

SBC-456/E

AIO Half-size CPU Card.486DX5-133.LCD,10/100 Base-T Ethernet / VGA / DOC,DOM ,CFD / PC/104 expansion connector & 4 COMs.

SBC-456/E

Notice:

The guide is designed for experienced users to setup the system within the shortest time. For detailed information, please refer to the electronic user's manual.

Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

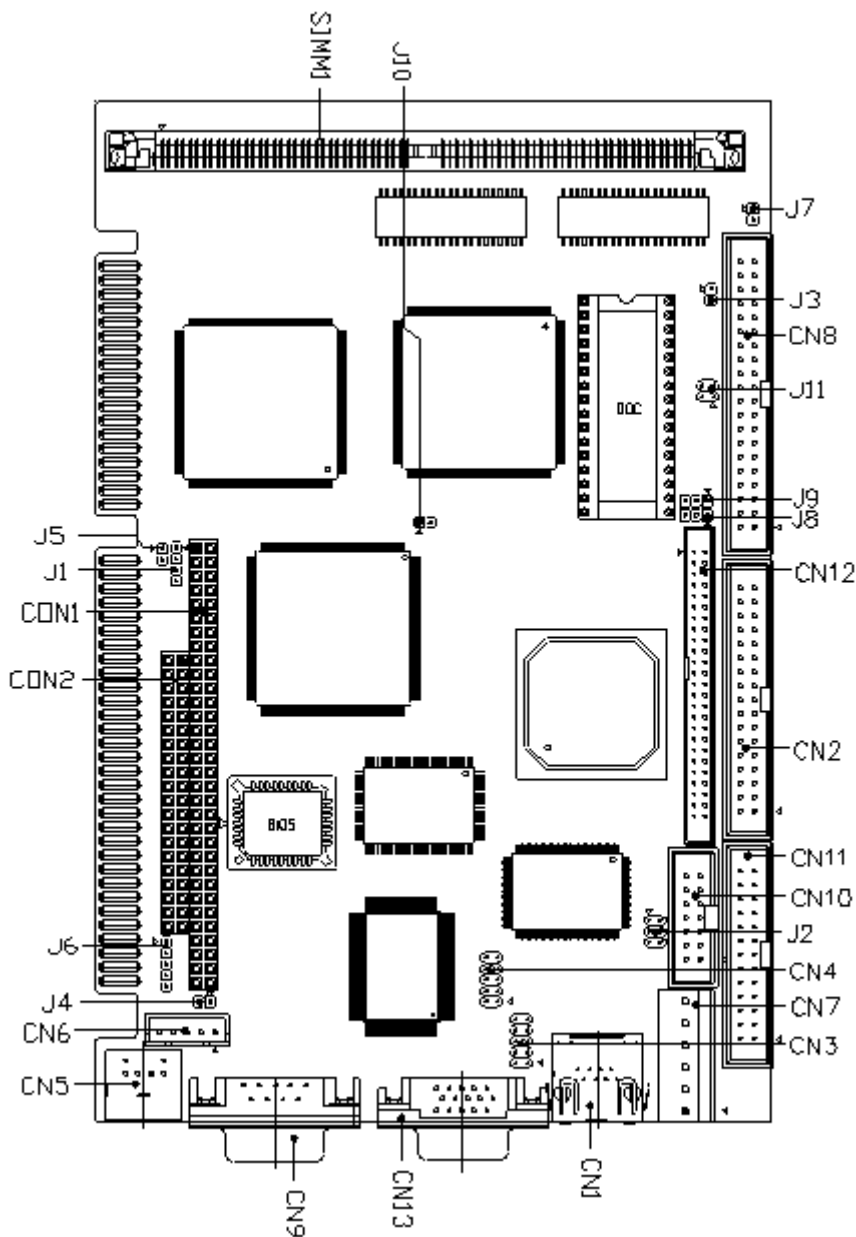
Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

