Pneumatic Division
Richland, Michigan USA
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Maintenance / Installation / Service Instruction Sheets

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Expansion Power Unit, PSSSE24A (24VDC)

	Document Number	Description
☐	E105P	Isysnet 24VDC Expansion Power Supply, Series A
☐	PSS-SG001	Isysnet Serial Bus System Selection Guide

Pneumatic Division
Richland, Michigan 49083

Installation & Service Instructions E105P

Isysnet 24VDC Expansion Power Supply, Series A (PSSSE24A)

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Doc.# E105P, ECN# 060961, Rev. 2

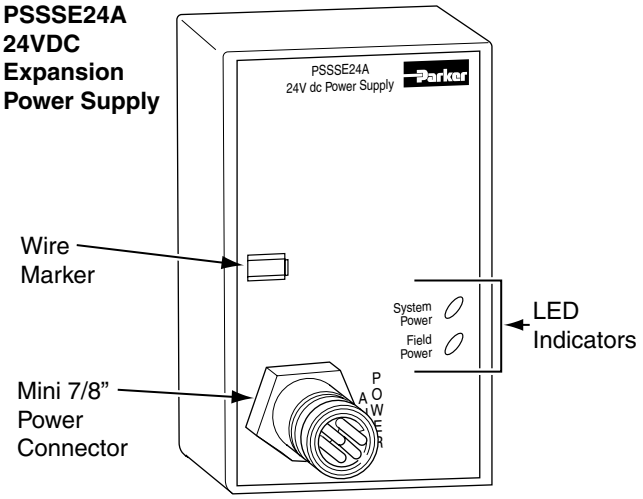
⚠WARNING

- **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 Safety Guide section of Pneumatic Division catalogs or you can download the **Pneumatic Division Safety Guide** at: www.parker.com/safety

PSSSE24A 24VDC Expansion Power Supply



ATTENTION

Do not connect 120/240VAC to the PSSSE24A terminals. Damage to the supply will result.

ATTENTION

You can only use the PSSSE24A expansion power unit with the I/O adapters.

Introduction

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

Isysnet 24VDC Expansion Power Supply, Series A

(PSSSE24A)

The 24VDC expansion power supply unit (PSSSE24A) passes 24VDC field power to the I/O modules to the right of the power supply. This unit extends the backplane bus power for up to 17 I/O modules to the right of the supply and creates a new field voltage partition.

The expansion power supply also separates field power from I/O modules to the left of the unit, effectively providing functional and logical partitioning for:

- separating field power between input and output modules
- separating field power to the analog and digital modules
- grouping modules to perform a specific task or function

You can use multiple expansion power units with the I/O adapters to assemble a full system. For instance, if you are using the PSSCDM12A or PSSCDM18PA adapter, you may use a PSSSE24A expansion power unit to add additional modules in 5 to 17 module increments. For example, if you had a 36 module system with a I/O adapter, you would have two PSSSE24A expansion power units to provide more PointBus current for modules to the right of the supply.

⚠ 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 Parker Hannifin Corporation, 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 Parker Hannifin Corporation 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* (available online at www.parker.com/pneu/isysnet) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, 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 Parker Hannifin Corporation be responsible or liable for indirect or consequential damages 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, Parker Hannifin Corporation cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Parker Hannifin Corporation 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 E115P (“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 wriststrap.
- 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.

