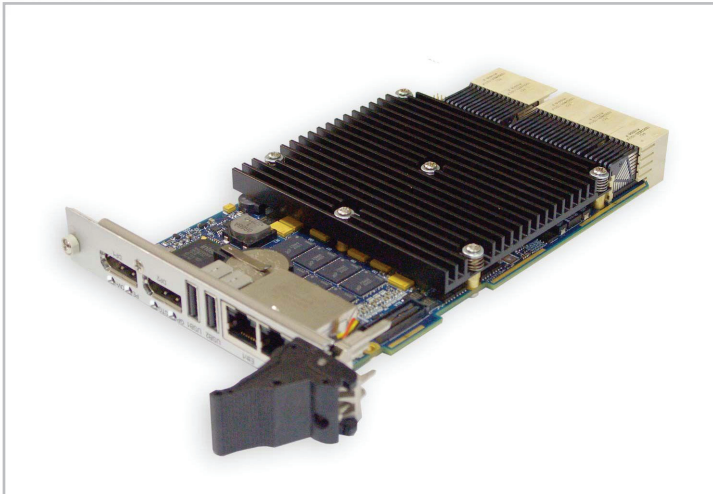# CPC510
3U CompactPCI CPU board

Features

- Intel IvyBridge processors (2/4 Cores, up to 2,5 GHz)
- Up to 8 GB soldered, dual-channel DDR3 SDRAM with ECC
- 2 DisplayPort up to 2560×1600@60Hz at the front panel, 1 DisplayPort up to 2560×1600@60Hz is routed to the mezzanine module
- 2×Gigabit Ethernet ports (front panel)
- 2×USB 2.0 (front panel)
- Intermodule communication (PICMG CPCI-S.0 CompactPCI® Serial): two x8 FatPipe PCI-E 2.0; four x4 PCI-E 2.0; 8 USB2.0 or 4 USB2.0 + 4 USB3.0; 2 SATA II and 2 SATA III
- SD card slot with USB 2.0 interface
- Increased heatsink versions for passive cooling
- Protective coating (optional)
- –40...+85°C or 0...+70°C
- Windows 7 Embedded, Linux 2.6, QNX 6.5

Technical Specification

Intel IvyBridge CPU (2/4 Cores)
- Intel i7-3517UE (DC, 2C/4T, 1,7 GHz, 1600 MHz, 4 MB, 17 W)
- Intel i7-3555LE (DC, 2C/4T, 2,5 GHz, 1600 MHz, 4 MB, 25 W)

Panther Point PCH

Memory
- DDR3 SDRAM 1333, 1600 Mhz or DDR3L SDRAM 1066, 1333 Mhz with ECC up to 8 GB soldered, dual-channel

Video Output (simultaneous output to 3 monitors)
- Two DisplayPort connectors (resolution up to 2560×1600@60Hz) at the front panel
- DisplayPort interface (resolution up to 2560×1600@60Hz) is routed to the mezzanine module

LPC Bus
- To the mezzanine connector
- PCI-E Bus
- CPU Hosts. PCI-E 2.0 support (up to 5GT/s):
  - Output via the PCI-E switch to J1 and J2 CPCI Serial connectors with support for two x8 FatPipe#1 and FatPipe#2 devices;
  - Support for the Non-Transparent mode for FatPipe#1;
  - Output via the PCI-E switch to J4 CPCI Serial connector with support for four x4 devices.
- PCH Hosts. PCI-E 2.0 support (up to 5GT/s):
  - Output to the mezzanine module on the left; support for 1 x4 or 4 x1 devices;
  - MIC590 connection.

SMBUS Bus
- Compatibility with the 2.0 specification
- Speed up to 100 kbps

FLASH BIOS
- 64 Mbit SPI-Flash
- MicroSD Interface
- Support for the SDHC 2.0 specification
- Connected to a USB 2.0 interface

SATA II Interface
- One interface is always routed to the mezzanine connector:
  - One interface - is switched between J3 CPCI Serial connector and the mezzanine connector;
  - Two ports are routed to the J3 CPCI Serial connector.