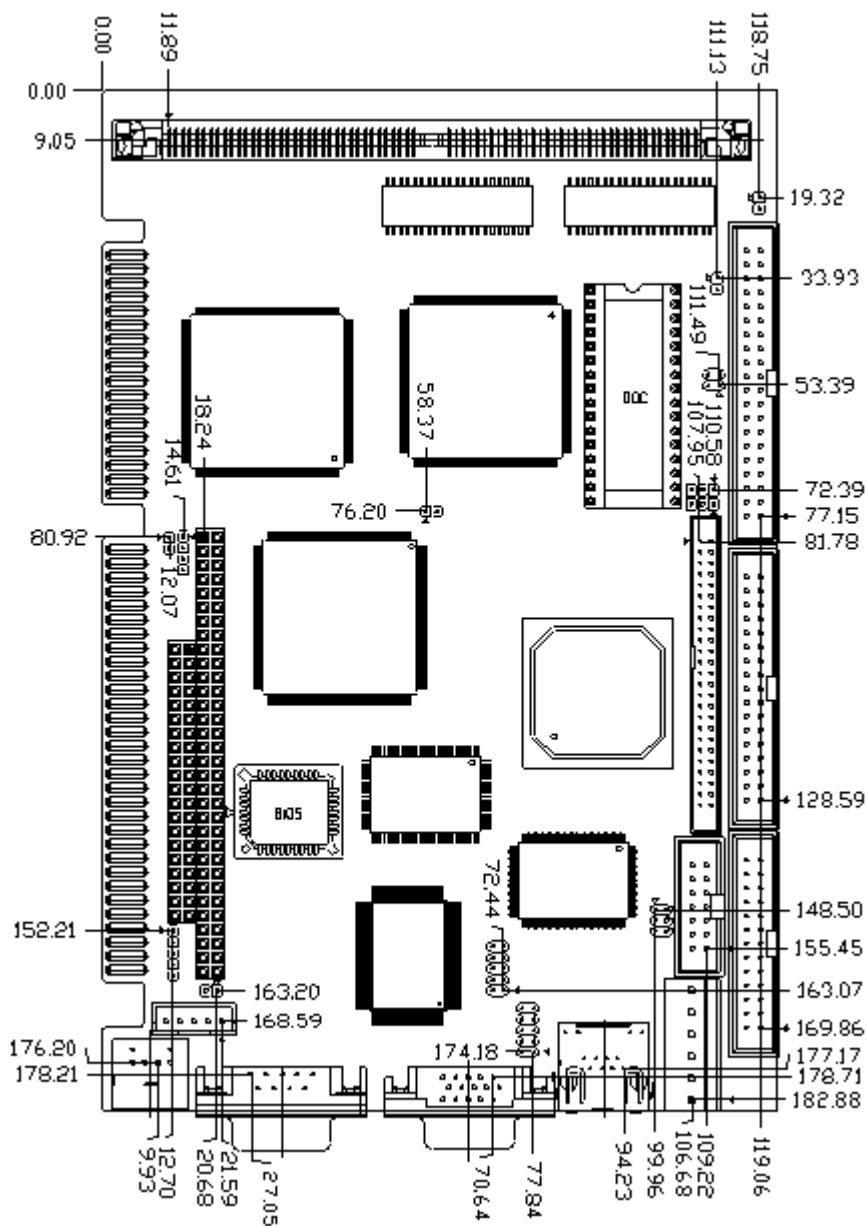
Quick Installation Guide

Locating Jumpers & Connectors



Quick Installation Guide

Mechanical Drawing



Jumpers and Connectors

Connectors on the board link themselves to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your applications. The table below lists the function of each jumper and connector:

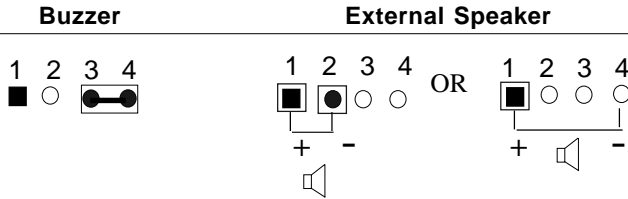
Jumpers and Connectors	
Label	Function
J1	Buzzer or external speaker
J2	COM2 RS-232/422/485 select
J3	DOM voltage select
J4	Clear CMOS
J5	Fan power
J6	Keyboard lock
J8	LCD voltage select
J9	LCD shift clock select
J11	DOC address setting
J7	HDD LED connector
J10	Reset connector
CN1	LAN connector
CN2	FDD connector
CN3	COM3 connector
CN4	COM4 connector
CN5	Keyboard & PS/2 Mouse connector
CN6	Internal keyboard connector
CN7	Power connector(P8)
CN8	HDD connector
CN9	COM1 connector
CN10	COM2 connector
CN11	Parallel connector
CN12	LCD connector
CN13	VGA connector
CN14	Compact Flash Disk connector
CON1,2	PC104 connector
U30	DOC socket

Quick Installation Guide

Buzzer or External Speaker (J1)

The CPU card has its own buzzer. You can disable the internal buzzer and connect an external speaker to EXT SPK. Enabling the external speaker automatically disables the internal buzzer.




