Integrity Instruments
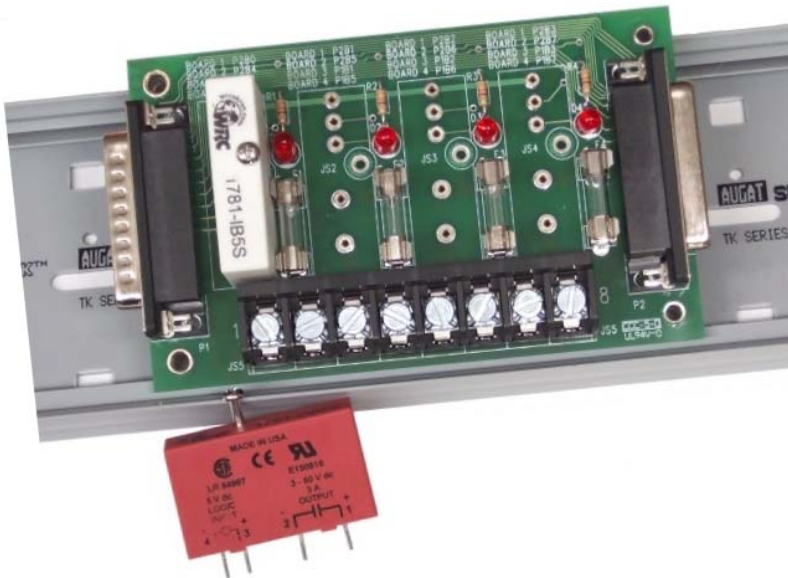
P.O. Box 451
Pine River Minnesota
56474 USA

Order Phone   800-450-2001
Fax Phone   218-587-3414
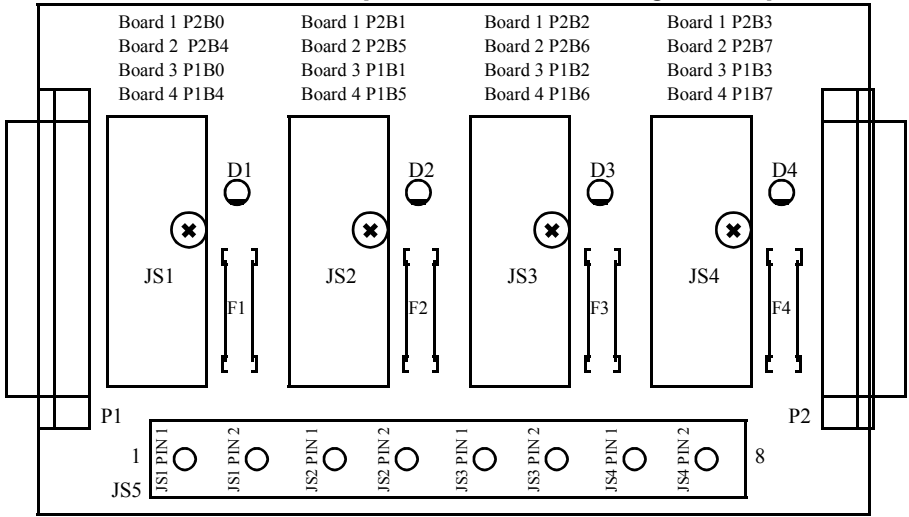Tech Phone   218-587-3120

**http://www.integrityusa.com**

EXP-STA
EXP-TRK

Digital I/O
Mounting Boards

EXP-X PCB Details   [Dimensions 3" x 4 $^7/_8$" excluding connectors]

Board 1 P2B0   Board 1 P2B1   Board 1 P2B2   Board 1 P2B3
Board 2 P2B4   Board 2 P2B5   Board 2 P2B6   Board 2 P2B7
Board 3 P1B0   Board 3 P1B1   Board 3 P1B2   Board 3 P1B3
Board 4 P1B4   Board 4 P1B5   Board 4 P1B6   Board 4 P1B7

