MIP405

PC/104-*Plus* SBC with up to 400 MHz PowerPC

General Description

The MIP405 is a highly integrated and robust PC/104-*Plus* Single Board Computer. The board is based around the sophisticated embedded PowerPC 405GPr from IBM. It expands the existing x86 MIP product family. They are available in various options and features. The MIP family can be operated under extreme as well as under normal conditions without the need of fans.
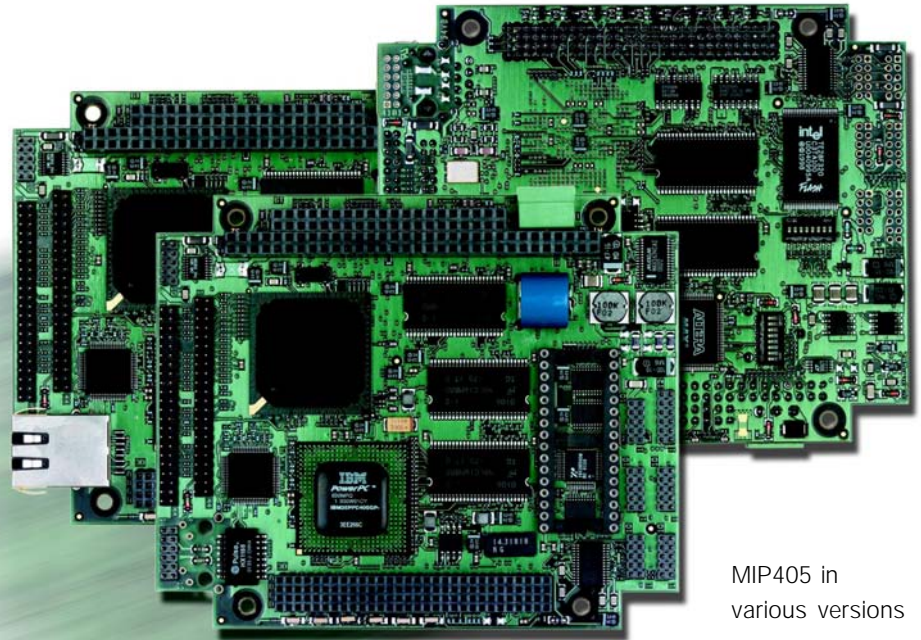
The MIP405 Specialties

are among many others the extreme low power consumption despite the fact having up to 608 DMIPS available. The MIP405 offers industrial features like 4 serial ports, USB, Ethernet, PC/104-*Plus* (PCI & ISA) soldered SDRAM & Flash and open source boot loader, LINUX & RT OS board support package.
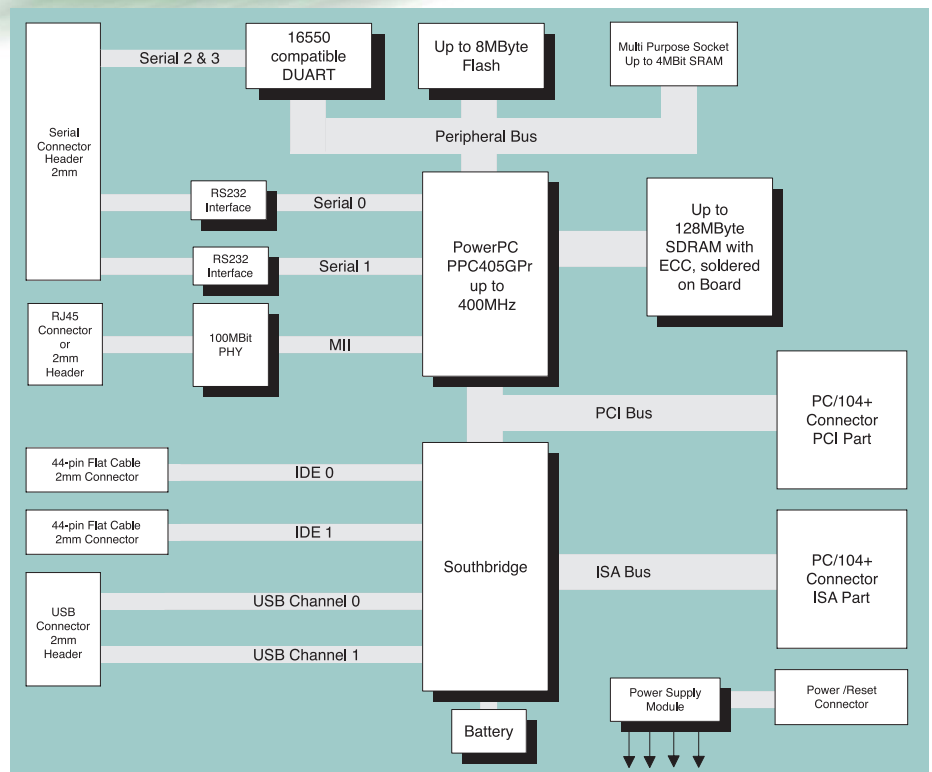
Unique features are

- Low power, high performance
- PC/104-*Plus* (PCI & ISA)
- Up to 8 MB Flash soldered
- Up to 128 MB SDRAM (ECC)
- Various boot sources
- Multi Purpose Socket for SRAM, EPROM ...

