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Output Interfaces  
for SVS2000<sup>™</sup>  
Installation & Operation Manual



# Output Interfaces for SVS2000™ Installation & Operation Manual

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## I. INTRODUCTION

This manual covers the installation, setup and program commands for interfacing the SVS2000™ to a PLC on a DeviceNet, EtherNet/IP™ network or Profibus DP network.

The SVS2000 is a single-channel signal processing system capable of monitoring one vessel instrumented with:

- Half-bridge sensors such as the Kistler-Morse L-Cell®, Microcell®, Load Stand II®, or Load Disc II®
- Full bridge, foil gage sensors, such as the Kistler-Morse TC1®, LD3xi, LD3xiC or products from other manufacturers

The SVS2000 is available with an optional output PCB Module. This module provides an interface between the SVS2000 and a PLC. Once interfaced on the network, a programmer can use a PLC and ladder logic programming to read and write data to and from the SVS2000.

Section II covers the installation of the output PCB Module into an SVS2000 signal processor. If your signal processor came with the module pre-installed from the factory you can skip this section and proceed to Section III.

Section III covers the hardware and software setup of the signal processor prior to connecting the module to the network.

## II. INSTALLING THE OUTPUT INTERFACE

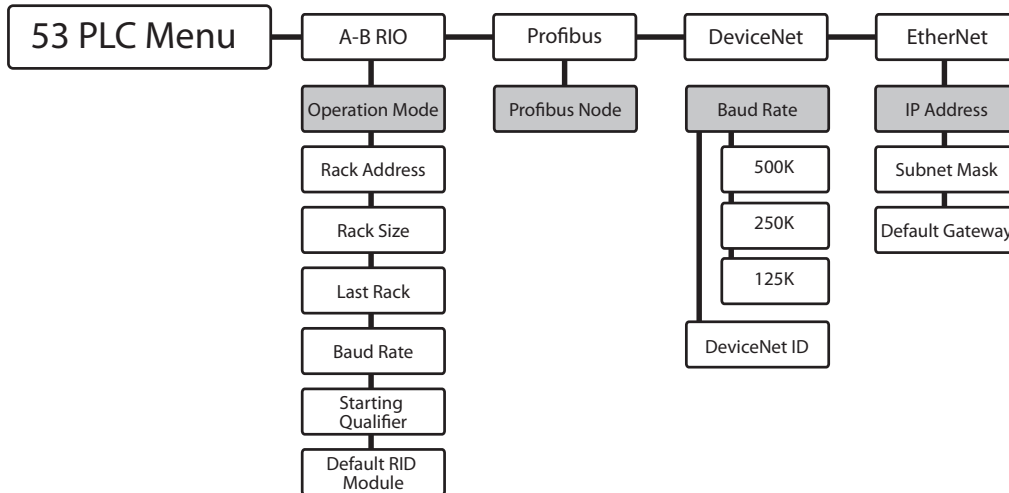
If the SVS2000 has been in service and calibration/setup has been performed then the procedure, SVS2000 Field Firmware Upgrade, included in the package with the output PCB Module, must be followed in order to save and restore the calibration/setup parameters before the steps below.

See diagrams on page(s) for reference as needed.

1. Ensure power is removed from the SVS2000.
2. Remove the four screws holding the front panel of the SVS2000 in place.
3. Locate four threaded standoffs opposite the transformer; loosen the top two screws and remove the bottom two screws, if present in the standoffs. If there are no screws, find the screws shipped with the output PCB Module and start the top two screws to ease installation later.
4. Remove the output PCB Module from the packing material and orient it so that the ribbon cable will mate to the 11 pin header located on the SVS2000 circuit board. See Section VIII for Board Layout & Wiring.
5. Slide the ribbon cable onto the header pins.
6. Slide the slotted holes of the module under the top two screws and tighten the screws, lightly, to hold the circuit board in place.
7. Install the remaining bottom two screws and tighten all four screws.
8. Proceed to Section III for hardware configurations.