D1   D2   D3   D4

JS1   JS2   JS3   JS4

F1   F2   F3   F4

P1   P2

JS5   1   JS1 PIN 1   JS1 PIN 2   JS2 PIN 1   JS2 PIN 2   JS3 PIN 1   JS3 PIN 2   JS4 PIN 1   JS4 PIN 2   8

JS1 (I/O Module		JS2 (I/O Module)		JS3 (I/O Module)		JS4 (I/O Module)	
JS1 PIN 1	JS1 PIN 2	JS2 PIN 1	JS2 PIN 2	JS3 PIN 1	JS3 PIN 2	JS4 PIN 1	JS4 PIN 2
JS5 Terminal Strip — PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8

JSx PIN 1 JSx PIN 2   JSx PIN 1 JSx PIN 2   JSx PIN 1 JSx PIN 2   JSx PIN 1 JSx PIN 2
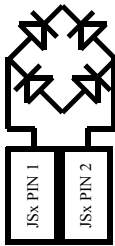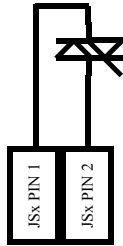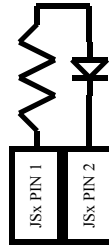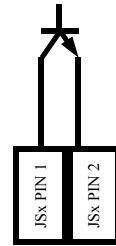
AC INPUT   AC OUTPUT   DC INPUT   DC OUTPUT

I/O Modules

The module inputs and outputs are connected to JS5. In the case of DC units polarity must be observed, and is shown above. There are many other modules which can be used, the only criteria being that the internal logic levels must be 5 vdc.

Fuses are 5 x 20 mm, 3.15 amp

The table below shows some of the manufacturers, and some of the applicable modules.

Module Color	Module type	Crouzet (Gordos)	Grayhill	Opto22	Potter & Brumfield	WRCAkron
WHITE	DC Input	IDC5	70-IDC5B	IDC5	IDC-5	1781-IB5S
RED	DC Output	ODC5	70-ODC5	ODC5	ODC-5	1781-OB5S
YELLOW	AC Input	IAC5	70-IAC5	IAC5	IAC-5	1781-IA5S
BLACK	AC Output	OAC5	70-OAC5	OAC5	OAC	1781-OA5S

Position Numbering

Board position and port/bit number in relation to I/O module position.
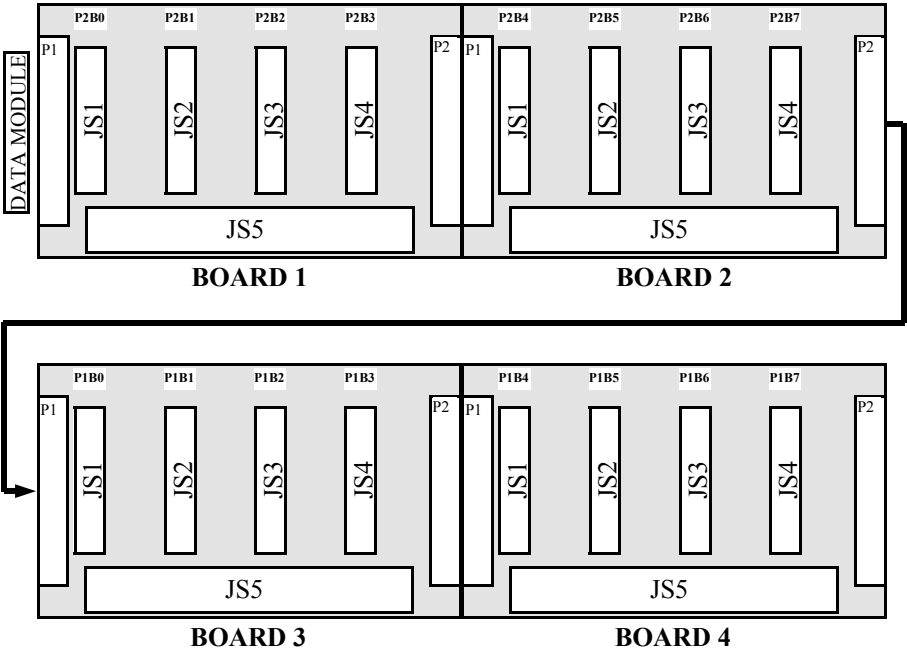
EXP-X BOARD #	I/O Module Number	I/O Port/Bit Number	I/O Module Port Pin#
1	JS1	P2B0	Pin 1
	JS2	P2B1	Pin 2
	JS3	P2B2	Pin 3
	JS4	P2B3	Pin 4
2	JS1	P2B4	Pin 5
	JS2	P2B5	Pin 6
	JS3	P2B6	Pin 7
	JS4	P2B7	Pin 8
3	JS1	P1B0	Pin 14
	JS2	P1B1	Pin 15
	JS3	P1B2	Pin 16
	JS4	P1B3	Pin 17
4	JS1	P1B4	Pin 18
	JS2	P1B5	Pin 19
	JS3	P1B6	Pin 20
	JS4	P1B7	Pin 21

