DIAMOND SYSTEMS CORPORATION

Pandora Enclosure
Including

Pandora EAP Panel Board

User Manual V1.2

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1 Introduction

This manual provides the information needed to use the Pandora Enclosure with Diamond Systems PC/104 CPU cards, including Athena, Elektra and Prometheus.

The manual includes,

- An introduction to the product.
- Detailed product physical dimensions
- Installation information
- Connector and other Configuration Information

Description and Features

Pandora provides an easy to assemble, lightweight, rugged and flexible enclosure for PC/104 systems. There are two versions of the Pandora enclosure.

- The generic version provides a flexible enclosure for arbitrary PC/104 stacks. With the generic version of Pandora, I/O connectors and system cabling is the responsibility of the user.
- The second version of the Pandora enclosure is customized to Diamond Systems PC/104 CPU products. When the system CPU is a Diamond Systems PC/104 CPU, Pandora provides additional functionality that eliminates the need for much internal cabling and provides a set of standard I/O connectors to the outside world.

This standardized interconnect scheme speeds up the assembly process and improves reliability and ruggedness. A panel I/O board plugs directly onto the Diamond Systems CPU card and converts all CPU I/O signals to industry-standard connectors. The panel board then mounts directly to the matching front panel of the enclosure. The entire PC/104 stack is held firmly in place with direct connections to both the top and bottom of the enclosure for extra rigidity. The rear panel provides convenient corner holes for quick mounting of the complete system.

The new Pandora Panel I/O Board is compatible with Diamond Systems Elektra, Athena, and Prometheus CPU boards. All three CPUs contain the same set of I/O connectors, with the same features in the same locations. The Pandora Panel Board has connectors for basic computer functions, including keyboard, mouse, VGA, Ethernet and USB. With the Pandora enclosure, you can build a rugged, cable-free PC-based controller using the CPU of your choice.

The Pandora Panel I/O Board design also accommodates up to two add-on PC/104 modules without requiring costly and time-consuming enclosure redesign. A supplementary 50-pin connector can be used with any PC/104 board with a 50-pin I/O connector to provide additional analog or digital I/O to the outside world. Two additional 20-pin connectors can be used with any model of Diamond Systems Emerald-MM Serial PC/104 Module to support 4 additional serial ports (for a total of 8). With all I/O, whether from the Diamond Systems CPU or additional PC/104 boards, the Pandora Panel Board provides real-world PC-style I/O connectors.

Pandora is available in multiple case lengths. The 1.7" size accommodates one CPU and the panel I/O board. A 3.0" case enables the addition of up to two add-on PC/104 boards. Other standard sizes include 5" and 7". Custom lengths and finishes are also available.

Panel Board Connector Summary

External (User-side) Connector Summary
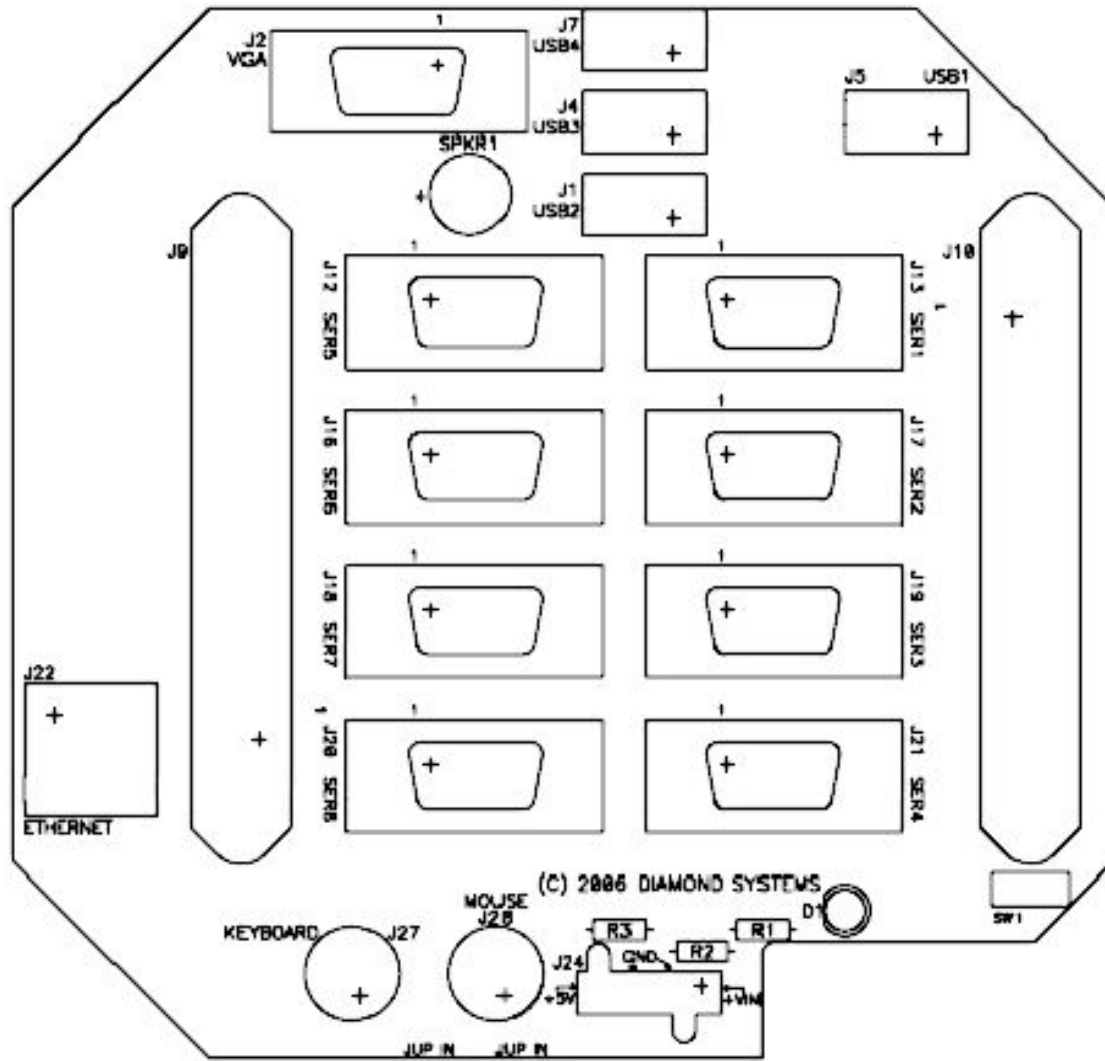
Figure 1: Panel Board, User Side

