VersaPoint® Technology

State-of-the-Art Pointing Solutions for the OEM

DuraPoint®
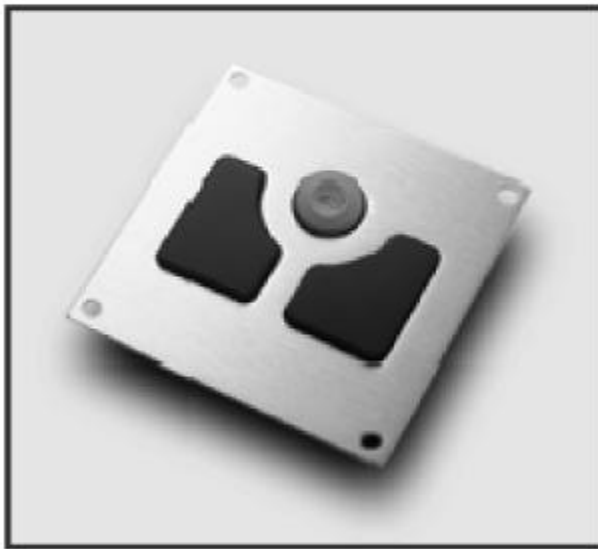
OEM Module Integration Guide

INTERLINK ELECTRONICS
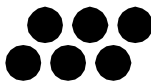
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1.0 INTRODUCTION TO THE DURAPOINT® OEM MODULE

Thank you for purchasing the DuraPoint OEM Module (DOM), the durable pointing device designed to operate in harsh environments. The module has been designed to be reliable, rugged and easy to integrate. It is the ideal computer cursor-control solution for industrial computers, process automation systems, industrial keyboards, vision inspection systems, and military computers. The module's standard data outputs also allow easy interfacing to other control applications such as pan and tilt controllers, CCTV controllers, motion control equipment, and medical control equipment.

The DOM can easily be sealed into a system to create an interface impervious to water and dust. Once properly sealed into a system, the DOM is designed to meet NEMA 4X, 6P, 12 and 13 standards.

The DOM requires less than 1.250" (includes UL gap requirements) of mounting depth (less than comparable trackballs or joysticks) allowing it to be integrated into tight, cramped spaces. The module's slim mounting profile frees valuable space for other system components or enables system size reduction. The module is unaffected by mounting orientation: it can be mounted horizontally, as in a desktop industrial keyboard; vertically, as in a process control panel; or any angle in-between. This gives system designers maximum flexibility with product design and ergonomics.

The DOM incorporates Interlink Electronics' VersaPoint® Pressure-Pointing technology. Directional control is achieved by applying finger pressure in the direction of desired movement to the mouse button. Speed is controlled by altering the amount of applied pressure. The result is smooth cursor movement in any direction, from a precise crawl to a screen-crossing zip. VersaPoint technology has no moving parts to break or wear out, thus delivering reliable, trouble-free cursor control.

DuraPoint, with no moving parts to break or wear out, is completely maintenance-free. Designed and manufactured with ruggedness and reliability in mind, DuraPoint delivers "mouse" lifetimes in excess of 10 million actuations.

Before using or installing the DOM, please take a few minutes to carefully review this integration guide.

Special Note: The DOM has two flexible circuits that electrically connect to the PCB. One connects to the shielding layer and the other connects to the pressure sensor. *Care should be taken during handling and installation of the DOM to protect these tails against kinking or tearing, which could permanently damage the module.* The DOM's PCB is ESD (electro static discharge) sensitive. Please use proper static safeguards when handling the module.

2.0 OPERATING THE DURAPOINT OEM MODULE

DuraPoint is designed to be easy and intuitive to use. The mouse button controls the cursor direction and speed while the two click buttons control the primary and secondary click functions.

MOUSE BUTTON

DEFAULT PRIMARY CLICK BUTTON

DEFAULT SECONDARY CLCIK BUTTON
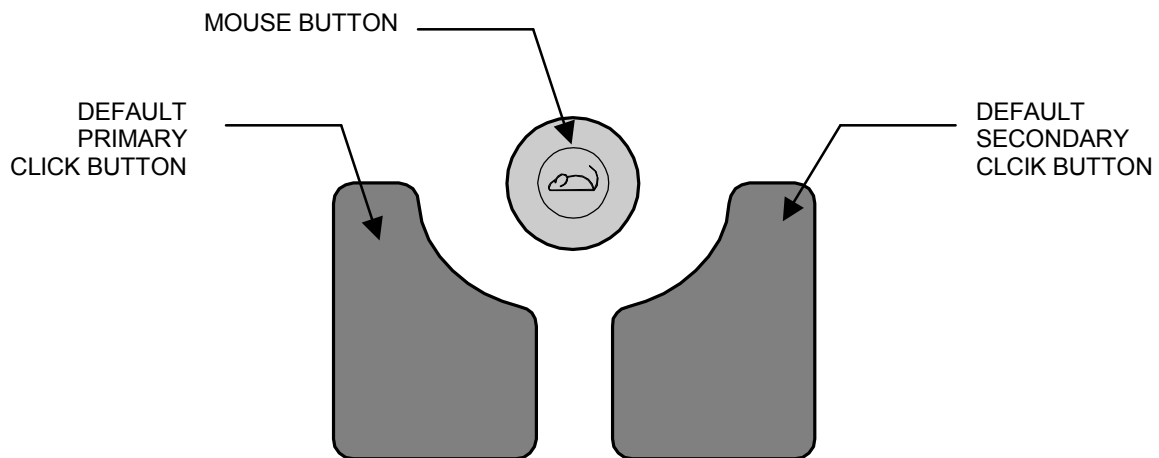
2.1 Using the Pressure-Sensing Mouse Button

The DuraPoint OEM Module's pressure-sensing mouse button converts the touch of your finger into smooth cursor movement. To move the cursor, or device being controlled by the DOM (e.g., a closed-caption camera), place your fingertip on the center of the mouse button and rock it in the direction you want the cursor to move. You can move the cursor in any direction—the DOM has full 360° directional control. A light touch will produce precise cursor movement. Increases in pressure will increase the speed—the harder you press, the faster the motion.

Hint: For maximum performance and flexibility in Windows™, we recommend that you use the VersaPoint Windows mouse driver. Please see the DuraPoint User's Guide or contact Interlink Electronics' Product Support for more information.

2.2 Clicking and Dragging

To Click
The click buttons, located on either side of the mouse button, incorporate pressure-sensitive sensors to detect "clicks". These sensors have no moving parts to break or wear out, leading to long lifetimes. The left button on the DOM is equivalent to the left mouse button and is used as the default primary button. The right button is equivalent to the right mouse button (the default secondary button). You can interchange the operation of the buttons in the Windows or VersaPoint *Mouse Control Panel*, if desired (e.g., for left-handed users).

To Drag an Item
Simply press and hold the primary button while moving the cursor with the mouse button. Release the primary button to complete the drag operation. Some users find it easier to swap click buttons and use the right click as the primary button, allowing fore-finger cursor control with middle-finger clicking. If your computer has Windows installed, you may wish to practice this technique by playing the game of *Solitaire* found in the Windows *Games* program group.

Programmable Drag Lock
The VersaPoint Windows mouse driver has a programmable drag-lock feature. Once this feature is activated (e.g., by programming the right click button to activate the drag-lock feature) an object remains selected until a click button is depressed. This facilitates simple one-finger clicking-and-dragging. For more details on this feature, please refer to the *VersaPoint Software User's Guide*.

3.0 INTEGRATION NOTES

3.1 Mounting and Sealing the DuraPoint OEM Module

The DOM is designed to be blind mounted or front mounted into a variety of panel types. Additionally, custom bezels can be fabricated or molded to allow integration into devices such as machine control panels or industrial computers. For more information on custom bezels, please contact Interlink Electronics Product Support.

Special Note: Before placing the installed DOM in the field, verify the seal of the DOM to the bezel/enclosure. Improper sealing, in wet environments, could result in damage to the DOM or system.

Suggested Panel Cut-out with Standard Female Faceplate
If you purchased the DOM with the standard female faceplate, designated by the VP25X0 series (e.g., a VP2500 is a Microsoft-compatible DOM with a female faceplate), see Figure 7.06 for details on the suggested mounting cut-out and fastener locations.

Suggested Panel Cut-out with Standard Male Faceplate
If you purchased the DOM with the standard male faceplate, designated by the VP25X2 series (e.g., a VP2502 is a Microsoft-compatible DOM with a male faceplate), see Figure 7.07 for details on the suggested mounting cut-out and fastener locations.

