Installation & Service Instructions
A10312

Serial Bus 32 Point Valve Driver, Series A (RPSSV32A)

ISSUED: August, 2007
Supersedes: None

⚠WARNING

To avoid unpredictable system behavior that can cause personal injury and property damage:

- **Disconnect electrical supply (when necessary) before installation, servicing, or conversion.**
- **Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.**
- **Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.**
- **Medium must be moisture-free if ambient temperature is below freezing.**
- **Service according to procedures listed in these instructions.**
- **Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.**
- **After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.**
- **Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.**

Safety Guide

For more complete information on recommended application guidelines, see the Installation Safety Guidelines section of Bulletin 600 (Form A10309) or you can download the Installation Safety Guidelines at: www.rosscontrols.com/rosslit.htm.

Introduction

Follow these instructions when installing, operating, or servicing the product.

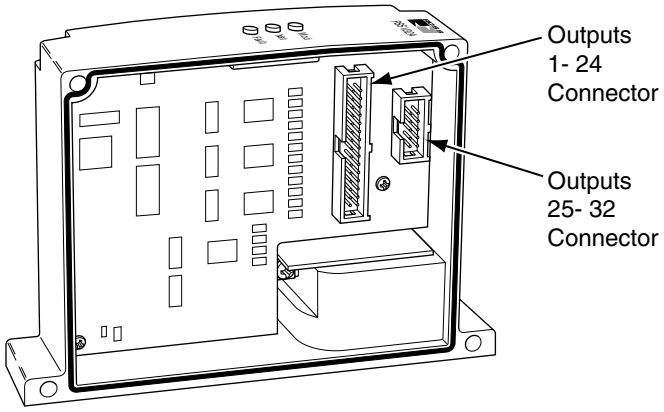
Serial Bus 32 Point Valve Driver, Series A

(RPSSV32A)

The sealed IP67 housing of these modules requires no enclosure. (Note that environmental requirements other than IP67 may require an additional appropriate housing.) The RPSSV32A module is shown below.

The RPSSV32A valve driver module provides an interface between the serial bus system and the valve assembly. This module will always be the last module on the serial bus. It controls 32 digital outputs at 24VDC. Depending on valve selection, it can control up to 32 single solenoid valves or 16 double solenoid valves.

RPSSV32A



⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from ROSS CONTROLS, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by ROSS CONTROLS and its subsidiaries at any time without notice.

EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Form #A10325)* (available online at www.rosscontrols.com/rosslit.htm), describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of these differences, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will ROSS CONTROLS® be responsible or liable for indirect or consequential damages to persons or property resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, ROSS CONTROLS cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by ROSS CONTROLS with respect to use of information, circuits, equipment, or software described in this manual.

Throughout this manual we use notes to make you aware of safety considerations.

WARNING 	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION 	Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you: • Identify a Hazard • Avoid a Hazard • Recognize the Consequence
SHOCK HAZARD 	Labels may be located on or inside the equipment to alert people that dangerous voltage may be present.
BURN HAZARD 	Labels may be located on or inside the equipment to alert people that surfaces may be dangerous temperatures.

ATTENTION

Environment and Enclosure

This equipment is intended for use in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating. This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance. This equipment is supplied as “enclosed” equipment. It should not require additional system enclosure when used in locations consistent with the enclosure type ratings stated in the Specifications section of this publication. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings, beyond what this product provides, that are required to comply with certain product safety certifications.

NOTE: See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the publication A10324 (“Industrial Automation Wiring and Grounding Guidelines”), for additional installation requirements pertaining to this equipment.