Connector	Description	Type
J1	USB2	Industry Standard Type-A
J2	VGA	DB-15
J4	USB3	Industry Standard Type-A
J5	USB1	Industry Standard Type-A
J7	USB4	Industry Standard Type-A
J9	Data Acquisition to CPU	50-pin Centronics style latching
J10	Auxiliary Data Acquisition to expansion board	50-pin Centronics style latching
J12	COM5	DB9
J13	COM1	DB9
J16	COM6	DB9
J17	COM2	DB9
J18	COM7	DB9
J19	COM3	DB9
J20	COM8	DB9
J21	COM4	DB9
J22	Ethernet	RJ45
J24	Power Input	1x4 0.165" pitch "Mini-fit" male header
J27	PS/2 Keyboard	6-pin Mini-DIN
J28	PS/2 Mouse	6-pin Mini-DIN
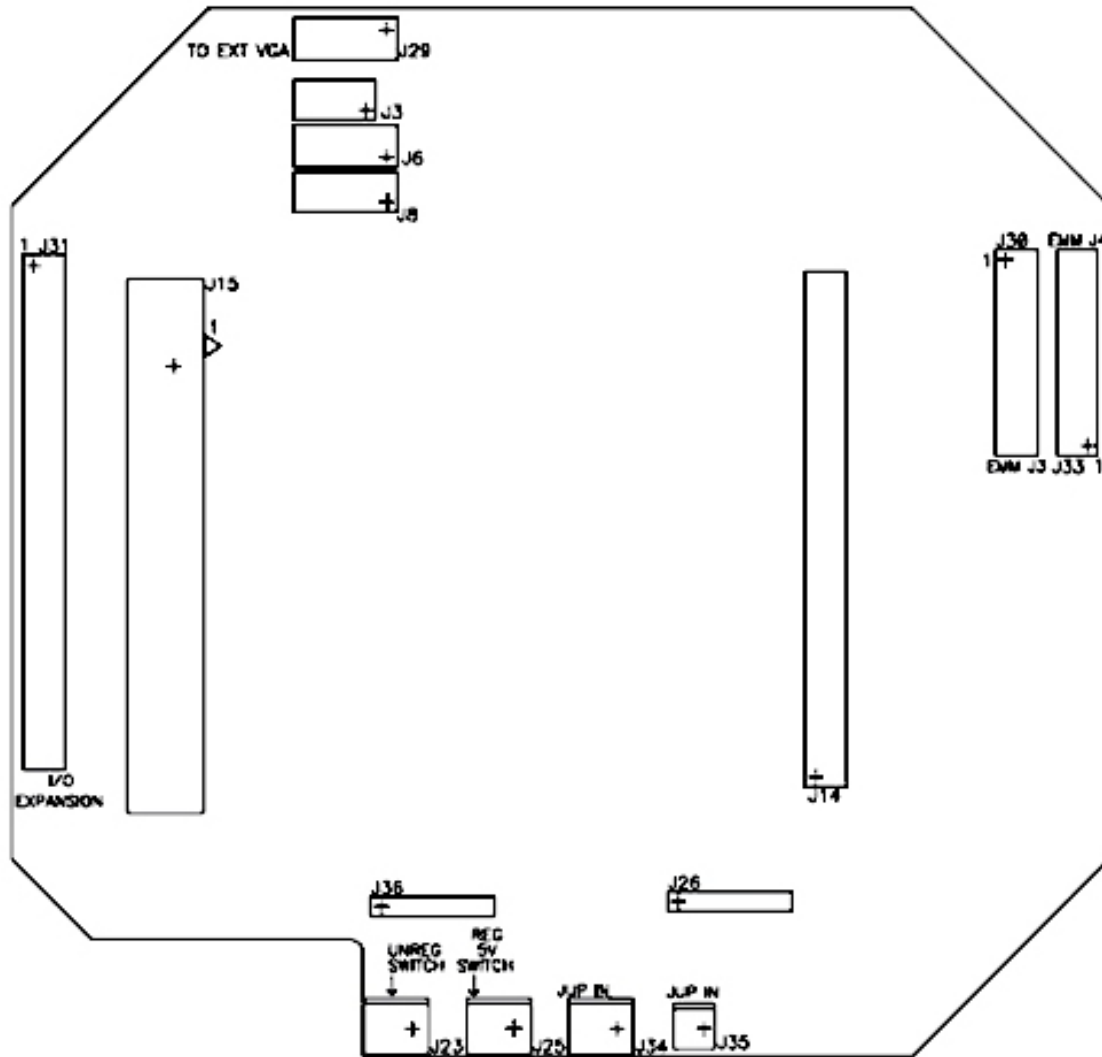
Figure 2: Panel Board, CPU Side

Connector	Description	Type
J3	VGA to CPU	2x4 0.1" pitch female pin header
J6	USB0 and USB1 to CPU	2x5 0.1" pitch female pin header
J8	USB2 and USB3 to CPU	2x5 0.1" pitch female pin header
J14	Data Acquisition to CPU	50-pin 0.1" pitch female pin header
J15	Multi I/O (4x RS-232, PS/2, utility) to CPU	3M/Robinson Nugent P80 series, 80-pin high density
J23	Variable voltage switch input	1x2 pin 0.1" pitch male header
J25	5v switch input	1x2 pin 0.1" pitch male header
J26	Ethernet to CPU	1x6 pin 0.1" pitch female pin header
J29	VGA to VGA expansion board	2x5 pin 0.1" pitch male header
J30	COM5/COM6 to/from Emerald MM expansion board	2x10 pin 0.1" pitch male header
J31	Data Acquisition to expansion board	2x25 pin 0.1" pitch male header
J33	COM7/COM8 to/from Emerald MM expansion board	2x10 pin 0.1" pitch male header
J34	Power input to DC/DC power supply card in stack	1x2 pin latching connector for cable interface up to xx AWG (Not installed)
J35	Power input to DC/DC power supply card in stack	1x2 pin latching connector for cable interface up to xx AWG
J36	Power to CPU	1x6 pin 0.1" pitch female header

Panel Board Jumper Summary

Jumper	Definition
R2	Determines whether power is provided directly to the DC/DC power supply board or through the on/off switch. Installed 0Ω resistor bypasses on/off switch.
R3	Determines whether power is provided directly to the CPU board or through the on/off switch. Installed 0Ω resistor bypasses on/off switch.

