
Em104-i423

PC/104 CPU Module

Quick Installation Guide

Version 1.1

Form Factor
<i>PC/104 CPU module</i>

CPU
<i>DMP Vortex86SX (32-Bit x86 Embedded SoC)</i>

Chipset
<i>Integrated in processor (Vortex86SX)</i>

Video
<i>CRT/ TFT/ DSTN/ EL</i>

LAN
<i>1 x 10/100 Base-T Ethernet</i>

I/O
<i>PC104 / USB / IDE / COM / LPT / FDD</i>

◆ Technical Support

If you have any technical difficulties, please consult the user's manual first at:
<ftp://ftp.arbor.com.tw/pub/manual>

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

<http://www.arbor.com.tw>

E-mail: info@arbor.com.tw

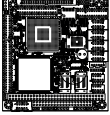
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Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:



1 x Em104-i423 PC/104 CPU module



1 x CD-ROM



1 x Quick Installation Guide

If any of the above items is damaged or missing, contact your vendor immediately.

Ordering Information

Em104-i423VL/4M	PC/104 Vortex86SX module with CRT/LCD and LAN
Em104-i423DVL/128M	PC/104 Vortex86SX module with CRT/LCD, LAN and 128M Flash Disk
Cable Kit	CBK-12-0423-00 USB cable x 2 COM flat cable x 4 FDD flat cable x 1 IDE flat cable x 1 LPT flat cable x 1 RJ45 cable x 1 VGA cable x 1 KBMS cable x 1

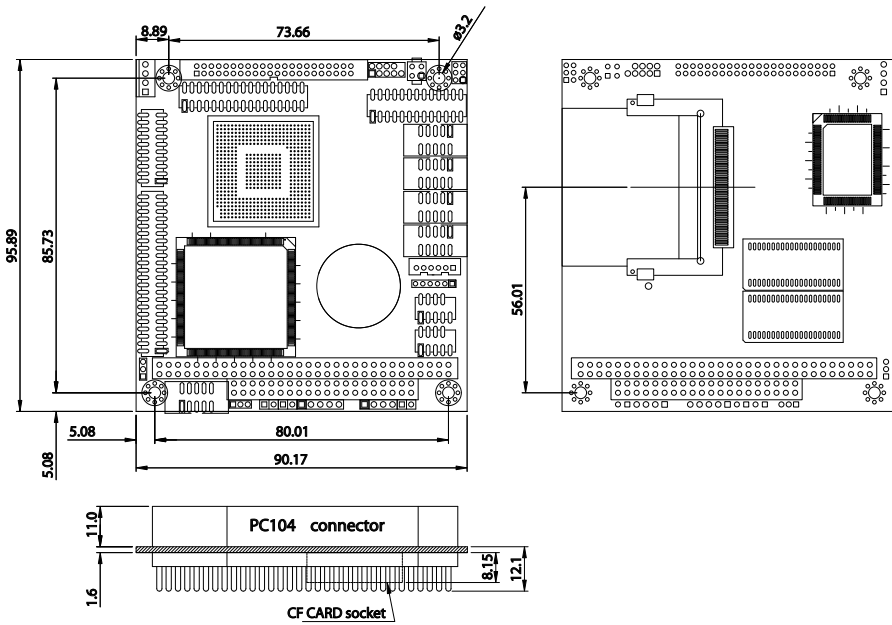
Specification

Form Factor	PC/104 CPU module
CPU	DMP Vortex86SX (32-bit x86 Embedded SoC)
Chipset	Integrated in processor (Vortex86SX)
System Memory	128MB DDR2 RAM On Board
VGA/ LCD Controller	Topro TP6508
Ethernet	1 x 10/100 Base-T Ethernet
BIOS	AMI PnP Flash BIOS
IDE Interface	1 x IDE (UltraATA 33), supports 2 IDE devices
Serial Port	4 x Serial Port (COM1, 3, 4: RS-232, COM2: RS-232/485 selectable)
Parallel Port/ Floppy	1 x SPP/EPP/ECP mode 1 x Floppy connector
KBMS	One 1x6 wafer connector for Keyboard and Mouse
Universal Serial Bus	4 x USB 2.0 compliant
LCD	TFT/ DSTN/ EL
Expansion Interface	1 x CF socket 1 x PC/104
RTC	Real Time Clock
Operation Temp.	-20°C ~ 70°C (-4°F ~ 158°F)
Watchdog Timer	127-level Reset
Dimension (L x W)	96 x 90 mm (3.8" x 3.5")

