SOM-DB4400

ETX Development Board

User's Manual

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This manual is for the SOM-DB4400

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Version History

June, 2002: SOM-DB4400 User's Manual 2nd edition (Part no. 2006440001) Corrected error on page 14: Sec. 2.5 Connector Location X3 and X4 reversed.

September 2001, SOM-DB4400 User's Manual 1st edition (Part no. 2006440000)

Packing list

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

- 1 SOM-DB4400 ETX Development Board
- CD-ROM or Disks for utility, drivers, including manual (in PDF format)
- 1 warranty certificate

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Contents

CHAPTER 1

General Information

This chapter provides background information for the SOM-DB4400.

Sections include:

- Card specifications
- Board layout

1.1 Introduction

With the SOM-DB4400 and its reference circuits, users may quickly test their specific SOM-ETX module and easily design their own solution boards for the SOM-ETX.

Advantech's new SOM-ETX is a form factor designed to increase efficiency and effectiveness in embedded systems. This product facilitates easier system design by eliminating expensive connectors and cumbersome adapter cables. These solutions make it more simple to customize a system using an off the shelf embedded PC and reduces the time to market of the product. This standard is a reference for dimensions and pinouts of SOM-ETX boards. Each SOM-ETX CPU board provides a different set of features. Please see the SOM-ETX CPU board manual for details about the product or contact your supplier to enquire about supported features.

The SOM-ETX boards are interchangeable as long as they provide the same features (i.e. 2 channel LVDS video output). In order to maintain this compatibility, ask your supplier or application engineers for assistance.

To learn about SOM-ETX basic functions, refer to the SOM-ETX evaluation schematic. This material better explains and clarifies information about features. Some of the non-standard features, such as the panel interface, are not usable usless the appropriate external parts are used.

Parts for EMV/ ESD protection are not included on the SOM-ETX CPU board. Also note that SOM-ETX signals do not need an external Pull-up or Pull down.

If you are creating a backplane for SOM-ETX boards ensure that you have the appropriate experience with PCI device development. It is also ideal to be familiar with signal integrity and timing when laying out your backplane.

1.2 Specifications

- **FlexATX board size and connector allocation on edge**
- **Two PCI-bus and two ISA expansion slots**
- **One DB-15 VGA connector**
- **RJ-45 Ethernet connector**
- **One DB-9 COM1 serial port connector**
- **One DB-9 serial port for RS-232/422/485, jumper selected**
- **Two USB connectors**
- **One LCD connector (up to 48 bits)**
- **One CompactFlash™ socket (type II)**
- **One DB-25 printer port connector**
- **One FDD connector and one HDD connector (40-pin)**
- **One 6-pin PS/2 KB/mouse connector (Keyboard/Mouse split)**
- **Three phone jack connectors (Line-in, line-out, Mic-in)**
- **One CD-in connector**
- **One TV-out connector (AV terminal)**
- **One Audio Codec**
- **One IRDA**

Mechanical and Environmental

Power supply : ATX power supply
Max. Power requirements: 5 W
Operating temperature: 0 to 60° C (32 to 140° F)
Board Size: 229 mm x 191mm
Weight: 0.35 Kg

1.3 Safety precautions

Warning! *Always completely disconnect the power cord from your chassis whenever you are working on it. Do not make connections while the power is on because sensitive electronic components can be damaged by the sudden rush of power. 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. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