Operational Characteristics

The Integrity Instruments **EXP-X** boards mate up directly to our line of I/O data acquisition modules. The boards are designed to allow expansion for up to 16 digital I/O points. If you need more than the 4 I/O points just plug in another board. This can be done for up to 4 **EXP-X** boards. All 16 I/O points, plus voltage and ground are available at the male DB 25 connector on the first board. This is accomplished by data line rollover shown in the diagram below.

MALE DB LEFT			FEMALE DB RIGHT	
DB PIN #	SIGNAL		DB PIN #	SIGNAL
PIN 1	P2 B0		PIN 1	P2 B4
PIN 2	P2 B1		PIN 2	P2 B5
PIN 3	P2 B2		PIN 3	P2 B6
PIN 4	P2 B3		PIN 4	P2 B7
PIN 5	P2 B4		PIN 5	P1 B0
PIN 6	P2 B5		PIN 6	P1 B1
PIN 7	P2 B6		PIN 7	P1 B2
PIN 8	P2 B7		PIN 8	P1 B3
PIN 14	P1 B0		PIN 14	P1 B4
PIN 15	P1 B1		PIN 15	P1 B5
PIN 16	P1 B2		PIN 16	P1 B6
PIN 17	P1 B3		PIN 17	P1 B7
PIN 18	P1 B4		PIN 18	P2 B0
PIN 19	P1 B5		PIN 19	P2 B1
PIN 20	P1 B6		PIN 20	P2 B2
PIN 21	P1 B7		PIN 21	P2 B3
PIN 24	+5V		PIN 24	+5V
PIN 22	+5V		PIN 12	+5V
PIN 25	GND		PIN 25	GND
PIN 13	GND		PIN 13	GND

Nomenclature

The boards are marked to show the specific port and bit number for each I/O point used with our data acquisition modules.

There are two ports, P1 and P2, and eight bits per port B0 to B7. The designation P2B3 is Port 2 Bit 3.

When all 4 boards are series connected, the **input end is board 1, then board 2, 3, and 4.** The marking on the board shows what port and bit number controls that I/O position on the board, depending on what board number it is in the connection series. See figures on page 3.

The left column in the diagram above shows the DB 25 pin number and its' relation to the specific I/O points on each board.

By using the Integrity Instruments **DB25FTS** adapter the expander board may be used with any I/O controller You need only to supply the unit with power and the proper signal lines for functionality.

