

AVENTICS™

580 Series DeviceNet™ Technical Manual



Conditions for use of this product

- (1) AVENTICS Manifold ("the PRODUCT") shall be used in conditions;
- i) Where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident.
 - ii) Where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.
- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

ASCO L.P. shall have no responsibility or liability including but not limited to any and all responsibility or liability based on contract, warranty, tort, product liability for any injury or death to persons, loss or damage to property caused by the product that are operated or used in application not intended or excluded by instructions, precautions or warnings contained in AVENTICS Technical, User, Instruction, Safety manuals or bulletins.

Safety precautions

Before using this product, please read this manual and the relevant manuals carefully and pay attention to safety and product application. The following symbols are used in the manual to identify important safety, installation and application information.



Caution symbol indicates a possible hazard which may cause injury or equipment damage.



Note symbol indicates important information regarding equipment installation and setup.



Electrical installation and operational guidelines

CAUTION

- To be connected to Class 2 power source only.
- All AVENTICS communication nodes should be grounded during the installation process. These grounding guidelines can be found in National Electrical code IEC 60204-1 or EN 60204-1.
- All AVENTICS 580 Electronics Products to be installed or wired in accordance with AVENTICS' published instructions and applicable electrical codes.
- **MULTIPLE CLASS 2 POWER SOURCES:** When interconnects, class 2 sources shall be Listed and rated suitable for parallel interconnection.
- Sources shall be Listed and rated suitable for parallel interconnection.
- **CLASS 2 WIRING:** All field wiring shall be suitable for Class 1, Electric Light and Power, or Class 2, 3 wirings are routed separately and secured to maintain separation between 1) Class 2 wiring and all other class wiring, and 2) Limited energy circuit conductors from unlimited energy circuit conductors.
- Class 2 Device Wiring Only – Do Not Reclassify and Install as Class 1, 3 or Power and Lighting Wiring.
- When using molded connector power cables, Do Not rely on wire colors for Pin-Out. Always use pin number references.
- Wire connections shall be rated suitable for the wire size (lead and building wiring) employed.
- **MULTIPLE CLASS 2 POWER SOURCES:** When interconnects, class 2 sources shall be Listed and rated suitable for parallel interconnection.
- Sources shall be Listed and rated suitable for parallel interconnection.

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1. About DeviceNet™

1.1 Overview

DeviceNet™ is a serial communication protocol used to network industrial devices to eliminate labor intensive and expensive point to point wiring schemes. It is based on the CAN (Controller Area Network) protocol. Allen Bradley originally developed DeviceNet™, but it is now supported by a multitude of manufacturers.

The ODVA™ (Open DeviceNet Vendor Association) is an independent organization that governs the DeviceNet™ specification and oversees conformance testing for products, which will be used in a DeviceNet™ system.

DeviceNet™ uses a powered 4-wire (plus shield) network and can have up to 64 nodes. The protocol can transfer a maximum of 8 bytes of data per node cycle with three selectable communication (baud) rates of 125 Kbps, 250 Kbps, or 500 Kbps. Maximum distance is dependent upon baud rate and cable media type. Refer to the section below for details.

More information about DeviceNet™ and ODVA™ can be obtained from the ODVA™ web site www.odva.org.

1.2 580 DeviceNet™ Features

<i>Features</i>	<i>Description</i>
DeviceNet Spec. Supported	Designed to DeviceNet™ Specification Revision 2.0
Bus Topology	Straight with restricted drops; trunkline-dropline configuration
Baud Rates Supported	125 Kbps, 250 Kbps and 500 Kbps and Autobaud
Duplicate address detection	If duplicate address detected on power up, duplicates will not progress to run mode
Error Correction	Yes, if error detected, sender is requested to repeat the message
Address Setting	Via graphic display or software (RSNetWorx™)
Termination Resistor (external)	A 121-ohm, 1%, ¼ Watt resistor is required at each end of the trunk line
ADR support	Auto-Device Replacement
Connection Types Supported	Polled, Cyclic, Change of State (COS) or Combinations
Conformance Tested	Tested by ODVA™ for conformance

1.3 Cabling and Drop Line Lengths (as defined by DeviceNet™ specification)

Maximum Main Trunk Cable Length

<i>Baud Rate</i>	<i>Thick Trunk Cable</i>	<i>Thin Trunk Cable</i>	<i>Flat Trunk Cable</i>
125 Kbps	1640 ft (500 m)	328 ft (100 m)	1246 ft (380 m)
250 Kbps	820 ft (250 m)	328 ft (100 m)	656 ft (200 m)
500 Kbps	328 ft (100 m)	328 ft (100 m)	246 ft (75 m)

Maximum Drop Line Cable Length

<i>Baud Rate</i>	<i>Maximum Drop Length</i>	<i>Cumulative Drop Length</i>
125 Kbps	20 ft (6 m)	512 ft (156 m)
250 Kbps	20 ft (6 m)	256 ft (78 m)
500 Kbps	20 ft (6 m)	128 ft (39 m)



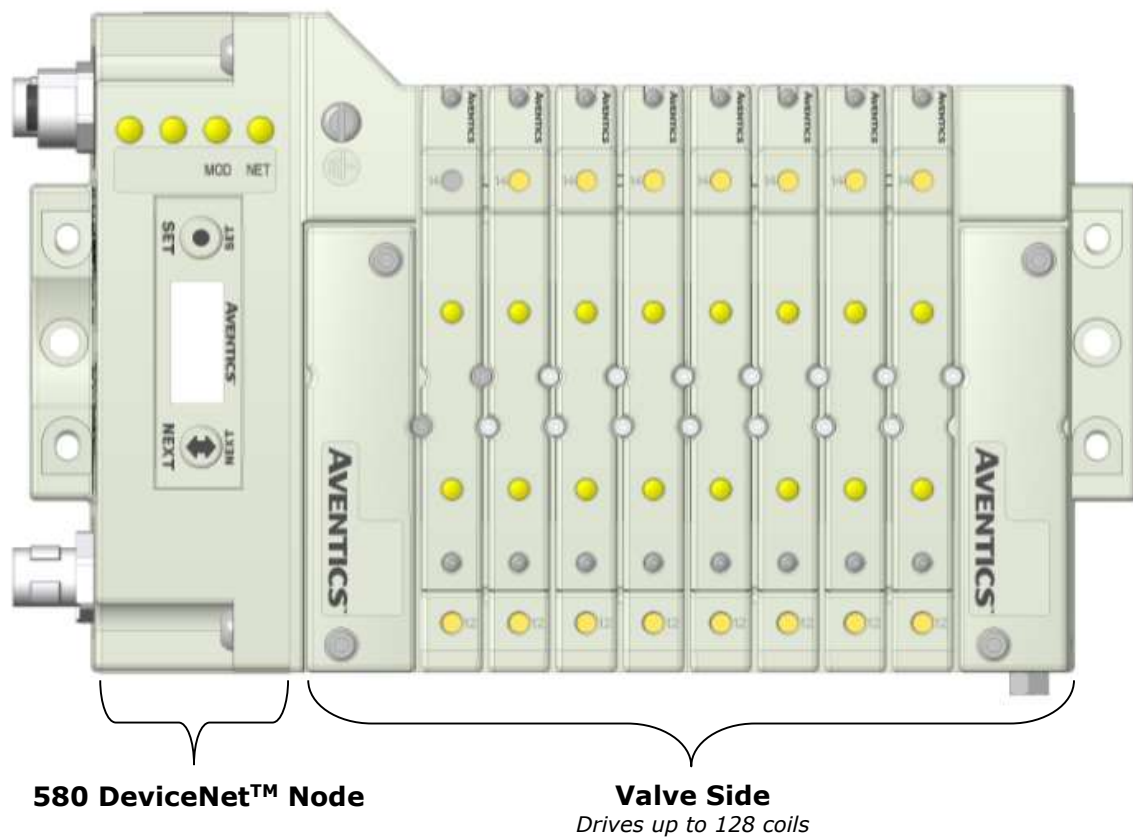
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2. 580 Introduction

The 580 DEVICENET™ Node is an electronic interface that features an integrated graphic display for simple commissioning and displaying of diagnostic information. The 580 DeviceNet Node mates to a variety of valve series including, the 501, 502, and 503. The 580 DeviceNet™ Node is capable of addressing a total of (32) coil outputs, with diagnostic functionality built in. With proper assembly and termination, the 580 DeviceNet™ Node has an IP65 rating.

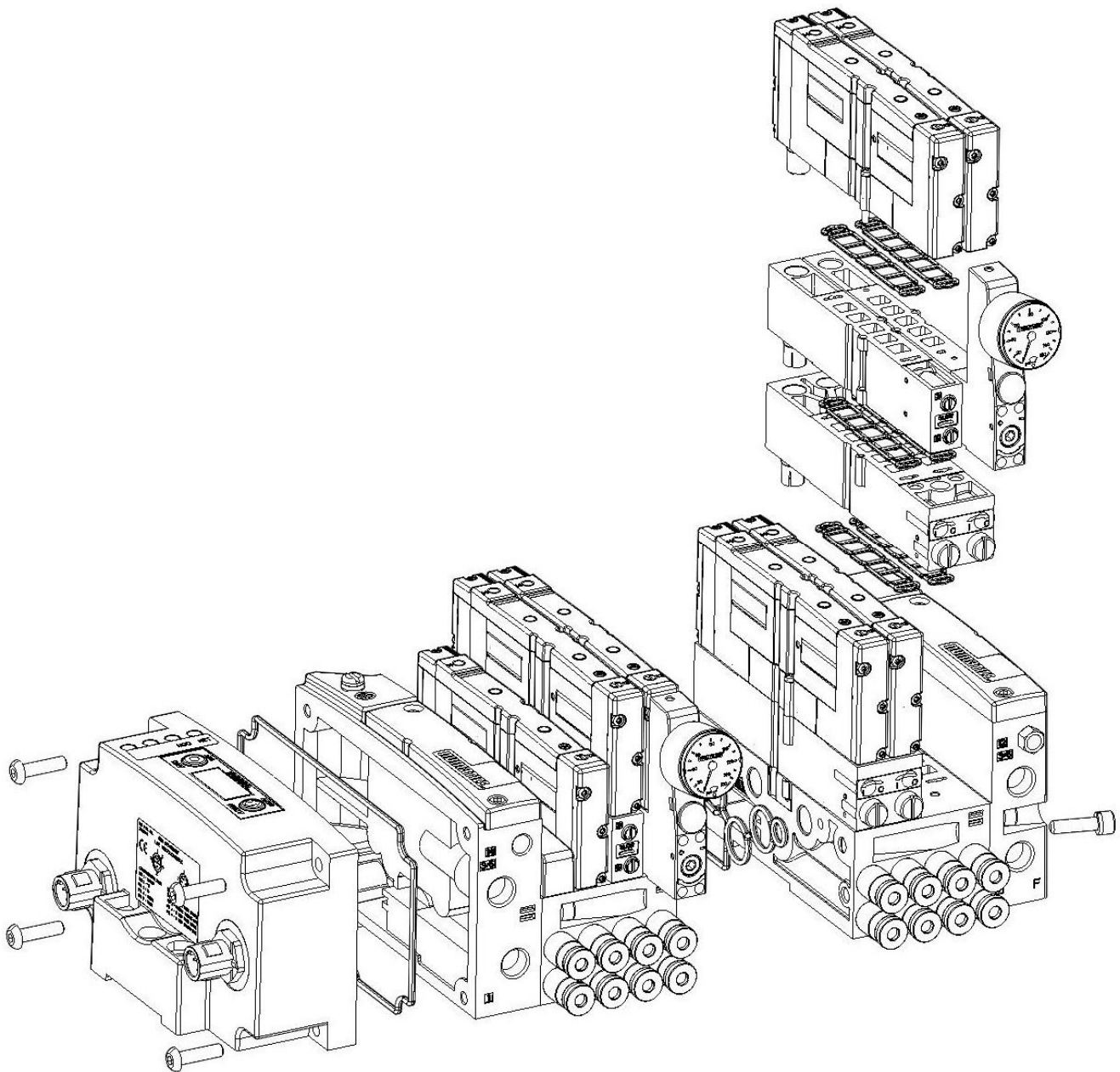
This manual details specific information for configuring and commissioning the AVENTICS 580 DeviceNet™ Node. For more information relating to pneumatic valving and valve manifold assemblies, please refer to the AVENTICS 500 Series Catalog at www.ASCO.com.



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2.1 Pneumatic Valve Manifold – 501 Series shown

The pneumatic valve manifold with internal circuit board technology is modular. The valve solenoid coil connections are automatically made using Z-Board™ technology (plug together PC boards, which allow internal connections from solenoid coils to output drivers without the use of wires). This allows easy assembly and field changes.



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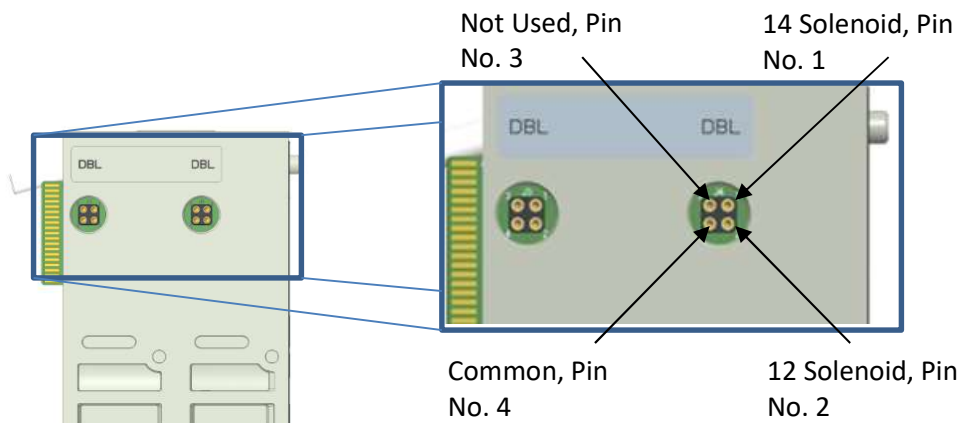
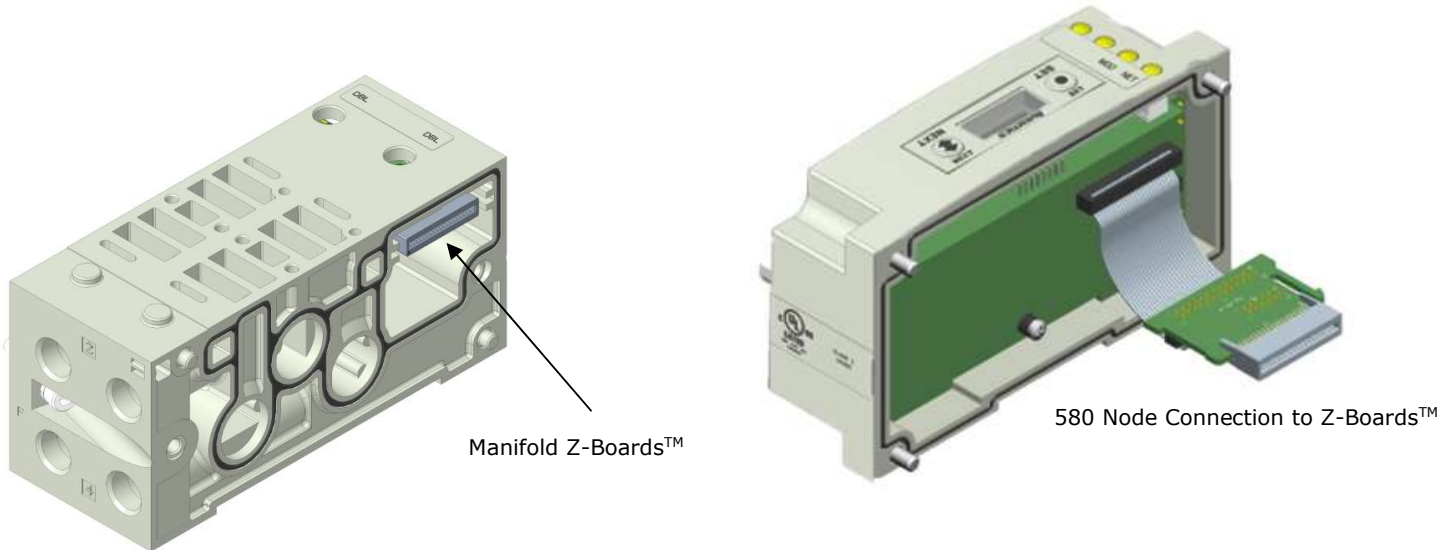
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2.2 Manifold Connectors

Solenoid Coil Connections using Z-Board™ Technology for 501/502/503 valve series

Z-Board™ plug together technology connects all valve solenoids to the valve coil output drivers, located in the 580 Node. There is a maximum of 128 coil outputs available on the complete manifold assemblies. The 128 available outputs are accessed on the 501 series valves utilizing 4 station manifolds and on the 502 and 503 series utilizing 2 station manifolds.