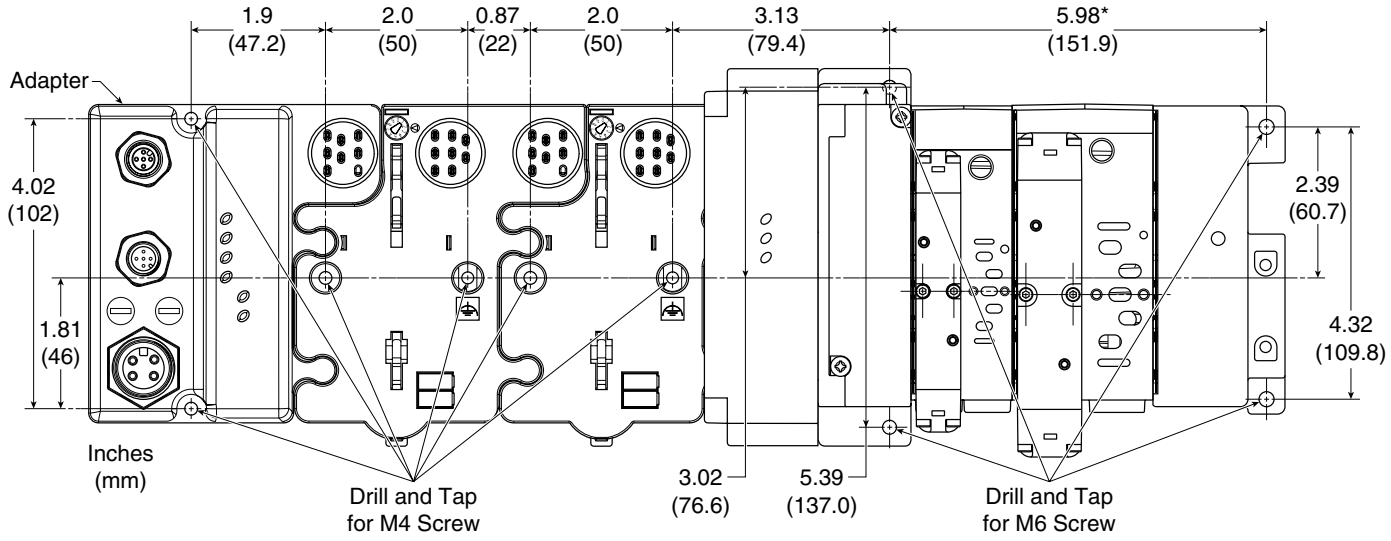
Mount the I/O Base

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.

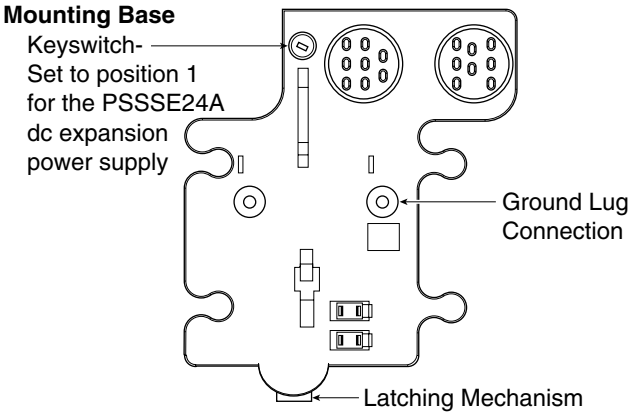
A mounting illustration for the base with an adapter is shown below.



*Depending on the type and number of manifolds, this dimension may vary. Refer to Catalog 0600P-# for additional information.

Install the Mounting Base as Follows:

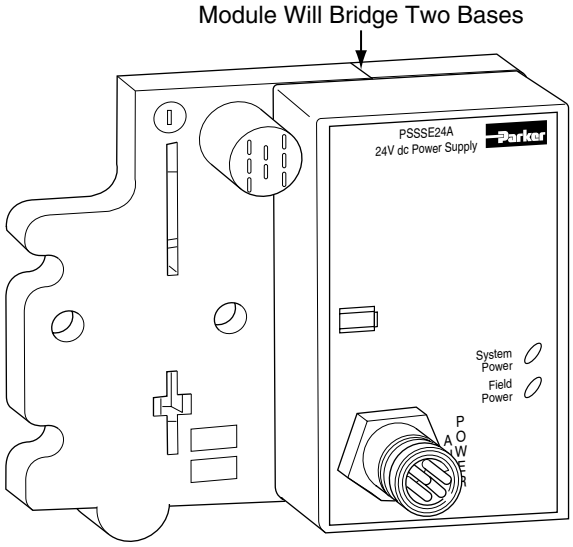
1. Lay out the required points as shown above in the drilling dimension drawing.
2. Drill the necessary holes for #8 (M4) machine or self-tapping screws.
3. Mount the base using #8 (M4) screws.
4. Ground the system using the ground lug connection. (The ground lug connection is also a mounting hole.)



Install the 24VDC Expansion Power Supply

To Install the Power Supply, Proceed as Follows:

1. Using a bladed screwdriver, rotate the keyswitch on the mounting base clockwise until the number 1 aligns with the notch in the base.
2. Position the power supply vertically above the mounting base. The module will bridge two bases.



3. Push the power supply down until it engages the orange latching mechanism. You will hear a clicking sound when the power supply is properly engaged. The locking mechanism will lock the power supply to the base.

Remove the 24VDC Expansion Power Supply From the Mounting Base

To Remove the Power Supply from the Mounting Base:

1. Put a flat blade screwdriver into the slot of the orange latching mechanism.
2. Push the screwdriver toward the I/O module to disengage the latch. The module will lift up off the base.
3. Pull the module off of the base.

Install a Replacement PSSSE24A to an Existing System

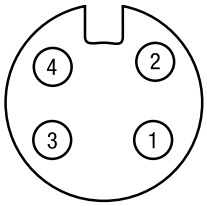
1. Remove the module to the right of the power supply from the mounting base.
2. If you have not done so already, remove the existing power supply from the mounting base.
3. Position the replacement power supply vertically above the mounting base.
4. Push the power supply down until it engages the orange latching mechanism. You will hear a clicking sound when the power supply is properly engaged and locked to the base.
5. Place the module to the right of the power supply back onto the mounting base.

