



## Features

- Vortex86DX™ 600 MHz CPU
- DDR2 SDRAM 256 MB
- 2 GB NAND Flash (SLC)
- Serial ports: COM1, COM2 with the rate of exchange up to 750 KB/s via RS-422/485; COM3, COM4: RS-232 (9-wire), exchange rate up to 250 KB/s via RS-232
- PS/2 port
- Operating temperature range: -40°C to + 85°C
- OS: MS-DOS 6.22, FreeDOS, Linux 2.6, QNX 4.25, QNX 6.5x, Windows CE 5.0, Windows XP Embedded
- RTC with integrated lithium battery 3 V
- Shock/vibration resistance: 50g/5g
- MTBF: 160 000 hours

## Overview

CPC152 CPU module based on Vortex 86DX 600 MHz CPU in MicroPC format is designed for Industrial Control System applications, including "simple" replacement of the Octagon Systems computers withdrawn from production. The CPU module is a direct replacement of 5066 Octagon Systems CPU module.

## Technical Specifications

### Processor:

- Vortex86DX™ 600 MHz CPU
- x86 core, 32 bit
- 16 bit memory bus
- L1 cache (32 KB)
- L2 cache (256 KB)
- System bus frequency: 333 MHz

### RAM

- DDR2 SDRAM 256 MB, soldered

### FLASH-drive

- PATA NAND Flash with integrated system of ECC and wear control
- 2 GB NAND Flash (SLC)

### FLASH BIOS

- 256 KB, modifiable within the system, with a backup copy
- automatic switching to a backup copy in case of an error, while the primary copy is loaded

### Integrated nonvolatile memory

- 256 byte internal memory
- 8 KB FRAM (SPI)
- 128 KB SRAM (ISA)

### Extension buses

- MicroPC (ISA 8-bit, 8/16 MHz)
- PC/104 (ISA 8/16-bit, 8/16 MHz)

### Connector for Compact Flash

- Support of type 1/2 modules
- Support of PIO, DMA, UDMA modes

### Port for HDD

- 1x Primary channel;
- Connection of up to two devices
- Support of Ultra-DMA 100
- Connection of 2.5" and 3.5" storage drives via KIB98201 interface board

### LAN 10/100 Mb port

- Standard RJ45 connector with LEDs
- Insulation from system, 500 V

### Audio port

- Line stereo input/output
- Mic. input (mono)

### Video subsystem

- 2D graphics controller
- Video memory: 16 MB DDR
- Independent connection of 2 displays
- Port for the connection of RGB display with resolution up to 1920×1440, 32 bit colors
- Port for the connection of LCD (TFT or DSTN) panels with resolution up to 1920×1440, 18 bit colors
- Display connection via a separate VGA port (IDC2-10 connector)
- Display connection via standard DSUB15F using KIB98102 interface board

### USB ports (host)

- Support of USB 1.1, USB 2.0 (HS, FS, LS)
- Connection of up to 4-x devices
- 2×USB Type A standard connectors

### Serial ports

- COM1, COM2: insulated RS-422/485 with lightning protection circuits
- Exchange rate via RS-422/485 is up to 750 KB/s
- Individual isolation of each system port: 500 V
- Automatic (hardware) control of transmission direction
- COM3, COM4: RS232 (9-wire, full)
- Compatibility with 16C550 / 16C552 model
- Exchange speed via RS-232 is up to 250 KB/s
- ESD protection: 15 KB (IEC1000-4-2)

### LPT universal parallel port

- Support of SPP, EPP, ECP modes

- Connection via a separate IDC-26 port
- Connection of devices via standard DSUB-25 port, using KIB98201 interface board

### RTC with integrated lithium battery 3V

### Remote reset / interruption port

- Potential-free contact
  - Voltage 3...15V, 10...30V
  - Isolation from system: 500 V
- ### GPIO port
- 8 I/O lines
  - Compatibility with 5V level
  - Maximum output load-carrying capacity: 16 mA
  - Using the port to control servo drives (pulse-width modulation)
  - Ability to use the port in the mode of compatibility with 8051 model

### PS/2 port

- Compatibility with 8042 model
- Connection of devices via a separate port
- Connection of devices via standard MiniDIN6 using KIB98102 interface board