2 Physical Information

Top/Front End Cap Dimensions
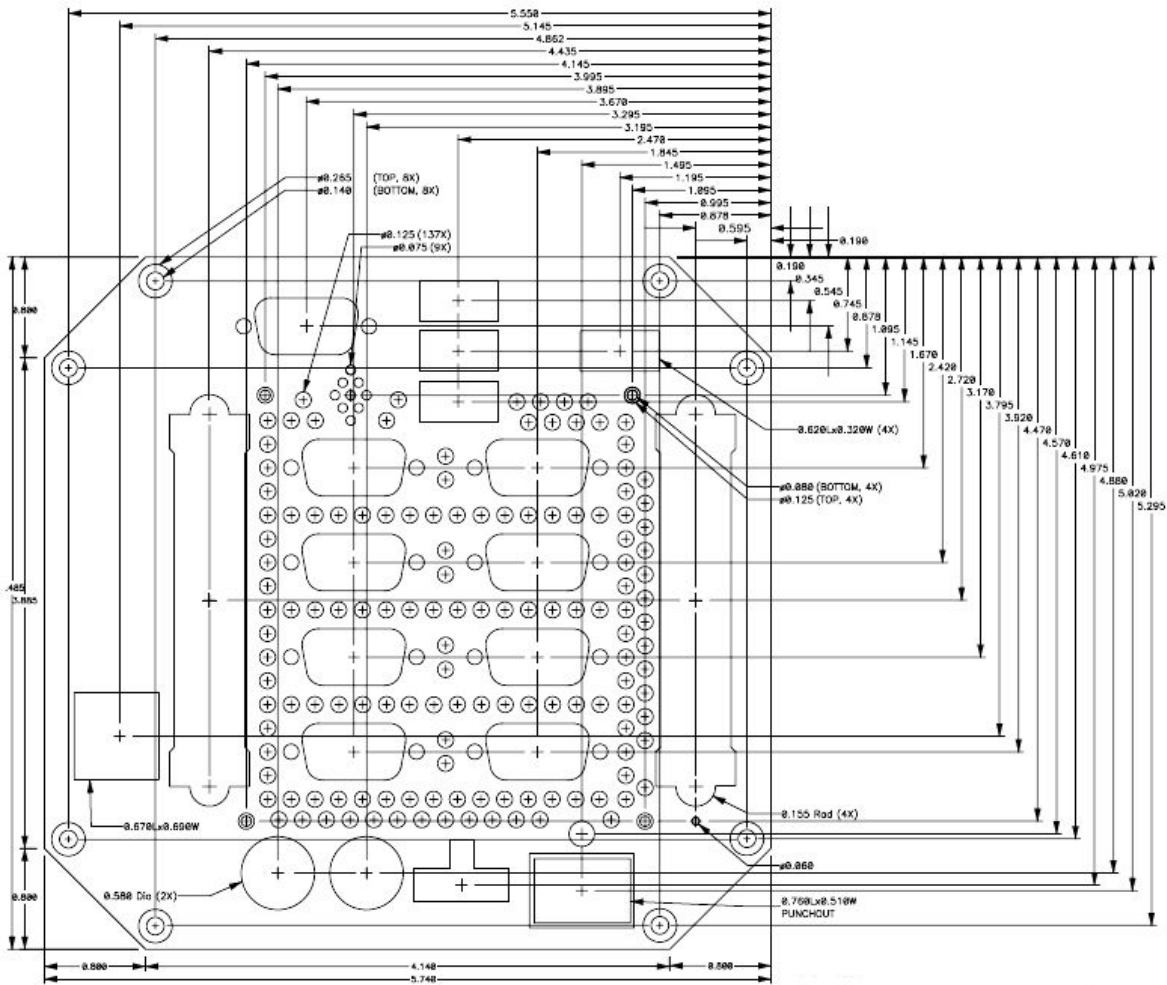
Figure 3: Top/Front End Cap Dimensions (DSC #PBEC-11-K)

Back/Bottom End Cap Dimensions
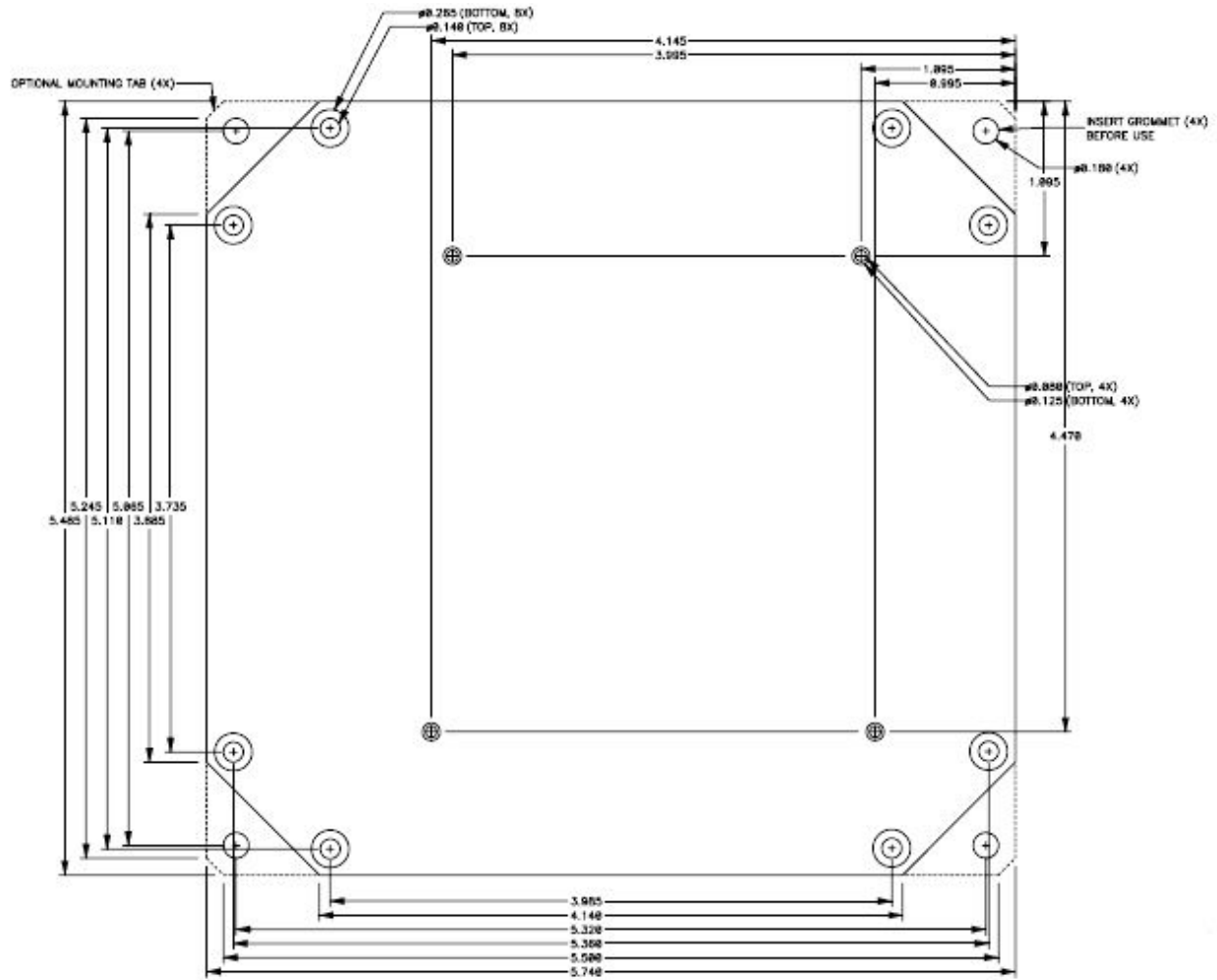
Figure 4: Bottom (Blank) End Cap Dimensions (DSC# PBEC-12-K)