Wire the 24VDC Expansion Power Supply

Following are wiring instructions for the 24VDC Expansion Power Supply.

PSSSE24A

Male In Connector (Mini 7/8")



(view into connector)
Pin 1 - User Power +
Pin 2 - Adapter Power +
Pin 3 - Adapter Power -
Pin 4 - User Power -

Note: User power is the 24VDC power for field devices. Adapter power is the 24VDC power for PSSSE24A. It is converted to 5VDC to power isysNet modules.

ATTENTION

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

Specifications

Following are specifications for the PSSSE24A Power Supply.

24VDC Expansion Power Supply - PSSSE24A	
I/O Module Capacity	5 to 17 I/O modules depending on each module's current rating
Power Supply adapter.	In order to comply with CE Low Voltage Directives (LVD), you must use a Safety Extra Low Voltage (SELV) or a Protected Extra Low Voltage (PELV) power supply to power the
Inputs Voltage Rating	12VDC, 24VDC nominal 10-28.8VDC range
Operating Voltage	10-28.8VDC
Input Current, Maximum	6A for 10ms
Backplane Output Current	5VDC, 1.3A
Field Side Power Requirements, Maximum	24VDC (+20% = 28.8VDC) @ 400 mA
Indicators	1 Green Field Power Status Indicator 1 Green 5V System Power Indicator
Module Location	Between I/O modules in system Breaks field power bus
PointBus Output Current	1A at 10-19.2V input; 1.3A at 19.2-28.8V input
Input Overvoltage Protection	Reverse polarity protected
Interruption	Output voltage will stay within specifications when input drops out for 10ms at 10V with maximum load
General Specifications	
Power Consumption, Maximum	9.8W @ 28.8VDC
Power Dissipation, Maximum	3.0W @ 28.8VDC
Thermal Dissipation, Maximum	10.0 BTU/hr. @ 28.8VDC
Isolation Voltage (continuous-voltage withstand rating)	50V rms Tested at 1250VAC rms for 60s
Field Power Bus Supply Voltage Voltage Range Supply Current	 12VDC, 24VDC nominal 10-28.8VDC range 10A maximum
Dimensions Inches (Millimeters)	1.25H x 2.63W x 4.25D (31.75H x 66.80W x 107.95D)
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): 5-95% non-condensing
Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock): Operating 30g Non-operating 50g
Vibration	IEC60068-2-6 (Test Fc, Operating): 5g @ 10-500Hz
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

General Specifications (continued)		
EFT/B Immunity	IEC 61000-4-4: ±4kV at 5kHz on power ports	
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on power 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	
Weight Imperial (Metric)	0.637 lb. (0.289 kg)	
Wiring Category[1]	1 - on power ports	
Keyswitch Position	1	
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. Use this Conductor Category information for planning conductor routing. Refer to Publication E115P, “Industrial Automation Wiring and Grounding Guidelines”.

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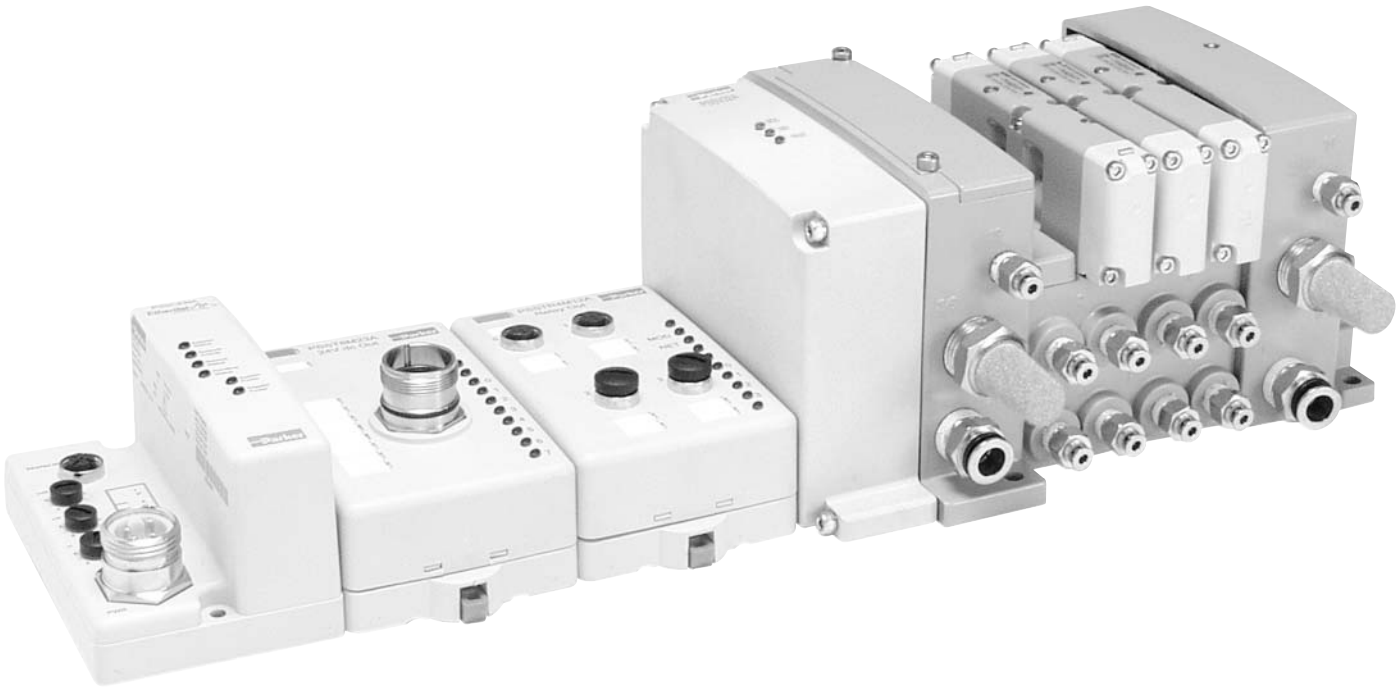
Isysnet Serial Bus System Selection Guide