1.4 Board layout: dimensions

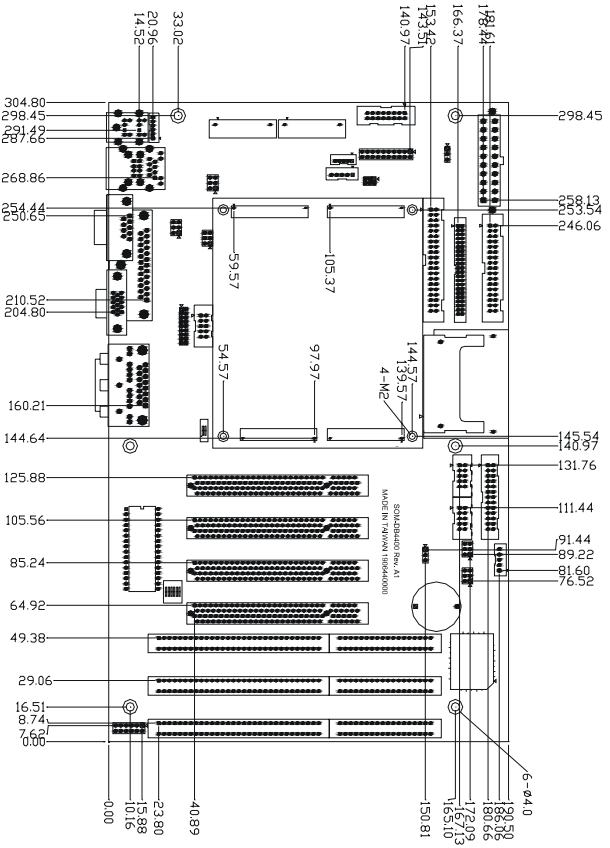


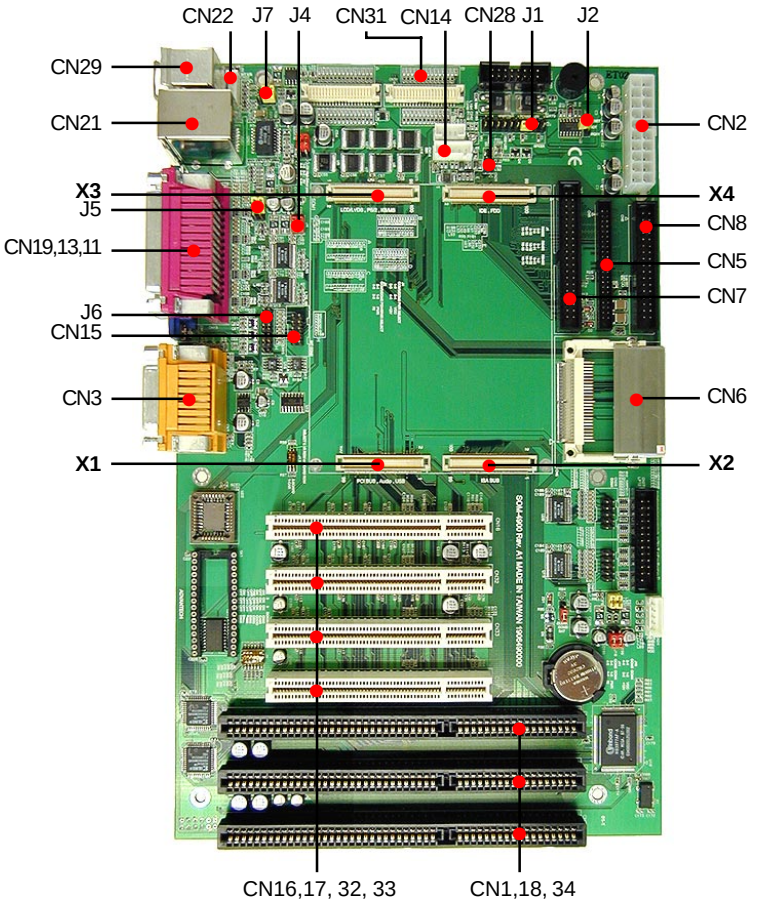
Fig 1-1: SOM-DB4400 Dimensions

CHAPTER 2

Connecting Peripherals

This chapter tells how to set up the SOM-DB4400 hardware.

2.1 Board layout: Jumper and connector locations



SOM-DB4400 Jumpers & Connectors

2.2 Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard or expansion bus connectors. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

The table below lists the function of each of the board jumpers and connectors:

Table 2-1: connectors

Name	Function
CN 1	ISA Slot
CN 2	ATX Power Connector
CN 3	Audio Connector
CN 5	Secondary Slaver IDE 22X2 Pins Box Header Connector
CN 6	Compact Flash
CN 7	Primary IDE 20X2 Pins Box Header Connector
CN 8	FDD 17X2 Pins Box Header Connector
CN 11	CRT 15 Pins D-Type Connector
CN 13	COM1 9 Pins D-Type Connector
CN 14	SIR 5X1 Pins Wafer Box Connector
CN 15	COM2 5X2 Box Header Connector
CN 16	PCI1 Slot
CN 17	PCI2 Slot
CN 18	ISA Slot
CN 19	LPT1 25 Pins D-Type Connector
CN 21	USB & LAN Connector
CN 22	Internal KB & Mouse 6X1 Wafer Box Connector
CN 28	TV Out 3X2 Pins Pin Header Connector
CN 29	PS2 KB & Mouse Connector
CN 31	24-bit LCD connector
CN 32	PCI3 Slot
CN 33	PCI4 Slot
CN 34	ISA Slot

