plus Interface - The PPM-USB2 is designed to offer simultaneous USB 2.0 operation on four ports. The chip has a PCI bus master interface and is compliant with the PCI Bus Specification Revision 2.2. It provides 32-bits of addressing and data, as well as the complete control interface to operate on the PC/104-Plus bus.

The PPM-USB2 is designed to support either +5V/3.3V tolerant or +3.3V only PC/104-Plus signaling. A jumper block selects the voltage range. There is also a jumper block on board to select the module slot position.

The +5V input power and ground for the board is supplied from both the PC/104 and PC/104-Plus connectors. Also, there is a PC/104 connector on the board; however, no control or data signals are wired to it. It simply feeds the signals through the connector to the next module in a stack.

Onboard Voltage Regulator - There is a +5V to 3.3V regulator on the PPM-USB2 to allow it to support either a 5V/3.3V or 3.3V only PC/104-Plus interface. The board is wired to the 3.3V pin on the PC/104-Plus connector when jumpered for 3.3V I/O mode.

SPECIFICATIONS

Electrical

Data rate: 1.5/12/480 megabits per second

Power Requirements

Vcc = +5V ±5% @ 125mA typical (does not include USB device power requirements)

Mechanical

Dimensions: 3.6" x 3.8" (90mm x 96mm)

Weight: 3.5 oz.

Connectors

USB: Four, USB 2.0 Type A

+5V Power: 4-pin, right angle Molex

PC/104-Plus: 120-pin (4 x 30; 2mm) stackthrough with shrouded header

PC/104: 16-bit stackthrough (feed through only)

Environmental

Operating Temperature: -40° to +85° Celsius

Non-condensing relative humidity: 5% to 95%

ORDERING INFORMATION

PPM-USB2 PC/104-Plus 4 channel USB 2.0 module

WinSystems reserves the right to make changes to products and/or documentation without further notification.