isysnet

The Isysnet System

Isysnet has four major components:

- **Valve driver module** provide control for 32 solenoids
- **I/O modules** provide the field interface, system-interface circuitry, and bases for mounting
- **Communication interface modules** provide the network-interface circuitry
- **Power distribution module** provide the solution to expandability of the Isysnet system

Isysnet Features

- Highly modular design (1pt — 8pt modularity)
- Broad application coverage
- Channel-level diagnostics (LED and electronic)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Channel-level short-circuit detection with electronic feedback
- Parameter-level explicit messaging
- Removal and insertion under power (RIUP)
- DeviceNet™ expansion
- Horizontal and vertical mounting without derating
- 5g vibration
- Flash upgradable adapters and digital I/O
- Electronic and mechanical keying
- Robust backplane design
- Hot swapping of I/O modules
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, C-UL, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits

Isysnet Product Compatibiliy

The following chart illustrates the compatibility of Isysnet with other control platforms, especially with Rockwell Automation. For information regarding the differences between the networks and Isysnet, please refer to the Selecting a Network Interface section in this document.

	DeviceNet Adapter PSSCDM	ControlNet Adapter PSSCCNA	EtherNet Adapter PSSCENA	PROFIBUS Adapter PSSCPBA
PLC-5™ with Network Port	IOD	NS	NS	NA
SLC 500™ with Network Port	IOD	NS	NS	NA
PLC-5 Processor via Network Module	IOD	NS	NS	3
1756 Logix™ Communication Interface	IOD	IOD	IOD	3
PanelView™ Terminal	NA	NA	NA	NA
RSLinx™ Software	NA	NA	NA	NA
1769-L20, -L30 Controller with 1761- NET Interface	NA	NS	NS	NA
1769-L35E	NA	NA	IOD	NA
SoftLogix5800™	NS	NS	NS	NA
PC with RSLinx Only	NS	NS	NS	NA

IOD = I/O Data
NS = Not Supported
NA = Not Applicable
3 = Requires third party scanner module

Communication Considerations

Isysnet features are impacted by your network choice.

Network	Impact
DeviceNet PSSCDM12A and PSSCDM18PA	The PSSCDM12A and PSSCDM18PA provide two means of connecting a node of I/O to DeviceNet. A total of 63 Isysnet modules can be assembled on a single DeviceNet node. Expansion power supplies may be used to provide additional PointBus backplane current.
ControlNet™ PSSCCNA	A total of 63 Isysnet modules can be assembled on a single ControlNet node. Expansion power supplies may be used to provide additional PointBus backplane current. Up to 25 direct connections and 5 rack connections are allowed.
EtherNet/IP™ PSSCENA	A total of 63 Isysnet modules can be assembled on a single EtherNet/IP node. Expansion power supplies may be used to provide additional PointBus backplane current. Refer to the User Manual, publication PSS-UM004 to determine the ratings for direct and rack connections allowed.
PROFIBUS DP™ PSSCPBA	A total of 63 Isysnet modules can be assembled on a single PROFIBUS node. Expansion power supplies may be used to provide additional PointBus backplane current.

