

### Features

- Vortex86DX™ 600 MHz
- 256 MB DDR II SDRAM soldered
- Fast Ethernet port
- CF I/II socket, 1 GB SLC NAND Flash soldered
- Four USB 2.0
- Digital I/O port: 72 CMOS/TTL lines
- 8/2 isolated analog I/O, 12 bit ADC/DAC
- Two RS-232, two RS-422/485 isolated
- Operating temperature range:  
-40°C...+85°C

### Overview

CPC109 MicroPC CPU module is a highly-integrated x86 compatible solution for use in real-time control systems, in industrial automation, in data acquisition and processing.

The module can operate as a stand-alone or a slave device. Connection of basic input-output devices, such as VGA monitors, LCD panels, matrix and AT-keyboards, printers, FDD drives, and USB devices allows using CPC109 in human operated systems.

An on-board flash drive, external IDE or USB drives can be used for data storage.

CPC109 module is capable to accomplish most of the input-output tasks for discrete and analog signals.

Besides, possibility to reprogram the on-board FPGA in-system provides extra flexibility in tailoring the module for different applications.

Along with standard MicroPC bus (8-bit ISA) CPC109 is equipped with PC/104 ISA (8/16-bit) connector allowing connection of additional expansion modules.

Moreover, the module can operate in RS-232, RS-422/485, and Ethernet networks as part of a distributed system.

### Technical Specifications

#### System

- CPU: DM&P Vortex86DX (600MHz): 32-bit x86 kernel, 16-bit memory bus, 32 KB L1 cache, 256 KB L2 cache, 333 MHz system bus speed
- 256 MB DDR2 SDRAM (soldered)
- 8 KB SPI FRAM
- 256 bytes CMOS RAM (battery backed-up)
- 128 KB SRAM (battery backed-up)
- Real time clock with 3V Li-battery backup
- Two watchdog timers:  
Internal: programmable event and timeout period (30.5  $\mu$ s to 512 s)  
External: programmable event and fixed timeout period (1.6 s)
- MTBF: minimum 144000 hours (TBA)

#### Flash BIOS

- 256 KB, reserved
- In-system modification

#### Storage

- Flash disk: 1 GB SLC NAND Flash (soldered)
- CompactFlash socket: Type I/II, PIO, DMA, UDMA modes support
- HDD port: one IDE channel (Primary), up to 2 devices, Ultra-DMA 100 mode support

#### Software support

- Microsoft™ MS-DOS® 6.22
- Fastwel™ FDOS 6.22
- Linux® 2.6
- QNX® 6.4x
- Microsoft™ Windows® CE 5

#### Interfaces

- Ethernet: 10/100 Mbit/s, standard RJ-45 connector with LED indicators
- USB: USB 1.1, USB 2.0 support, up to 4 devices, two standard Type A USB connectors
- Expansion bus:  
8-bit ISA (MicroPC), 8/16 MHz  
16-bit ISA (PC/104), 8/16 MHz
- Universal discrete I/O port:  
72 CMOS/TTL lines (overvoltage varistor protection, natural 5V level)  
8 GPIO lines (5V tolerant)  
In-system programming  
LCD port: text and graphics models support; backlight connector; contrast adjustment  
Matrix keyboard port (4x4, 4x5)
- 8 isolated analog inputs:  
12-bit ADC  
Conversion time: 12.5  $\mu$ s  
Overvoltage protection:  $\pm$ 16.5 V  
Isolation from system: 500 V
- 2 isolated analog outputs:  
12-bit DAC  
Output load: 2 K $\Omega$   
Conversion time: 10  $\mu$ s  
Isolation from system: 500 V

- Four serial ports:  
COM1, COM2: RS-422/485; individual isolation from system: 500 V; up to 750 Kbit/s; automatic direction control; lightning protection circuitry.  
COM3, COM4: RS-232 (complete); up to 375 Kbit/s; ESD protection: 15 kV (IEC1000-4-2)
- Universal parallel port LPT: SPP, EPP, ECP modes support
- PS/2 keyboard and mouse port
- Temperature sensor (-55...+125°C)
- PC-buzzer
- Reset/Interrupt input  
Isolation from system: 500V
- Console ports:  
COM3/4 and/or VGA/LCD  
COM3/4 and/or Keyboard

#### Mechanical

- Dimensions: 125.0  $\times$  123.0  $\times$  25 mm (4.84"  $\times$  4.77"  $\times$  0.97")
- Weight: 0.1 kg

#### Power

- +5V  $\pm$ 5%
- Additional power connector
- Overvoltage (up to 28V), overcurrent (3A resettable fuse) and reverse polarity protection
- Consumption current:  
CPC10903: 600 mA  
CPC10902: 700 mA  
CPC10901: 800 mA

#### Environmental conditions

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -55°C to +95°C
- Humidity: 5%...95%, at +25°C
- Shock/vibration stability: up to 20G/5G