### III. SETTING UP THE OUTPUT CARD FOR THE SVS2000

A network consists of two or more nodes interconnected that each have a unique address. For each installation, unique parameters must be configured in the output module prior to connecting the module to the network so a conflict or error does not occur.



1. Route the customer supplied network cabling through one of the holes in the bottom of the SVS2000, connecting it to the top PCB of the output module. Refer to Section VIII, for wiring diagrams.
2. The front panel can now be re-installed and power applied.
3. To change the output interface parameters that require editing:
  - a. Press the 'GROSS' key to access the Run Mode.
  - b. Press the '5' key and '3' key followed by the 'ENTER' key to access the menu tree. The display reads: 53 PLC MENU
  - c. Press the 'ENTER' key to access the PLC Menu. The display reads: A-B RIO MENU

#### FOR DEVICENET

The DeviceNet Module factor default configuration is Node 5 and 250k baud rate.

- d. Press the 'DOWN' arrow key until the DeviceNet menu appears. Press the 'ENTER' key. The display reads: DeviceNet MENU
- e. Press the 'UP' arrow key until the DeviceNet ID appears. The display reads: DeviceNet ID
- f. Press the 'ENTER' key to view the current Node Address and to allow editing. The display reads: 5 ID
- g. Edit the Node Address at this time using the numeric keys. The range can be from 1 to 63. Press the 'ENTER' key after entering the Node Address. The display reads: DeviceNet ID
- h. Press the 'UP' arrow key to access the baud rate. The display reads: BAUD RATE
- i. Press the 'ENTER' key to access the Baud Rate Menu. (Asterisk indicates the current selection) The display reads: BAUD RATE: \*250K. Press the 'UP' arrow key to select the desired baud rate.

- j. When the desired baud rate is displayed, press the 'ENTER' key. The display reads: BAUD RATE
- k. Press the 'GROSS' key to exit the PLC Menu Tree.

If you started this procedure with the SVS2000 Field Firmware Upgrade then you will need to go back to those instructions now in order to restore the calibration/setup parameters.

#### **FOR ETHERNET/IP™**

The Ethernet/IP™ Module is shipped from the factory configured for an IP address of 192.168.1.2 with a Subnet Mask of 255.255.255.0 and the Default Gateway of 0.0.0.0.

- d. Press the 'DOWN' arrow key until the Ethernet/IP™ menu appears. Press the 'ENTER' key. The display reads: IP Address.
  - e. Press the 'ENTER' key. The default IP Address of 192.168.1.2 is shown and allows for editing. Type the new IP address using the keypad. The 'ENTER' key will advance through each of the four (4) octets, and the last octet entered will store the value; the display will show IP Address.
  - f. Press the 'UP' arrow key to access the Subnet Mask. Press the 'ENTER' key. The Subnet Mask of 255.255.255.0 is shown and allows editing. Type the new Subnet Mask using the keypad. The 'ENTER' key will advance through each of the four (4) octets, and the last octet entered will store the value; the display will show the Subnet Mask.
  - g. Press the 'UP' arrow key to access the Default Gateway. Press the 'ENTER' key. The Default Gateway of 0.0.0.0 is shown and allows editing. Type the new Default Gateway using the keypad. The 'ENTER' key will advance through each of the four (4) octets, and the last octet entered will store the value; the display will show the Default Gateway.
4. Configure the PLC to match the selections made to the SVS2000.

If you started this procedure with the SVS2000 Field Firmware Upgrade then you will need to go back to those instructions now in order to restore the calibration/setup parameters.

## FOR PROFIBUS DP

The Profibus Module is shipped from the factory configured for node 4. The node address is changeable via the DIP switches on the Profibus PCB Module. Switches one (1) through eight (8) configure the node address where switch one (1) is the LSB and switch eight (8) is the MSB. When the switch is in the on position the value is a one (1), and when the switch is off the value is zero (0). The Profibus Module will auto baud to the network baud during power-up. The table below provides examples.