Specifying an Isysnet System

Follow these steps as you specify your Isysnet system:

Step	See Page	
1 Select a Communication Interface Module Choose the interface module for your operating system.	NetLinx™ Architecture Selecting a Network Selecting the DeviceNet Communication Interface	2 3 3
2 Select I/O Devices Based on Field Devices Location of the device Number of Isysnet modules needed Appropriate catalog number Number of I/O available per module Number of modules	Digital I/O Modules Analog I/O Modules Specialty I/O Module Valve Driver Module	6 7 9 10
3 Select Optional Power Component Choose optional component to extend backplane power	Expansion Power Unit Typical Configurations	10 12
4 Select Accessories	Cables and Cordsets	13
5 Placing Isysnet Modules Determine necessary dimensions based on the communication interface chosen.	Placing Isysnet Modules Mounting the Isysnet System	15 16

Step 1 - Select a Communication Interface Module

Selecting Isysnet Communication Interfaces

Rockwell Automation NetLinx Architecture

Separate communication interface adapters are available for different networks. Install adapters into the PointBus backplane to allow Isysnet modules to communicate with a controller.

NetLinx open network architecture is the Rockwell Automation strategy of using open networking technology for seamless, top-floor to shop-floor integration. The networks in the NetLinx architecture, DeviceNet, ControlNet, and EtherNet/IP, speak a common language and share a universal set of communication services. NetLinx architecture, part of the Integrated Architecture, seamlessly integrates all the components in an automation system from a few devices on one network to multiple devices on multiple networks including access to the Internet, helping you to improve flexibility, reduce installation costs, and increase productivity.

- EtherNet/IP is an open industrial networking standard that supports implicit and explicit messaging and uses commercial, off-the-shelf EtherNet equipment and physical media.
- ControlNet allows intelligent, high-speed control devices to share the information required for supervisory control, work-cell coordination, operator interface, remote device configuration, programming, and troubleshooting.
- DeviceNet offers high-speed access to plant-floor data from a broad range of plant-floor devices and a significant reduction in wiring.

Selecting a Network

You can configure your system for information exchange between a range of devices and computing platforms and operating systems.

Application Requirements	Network	Select
• Plant management (material handling) • Configuration, data collection, and control on a single, high-speed network • Time-critical applications with no established schedule • Data sent regularly • Internet/Intranet connection	EtherNet/IP	PSSCENA
• High-speed transfer of time-critical data between controllers and I/O devices • Deterministic and repeatable data delivery • Media redundancy • Controller redundancy • Intrinsic safety • Redundant controller systems	ControlNet	PSSCCNA
• Connections of low-level devices directly to plant-floor controllers, without interfacing them • Data sent as needed • More diagnostics for improved data collection and fault detection • Less wiring and reduced start-up time than a traditional, hard-wired system	DeviceNet	PSSCDM12A PSSCDM18PA
• Connecting to an existing PROFIBUS DP 5m bus, 12 MB network	PROFIBUS	PSSCPBA

Selecting the DeviceNet Communication Interface

Isysnet offers two interfaces for connecting to DeviceNet. Refer to the following table.

For These Features	Remember	Select
• Behaves as a slave device on the Main Network and a master on the PointBus • Allows a group of I/O modules on the Subnet to act as a single node on the Main Network • RSNetWorx™ for DeviceNet software is needed for configuration of the PSSCDM12A or PSSCDM18PA on the Main Network and the PointBus • Configuration on the PointBus consists of a scan list that is very similar to those used in all of the DeviceNet master scanner modules	• All Isysnet modules count as a single node on the Main Network • The Main Network distance is acceptable • Isysnet expansion power supplies are permitted to add more Isysnet modules.	PSSCDM12A (M12-style network connectors) PSSCDM18PA (mini-style network connectors with pass-through)

With the introduction of the PSSS23A module, the amount of data to be transferred over the Subnet could become substantial. It is important that the total amount of data coming from the Subnet does not exceed the data capability of either the PSSCDM12A or PSSCDM18PA.

- 250 bytes (248 data + 2 bytes command info) for output data (used as either COS, cyclic, or poll)
- 250 bytes (248 data + 2 bytes status info) for polled input data
- 250 bytes (248 data + 2 bytes status info) for COS/cyclic input data
- 8 bytes (6 data + 2 status info) for strobe input data