ATTENTION

Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wrist strap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

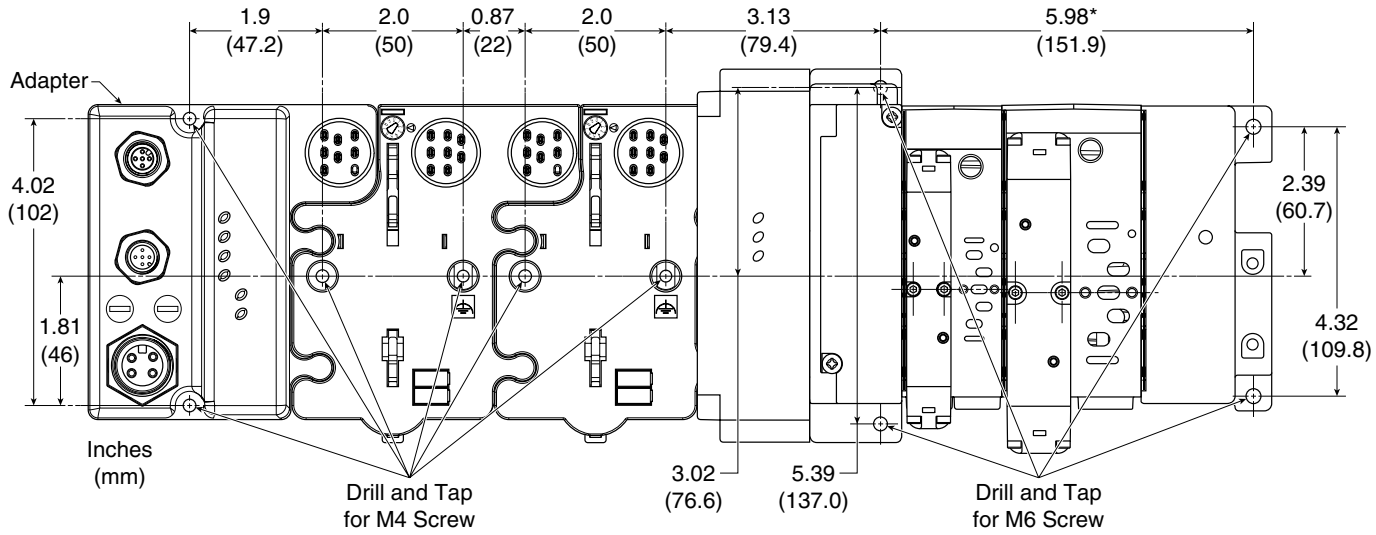
Mount the I/O Base

To mount the I/O base on a wall or panel, use the screw holes provided in the base.

IMPORTANT

The I/O module must be mounted on a grounded metal mounting plate or other conductive surface.

A mounting illustration for the base with an adapter is shown below.

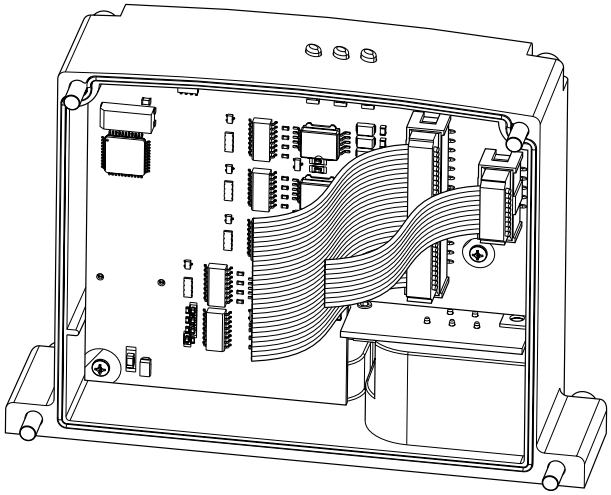


* Depending on the type and number of manifolds, this dimension may vary. Consult Ross for specific information.

Install the 32 Point Valve Driver

To Install the 32 Point Valve Driver, Proceed as Follows:

1. Assemble the valve driver to the manifold interface plate using four M4 screws, torqued 11 to 13 in. lbs.
2. Plug the 32 point valve driver onto the previous mounting base or communication adapter.



Wire the 32 Point Valve Driver

Following are wiring instructions for the 32 point valve driver.