SW8	SW7	SW6	SW5	SW4	SW3	SW2	SW1	NODE ADDRESS
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	1	0	2
0	0	0	0	0	1	0	0	3
0	0	0	0	1	0	0	0	4
1	1	1	1	1	1	0	1	125
1	1	1	1	1	1	1	0	126 (Reserved for SSA)
1	1	1	1	1	1	1	1	INVALID

4. Configure the PLC to match the selections made to the SVS2000.

If you started this procedure with the SVS2000™ Field Firmware Upgrade then you will need to go back to those instructions now in order to restore the calibration/set up parameters.

## IV. SETTING UP THE ETHERNET MODULE (ETHERNET/IP ONLY)

Once the signal processor is wired into the EtherNet/IPTM network with a valid IP address and powered up, it should be possible for the device to be added to the configuration of the PLC. A copy of the EDS file was included with the product and is located on the CD. See the screen shot of a typical installation using RSLogix 5000:

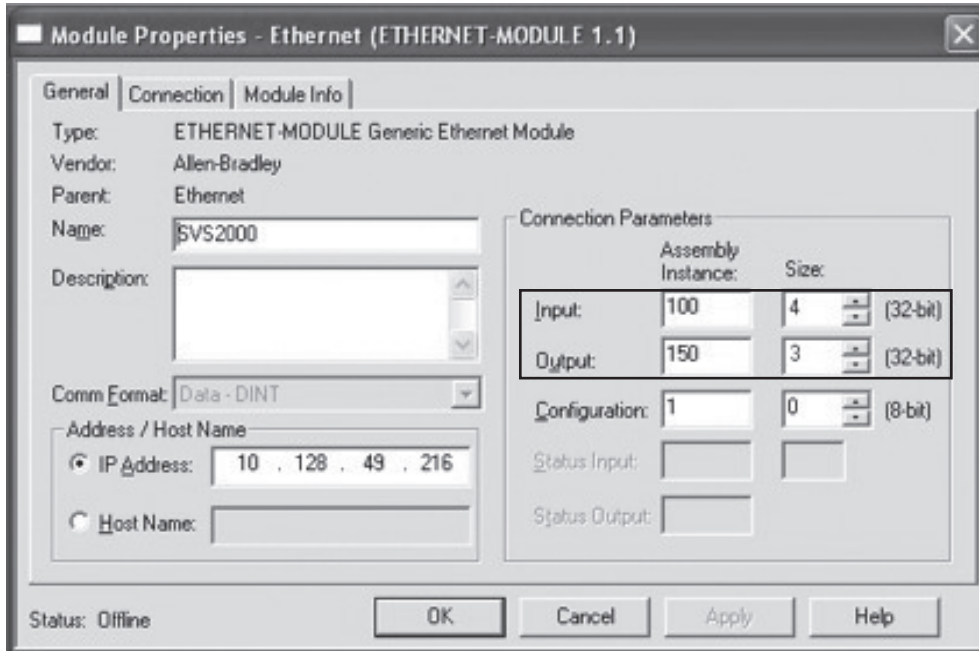
There are four (4) 32 bit Input Connection Parameters

- one double word input of Gross Weight
- one double word input of Net Weight
- one double word input of Status
- one double word input of variable read data.