Suggested Panel Cut-out without a Faceplate
DOM models without a faceplate are designated as the VP25X1 series (e.g., a VP2501 is a Microsoft-compatible DOM without a faceplate). The rubber keypad has been adhered to the DOM and should not be removed. When mounting the DOM, the suggested clearance for the cut-out around the mouse button and click buttons is 0.05" (1.3 millimeters). See Figure 7.05 for details on the suggested cut-out and fastener locations.

Mounting the DuraPoint OEM Module
To panel mount the DOM without sealing, all that is needed is a panel designed with the necessary cut-outs for the faceplate/mouse and click buttons and four or more fasteners (e.g., PEM studs, edge clips, hole clips, heat stakes, etc.). No other live electric parts may be within a half inch (0.500") of the components inside of the DuraPoint. DuraPoint must be installed into a suitable enclosure. When installing the DOM, the mounting fasteners should be tightened evenly to allow proper seating. Over torque on the bolts should be avoided, as this could damage the DOM. With proper seating and tightening, a liquid-and-particulate resistant interface can be created. The DOM should be grounded through either of the two upper PCB mounting studs as shown in Figure 7.08. When mounting the DOM without a faceplate, the flexible shielding layer circuit should be connected to the support plate. Simply wrap the circuit over the mounting hole nearest the circuit, run a fastener through the mounting hole, and tighten the fastener down. Figure 7.08 details the location of the shielding circuit.

Sealing the DuraPoint OEM Module

Some integrators may want to completely seal the DOM into a system. By following the instructions below, a NEMA 4X/IP66 seal can easily be obtained.

Sealing the DuraPoint OEM Module with RTV Sealant

RTV silicone sealant can be used as a sealing material. Before starting installation, be sure to clean the panel and faceplate/rubber keypad thoroughly with isopropyl alcohol. Integrators may also find that some panel/bezel materials will need to be primed with a silicone primer to obtain proper adhesion. To seal the DOM with silicone sealant, apply a thin bead of sealant to the top of the faceplate/rubber keypad on the outer edge of the faceplate/keypad. Sealant should also be applied around the four mounting holes on DOMs with female faceplates and on DOMs with no faceplate. If mounting without a faceplate, minimize the amount of sealant applied to prevent lumping near the active buttons, which could adversely affect the DOM's performance. Alternately, sealant can be applied around the perimeter of the module and the mounting holes after it has been installed into the bezel or panel. For the best possible seal, apply the sealant to both the top of the faceplate/ keypad before installation, and around the perimeter of the module after installation.

Sealing the Male-Faceplate DuraPoint OEM Module

The DOM with male-faceplate option is sold with a foam-rubber sealing gasket. The gasket is designed to seal the DOM into a system. As detailed above, RTV sealant can also be used as a sealant material. To seal the male DOM into a panel, place the gasket in between the DOM's faceplate and the panel face. Then tighten down the mounting studs using care to tighten them evenly and in a cross-wise pattern. Six mounting studs are attached to the DOMs male faceplate. Use care not to overtighten the mounting bolts, as this could damage the DOM or cause the gasket to extrude from the sides.

3.2 Electrical Interfacing to the DuraPoint OEM Module

The DOM can be connected to either a Microsoft®-compatible serial interface (RS232C), PS/2 mouse port, or quadrature card via the J1 interface header. For Sun-compatible models, a header is installed at location J3 and no header is installed at J1 (see Figure 7.08 for more information on the header locations). Before installing the DOM, verify that your system meets these requirements:

- A system running MS-DOS Version 2.0, Windows 3.0, OS/2® Version 2.0 or newer, or operating system with Microsoft-compatible mouse driver via serial or PS/2 mouse port

- Workstation or any other system (e.g., an X-Terminal) with a PS/2 mouse port

- Sun workstation compatible with Type 5 mice

- A system compatible with DuraPoint's Quadrature output

RS232C Serial-Interface Connections

The following table shows the pin-out for RS232C serial-data connections to the J1 interface header. The J1 header is the 10-pin, double-row 0.1" center header on the back of the DOM's circuit board. Also shown are the connections for standard 9-pin and 25-pin DB-style serial connectors. Five lines are needed for an RS232C serial interface. See Figure 7.08 for details on the J1 pin-out convention.

Serial Pin- Out Information

J1 Header Pin	Signal	Signal Description	DB-9 Pin*	DB-25 Pin
1	GND	Ground	5	7
2	DTR	Data terminal ready	4	20
3	TXD	Transmit data	3	2
4	RXD	Receive data	2	3
9	RTS	Request to send	7	4
N/A	N/A	Cable Shield**	Shell	Shell

* See Figure 7.13 for details on the DB-9 pin-out convention
** See Figure 7.08 for details on connecting the cable shield

The DOM uses standard Microsoft-compatible serial-data format (detailed information on this data format is given in drawing VPDP-DOM120). In order for the DOM to properly communicate to a system, a Microsoft-compatible mouse driver, such as the supplied Windows VersaPoint mouse driver, will need to be installed (see the DuraPoint User's Guide). Once the DOM is connected, the correct mouse driver installed, and the system restarted, the DOM should operate properly.

PS/2® Mouse-Port Connections

The following table shows the pin-out of the J1 header that corresponds to a PS/2 mouse-port connection. Also shown are the connections for a standard 6-pin mini-DIN PS/2 mouse-port connector. Four lines are needed for a PS/2 interface. See Figure 7.08 for details on the J1 pin-out convention.

PS/2 Pin-Out Information

J1 Pin	Signal Description	mini-DIN 6 (PS/2) Pin*
1	Ground	3
5	Clock	5
7	Data	1
8	+5V	4
N/A	Cable Shield**	Shell

* See Figure 7.13 for details on the PS/2 pin-out convention
** See Figure 7.08 for details on connecting the cable shield

Quadrature Connections

The following table shows the pin-out of the J1 interface header. Also shown are the connections for the VP760 cable. The VP760 cable is supplied with a male D-sub 9 connector (see drawing VPDP-DOM060 for details on the J1 pin-out convention).

Quadrature Pin-Out Information

J1 Header Pin	Signal	Signal Description	DB-9 (VP760)*
1	Yb	Lags or Leads reference	5
2	Ya	"Y" Direction reference	4
3	Xb	Lags or Leads Reference	3
4	Xa	"X" Direction Reference	2
5	+5 Volts	Power	1
6	No connection	No connection	N/A
7	Ground	Ground	9
8	Right Button	Right Switch (Active Low)	8
9	Center Button	Center Switch (Not Functional)	7
10	Left Button	Left Switch (Active Low)	6
N/A	N/A	Cable Shield**	Shell

* See Figure 7.13 for details on the DB-9 pin-out convention
** See Figure 7.08 for details on connecting the system shield

Sun (Type 5) Mouse-Port Connections

The following table shows the pin-out of the J3 interface header. The J3 header is only installed on Sun-compatible DOMs. No header is installed at J1 for these models. Also shown are the connections for an 8-pin mini-DIN mouse-port connector. Three lines are needed for a Sun interface (see Figure 7.08 for details on the J3 pin-out convention).

Sun-Compatible Mouse Pin-Out Information

J3 Pin	Signal Description	mini-DIN 8 Pin
1	No Connection	N/A
2	Signal and Power Ground	2
3	Vcc (+5 Volts)	3
4	Mouse Tx (Data)	4
N/A	Cable Shield*	Shell

* See Figure 7.08 for details on connecting the cable shield

3.3 Cabling Options

Interlink Electronics offers a variety of optional cables to interface with the DOM. If a custom cable is required, please contact Interlink Electronics Product Support for more information. For system integrators wishing to fabricate cables in-house, information on interfacing to the DOM's header is given below.

DuraPoint OEM Interface Cables

Below is a list of Interlink Electronics' line of DOM interface cables. Please refer to Figure 7.09 for more detailed information. These cables are designed to interface with the DOM's interface headers or adapt from DB-9 to PS/2 interfaces.

- VP710 – 24" ribbon cable with D-sub 9 serial connector (for internal use only)
- VP720 – 6' shielded PVC cable with D-sub 9 female serial connector and strain relief
- VP730 – 6" PS/2 adapter cable, D-sub 9 serial to mini-DIN 6
- VP740 – 6' shielded PVC cable with in-line 8-pin mini-DIN interconnect for use with enclosure cord grips (D-sub 9 serial adapter included)
- VP750 – 6' shielded PVC cable with 8-pin mini-DIN connector (for use with Sun models)
- VP760 – 6' shielded PVC cable with D-Sub 9 male connector and strain relief (for use with Quadrature models)

Header/Mating Connector Specifications

The J1 interface header is a 10-pin double-row header on 0.1" centers. The pin-out of this header is arranged such that a 10-conductor ribbon cable with an IDC 10-position receptacle connector (e.g. AMP #746288-1) at one end and an IDC DB-9 (e.g. AMP #747303-4) on the other end will give the proper serial and PS/2 connections. Please refer to Section 3.2 for more details on the J1 header-pin signal descriptions.