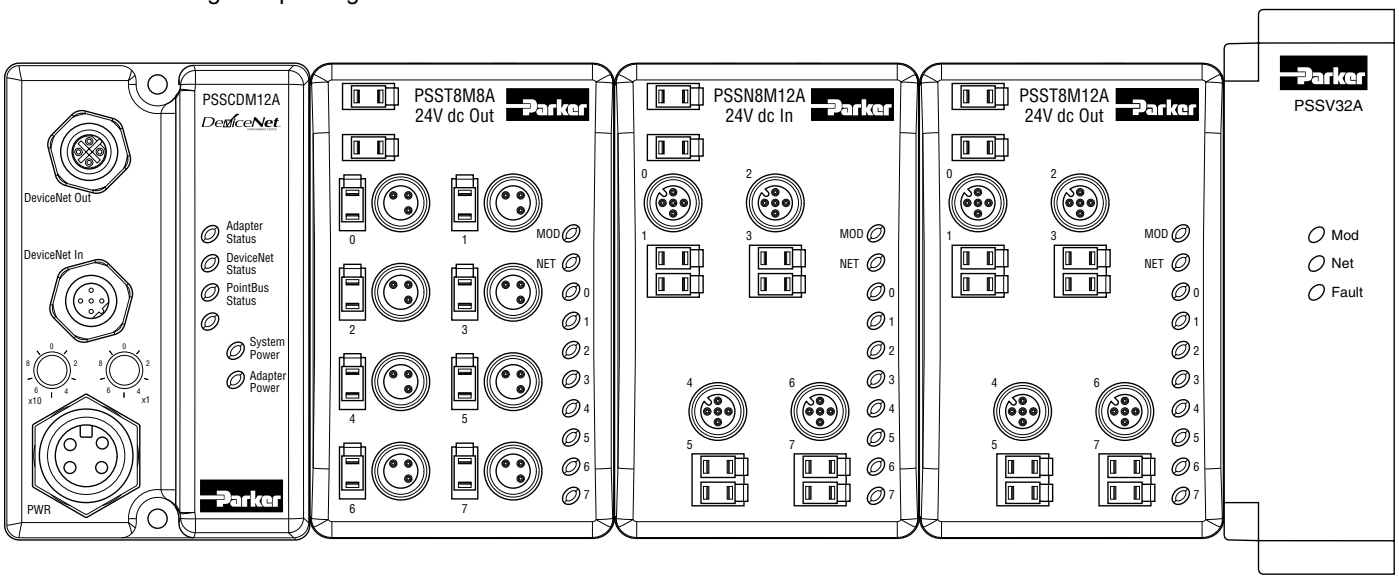
The data coming through the PSS adapter combined with the other data from the Main Network cannot exceed the data capability of the Main Network master scanner. If this occurs, you will need multiple master scanners on the Main Network and the I/O modules on the Subnet will need to be split between multiple PSSCDM12A or PSSCDM18PA adapters.

Step 2 - Select I/O Modules

Selecting Isysnet Modules

Some modules have diagnostic features, electronic fusing, or individually isolated inputs/outputs.

The Isysnet family provides a wide range of input and output modules to span many applications, from high-speed discrete to process control. Isysnet supports producer/consumer technology, which allows input information and output status to be shared among multiple Logix controllers.



The Isysnet family of I/O modules includes:

- Digital I/O Modules
- Analog I/O Modules
- Specialty I/O Module
- Valve Driver Module

Digital I/O Modules

Choose digital I/O modules when you need:

- **Input Modules.** An input module responds to an input signal in the following manner:
  - Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data. All input modules use input filtering.
  - Optical isolation shields logic circuits from possible damage due to electrical transients.
  - Logic circuits process the signal.
  - An input LED turns on or off indicating the status of the corresponding input device.
- **Output Modules.** An output module controls the output signal in the following manner:
  - Logic circuits determine the output status.
  - An output LED indicates the status of the output signal.
  - Optical isolation separates module logic and bus circuits from field power.
  - The output driver turns the corresponding output on or off.
- **Surge Suppression.** Most output modules have built-in surge suppression to reduce the effects of high-voltage transients. However, we recommend that you use an additional suppression device if an output is being used to control inductive devices, such as:
  - Relays
  - Motor starters
  - Solenoids
  - Motors

  Additional suppression is especially important if your inductive device is in series with, or parallel to, hard contacts such as:
  - Push buttons
  - Selector switches

The digital I/O modules support:

- A wide variety of voltage interface capabilities
- Isolated and non-isolated module types
- Point-level output fault states
- Choice of direct-connect or rack-optimized communications
- Field-side diagnostics on select modules

Connector types are indicated by the catalog number. For example, the PSSN8M12A has an M12 connector.

Digital DC Input Modules

	PSSN8M8A PSSN8M12A PSSN8M23A	**PSSP8M8A PSSP8M12A PSSP8M23A**
Number of Inputs	8 Sinking	8 Sourcing
Keyswitch Position	1	1
Voltage, On-State Input, Nom.	24VDC	24VDC
Voltage, On-State Input, Min.	10VDC	10VDC
Voltage, On-State Input, Max.	28.8VDC	28.8VDC
Input Delay Time, ON to OFF	0.5 ms hardware + (0…65 ms selectable)*	0.5 ms hardware + (0…65 ms selectable)*
Current, On-State Input, Min.	2 mA	2 mA
Current, On-State Input, Max.	5 mA	5 mA
Current, Off-State Input, Max.	1.5 mA	1.5 mA
PointBus Current (mA)	75	75
Power Dissipation, Max.	1.0 W @ 28.8VDC	1.0 W @ 28.8VDC

* Input ON-to-OFF delay time is the time from a valid input signal to recognition by the module.