Buzzer or External Speaker (J1)



Pin	Function
1	Vcc
2	Speaker output
3	Buzzer in
4	Speaker output

COM2 RS-232/422/485 Select (J2)

The SBC-456/E Ver.B offers two serial ports. The following chart shows the available options:

COM2 RS-232/422/485 select (J2)		
*RS-232	RS-422	RS-485
		

* default

DOM Voltage Select (J3)

DOM Voltage Select (J3)

*Default

DOM Used



Clear CMOS (J4)

You can connect an external switch to clear the CMOS. This switch closes J4 and turns on the power, at which time the CMOS setup will be cleaned.

Clear CMOS (J4)

*Protect (default)

Clear CMOS



Fan Power (J5)

You can connect a fan to the CPU. SBC456/E Ver.B offers +5V to drive a fan for CPU.

Fan Power (J5)

Pin	Function
1	Vcc
2	GND

Keyboard Lock (J6)

Keyboard Lock (J6)

Pin	Signal	Pin	Signal
1	Vcc	4	KBLOCK
2	N/C	5	GND
3	GND		

Quick Installation Guide

LCD Voltage Select (J8)

J8	3.3V	5V
	1 <input type="radio"/>	1 <input checked="" type="checkbox"/>
	2 <input checked="" type="checkbox"/>	2 <input checked="" type="checkbox"/>
*default	3 <input type="radio"/>	3 <input type="radio"/>

LCD Shift Clock Select (J9)

You can select the LCD control signals by setting J9. The following chart shows the available options.

LCD Shift Clock Select (J9)

SHF CLK	ASHF CLK
1 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>
2 <input checked="" type="checkbox"/>	2 <input checked="" type="checkbox"/>
3 <input type="radio"/>	3 <input checked="" type="checkbox"/>

* default

DiskOnChip Socket (U30)

The DiskOnChip 2000 family of products provides a single chip solid-state flash disk in a standard 32-pin DIP package. The DiskOnChip 2000 is a solid-state disk with no moving parts, resulting in a significant reduction in power consumption and an increase in reliability. If your operating system is Win9X (except win2000), you can install it according to the process on the next page.

The DiskOnChip 2000 family of products is available in capacities ranging from 2MB up to 1GB, unformatted. In order to manage the disk, the DiskOnChip 2000 includes the TrueFFS, M-Systems' Flash File System proprietary software. The DiskOnChip 2000 package is pin-to-pin compatible with standard 32-pin EPROM devices.

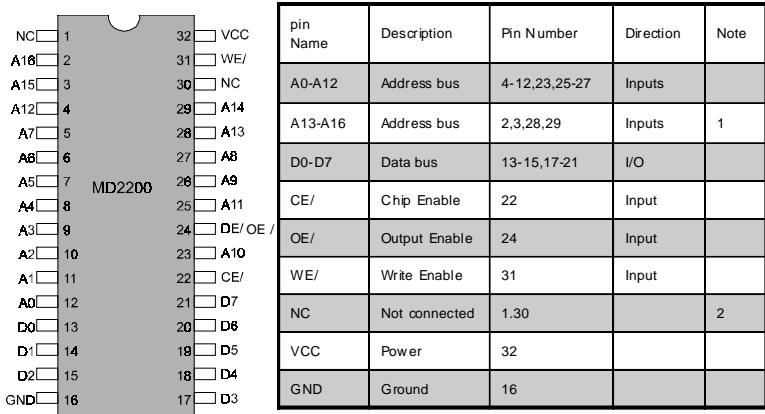


Figure1-MD2200 Pin-out

Note 1: Pins A13 through A16 are not used by the MD2200. They are kept for socket backward compatibility with ED 1100 (DiskOnChip 1000)

Note 2: Pins 1 and 30 are not used by MD2200

Quick Installation Guide

DiskOnChip (DOC) 2000 Installation

When the DOC is installed correctly, a DOC will work like an HDD or an FDD. To install the DOC on the mainboard, follow the instructions below:

1. Plug the DOC into the socket. Make sure pin 1 of the DOC is aligned with pin 1 of the socket.
2. Push the DOC into the socket until it is firmly seated in the socket.

