INSTRUCTION MANUAL

Sensoray Model 720RB/DIN

Relay I/O Board
(Rev A)
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For Technical Support contact Sensoray Co., Inc.
7313 SW Tech Center Dr., Tigard, Oregon 97223, USA
Tel:(503) 684-8005 Fax:(503) 684-8164
Email: support@sensoray.com
www.sensoray.com

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1 Limited Warranty

Sensoray Company, Incorporated (Sensoray) warrants the Model 720RB/DIN hardware to be free from defects in material and workmanship and perform to applicable published Sensoray specifications for two years from the date of shipment to purchaser. Sensoray will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

The warranty provided herein does not cover equipment subjected to abuse, misuse, accident, alteration, neglect, or unauthorized repair or installation. Sensoray shall have the right of final determination as to the existence and cause of defect.

As for items repaired or replaced under warranty, the warranty shall continue in effect for the remainder of the original warranty period, or for ninety days following date of shipment by Sensoray of the repaired or replaced part, whichever period is longer.

A Return Material Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before any equipment will be accepted for warranty work. Sensoray will pay the shipping costs of returning to the owner parts that are covered by warranty.

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2 Special Handling Instructions

The Model 720RB/DIN circuit board contains CMOS circuitry that is sensitive to Electrostatic Discharge (ESD).

Special care should be taken in handling, transporting, and installing the model 720RB/DIN to prevent ESD damage to the board. In particular:

- Do not remove the circuit board from its protective anti-static bag until you are ready to configure the board for installation.
- Handle the circuit board only at grounded, ESD protected stations.
- Remove power from the PCI system before installing or removing the circuit board.

3 Description

The Model 720RB/DIN Relay Board provides a cost effective opto-coupled interface between the input/output signals and the system control board using readily available, industry standard, G4 OPTO22 devices. There are a wide range of OPTO22 devices available giving the system great flexibility.

4 Features

1. Connects 24 OPTO22 I/O modules.
2. Three boards can be chained together to provide up to 72 I/O connections.
3. Easy service replacement of standard G4 OPTO22 devices.
4. Screw terminals for easy field wiring.
5. Available as a DIN rail mounting board or with standoffs.
6. Can be used for input or output signals.
7. OPTO22 I/O modules give a designer a high degree of flexibility.

5 Field Connections

The 720RB/DIN is connected to the control system using a 50-pin header or a 80-pin high density connector.
There are two screw terminals, which are used connect a suitable supply the OPTO22 devices.
There are 24 pairs of I/O screw terminals, two for each OPTO22 device.
There are a further two 50-pin headers used to connect another two 720RB boards giving a total of 72 possible I/O modules. This connection method is only used when using the 80-pin high-density connector.
The terminal connectors will accept 2,5mm single solid wire or 1,5mm stranded wire with ferrules.

6 Supply

This is determined by the OPTO 22 devices used and the input voltage of the system controller. If for example a G4 OAC5 is used then the supply would need to be +5V and the system controller needs to be able to accommodate the 5V input levels that will be caused buy the pull-up resistors.
The supply connector is J3 and is labeled ‘GND’ and ‘VCC’. The ‘GND’ terminal is the system common.
You cannot mix OPTO 22 devices of different supply voltages on the same 720RB board.

7 I/O Configuration

When used in this configuration the board is usually connected to the control system using a 50 way ribbon cable connecting to 50 pin header (JP1).