Pin out of integral plug is the same for 501, 502, and 503 Series valves manifolds



A single solenoid valve's coil is always on the "14" end.



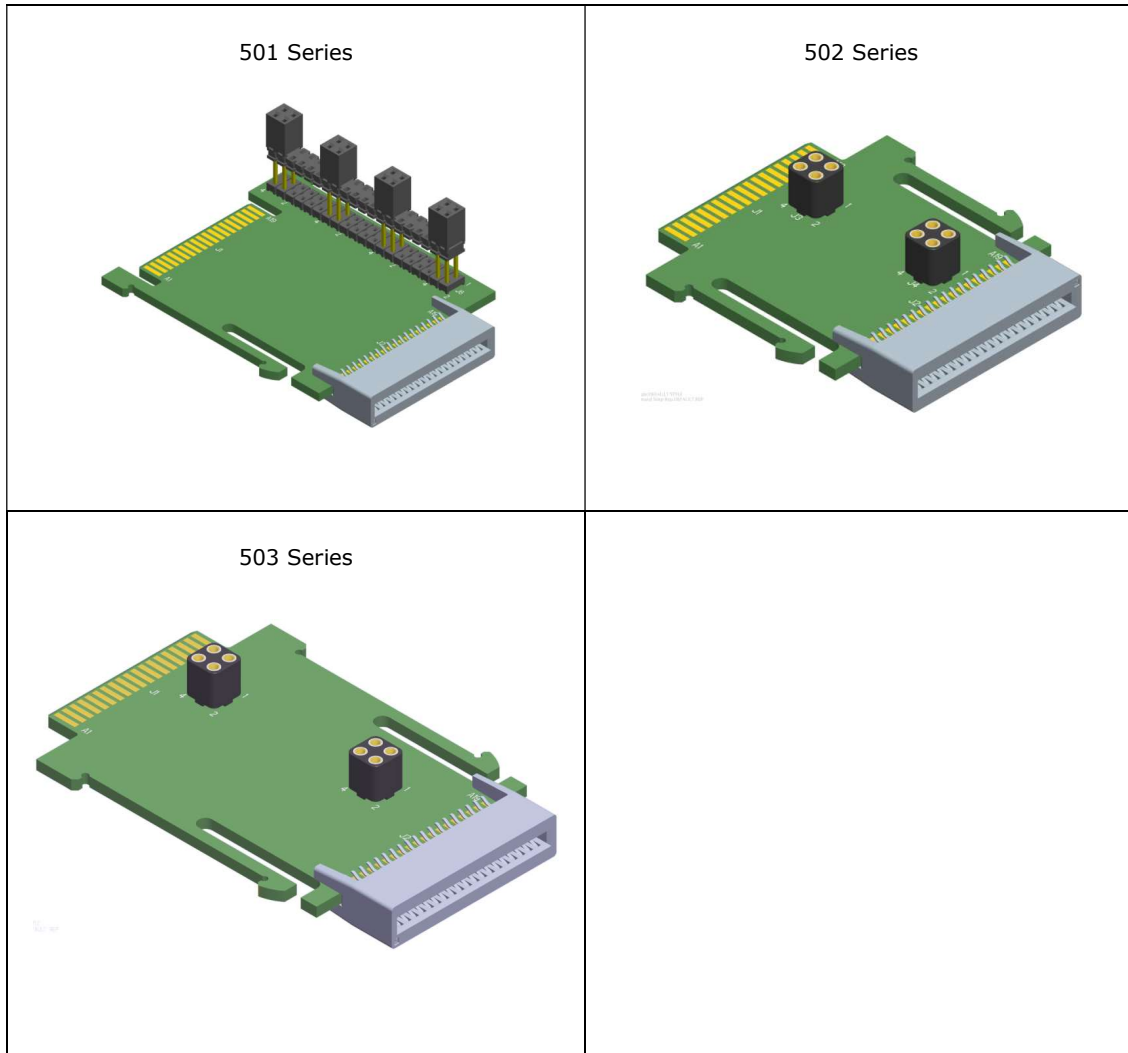
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2.3 Z-Board™ Connectors

The 501/502/503 valve series utilize 2 different Z-Board™ designs to achieve the single and double solenoid output functions.



Each series Z-Board™ can be selected in either SINGLE or DOUBLE output (coil) versions. The SINGLE and DOUBLE output function cannot be mixed on the Z-Boards™

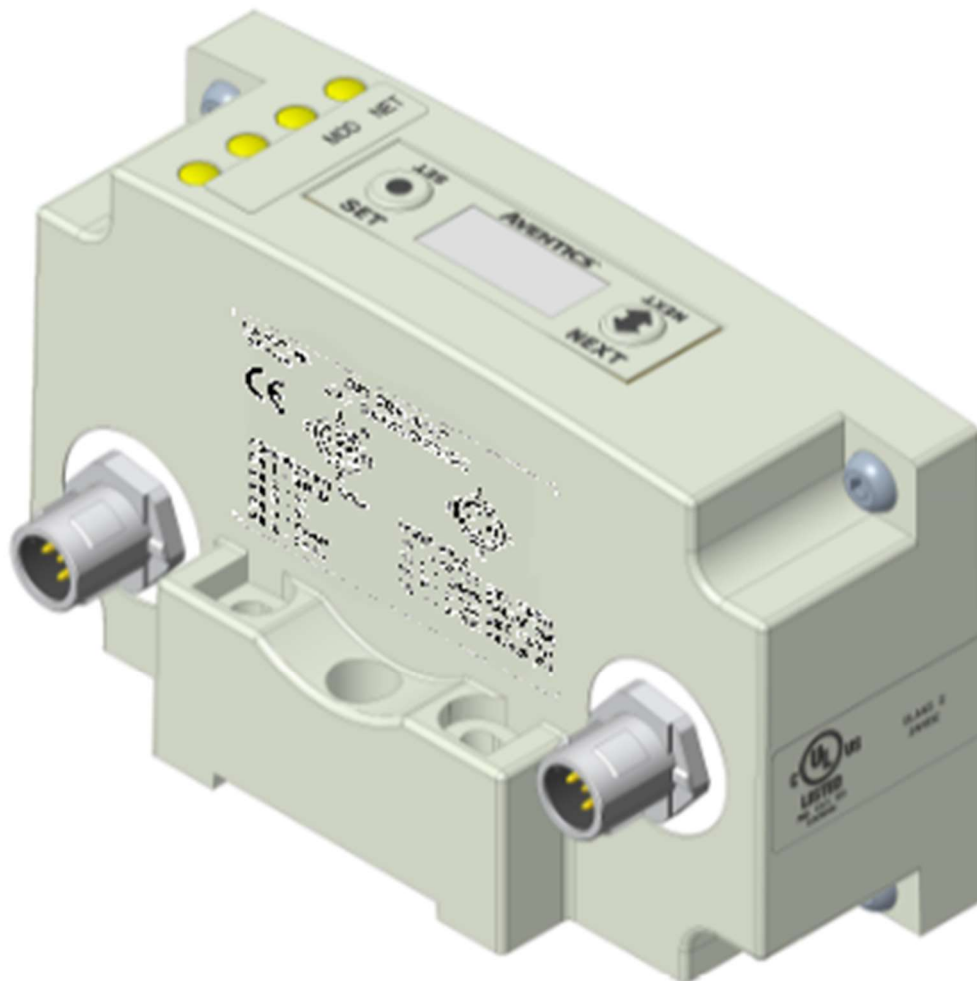
3. Communication Node

3.1 DeviceNet™ Node

This module is the Communication Node to the manifold. It contains communication electronics and internal short circuit protection for power. It can be configured via the graphic display or via software (RSNetWorx™).

The AVENTICS 580 DeviceNet™ Node is tested by the ODVA to ensure DeviceNet™ compatibility and interoperability. The 580 DeviceNet™ Node supports Polled, Change of State (COS), Cyclic and Combination.

<i>Communication Node</i>	<i>Part Number</i>
580 DeviceNet™ Node	P580AEDN1010A00
580 DeviceNet™ Node w/DIN Rail Mount	P580AEDN1010DRM



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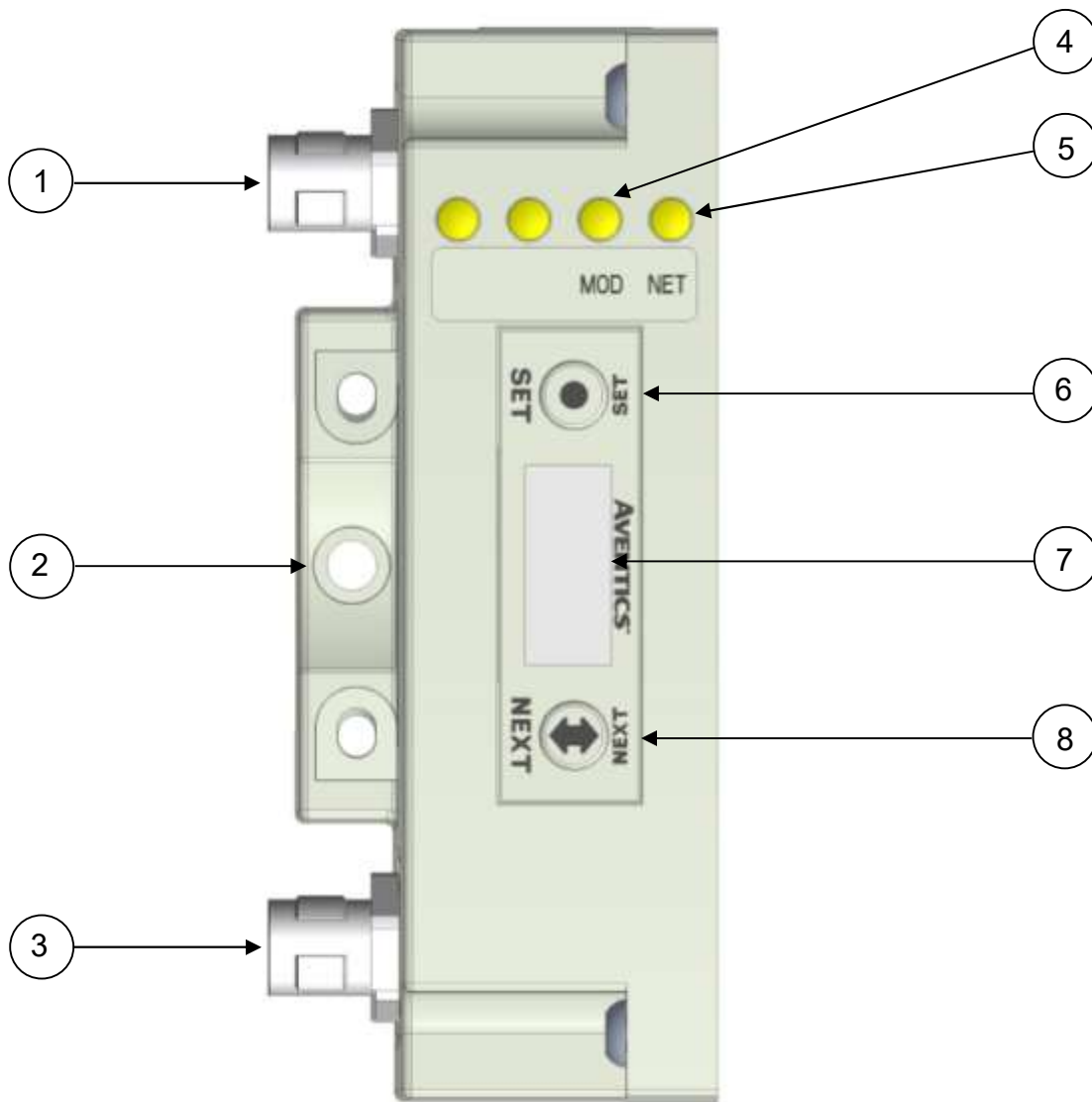
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3.2 DeviceNet™ Node Description

Detail No.	Description
1	5 Pin M12 Male Communication Connector per ODVA™ specification
2	Mounting Hole
3	4 Pin M12 Male Power Connector per ODVA™ specification
4	Module Status LED
5	Network Status LED
6	SET Button – used to navigate through user menus and to set parameters
7	Graphic Display – used to display parameter information
8	NEXT Button – used to navigate through user menus and to set parameters



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3.3 Connector Pin-Outs

Industry standard M12 connectors are used for communication and power.
 The DeviceNet™ communication connector is a single keyway 5 pin male connector.
 The Power connector is a single keyway 4 pin male connector.

DeviceNet™ Communication Connector Pin-Out

Pin No.	Function	Description
1	Shield	Cable shield
2	V+	Bus Power 11-25VDC
3	V-	Bus Power Common (0 VDC)
4	CAN_H	Controller Area Network High Communication Line
5	CAN_L	Controller Area Network Low Communication Line

Power Connector Pin-Out

Pin No.	Function	Description
1	+24 VDC (Node)	Voltage used to power node electronics UNSW
2	+24 VDC (Valves)	Voltage used to power outputs (valve coils) SW
3	0 VDC Common (Node)	0 VDC (-V) Voltage used to power node electronics UNSW
4	0 VDC Common (Valves)	0 VDC Voltage used to power outputs (valve coils) SW

U.S. PAT. NO. 7967646 580 DEVICENET
 LOT: XXXXXXXXXXXXX

COMMUNICATION MALE

PIN 1 = SHIELD
 PIN 2 = V+
 PIN 3 = V-
 PIN 4 = CAN.H
 PIN 5 = CAN.L

POWER MALE

PIN 1 = +24VDC NODE (UNSW)
 PIN 2 = +24VDC VALVES (SW)
 PIN 3 = 0 VDC NODE (UNSW)
 PIN 4 = 0 VDC VALVES (SW)



- Power common (0 VDC) pins 3 and 4 are isolated from each other to allow separate (isolated) power supply connection if required. However, they can be tied together if a single common, non-isolated, application is preferred.
- The draw of the +24VDC Valves and +24VDC Node pins cannot exceed 4 Amps, at any given moment in time.
- The Node pins supplies power to the node electronics. These pins must be powered at all times for communication node to be functional.
- To be connected to Class 2 power source only



