The IB Series interface boards have been developed as economical compliments to the TCB temperature control boards. The IB Series is available in three basic models, IB1, IB3 and IB6, and each can accept 4-20 milliamp or 0-10 volt DC analog input signals. All are designed to allow externally supplied control signals to control one or two Sporlan step motor valves including CDS evaporator control valves, SDR electric discharge bypass valves and SEI/SER/SEH electric expansion valves.

![Figure 1](image)

The IB1 is programmed to control any Sporlan step motor valve having 1596 steps of resolution, the IB3 is used with valves having 3193 steps and the IB6 is used on valves with 6386 steps. "Q" denotes quick response for special applications. Please contact Sporlan Valve Company. Refer to Ordering Information, page 2.

**Configure the Board.**

When used with a 0-10 volt input signal, a jumper should be placed on the pins labeled CN3 as shown in the Figure 1. This is the default jumper position. The impedance for this input is 40 k ohms.

When used with a 4-20 milliamp input, the board must be matched to the impedance of the external controller. Refer to the manufacturer's literature and choose the jumper position on CN4 as shown Figure 1. Possible impedance selections on CN4 are 1,000 ohms (1k), 600 ohms, and 300 ohms.

Choose "Open on Rise" or "Close on Rise" operation using the middle two pins on jumper CN2. The jumper is stored on one pin only and will cause the valve to open as input signal rises, i.e. valve is closed at 0 volts or 4 milliamps and fully

---

**For Use on Refrigeration and/or Air Conditioning Systems Only**

© 2003 BY SPORLAN VALVE COMPANY, WASHINGTON, MISSOURI
WIRING CONNECTIONS

From left to right when the board is oriented with the terminal strip across the bottom.

+4-20  -  connection for the positive leg of a 4-20 milliamp or 0-10 volt signal
-4-20  -  connection for negative leg of a 4-20 milliamp or 0-10 volt signal
B      -  black wire from valve, or both valves when two valves are used
W      -  white wire from valve, or both valves when two valves are used
G      -  green wire from valve, or both valves when two valves are used
R      -  red wire from valve, or both valves when two valves are used
IN     -  from external pumpdown switch or relay. See wiring instructions.
GND    -  to external pumpdown switch or relay. See wiring instructions.
24V-1  -  from 24 volt, 15 VA transformer. See wiring instructions.
24V-2  -  from 24 volt, 15 VA transformer. See wiring instructions.

open at 10 volts or 20 milliamp input. By placing the jumper on both pins, the operation is reversed so that the valve will be fully open at 0 volts or 4 milliamps. Other pins on CN2 have been clipped at the factory and are not used for operation of the valve.

MOUNT the BOARD

The IB Series is based on a 3.0" x 3.0" circuit card with 0.125" mounting holes, 0.25" from each corner. If desired, these mounting holes may be used with customer supplied non-metallic standoffs. The IB Series does, however, come supplied with a length of snap-in plastic track. The track should be mounted in the desired location and one side of the IB engaged in the upper groove in the track. The IB is then pushed down so that the opposite side of the board snaps into the uppermost groove in the opposite side of the track. The board may be mounted in the orientation most convenient for wiring. Location should be dry, protected and close to the 24 volt power supply and external controller.

WIRING INSTRUCTIONS and CAUTIONS

Use the chart above as a guide for wire connections. Certain precautions must be taken in wiring and operation of the IB Series.

1. The 24 volts must be supplied by a transformer not used for any other purpose. In addition, the secondary winding of the transformer must not be connected to chassis ground.

2. The primary input of the transformer should be protected by Metal Oxide Varister (MOV) surge suppressors, supplied with the IB. For protection from electrical transients, connect one MOV between one leg of the input voltage of the 24 VAC transformer and earth ground. Connect a second MOV between the other leg of the input voltage of the 24 VAC transformer and earth ground.

3. The pumpdown terminals must be supplied with a "dry" contact from a switch or relay. No external power should be applied to these terminals.

OPERATION and TROUBLESHOOTING

When properly configured and installed the IB Series requires no maintenance. They incorporate a number of operational features to assure trouble free service. On power-up the board will initialize by giving the valve a large number of steps to assure that the valve is fully shut. The routine will require approximately 8 seconds for the IB1, 16 seconds for the IB3 and 32 seconds for the IB6. The valve will not respond to input signals during this time.

If the valve is required to shut during operation, the pumpdown terminals should be used. When given a pumpdown signal, the board will shut the valve immediately and overdrive by 250 steps to reset valve position. On removal of the pumpdown signal the valve will resume position as dictated by the external control signal.

If power is lost to the IB or wire to the valve severed, the valve will remain in its last position. Solenoid valves may be desired before the step motor valve on critical applications.

To force the valve shut during operation for test purposes, simply remove the jumper from CN4 or CN3, depending on configuration. To resume normal operation, replace the jumper.

To allow for component tolerances, the IB will shut the valve when the input signal reaches 4.25 milliamps or .015 volts depending on the configuration.

The IB can power one or two valves. The valves will operate simultaneously and will open and close by the same number of steps. Valve wires must be connected exactly the same for both valves.

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART #</th>
<th>STEPS</th>
<th>USED on VALVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB1</td>
<td>952955</td>
<td>1596</td>
<td>SEI .5-11, SER</td>
</tr>
<tr>
<td>IB3</td>
<td>952956</td>
<td>3193</td>
<td>SEI-25, SDR-3, .3X</td>
</tr>
<tr>
<td>IB6</td>
<td>952957</td>
<td>6386</td>
<td>CDS, SEI-50, SEH, SDR-4</td>
</tr>
<tr>
<td>IB1Q</td>
<td>952958</td>
<td>1596</td>
<td>SEI .5-11, SER</td>
</tr>
<tr>
<td>IB3Q</td>
<td>952959</td>
<td>3193</td>
<td>SEI-25, SDR-3, .3X</td>
</tr>
<tr>
<td>IB6Q</td>
<td>952960</td>
<td>6386</td>
<td>CDS, SEI-50, SEH, SDR-4</td>
</tr>
</tbody>
</table>

Printed in U.S. of A.