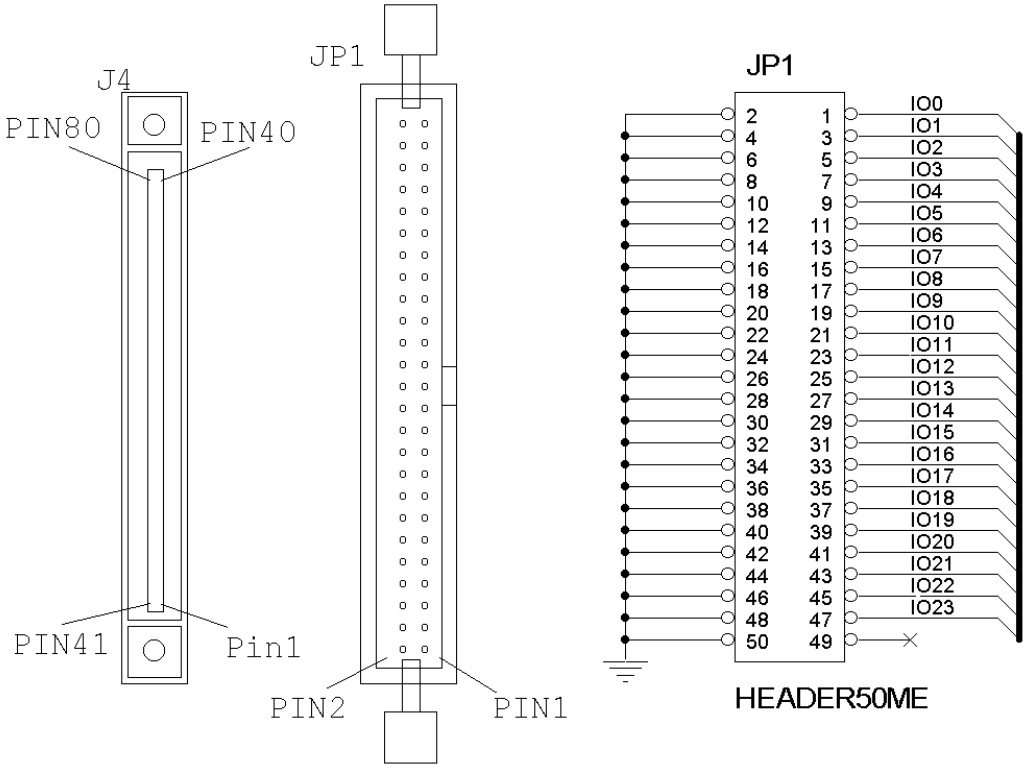


Figure 1 Connectors

JP1 will accept a standard .100” dual row IDC ribbon cable connector.
The 80 pin high density connector (J4) can also be used but only IO0-IO23 will be connected. (Refer to Figure 8 J4 Pin-out page 11)

There is a 4K7 pull-up resistor on each I/O pin. This resistor pulls up to the OPTO22 supply voltage and ensures that the control systems input pin does not float.

OPTO 22 devices of the same supply voltage can be mixed in any order on the 720RB board. Take care that an input OPTO 22 device is not used on an I/O line that has been assigned as an output on the control system as this could cause damage to the control system or the OPTO 22 device.

Also take care when selecting the OPTO 22 operating voltage. Generally this is chosen to be the same as the control systems input voltage level.

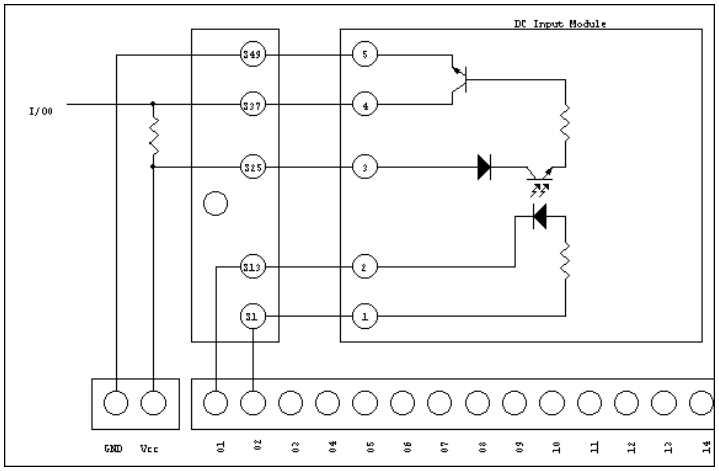


Figure 2 Schematic representation of DC input module in the first I/O position on the board.

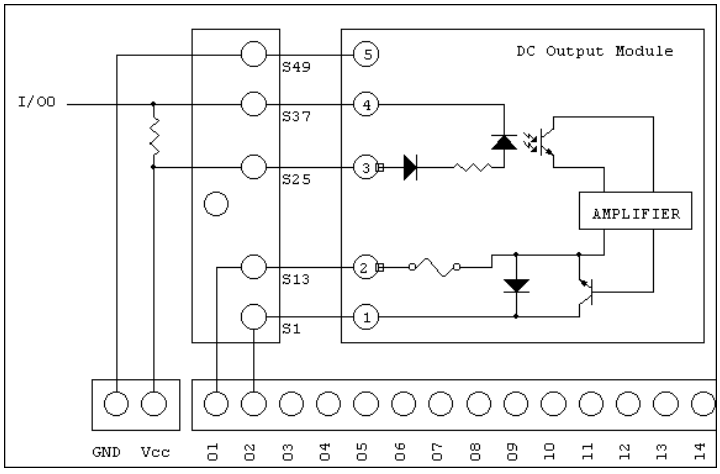


Figure 3 Schematic representation of DC output module in the first I/O position on the board.