There are three (3) 32 bit Output Connection Parameters

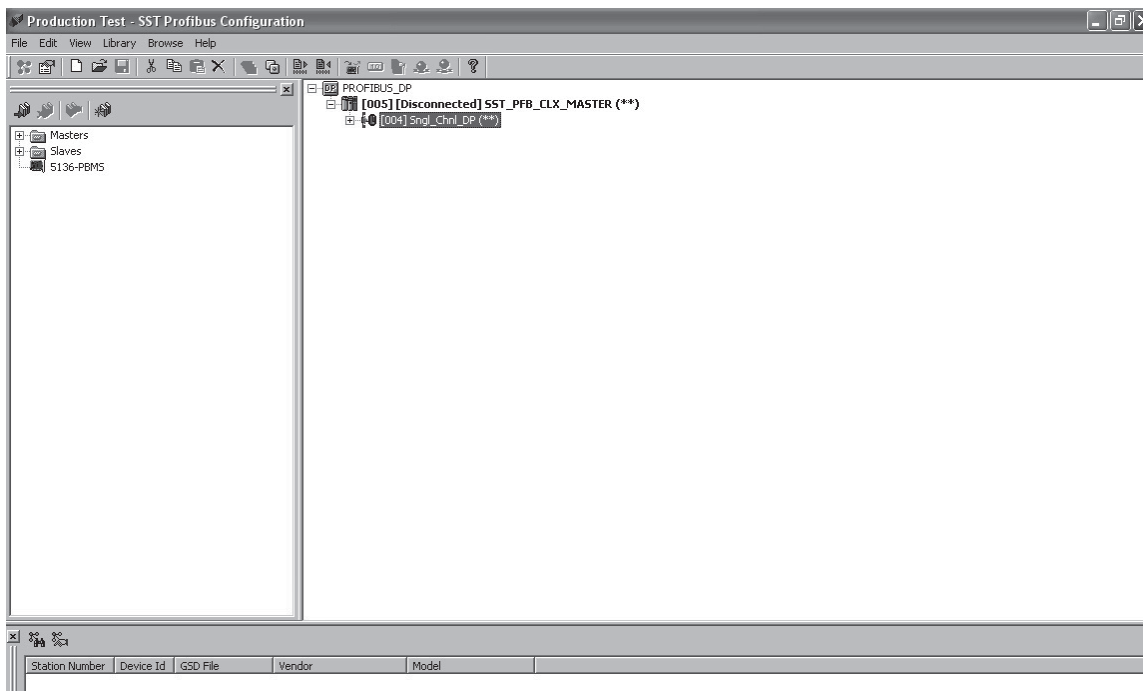
- one double word output of Tare Command
- one double of read write data
- one double word of variable read data.