Caution: The DOC may be damaged if it is installed incorrectly.

3. Set the jumper for the memory address of the DOC.

Note:

The memory shadow function sometimes will create conflicts with the memory window. You should disable the memory shadow from the BIOS SETUP if the DOC cannot be accessed.


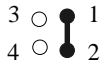
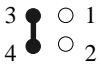
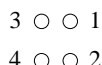
Configure DOC as a boot device

To configure a DOC as a boot drive, you should copy the operating system files onto the DOC. The following procedure is an example of the initialization process.

1. Install a DOC into your system.
2. Insert a bootable floppy disk in drive A: and boot the system.
3. At the DOS prompt, type **SYS C:** to transfer the DOS system files to the DOC (assuming the DiskOnChip is installed as drive C:). Reboot the system.
4. Go to the BIOS Setup Utility by hitting the key. Set the type of Primary Master or C: Drive as *Not Installed*.
5. Remove the floppy disk from the drive A: and leave the BIOS Setup Utility. The system should boot from the DOC.

DOC Address Setting (J11)

The DiskOnChip 2000 occupies a 8 Kbyte window in the upper memory address (the range is shown as below). You should ensure this dose not conflict with any other device's memory address. J11 can control the memory address of Flash disk.

DiskOnChip 2000 Address Setting	
Memory address (HEX)	J11
DISABLE	
DC00	
D800*	
D400	

* default setting

These addresses might conflict with the ROM BIOS of other peripheral boards. Please select appropriate memory address to avoid memory conflict.

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HDD LED Connector (J7)

You can use an LED to indicate when the HDD is active. Pin1 supplies the LED power, and Pin2 is the ground.

HDD LED Connector (J7)

Pin	Function
1	HD-LED+
2	HD-LED-

Reset Connector (J10)

You can connect an external switch to easily reset your computer. This switch restarts your computer as if you had turned off the power, then turned it back on.

Reset Connector (J10)

Pin	Function
1	GND
2	RST-IN

LAN Connector (CN1)

This 100Base-T Ethernet connector is a standard RJ-45 connector.

The onboard Realtek RTL8139C fast Ethernet controller supports 10Mb/s and 100 Mb/s N-way auto-negotiation operation. Ethernet is the most popular type of local area network, which sends its communications through radio frequency signals carried by a coaxial cable.

Ethernet uses a bus or star topology and supports data transfer rates of 10 Mbps. A new version of Ethernet, called *100Base-T* (or *Fast Ethernet*), can support data transfer rates of 100 Mbps.

LAN Connector (CN1)

Pin	Signal	Pin	Signal
1	Tx+	2	Tx-
3	Rx+	4	NC
5	NC	6	Rx-
7	NC	8	NC

Floppy Drive Connector (CN2)

You can attach up to two floppy drives to the SBC-456/E Ver.B's on-board controller and use any combination of 5 1/4" (360 KB and 1.2 MB) and/or 3 1/2" (720 KB, 1.44 MB, and 2.88 MB) drives.

The SBC-456/E Ver.B CPU card comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. There are two sets of floppy disk drive connectors, one in the middle, and one on the other end. Each set consists of a 34-pin flat-cable connector (usually used for 3.5" drives) and a printed-circuit board connector (usually used for 5.25" drives).

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into the CN2 connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: floppy and the other set in the middle connects to the B: floppy.

Pin assignments

The following table lists the pin assignments for the CN2 connector:

FLOPPY drive connector (CN2)			
Pin	Signal	Pin	Signal
1~33 (odd)	GND	2	High density
4, 6	Unused	8	Index
10	Motor enable A	12	Driver select B
14	Driver select A	16	Motor enable B
18	Direction	20	Step pulse
22	Write data	24	Write enable
26	Track 0	28	Write protect
30	Read data	32	Select head
34	Disk change		

Quick Installation Guide

Serial Port COM1 (CN9), COM2 (CN10), COM3 (CN3), and COM4 (CN4) Connectors

The SBC-456/E Ver.B offers three RS-232 serial ports to connect serial devices. Using the BIOS Peripheral Setup program, you can select the address for each port or disable it. Please check the following table for the pin assignment.