3.4 Cursor Speed Options

DuraPoint provides three speed ranges: fast, medium, slow. Slow is the default. In this illustration Jumper 5 (JP5) is bridged for the default cursor speed setting of slow:

JP3	▢ ▢	Fast
JP4	▢ ▢	Medium
JP5	▢━━▢	Slow *default*
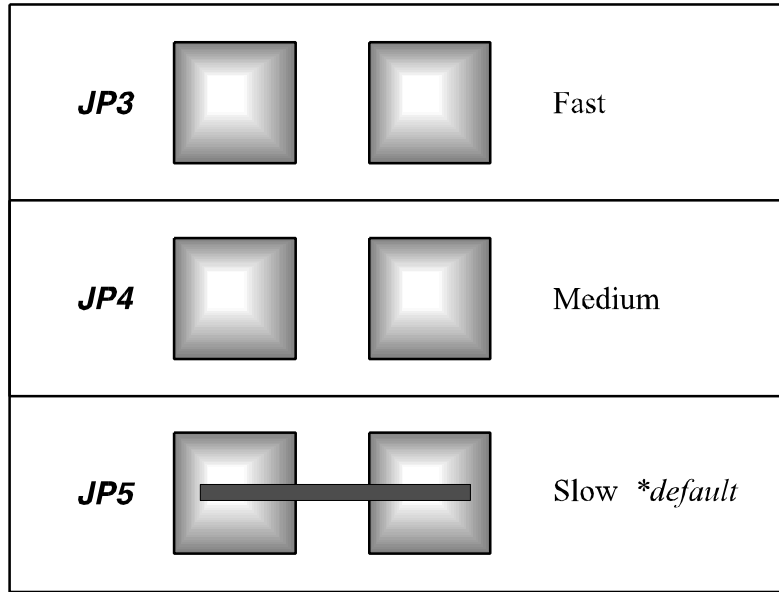
Integrators are encouraged to optimize the speed range of DuraPoint to meet their system's requirements.

The cursor speed of DuraPoint can be changed in Windows with the VersaPoint mouse driver. Refer to the VersaPoint Software User's Guide for more information.

To change the cursor speed of DuraPoint on the board, first, carefully remove the solder bridge that connects JP5. Then, solder wires to connect the jumpers associated with the cursor speed you desire. If a different usage response range is needed, please contact Interlink Electronics Product Support. Interlink Electronics can design an optimal speed range for any application.

4.0 CUSTOM DESIGNS

Custom DuraPoint OEM Module Solutions

Interlink Electronics specializes in customizing DuraPoint OEM pointing solutions to meet your requirements. DOM pointing solutions can easily be designed to meet your specifications for size, color, number of buttons, output protocol, graphic design, sensitivity/speed range, extended temperature range, increased chemical resistance, special output header, or almost any other requirement. We encourage you to contact Interlink Electronics Product Support for more information.

5.0 TECHNOLOGY

How the DuraPoint OEM Module Works

The DOM's innovative design features no moving parts—the patented pressure-sensitive sensor used in VersaPoint technology replaces the troublesome mechanical assemblies (optical encoders, wheels, rollerballs, etc.) found in conventional mice and trackballs.

When finger pressure is applied to the DOM's mouse button, the pressure is transferred to the pressure-sensitive sensor located under the button. The sensor is divided into four directional zones (up, down, left, right). The pressure distribution over the four zones determines the direction of cursor movement. This same sensor also controls the speed of cursor movement—a light touch moves the cursor at a precise crawl while increases in pressure will cause the cursor to move faster.

When pressure is applied to the DOM's click buttons, it is transferred to a pressure-sensitive sensor located under the click buttons. The change in pressure is detected by the DOM's electronics and is interpreted as a click activation. The click buttons' pressure-sensitive technology have no moving parts to break or wear out.

For enhanced operation in Windows, a VersaPoint Windows mouse driver is available, and is included with the DOM. While it provides optimal performance, the standard Microsoft mouse driver included with Windows also works well. A VersaPoint DOS mouse driver is also included for DOS applications.

6.0 SPECIFICATIONS

Hardware Interfaces:	RS232C serial, PS/2 mouse port, and Sun (Type 5)
Output Data Formats:	Microsoft and Mouse Systems serial, PS/2 two-button mouse, and Sun (Type 5)
System Compatibility:	DOS, Windows, and OS/2 via serial and PS/2 ports. PS/2 compatible with any PS/2 mouse port (X-terminals, etc.). Sun compatible with Sun Type 5 mouse ports
Cursor Directional Control:	Continuous 360° control
Cursor Speed Control:	Proportional to applied pressure
Power Consumption:	Less than 10 mA @ 5V
Weight:	With female faceplate: 8 oz. (no cable)
Liquid/Dust Resistance:	Complete when sealed into system. Can meet NEMA 4X, 6P, 12 and 13 standards*
Mounting Options:	PEM studs, heat staking, fasteners, etc.
Lifetime:	Mouse actuator: > 10 million cycles
Primary Materials:	Silicone rubber keypad, glass-reinforced PCB, aluminum (support plate), stainless steel (faceplate)
Chemical Resistance:	Bleach, soap, alcohol, oil, saline, Cidex 7... *(custom enhanced-resistance DOMs can be developed)*
Temperature:	Operating: +32° to +140°F (0° to +60°C) Storage: -40° to +185°F (-40° to +85°C) (enhanced-temperature range DOMs can be developed)
Shock:	80G acceleration, 11 msec, half-sine*
Vibration:	Operating: 0.5G peak acceleration, 5-500 Hz* Storage: 5.0G peak acceleration, 5-500 Hz*
ESD Susceptibility:	IEC 801-2, Level 3 (no errors at 8kV)*