MODELS: **EXP-TRK** -------------Track mount in Snaptrack[®]
                      EXP-STA -------------Standoffs 1/2 inch, hollow for 6/32 mounting screws

Expander Board Schematic
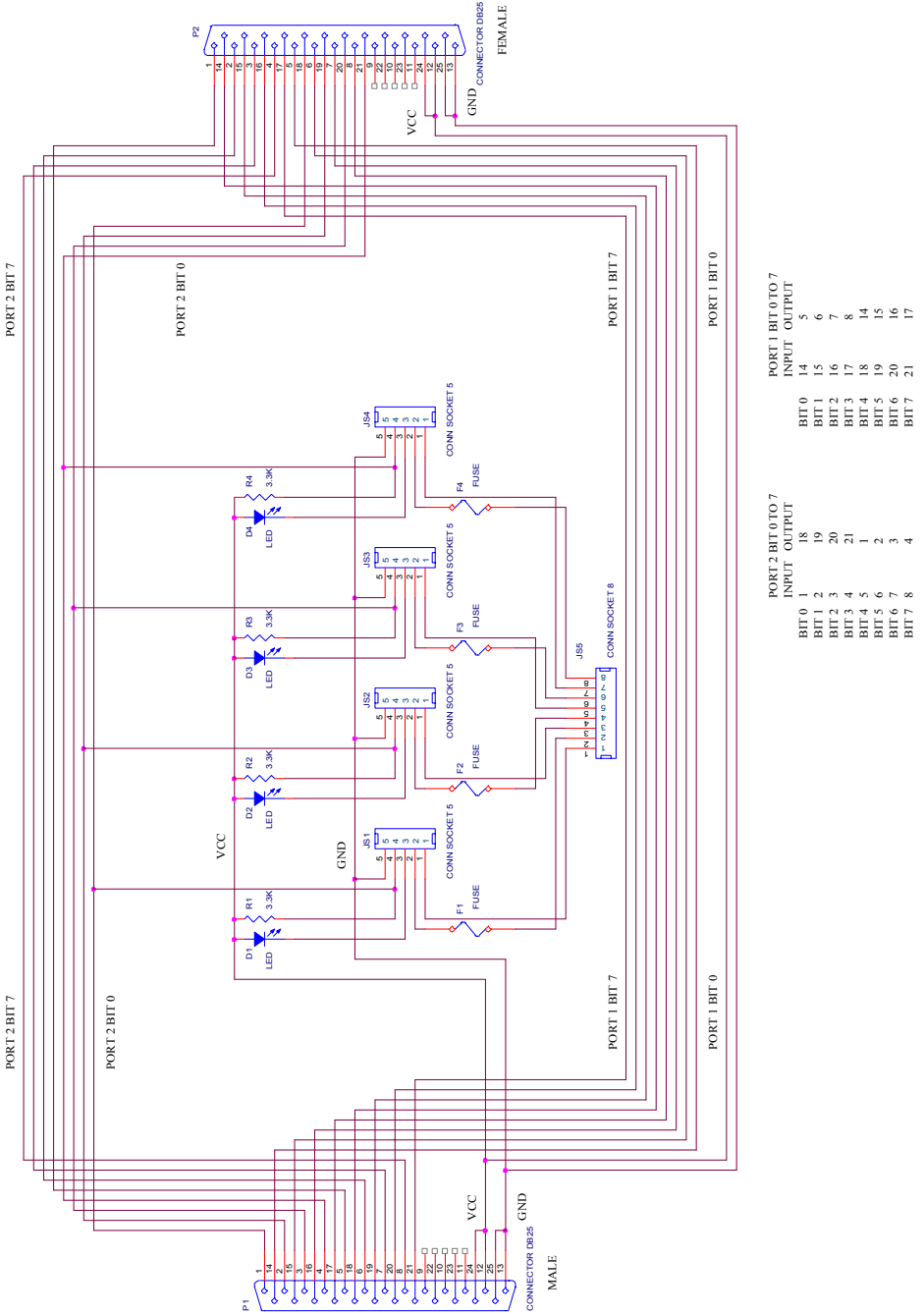
I/O Modules Specifications available from **Integrity Instruments**