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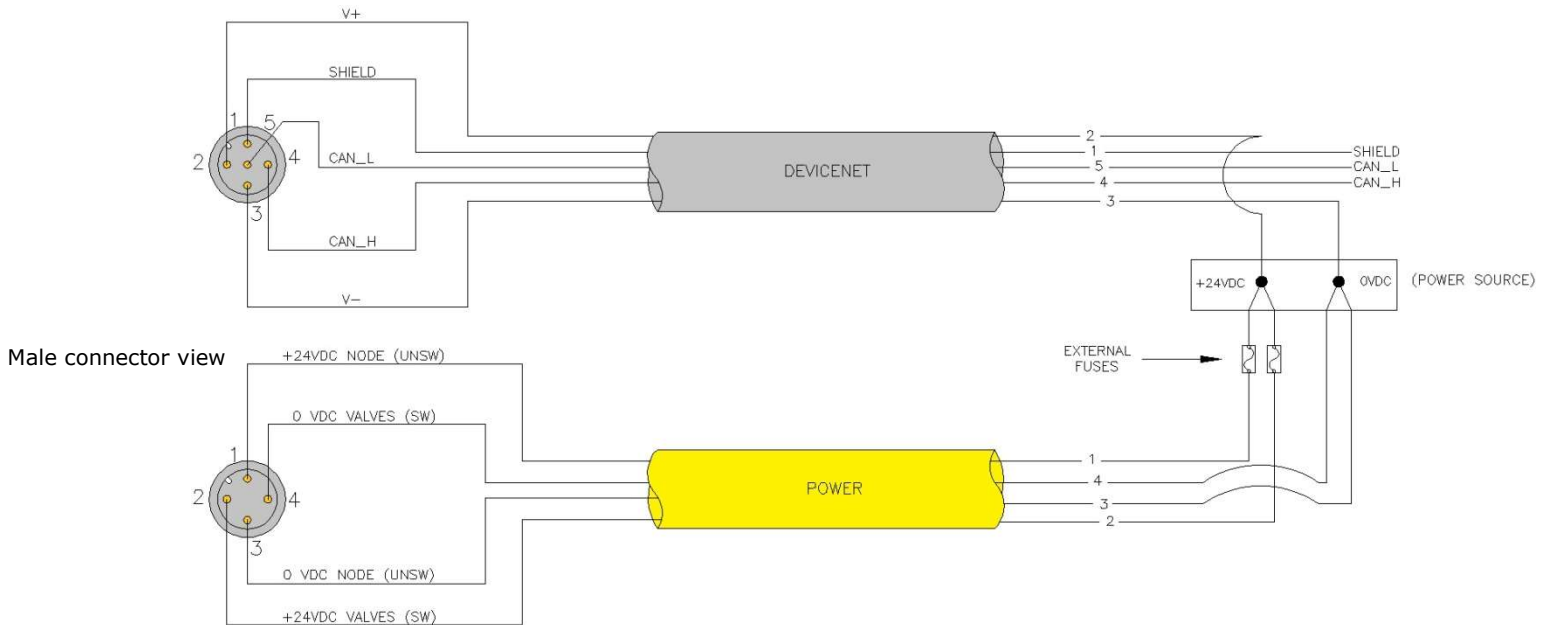
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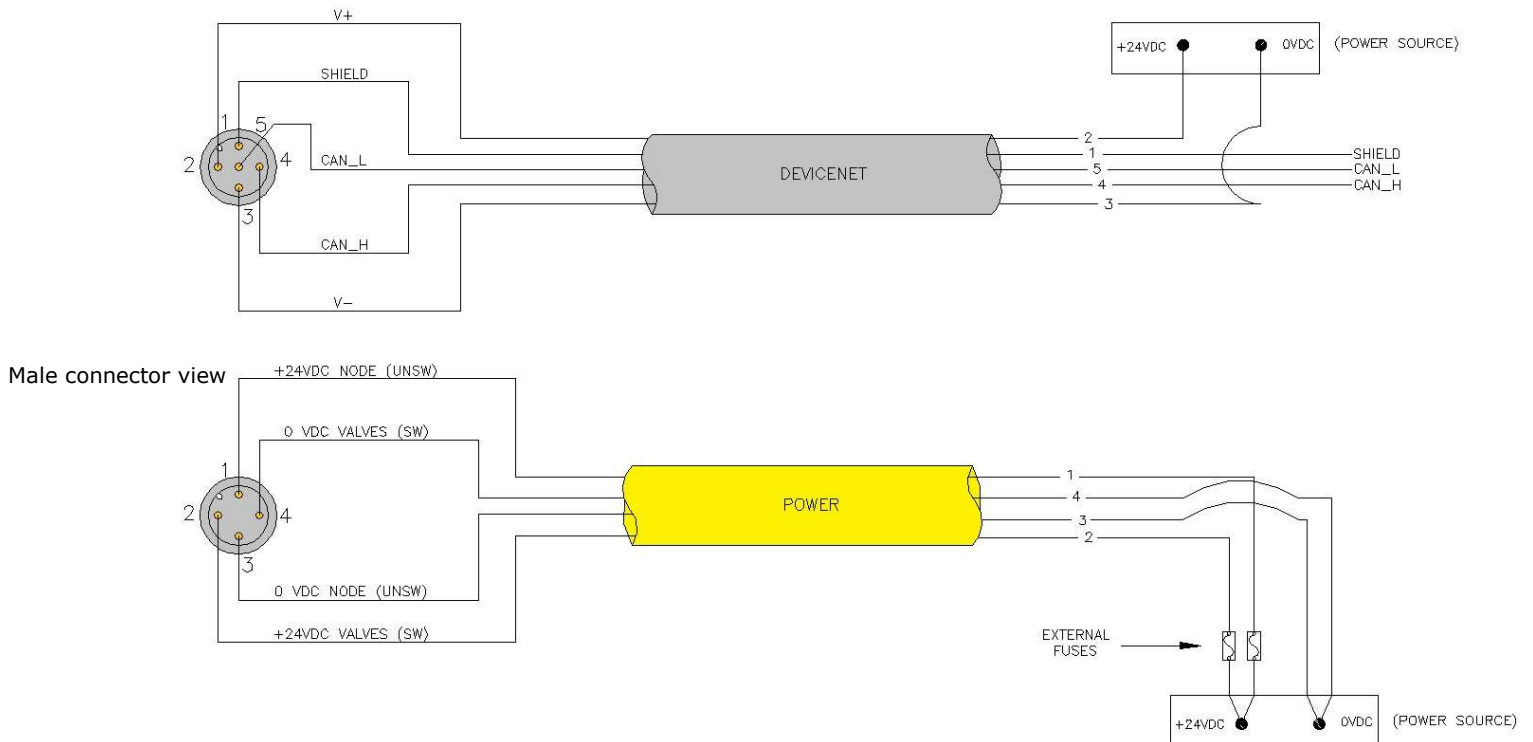
3.4 Electrical Connections

Standard Power Connector Wiring Diagram Examples

Single Power Supply Example (Non-isolated commons)



Separate Power Supply Example (Non-isolated commons)



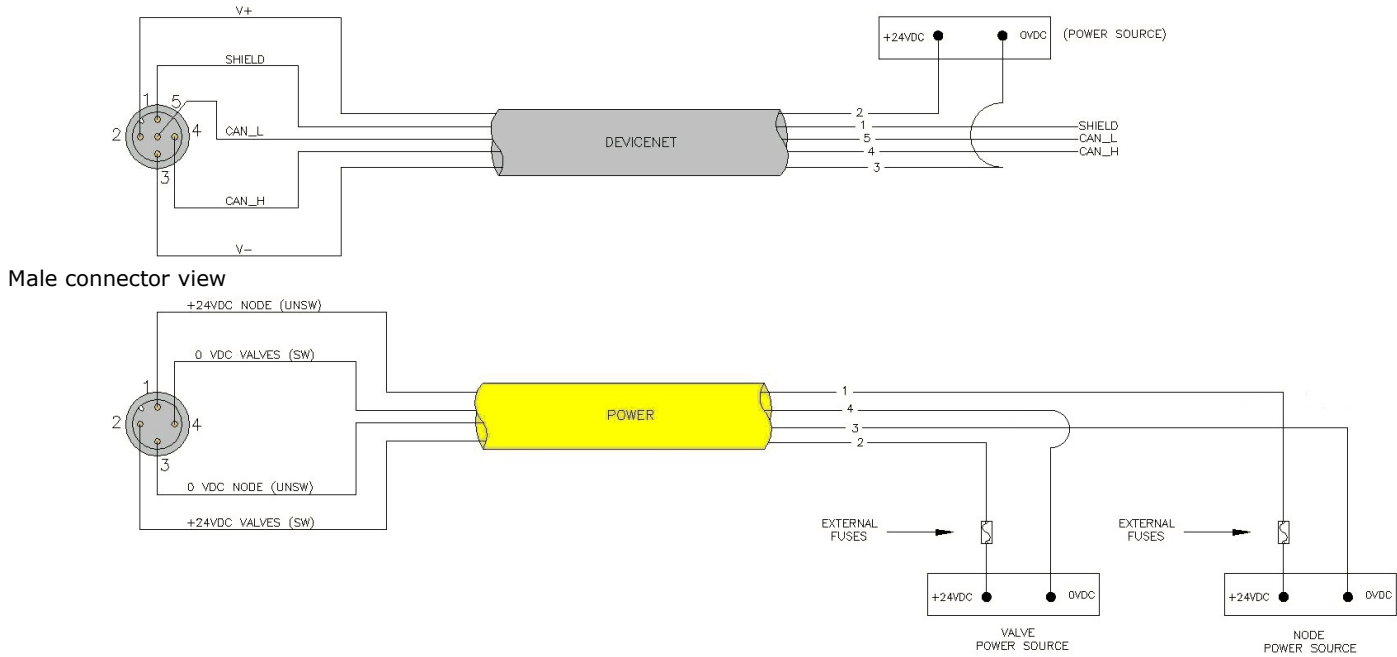
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Separate Power Supply Example (Isolated commons)



- Please see page 3-17 for external fuse sizing guide.
- When using molded connector power cables, **Do Not** rely on wire colors for Pin-Out. Always use pin number references.
- To be connected to a Class 2 power source only
- Class 2 Device Wiring Only – Do Not Reclassify and Install as Class 1, 3 or Power and Lighting Wiring.
- Wire connections shall be rated suitable for the wire size (lead and building wiring) employed.
- CLASS 2 WIRING: All filed wiring shall be suitable for class 1, Electric Light and Power, or Class 2, Class 3 wirings are routed separately and secured to maintain separation between 1) Class 2 wiring and all other class wiring, and 2) limited energy circuit conductors from unlimited energy circuit conductors.
- MULTIPLE CLASS 2 POWER SOURCES: when interconnects, Class 2 sources shall be listed and rated suitable for parallel interconnection.

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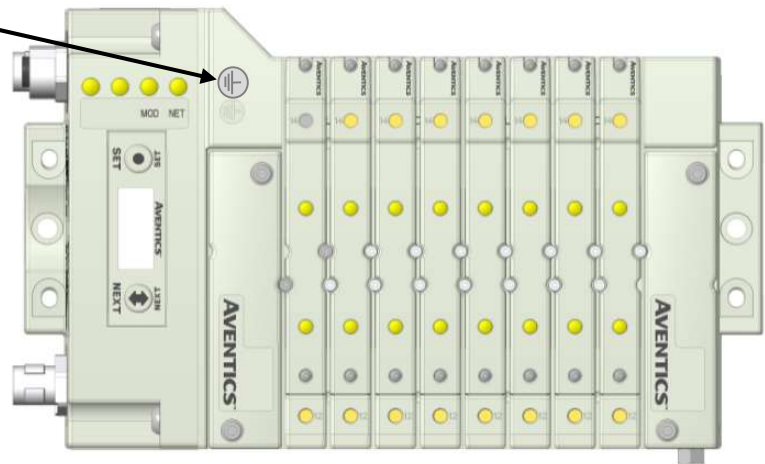
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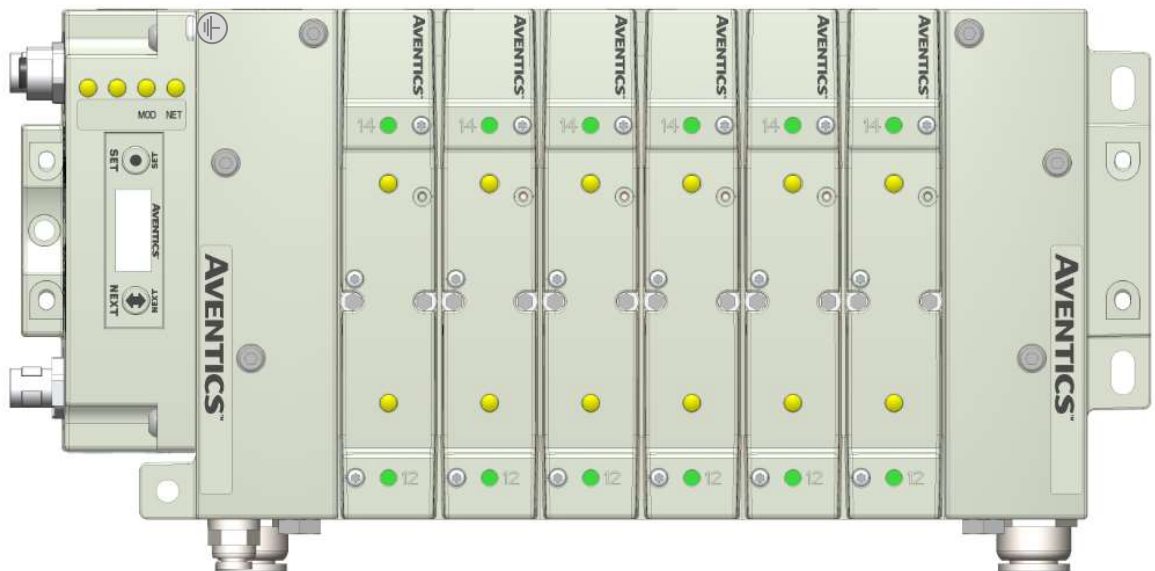
3.5 Chassis Ground

All AVENTICS manifolds should be grounded for safety. Grounding guidelines can be found in National Electrical code IEC 60204-1 or EN 60204-1.

CHASSIS GROUND CONNECTION POINT,
501 VALVES



CHASSIS GROUND CONNECTION
POINT, 502 & 503 VALVES



CAUTION

- When grounding to a machine frame, please ensure that the machine frame itself is already properly grounded.
- Better grounding can be achieved when larger diameter (lower gauge) wire is used.

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3.6 Power Consumption

Power Connection

Pin No.	Function	Description
1	+24 VDC (Node)	Voltage used to power node electronics UNSW
2	+24 VDC (Valve)	Voltage used to power outputs (valve) SW
3	0 VDC Common(Node)	0 VDC (-V) Voltage used to power node electronics UNSW
4	0 VDC Common(Valve)	0 VDC (-V) Voltage used to power outputs (valve) SW

Power Rating

- The maximum system current capability is 4 Amps. Care should be taken not to exceed 4 Amp draw through the M12 Power connector pins.

Component	Voltage	Tolerance	+24VDC (Valve) Pins 2 & 4		+24VDC (Node) Pins 1 & 3	
			Current Per Coil	Power Per Coil	Current	Power
Solenoid Valve Coil 501 (Each)	24 VDC	+10%/-15%	0.03 A	0.80 W	N/A	N/A
Solenoid Valve Coil 502 (Each)	24 VDC	+10%/-15%	0.06 A	1.30 W	N/A	N/A
Solenoid Valve Coil 503 (Each)	24 VDC	+10%/-15%	0.07 A	1.70 W	N/A	N/A
501 Series 32+ valve driver board	24 VDC	+/- 10%	0.03 A	0.72 W	0.05 A	1.20 W
502 Series 32+ valve driver board	24 VDC	+/- 10%	0.03 A	0.72 W	0.05 A	1.20 W
503 Series 32+ valve driver board	24 VDC	+/- 10%	0.03 A	0.72 W	0.05 A	1.20 W
580 DeviceNet™ Node	24 VDC	+/- 10%	N/A	N/A	0.05 A	1.20 W

DeviceNet™ Connector

Pin No.	Function	Description
1	Shield	Cable shield
2	V+	Bus Power 11-25VDC
3	V-	Bus Power Common (0 VDC)
4	CAN_H	Controller Area Network High Communication Line
5	CAN_L	Controller Area Network Low Communication Line

Component	Voltage	Tolerance	+24VDC (Network) Pins 2 & 3	
			Current	Power
580 DeviceNet™ Node	24 VDC	11-25 VDC	0.050 Amps	1.2 Watts



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3.7 Recommended External Fuses

External fuses should be chosen based upon the physical manifold configuration. Please refer to table below for the external fuse sizing chart.