* When properly integrated
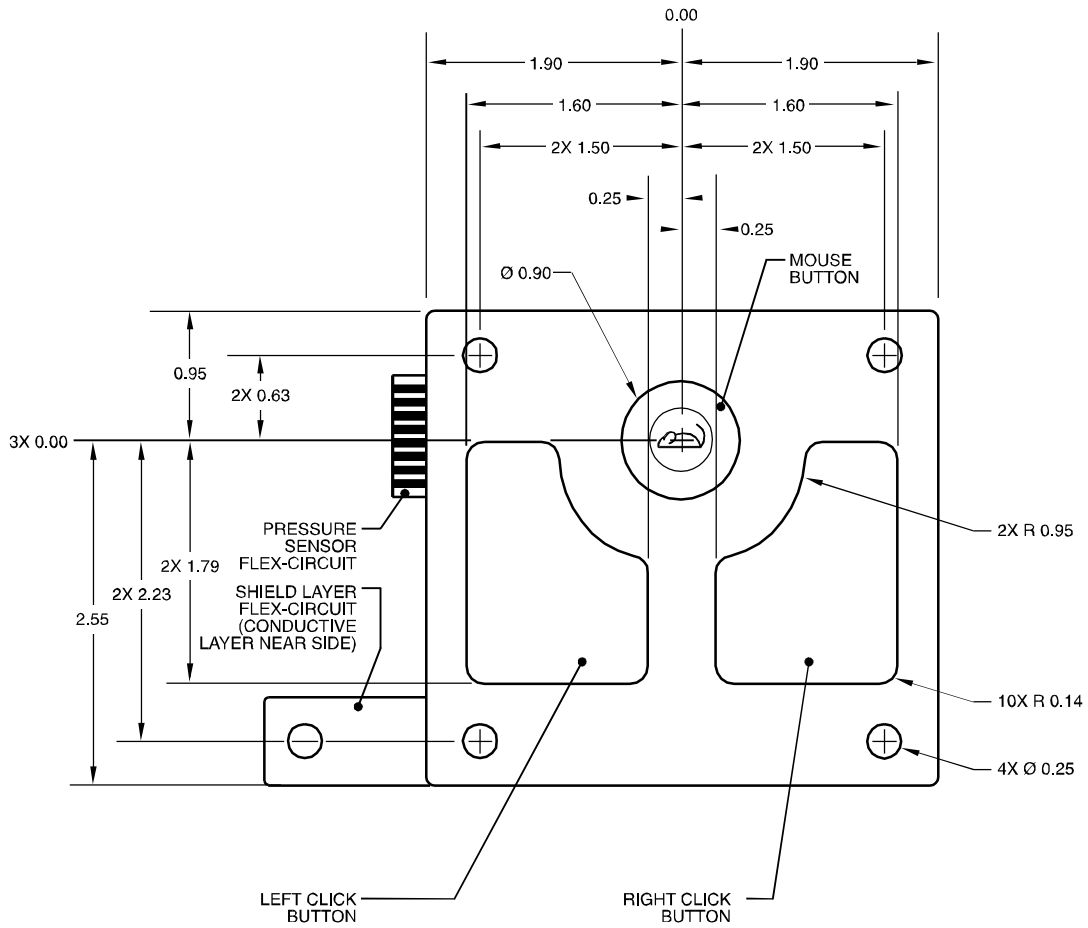
Figure 7.01
DOM Without Faceplate (Core Module)
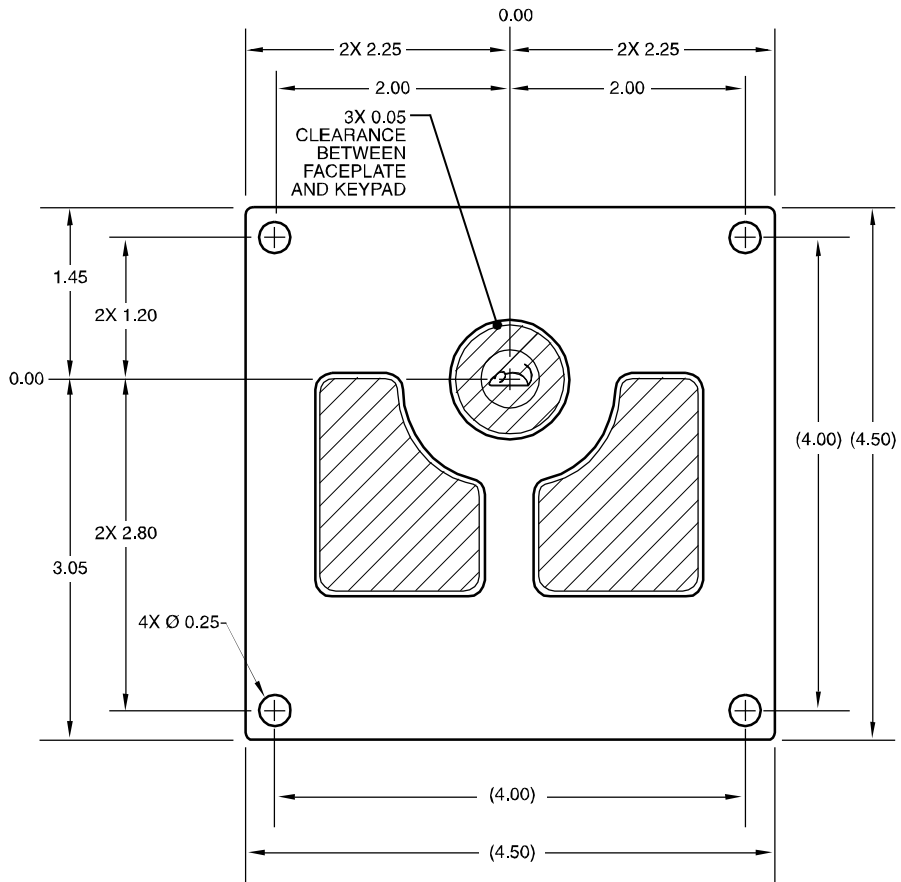
Figure 7.02
DOM With Female Faceplate

3 X 0.00

3.125

3 X 2.750

3 X 2.750

3.125

3X 0.05
CLEARANCE
BETWEEN
FACEPLATE
AND KEYPAD

6 X
6-32 X 0.500"
STUDS

3 X 1.575

0.00

2X 0.800

3 X 3.175

(4.750) (5.500)

(2.375)

(2.750)

(5.500)

(6.250)

Figure 7.03
DOM With Male Faceplate

GASKET (MALE
FACEPLATE ONLY)

MALE OR
FEMALE
FACEPLATE

RUBBER KEYPAD

FORCE SENSING RESISTOR

SUPPORT PLATE

PCB SPACER

PCB

0.63

APPROXIMATE
LOCATION OF
PCB COMPONENTS

0.83

0.06

0.05

0.26

SIDE VIEW

Figure 7.04
DOM, Side Viewand BOM

0.00

1.65   1.65

2 X 1.50   2 X 1.50

2 X 1.46   2 X 1.46

(1.08)   (1.08)

0.20   0.20

(0.39)   (0.39)

Ø 1.00

2X 1.20

2 X 0.63

(2 X 0.14)

0.00

2 X 0.05

(2 X 1.02)

(4 X 1.65)

2 X 1.84

2 X 2.23

2 X R0.90

10 X R0.19

4 X FASTENER LOCATIONS
TO FIT Ø 0.25 MOUNTING
HOLES LOCATED ON
CORE MODULE
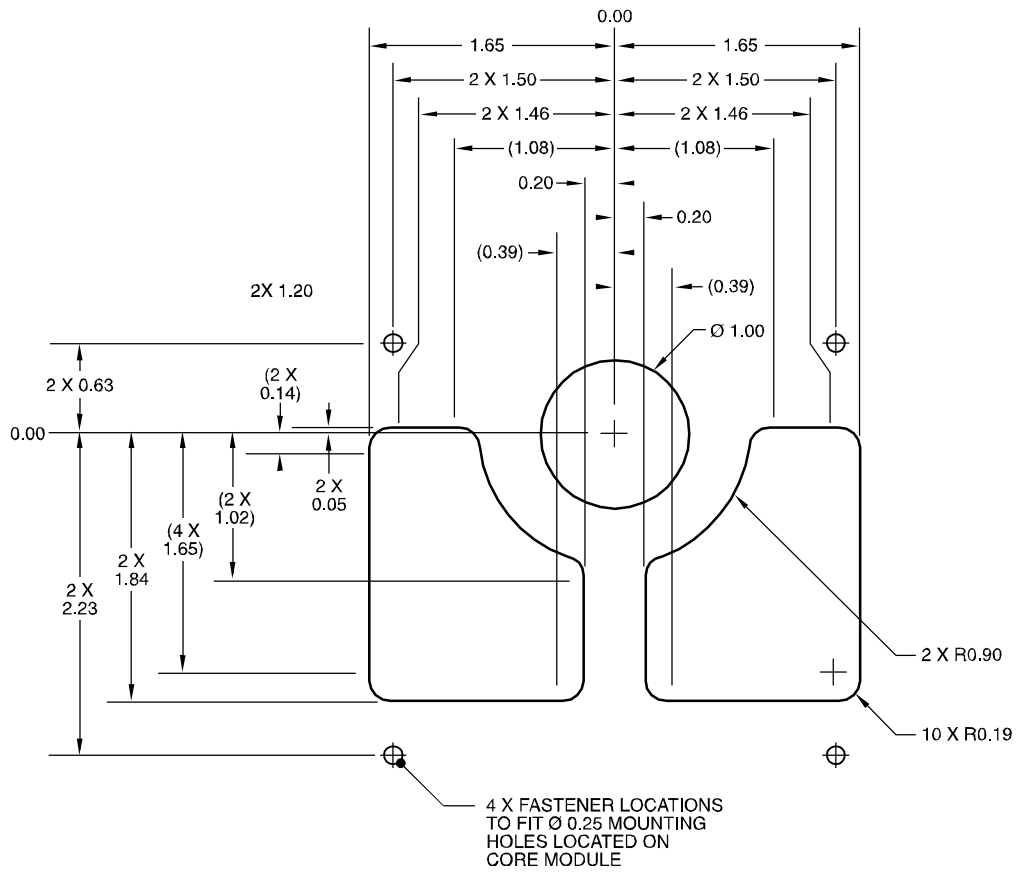
Figure 7.05
Suggested Mounting Without Faceplate

0.00

2 x 2.00　　　2 x 2.00

1.70　　　1.70

2 x 1.20

0.55

0.00

(2.24)　(4.00)

1.89

2 X 2.80

(0.91)

(3.40)