Table 2-2: Jumpers

Label	Function
J1	System Function
J2	WatchDog Reset Clear RTC
J4	COM1, COM2 Voltage select
J5	COM1, COM2 Ring/Voltage select
J6	Select RS232 or RS485 or RS422
J7	Select KB and MOUSE

Table 2-3: J1: System Function Connector *: LOW ACTIVE

Pin	Function	Pin	Function
1	PW LED	2	+5V
3	PW LED	4	GND
5	PW LED GND	6	SPKB
7	KBLOCK*	8	SPKA
9	KBLOCK* GND	10	NC
11	PANSW* GND	12	HDDLED
13	PANSW*	14	HDDLED +5V
15	NC	16	NC
17	NC	18	FPRST*
19	GND	20	FPRST* GND

Table 2-4: J2: Watchdog Reset Clear RTC

Close Pins	Function
1-2	Reset
2-3	Clear RTC

Table 2-5: J4: COM1, COM2 Voltage select

Close Pins	COM1
2-4	+5 V*
4-6	+ 12 V
Close Pins	**COM2**
1-3	+5 V*
3-5	+ 12 V

** default*

Table 2-6: J5: COM3, COM4 Ring/Voltage select

Close Pins	COM3
2-4	Voltage
4-6	Ring*
Close Pins	**COM4**
1-3	Voltage
3-5	Ring*

** default*

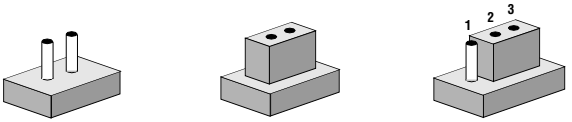
Table 2-7: J6: RS-232, RS-485, RS-422 Select

RS232*	RS485	RS422
5-6	3-4	1-2
7-9	9-11	9-11
8-10	10-12	10-12
13-15	15-17	15-17
14-16	16-18	16-18

** default*

2.3 Setting jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



Open **Closed** **Closed 2-3**

The jumper settings are schematically depicted in this manual as follows:

Open **Closed** **Closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

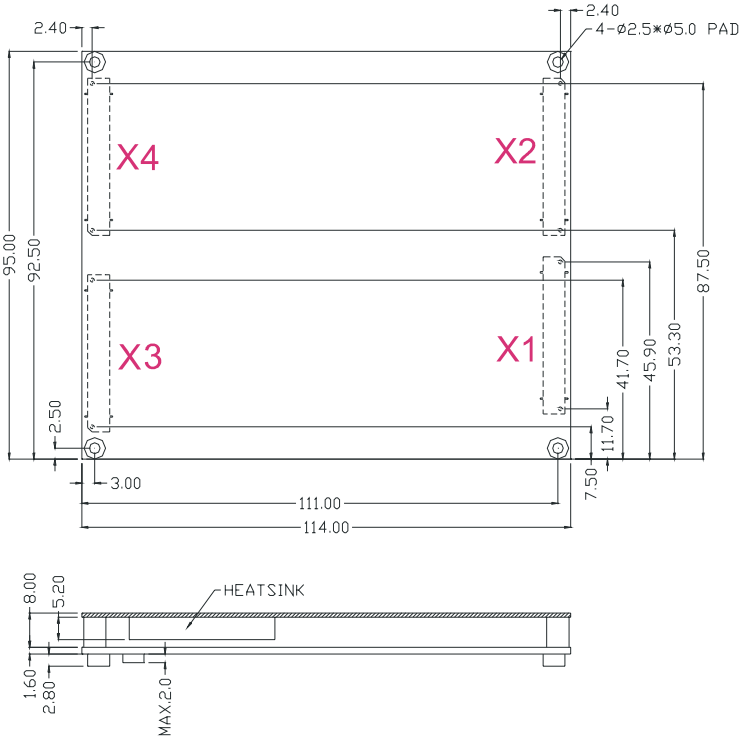
If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

2.4 Connector Locations

The board has a number of connectors that allow you to configure your system to suit your application.