External Fuse Sizing Chart

<i>Power Consumption - Power Connector Pin for VALVES</i>		
<u>Description</u>		<u>Current</u>
Number of Solenoid Valve Coils Energized Simultaneously		
___ X 0.03 A (501 Series)	=	_____ Amps
___ X 0.06 A (502 Series)	=	_____ Amps
___ X 0.07 A (503 Series)	=	_____ Amps
		+
Number of +32 Valve Drivers	=	0.05 Amps
Total:		_____ Amps
Surge Compensation:	X	1.25
Suggested External +24 VDC (Valves) Fuse Value:		_____ Amps
<i>Power Consumption - Power Connector Pin for NODE</i>		
<u>Description</u>		<u>Current</u>
Communication Node Power Consumption	=	0.050 Amps
Surge Compensation:	X	1.25
Suggested External Pin +24 VDC (Node) Fuse Value:	=	0.060 Amps

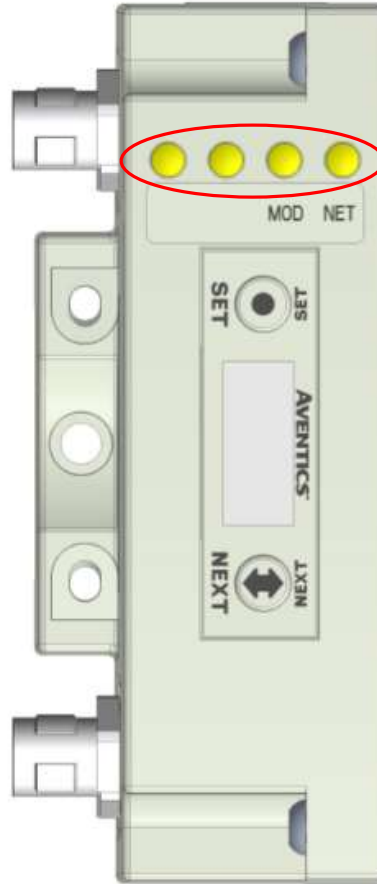


- The Node Power pins supply power to the node electronics. These pins must be powered at all times for the communication node to be functional. See page 3-12 for reference.
- Reverse polarity protection is provided.

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3.8 Diagnostics – 580 DeviceNet™ Node LED Functions

Upon power up, the Module and Network Status LEDs indicate the state of the unit. There are two LEDs on the 580 DeviceNet™ Interface. The LEDs functions are described in the table below.



LED Name	Color	Status	Description
NET NETWORK STATUS	Off	OFF	Device is not on-line; Bus power not applied if Module Status also flashing green; Physical problem with network; Improper baud rate.
	Green	ON	Normal operation. Device is on-line and has established a connection.
		FLASHING	Device is on-line but has no established connections.
	Red	ON	The device has detected a bus error that has rendered it incapable of communicating on the network; Duplicate MAC ID; "Bus Off" condition; Physical problem with network.
		FLASHING	Communication failure – one or more I/O connections have timed out.
MOD MODULE STATUS	Off	OFF	Critical hardware fault. Microprocessor is not running.
	Green	ON	Normal operation. The device is operating properly.
		FLASHING	Network power is absent.
	Green	Red	FLASHING

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3.9 Output / Short Circuit Protection Diagnostic Status Bits

Diagnostic Status Bit Action

<i>Output Type</i>	<i>Output State</i>	<i>Fault Condition</i>	<i>Status Bit</i>
Valve Solenoid Coil Driver	ON	No Fault	0
		Fault - Short Circuit, Over Temp/Over Current	1
Valve Solenoid Coil Driver	OFF	No Fault	0
		Fault - Open Load	1

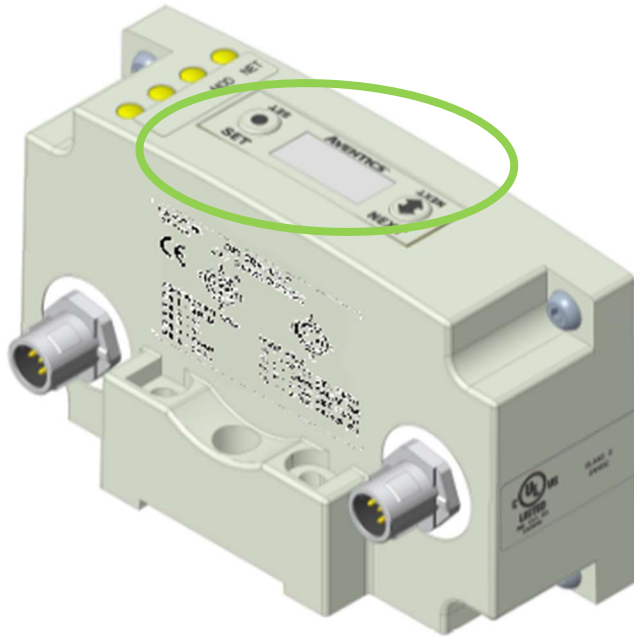


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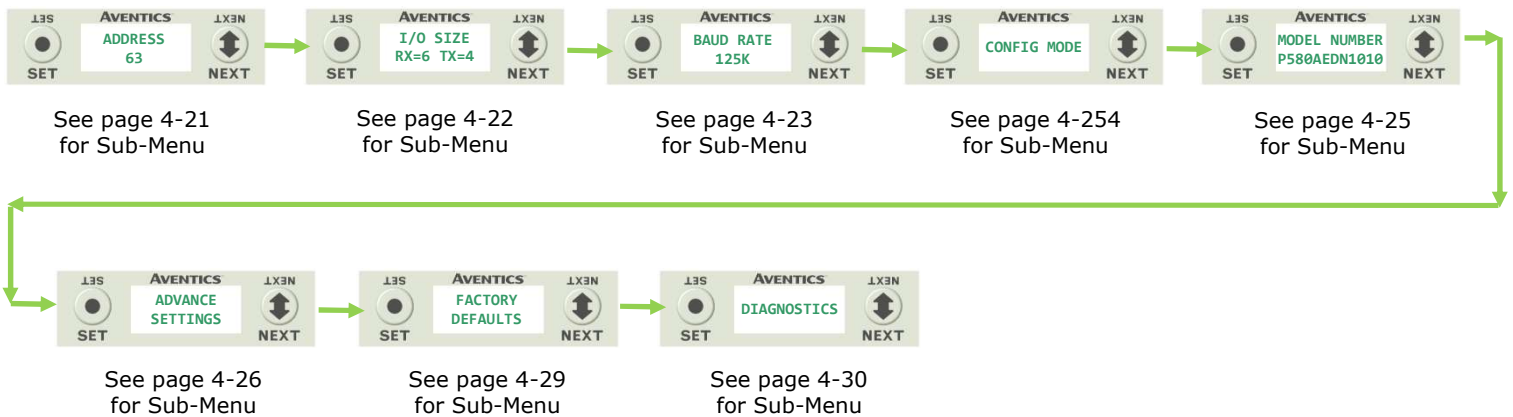
4. DeviceNet™ Node Graphic Display

The 580 DeviceNet™ Node has an integrated graphic display that may be used to configure the parameters of the Node as well as showing diagnostic information.



The following graphic displays represent the main menu selections of the 580 DeviceNet™ node. Use the NEXT button to scroll through the Main menu headings shown below. At this level pressing the SET button allows access to the Sub-Menus. Please see the appropriate pages referenced below for further details and descriptions of the Sub-Menus. *Note that many of these settings can also be adjusted via software with EDS file parameters. NOTE: WHEN A NETWORK I/O CONNECTION IS ESTABLISHED MANUAL CHANGES TO NODE PARAMETERS ARE NOT ALLOWED!*

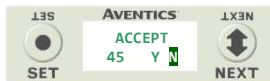
Home Screen



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4.1 Network Address Sub-Menu



Steps to Set Address

1. Press the SET button to enter the ADDRESS sub-menu.

2. Press the NEXT button to scroll through the choices for the tens digit of the node address. Press the SET button to select the tens digit and move into the ones digit selection.

3. Press the NEXT button to scroll through the choices for the ones digit of the node address. Press the SET button to select the ones digit.

4. Press the NEXT button to select Yes or No to accept the address shown on the display,
 - a. Selecting No will bring you back to the main Address menu.
 - b. Selecting Yes will take you to the following SAVE SETTINGS menu.

Press the SET button to confirm your choice.

5. Press the NEXT button to select either NOW or LATER.
 - a. Selecting NOW will cause the node to reset and apply the new setting.
 - b. Selecting LATER will cause the new Address to be saved in temporary memory, and allow you to make additional parameter changes before the node is reset. However, you must ACCEPT the saved changes before your next power cycle otherwise they will be lost.

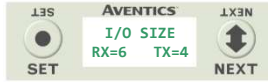
Press the SET button to confirm your choice.



- Only addresses 0-63 are valid.
- Address 0 is typically reserved for the master (i.e. PLC, IPC, etc.)
- Address 62 is typically reserved for network programming devices (i.e., 1784-U2DN).
- Address 63 is reserved for new replacement devices.
- Address 63 is the Factory Default node address.

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4.2 I/O Size



I/O Size of Manifold

1. The I/O Size is reference only.



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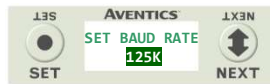
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4.3 Baud Rate Sub-Menu

Steps to Set Baud Rate

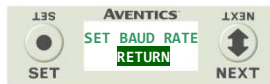
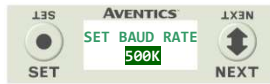
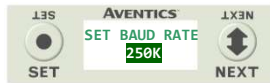


1. Press the SET button to enter the BAUD RATE sub-menu.



2. Press the NEXT button to scroll through the choices for the baud rate of the node:

- 125K (Factory Default)
- 250K
- 500K
- AUTOBAUD
- RETURN (this will return you to the top of BAUD RATE menu)

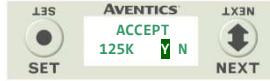


Press the SET button to confirm your choice.



3. Press the NEXT button to select Yes or No to accept the baud rate shown on the display.

- Selecting No will bring you back to the main Baud Rate menu.
- Selecting Yes will take you to the following SAVE SETTINGS menu.



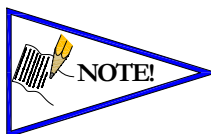
Press the SET button to confirm your choice

Saved Setting Steps



4. Press the NEXT button to select either NOW or LATER.
 - Selecting NOW will cause the node to reset and apply the new setting.
 - Selecting LATER will cause the new Baud Rate to be saved in temporary memory and allows you to make additional parameter changes before the node is reset. However, you must ACCEPT the saved changes before your next power cycle otherwise they will be lost.

Press the SET button to confirm your choice.



- Node must be set to the same baud rate as the network master (i.e. PLC scanner, controller's communication module, etc.)
- More than one device (slave) is required on the network for AUTOBAUD to function.

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4.4 Config. Mode

Config Mode Settings



1. Press the SET button to enter the Config Mode sub-menu.



2. Press the SET button to change this parameter to 32, 64, 96 or 128



3. Press the NEXT button to select Yes or No.
a. Selecting No will bring you back to the main FACTORY DEFAULTS menu.
b. Selecting Yes will cause the node to reset and return all parameters to the factory default conditions.
c. Selecting RETURN will bring you back to the main FACTORY DEFAULTS menu

Press the SET button to confirm your choice.



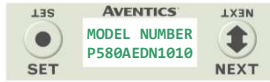
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4.5 Model Number

Model Number



1. The Model Number is reference only.

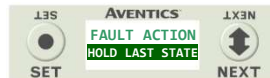
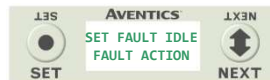


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4.6 Advanced Settings - Fault Action / Idle Action

This menu allows the enabling / disabling of the fault action parameter. The fault action parameter determines the behavior of the outputs (coils) during a communication fault. Please see page 5-35 for more details.



Fault Action Settings

1. Press the SET button to enter the ADVANCED SETTINGS menu.
2. Press the SET button to enter the FAULT ACTION, IDLE ACTION setting screen.
3. Press the NEXT button to scroll through the settings; FAULT ACTION, IDLE ACTION, or RETURN.
4. Press the SET button to select FAULT ACTION, IDLE ACTION, or RETURN.
 - a. OUTPUTS OFF (Factory Default)
 - b. HOLD LAST STATE
 - c. RETURN (this will return you to the SET FAULT/IDLE menu)

Press the SET button to confirm your choice.

6. Press the NEXT button to select Yes or No to accept the selection
 - a. Selecting No will bring you back to the main SET FAULT IDLE menu.
 - b. Selecting Yes will take you to the following saved settings menu.

Save Settings Steps

7. Press the NEXT button to select either NOW or LATER.
 - a. Selecting NOW will cause the node to reset and apply the new setting
 - b. Selecting LATER will cause the new FAULT IDLE Action selection to be saved in memory, you must Accept the saved changes before your next power cycle otherwise they will be lost.

Press the SET button to confirm your choice.

Idle Action Setting

The IDLE ACTION setting process is performed the same as the FAULT ACTION process explained above. Re-enter the ADVANCED SETTINGS menu to set the IDLE ACTION setting.



- See page 5-30 for more details.
- Factory Default is "ALL OUTPUTS OFF"

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4.7 Advanced Settings – Flip Display

Flip Display Settings



1. Press the SET button to enter the ADVANCED SETTINGS menu.



2. Press the NEXT button to advance to the ADVANCED MENU FLIP DISPLAY screen.



3. Press the SET button to enter the FLIP DISPLAY sub menu.



4. Press the NEXT button to change this selection.
 - a. YES
 - b. RETURN



5. Press the SET button to confirm your selection.



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4.8 Advanced Settings – Parameters

This menu allows the enabling / disabling of the Parameters setting. By setting the PARAMETERS LOCKED function all user settable parameters on the node will be locked out via the graphic display.



Parameters Settings

1. Press the SET button to enter the ADVANCED SETTINGS menu.



2. Press the NEXT button to advance to the ADVANCED MENU PARAMETERS screen.



3. Press the SET button to enter the PARAMETERS sub menu.



4. Press the NEXT button to change this selection
 - a. UNLOCKED
 - b. LOCKED
 - c. RETURN



5. Press the SET button to confirm your selection.



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4.9 Factory Defaults

Factory Default Settings



1. Press the SET button to enter the FACTORY DEFAULTS sub-menu.



2. Press the NEXT button to select Yes or No.
 - a. Selecting No will bring you back to the main FACTORY DEFAULTS menu.
 - b. Selecting Yes will cause the node to reset and return all parameters to the factory default conditions.



Press the SET button to confirm your choice.

FACTORY DEFAULT SETTINGS	
Description	Default
Node Address	63
Baud Rate	125K
Rx/Tx Values	Rx = 6 / Tx = 4 (non-settable)
Fault Action	Reset to All Outputs Off
Idle Action	Reset to All Outputs Off

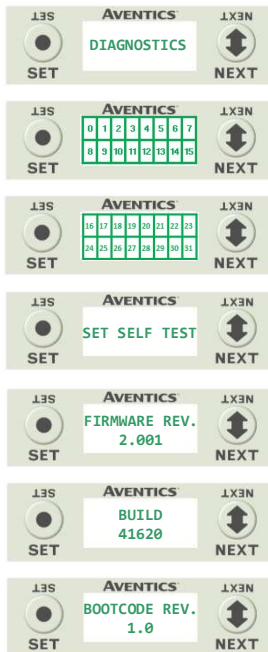


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4.10 Diagnostics



1. All diagnostic information is read only
2. Press the SET button to enter DIAGNOSTICS sub-menu.
3. Press the NEXT button to scroll through the main diagnostic menu choices.
 - a. OUTPUT INDICATION
i.- Displays the coils actuated. Press NEXT to view the second word of data.
 - b. SET SELF TEST
i.- Please see following page for description
 - c. FIRMWARE REV.
i.- For service personnel.
 - d. BUILD
i.- For service personnel.
 - e. BOOTCODE REV.
i.- For service personnel.