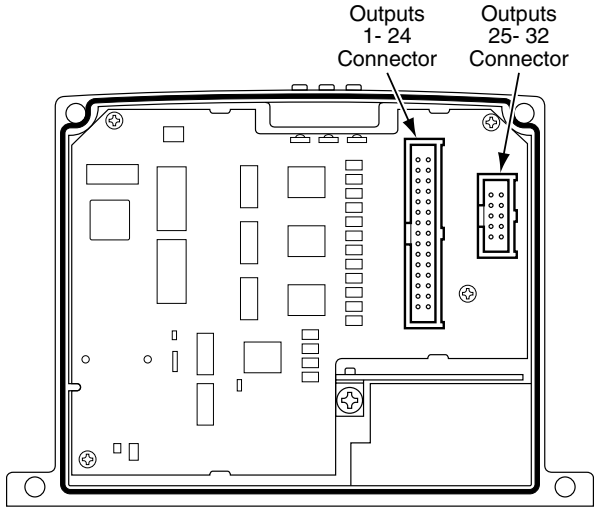
Use the appropriate harness assembly based on your manifold wiring/interconnect system.

Harness Assembly Kit Numbers

	1 to 24 Outputs	25 to 32 Outputs
Series W66, Size 0	RPS5624P	RPS5632P
Series W66, Size 00		
Series W65, Size 1	RPS4024P	RPS4032P
Series W65, Size 2		
Series W65, Size 3		

Plug the 2X15 connector into the valve driver module for 1-24 outputs. If you have more than 24 outputs, plug the 2X5 connector into the valve driver module for 25-32 outputs.

Plug the 2X10 and 1X10 connectors into the interconnect board in the valve manifold.



EDS File Requirements

The EDS file is available online at www.rosscontrols.com/rosslit.htm

ATTENTION

Make sure all four screws are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.

Communicate With Your Module

I/O messages are sent to (consumed) and received from (produced) the I/O modules. These messages are mapped into the processor's memory. The 32 point valve driver produces 1 byte of input data (scanner Rx - status), and consumes 1 byte of I/O data (scanner Tx).

Default Data Map for the 32 Point Valve Driver

RPSSV32A

Message Size: 1 Byte

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 0	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1	Output 0
Produce 1	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9	Output 8
Produce 2	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17	Output 16
Produce 3	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25	Output 24
Produce 4	Fault 28-31	Fault 24-27	Fault 20-23	Fault 16-19	Fault 12-15	Fault 8-11	Fault 4-7	Fault 0-3
Consume 0	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1	Output 0
Consume 1	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9	Output 8
Consume 2	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17	Output 16
Consume 3	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25	Output 24

Setup the 32 Point Valve Driver in DeviceNet

Step 1: Load 32 Point Valve Driver EDS file to RSLinx

- Download EDS file from www.rosscontrols.com/rosslit.htm
- On your computer, follow **Start→Rockwell Software→RSLinx Tools→EDS Hardware Installation Tool** to load the EDS file to RSLinx

Step 2: Configure the DeviceNet Scanner Subnet

- Reference Chapter 4 of the Serial Bus DeviceNet Adapters User Manual Bulletin 601 (Form #A10311) for detailed information. Make sure to add RPSSV32A to the DeviceNet Adapter's scanlist.

Step 3: Add the Serial Bus DeviceNet Adapter to the DeviceNet Scanner's Scanlist

- Reference Chapter 5 of the Serial Bus DeviceNet Adapters User Manual Bulletin 601 (Form #A10311) for detailed information.

Step 4: Use 32 Point Valve Driver in RSLogix 5000

- Access RPSSV32A data via DeviceNet Scanner in the ladder logic program.

Setup the 32 Point Valve Driver in ControlNet

Step 1: Load 32 Point Valve Driver EDS file to RSLinx

- Download EDS file from www.rosscontrols.com/rosslit.htm
- On your computer, follow **Start→Rockwell Software→RSLinx Tools→EDS Hardware Installation Tool** to load the EDS file to RSLinx