4 X FASTENER LOCATIONS TO FIT Ø 0.25 MOUNTING HOLES LOCATED ON CORE MODULE

(4.00)
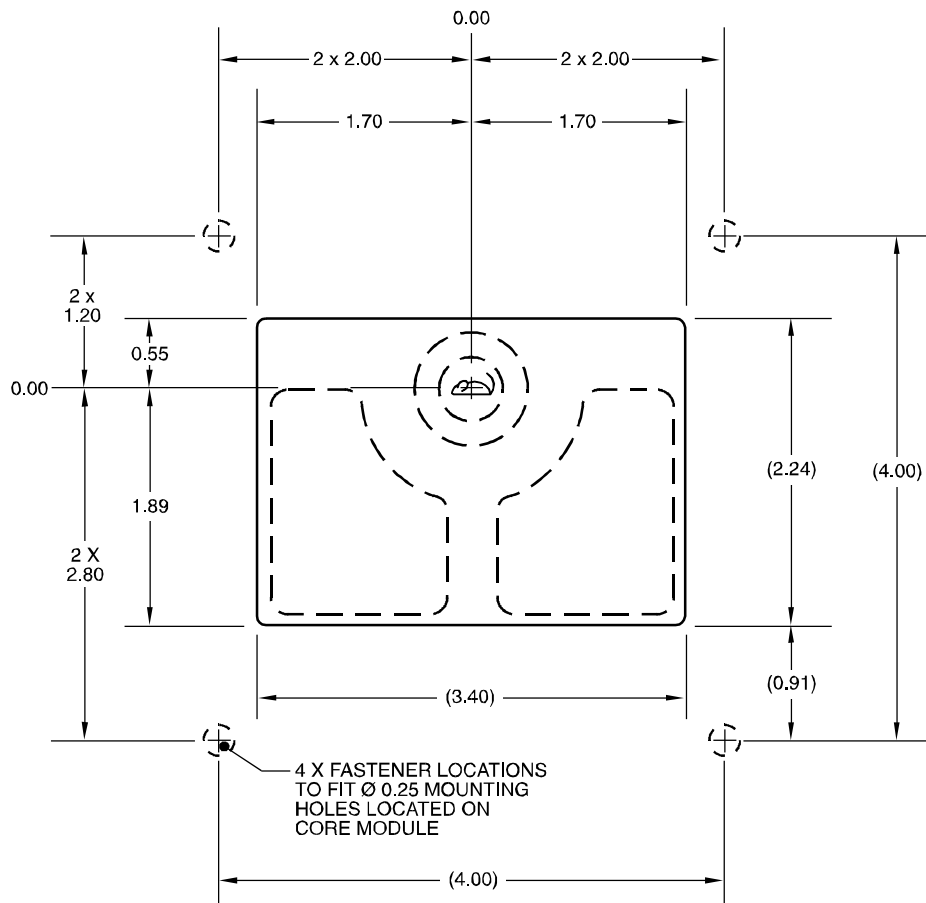
Figure 7.06
Suggested Mounting With Female Faceplate

3 X
0.00

3 X 2.750

3 X 2.750

2.125

2.125

3 X
1.575

1.075

2 X 0.800

2.675

3 X
3.175

(3.750) (4.750)

(2.375)

(2.750)

(4.250)

(5.500)

6 X CLEARANCE
HOLES FOR
6-32 STUDS
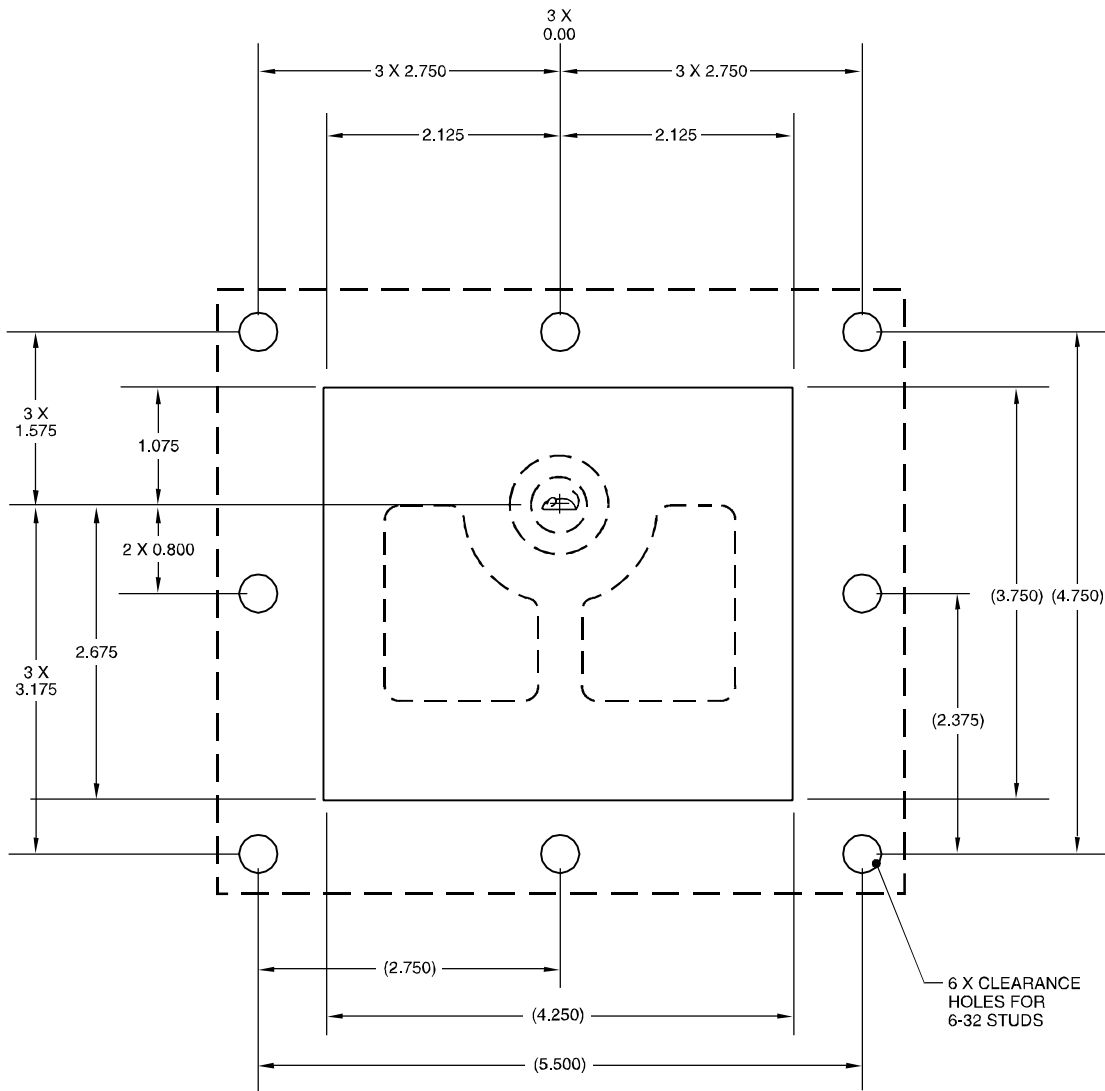
Figure 7.07
Suggested Mounting With Male Faceplate

J3 INTERFACE HEADER
INSTALLED ON
SUN MODELS ONLY
(SEE DETAIL -B-)

CONNECT SYSTEM SHIELD
TO PCB MOUNTING STUD
AT THIS LOCATION OR TO
STUD ON OPPOSITE SIDE
OF PCB

J1 INTERFACE HEADER
(SEE DETAIL -A-)

J2 HEADER
(PRESSURE
SENSOR HEADER)

PRESSURE SENSOR
FLEX-CIRCUIT

J3

J1

J2

(COMPONENTS NEAR SIDE)