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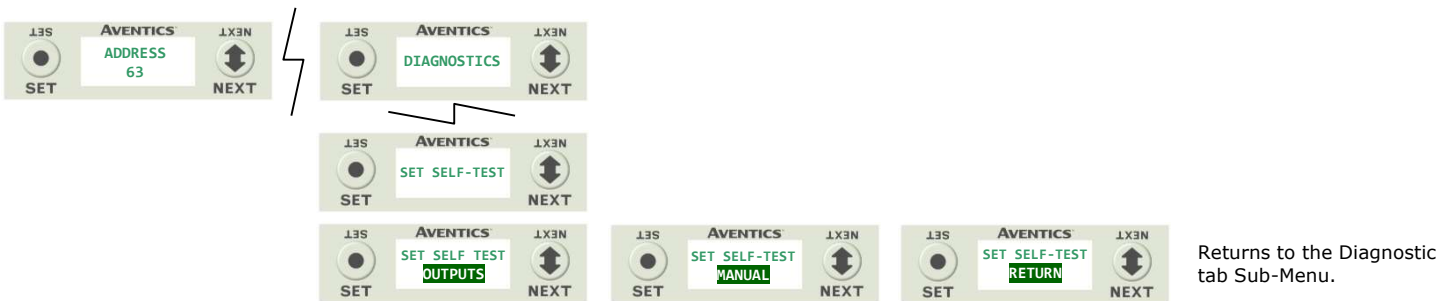
4.11 Diagnostics - Self Test Mode

An internal diagnostic tool can be enabled on the 580 (node) using the graphic display. This tool allows the user to confirm that all of the outputs (coils), on the manifold are fully functional without needing a network connection or controller. There are two test modes that the user can choose. The "OUTPUTS" test mode tests all the outputs by sequentially turning them ON and OFF for approximately .5 seconds. The "MANUAL" test mode will allow the user to manually select one or multiple output (coils) to be energized individually or simultaneously. It will remain energized until the selected output is changed, or the SELF TEST MODE is ended. Cycling power to the Node in either test mode will end the SELF TEST MODE function.

To use the SELF TEST MODE, the user must first set some initial conditions. Follow these steps to initiate the SELF TEST MODE for either "OUTPUTS", or "MANUAL".



- 1) **Disconnect Air and Communication from the manifold!**
- 2) Select the desired test mode using the graphic display. (See example below)
- 3) Starting at the Home Screen, navigate the menus by selecting the NEXT button until the DIAGNOSTICS menu is shown.
- 4) Select the SET button to access the DIAGNOSTICS menu and then again to access the SELF TEST MODE menu.
- 5) Push NEXT to navigate to the desired test mode: "OUTPUTS" or "MANUAL".
- 6) Push SET to select the desired test mode.
- 7) A message will appear: DISCONNECT AIR HOLD SET BUTTON
- 8) Hold the SET button down for approximately 10 seconds to enable the test. The Display will flash DISCONNECT AIR HOLD SET BUTTON while the button is pushed.
- 9) When the display stops flashing, the SELF TEST MODE will run and the Module Status LED will flash Red/Green while the display identifies the chosen test mode running.



The connected outputs will cycle every 0.5 seconds.



Push to Energize flashing coil output

Push again to De-energize



The first (16) available coils (outputs) will appear. There is a total of (32) coils that can be individually or simultaneously energized. If less than 32 coils are present, there will be some delay before the next cycle.

Press NEXT button to advance to the desired coil to be actuated. The desired coil indicator will **flash**. Press the SET button to turn on the coil, the indicator will flash until the cursor is moved and then it will remain solid to indicate an actuated coil. Pressing the SET button again will turn the coil off. If you choose to leave the coil actuated, press the next button and move to the next desired coil. You have the ability to actuate all 32 coils manually. Moving to any coil that is actuated and pressing the SET button will deactivate the coil. Cycling power to the unit will deactivate the SELF TEST MODE.

The user can advance quickly through the available coils by pressing and holding the NEXT button for at least 3 seconds.



A Power Cycle is required to Deactivate SELF TEST MODE

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4.12 Error Messages

The following are automatic error messages that are displayed when specific faults occur during operation:



Displayed when a short circuit condition is detected on a valve coil.



Displayed when an open circuit condition is detected on a valve coil.



Displayed when +24 VDC on Pin No. 2 and No. 4 (Valves) is not present.



Displayed when +24 VDC on pin No. 2 and No. 3 of the Communication connector is not present.



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5. DeviceNet™ Configuration and Mapping

5.1 EDS File

The EDS file contains configuration information required to establish communication to a node on a DeviceNet™ network. EDS files are available on the ASCO website at www.ASCO.com/G3.

5.2 I/O Message Types

The AVENTICS 580 DeviceNet™ Node supports 3 different I/O message types. Below are brief definitions for the supported types:

Polled

The poll command is an I/O message that is transmitted by the Master. A Poll Command is directed towards a single, specific Slave (point to point). A Master must transmit a separate Poll Command Message for each one of its Slaves that is to be polled. The slave can respond with an I/O Message that is transmitted back to the Master.

Cyclic

The Cyclic message is transmitted by either the Master or the Slave. An Acknowledge Message may be returned in response to this message. The message is sent based on the value of a cyclic timer, which is set by the user.

Change of State

The Change of State message is transmitted by either the Master or the Slave. An Acknowledge Message may be returned in response to this message. The message is sent whenever a change of state occurs.

5.3 User Configurable Device Parameters

The AVENTICS 580 DeviceNet™ Node allows the user to set many user options which define how the manifold behaves in certain instances. The following are descriptions of these device parameters. All of these configurable parameters can be adjusted using appropriate DeviceNet™ configuration software (i.e. RSNetWorx™, DeviceNet Manager™, etc...), selecting the appropriate parameters in the node's graphic display screen, or by initiating the explicit messaging function.

Parameter Name	Description	Settable Via	
		Display	Software
MAC ID	Node address	✓	✓
Baud Rate	Network speed	✓	✓
Autobaud	Enables/Disables Autobaud setting	✓	✓
Output Idle Action	Determines whether to use idle value attribute or hold last state	✓	✓
Output Fault Action	Determines whether to use idle value attribute or hold last state	✓	✓
Flip Display	Allows the user to "flip" the onboard display 180 degree's	✓	✗
Parameters Lock	Allows the user to "lock" all settable parameters	✓	✓

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5.4 Explicit Messaging

Explicit messages provide multi-purpose, point-to-point communication paths between two devices. These messages use the typical request/response-oriented network communication to perform node configuration and problem diagnosis. Explicit messages typically use low priority identifiers and contain the specific meaning of the message as part of the data field; including the service to be performed and the specific object attribute address. Each explicit message uses a four-level address scheme; Node Address (MAC ID), Object Class Identifier, Instance, Attribute and Data. Explicit messaging requires appropriate DeviceNet™ configuration software (i.e. RSNetWorx™, etc.). It can also be used via control program (ladder logic, function block, etc.)

		<i>Explicit Message Information (values in decimal)</i>			
<i>Name</i>	<i>Description</i>	<i>Class</i>	<i>Instance</i>	<i>Attribute</i>	<i>Data</i>
MAC ID	Node address	3	1	1	0 - 63
Baud Rate	Network speed	3	1	2	0 = 125K 1 = 250K 2 = 500K
Autobaud	Enables/Disables Autobaud setting	15	3	1	0 = Enabled 1 = Disabled
Output Idle Action Attribute	Determines whether to use idle value attribute or hold last state	9	1	7	0 = Outputs Off 1 = Hold Last State
Output Fault Action Attribute	Determines whether to use idle value attribute or hold last state	9	1	5	0 = Outputs Off 1 = Hold Last State

Changing Configurable Parameter Example

Change "Baud Rate" Setting of Node

1. Using appropriate DeviceNet configuration software (i.e. Rockwell's RSNetWorx™ for DeviceNet™ or similar) select the "Class Instance editor"
2. Select the appropriate node's address (MAC ID), select service "Set Single Attribute" (code 10 hex), Insert "15" in the Class section (value from table); Instance "3" (value from table), Attribute "1" (value from table) and desired Data 0 or 1 (value from table).



5.5 Communication Fault/Idle Mode Parameter (Sec 4.4)

This parameter is used to set the behaviors of output points (bits) during a communication fault or an "idle" event (when a PLC is in "Idle mode" not in RUN mode). The parameter shown below is used to determine what state/action the outputs (coils) will have during an "Idle" event and a "Fault" event. It will allow control of all output points, valves, on the manifold.

The user, through the graphic display or software, can determine how the outputs (coils) behave when a communication fault or idle actions occurs. These settings are non-volatile and thus will not change upon loss of power.

The two behavior options are:

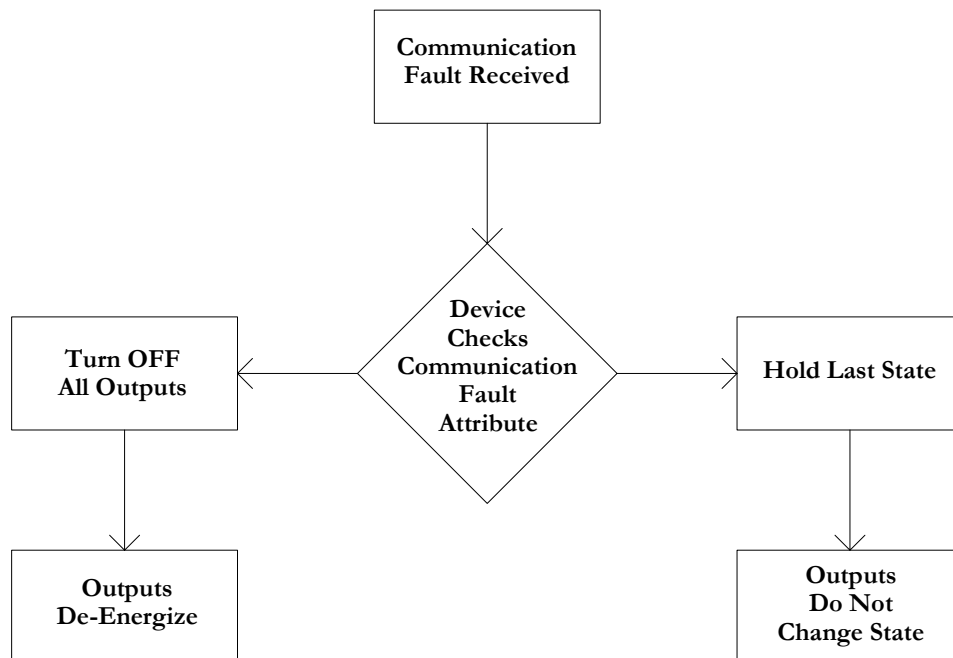
1. Hold Last State of Outputs
2. Turn Off All Outputs

Communication Fault/Idle Mode Sequence

The Communication Fault/Idle Mode parameter determines the output state/action if the device encounters a communication fault and/or idle condition. A Communication Fault is defined as an inability for the master node to communicate with a slave node on a network. Idle Mode is a condition when the processor is in program mode.

The process for determining the output state during a Communication Fault/Idle Mode is as follows:

1. The device receives a Communication Fault/Idle Mode event.
2. The device determines what action to take based on the Communication Fault/Idle Mode attribute setting.
3. If the attribute is set to turn off all outputs, all of the outputs (coils) will turn off (Factory Default Setting).
4. If the attribute is set to hold last state, all of the outputs (coils) will hold their last state.



6. DeviceNet™ Mapping

6.1 I/O Sizes - Rx/Tx

Outputs (Valves)

Outputs are defined as any valve solenoid coil attached. The factory default valve size is set at (32) coils, 4 bytes of output data. This is configurable to (64), (96), or (128) coils.

Inputs (Status)

Inputs are defined as status bits (i.e. status input bits produced by output (valve) drivers, and Diagnostic Word information). Therefore, the input size represents only Status information. Both the Status Inputs and the Diagnostic Word data are non-settable. Please reference the following pages for a detailed mapping.

Total I/O Size

The total I/O size of the 580 DeviceNet™ Node is fixed based on the coil configuration chosen:

32 coils: Rx = 6, Tx = 4

64 coils: Rx = 10, Tx = 8

96 coils: Rx = 14, Tx = 12

128 coils: Rx = 18, Tx = 16

6.2 Bit Mapping Rules

There is not much variation in the bit mapping for a 580 DeviceNet™ manifold, the only difference depends on whether a single or a double solenoid valve is used. The following is a breakdown of the bit mapping rules associated with the AVENTICS 580 DeviceNet™ Valve Manifold.

- 1) Solenoid coil outputs are connected to the valve coils using the Z-Boards™.
- 2) Each solenoid coil output has an associated status input bit (refer to the section labeled, "Output Short Circuit Protection", on page 3-19 for functional details).
- 3) Solenoid coil output addressing begins at the 1st manifold station nearest the node, using the "14" coil 1st and then, if applicable, the "12" coil, and continues in ascending order away from the communication node.
- 4) Each manifold station allocates 1 or 2 output bits. This is dependent on the Z-Board™ type installed. A single Z-Board™ allocates 1 output bit. A double Z-Board™ allocates 2 output bits.
- 5) Z-Boards™ can be used in any arrangement (all singles, all doubles, or any combination). Per station selection is limited based on the fact that 502 and 503 manifolds are a minimum of two stations, and the 501 is a minimum of three or four stations.



Single solenoid valves can be used with double Z-Boards™. However, one of the two available outputs will remain unused. Refer to the Mapping Examples on the following pages.

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6.3 Mapping Example #1

Assumed Settings

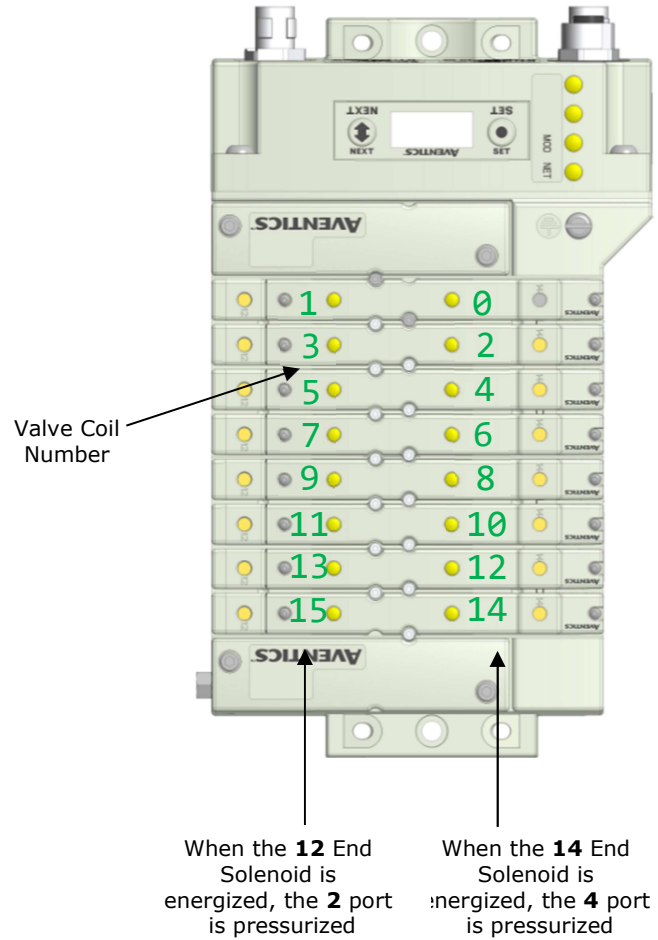
- Double Z-Boards™ used with all valves
- All Double-Solenoid valves
- Diagnostic Word is present (non-settable)
- 32 coils (4 Bytes) configuration

Manifold I/O Configuration

Description	In	Out
	Bytes	
Diagnostic Word	2	0
Local Valve Size:	4	4
Total:	6	4

How to Order

Qty	Part Number
1	8501AV8H100VA00
4	R501A2B40MA00F1
1	H501AMM4BMA0010
4	R501A2B40MA00F1
1	H501AMM4BMA0010
1	P580AEDN1010A00
	ASSEMBLED