8 Multi-Board configuration

Up to three 720RB boards can be chained together & operated from the system controller through one 80-pin high-density connector (J4).

When set up in this configuration IO0-23 are on the first board, IO24-47 on the second board and IO48-71 are on the third board.

The IO on a 720RB board are available on the connectors as follows:

IO0-71 are available on J4
IO0-23 are duplicated on JP1
IO24-47 are duplicated on JP2
IO 48-71 are duplicated on JP3.

The first board is connected to the system controller with an 80-way cable connected to J4. A 50-way ribbon cable runs from JP2 of the first board to JP1 of the second board. A second 50-way ribbon cable runs from JP3 of the first board to JP1 of the third board.

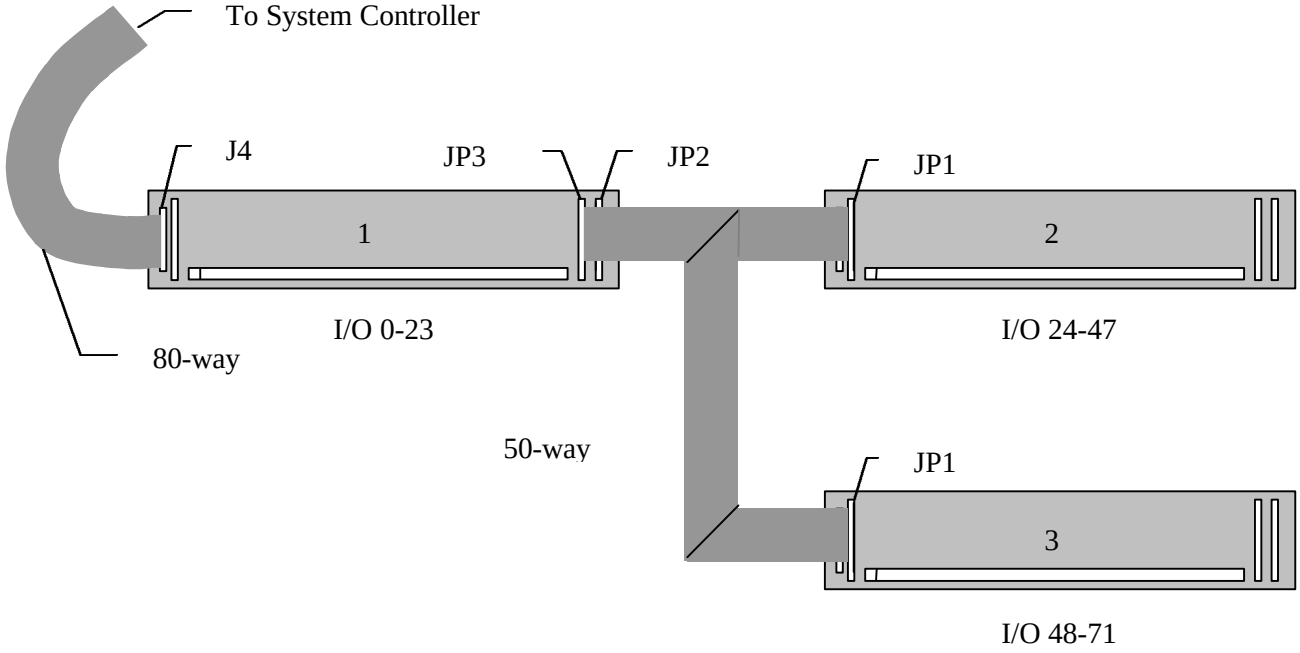
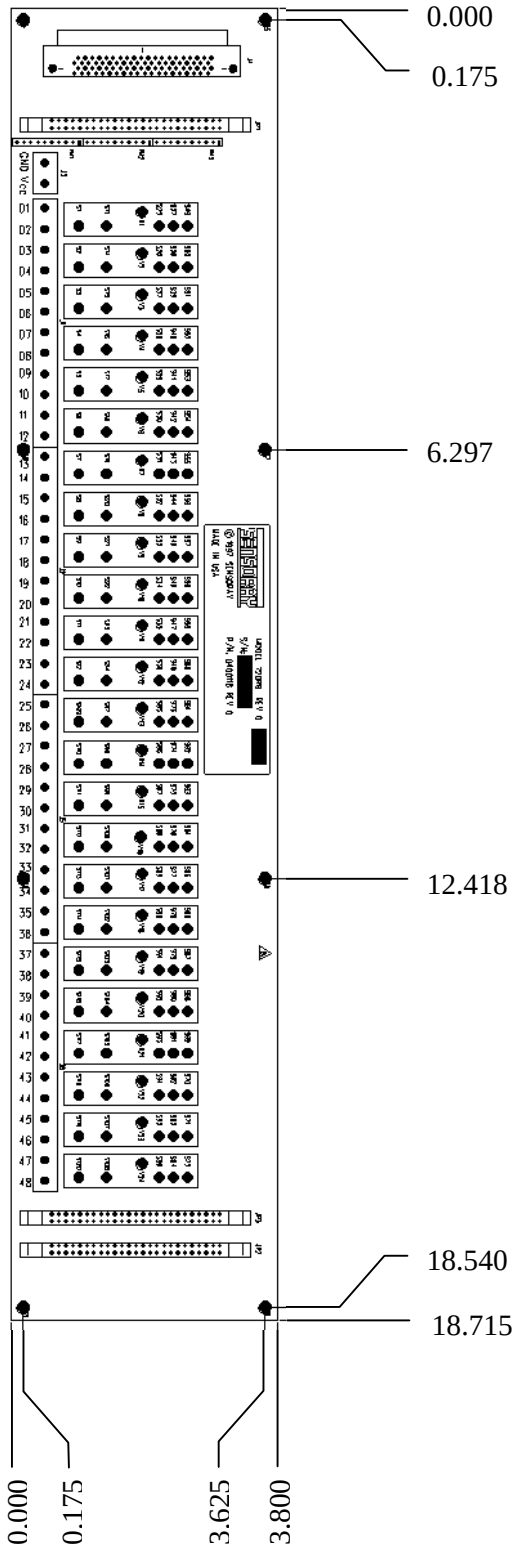