Figure 5: Top/Front End Cap Outline (DSC# PBEC-11-K)

End Cap Silkscreen/Panel Board Mapping

The following table maps the silkscreen on the end cap to the connector designator on the top side of the panel board, and to the CPU connector on the bottom side of the panel board.

Silkscreen Label	Top Connector Reference	Bottom Connector Reference	Bottom Connector Connects to
VGA	J2	J3/J29	CPU/VGA Expansion
USB1	J5	J8	CPU
USB2	J1	J8	CPU
USB3	J4	J6	CPU
USB4	J7	J6	CPU
SER1	J13	J15	CPU
SER2	J17	J15	CPU
SER3	J19	J15	CPU
SER4	J21	J15	CPU
SER5	J12	J30	Serial expansion (EMM)
SER6	J16	J30	Serial expansion (EMM)
SER7	J18	J33	Serial expansion (EMM)
SER8	J20	J33	Serial expansion (EMM)
I/O 1	J9	J14	CPU
I/O 2	J10	J31	Data acquisition expansion
Ethernet	J22	J26	CPU
Keyboard	J27	J15	CPU
Mouse	J28	J15	CPU
Power In	J24	J35/J36	CPU or DC/DC Supply Board

3 User-side Connector Descriptions

This section describes the PC-style connectors that protrude through the end cap for user cable connections.

Serial Ports 1,2,3,4

Serial ports 1 through 4, designated on the silkscreen as SER1, SER2, SER3 and SER4 are male DB9 connectors and support the RS232 protocol only. These signals come from the CPU card.

Figure 6: SER1/SER2/SER3/SER4 - DB9 Serial Connector

1	DCD - Data Carrier Detect
2	RXD - Receive Data
3	TXD - Transmit Data
4	DTR - Data Terminal Ready
5	System Ground
6	DSR - Data Set Ready
7	RTS - Request to Send
8	CTS - Clear to Send
9	RNG - Ring Indication

Serial Ports 5,6,7,8

Serial ports 5 through 8, designated on the silkscreen as SER5, SER6, SER7 and SER8 are male DB9 connectors. The signals are provided by an expansion serial I/O card in the stack. If a Diamond Systems Emerald MM-4 is utilized, these connectors support RS232, RS422 and RS485 protocols.

Figure 7: SER5/SER6/SER7/SER8 - DB9 Serial Connector

RS232 Protocol

1	DCD - Data Carrier Detect
2	RXD - Receive Data
3	TXD - Transmit Data
4	DTR - Data Terminal Ready
5	System Ground
6	DSR - Data Set Ready
7	RTS - Request to Send
8	CTS - Clear to Send
9	RNG - Ring Indication

RS422 Protocol

1	Not Used
2	TX Data Positive
3	Not Used
4	RX Data Positive
5	System Ground
6	Not Used
7	TX Data Negative
8	RX Data Negative
9	Not Used

RS485 Protocol

1	Not Used
2	Data Positive
3	Not Used
4	Not Used
5	System Ground
6	Not Used
7	Data Negative
8	Not Used
9	Not Used

Keyboard, Mouse

These two connectors are 6-pin, female Mini-DIN. The signals are provided by the CPU board.
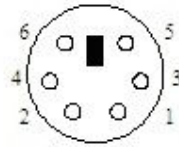
Figure 8: KEYBOARD/MOUSE - Mini-DIN Connector

1	Data
2	Reserved
3	System Ground
4	System Power (5V)
5	Data Clock
6	Reserved

USB 1,2,3,4

These four connectors are industry standard Type A USB connectors. The signals are provided by the CPU board.
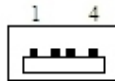
Figure 9: USB1/USB2/USB3/USB4 - Type A Connector

1	System Power (5V)
2	Data Positive
3	Data Negative
4	System Ground

Power In

Power input is a female Molex Mini-fit connector, part number 39-30-2045. If the system is powered by a 5v supply, use pin 4 to supply power. If the system is powered by a variable voltage DC supply, use pin 1 to supply power. See Section 6, Power Interface, for additional power connection information.
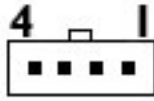
Figure 10: POWER IN - Power Connector

1	Unregulated 7-28V
2	System Ground
3	System Ground
4	Regulated 5V

VGA

The VGA connector is a traditional, industry standard female DD15 connector.
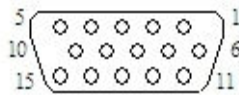
Figure 11: VGA - DD15 VGA Connector