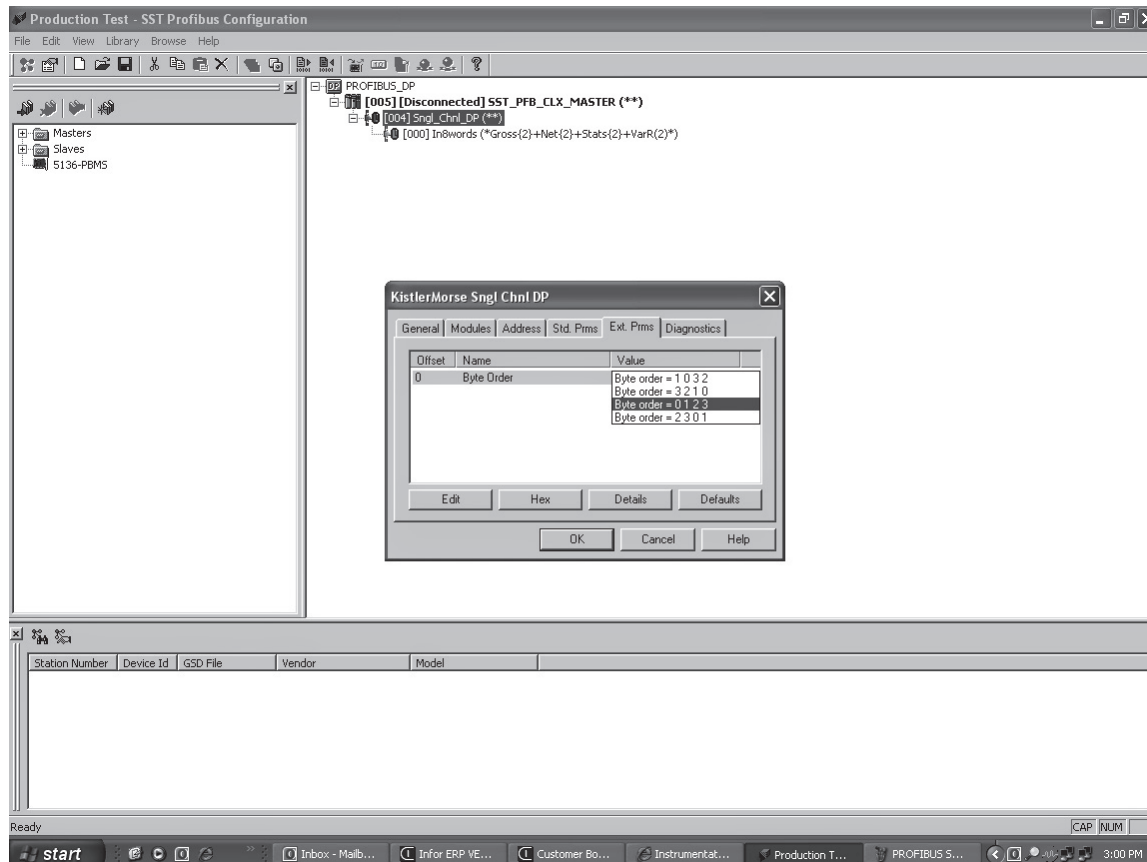
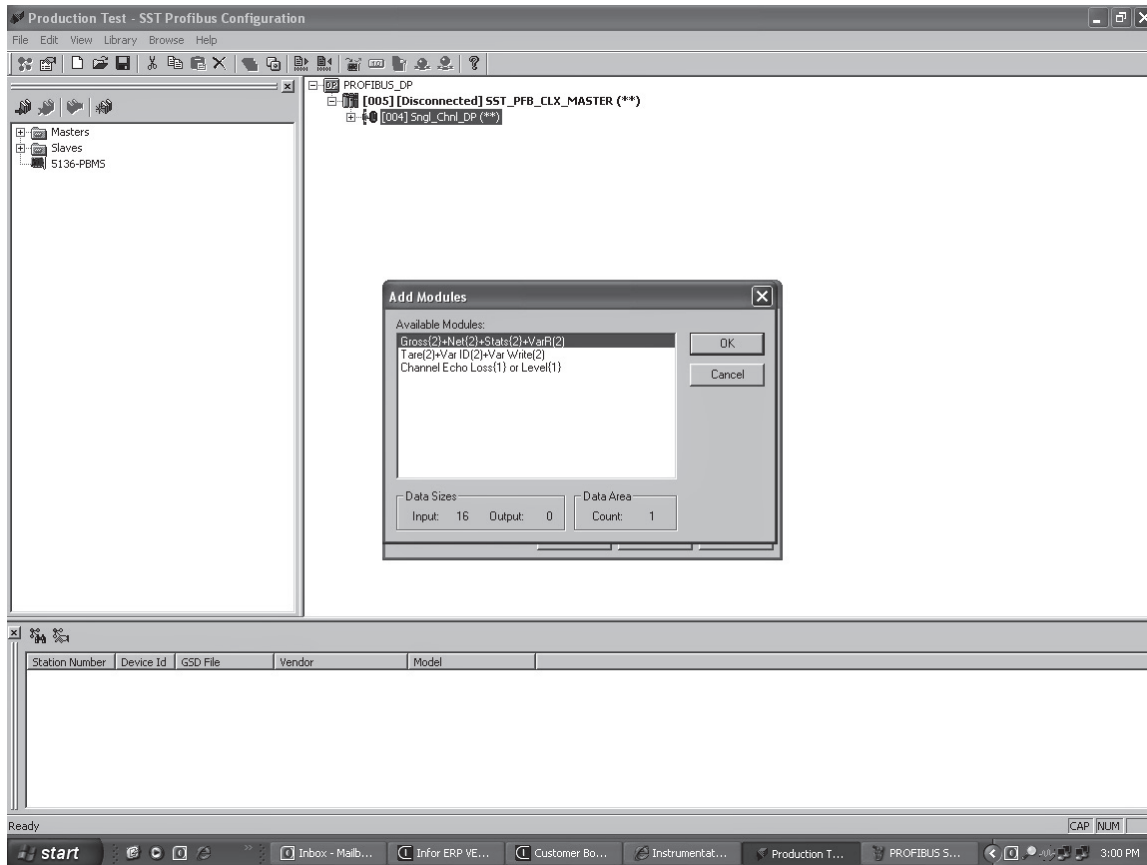