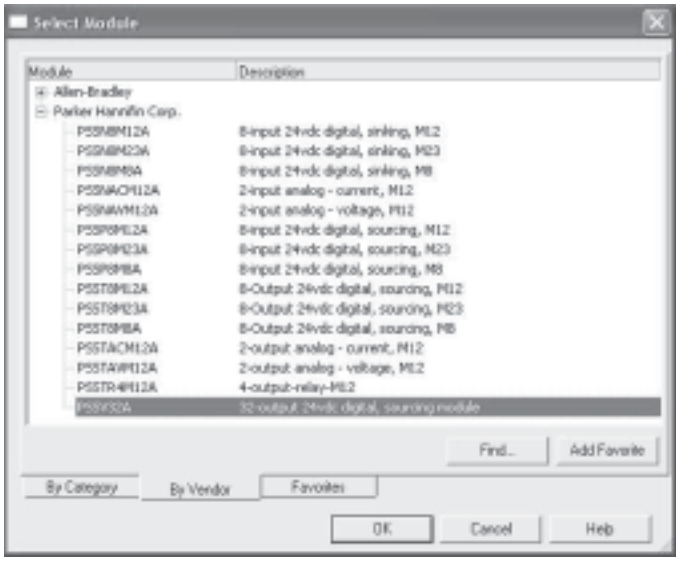
Step 2: Add Controller and Communication Module to the RSLogix 5000 I/O Configuration

- Add a controller and a communication module (Serial Bus RPSSCCNA or Rockwell 1738-ACNR) to I/O configuration. Reference pages 4-1 through 4-7 of Rockwell publication 1734-UM008 (follow **www.rockwell.com→Support→Support Overview→Online manuals and literature→I/O→1734 POINT and 1734D POINT Block I/O** and find POINT I/O ControlNet Adapter User Manual) for a similar setup procedure.

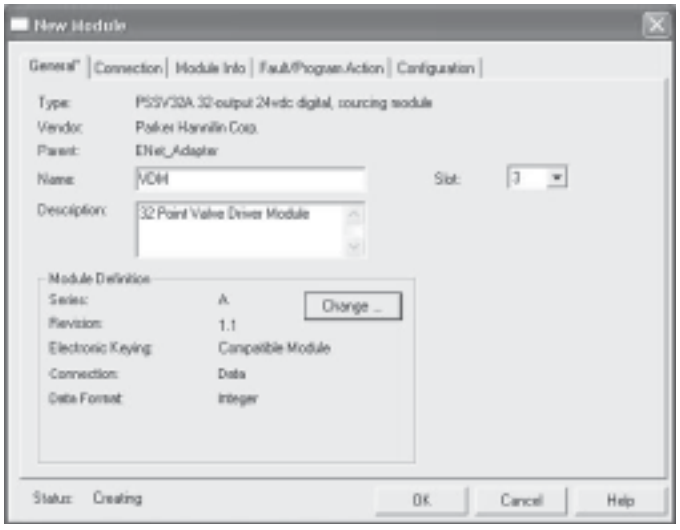
Step 3: Add 32 Point Valve Driver to RSLogix 5000 I/O Configuration.

If your RSLogic 5000 is Version 15.X or greater:

- Highlight the ***RPSSCCNA*** under I/O configuration, right click and select **New Module**.
- Choose the ***RPSSV32A*** module from the list of Parker modules.



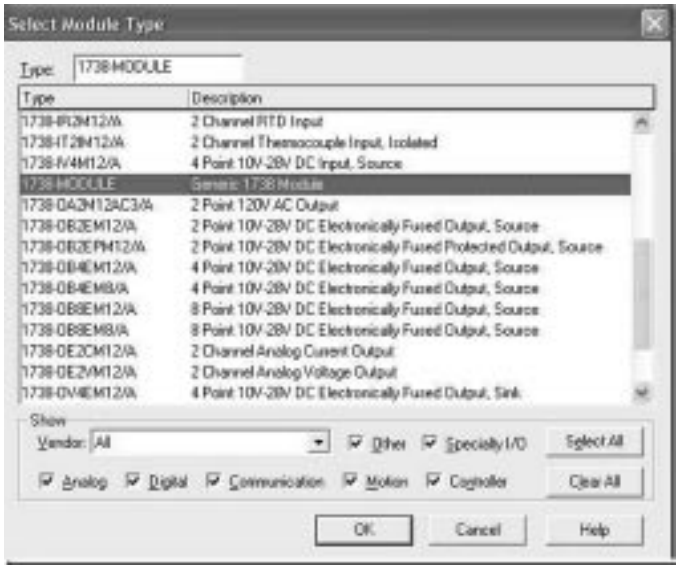
- Enter a name (optional) and click OK.