1	Red Video
2	Green Video
3	Blue Video
4	RESERVED
5	System Ground
6	System Ground
7	System Ground
8	System Ground
9	RESERVED
10	System Ground
11	RESERVED
12	Identification Serial Data
13	Horizontal Sync
14	Vertical Sync
15	Identification Serial Clock

Ethernet

The Ethernet connector is a standard RJ45 Ethernet connector wired to support 10/100BaseT Ethernet.
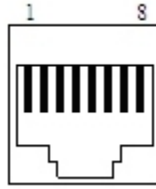
Figure 12: ETHERNET - RJ45 Ethernet Connector

1	Tx Positive
2	Tx Negative
3	Rx Positive
4	System Ground
5	System Ground
6	RX Negative
7	System Ground
8	System Ground

Data I/O Port 1

Data I/O Port 1 is a latching "Centronics" 50-Pin Female connector typically used with printers or SCSI devices. It provides the data acquisition signals from the CPU board according to the pinout listed below.
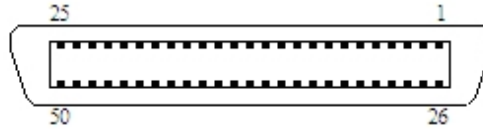
Figure 13: I/O 1 - Data I/O Port 1 Connector

Signal	Pin	Pin	Signal
Digital I/O Port A Bit0	1	26	Digital I/O Port A Bit1
Digital I/O Port A Bit2	2	27	Digital I/O Port A Bit3
Digital I/O Port A Bit4	3	28	Digital I/O Port A Bit5
Digital I/O Port A Bit6	4	29	Digital I/O Port A Bit7
Digital I/O Port B Bit0	5	30	Digital I/O Port B Bit1
Digital I/O Port B Bit2	6	31	Digital I/O Port B Bit3
Digital I/O Port B Bit4	7	32	Digital I/O Port B Bit5
Digital I/O Port B Bit6	8	33	Digital I/O Port B Bit7
Digital I/O Port C Bit0	9	34	Digital I/O Port C Bit1
Digital I/O Port C Bit2	10	35	Digital I/O Port C Bit3
Digital I/O Port C Bit4	11	36	Digital I/O Port C Bit5
Digital I/O Port C Bit6	12	37	Digital I/O Port C Bit7
Cntr/Tmr Ext Trigger	13	38	Cntr/Tmr Output
Regulated +5V	14	39	Digital Ground
Analog Output 0	15	40	Analog Output 1
Analog Output 2	16	41	Analog Output 3
Analog Ground	17	42	Analog Ground
Analog Input 0	18	43	Analog Input 8
Analog Input 1	19	44	Analog Input 9
Analog Input 2	20	45	Analog Input 10
Analog Input 3	21	46	Analog Input 11
Analog Input 4	22	47	Analog Input 12
Analog Input 5	23	48	Analog Input 13
Analog Input 6	24	49	Analog Input 14
Analog Input 7	25	50	Analog Input 15

Data I/O Port 2

Data I/O port 2 is also a latching "Centronics" 50-Pin Female connector which provides a 1-to-1 mapping from the signals provided by an expansion I/O board.

> **Note: Pay particular attention to the pin mapping, because it may not match the pin mapping on your expansion I/O board.**
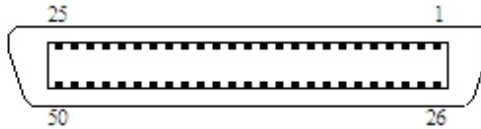
Figure 14: I/O 2 - Data I/O Port 2 Connector

I/O Port Pin 1	1	26	I/O Port Pin 26
I/O Port Pin 2	2	27	I/O Port Pin 27
I/O Port Pin 3	3	28	I/O Port Pin 28
I/O Port Pin 4	4	29	I/O Port Pin 29
I/O Port Pin 5	5	30	I/O Port Pin 30
I/O Port Pin 6	6	31	I/O Port Pin 31
I/O Port Pin 7	7	32	I/O Port Pin 32
I/O Port Pin 8	8	33	I/O Port Pin 33
I/O Port Pin 9	9	34	I/O Port Pin 34
I/O Port Pin 10	10	35	I/O Port Pin 35
I/O Port Pin 11	11	36	I/O Port Pin 36
I/O Port Pin 12	12	37	I/O Port Pin 37
I/O Port Pin 13	13	38	I/O Port Pin 38
I/O Port Pin 14	14	39	I/O Port Pin 39
I/O Port Pin 15	15	40	I/O Port Pin 40
I/O Port Pin 16	16	41	I/O Port Pin 41
I/O Port Pin 17	17	42	I/O Port Pin 42
I/O Port Pin 18	18	43	I/O Port Pin 43
I/O Port Pin 19	19	44	I/O Port Pin 44
I/O Port Pin 20	20	45	I/O Port Pin 45
I/O Port Pin 21	21	46	I/O Port Pin 46
I/O Port Pin 22	22	47	I/O Port Pin 47
I/O Port Pin 23	23	48	I/O Port Pin 48
I/O Port Pin 24	24	49	I/O Port Pin 49
I/O Port Pin 25	25	50	I/O Port Pin 50

4 CPU-side Connector Descriptions

This section describes the connectors used to interface to the CPU card and expansion cards in the PC/104 stack.

VGA

VGA TO CPU (J3)

The J3 connector is a 2x4 pin, 0.1" pitch female header that interfaces directly to the VGA connector on the Diamond Systems Athena PC/104 CPU.

Pin 1
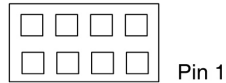
Figure 15: J3 - VGA to CPU

GREEN	1	2	RED
BLUE	3	4	Ground
HSYNCH	5	6	DDC-Data
VSYNCH	7	8	DDC-Clock

VGA TO EXPANSION CARD (J29)

The J29 connector is a 2x5 pin, 0.1" pitch male header that is designed to interface to a VGA connector on an expansion VGA card via a cable interface. This connector can be used to provide video when a Diamond Systems Prometheus or Elektra PC/104 CPU is used.