## V. SETTING UP THE PROFIBUS MODULE

Once the signal processor is wired into the Profibus DP network with a valid node address and powered up, it should be possible for the device to be added to the configuration of the PLC. A copy of the GSD is included with the product and is located on the CD. The GSD can also be downloaded from the website, [www.kistlermorse.com](http://www.kistlermorse.com). See the screen shots below of a typical installation.





## VI. PLC INPUT/OUTPUT CONFIGURATION TABLE

At this point weight data and status should be received by the PLC. The PLC should be able to set the required tare command bit in order to force the SVS2000 to tare and read/write a supported variable. Currently there are only two (2) supported variables that can be read/written. **Read/write is optional and not required for gross/net values.**

OUTPUT WORD

WORD	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1 Tare MSW																	
2 Tare LSW													CH4*	CH3*	CH2*	CH1	
3 Read/Write															WR	RD	
4 Variable ID																	
5 Variable Write MSW														* Channels 2-4 only available on Weigh II			
6 Variable Write LSW																	

INPUT WORD

WORD	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1 Gross MSW																
2 Gross LSW																
3 Net MSW																
4 Net LSW																
5 Status MSW																
6 Status LSW																
	Not Used	Not Used	Not Used	Not Used	FORMAT BITS				Gross Units Negative	Gross/Net Unit Error	ADC Error	Comm Error	Avg or Calibration Error	Move More Material	Not Used	Net Units Negative
7 Variable Read MSW																
8 Variable Read LSW																

- TO READ A VARIABLE:
  - a. In the Output Word, set Read/Write bit (line 3) to 000000000000001
  - b. In the Output Word, set the Variable ID (line 4) to 000000000000001 for Setpoint 1 or 0000000000000010 for Setpoint 2. Subsequently, the value will be returned in the Input Word, Variable Read (line 8).

FORMAT BITS	12	11	10	9
XXXXXX	0	0	0	0
XXXXXX00	0	0	0	1
XXXXXX00	0	0	1	0
XXXXX.X	0	1	0	0
XXXX.XX	0	1	0	1
XXX.XXX	0	1	1	0

\* Channels 2-4 only available  
on Weigh II

- TO WRITE A VARIABLE:
  - a. In the Output Word, set Read/Write bit (line 3) to 000000000000010
  - b. In the Output Word, set the Variable ID (line 4) to 000000000000001 for Setpoint 1 or 0000000000000010 for Setpoint 2.
  - c. Add the new input values, in binary, to the Output Word, Variable Write (line 6 or 5 and 6). What is written in line 6 or 5 and 6 will show up on the Input Word in lines 8 or 7 and 8. Invalid values will be ignored.

## VII. TROUBLESHOOTING

Status indicators are as follows:

### FOR DEVICENET

LED	Network Status (NS)	Module Status (MS)
Off	Not on-line or no power to the system.	Module not powered
Green	On-line, one or more connections established	Normal Operation
Green Flashing	On-line, no connections established	Auto-baud in progress
Red	Critical link failure	Unrecoverable fault detected
Red Flashing	Connection timeout	Recoverable fault detected
Alternating Red/Green Flashing	Self-test in progress	Self-test in progress

### FOR ETHERNET/IP

LED	Network Status (NS)	Module Status (MS)
Off	Not on-line or no power to the system.	Module not powered
Green	On-line, one or more connections established	Normal Operation
Green Flashing	On-line, no connections established	No connection
Red	Duplicate IP address detected	Unrecoverable fault detected
Red Flashing	Connection timeout	Recoverable fault detected
Alternating Red/Green Flashing	Self-test in progress	Self-test in progress