The tables below shows the function of each of the board's connectors:



SOM-DB4400 ETX Pinout

2.5 Pin Assignments (X1,X2,X3,X4 connectors)

Please Refer to the SOM-ETX Design and Specification guide for pin assignment and description information.

2.6 Safety precautions

Warning! *Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because sensitive electronic components can be damaged by a sudden rush of power.*

Caution! *Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

CHAPTER 3

Connector Descriptions

This chapter tells how to set up the SOM-DB4400, including connecting peripherals, switches and indicators.

3.1 IDE hard drive connector (CN7)

You can attach two IDE (Integrated Device Electronics) drives/ devices to the SOM-DB4400 through a EIDE connector (CN7). Connecting drives is done in a daisy-chain fashion and requires one or two cables, depending on the drive size. 2.5" drives need a 1 x 40-pin to 2 x 44-pin flat-cable connector. 3.5" drives use a 1 x 40-pin to 2 x 40-pin cable. However, the required cables are not included in the SOM-DB4400 package.

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

1. Connect one end of the cable to CN7. Make sure that the red (or blue) 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.)

Connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

3.2 CompactFlash disk interface (CN6)

The CompactFlash socket is specially designed to prevent any incorrect installation of the CompactFlash disk card. When installing or removing the CompactFlash disk card, please make sure that the system power is off. The CompactFlash disk card is defaulted to drive E: in your system.

3.3 Floppy drive connector (CN8)

You can attach up to two floppy drives to the the SOM-DB4400 on-board controller. The recommend drives are 3.5" drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. A 34-pin flat-cable connector is fitted on one end of the cable while the other end sports two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (for the 3½" drives) and a printed-circuit board connector (for the 5¼" drives).

1. Plug in the 34-pin flat-cable connector into CN8. Make sure that the red wire corresponds to pin 1 on the connector.
2. Attach the appropriate conector at the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set at the other end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

When connecting a 3½" floppy drive, you may have some difficulties in determining which pin is pin number one. Look for a number on the circuit board indicating pin number one. In addition, you should check if the connector on the floppy drive has an extra slot. If the slot is up, pin number one should be on the right. Please refer to any documentation that came with the drive for more information.

If needed, connect the B: drive to the connectors in the middle of the cable as described as above.

If your cable needs to be custom made, you can find the pin assignments for the board's connector in Appendix A.

3.4 Parallel port connector (CN19)

Normally, the parallel port is used to connect to a printer. The SOM-DB4400 includes a multi-mode (ECP/EPP/SPP) parallel port, accessed through 25-pin DB-25 connector.

You will need an adapter cable if you use a traditional DB-25 connector. The adpater cable should have a 26-pin connector on one end and a 25-DB connector on the other.

The parallel port is designated as LPT1 and can be disabled.

3.5 PS/2 keyboard and mouse connector (CN29)

The SOM-DB4400 board provides 2 PS/2 connectors for a PS/2 keyboard, the lower, and a PS/2 mouse, the upper, respectively.

3.6 IR header (CN14)

The SOM-DB4400 provides an 5-pin IR header. To choose different transferring rate, Please refer its pin definition for further IR module installation.

3.7 Audio interfaces (CN3)

The SOM-DB4400 provides three audio phone jack connectors includeMicrophone in (mono), Line in (stereo) and Line out (stereo).

3.9 Serial ports (CN13, CN15)

The SOM-DB4400 offers two serial ports connection: one with DB-15 connector (COM1,CN13) and the other is 10 -pin header (COM2, CN15) RS-232 signal output. These ports allow you to connect to any serial device (a mouse, printers, etc.) or communication network.

Table 2-5: Serial port default settings

Port	Address	Interrupt	Default
COM1	3E8, 3F8	IRQ4	3F8
COM2	2E8, 2F8	IRQ3	2F8

3.10 VGA interface connections (CN11, CN31)

The SOM-DB4400 board's SVGA interface can facilitates conventional CRT displays as well as active LCD displays. It can support display fucntion provided either by the SOM 144/PCI module or by its on-board VGA controller.

3.10.1 CRT connector for on-board VGA (CN11)

CN4 is a 15-pin, D-SUB connector commonly used for conventional CRT displays.