Figure 4 Multiple board configuration

9 Board size & standoff location.



(All dimensions in inches)

Figure 5 Board size and standoff location

10 Side views

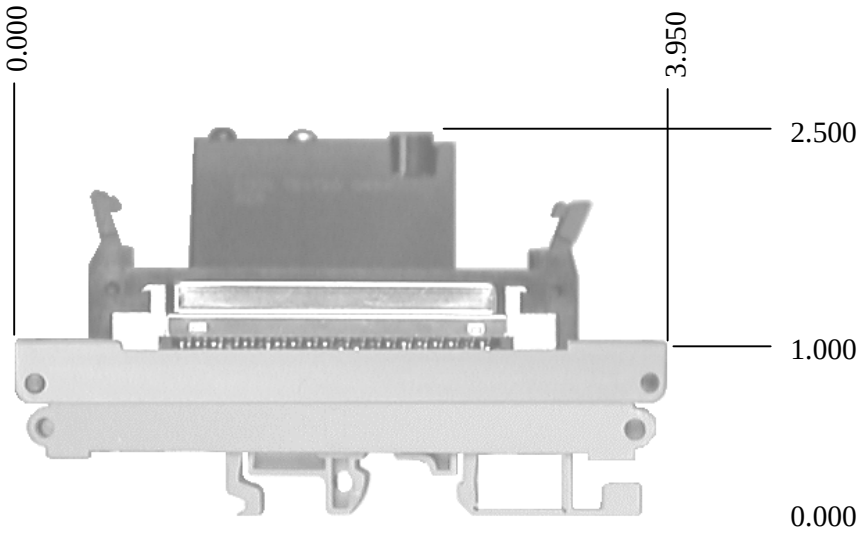


Figure 6 Side view – Din rail (720RBDIN)