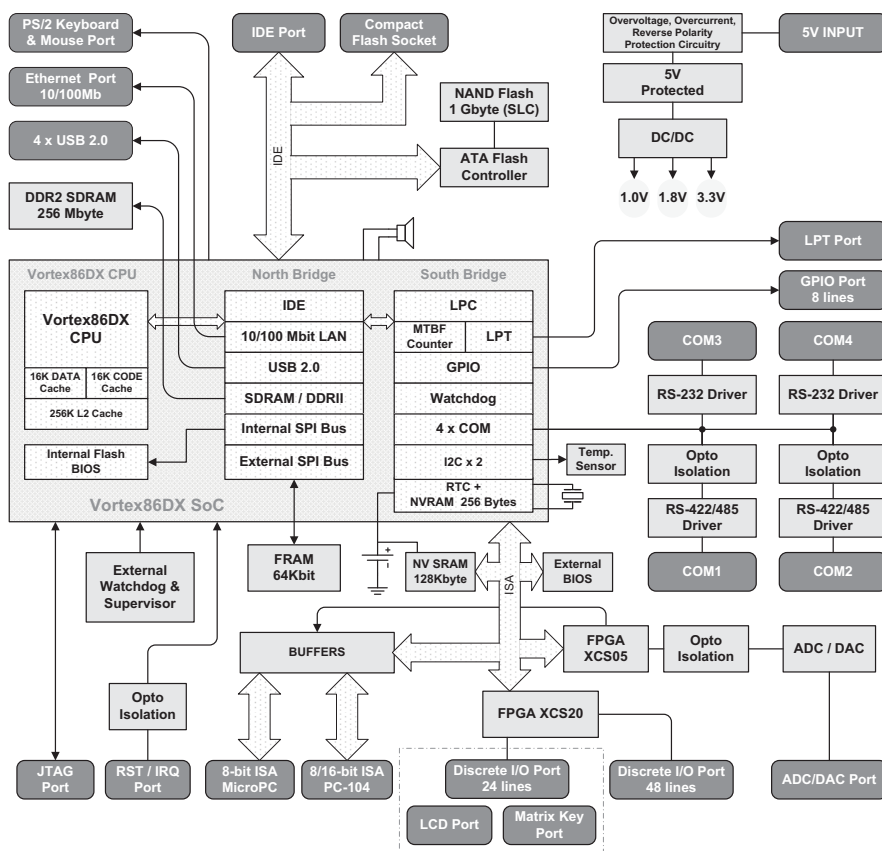
#### List of deliverables

- CPC109 CPU module
- ACS00023 – COM-port adapter (DB9F – IDC2-10)
- Set of mating parts for non-standard connectors
- CD with software and documentation
- Package

#### Warranty

- 3 years for parts and labor

## Board Layout



## Ordering Information

### CPC109 Configuration

#### CPC109 - 01 \Options

##### Device Type

- CPC10901 MicroPC CPU module, Vortex86DX 600 MHz, 256 MB DDR2 SDRAM, 1 GB FFD, Ethernet 10/100 Mbps, 4 x USB 2.0, 2 x RS-232, 2 x RS-422/485 (isolated, lightning protection), 128 KB NV SRAM, PC/104 extension, discrete I/O: 72 lines, 8 GPIO lines, temperature sensor, analog I/O: 8AI, 2AO (isolated).
- CPC10902 MicroPC CPU module, Vortex86DX 600 MHz, 256 MB DDR2 SDRAM, 1 GB FFD, Ethernet 10/100 Mbps, 4 x USB 2.0, 2 x RS-232, 2 x RS-422/485 (isolated, lightning protection), 128 KB NV SRAM, PC/104 extension, discrete I/O: 72 lines, 8 GPIO lines, temperature sensor.
- CPC10903 MicroPC CPU module, Vortex86DX 600 MHz, 256 MB DDR2 SDRAM, 1 GB FFD, Ethernet 10/100 Mbps, 4 x USB 2.0, 2 x RS-232, 2 x RS-422/485 (isolated), 8 GPIO lines.

##### Options

\xxx Choose available options from the table

### CPC109 Available Options

Compact Flash Module	
\CF1024	1024 MB Compact Flash, industrial
\CF2G	2 GB Compact Flash, industrial
\CF4G	4 GB Compact Flash, industrial
\CF8G	8 GB Compact Flash, industrial
\CF16G	16 GB Compact Flash, industrial
Accessories	
ACS00009	FK-3, KP-3, matrix keyboard cable
ACS00010	FC44 - 2.5" HDD adapter cable
ACS00023	DB9F - IDC10 adapter cable
ACS000xx	IDC2-26 - DB25 (LPT) adapter cables
ACS000xx	IDC2-10 - 2x USB Type A female (2 USB ports) adapter cables
AIB92xxx	AIMUX-32C-1, analog multiplexer
DIB91xxx	TBI-xx/xx, terminal boards
DIC1100x	UNIOxx-5, MicroPC universal discrete input-output modules
DIC11101	UNIO96-1, MicroPC universal discrete input-output cost-saving modules
DIC112xx	DI32-5, MicroPC discrete input modules
DIC113xx	DO32-5, MicroPC discrete output modules
ICC19xxx	ISA-8 MicroPC mounting racks
AIC12xxx	Analog input-output MicroPC cards
Coating	
\COATED	Protective coating
Operating System Presetting	
\DOS	MS DOS 6.22
\FDOS	Fastwel DOS 6.22
\LNX	Linux 2.6
\QNX	QNX 6.4x
\WCE	Windows CE 5

Other configurations and options are available upon request.

#### Example

##### CPC109-01\COATED\CF16G\WCE

MicroPC CPU module, Vortex86DX 600 MHz, 256 MB DDR2 SDRAM, 1 GB FFD, Ethernet 10/100 Mbps, 4 x USB 2.0, 2 x RS-232, 2 x RS-422/485 (isolated, lightning protection), 128 KB NV SRAM, PC/104 extension, discrete I/O: 72 lines, 8 GPIO lines, temperature sensor, analog I/O: 8AI, 2AO (isolated)

Protective coating  
16 GB Compact Flash  
Windows CE 5

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Product specifications are subject to change without notice