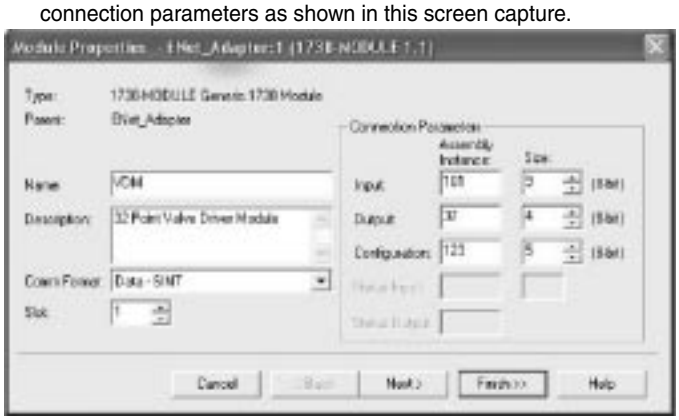
Notice that the ***32 Point Valve Drive Module*** is now under I/O Configuration.

If your RSLogic 5000 is Version 13.X:

- Highlight the ***1738-ACNR*** under I/O configuration, right click and select **New Module**.
- Choose the ***Generic 1738*** module from the list of Allen-Bradley modules.



- Enter a name (optional), an appropriate slot number and the connection parameters as shown in this screen capture.



- Choose ***Next*** to set **RPI.**
- Choose ***Finish***. Notice that the 32 Point Valve Driver Module is now under the I/O configuration.

Step 4: Download the Program to the Controller and Configure the RPSSCCNA or 1738-ACNR Adapter.

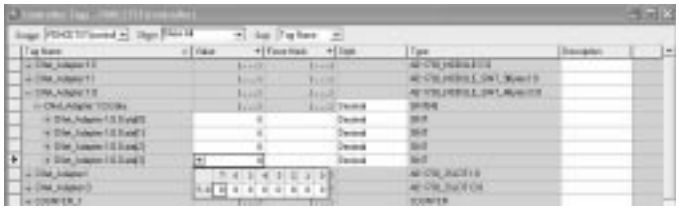
- Reference pages 4-11 through 4-15 of Rockwell publication 1734-UM008 for similar setup procedure.

Step 5: Schedule I/O Module Connections

- Reference pages 4-15 through 4-19 of Rockwell publication 1734-UM008 for similar setup procedure.

Step 6: Access Module Data via the RPSSCCNA or 1738-ACNR Adapter.

- Make sure the 32 outputs of RPSSV32A appear in Controller Tags. Use the information in the ladder logic program to access module data.



- Reference pages 4-19 through 4-22 of Rockwell publication 1734-UM008 for similar information.

Setup the 32 Point Valve Driver in EtherNet/IP

Step 1: Load 32 Point Valve Driver EDS file to RSLinx

- Download EDS file from www.rosscontrols.com/rosslit.htm
- On your computer, follow **Start→Rockwell Software→RSLinx Tools→EDS Hardware Installation Tool** to load the EDS file to RSLinx

Step 2: Set IP Address for EtherNet/IP Scanner and Adapter

- Set IP address using Rockwell BootP/DHCP utility for EtherNet/IP scanner and PSSCENA or 1738-AENT adapter. Reference pages 3-7 through 3-10 of Rockwell publication 1734-UM011 (follow **www.rockwell.com→Support→Support Overview→Online manuals and literature→I/O→1734 POINT and 1734D POINT Block I/O** and find POINT I/O Ethernet Adapter User Manual) for similar information.