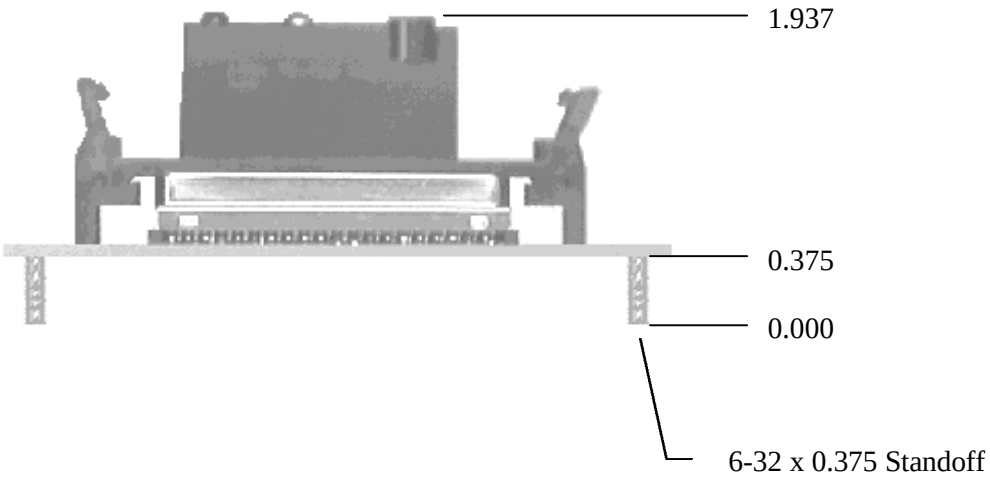
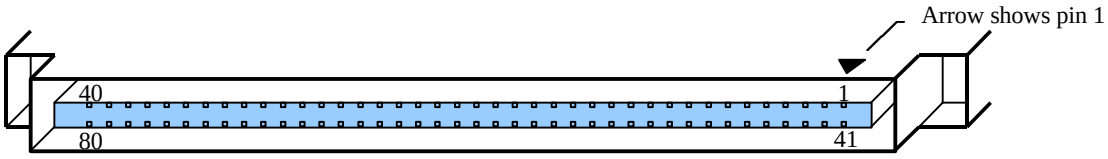


Figure 7 Side view – Standoff (720RB)

(All dimensions in inches.)

Appendix A: Connector J4 Pin-out



PIN	FUNCTION		PIN	FUNCTION	
1	GND		41	I/O 37	
2	I/O 0		42	I/O 38	
3	I/O 1		43	I/O 39	
4	I/O 2		44	I/O 40	
5	I/O 3		45	I/O 41	
6	I/O 4		46	I/O 42	
7	I/O 5		47	I/O 43	
8	I/O 6		48	I/O 44	
9	I/O 7		49	I/O 45	
10	I/O 8		50	I/O 46	
11	I/O 9		51	I/O 47	
12	I/O 10		52	GND	
13	I/O 11		53	I/O 48	
14	I/O 12		54	I/O 49	
15	I/O 13		55	I/O 50	
16	I/O 14		56	I/O 51	
17	I/O 15		57	I/O 52	
18	GND		58	I/O 53	
19	I/O 16		59	I/O 54	
20	I/O 17		60	I/O 55	
21	I/O 18		61	I/O 56	
22	I/O 19		62	I/O 57	
23	I/O 20		63	I/O 58	
24	I/O 21		64	I/O 59	
25	I/O 22		65	I/O 60	
26	I/O 23		66	I/O 61	
27	I/O 24		67	I/O 62	
28	I/O 25		68	I/O 63	
29	I/O 26		69	GND	
30	I/O 27		70	NC	
31	I/O 28		71	I/O 64	
32	I/O 29		72	I/O 65	
33	I/O 30		73	I/O 66	
34	I/O 31		74	I/O 67	
35	GND		75	I/O 68	
36	I/O 32		76	I/O 69	
37	I/O 33		77	I/O 70	
38	I/O 34		78	I/O 71	
39	I/O 35		79	NC	
40	I/O 36		80	GND	

Figure 8 J4 Pin-out

Appendix B: Options and Accessories

The 720RB is available as the 720RBDIN with Din rail mounting or as the 720RB with 3/8" standoffs but no Din rails.

There is an 80-way flat cables and 50-way flat cables available for this product. Contact sales@sensoray.com or visit www.sensoray.com for further details.

The mating connector for the 80 pin ribbon cable connector is made by Robinson Nugent (www.robinsonnugent.com/).
Their part number is: P50E-080S-TG.
The Robinson Nugent part number of the connector mounted on the 720RB printed circuit board is P50E-080P-1-S1-TG.
This connector is used with 2 separate pieces of standard .100" ribbon cable each containing 40 conductors.

Appendix C: Revision information

Date	Rev.	Revised by	Description of changes
07/18/00	A	Dennis Frost	Changed the connector drawings for J4

Appendix D: Technical Support

For technical support contact Sensoray Company Inc.

Tel: (503) 684-8005
Fax: (503) 684-8164
e-mail: support@sensoray.com
WWW: www.sensoray.com