SHIELD LAYER
FLEX-CIRCUIT

BOLT DOWN POINT
FOR SHIELD LAYER
FLEX-CIRCUIT

J1

PIN 10

PIN 6

PIN 1

1

DETAIL -A-
(J1 HEADER)
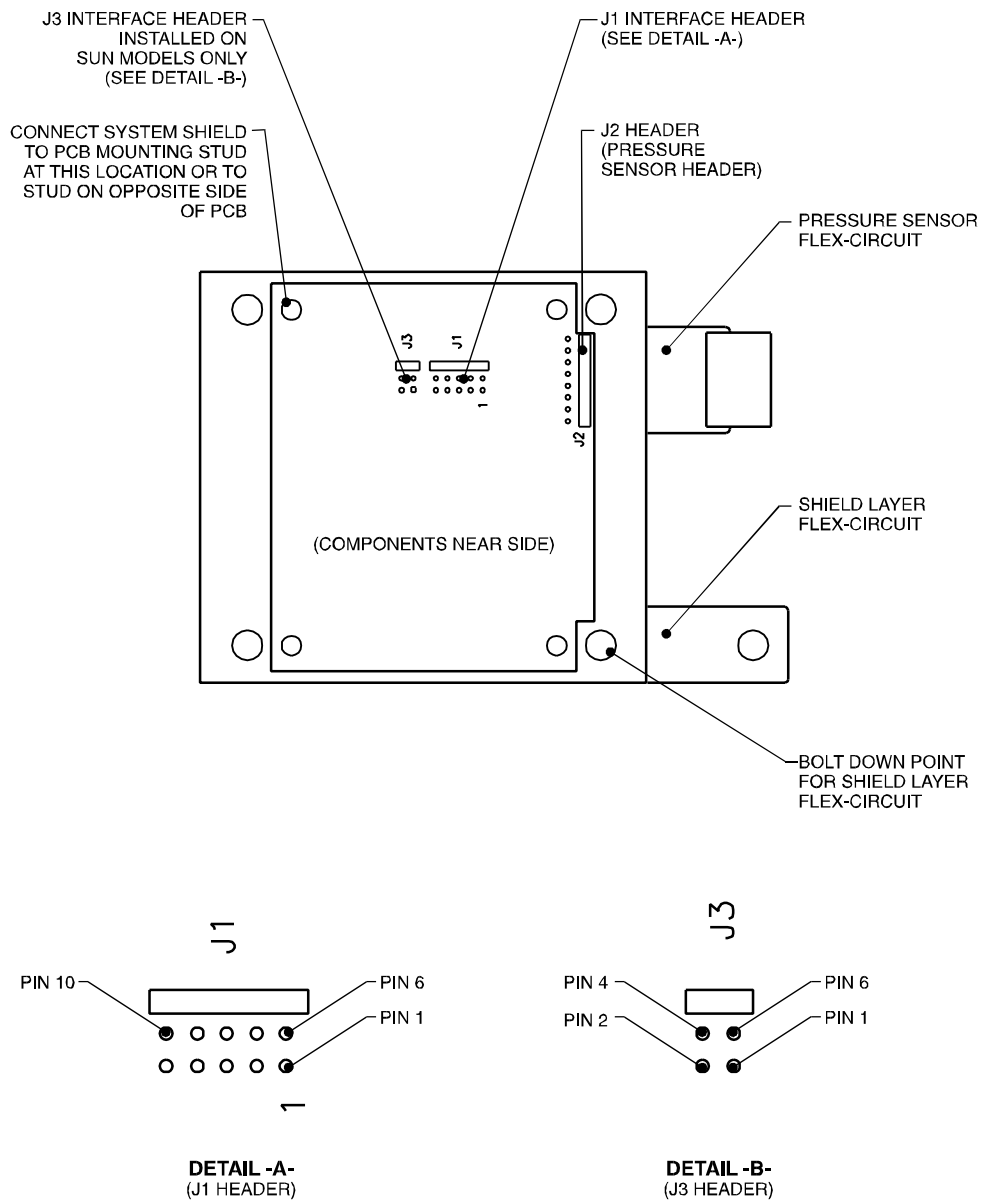
J3

PIN 4

PIN 2

PIN 6

PIN 1

DETAIL -B-
(J3 HEADER)

Figure 7.08
Circuit Board Detail
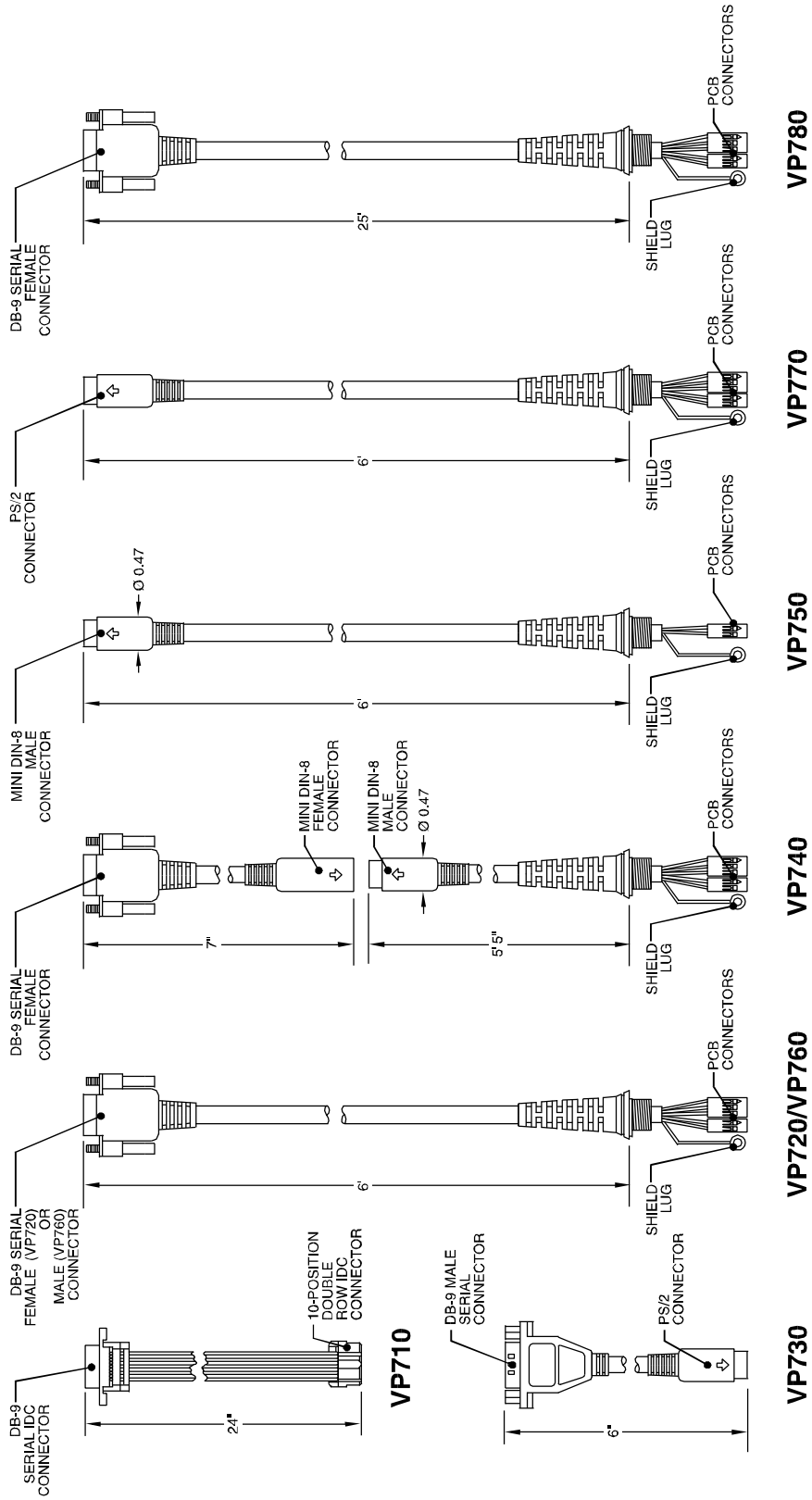
Figure 7.09
"VP" Cable Details

DB-9 IDC SERIAL
CONNECTOR

VP710 CABLE

CONNECT SYSTEM SHIELD
TO PCB MOUNTING STUD AT
THIS LOCATION OR TO STUD
ON OPPOSITE SIDE OF PCB

10-PIN IDC CONNECTOR
CONNECTS TO J1 HEADER
(POLARIZING KEY FACES UP)

J3

J2

J2 HEADER

1

PRINTED CIRCUIT BOARD

(COMPONENTS NEAR SIDE)