Pin 1
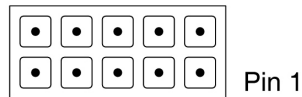
Figure 16: J29 - VGA to Expansion Card

RED	1	2	R-Ground
GREEN	3	4	G-Ground
BLUE	5	6	B-Ground
HSYNCH	7	8	DDC-Data
VSYNCH	9	10	DDC-Clock

USB (J6 and J8)

The J6 and J8 connectors are identical 2x5 pin, 0.1" pitch female headers that interface directly to the USB connectors on the Diamond Systems Athena PC/104 CPU.
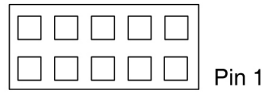
Figure 17: J6/J8 - USB to CPU

Key (pin cut)	1	2	Shield
USB2 Pwr-	3	4	USB1 Pwr-
USB2 Data+	5	6	USB1 Data+
USB2 Data-	7	8	USB1 Data-
USB2 Pwr+	9	10	USB1 Pwr+

Ethernet (J26)

The J26 connector is a 1x6 pin, 0.1" pitch female header that interfaces directly to the Ethernet connector on the Diamond Systems Athena, Prometheus and Elektra PC/104 CPUs.

Pin 1

Figure 18: J26 - Ethernet to CPU

1	Common
2	RX-
3	Common
4	RX+
5	TX-
6	TX+

Multifunction (Serial, Keyboard, Mouse, Utility) (J15)

The J15 connector is an 80-pin high density connector, 3M part number P50-080-S-R1-TG, that provides the interfaces for the four serial ports from the CPU, the keyboard/mouse interface and certain utility signals. The power LED signal is routed to the power LED on the panel board. The speaker output signal is routed to the PC speaker on the panel board. The reset signal is routed to the reset connector on the panel board. All remaining signals on this connector, including the LPT port and other utility signals are not connected on the panel board and are not made available outside the enclosure.

Pin 1
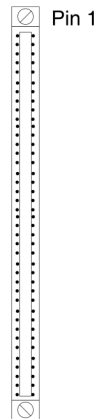
Figure 19: J15 - Multifunction (serial, keyboard, mouse, utility) to CPU

	DCD1	1	1	STB-	
	DSR 1	2	2	AFD-	
	RXD 1	3	3	PD0	
	RTS 1	4	4	ERR-	
COM1	TXD 1	5	5	PD1	
	CTS 1	6	6	INIT-	
	DTR 1	7	7	PD2	
	RI 1	8	8	SLIN-	
	Ground	9	9	PD3	
	DCD 2	10	10	Ground	
	DSR 2	11	11	PD4	LPT1
	RXD 2	12	12	Ground	
	RTS 2	13	13	PD5	
COM2	TXD 2	14	14	Ground	
	CTS 2	15	15	PD6	
	DTR 2	16	16	Ground	
	RI 2	17	17	PD7	
	Ground	18	18	Ground	
	DCD 3	19	19	ACK-	
	DSR 3	20	20	Ground	
	RXD 3	21	21	BUSY	
	RTS 3	22	22	Ground	
COM3	TXD 3	23	23	PE	
	CTS 3	24	24	Ground	
	DTR 3	25	25	SLCT	
	RI 3	26	26	KB Clk	
	Ground	27	27	KB/MS V-	Keyboard
	DCD 4	28	28	KB Data	
	DSR 4	29	29	KB/MS V+	
	RXD 4	30	30	MS Clk	
	RTS 4	31	31	KB/MS V-	Mouse
COM4	TXD 4	32	32	MS Data	
	CTS 4	33	33	KB/MS V+	
	DTR 4	34	34	Ground	
	RI 4	35	35	Reset-	
	Ground	36	36	ATX Power	
	+5V Out	37	37	KB Lock	Utilities B
Utilities A	Speaker Out	38	38	IR RX	
	IDE Drive LED	39	39	IR TX	
	Power LED	40	40	+3VSB	

Data Acquisition from CPU (J14)

The J9 connector is a 2x25 pin, 0.1" pitch female header that routs signals directly from the data acquisition connector on the Athena, Prometheus or Elektra PC/104 CPUs. These signals include 16, 16-bit analog inputs, four 12-bit analog outputs and 24 digital I/O lines, along with control for two counter/timers.

Pin 1

Figure 20: J14 - Data Acquisition to CPU

DIO A0	1	2	DIO A1
DIO A2	3	4	DIO A3
DIO A4	5	6	DIO A5
DIO A6	7	8	DIO A7
DIO B0	9	10	DIO B1
DIO B2	11	12	DIO B3
DIO B4	13	14	DIO B5
DIO B6	15	16	DIO B7
DIO C0	17	18	DIO C1
DIO C2	19	20	DIO C3
DIO C4 / Gate 0	21	22	DIO C5/Gate 1
DIO C6 / Clk 1	23	24	DIO C7/Out 0
Ext Trig	25	26	Tout 1
+5V Out	27	28	Dground
Vout 0	29	30	Vout 1
Vout 2	31	32	Vout 3
Aground (Vout)	33	34	Aground (Vin)
Vin 0	35	36	Vin 8
Vin 1	37	38	Vin 9
Vin 2	39	40	Vin 10
Vin 3	41	42	Vin 11
Vin 4	43	44	Vin 12
Vin 5	45	46	Vin 13
Vin 6	47	48	Vin 14
Vin 7	49	50	Vin 15

Power (J36)

The J36 connector is a 1x6 pin 0.1" pitch header that provides +5v power to the CPU card.   For this power interface to be active, either the power switch bypass jumper 0Ω resistor at R3 must be installed or the power switch must be cabled to connector J25.

Pin 1 ▢ ▢ ▢ ▢ ▢ ▢

Figure 21: J36 - Power to CPU

1	+5V In
2	Ground
3	Ground
4	N/C
5	Ground
6	+5V In

Data Acquisition from Expansion Board (J31)

The data acquisition connector at J31 is designed to provide an interface to the outside from a 50-pin connector on an expansion board in the PC/104 stack. This connector is a 2x25 pin, 0.1" pitch male header that connects pin for pin with connector J10 on the user side of the panel board.