SATA III Interface
- Two interfaces are routed to the J3 CPCI Serial connector
- Support for RAID 0, 1, 5, 10

2 ports LAN 10/100/1000 Mbit at PCI-E x4 Gen2
- Two interfaces are routed to the XS5 connector at the front panel
- Implementation of a server network adapter

USB ports
- 13 USB 1.1 ports (12 Mb/sec), USB 2.0 (480 Mb/sec) and 4 USB 3.0 ports (4.8 Gb/sec)
- Two USB2.0 ports are routed to connectors at the front panel
- Two USB2.0 ports are routed to the mezzanine connector
- 8/4 USB2.0 ports are routed to the J3 CPCI Serial connector*
- 1 USB2.0 port is used for implementation of the MicroSD interface
- 4 USB3.0 ports are routed to the J1 and J2 CPCI Serial connectors*

FRAM Memory
- 32 Kbyte, RAM 1 Kbyte for storing settings of the Bios Setup
- Implemented on the SPI Bus

Real time clock (RTC)
- Power is supplied from a CR 2032 lithium battery (3V)

Audio Support
- HD Audio interface is routed to the mezzanine connector

Watch dog timer
- Internal with a possibility of programmed control

SGPIO Interface
- Support for signaling according to the SFF-8485 Specification

Hardware monitor
- Implemented via PECI/SMBUS interfaces
- Monitoring of three supply voltages
- Monitoring of the CPU temperature
- Monitoring of the PCB temperature
- Monitoring of the RAM temperature

Support for the power source management Indication
- Board Startup Diagnostics LED / Hot Swapping Light.SATA/SD Drives Access LED
- Two software-controlled LEDs (user-defined)
- Temperature state LED
- PCI Express Interconnections state LED

OS Programming Compatibility
- Windows 7 Embedded
- Linux 2.6
- QNX 6.5

Power Requirements
- Power voltage +12V, +5V_STBY (option)

Operating temperature range
- Industrial Modification: from –40°C to +85°C
- Commercial Modification: from 0°C to +70°C

Humidity
- Up to 80% non-condensing

Vibration / Single shock resistance
- 5g/100g

MTBF
- Not less than 100,000 hours

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* When USB 3.0 is used four USB 2.0 ports are utilized by the USB 3.0 ports

CPC510
3U CompactPCI CPU board

Expansion modules

A number of interfaces output from the board may be increased by means of connecting MIC584, KIC550 modules and a MIC590 board

MIC584 module interfaces
- 2×USB 2.0
- 2×SATA
- Audio IN/OUT/MIC
- 4×RS-232
- 2×RS-485
- LPT
- PS/2 keyboard+mouse

KIC550 module interfaces
- 1×USB 2.0
- 1×USB 2.0/3.0
- 2.5" SATA HDD Interface
- 1×Gigabit Ethernet (optional)

MIC590 board (a part of CPC510-02 module) contains the following set of interfaces
- Video Output
  - DisplayPort connector (resolution up to 2560×1600@60Hz) at the front panel

- Dual channel LVDS Interface (25–112 MHz, up to 224 Mpixel/sec) is switched between a connector at the board and via a RIO backplane
- Support for a TFT panel power management with a 3.3 V power voltage and illumination circuits with a 5 V or a 12 V power voltage
- CompactPCI Bus
  - 32-bits, clock frequency of 33/66 MHz
  - Operation mode – System Master, support for up to seven Bus Mastering devices
  - Support for the PCI Local Bus Rev. 3.0 Specification
  - 3.3 V and 5 V VIO Support
- PCI Express Bus
  - 3 ports x1 (a through route for the PCI Express PCH ports of the CPC510 module)
  - Complies with the PCI Express 1.0a Specification
  - Complies with the PICMG 2.30 Compact PCI PlusIO Specification
  - Allows for a module binding CPC510+MIC590 installation into a hybrid backplane, complies with the PICMG 2.30 specification
    A simultaneous support for four Legacy CompactPCI peripheral devices and for three Compact PCI Serial peripheral devices is provided with that. Though

SATA and USB interconnects, which are parts of the PICMG 2.30 Specification, are not available
- Power Source
  - The MIC590 module power consumption is 2 W without consumption of the TFT panel and the illumination invertor
  - The maximum power consumption of a TFT panel connected to the MIC590 module is 6 W, and that of the illumination circuits is 10 W (for Upow = 5 V) or 30 W (for Upow = 12 V)
  - The module does not utilize the voltage generated at the Compact PCI backplane for feeding its internal circuits
- OS Programming Compatibility
  - The MIC590 module is compatible with software which is designed for operation along the CPC510 CPU Module