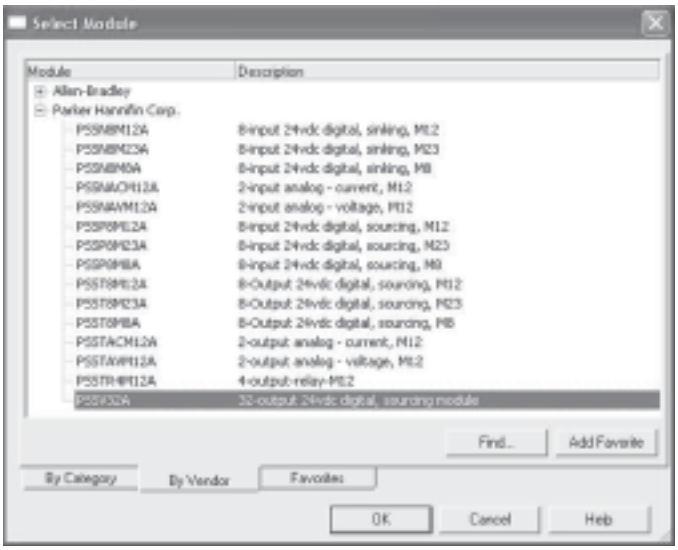
Step 3: Add EtherNet/IP Scanner and Adapter to RSLogix 5000 I/O configuration.

- Add EtherNet/IP scanner and PSSCENA or 1738-AENT adapter to I/O configuration. Reference pages 4-4 to 4-8 of Rockwell publication 1734-UM011 for similar information.

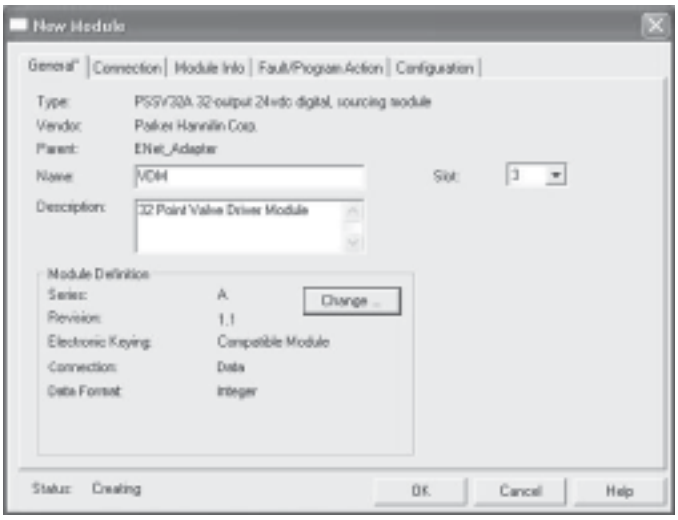
Step 4: Add 32 Point Valve Driver to RSLogix 5000 I/O Configuration.

If your RSLogic 5000 is Version 15.X or greater:

- Highlight the ***PSSCENA*** under I/O configuration, right click and select **New Module**.
- Choose the ***RPSSV32A*** module from the list of Ross modules.



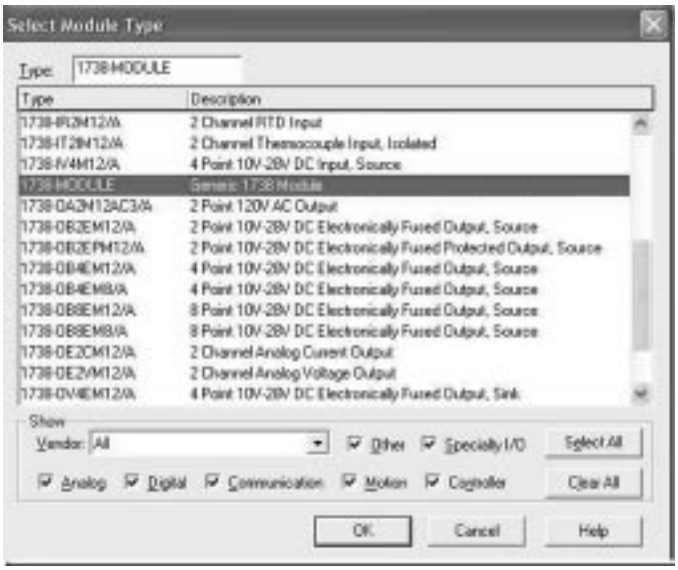
- Enter a name (optional) and click OK.