Digital DC Output Modules

	PSST8M8A PSST8M12A PSST8M23A
Number of Outputs	8 sourcing
Keyswitch Position	1
Voltage, On-State Output, Nom.	24VDC
Voltage, On-State Output, Min.	10VDC
Voltage, On-State Output, Max.	28.8VDC
Output Current Rating, Max.	3.0 A per module, 1.0 A per channel
PointBus Current (mA)	75
Power Dissipation, Max.	1.2 W @ 28.8VDC

Relay Output Module

	PSSTR4M12A
Number of Outputs	4 Form A (N.O.) relays, isolated
Keyswitch Position	7
Output Delay Time, ON to OFF, Max.	26 ms*
Contact Resistance, Initial	30 mΩ
Current Leakage, Off-State Output, Max.	1.2 mA and bleed resistor thru snubber circuit @ 240V ac
PointBus Current (mA)	90
Power Dissipation, Max.	0.5 W

*Time from valid output off signal to relay deenergization by module.

Analog I/O Modules

The Isysnet analog modules support: on-board, channel-level data alarming (four set-points per channel); scaling to engineering units; channel-level diagnostics (electronic bits and LEDs); and integer format.

Choose analog I/O modules when you need:

- **Individually configurable channels** to use the module(s) with a variety of sensors.
- **On-board scaling** to eliminate the need to scale the data in the controller. Controller processing time and power are preserved for more important tasks, such as I/O control, communications, or other user-driven functions.
- **On-line configuration.** Modules can be configured in the RUN mode using the programming software or the control program. This allows you to change configuration while the system is operating. For example, the input filter for a particular channel could be changed, or a channel could be disabled based on a batch condition. To use this feature, the controller and network interface must also support this feature.
- **Over- and under-range detections and indications.** This eliminates the need to test values in the control program, saving valuable processing power of the controller. In addition, since alarms are handled by the module, the response is faster and only a single bit per channel is monitored to determine if an error condition has occurred.
- **Ability to direct output device operation during an abnormal condition.** Each channel of the output module can be individually configured to hold its last value or assume a user-defined value on a fault condition. This feature allows you to set the condition of your analog devices, and therefore your control process, which may help to ensure a reliable shutdown.
- **Ability to individually enable and disable channels.** Disabling unused channels improves module performance.
- **Selectable input filters** This lets you select the filter frequencies for each channel that best meets the performance needs of your application based on environmental limitations. Lower filter settings provide greater noise rejection and resolution. Higher filter settings provide faster performance. Note: The analog modules provide four input filter selections.
- **Selectable response to broken input sensor.** This feature provides feedback to the controller that a field device is not connected or operating properly. This lets you specify corrective action based on the bit or channel condition.
- **High accuracy.** The modules share a high accuracy rating of ±0.1% of full-scale accuracy at 25 °C.

Analog Input Modules

	PSSNACM12A	PSSNAVM12A
Number of Inputs	2	2
Keyswitch Position	3	3
Input Signal Range	4…20 mA 0…20 mA	0…10V ±10V
Input Resolution, Bits	16 bits - over 21 mA 0.32 µA/cnt	15 bits plus sign 320 µV/cnt inunipolar or bipolar mode
Absolute Accuracy, Current Input	0.1% Full Scale @ 25°C*†	—
Absolute Accuracy, Voltage Input	—	0.1% Full Scale @ 25°C*†
Input Step Response, per Channel	70 ms @ Notch = 60 Hz (default) 80 ms @ Notch = 50 Hz 16 ms @ Notch = 250 Hz 8 ms @ Notch = 500 Hz	70 ms @ Notch = 60 Hz (default) 80 ms @ Notch = 50 Hz 16 ms @ Notch = 250 Hz 8 ms @ Notch = 500 Hz
Input Conversion Type	Delta Sigma	Delta Sigma
PointBus Current (mA)	75	75
Power Dissipation, Max.	0.6 W @ 28.8VDC	0.6 W @ 28.8VDC

* Includes offet, gain, non-linearity and repeatability error terms.

† Analog input modules support these configurable parameters and diagnostics: open-wire with LED and electronic reporting; four-alarm and annunciation set-points; calibration mode and electronic reporting; under- and over-range and electronic reporting; channel signal range and update rate and on-board scaling; filter-type; channel update rate.