LED	Network Status (LA)	Module Status (RA)
Off	Not on-line or no power to the system.	10 Mps operation
Green	On-line, one or more connections established	100 Mps operation
Green Flashing	RX/TX activity	NA
Red	NA	NA
Red Flashing	NA	NA
Alternating Red/Green Flashing	Self-test in progress	Self-test in progress

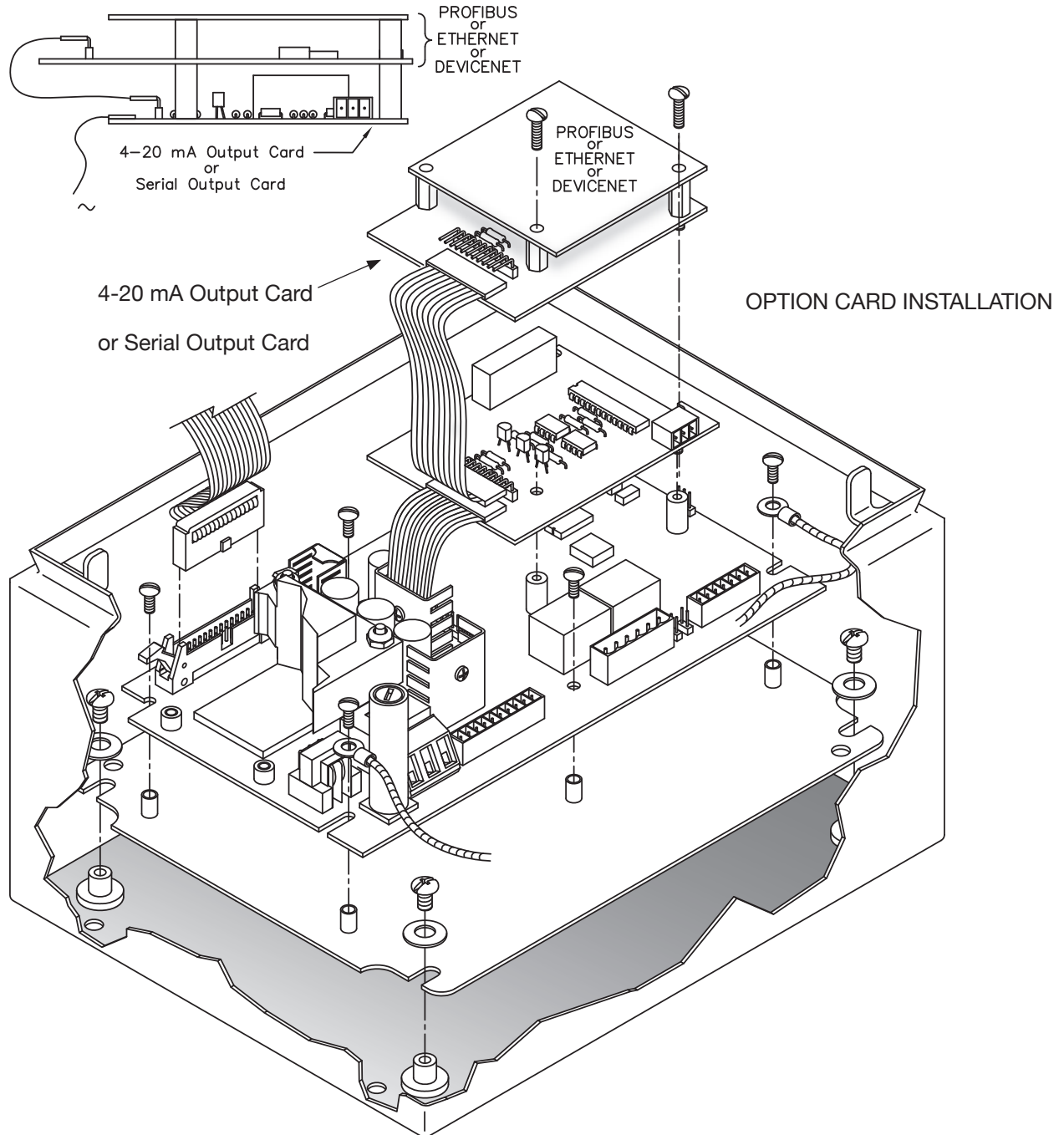
### FOR PROFIBUS DP

There is a single LED on the Profibus Module labeled D3.