Detailed information on pin assignments for CRT display connector CN4 is given in Appendix A.

3.10.5 Flat panel display connector for the SOM 144 module (CN31)

When the SOM-ETX module, such as SOM-4450, installed on the SOM-DB4400 supports LCD display, the LCD signal will be connected to CN31. The pin assignments for CN31 can be found in Appendix A.

3.11 Ethernet RJ-45 connector and USB connector(C21)

3.11.1 Ethernet connector (CN21, the upper)

When the SOM-ETX PCI module on the SOM-DB4400 is equipped with Ethernet feature, users may test such function from the SOM-DB4400's RJ-45 Ethernet connector (CN21, the upper)

3.11.2 USB connector(CN21, the lower)

The SOM-DB4400 board provides two USB (Universal Serial Bus) interfaces.

The USB interfaces can be disabled in the system BIOS setup.

3.12 TV-out S-vedio connector (CN28)

The TV-out's pin assignment can be found in Appendix A.

3.13 PCI slots (PCI 1~3)

The PCI slot are used for connecting the SOM-DB4400 to an PCI expansion card.

3.14 400-pin ETX socket(X1, X2, X3, X4)

Please refer Chapter 2 of *SOM ETX Design Specification Rev. 2.1*

APPENDIX A

Pin Assignments

This appendix contains information of a detailed or specialized nature. It includes:

- ATX Power connector (CN2)
- IDE hard drive connector (CN7)
- Floppy drive connector (CN8)
- IR connector (CN14)
- CD audio connector (CN10)
- TV-out connector (CN28)
- 24-bit Flat panel connector (CN31)
- Parallel Port connector (CN19)
- VGA connector (CN11)
- COM1 RS-232 serial port (CN13)
- COM2 RS-232 connector (CN15)
- Keyboard connnector (CN 29 lower)
- Mouse connnector (CN 29 upper)

connector

A.1 ATX power connector (CN2)

Table A-1: ATX power connector

Pin	Pin Name	Pin	Pin Name
1	3.3 V	2	3.3 V
3	GND	4	+ 5 V
5	GND	6	+ 5 V
7	GND	8	PWROK
9	+ 5 VSB	10	+12 V
11	3.3 V	12	-12 V
13	GND	14	PSON*
15	GND	16	GND
17	GND	18	-5 V
19	+5 V	20	+5 V

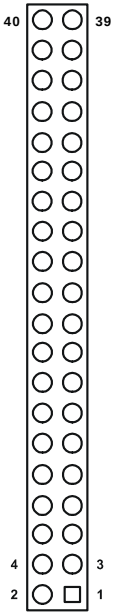
***low active**

A.2 IDE hard drive connector (CN7)

Table A-2: IDE hard drive connector

Pin	Signal	Pin	Signal
1	IDE RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	DRQ*	22	GND
23	IO WRITE*	24	GND
25	IO READ*	26	GND
27	IO CHANNEL READY	28	N/C
29	ACK	30	GND
31	IRQ14 (IDE IRQ)	32	IOCS16*
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE*	40	GND

* low active



A.3 Floppy drive connector (CN8)

Table A-3: Floppy drive connector

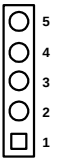
Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT*
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX*
9	GND	10	MOTOR 0*
11	GND	12	DRIVE SELECT 1*
13	GND	14	DRIVE SELECT 0*
15	GND	16	MOTOR 1*
17	GND	18	DIRECTION*
19	GND	20	STEP*
21	GND	22	WRITE DATA*
23	GND	24	WRITE GATE*
25	GND	26	TRACK 0*
27	GND	28	WRITE PROTECT*
29	GND	30	READ DATA*
31	GND	32	HEAD SELECT*
33	GND	34	DISK CHANGE*

* low active

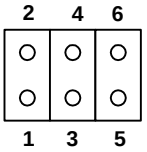
A.4 IR connector (CN14)

Table A-4: IR connector

Pin	Signal
1	+5 V (VCC)
2	FIR/C IR
3	IR_RX
4	GND
5	IR_TX



A.6 TV-out connector (CN28)



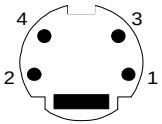


Table A-5: S-Video connector

Pin	Signal
1	LUMF
2	CHROMF
3	COMPOSITEF
4	GND
5	CSYNC
6	GND

A.7 24-bit Flat panel connector (CN31)