Output Table								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Valve Coil No. 7	Valve Coil No. 6	Valve Coil No. 5	Valve Coil No. 4	Valve Coil No. 3	Valve Coil No. 2	Valve Coil No. 1	Valve Coil No. 0
1	Valve Coil No. 15	Valve Coil No. 14	Valve Coil No. 13	Valve Coil No. 12	Valve Coil No. 11	Valve Coil No. 10	Valve Coil No. 9	Valve Coil No. 8
2	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved
3	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved

Input Table								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0 (Optional)	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Comm. Module Diagnostic Bit
1 (Optional)	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
2 (Optional)	Coil No. 7 Status	Coil No. 6 Status	Coil No. 5 Status	Coil No. 4 Status	Coil No. 3 Status	Coil No. 2 Status	Coil No. 1 Status	Coil No. 0 Status
3 (Optional)	Coil No. 15 Status	Coil No. 14 Status	Coil No. 13 Status	Coil No. 12 Status	Coil No. 11 Status	Coil No. 10 Status	Coil No. 9 Status	Coil No. 8 Status
4 (Optional)	Coil No. 23 Status	Coil No. 22 Status	Coil No. 21 Status	Coil No. 20 Status	Coil No. 19 Status	Coil No. 18 Status	Coil No. 17 Status	Coil No. 16 Status
5 (Optional)	Coil No. 31 Status	Coil No. 30 Status	Coil No. 29 Status	Coil No. 28 Status	Coil No. 27 Status	Coil No. 26 Status	Coil No. 25 Status	Coil No. 24 Status



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6.4 Mapping Example #2

Assumed Settings

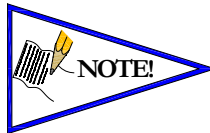
- Double Z-Boards™ used with all valves
- All Single-Solenoid valves
- Diagnostic Word is present (non-settable)
- 32 coils (4 Bytes) configuration

Manifold I/O Configuration

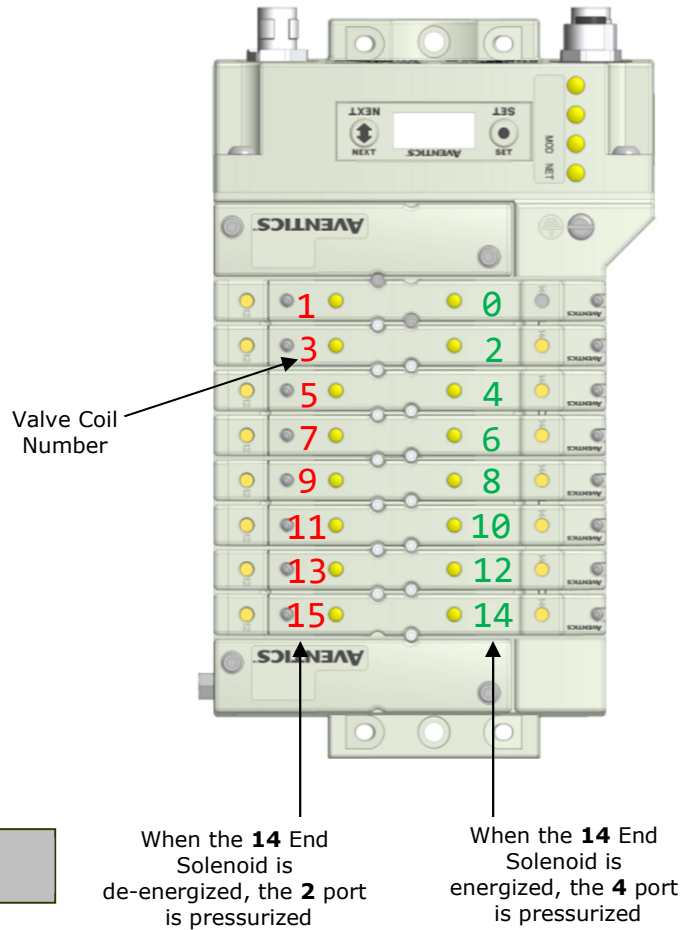
Description	In	Out
	Bytes	
Diagnostic Word	2	0
Local Valve Size:	4	4
Total:	6	4

How to Order

Qty	Part Number
1	8501AV8H100VA00
4	R501A2B10MA00F1
1	H501AMM4BMA0010
4	R501A2B10MA00F1
1	H501AMM4BMA0010
1	P580AEDN1010A00
	ASSEMBLED



Coils identified in **RED** are allocated and reserved; refer to mapping table below.



Output Table								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Allocated and Reserved	Valve Coil No. 6	Allocated and Reserved	Valve Coil No. 4	Allocated and Reserved	Valve Coil No. 2	Allocated and Reserved	Valve Coil No. 0
1	Allocated and Reserved	Valve Coil No. 14	Allocated and Reserved	Valve Coil No. 12	Allocated and Reserved	Valve Coil No. 10	Allocated and Reserved	Valve Coil No. 8
2	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved
3	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved	Allocated and Reserved

Input Table								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0 (Optional)	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Comm. Module Diagnostic Bit
1 (Optional)	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
2 (Optional)	Coil No. 7 Status	Coil No. 6 Status	Coil No. 5 Status	Coil No. 4 Status	Coil No. 3 Status	Coil No. 2 Status	Coil No. 1 Status	Coil No. 0 Status
3 (Optional)	Coil No. 15 Status	Coil No. 14 Status	Coil No. 13 Status	Coil No. 12 Status	Coil No. 11 Status	Coil No. 10 Status	Coil No. 9 Status	Coil No. 8 Status
4 (Optional)	Coil No. 23 Status	Coil No. 22 Status	Coil No. 21 Status	Coil No. 20 Status	Coil No. 19 Status	Coil No. 18 Status	Coil No. 17 Status	Coil No. 16 Status
5 (Optional)	Coil No. 31 Status	Coil No. 30 Status	Coil No. 29 Status	Coil No. 28 Status	Coil No. 27 Status	Coil No. 26 Status	Coil No. 25 Status	Coil No. 24 Status



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6.5 Diagnostic Word

<i>Diagnostic Word Format</i>								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0 (Comm. Status)	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Switched Power Status (1=Error)
1 (Reserved)	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

Byte 0 (Communication Status)

Byte 0, Bit 0 Switched Power Status = Bit is high when valve (output) power is not present on the comm. module.

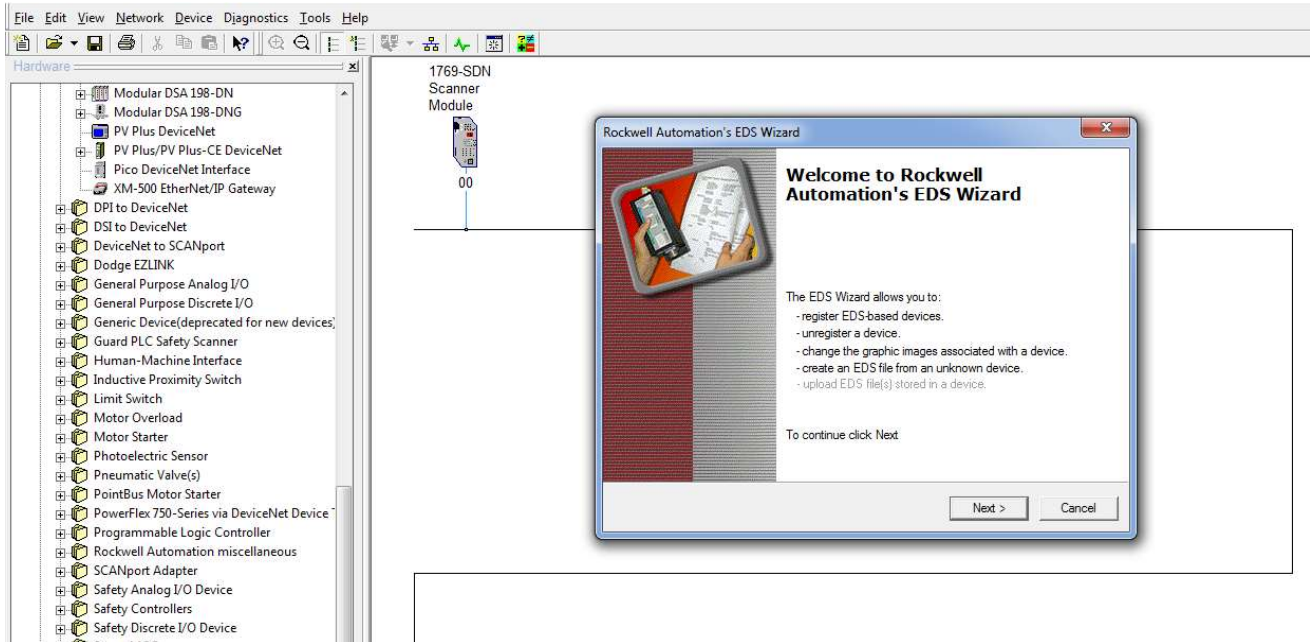
Byte 0, Bit 1 Un-switched Power Status = Bit is high when node power is below 19VDC

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6.6 Commissioning DeviceNet™ Node with RSNetWorx™ software

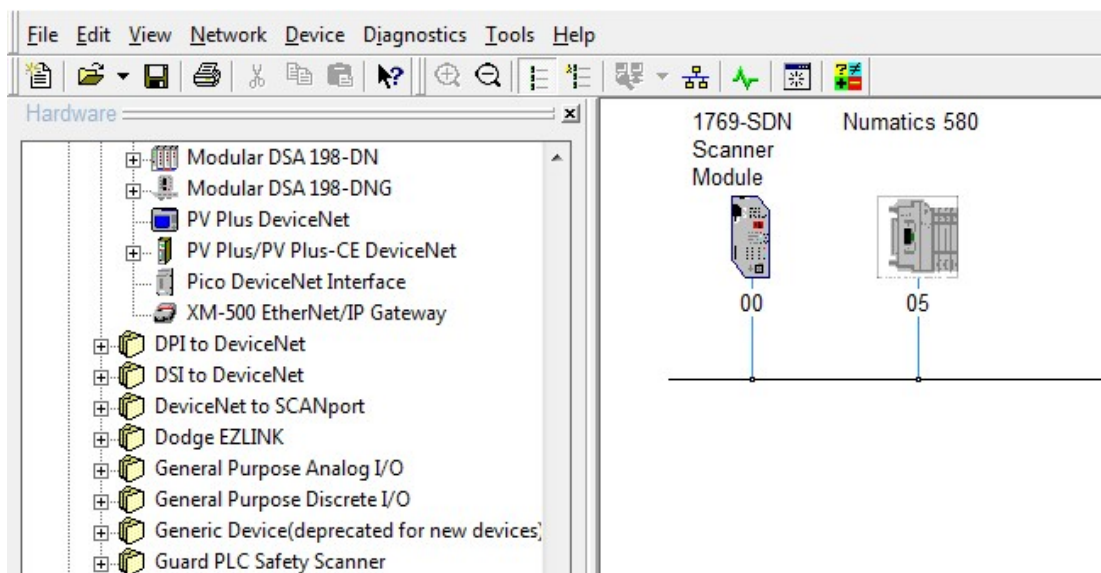
1) Register the AVENTICS 580 DeviceNet™ Node EDS File

Download the AVENTICS 580 DeviceNet™ Node EDS file from www.ASCO.com/G3. Open RSNetWorx™ for DeviceNet™ select "Tools" and run the "EDS Wizard" to register the AVENTICS 580 DeviceNet™ Node.



2) Add the 580 DeviceNet™ Interface to the RSNetWorx™ configuration

From RSNetWorx™ for DeviceNet™ add the AVENTICS 580 DeviceNet™ Node. Double click on the Numatics address to modify the DeviceNet™ address. Enter the address for the 580 DeviceNet™ Node.



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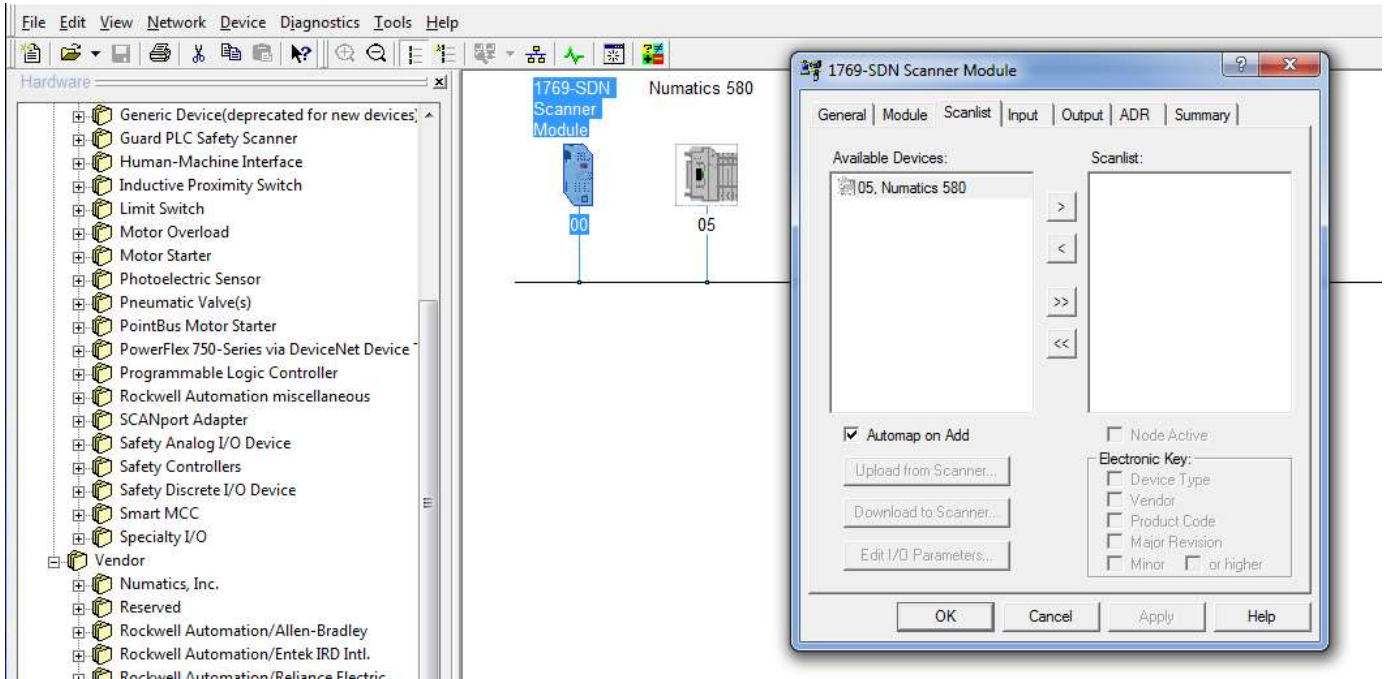


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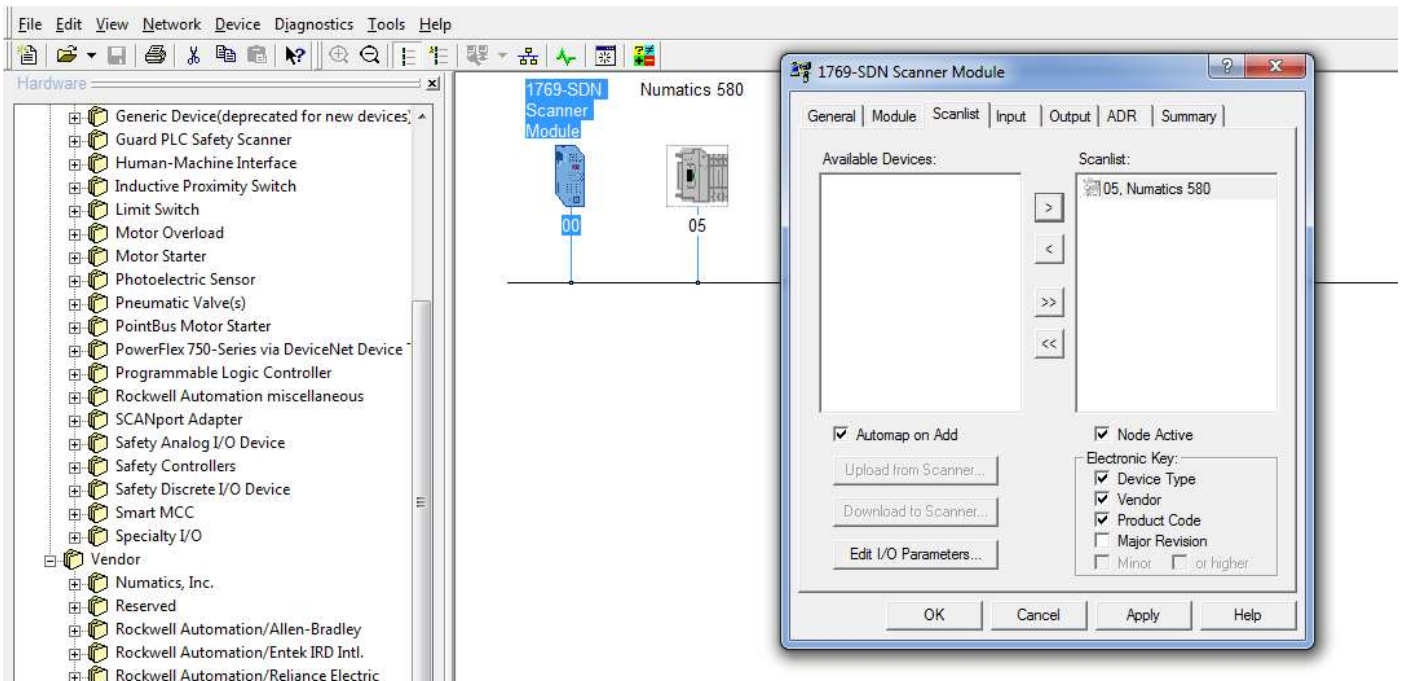
3) Configure the DeviceNet™ scanner module.