The Installation Paths of CD Driver

Driver	Path
Ethernet	\Ethernet\RDCR6040\LINUX_2422 \Ethernet\RDCR6040\DOS_070419

Board Dimensions



Unit:mm

Jumpers/ Connectors Quick Reference

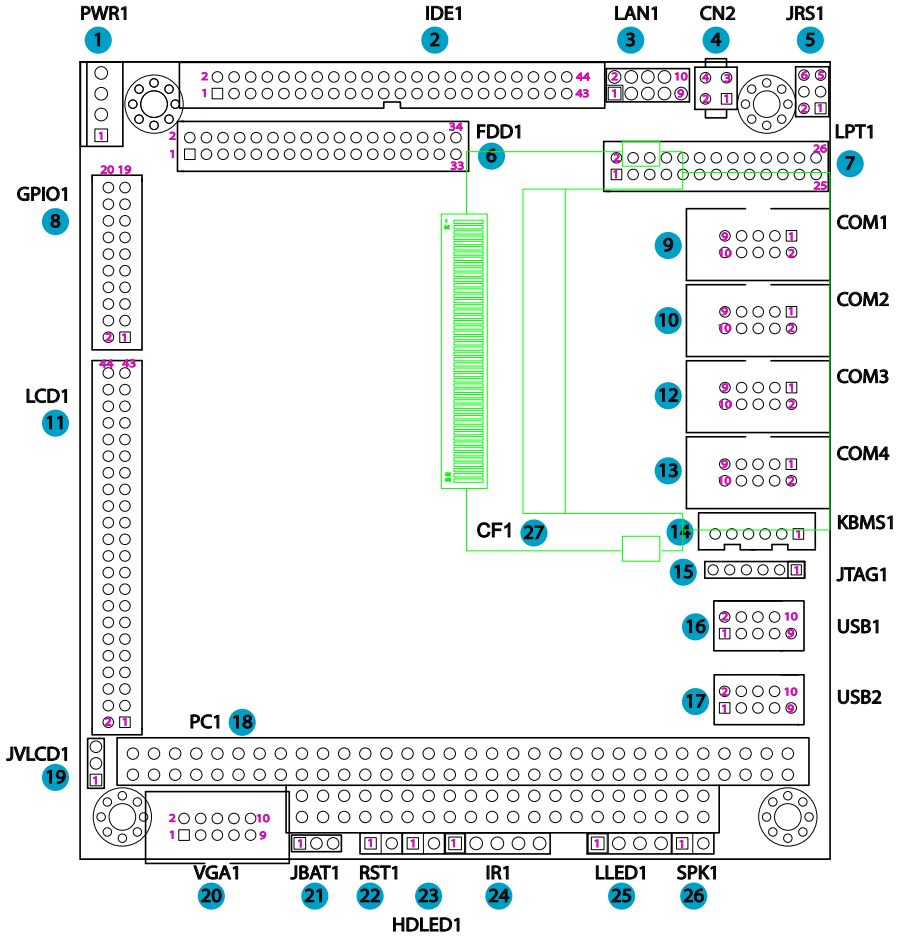
Jumpers

Label	Function
JVLCD1	LCD Voltage Select
JRS1	COM2 RS-232/485 Select
JBAT1	Clear CMOS

Connectors

Label	Function
PWR1	Power Supply Connector
IDE1	Primary IDE Connector
LAN1	Ethernet Connector
CN2	RS-485 Output Connector
FDD1	FDD Connector
LPT1	Parallel Port Connector
GPIO1	Digital I/O Connector
COM1~4	Serial Port Connectors
LCD1	LCD Connector
KBMS1	Keyboard & Mouse Connector
JTAG1	JTAG Connector
USB1, USB2	USB Connectors
PC1	PC/104 ISA Interface
VGA1	CRT Connector
RST1	Reset Connector
HDLED1	HDD LED Indicator
IR1	Infrared Connector
LLED1	LAN LED Indicators
SPK1	Speaker Connector
CF1	Compact Flash Socket



Connectors Quick Reference



Jumpers

JRS1: COM2 RS-232/485 Select (5)



Connector type: 2.00mm pitch 2x3 pin header.