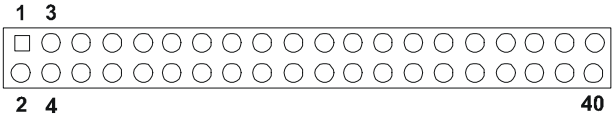


Table A-6: 24-bit LCD display connector (CN15)

Pin	Signal	Pin	Signal
1	VDDSAFE5	2	VDDSAFE5
3	GND	4	GND
5	VDDSAFE3	6	VDDSAFE3
7	Vcon	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	SHIFT CLOCK	36	FILM
37	M	38	LP
39	N/C	40	ENAVEE

Note: The model number of the CN15 and CN30 socket is DF13A-40DP-1.25V (Hirose Electric Co., Ltd.)

A.9 LCD Signal Mapping

LCD Connect	Pin Name	LCD		
		16-bit DSTN	18-bit TFT	24-bit TFT
CN31	P0	LD0	B0	B0
	P1	LD1	B1	B1
	P2	LD2	B2	B2
	P3	LD3	B3	B3
	P4	LD4	B4	B4
	P5	LD5	B5	B5
	P6	LD6	N/A	B6
	P7	LD7	N/A	B7
	P8	N/A	G0	G0
	P9	N/A	G1	G1
	P10	N/A	G2	G2
	P11	N/A	G3	G3
	P12	UD0	G4	G4
	P13	UD1	G5	G5
	P14	UD2	N/A	G6
	P15	UD3	N/A	G7
	P16	UD4	R0	R0
	P17	UD5	R1	R1
	P18	UD6	R2	R2
	P19	UD7	R3	R3
	P20		R4	R4
	P21		R5	R5
	P22			R6
	P23			R7

A.10 Parallel Port connector (CN19)

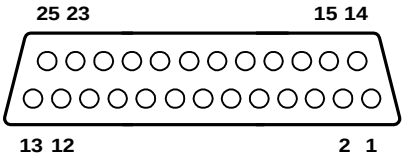


Table A-8: Parallel port connector (CN 9)

Pin	Signal	Pin	Signal
1	STROBE*	2	D0
3	D1	4	D2
5	D3	6	D4
7	D5	8	D6
9	D7	10	\ACK
11	BUSY	12	PE
13	SLCT	14	AUTOFD
15	ERR	16	INIT
17	SLIN	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND		

* Low active

A.11 VGA connector (CN11)

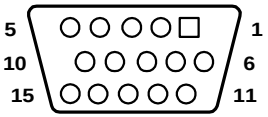


Table A-9: VGA connector (CN4)

Pin	Signal	Pin	Signal
1	RED	9	N/C
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDA
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	SCL
8	GND		

A.12 COM1 RS-232 serial port (CN13)

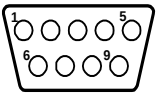


Table A-10: COM1 RS-232 serial port

Pin	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

A.13 COM2 RS-232 connector (CN15)

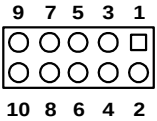


Table A-11: COM2 RS-232 connector (CN5)

Pin	RS-232 port	Pin	RS-232 port
1	DCD	6	CTS
2	DSR	7	DTR
3	RxD	8	RI
4	RTS	9	GND
5	TxD	10	N/C

A.14 Keyboard connnector (CN 29 lower)

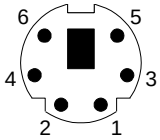


Table A-12: Keyboard and mouse connector

Pin	Signal
1	KB Data
2	N/C
3	GND
4	Vcc
5	KB Clock
6	N/C

A.15 Mouse connnector (CN 29 upper)

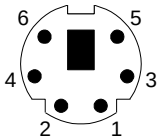


Table A-13: Keyboard and mouse connector

Pin	Signal
1	N/C
2	MSDATA
3	GND
4	Vcc
5	N/C
6	MSCLK

APPENDIX B

LVDS Connection

This appendix contains information concerning the LVDS installation and pin assignments.