Double click on the DEVICENET™ scanner and select "Scanlist".



4) Add the AVENTICS 580 DeviceNet™ node to the "Scanlist"

Select Numatics 580 under available devices. Select > to move Numatics 580 into the "Scanlist". Select Edit I/O Parameters.



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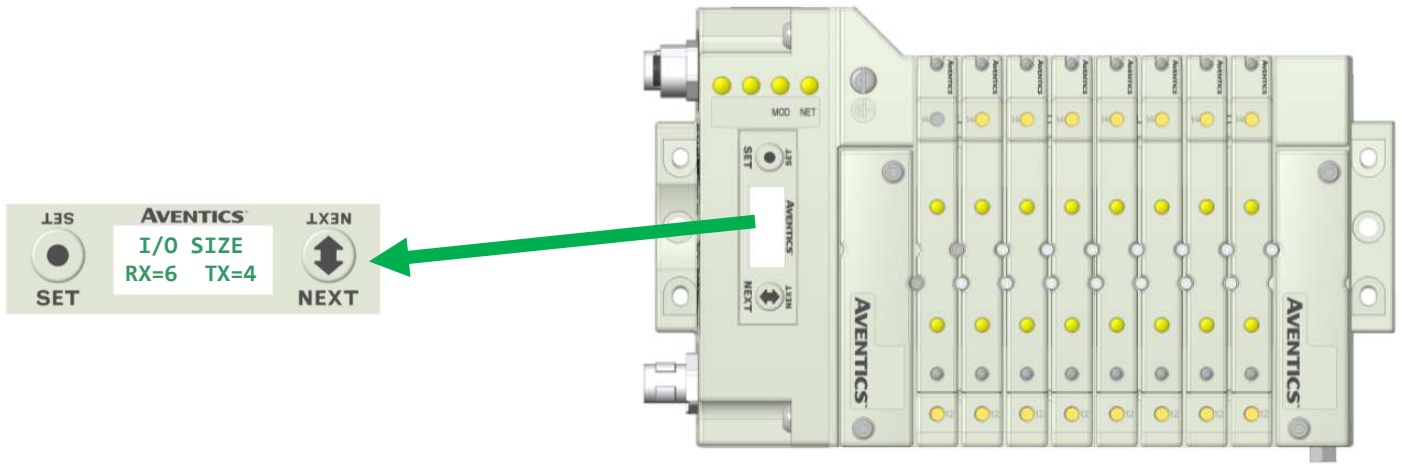


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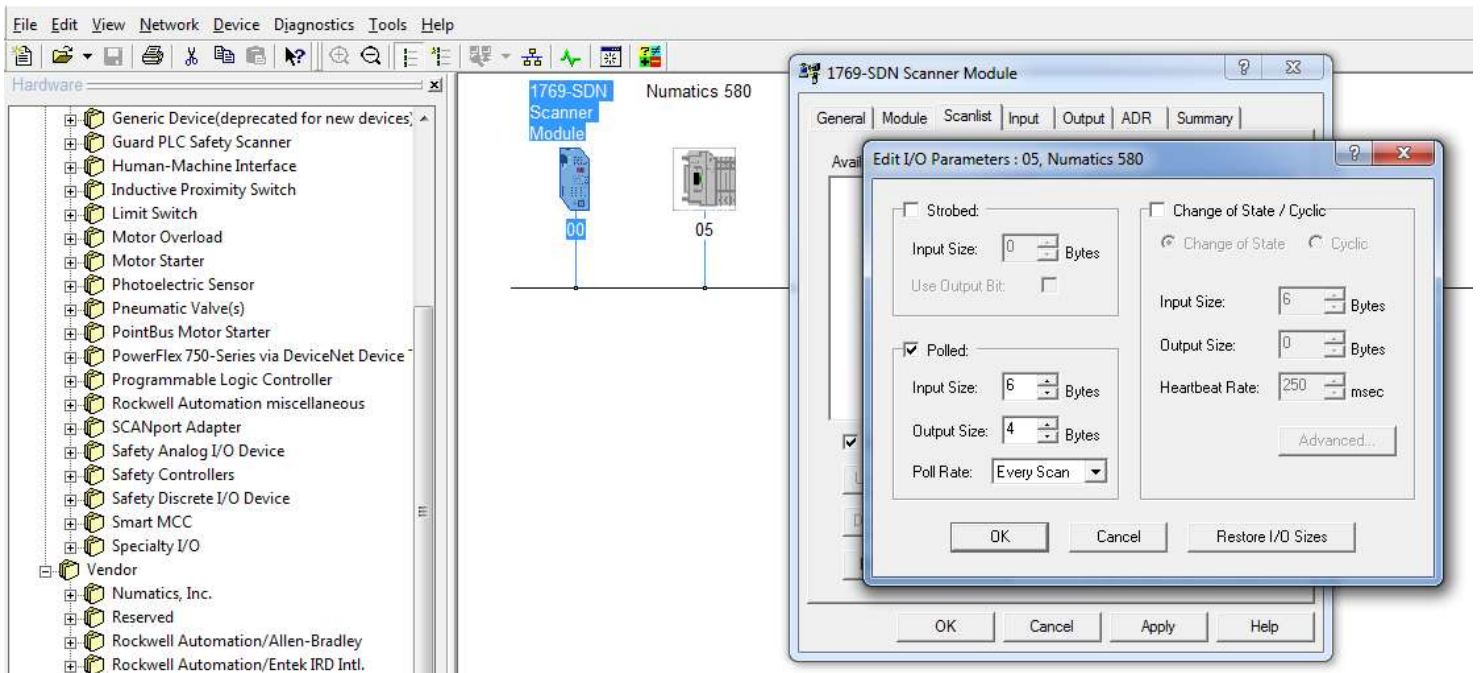
I/O sizes - RX and TX Values

The I/O sizes (RX and TX bytes) for the AVENTICS 580 DeviceNet™ node are fixed; Rx = 6 and Tx = 4. See page 4-22 for the reference location of this screen.



5) Enter the I/O sizes as Scan List Parameters

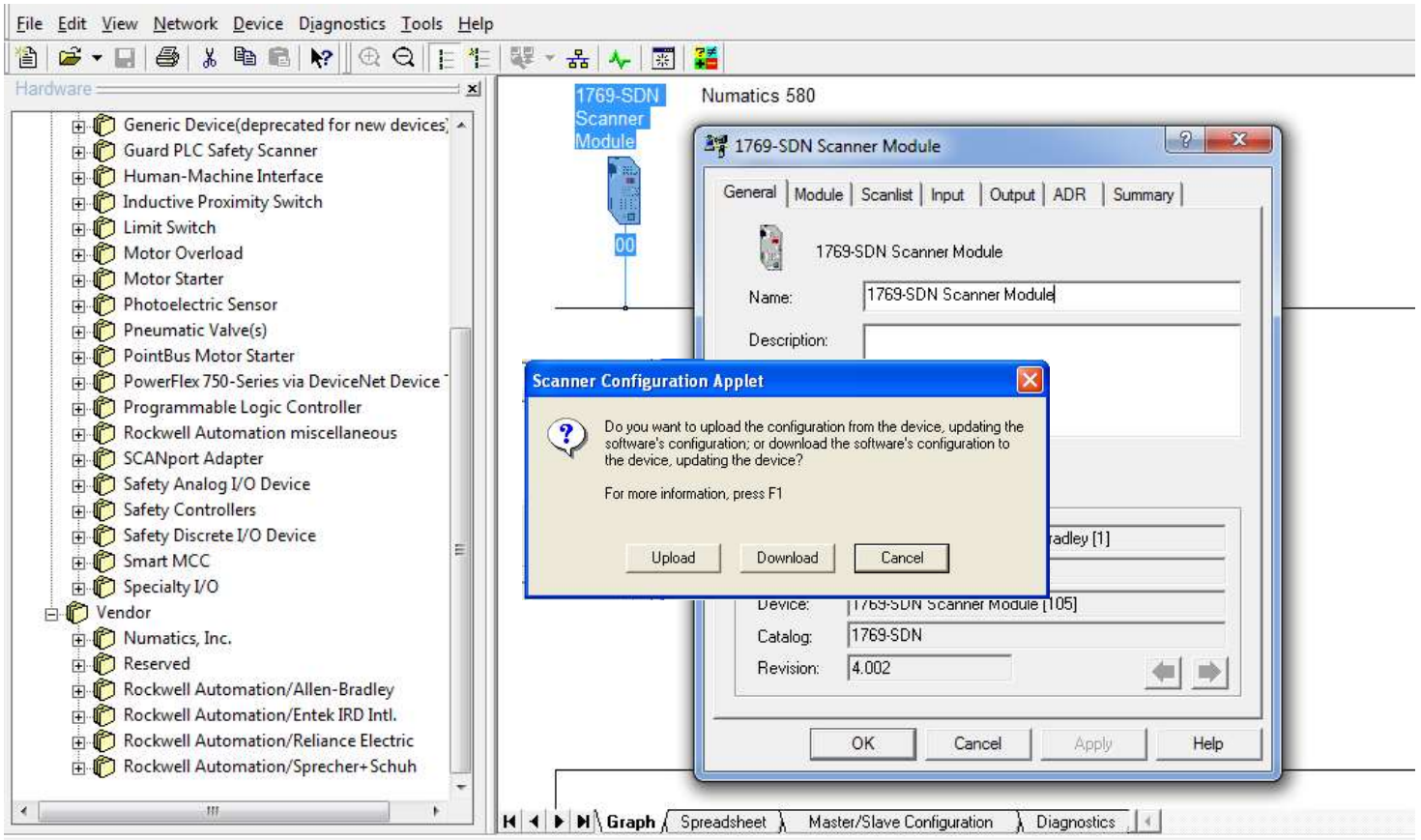
The set I/O sizes (RX=6 TX=4 in this example) are assigned in the polled section of the scan list. Select OK to exit 05, Numatics 580, I/O parameters.



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6) Download the scanner module parameters

Go online and **download** the scanner parameters (includes "ScanList") to the scanner module.



7. Extended Coil Capability

7.1 Extended Coil Valve driver IO Mapping

IO Mapping for each additional 501 series 32 coil valve driver added to the manifold assembly

<i>Input Mapping</i>								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X	Coil 7 Status	Coil 6 Status	Coil 5 Status	Coil 4 Status	Coil 3 Status	Coil 2 Status	Coil 1 Status	Coil 0 Status
X+1	Coil 15 Status	Coil 14 Status	Coil 13 Status	Coil 12 Status	Coil 11 Status	Coil 10 Status	Coil 9 Status	Coil 8 Status
X+2	Coil 23 Status	Coil 22 Status	Coil 21 Status	Coil 20 Status	Coil 19 Status	Coil 18 Status	Coil 17 Status	Coil 16 Status
X+3	Coil 31 Status	Coil 30 Status	Coil 29 Status	Coil 28 Status	Coil 27 Status	Coil 26 Status	Coil 25 Status	Coil 24 Status

<i>Output Mapping</i>								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X	Valve Coil No. 7	Valve Coil No. 6	Valve Coil No. 5	Valve Coil No. 4	Valve Coil No. 3	Valve Coil No. 2	Valve Coil No. 1	Valve Coil No. 0
X+1	Valve Coil No. 15	Valve Coil No. 14	Valve Coil No. 13	Valve Coil No. 12	Valve Coil No. 11	Valve Coil No. 10	Valve Coil No. 9	Valve Coil No. 8
X+2	Valve Coil No. 23	Valve Coil No. 22	Valve Coil No. 21	Valve Coil No. 20	Valve Coil No. 19	Valve Coil No. 18	Valve Coil No. 17	Valve Coil No. 16
X+3	Valve Coil No. 31	Valve Coil No. 30	Valve Coil No. 29	Valve Coil No. 28	Valve Coil No. 27	Valve Coil No. 26	Valve Coil No. 25	Valve Coil No. 24

IO Mapping for each additional 502/503 series 16 coil valve driver added to the manifold assembly

<i>Input Mapping</i>								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X	Coil 7 Status	Coil 6 Status	Coil 5 Status	Coil 4 Status	Coil 3 Status	Coil 2 Status	Coil 1 Status	Coil 0 Status
X+1	Coil 15 Status	Coil 14 Status	Coil 13 Status	Coil 12 Status	Coil 11 Status	Coil 10 Status	Coil 9 Status	Coil 8 Status

<i>Output Mapping</i>								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X	Valve Coil No. 7	Valve Coil No. 6	Valve Coil No. 5	Valve Coil No. 4	Valve Coil No. 3	Valve Coil No. 2	Valve Coil No. 1	Valve Coil No. 0
X+1	Valve Coil No. 15	Valve Coil No. 14	Valve Coil No. 13	Valve Coil No. 12	Valve Coil No. 11	Valve Coil No. 10	Valve Coil No. 9	Valve Coil No. 8

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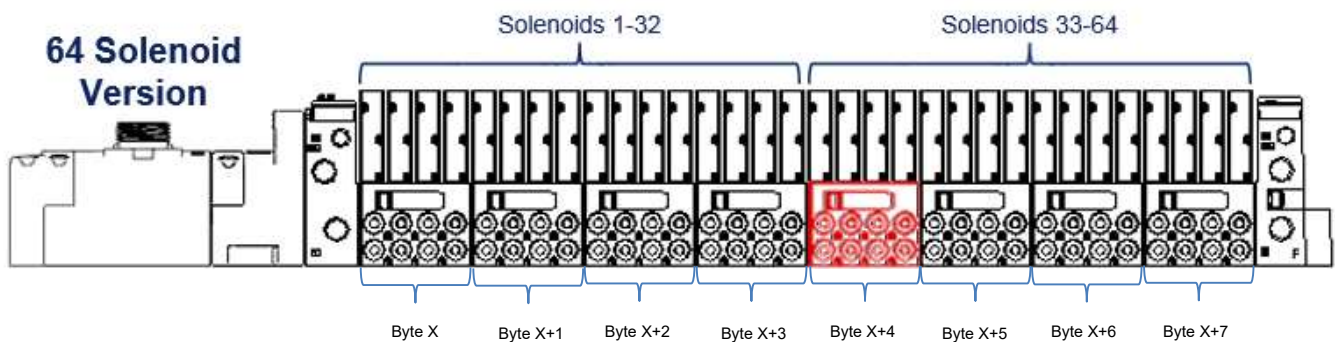
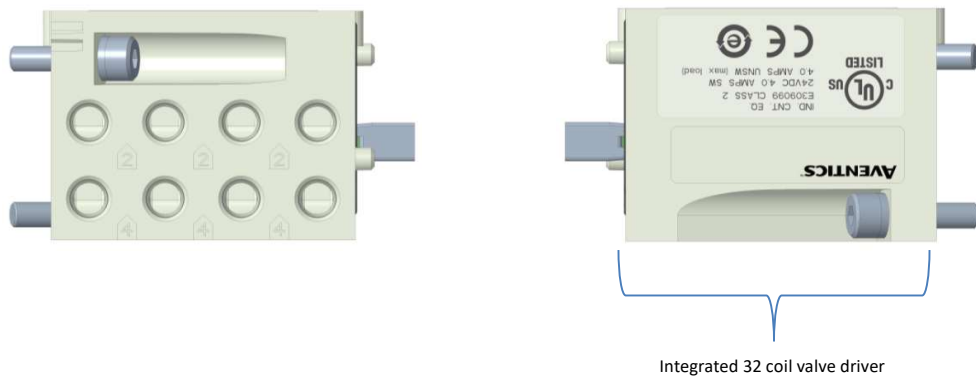
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7.2 501 Series, up to 64 solenoid coils

501 series, 4 station manifold block with an integrated 32 coil valve driver

- To be used with 501 series valves on valve manifold assemblies with 33-64 coils.
- Only to be used on assemblies where additional power, supply and/or exhaust capacity is not required.