Those features make

the MIP405 to the ideal solution for any application where high quality, small size, ruggedness, high performance, low power or an expandable SBC solution is needed. The products are being used in medical, transportation systems, telecom, airborne systems or any other rugged and/or industrial application.

MIP405 in various versions

PowerPC PPC405GPr up to 400MHz

Peripheral Bus

- Serial 2 & 3 — 16550 compatible DUART
- Up to 8MByte Flash
- Multi Purpose Socket Up to 4MBit SRAM
- Serial Connector Header 2mm
- RS232 Interface — Serial 0
- RS232 Interface — Serial 1
- Up to 128MByte SDRAM with ECC, soldered on Board
- RJ45 Connector or 2mm Header — 100MBit PHY — MII
- PCI Bus
- PC/104+ Connector PCI Part
- 44·pin Flat Cable 2mm Connector — IDE 0
- 44·pin Flat Cable 2mm Connector — IDE 1
- Southbridge
- ISA Bus
- PC/104+ Connector ISA Part
- USB Connector 2mm Header — USB Channel 0
- USB Channel 1
- Battery
- Power Supply Module
- Power /Reset Connector

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Technical Features MIP405

Board Key Data

Processor	PowerPC PPC405GPr	Embedded processor from IBM
CPU Speed	608 DMIPS @ 400 MHz	375 DMIPS @ 266 MHz
BIOS	Up to 8 MB Flash EEPROM	7,5 MB free user space for boot kernel
SDRAM	Soldered on board, ECC support	Up to 128 MB SDRAM
Multi Purpose Socket	Supports, SRAM, FLASH, EPROM	32-pin DIL, up to 512 KB memory size
RTC	backed with on-board battery	Environment can be saved in EEPROM
Ethernet	10BaseT /100BaseTX	RJ45 or 12-pin header
	Fast 10/100 Mbit/s,	support IEEE802.3 auto negotiation
4 x Serial Ports	2 ports with RS232 signaling	Available over 4 x 10-pin header
	2 ports with TTL signaling	Connector kit available
2 x USB Interface	USB 1.0 ports for transfer rates of 12 and 1.5 Mbit/s	10-pin header
2 x E-IDE Ports	PIO mode 4, BusMaster IDE, Ultra DMA/33	2 x 44-pin header, usable for Flash Module/Disk
Expansions	Full 16-bit PC/104 and 32-bit PC/104-*Plus* interface	PCI & ISA
Keyboard	Over USB	10-pin header
Mouse	Over USB	10-pin header
Floppy	Over USB	10-pin header
Watchdog	Selectable timeouts	Built in PPC405GP processor
Debug Port	JTAG and IBM RISCWatch	12-pin header
Indicator	5 activity LED's + 1 user definable	Power, Reset, Error, HDD, LAN, User
Reset button	remote button	Connection over power connector

Physical / Power

Size	95.9 x 90.2 + 2 x 12.7 mm (PC/104 form factor)	3.775 x 63.550 + 2 x 0.495 inch
Overall height	14 mm (excluding PC/104 connector)	0.550 inch (excluding PC/104 connector)
Weight	110g fully equipped	0.24 pound
Power	+5 VDC ±5%	Over power connector or PC/104 connector
Power consumption	typically <3 Watt @ 400 MHz	LAN, USB and 128 MB SDRAM
Temperature range	-20°C up to 60°C, optional –40°C up to +85°C	Without heat sink
Humidity	5% - 95% non condensing	Optional coating available

Standard Compliance

The MIP405 is designed to meet or exceed the most common standards. Particular references are:

EMC	EN 55022, EN 55024, EN 61000, MIL-STD-461E
Shock & Vibration	EN 60068
Environmental & Safety	EN 50155, MIL-STD-810-F, EN 60601, EN 60950
Approval Lists	CE, EN 60945, IACS E10

MIP405 versions	Expansions & Options	Operation systems
• Complete version	• Over the PC/104 & PC/104-*Plus*	• Various LINUX distributions
• Coated versions	- Graphic Module	• Real Time LINUX
• Depopulated versions	- PC Card Module	• Open source boot loader for other OS
• Extended temp. versions	- any Digital or Analog I/O Board	• RT OS board support packages
	• Cable kit for easy connection	
	• PowerPC 405 starter kit	

The MIP405 is fully developed, designed and produced by MPL AG in Switzerland.
For other requirements contact MPL.

Other MPL Products

PC/104 Peripherals	PC/104 and PC/104-*Plus* peripheral solutions (4/8 x serial lines, single & dual LAN, PC card, …) IDE based memory storage solutions (CF, PCMCIA).
Industrial PCs	Fanless, rugged Packed Industrial PCs with Intel CPUs in various housings and with many accessories. Products for extended temperature (-40° up to +75°C) and with long-term availability.
Panel PCs	Fanless, IP65/NEMA4 protected Panel PCs (all around). Solutions with 6″ - 19″ LCDs and Touch in special aluminum or stainless steel case.
Engineering & Support	Professional engineering, support and consulting through MPL engineers on Hardware and Software.

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