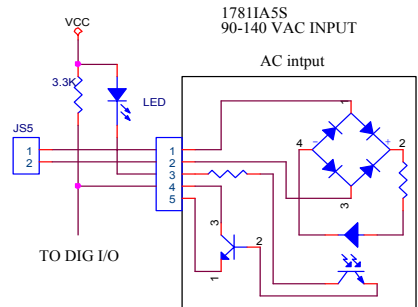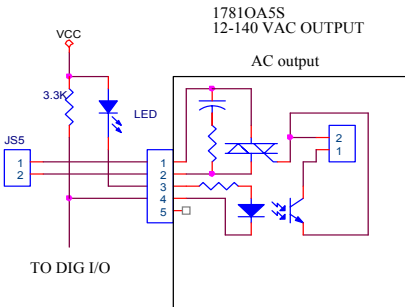| PART NUMBER	FUNCTION	RANGE	TURN ON TIME	TURN OFF TIME
1781-IB5S	DC INPUT	3.3 to 32 VDC	.3 milli-seconds	.6 milli-seconds
1781-OB5S	DC OUTPUT	3 to 60 VDC 3A	.05 milli-seconds	.1 milli-seconds
1781-IA5S	AC INPUT	90 to 140 VAC	20 milli-seconds	30 milli-seconds
1781-OA5S	AC OUTPUT	12 to 140 VAC 3A	N/A	N/A

I/O Modules Internal Schematic and Exp Board Connections

1781OB5S
3-60 VDC OUTPUT
DC output
VCC
3.3K
LED
JS5
TO DIG I/O

1781IB5S
3.3-32 VDC INPUT
DC intput
VCC
3.3K
LED
JS5
TO DIG I/O
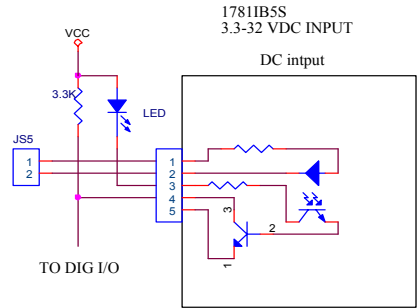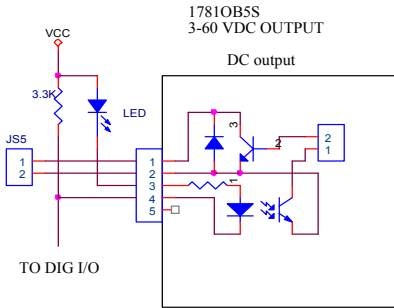
PINNING

PIN 1	+ INPUT	+ OUTPUT		
PIN 2	- INPUT	- OUTPUT		
PIN 3	VCC	VCC		
PIN 4	TO MPU	TO MPU	- AS OUT	+ AS IN
PIN 5	GND	GND		

1781OA5S
12-140 VAC OUTPUT
AC output
VCC
3.3K
LED
JS5
TO DIG I/O

1781IA5S
90-140 VAC INPUT
AC intput
VCC
3.3K
LED
JS5
TO DIG I/O

Digital & Analog I/O Port Specifications:

Digital I/O	
DB25 Pins	**Description**
1	Port 2 Bit 0
2	Port 2 Bit 1
3	Port 2 Bit 2
4	Port 2 Bit 3
5	Port 2 Bit 4
6	Port 2 Bit 5
7	Port 2 Bit 6
8	Port 2 Bit 7
9	
10	
11	
12	+5Vdc
13	GND
14	Port 1 Bit 0
15	Port 1 Bit 1
16	Port 1 Bit 2
17	Port 1 Bit 3
18	Port 1 Bit 4
19	Port 1 Bit 5
20	Port 1 Bit 6
21	Port 1 Bit 7
22	
23	
24	+5Vdc
25	GND

<u>NOTES</u>