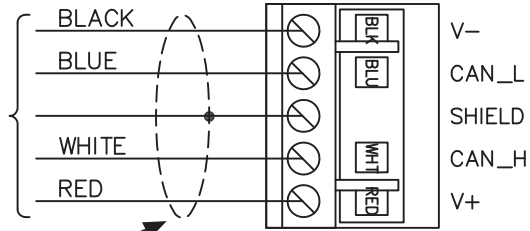
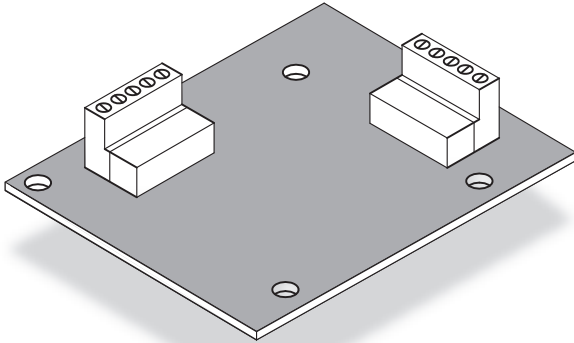
LED	Status
Off	Module not powered
Green	Node is in Data Exchange mode
Green Flashing	Node in Clear mode
Red	Error in initializing of module
Red Flashing	Error in configuration of module
Alternating Red/Green	Self-test in progress

## VIII. BOARD LAYOUT & WIRING

### SINGLE OPTION CARD INSTALLATION

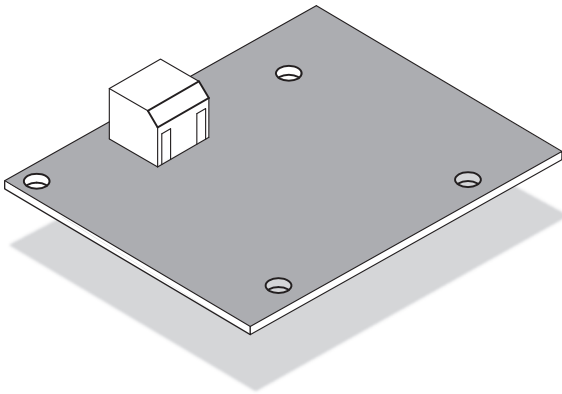


**DEVICENET WIRING CONNECTION**



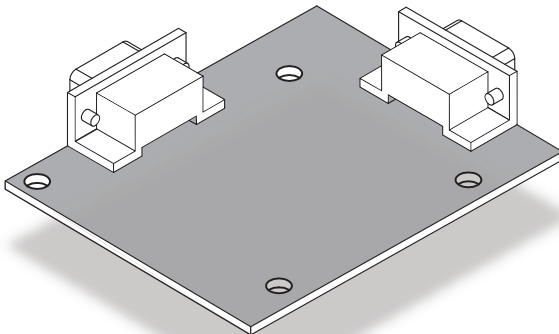
To PLC or other DEVICENET peripheral equipment. Acceptable cable types are Belden 3084A or equivalent. To prevent ground loops, ground the signal shield wire only at one end.

**ETHERNET/IP WIRING CONNECTION**



Plug ethernet cable into ethernet connector/plug (RJ45) in the SVS2000 unit. Cable should 'click' into place.

**PROFIBUS WIRING CONNECTION**



Plug Profibus cable into DB9 connector in the SVS2000 unit. Connector should screw into place.

## Notes



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MEASUREMENT

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