J1 HEADER
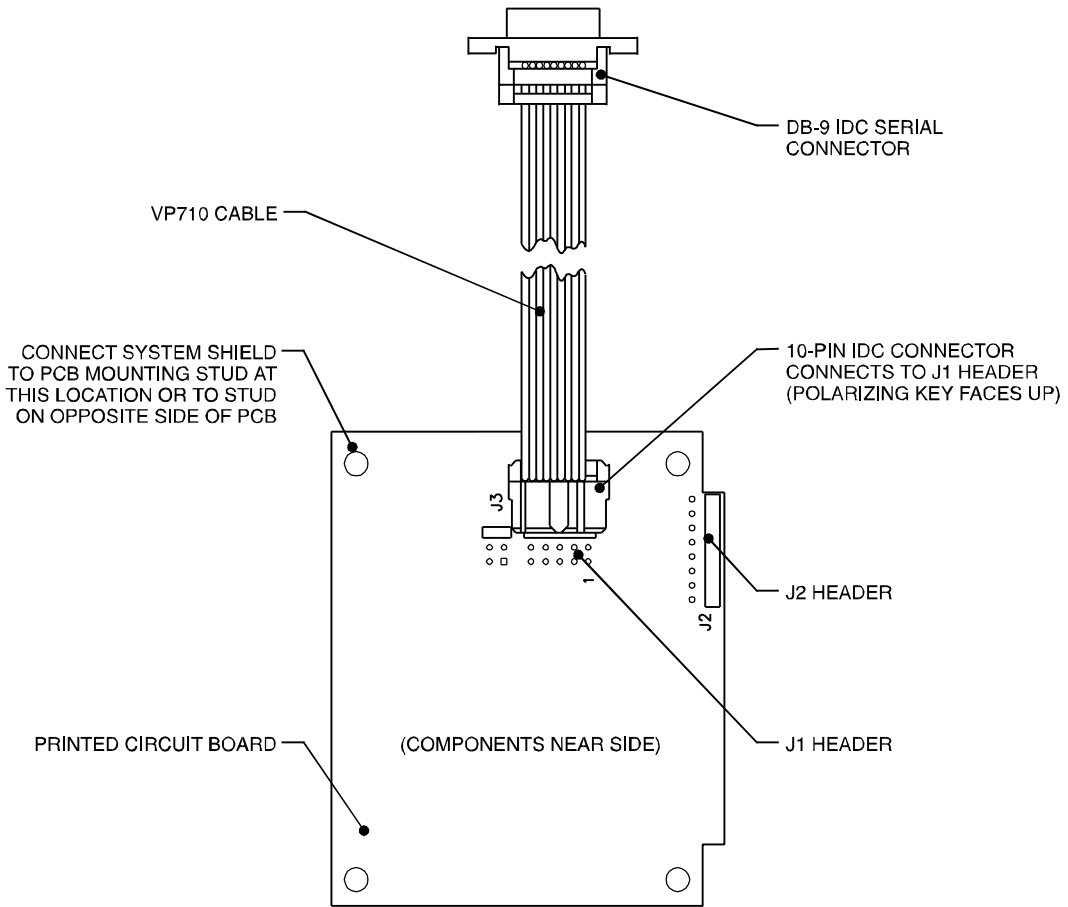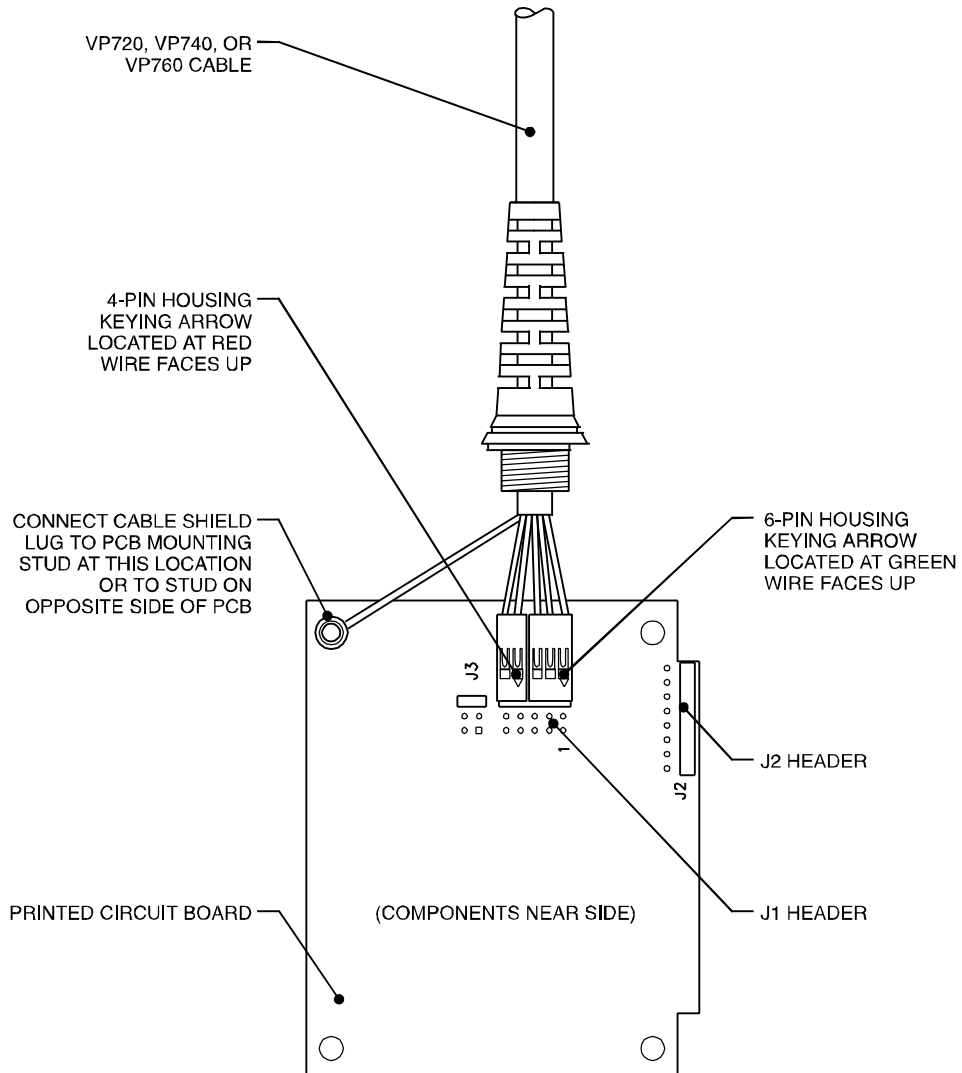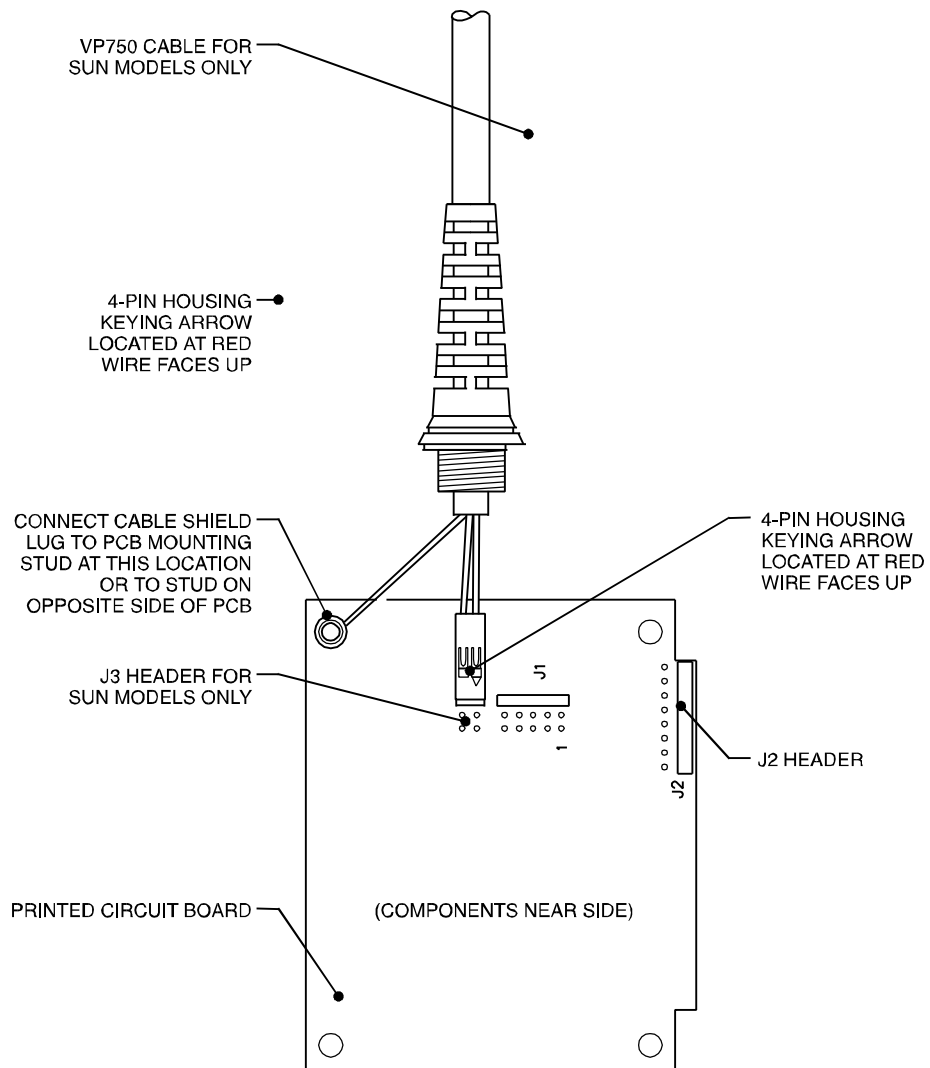
IMPORTANT

1) MAKE SURE POLARIZING KEY
ON THE RIBBON CABLE 10-PIN
IDC CONNECTOR FACES UP.