Board Layout
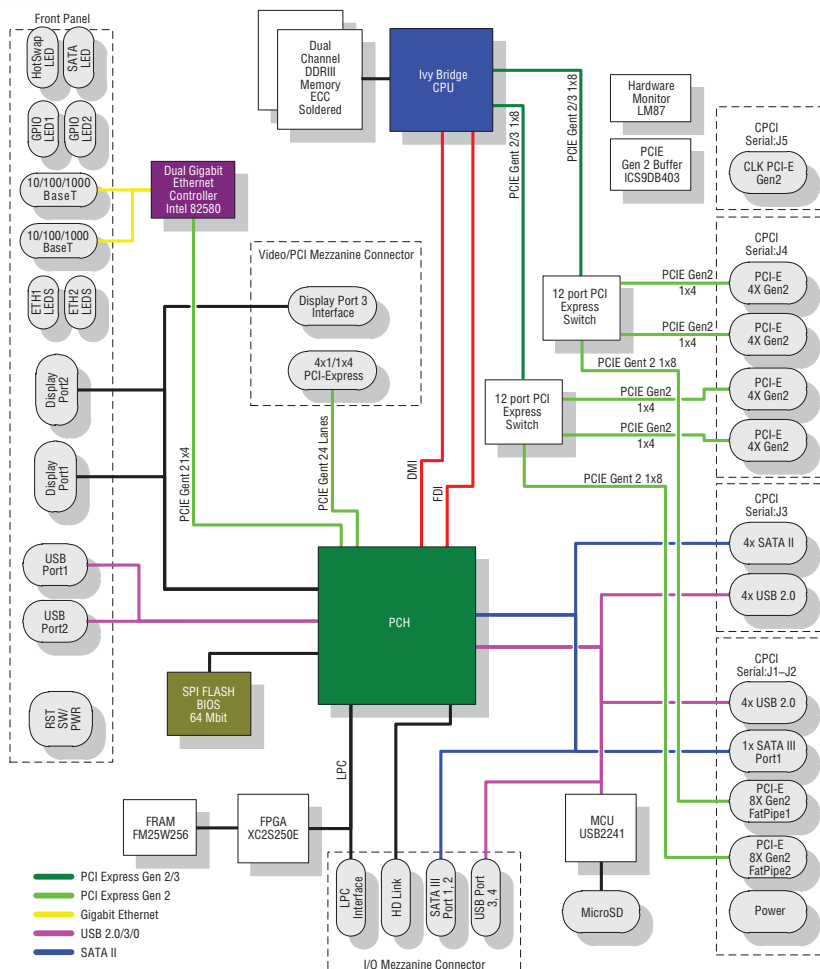
Ordering Information

CPC510 Configuration

CPC510 - 01 - i72C1.7-RAM4096-R1-I\Options

Configurations
01	Without mezzanine card
02	MIC590

Processor
I72C1.7	Intel i7-3517UE (DC, 2CI4T, 1.7 GHz, 1600 MHz, 4MB, 17W), BGA 1023 CPU
I72C2.5	Intel i7-3555LE (DC, 2CI4T, 2.5GHz, 1600 MHz, 4MB, 25W), BGA 1023 CPU

Memory
4096	4096MB Soldred DDR3L SDRAM
8192	8192MB Soldered DDR3L SDRAM

Cooling system (front panel width)
R1	4HP
R2	8HP

Temperature Range
I	Industrial Range, –40…+85°C
C	Commercial Range, 0…+70°C

CPC510 Available Options

Coating	
\COATED	Protective Coating
Operating System Presetting	
\LNX	Linux 2.6
\Win7e	Windows 7 Embedded
\QNX	QNX 6.5

Other configurations and options are available upon request.