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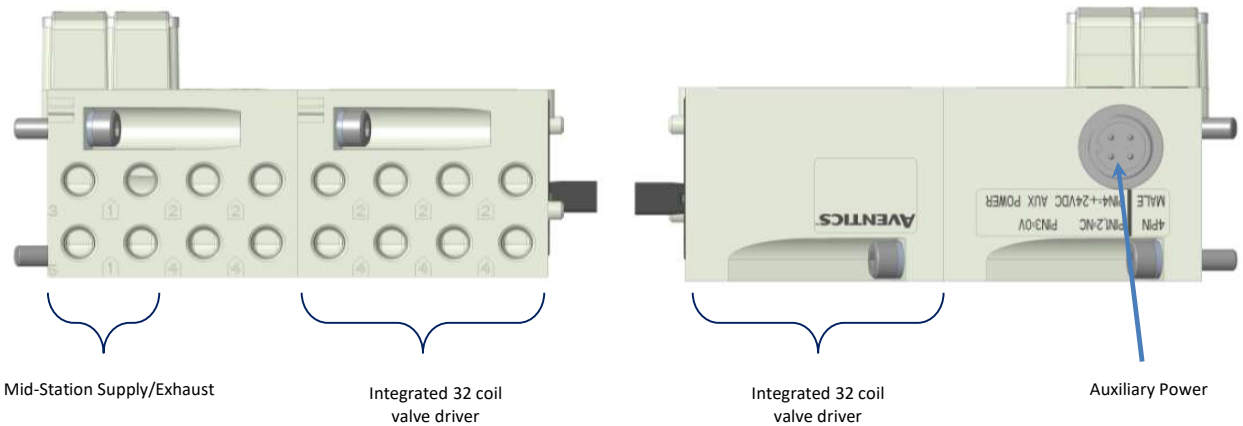
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7.3 501 Series, up to 128 solenoid coils

501 series, 8-station manifold with integrated 32 coil valve driver, auxiliary power connector and mid-station supply and exhaust ports

- To be used with 501 series valves on valve manifold assemblies with 33-128 coils.
- Up to 3 of these valve drivers can be used on each assembly.
- Required to use on manifold assemblies larger than 64 coils, this manifold block has a M12 power connector to supplement the main power connection on the 580 node and two additional port 1 supply and port 3/5 exhaust ports.
- Aux power is required to be connected to the aux power connector provided on the extended coil valve driver.

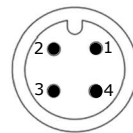
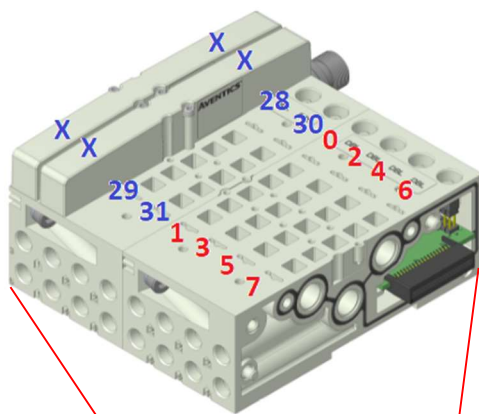


Mid-Station Supply/Exhaust

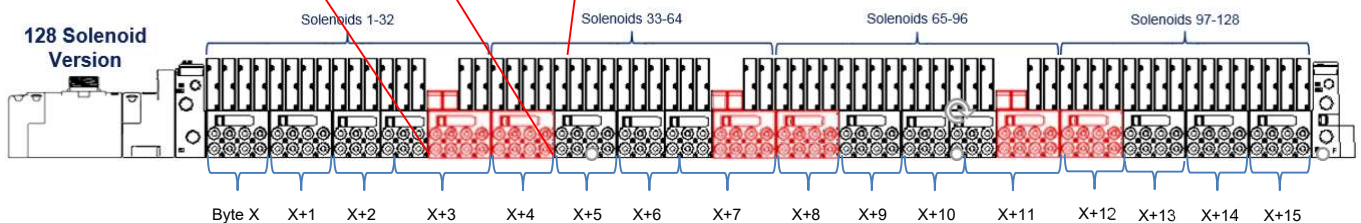
Integrated 32 coil valve driver

Integrated 32 coil valve driver

Auxiliary Power



- Pin # 1 = No Connection**
- Pin # 2 = No Connection**
- Pin # 3 = 0 VDC**
- Pin # 4 = +24 VDC**



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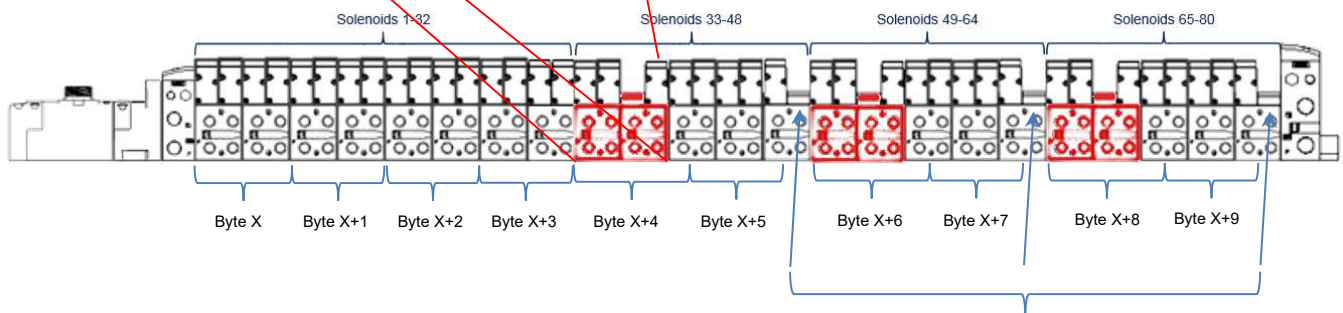
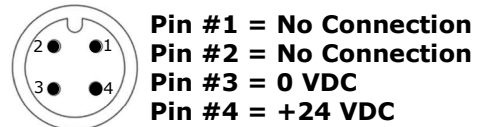
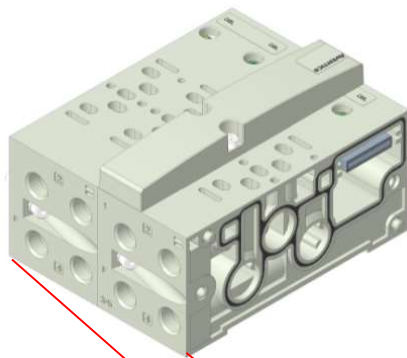
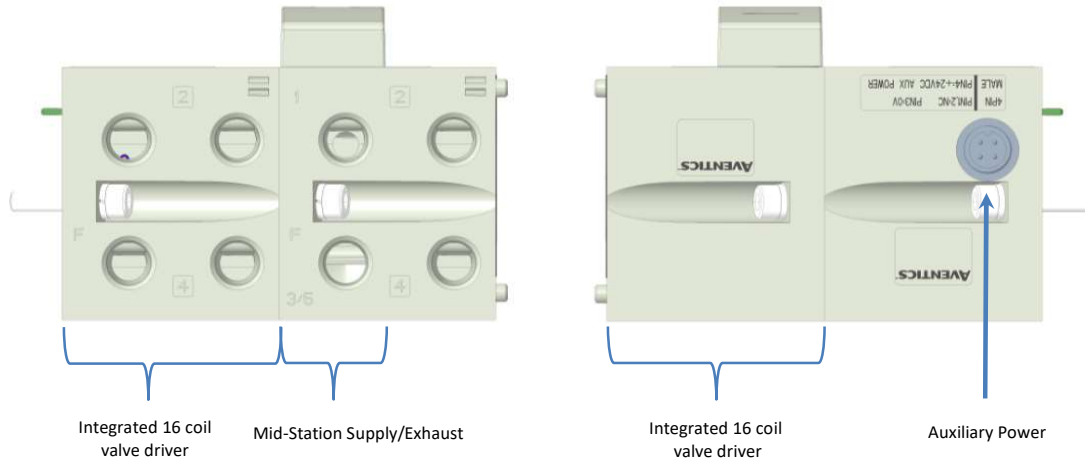
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7.4 502 and 503 Series, up to 80 coils

502 and 503 series, 4-station manifold with integrated 16 coil valve driver, power connector and mid-station supply and exhaust ports

- To be used with 502 and 503 series valves on valve manifold assemblies with 33-80 coils.
- Up to 3 of these valve drivers can be used on each assembly.
- Required to use on manifold assemblies larger than 32 coils, this manifold block has an M12 power connector and two additional port 1 supply and port 3/5 exhaust ports.
- Aux power is required and will provide power to the 16 coils available via the extended coil valve driver.



Recommended blank station plates to achieve maximum number of coils with least number of stations



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8. Appendix

8.1 System Specifications

<i>Electrical</i>	
Supply Voltage	Valves (501, 502, 503): 24 VDC + 10%, -15% Node: 24 VDC ± 10%
Current	Total current on the Power Connector ("Valves" and "Node" Pins) must not exceed 4 Amps.
Reverse Polarity	Reverse polarity protection is provided on both Node and Valve power.
Recommended External Fuse	External fuses should be chosen depending upon manifold configuration. Please refer to power consumption chart on page 3-17 for additional fuse sizing information.
Spike Suppression	Output spike suppression is internally provided for valve outputs.
Valve Solenoid Coil Output Drivers	Maximum 0.5 Amps per output. All output points are short circuit protected and have internal spike suppression.
Operating Temperature for Electronic Components	-10 to 115°F (-23 to 46°C)

8.2 Factory Default Settings

<i>Description</i>	<i>Default</i>
Node Address	63
Baud Rate	125 KB
Rx/Tx Values	Rx = 6 / Tx = 4 (non-settable)
Diagnostic Word	Enabled (non-settable)
Valve Diagnostics	Enabled (non-settable)
Fault Action	Reset to Off
Idle Action	Reset to Off
Brightness	(non-settable)

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8.3 Troubleshooting

Communication Node

<i>Symptom</i>	<i>Possible Cause</i>	<i>Solution</i>
The wrong valve solenoid coils are being energized.	Z-Board™ type mismatch. Single Z-Board™ present where double Z-Board™ expected or vice versa.	Check that correct Z-Board™ types are installed.
Valve outputs do not energize.	Output power not present or connected improperly on Power connector.	Check for 24VDC on the +24 VDC (Valves) pin of the M12 Power connector of the 580 Node.

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8.4 Glossary of Terms

The following is a list and description of common terms and symbols used throughout this document:

Term	Description
ADR	Auto-Device Replacement is a feature (enabled by Allen Bradley scanners) that consists of Configuration Recovery and Auto-Address Recovery. Configuration Recovery (CF) refers to the scanner's ability to store a device's configuration. Auto-Address Recovery (AAR) refers to the ability of the scanner to change a device's node address from 63 to that desired by the scanner. Please refer to Allen Bradley's Release Notes No. 1747-5.8-RN1 for additional information.
Assembly parameter	An AVENTICS term describing a user definable parameter that allows user to allocate the number of valve output drivers. A 0, 8, 16, 24, 32 option is available and is helpful if there are I/O memory constraints in the PLC.
Auto-Baud	A technology that enables the communication node to automatically set its own baud rate to match the DeviceNet™ scanners' baud rate.
Bit	Smallest unit of digital information either a "0" or "1".
Bit mapping	Chart showing which bit is connected to which physical input or output point.
Byte	8 bits (1/2 word).
CAN_H	Controller Area Network – High; Communication Line.
CAN_L	Controller Area Network – Low; Communication Line.
CANBUS	Serial communication BUS network based on CAN protocol.
Change of State	I/O message type in which either the expiration of the transmission timer or a change in input state triggers data production.
Comm. Fault	One or more of the I/O connections have timed out.
Cyclic	I/O message type in which data production is triggered by the expiration of the transmission timer.
DeviceNet Manager	Allen-Bradley's DeviceNet™ configuration software (Replaced by RSNetWorx).
Discrete I / O	The Inputs / Outputs that are available via the "Discrete I/O" side of manifold.
EDS file	<u>E</u> lectronic <u>D</u> ata <u>S</u> heet. A text file, which contains specific product information, definitions of product capabilities and configurable parameters necessary for operation on a DeviceNet™ network.
EDS Stub file	An abridged version of the EDS file, which contains only the minimum information necessary to make the product functional on a DeviceNet™ network.
Ground	This term is used to indicate an earth ground.
Group 2	DeviceNet™ message group applicable to AVENTICS' Serial/Bus products.
I/O	Any combination of Inputs and Outputs.
Idle	A zero (0) length poll message (i.e.: scanner in program mode).
MAC ID	Media Access Connection Identification (00-63) – Node (network drop) address.
NEMA	National Electrical Manufacturers Association.
ODVA	Open DeviceNet™ Vendor Association (www.odva.org)
Polled	I/O message type in which the device consumes I/O data from its master and produces I/O data when the master requests it.
RS NetWorx	Allen-Bradley's DeviceNet™ configuration software.



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Glossary of Terms Continued

Term	Description
Rx/Tx	Rx = Consumed byte size; analogous to Input byte size. Tx = Produced byte size; analogous to Output byte size.
Sinking (NPN)	Method of connecting electrical circuits in which the zero (0) volt DC side is switched and the common is positive
SCP	Short Circuit Protection
Sourcing (PNP)	Method of connecting electrical circuits in which the positive side is switched and the common is zero (0) volts DC.
Status Input bit	A bit in the input table that reports the health of a corresponding output. Indicates short circuit or open coil (load) diagnostics
Word	2 Bytes (16 bits)
Z-Board™	Circuit board installed in the valve sub-base which electrically connects the valve solenoid to the electrical/electronics interface. Available in single or double solenoid versions.



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8.5 Technical Support

For technical support, contact your local AVENTICS distributor. If further information is required, please call AVENTICS Technical Support Department at (248) 596-3333.

Issues relating to network setup, PLC programming, sequencing, software related functions, etc. should be handled with the appropriate product vendor.

Information on device files, technical manuals, local distributors, and other AVENTICS products and support issues can be found on the ASCO website at www.ASCO.com.



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