CPC152
MicroPC Vortex86DX™ 600 MHz CPU Module

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is designed for Industrial Control System applications, including "simple" replacement of the Octagon Systems computers withdrawn from production.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: ± 2g / ± 4g / ± 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 µs …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 ± 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
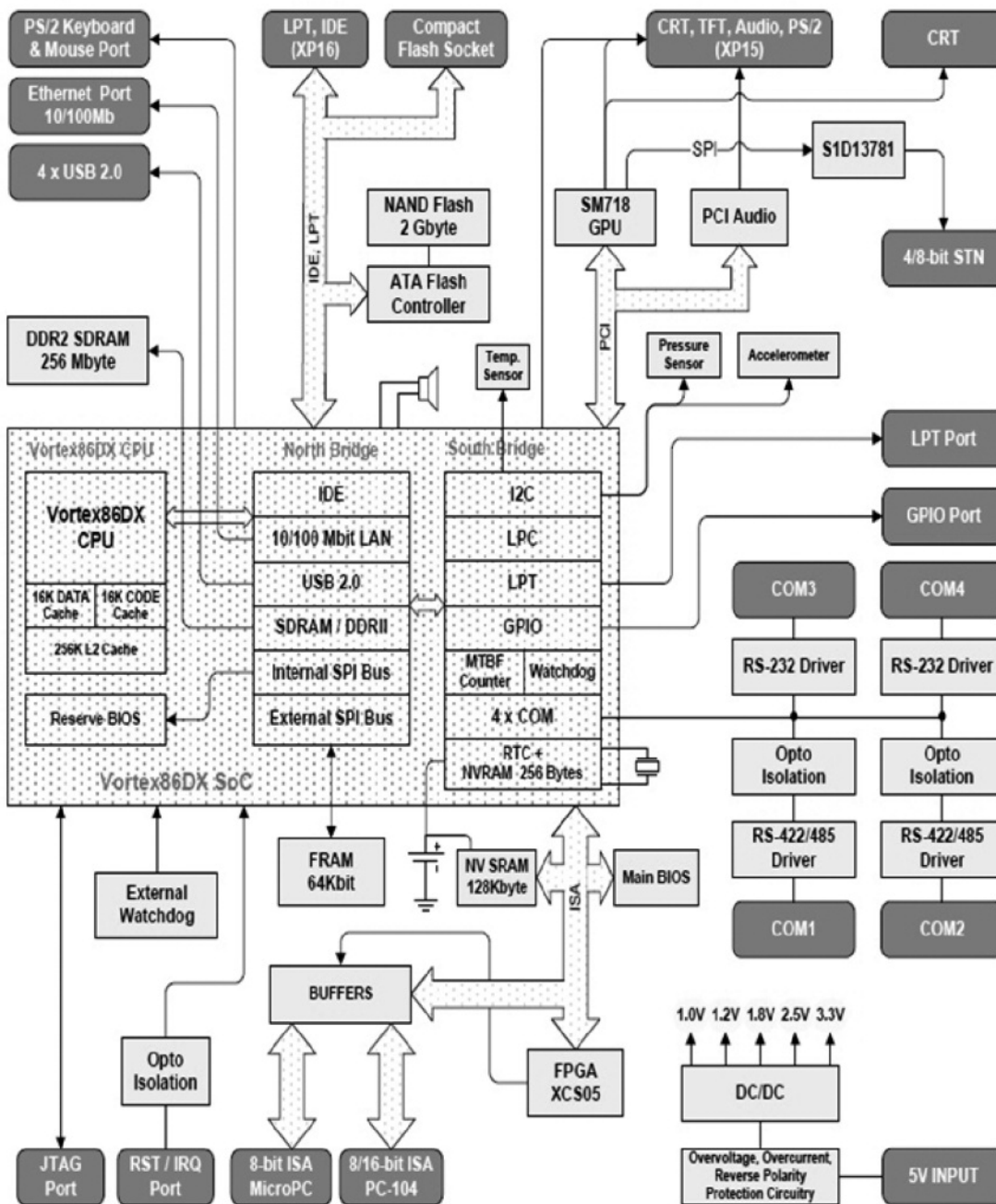- Weight: no more than 140 g

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

Board Layout

Block diagram showing the CPC152 board layout with the following components:

- PS/2 Keyboard & Mouse Port
- Ethernet Port 10/100Mb
- 4 x USB 2.0
- LPT, IDE (XP16)
- Compact Flash Socket
- CRT, TFT, Audio, PS/2 (XP15)
- CRT
- NAND Flash 2 Gbyte
- ATA Flash Controller
- SM718 GPU
- PCI Audio
- S1D13781
- 4/8-bit STN
- DDR2 SDRAM 256 Mbyte
- Temp. Sensor
- Pressure Sensor
- Accelerometer
- LPT Port
- GPIO Port

Vortex86DX CPU / North Bridge / South Bridge (Vortex86DX SoC):
- Vortex86DX CPU
  - 16K DATA Cache, 16K CODE Cache
  - 256K L2 Cache
- Reserve BIOS
- North Bridge: IDE, 10/100 Mbit LAN, USB 2.0, SDRAM / DDRII, Internal SPI Bus, External SPI Bus
- South Bridge: I2C, LPC, LPT, GPIO, MTBF Counter, Watchdog, 4 x COM, RTC + NVRAM 256 Bytes

- COM3, COM4: RS-232 Driver, Opto Isolation, RS-422/485 Driver → COM1, COM2
- External Watchdog
- FRAM 64Kbit
- NV SRAM 128Kbyte
- Main BIOS
- Opto Isolation
- BUFFERS
- FPGA XCS05
- JTAG Port
- RST / IRQ Port
- 8-bit ISA MicroPC
- 8/16-bit ISA PC-104
- DC/DC (1.0V 1.2V 1.8V 2.5V 3.3V)
- Overvoltage, Overcurrent, Reverse Polarity Protection Circuitry
- 5V INPUT

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

Corporate Offices

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

READY FOR
RoHS