Example

CPC510-01- I72C1.7- RAM4096-R1-I\Coated\LNX

3U CompactPCI serial SBC, Intel i7-3517UE (DC, 2CI4T, 1.7 GHz, 1600 MHz, 4MB, 17W), BGA 1023 CPU, 4096MB Soldred DDR3L SDRAM, 4HP cooling system, Industrial Range, –40…+85°C, Protective Coating, Linux 2.6

Delivery checklist

1. CPC510 module or CPC510 assembled with the MIC590 module (video/PCI bridge mezzanine expansion module)

Additional accessories

1. MIC584 module. I/O mezzanine expansion module
2. KIC550 module. 2,5" HDD carrier module or 2,5" SSD

Corporate Offices

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ISO 9001:2008
EC.C.O.02.01.000823-12

MIC584
Mezzanine Module

Features

- Audio controller: audio codec, compatible with the High Definition Audio standard (for 2.1: AD1986A module version, for 3.1: CS4702 version)
- 2×USB 2.0 ports
- 1×parallel port (IEEE 1284)
- PS/2 interface
- 6×serial ports (6×16c550 UART)
- Operating temperature range: –40°C to +85°C
- Vibration/Shock resistance: 5g/100g
- MTBF: No less than 800 000 hours
- Dimensions: shortened 3U: 88,3×128,4× 36,5 mm

Overview

MIC584 is designed for the extension of functionalities of processor modules in 3U CompactPCI format.

Technical Specifications

Audio controller

Audio codec, compatible with the High Definition Audio standard (for 2.1: AD1986A module version, for 3.1: CS4702 version)

- Linear input, $U_{ВХ}$=1 B (RMS); routed to the board connector
- Linear output, output resistance Z=10 K; routed to the board connector
- Mic. input; $U_{ВХ}$=1 B (RMS) at the amplification 0 dB; $U_{ВХ}$=0.1 V (RMS) at the amplification 20 dB; routed to the front panel
- Audio output to headphones, output resistance Z=65 Om; routed to the front panel

2x USB 2.0 ports

- Compliant with USB 2.0 specification
- Routed to front panel

Parallel port (IEEE 1284)

- Standard Bi-directional SPP mode
- Extended EPP v.1.7 and v.1.9 mode
- High-speed ECP, IEEE 1284 mode
- Routed to the board connector (IDC2-26)

PS/2 interface

- Standard Mini-DIN for the connection of Y-cable (included in the delivery kit)
- Routed to the front panel

Six serial ports (6x 16C550 UART)

- COM1 – non-isolated RS-232 port; routed to the front panel (DSUB9M)
- COM2, COM3, COM4 – non-isolated RS-232 ports; routed to the connectors onboard (IDC2-10)
- COM5, COM6 – non-isolated RS-485 ports; routed to the connectors onboard (IDC2-10)

Serial ATA interface (2x channels), implemented on MIC584-01

- Simultaneous connection of up to 2 external SATA-drives using standard cables (included into the delivery kit)
- Support of 2x SATADOM modules for the revision of MIC584 2.2 version and higher
- 1x channel may be used for the connection of 1.8" SATA HDD or SSD, installed via carrier board
- Routed to the connectors onboard

Additional capabilities

- Module board has a shortened version, for increasing cooling capacity of processor modules in 3U CompactPCI format