Figure 22: J31 - Data Acquisition to Expansion Board

I/O Pin 1	1	2	I/O Pin 26
I/O Pin 2	3	4	I/O Pin 27
I/O Pin 3	5	6	I/O Pin 28
I/O Pin 4	7	8	I/O Pin 29
I/O Pin 5	9	10	I/O Pin 30
I/O Pin 6	11	12	I/O Pin 31
I/O Pin 7	13	14	I/O Pin 32
I/O Pin 8	15	16	I/O Pin 33
I/O Pin 9	17	18	I/O Pin 34
I/O Pin 10	19	20	I/O Pin 35
I/O Pin 11	21	22	I/O Pin 36
I/O Pin 12	23	24	I/O Pin 37
I/O Pin 13	25	26	I/O Pin 38
I/O Pin 14	27	28	I/O Pin 39
I/O Pin 15	29	30	I/O Pin 40
I/O Pin 16	31	32	I/O Pin 41
I/O Pin 17	33	34	I/O Pin 42
I/O Pin 18	35	36	I/O Pin 43
I/O Pin 19	37	38	I/O Pin 44
I/O Pin 20	39	40	I/O Pin 45
I/O Pin 21	41	42	I/O Pin 46
I/O Pin 22	43	44	I/O Pin 47
I/O Pin 23	45	46	I/O Pin 48
I/O Pin 24	47	48	I/O Pin 49
I/O Pin 25	49	50	I/O Pin 50

Serial from Expansion Board (Emerald-MM) (J30 and J33)

Connectors J30 and J33 provide an interface to a serial port expansion board such as a Diamond Systems Emerald MM-4. Each connector is a 2x10 pin, 0.1" pitch male header designed to cable interface to the connectors on the Emerald MM-4. The tables below shows the pin definition for the RS232, RS422 and RS485 protocols supported by the Emerald MM-4.
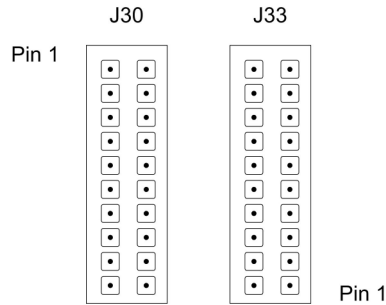
Figure 23: J30 /J33 - Serial to Expansion Board

RS-232 Configuration

J30:

DCD 1	1	2	DSR 1
RXD 1	3	4	RTS 1
TXD 1	5	6	CTS 1
DTR 1	7	8	RI 1
GND	9	10	NC
DCD 2	11	12	DSR 2
RXD 2	13	14	RTS 2
TXD 2	15	16	CTS 2
DTR 2	17	18	RI 2
GND	19	20	NC

J33:

DCD 3	1	2	DSR 3
RXD 3	3	4	RTS 3
TXD 3	5	6	CTS 3
DTR 3	7	8	RI 3
GND	9	10	NC
DCD 4	11	12	DSR 4
RXD 4	13	14	RTS 4
TXD 4	15	16	CTS 4
DTR 4	17	18	RI 4
GND	19	20	NC

RS-422 Configuration

J30:

NC	1	2	NC
TXD+ 1	3	4	TXD- 1
GND	5	6	RXD- 1
RXD+ 1	7	8	NC
GND	9	10	NC
NC	11	12	NC
TXD+ 2	13	14	TXD- 2
GND	15	16	RXD- 2
RXD+ 2	17	18	NC
GND	19	20	NC

J33:

NC	1	2	NC
TXD+ 3	3	4	TXD- 3
GND	5	6	RXD- 3
RXD+ 3	7	8	NC
GND	9	10	NC
NC	11	12	NC
TXD+ 4	13	14	TXD- 4
GND	15	16	RXD- 4
RXD+ 4	17	18	NC
GND	19	20	NC

RS-485 Configuration

J30:

NC	1	2	NC
TXD/RXD+ 1	3	4	TXD/RXD- 1
GND	5	6	NC
NC	7	8	NC
GND	9	10	NC
NC	11	12	NC
TXD/RXD+ 2	13	14	TXD/RXD- 2
GND	15	16	NC
NC	17	18	NC
GND	19	20	NC

J33:

NC	1	2	NC
TXD/RXD+ 3	3	4	TXD/RXD- 3
GND	5	6	NC
NC	7	8	NC
GND	9	10	NC
NC	11	12	NC
TXD/RXD+ 4	13	14	TXD/RXD- 4
GND	15	16	NC
NC	17	18	NC
GND	19	20	NC

Power interface to a DC/DC power supply expansion board (Jupiter MM) (J35)

Connector J35 is used to interconnect the front panel power input to a DC/DC power supply board, such as the Diamond Systems Jupiter MM, in the PC/104 stack. When this interface is used, the direct CPU power interface through connector J36 is not used. Instead, the CPU is powered through the PC/104 bus by the power supply board. This connector is cabled to the DC/DC power supply board as indicated in the cabling drawing, below. To activate this interface *without* the use of the power switch, the bypass jumper at R2 must be installed with a 0Ω resistor. To activate this interface *with* the use of the power switch, the power switch must be cabled to connector J23.