Mode	Pin	
RS-232 (Default)	1-3 short 2-4 short	
RS-485	3-5 short 4-6 short	

JVLCD1: LCD Panel Voltage Select (19)



The voltage of LCD panel could be selected by JVLCD1 in +5V or +3.3V.

Connector type: 2.00mm pitch 1x3 pin header.

Pin	Voltage	
1-2	+5V	
2-3	+3.3V (Default)	

JBAT1: CMOS Setup (21)


Connector type: 2.00mm pitch 1x3 pin header.

Pin	Mode	
1-2	Keep CMOS (Default)	
2-3	Clear CMOS	

Connectors

PWR1: Power Supply Connector (1)

Connector type: 2.54mm pitch 1x4-pin wafer one wall connector

Pin	Description	
1	+5V	
2	GND	
3	GND	
4	+12V	

IDE1: Primary IDE Connector (2)

Connector type: 2.00mm pitch 2x22 box header

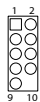


Pin	Description	Pin	Description
1	RESET#	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N/C
21	DREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IRDY	28	GND
29	ACK#	30	GND
31	IRQ	32	N/C
33	AD1	34	ATA66 DETECT
35	AD0	36	AD2
37	CS#0	38	CS#1
39	ACT#	40	GND
41	+5V	42	+5V
43	GND	44	N/C

LAN1: Ethernet Connector (3)

Connector type: 2.00mm pitch 2x5 pin header


Pin	Description	Pin	Description
1	TX+	2	TX-
3	RX+	4	N/C
5	N/C	6	RX-
7	N/C	8	N/C
9	GND	10	N/C (Key)



CN2: RS-485 Output Connector (4)

Connector type: 2.54mm pitch 2x2 pin header.


Pin	Desc.	Pin	Desc.
1	1-RS-485+	2	1-RS-485-
3	2-RS-485+	4	2-RS-485-



FDD1: FDD Connector (6)

Connector type: 2.00mm pitch 2x17 pin header.


Pin	Description	Pin	Description
1	GND	2	DRVDCEN0
3	GND	4	N/C
5	GND	6	DRVDCEN1
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	DSB#
13	GND	14	DSA#
15	GND	16	MOB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TRACK0#
27	GND	28	WP#
29	GND	30	RDATA#
31	GND	32	HEAD#
33	GND	34	DSKCHG#



LPT1: Parallel Port Connector (7)

Connector type: 2.00mm pitch 2x13 pin header.

Pin	Description	Pin	Description
1	STB#	2	AFD#
3	PTD0	4	ERROR#
5	PTD1	6	INIT#
7	PTD2	8	SLIN#
9	PTD3	10	GND
11	PTD4	12	GND
13	PTD5	14	GND
15	PTD6	16	GND
17	PTD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	N/C

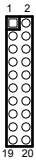


GPIO1: Digital I/O Connector (8)

Supports 16-bit GPIO, the signals can be programmable by user define.

Connector type: 2.00mm pitch 2x10 pin header

Pin	Description	Pin	Description
1	GND	2	+5V
3	GP0	4	GP8
5	GP1	6	GP9
7	GP2	8	GP10
9	GP3	10	GP11
11	GP4	12	GP12
13	GP5	14	GP13
15	GP6	16	GP14
17	GP7	18	GP15
19	+5V	20	GND




COM1~4: Serial Port Connectors (9), (10), (12), (13)

COM1, COM3, COM4: RS-232.

COM2: RS-232/422/485 selectable.