Environmental

- Operating temperature range: industrial version: from –40°C to +85°C, commercial version: from 0°C to +70°C
- Resistance to cyclic damp heat when lacquer-coated: at the ambient temperature +(55 ± 2)°C, relative humidity (93±3)%
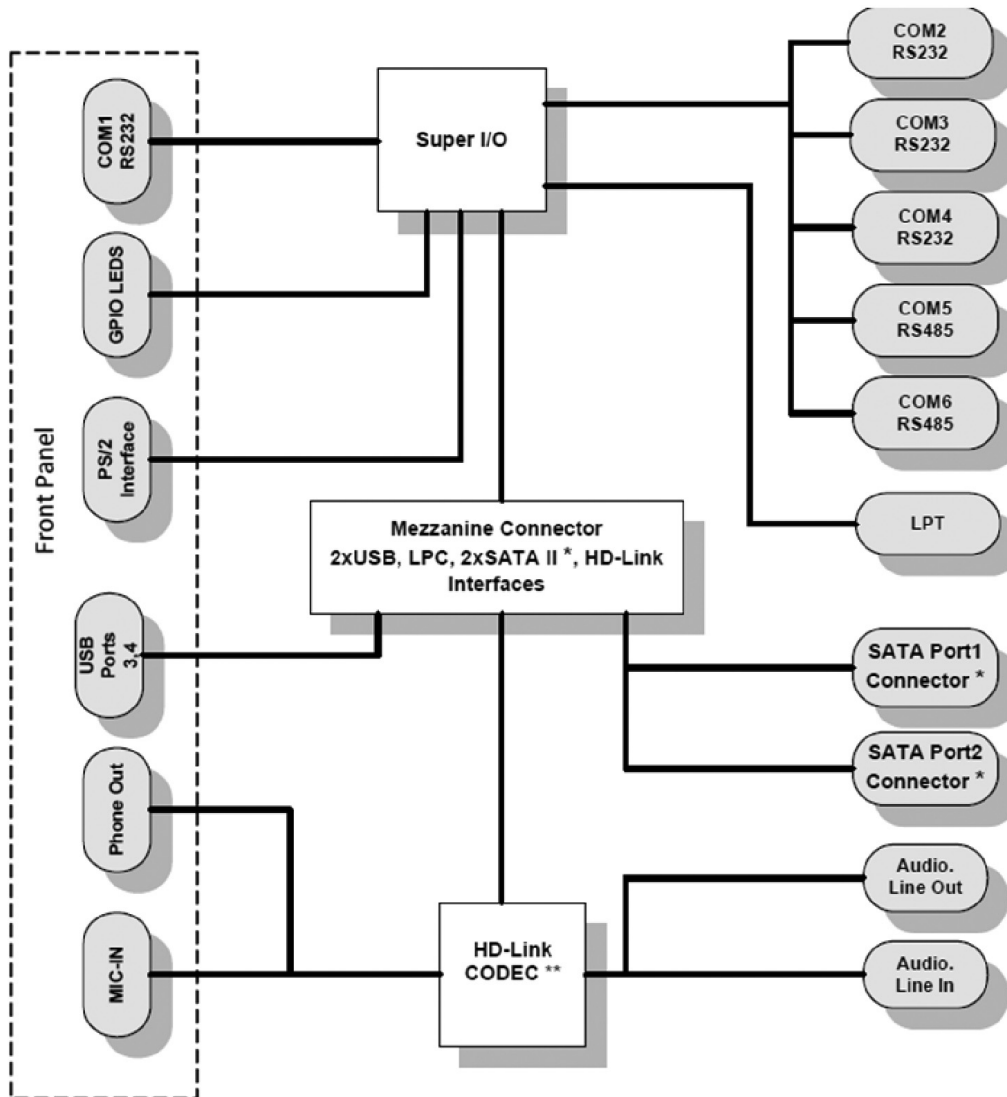
Mechanical

- Vibration/single shock resistance: 5g/100g
- MTBF: no less than 800 000 hours
- Weight: no more than 100 g
- Dimensions: shortened 3U: 88,3 × 128,4 × 36,5 mm

Fastwel

Board Layout

Front Panel

Super I/O

COM1 RS232

GPIO LEDS

PS/2 Interface

USB Ports 3,4

Phone Out

MIC-IN

Mezzanine Connector
2xUSB, LPC, 2xSATA II *, HD-Link
Interfaces

HD-Link
CODEC **

COM2 RS232

COM3 RS232

COM4 RS232

COM5 RS485

COM6 RS485

LPT

SATA Port1 Connector *

SATA Port2 Connector *

Audio. Line Out

Audio. Line In

* SATA connectors are provided only for MIC584-01 version (Fastwel manufactures MIC584 in two versions: MIC584-01 and MIC584-02).
**Audio controller for module version 2.1: AD1986A, for version 3.1: CS4702.

http://www.fastwel.com

Ordering Information

MIC584 Configuration

MIC584 - 01 - C \Options

Configurations

01	SATA (XP8…XP10) – Yes
02	SATA (XP8…XP10) – No

Temperature Range

I	Industrial Range, –40…+85°C
C	Commercial Range, 0…+70°C

Options

\Coated	Conformal coating

Delivery checklist

MIC584 delivery checklist contains:

1. MIC584 – 1 pcs.
2. PS/2 Y-cable – 1 pcs.
3. Standard Serial ATA cable – 2 pcs. (for MIC584-01)
4. HDD SATA supply cable – 1 pcs. (for MIC584-01)
5. Jumpers for XP3, XP4 contacts – 2 pcs.
6. Module's mounting kit
7. Packaging

Kit for installation of ACS20044 hard drive needs to be purchased separately.

Note:

Retain all original packaging at least until the warranty period is over.
You may need it for shipments or for storage of the product.

Corporate Offices

ISO 9001:2008
EC.C.O.02.01.000823-12