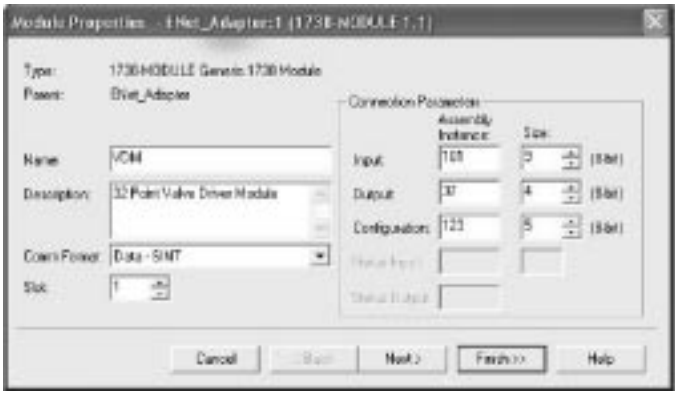
Notice that the ***32 Point Valve Drive Module*** is now under I/O Configuration.

If your RSLogic 5000 is Version 13.X:

- Highlight the ***1738-AENT*** under I/O configuration, right click and select **New Module**.
- Choose the ***Generic 1738*** module from the list of Allen-Bradley modules.



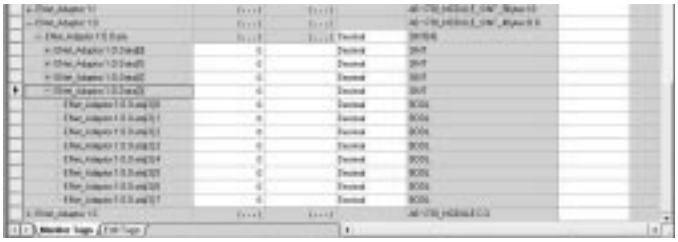
- Enter a name (optional), an appropriate slot number and the connection parameters as shown in this screen capture.



- Choose ***Next*** to set **RPI.**
- Choose ***Finish***. Notice that the 32 Point Valve Driver Module is now under the I/O configuration.

Step 5: Access Module Data via the RPSSCENA or 1738-AENT Adapter and Create Ladder Program.

- Make sure the 32 outputs of RPSSV32A appear in Controller Tags. Use the information in the ladder logic program to access module data.



- Reference pages 4-13 through 4-14 of Rockwell publication 1734-UM011 for similar information.

Step 6: Download the Program to the Controller

- Reference pages 4-13 through 4-14 of Rockwell publication 1734-UM011 for similar information.

Setup the 32 Point Valve Driver in Profibus

Step 1: Configure Valve Driver Module in SST Profibus Configuration Utility

Note: SST-PFB-CLX is used here for example. For different Profibus scanners, refer to appropriate documentation for setup information.

- Download GSD file from www.rosscontrols.com/rosslit.htm
- In SST Profibus Configuration Utility, follow **Library→Add GSD** to load the GSD file to SST Profibus.
- In SST Profibus Configuration Utility, follow **Browse→Search for devices** to load the GSD file to SST Profibus
- Right click on the found device, follow **GSD files** and click on appropriate GSD for RPSSV32A.
- Add RPSSV32A as slave to SST-PFB-CLX master.
- Detailed information can be found in the SST-PFB-CLX User Guide (Ver. 1.4 715-0022), which is available on www.woodhead.com.