COM1 RS-232 Connector (CN9)

Pin	Signal
1	DCD1
2	RX1
3	TX1
4	DTR1
5	GND
6	DSR1
7	RTS1
8	CTS1
9	RI1

COM2 RS-232/422/485 (CN10)

Pin	Signal	Pin	Signal
1	DCD2	2	DSR2
3	RXD2	4	RTS2
5	TXD2	6	CTS2
7	DTR2	8	RI2
9	GND	10	N/C
11	485TXD+	12	485TXD-
13	422RXD-	14	422RXD-

COM3 RS-232 Connector (CN3)

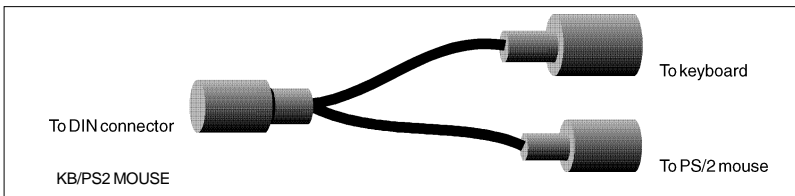
Pin	Signal	Pin	Signal
1	DCD3	6	DSR3
2	RX3	7	RTS3
3	TX3	8	CTS3
4	DTR3	9	RI3
5	GND	10	NC

COM4 RS-232 Connector (CN4)

Pin	Signal	Pin	Signal
1	DCD4	6	DSR4
2	RX4	7	RTS4
3	TX4	8	CTS4
4	DTR4	9	RI4
5	GND	10	NC

Keyboard and PS/2 Mouse Connectors (CN5, CN6)

The SBC-456/E Ver.B board provides two keyboard and PS/2 mouse connectors. A 5-pin connector (CN6) supports passive backplane applications. A second 6-pin mini-DIN keyboard and PS/2 mouse connector (CN5) on the card mounting bracket supports single board computer applications.



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Keyboard & PS/2 Mouse Connector (CN5)

Pin	Function
-----	----------

1	K.B. data
---	-----------

2	PS/2 data
---	-----------

3	GND
---	-----

4	Vcc
---	-----

5	K.B.clock
---	-----------

6	PS/2 clock
---	------------

Keyboard Connector (CN6)

Pin	Function
-----	----------

1	K.B. clock
---	------------

2	K.B. data
---	-----------

3	N.C.
---	------

4	GND
---	-----

5	Vcc
---	-----

Power Connector (CN7)

In single board computer (non-passive backplane) applications, you will need to connect the power directly to the SBC-456/E Ver.B board using CN7. This connector is fully compatible with the standard PC PS/2 power supply connector, P8. See the following table for its pin assignments:

Power connector (CN7)

Pin	Signal
-----	--------

1	N.C.
---	------

2	+5 V _{DC}
---	--------------------

3	+12 V _{DC}
---	---------------------

4	-12 V _{DC}
---	---------------------

5	GND
---	-----

6	GND
---	-----

IDE Hard Drive Connector (CN8)

You can attach two Enhanced Integrated Device Electronics hard disk drives to the SBC-456/E Ver. B's internal controller. The card comes with a 40-pin flat piggyback cable which has three identical 40-pin flat-cable connectors.

Connecting the hard drive

Wire number 1 on the cable is red, and the other wires are gray.

1. Connect one end of the cable to the IDE connector and make sure that the red wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Unlike floppy drives, you can make the connections with any of the connectors on the cable. If you install two drives, you will need to set one as the master and the other as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

Quick Installation Guide

Pin assignments

The following table lists the pin numbers and their respective signals:

IDE Connector (CN8)			
Pin	Signal	Pin	Signal
1	Reset	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	DOM voltage
21	N.C.	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	BALE
29	N.C.	30	GND
31	IRQ 14	32	-I/O CS16
33	A1	34	N.C.
35	A0	36	A2
37	CS0	38	CS1
39	-ACT	40	GND

Parallel (Printer) Connector (CN11)

Normally, the parallel port is used to connect the card to a printer. The SBC-456/E Ver. B includes an onboard parallel port, accessed through the CN11 connector, a 26-pin flat-cable connector. The CPU card comes with an adapter cable, which lets you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other, mounted on a retaining bracket.

Installing the retaining bracket

The retaining bracket installs at an empty slot in your system's chassis. It provides an external port that gives your parallel peripheral access to the card's parallel port connector.

1. Find an empty slot in your chassis.
2. Unscrew the plate that covers the end of the slot.
3. Screw in the bracket in place of the plate.
4. Next, attach the flat-cable connector to the CN11 connector.
Wire 1 of the cable is red or blue, and the other wires are gray. Make sure that Wire 1 connects to Pin 1 of the CN11 connector. Pin 1 is on the right side of the CN11 connector.