B.1 LVDS Introduction

When you mention the impressive data rate of 400 Mbps at 15 meters for LVDS, you immediately realize how significant the differences are between analog and digital interfaces. There are several other factors other than significantly increased data transfer rate and image quality that make LVDS (Low-Voltage Differential Signaling) very attractive to industrial users. One is that LVDS drivers and receivers maintain excellent signal levels and performance while operating on supply voltages as low as 2 V. This low voltage allows LVDSs to operate independently from the main power supply voltage. Another factor is that LVDS drivers and receivers have a low swing voltage. This voltage is typically around 345 mV. This allows LVDS devices to achieve high speeds while using relatively little power. This low differential swing voltage together with self-canceling EMI, reduces EMI problems significantly. This is especially important in space-critical applications. This is also why LVDS has already been widely used in Notebook computer panel connections.

All Digital Benefits

No matter which digital standard an end user uses for their industrial applications, it will have to provide the following criteria. Be compatible so that system and display products from different suppliers can be made available in an open market. Become a standard for the electronics and PC industry. Be able to transmit data over standard twisted pair cables as well as fiber optic. Maintain a low bit error rate for high quality image while operating at a very low power level. Be scalable.

Expanded Applications

With flat panel displays already a common part of our everyday lives at work, home and industrial/commercial settings, deciding on a standard is a monumental decision that will affect all our lives. Engineers will have to champion their cause by applying both of these digital panel technologies to many practical products. Thus enabling the end user, whether it be in an industrial setting or a consumer setting, to benefit from both of these technologiesprocessor of choice.

B.2 LVDS Pin assingments

Pin Name	LVDS signal	Channel
LCDDO0	Txout0-	first
LCDDO1	Txout0+	first
LCDDO2	Txout1-	first
LCDDO3	Txout1+	first
LCDDO4	Txout2-	first
LCDDO5	Txout2+	first
LCDDO6	Txclk-	first
LCDDO7	Txclk+	first
LCDDO8	not used	--
LCDDO9	not used	--
LCDDO10	not used	--
LCDDO11	not used	--
LCDDO12	not used	--
LCDDO13	not used	--
LCDDO14	not used	--
LCDDO15	not used	--
LCDDO16	not used	--
LCDDO17	not used	--
LCDDO18	not used	--
LCDDO19	not used	--

Connector X3 (VGA, LCD, Video, COM1, COM2, LPT/Floppy, Irda, Mouse, Keyboard)			
Pin Number	Signal	Pin Number	Signal
1	GND	2	GND
3	R	4	B
5	HSY	6	G
7	VSY	8	DDCK
9	N.C.	10	DDDA
11	LCDDO16	12	LCDDO18
13	LCDDO17	14	LCDDO19
15	GND	16	GND
17	LCDDO13	18	LCDDO15
19	LCDDO12	20	LCDDO14
21	GND	22	GND
23	LCDDO8	24	LCDDO11
25	LCDDO9	26	LCDDO10
27	GND	28	GND
29	LCDDO4	30	LCDDO7
31	LCDDO5	32	LCDDO6
33	GND	34	GND
35	LCDDO1	36	LCDD03
37	LCDDO0	38	LCDDO2
39	VCC	40	VCC
41	LTGIO2	42	LTGIO0
43	LTGIO1	44	BLON#
45	BIASON	46	DIGON
47	COMP	48	Y
49	SYNC	50	C
51	LPT/FLPY#	52	N.C.
53	VCC	54	GND
55	/STB_DRV0	56	/AFD_DENSEL
57	FIR	58	PD7
59	IRRX	60	/ERR_HDSEL#
61	IRTX	62	PD6_MOT0
63	RXD2	64	/INIT_DIR#
65	GND	66	GND
67	RTS2#	68	PD5
69	DTR2#	70	/SLIN_STEP#
71	DCD2#	72	PD4_DSKCHG#
73	DSR2#	74	PD3_RDATA#
75	CTS2#	76	PD2_WP#
77	TXD2#	78	PD1_TRK0#
79	RI2#	80	PD0_INDEX#
81	VCC	82	VCC
83	RXD1	84	/ACK_DRV1
85	RTS1#	86	/BUSY_MOT1
87	DTR1#	88	PE_WDATA#
89	DCD1#	90	/SLCT_WGATE#
91	DSR1#	92	MSCLK
93	CTS1#	94	MSDAT
95	TXD1	96	KBCLK
97	RI1#	98	KBDAT
99	GND	100	GND