### Digital accelerometer

- Measuring acceleration along three axes
- Measuring ranges:  $\pm 2g / \pm 4g / \pm 8g$  (additional code with the sign)
- Resolution: 14 bit + sign

### Digital barometer

- Pressure measurement from 50 to 115 kPa
- Resolution up to 10 bit
- Price of the least significant digit value 0.15 kPa
- Conversion time: up to 3 ms

### Digital temperature sensor

- Temperature measurement: from -55 to +125°C
- Resolution: 12 bit + sign
- Price of the least significant digit value 0.0625°C
- Conversion time: up to 1000 ms

### PC alarm buzzer

### Watchdog timers

- 2x watchdog timers integrated into CPU, with actuation interval 30.5  $\mu$ s ... 512 s
- 1x integrated into supply supervisor, with actuation interval 1.6 s (used for automatic switching to BIOS backup copy)

### Supported OS

- Microsoft™ MS-DOS®6.22, FreeDOS;
- Linux 2.6
- QNX 4.25, QNX 6.5x
- Microsoft™ Windows CE 5.0
- Microsoft™ Windows XP Embedded

### Console ports

- COM3 / COM4 and/or VGA / LCD/ Keyboard

### Power

- Supply voltage: - +5 B  $\pm$  5%
- Power is supplied via additional connector
- Current consumption: no more than 0.85 A @ 5V (4.25 W), current consumed by external devices is not considered

### Mechanical

- Shock/Vibration resistance: 50g / 5g
- Dimensions: no more than 125.0×123.0×27.0 mm
- MTBF: no less than 160 000 hours
- Weight: no more than 140 g

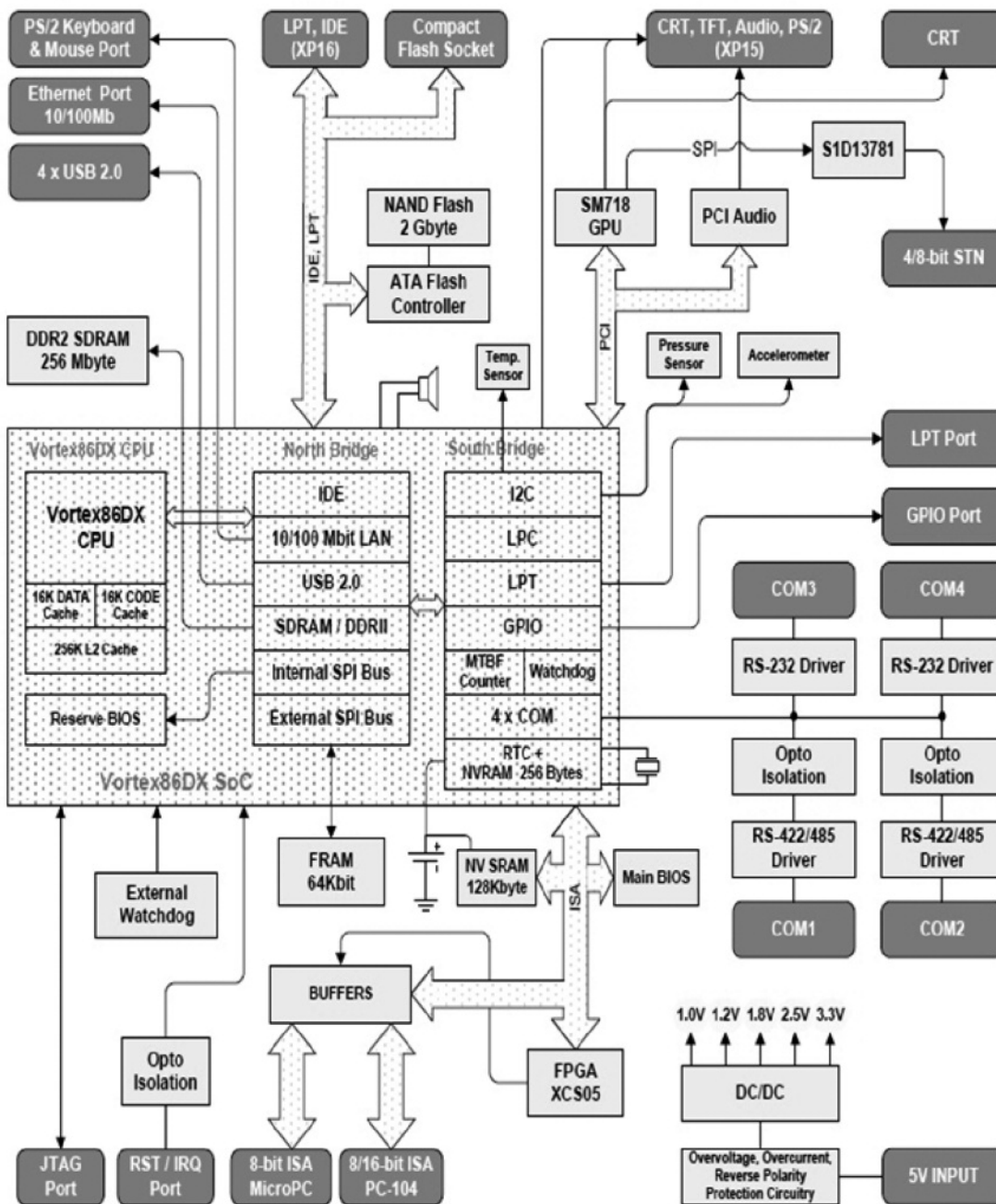
### Environmental:

- Operating temperature range: from -40°C to + 85°C
- Humidity: up to 95%, at +25°C without condensation

# CPC152

## MicroPC Vortex86DX™ 600 MHz CPU Module

### Board Layout



# CPC152

## MicroPC Vortex86DX™ 600 MHz CPU Module

### Ordering Information

### CPC152 Configuration

#### CPC152 - 01

##### Versions

CPC152-01 CPC152 CPU Module (MicroPC), Vortex86DX 600 MHz, 256 MB DDR2 SDRAM, GPU SM718 (16 MB DDR), 2 GB FFD, NV SRAM 128 KB, Compact Flash socket, 4×USB 2.0, Ethernet 10/100 Mbps, 2×RS-232, 2×RS-422/485 (isolated, with lightning protection); acceleration, pressure and temperature sensors

##### CPC152 Available Options

Coating	
\COATED	Protective coating
Preinstalled operating system	
\LNX	Linux 2.6
\WCE	Windows CE 5.0
\WXPe	Windows XP Embedded

##### Delivery checklist:

1. CPC152 CPU Module;
2. ACS00005-01 adapter cable (RS-232 port, IDC-10 / DB9M, length 180 mm);
3. ACS00027-02 adapter cable (VGA port, IDC2-10 / D-SUB 15F, length 180 mm);
4. WAGO 733-105 pluggable terminal block (RS-422/485 port), 2 pcs;
5. Set of jumpers (pitch 2 mm);
6. Packaging.

##### Additional accessories:

**KIB98101** Interface board (Audio, VGA, TFT, PS/2)  
**KIB98201** Interface board (2.5" HDD, 3.5" HDD, LPT)  
**ACS00005** Adapter cable IDC-10 / D-SUB 9M (port RS-232, length 1800 mm)  
**ACS00005-01** Adapter cable IDC-10 / D-SUB 9M (port RS-232, length 180 mm)  
**ACS00006** Adapter cable IDC-10 / D-SUB 9F (port RS-232, length 1800 mm)  
**ACS00010** FC44 - 2.5" HDD, connecting ribbon cable  
**ACS00027-02** Cable IDC2-10 / D-SUB 15F (VGA port, length 180 mm)  
**ACS00042** Null modem cable 1.8 m  
**ACS00043** PS/2 adapter cable (PHR-6 / MiniDIN-6F)  
**ACS00051-01** Adapter cable 2×USB Type A Female (2×USB ports)  
**ACS00058** set of Li battery 3V with PHR-2 connector (length 40 mm)  
**ACS00031-02** PHR-6 socket and a set of contacts (PS/2 port)  
**ACS00031-03** PHR-2 socket and a set of contacts (RESET ports, PC-Speaker, VBAT)  
**ACS00039** Molex 22-01-2045 socket and a set of contacts (additional power connector)  
**ACS00064** 89947-710LF wire-board connector (VGA, GPIO, USB ports)  
**ACS00064-01** 10073599-020LF cable connector, FCI with a set of contacts (VGA, GPIO, USB ports)  
**ICC19xxx** ISA-8 MicroPC mounting racks  
**AIC324xx** Analog input-output PC104 cards  
**MIC230xx** CompactFlash drive, -40°C...+85°C