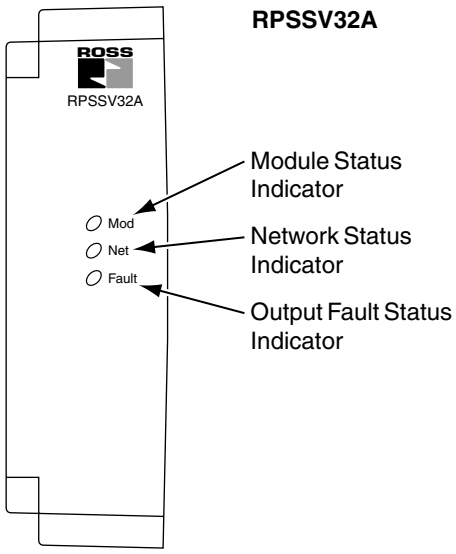
Step 2: Add SST Profibus Scanner in RSLogix 5000 I/O Configuration

- Add SST-PFB-CLX scanner I/O configuration. Reference pages 36 to 39 of the SST-PFB-CLX User Guide, for detailed information.
- Notice that the SST-PFB-CLX scanner is now under the I/O configuration.

Step 3: Access Module Data via the SST-PFB-CLX Scanner and Create Ladder Program.

- Reference Chapter 7 of the SST-PFB-CLX User Guide for addressing information.

Troubleshoot With the Indicators



Indication	Probable Cause
Module Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to missing, incomplete, or incorrect configuration
Flashing Red	Recoverable fault
Red	Unrecoverable fault - may require device replacement
Flashing Red/Green	Device is in self-test

Indication	Probable Cause
Network Status	
Off	Device is not on line: - Device has not completed dup_MAC-id test. - Device not powered - check module status indicator.
Flashing Green	Device is on line but has no connections in the established state.
Green	Device is on line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state.
Red	Critical link failure - failed communication device. Device detected error that prevents it from communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identity Communication Faulted Request - long protocol message.

Indication	Probable Cause
Output Fault Status	
Off	Outputs operating normally
Red	Over current, short circuit or over temperature detected on one or more outputs. (On-State only)

Specifications – Following are specifications for the 32 point valve driver.

32 Point Valve Driver	
Outputs per Module	32, sourcing
Voltage Drop, On-State Output, Maximum	0.2VDC
Voltage, Off-State Output, Maximum	28.8VDC
Voltage, On-State Output, Maximum Minimum Nominal	 28.8VDC 10VDC 24VDC
Output Current Rating	200 mA per channel, not to exceed 6.0 A per module
Output Surge Current, Maximum	0.5 A for 10 ms, repeatable every 3 seconds
Current Leakage, Off-State Output, Maximum	0.1 mA
Current, On-State Output Minimum	200 mA per channel
Output Delay Time OFF to ON, Maximum[1]	0.1 ms
Output Delay Time, ON to OFF, Maximum[1]	0.1 ms
External DC Power Supply Voltage Range	10 to 28.8VDC
External DC Power Supply Voltage Nominal	24VDC
General Specifications	
LED Indicators	1 output status 1 green/red network status, logic side 1 green/red module status, logic side
PointBus Current, Maximum	75 mA @ 5VDC
Operating Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -20 to 60°C (-4 to 140°F)
Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), -40 to 85°C (-40 to 185°F)
Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): 5 to 95% non-condensing
Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock): Operating 30g Non-operating 50g
Vibration	IEC60068-2-6 (Test Fc, Operating): 5g @ 10 to 500Hz
ESD Immunity	IEC 61000-4-2: 6kV contact discharges 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz 10V/m with 200Hz 50% Pulse 100%AM at 1890Mhz
EFT/B Immunity	IEC 61000-4-4: ±3kV at 5kHz on signal ports
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on signal ports
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz
Emissions	CSPR 11: Group 1, Class A
Enclosure Type Rating	Meets IP65/66/67 (when marked)
Mounting Base Screw Torque	#8 screw, 7.5 in. lbs. in Aluminum, 16 in. lbs. in Steel
Wiring Category[2]	1 - on signal ports
Certifications: (when product is marked)	c-UL-us UL Listed Industrial Control Equipment, certified for US and Canada CE European Union 89/336/EEC EMC Directive, compliant with: EN 61000-6-4; Industrial Emissions EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity C- Tick Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions

1. OFF to ON or ON to OFF delay is time from a valid output “on” or “off” signal to output energization or de-energization.
2. Use this Conductor Category information for planning conductor routing. Refer to Publication A10324, “Industrial Automation Wiring and Grounding Guidelines”.