Pin 1

Figure 24: J35 - Power to DC/DC Power Supply Board

| 1 | Positive Input |
| 2 | Input Return |

5 Board Cabling and Stacking

Board Stacking Order and Cabling Diagram

The following diagrams show how the CPU board plus optional expansion boards might interface and cable to the Pandora Panel I/O board.
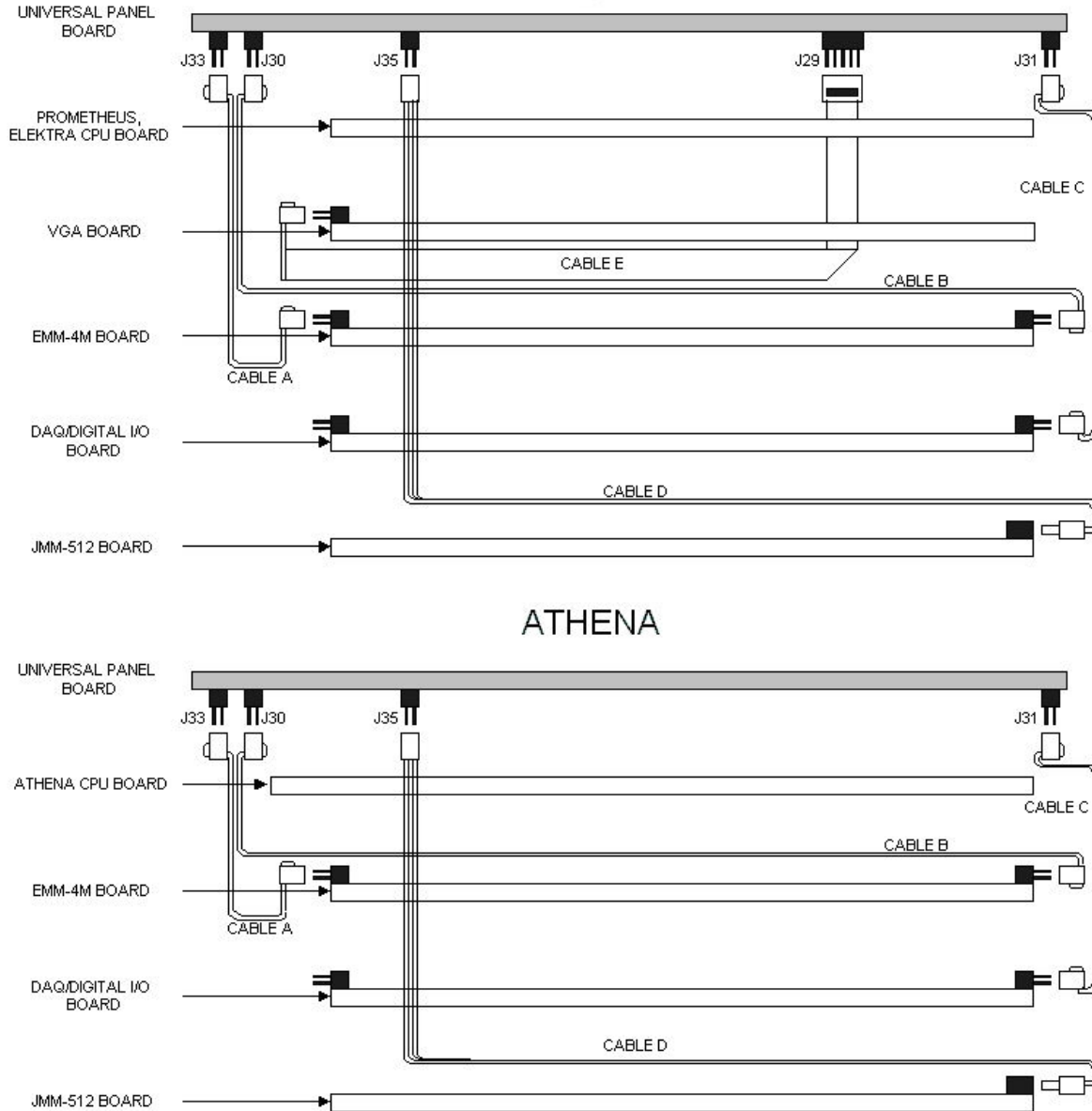
Figure 25: Board Stacking and Cabling

Cables Used to Interface PC/104 Expansion Boards to the Pandora Panel Board

Item	Description	DSC Part Number
CABLE A	RIBBON CABLE, 20-PIN, 3" TYPE "S"	698061
CABLE B	RIBBON CABLE, 20-PIN, 8" TYPE "C"	698062
CABLE C	RIBBON CABLE, 50-PIN, 3" TYPE "S"	698063
CABLE D	POWER CABLE, 2-PIN, 8"	698011
CABLE E	RIBBON CABLE, VGA, 8"	698013

6 Power Interface

Input Supply Considerations

Power to systems utilizing the Pandora Enclosure may be provided by either a 5v supply, such as a traditional AT-style or ATX-style power supply, or by a variable voltage DC supply. In either case, the power supply interfaces to the enclosure through a 4-pin Mini-Fit type connector on the front panel.

When using a 5v input, the power input must be on pin 1. When using a variable voltage input, the power input must be on pin 4.

Power Switch Usage

The Pandora Enclosure has a provision for an optional *On/Off* power switch at the bottom right hand corner of the front panel. The Pandora Enclosure is shipped with the power switch enabled. That means that the system will boot when power is applied and the power switch is turned to the *On* position. To disable the power switch, users must perform two tasks, described below. (The tasks differ slightly depending on whether the enclosure is powered by a 5v supply or by a variable voltage DC supply).

5v Power Input

1. Remove the cable from the power switch and the two-pin connector at J25.
2. Install a 0Ω resistor at R3. To do this, you will need to disassemble the panel board from the Pandora Enclosure end cap.

Variable voltage input

1. Remove the cable between the power switch and the two-pin connector at J23.
2. Install a 0Ω resistor at R2. to do this, you will need to disassemble the panel board from the Pandora Enclosure end cap.

Note that the power switch does not operate like the switch on an ATX-style PC. The switch controls all power to the system. No sustaining or standby voltage is supplied when the system is off. A soft-off through the operating system does not shutdown the power supply to the system.

Direct CPU Power vs. DC/DC Supply Board

The Pandora Enclosure provides two methods of powering the CPU board.

● The CPU board can be powered directly, also powering the entire PC/104 stack.
● The Pandora Enclosure can power a DC/DC power supply board in the stack.

When a 5v input is used, either of these two provisions may be selected. When a variable voltage input is used, power must be routed to the DC/DC supply board.

For the direct CPU power connection, simply supply 5v through the front panel power connector. Power is supplied to the CPU board directly.

To power the system through a DC/DC power supply board in the stack, you must cable from either the J34 or J35 connector to the power supply board. The connectors differ only in their interface. Choose the connector most appropriate to the power requirements of the DC/DC board and the amount of current you are supplying.

7 Specifications

Mechanical

- 5.75" x 5.50" x 1.70" (145mm x 138mm x 43mm)
- 5.75" x 5.50" x 3.00" (145mm x 138mm x 76mm)
- 5.75" x 5.50" x 5.00" (145mm x 138mm x 127mm)
- 5.75" x 5.50" x 7.00" (145mm x 138mm x 178mm)

Environmental

- FCC Class B available on request
- UL - CUL available on request
- CE Mark available on request

Thermal

- Operating Temperature: -40 to +85°C
- Storage Temperature: -40 to 85°C

Note 1: Enclosure/panel board only.

Note 2: The operating temperature of systems built with the Pandora Enclosure depends on the CPU used, and the number and thermal characteristics of the boards in the PC/104 stack.

8 Technical Support

For technical support, please email support@diamondsystems.com or contact Diamond Systems Corporation technical support at 1-510-456-7800.