Pin assignments

Parallel (printer) Connector (CN11)

Pin	Signal	Pin	Signal
1	Strobe	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	-Acknowledge
11	Busy	12	Paper empty
13	+Select	14	-Auto feed
15	-Error	16	-Init printer
17	-Select input	18~25	GND

Quick Installation Guide

Display Connectors (CN13, CN12)

The SBC-456/E CPU card's VGA connector (CN13) with PCI bus supports monochrome display as well as high resolution color displays. The card also features an LCD connector (CN12), which allows you to connect various flat panel displays. The following table lists their pin assignments:

VGA connector (CN13)	
Pin	Signal
1	Red
2	Green
3	Blue
4	Not used
5	GND
6	Red return (GND)
7	Green return (GND)
8	Blue return (GND)
9	NC
10	Sync return (GND)
11	NC
12	SDAT
13	Horizontal sync
14	Vertical sync
15	SCLK

LCD connector (CN12)

Pin	Signal	Pin	Signal
1	+12 V _{DC}	2	+12 V _{DC}
3	GND	4	GND
5	LCDV (5 V or 3.3V)	5	LCDV (5 V or 3.3V)
7	EN VEE	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	P24	34	P25
35	SHFCLK	36	FLM (V SYS)
37	M(DE)	38	LP (H SYS)
39	GND	40	FPEN
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35

Please check the next page to get the more detailed information of pin assignment.

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LynxEM+	Color DSTN			Color TFT				
	16-bit	24-bit	9-bit	12-bit	18-bit	24-bit	12-bitx2	18-bitx2
P0	LD0	LD0	B0	B0	B0	B0	BA0	BA0
P1	LD1	LD1	B1	B1	B1	B1	BA1	BA1
P2	LD2	LD2	B2	B2	B2	B2	BA2	BA2
P3	LD3	LD3		B3	B3	B3	BA3	BA3
P4	LD4	LD4			B4	B4	BB0	BB0
P5	LD5	LD5			B5	B5	BB1	BB1
P6	LD6	LD6				B6	BB2	BB2
P7	LD7	LD7				B7	BB3	BB3
P8		LD8	G0	G0	G0	G0	GA0	GA0
P9		LD9	G1	G1	G1	G1	GA1	GA1
P10		LD10	G2	G2	G2	G2	GA2	GA2
P11		LD11		G3	G3	G3	GA3	GA3
P12	UD0	UD0			G4	G4	GB0	GB0
P13	UD1	UD1			G5	G5	GB1	GB1
P14	UD2	UD2				G6	GB2	GB2
P15	UD3	UD3				G7	GB3	GB3
P16	UD4	UD4	R0	R0	R0	R0	RA0 ¹	RA0
P17	UD5	UD5	R1	R1	R1	R1	RA1	RA1
P18	UD6	UD6	R2	R2	R2	R2	RA2	RA2
P19	UD7	UD7		R3	R3	R3	RA3	RA3
P20		UD8			R4	R4	RB0	RB0
P21		UD9			R5	R5	RB1	RB1
P22		UD10				R6	RB2	RB2
P23		UD11				R7	RB3	RB3
P24								BA4
P25								BA5
P26								BB4
P27								BB5
P28								GA4
P29								GA5
P30								GB4
P31								GB5
P32								RA4
P33								RA5
P34								RB4
P35								RB5

RA0 denotes first pixel of R0 for 2 pixels/clock interface. RB0 denotes second pixel of R0 for 2 pixels/clock interface.

Compact Flash Disk Connector (CN14)

Compact Flash Disk Connector (CN14)			
Pin	Signal	Pin	Signal
1	GND	26	GND
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	CS#1	32	CS#3
8	GND	33	GND
9	GND	34	IOREAD
10	GND	35	IO WRITE
11	GND	36	+5V
12	GND	37	IRQ15
13	+5V	38	+5V
14	GND	39	CSEL
15	GND	40	N.C.
16	GND	41	IDERESET
17	GND	42	IOREADY
18	ADDR2	43	N.C.
19	ADDR1	44	+5V
20	ADDR0	45	DASP
21	DATA0	46	DIAG
22	DATA1	47	DATA8
23	DATA2	48	DATA9
24	HDIO16J	49	DATA10
25	GND	50	GND