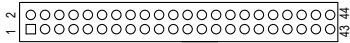
Connector type: 2.00mm pitch 2x5 box header.

Pin	Description	Pin	Description
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	N/C



LCD1: LCD Connector (11)

Connector type: 2.00mm pitch 2x22 pin header



Pin	Description	Pin	Description
1	+12V	2	+12V
3	GND	4	GND
5	VLCD	6	ENAVDD
7	FPVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHFCLK	36	FLM_VS
37	DE	38	LP_HS
39	GND	40	FPEN
41	GND	42	FPSCLK
43	+5V	44	+5V

KBMS1: Keyboard & Mouse Connector (14)

Connector type: 2.0mm pitch 1x6-pin box wafer connector.

Pin	Description
1	KB_DATA
2	GND
3	MS_DATA
4	KB_CLK
5	PS2_VCC
6	MS_CLK



JTAG1: JTAG connector (15)

Connector type: 2.00mm pitch 1x6 pin header.

Pin	Description
1	+5V
2	TCK
3	TDO
4	TDI
5	TMS
6	GND



USB1, USB2: USB Connectors (16), (17)

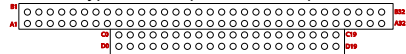
Connector type: 2.00mm pitch 2x5 pin header.

Pin	Desc.	Pin	Desc.
1	+5V	2	+5V
3	USBD-	4	USBD-
5	USBD+	6	USBD+
7	GND	8	GND
9	GND	10	N/C (Key)



PC1: PC/104 ISA Interface (18)

Connector type: PC104 press fit 2x20-pin connector



VGA1: CRT Connector (20)

Connector type: 2.00mm pitch 2x5 pin header.

Pin	Desc.	Pin	Desc.
1	RED	2	GND
3	GREEN	4	GND
5	BLUE	6	GND
7	H-SYNC	8	GND
9	V-SYNC	10	GND



RST1: Reset Connector (22)

Connector type: 2.54mm pitch 1x2 pin header.

Pin	Description
1	RESET-
2	RESET+



HDLED1: HDD LED Connector (23)

Connector type: 2.54mm pitch 1x2 pin header.

Pin	Description
1	HDD_LED-
2	HDD_LED+



IR1: Infrared Connector (24)

Connector type: 2.54mm pitch 1x5 pin header.

Pin	Description
1	+5V
2	N/C
3	IRRX
4	GND
5	IRTX



LLED1: LAN LED indicators (25)

Connector type: 2.54mm pitch 1x4 pin header.

Pin	Description
1	LINK_LED+
2	LINK_LED-
3	ACT_LED+
4	ACT_LED-



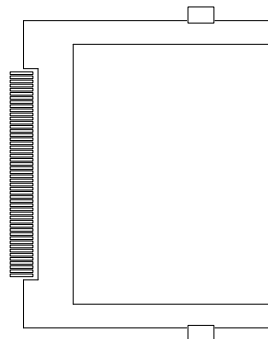
SPK1: Speaker Connector (26)

Connector type: 2.54mm pitch 1x2 pin header.

Pin	Description
1	SPEKOUT+
2	SPEKOUT-



CF1: Compact Flash Socket (27)



Pin	Description	Pin	Description
1	GND	26	N/C
2	SDD3	27	SDD11
3	SDD4	28	SDD12
4	SDD5	29	SDD13
5	SDD6	30	SDD14
6	SDD7	31	SDD15
7	SDCS0#	32	SDCS1#
8	N/C	33	N/C
9	GND	34	SDIOR#
10	N/C	35	SDIOW#
11	N/C	36	N/C
12	N/C	37	SIDEIRQ
13	+5V	38	+5V
14	N/C	39	CSEL#
15	N/C	40	N/C
16	N/C	41	SIDERST#
17	N/C	42	SIORDY
18	SDA2	43	SDDREQ
19	SDA1	44	SDDACK#
20	SDA0	45	HD_LED2#
21	SD0	46	SDIAG#
22	SD1	47	SDD8
23	SD2	48	SDD9
24	N/C	49	SDD10
25	N/C	50	GND