2) INCORRECT CABLE INSTALLA-
TION MAY CAUSE DAMAGE TO
THE DURAPOINT OR SYSTEM

Figure 7.10
Interfacing to the VP710 Cable

VP720, VP740, OR
VP760 CABLE

4-PIN HOUSING
KEYING ARROW
LOCATED AT RED
WIRE FACES UP

6-PIN HOUSING
KEYING ARROW
LOCATED AT GREEN
WIRE FACES UP

CONNECT CABLE SHIELD
LUG TO PCB MOUNTING
STUD AT THIS LOCATION
OR TO STUD ON
OPPOSITE SIDE OF PCB

J3

J2

J2 HEADER

PRINTED CIRCUIT BOARD

(COMPONENTS NEAR SIDE)

J1 HEADER

IMPORTANT
1) KEYING ARROWS LOCATED ON HOUSING MUST FACE UP.
2) INSTALL 6-PIN HOUSING ON "J2" HEADER (PRESSURE SENSOR) SIDE OF PCB
3) INCORRECT CABLE INSTALLA-TION MAY CAUSE DAMAGE TO THE DURAPOINT OR SYSTEM

Figure 7.11
Interfacing to the VP720, VP740 and VP760 Cables

VP750 CABLE FOR
SUN MODELS ONLY

4-PIN HOUSING
KEYING ARROW
LOCATED AT RED
WIRE FACES UP

CONNECT CABLE SHIELD
LUG TO PCB MOUNTING
STUD AT THIS LOCATION
OR TO STUD ON
OPPOSITE SIDE OF PCB

4-PIN HOUSING
KEYING ARROW
LOCATED AT RED
WIRE FACES UP

J3 HEADER FOR
SUN MODELS ONLY

J1

J2 HEADER

J2

PRINTED CIRCUIT BOARD

(COMPONENTS NEAR SIDE)

1

IMPORTANT
1) KEYING ARROWS LOCATED ON 4-PIN HOUSING MUST FACE UP.
2) INSTALL 4-PIN HOUSING INTO "J3" HEADER
3) INCORRECT CABLE INSTALLA- TION MAY CAUSE DAMAGE TO THE DURAPOINT OR SYSTEM

Figure 7.12
Interfacing to the VP750 Cables
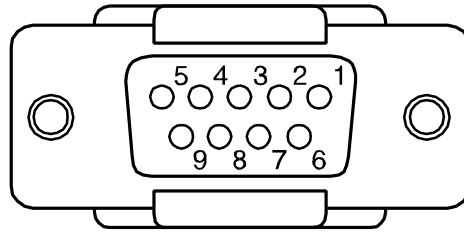
VP720 DB-9 PIN LOCATIONS

DB-9 PIN (VP720)	SIGNAL	SIGNAL DESCRIPTION (FOR VP720 CABLE)	VP720 COLOR CODE
1	CLK/CD	CLOCK	BROWN
2	RXD	RECEIVE DATA	RED
3	TXD	TRANSMIT DATA	ORANGE
4	DTR	ATA TERMINAL READY	YELLOW
5	GND	SIGNAL GROUND	GREEN
6	N/A	NO CONNECTION	N/A
7	RTS	REQUEST TO SEND	BLUE
8	+5/CTS	+5V	PURPLE
9	DATA/RI	DATA	BLACK
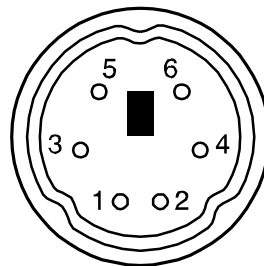
PS/2 PIN LOCATIONS

PS/2 PIN	SIGNAL DESCRIPTION
1	DATA
2	NO CONNECTION
3	GROUND
4	+5Vcc
5	CLOCK
6	NO CONNECTION

Figure 7.13
DB-9 and P/S2 Connector Details

Interlink Electronics, Inc.

COM PORT MOUSE DATA FORMAT:

DATA IS TRANSFERRED IN THE FORM OF SEVEN-BIT DATA BYTES,
ONE STOP BIT, AND NO PARITY. EACH REPORT CONSISTS OF THREE
BYTES. X AND Y ARE RELATIVE MOVEMENTS. X MOVEMENT IS
POSITIVE TO THE RIGHT AND NEGATIVE TO THE LEFT. Y MOVEMENT
IS POSITIVE IN THE DOWN DIRECTION AND NEGATIVE IN THE UP
DIRECTION. MOUSE DATA IS SENT ONLY WHEN THERE IS DATA TO
SEND (E.G. MOVEMENT OR BUTTON PRESS/RELEASE). THE MOUSE
REPORTS DATA AT A MAXIMUM RATE OF 40Hz. THE MOUSE WILL
TRANSMIT AN "M" WHEN RTS GOES FROM 1 TO 0 (NEGATIVE
VOLTAGE TO POSITIVE VOLTAGE). MOUSE DRIVERS USE THIS
FEATURE TO DETERMINE WHICH COM PORT, IF ANY, A MOUSE IS
CONNECTED TO.

PACKET FORMAT:

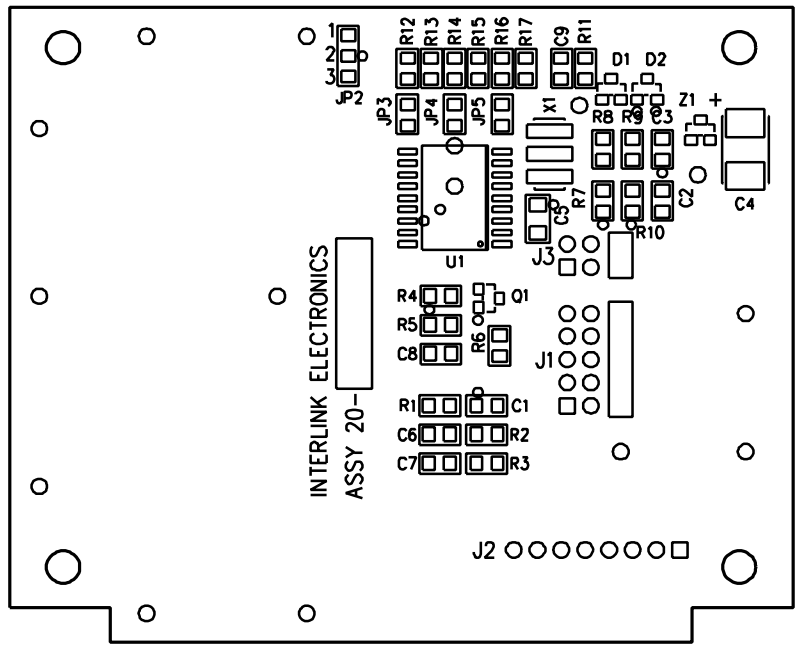| BYTE	B6	B5	B4	B3	B2	B1	B0
1	1	L	R	Y7	Y6	X7	X6
2	0	X5	X4	X3	X2	X1	X0
3	0	Y5	Y5	Y3	Y2	Y1	Y0

7 DATA BITS, 1 STOP BIT, NO PARITY
(40 PACKETS PER SECOND MAXIMUM)

L&R = LEFT AND RIGHT CLICK BUTTON DATA.
(1 = KEY DEPRESSED)

X7 - XO = X DISTANCE IN AN 8-BIT TWO'S COMPLEMENT FORMAT,
RANGE - 128 TO 127

Y7 - XO = Y DISTANCE IN AN 8-BIT TWO'S COMPLEMENT FORMAT,
RANGE - 128 TO 127

Figure 7.14
COM Port Output Format

THE SPEED SETTING ARE AS FOLLOWS:
 JP3 - MEDUIM
 JP4 - SLOW (DEFAULT)
 JP5

Figure 7.15
PCB Assembly, Zilog Mask V4.1

8.0 WARRANTY INFORMATION

Interlink Electronics warrants the DOM against defects in materials or workmanship for a period of one (1) year after date of purchase. Interlink Electronics will, at its option, repair or replace any DOM which becomes inoperable due to defects of manufacture.

If you need to return a DOM for warranty repair and have already contacted Interlink Electronics Product Support to receive an RMA number, pack the DOM securely with an explanation of the problem and a copy of the dated Bill of Sale, label the box with the RAM number clearly visible, and send the package prepaid and insured to Interlink Electronics.

Interlink Electronics will ship the repaired or replaced product to you prepaid. Interlink Electronics reserves the right to provide, at no additional cost, a more current or upgraded model for replacement, if available.

9.0 PRODUCT SUPPORT

The DOM has been designed for quick and easy integration. However, if you have any questions about integrating or using your DOM, please call Interlink Electronics Product Support at:

Interlink Electronics Product Support
Phone: 805-484-1331
Toll free in the US 800-340-1331
Fax: 805-484-8989
E-mail: ....psupport@interlinkelec.com
Product Support hours: .... 8:00 AM to 5:00 PM
(United States Pacific Standard Time)

Corporate Headquarters:
Interlink Electronics, Inc.
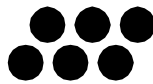546 Flynn Road
Camarillo, CA 93012 USA
Phone: 805-484-8855
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