Analog Output Modules

	PSSTACM12A	PSSTAVM12A
Number of Outputs	2	2
Keyswitch Position	4	4
Output Signal Range	4…20 mA 0…20 mA	0…10V ±10V
Output Resolution, Bits	13 bits - over 21 mA 2.5 µA/cnt	14 bits (13 plus sign) 1.28 mV/cnt inunipolar or bipolar mode
Absolute Accuracy, Current Output	0.1% Full Scale @ 25°C*†	—
Absolute Accuracy, Voltage Output	—	0.1% Full Scale @ 25°C*†
Step Response to 63% of FS, Current Output	24 µs	—
Step Response to 63% of FS, Voltage Output	—	20 µs
Output Conversion Rate	16 µs	20 µs
PointBus Current (mA)	75	75
Power Dissipation, Max.	1.0 W @ 28.8VDC	1.0 W @ 28.8VDC

* Includes offet, gain, non-linearity and repeatability error terms.

† Analog output modules support these configurable parameters and diagnostics: open-wire with LED and electronic reporting (PSSTACM12A only); fault mode; idle mode; alarms; channel signal range and on-board scaling.

Specialty I/O Module

PSSS23A

The PSSS23A serial-interface module offer a serial-link communication interface solution for peripheral products with RS-232 port.

The module allows a device with serial-interface output, i.e., bar code readers, to communicate up to 128 bytes of ASCII data onto any network supported by Isysnet. Each module is a single-channel, full-duplex interface and is rated for up to 38.4 kbaud. LED indicators on the module offer diagnostics for the module, Isysnet PointBus backplane, and transmit/receive status indication.

Isysnet ASCII Module Specifications

	PSSS23A
Number of Serial Channels	1
Keyswitch Position	2 (Specialty)
PointBus Current (mA)	75
Power Dissipation	1.75 W @ 28.8VDC
Serial Port Parameters	
Serial Character Framing	7N2, 7E1, 7O1, 8N2, *E1, 8O1, 7E2, 7O2
Serial Port Comm Speed	9600, 1200, 2400, 4800, 19.2 k, 38.4 k
Serial Port Receive from ASCII Device	
Number of Receive Chars, Max	1...128
Receive Record Start Mode	No, exclude, include start delimiter
Receive Start Delimiter	ASCII character
Receive Record End Mode	No, exclude, include end delimiter
Receive End Delimiter	ASCII character
Send (Produce) on DeviceNet to Master	
Receive String Data Type	Array, short-string, string
Pad Mode	Pad mode disabled, enabled
Pad Character	ASCII character
Receive Swap Mode	Disabled, 16-bit, 24-bit, 32-bit swap
DeviceNet Handshake Mode	Master/slave handshake, produce immediate
Produce Assembly Size	4...132
Serial Data Size	0...128 bytes
Receive Transaction ID	0...255
Serial Port Transmit to ASCII Device	
Number of Transmit Chars, Max	1...128
Transmit End Delimiter Mode	No, exclude, include end delimiter
Transmit End Delimiter Character	ASCII
Consume on DeviceNet from Master	
Consume String Data Type	Array, short-string, string
Transmit Swap Mode	Disabled, 16-bit, 24-bit, 32-bit swap
DeviceNet Record Header Mode	Transmit handshake/immediate
Consume Assembly Size	4...132
Serial Port Transmit/Explicit Messages from Configuration Tool	
Transmit Serial Data String Size	0...128 bytes
Transmitted Serial Data Length	0...128 bytes
Transmit Transaction ID	0...255
Serial Port Status	TX FIFO overflow, RX FIFO overflow, RX parity error, handshake error, new data flag

Valve Driver Module

PSSV32A

The PSSV32A valve driver module provides an interface between the Isysnet serial bus system and the Isys valve assembly. This module will always be the last module on the Isysnet serial bus. It controls 32 digital outputs at 24VDC. Depending on the valve selection, it can control up to 32 single solenoid valves or 16 double solenoid valves.

Valve Driver Module Specifications

	PSSV32A
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

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.

Step 3 - Select the Appropriate Power Unit

Selecting a Power Supply Unit

Isysnet adapters have built-in PointBus power supplies. All Isysnet modules are powered from the PointBus by either an adapter or expansion power supply.

Power Specifications

Cat. No.	**Power Supply Input Voltage, Nom.**	**Operating Voltage Range**	**Field Side Power Reuirements, Max.**	**Power Supply Inrush Current, Max.**	**Input Overvoltage Protection**	**Power Supply Interruption Protection**
PSSCDM12A	24VDC	10...28.8VDC	24VDC (+20% = 28.8VDC) @ 400 mA	6 A for 10 ms	Reverse polarity protected	Output voltage will stay within specifications when input drops out for max. load.
PSSCDM18PA						
PSSCCNA						
PSSCENA						
PSSCPBA						
PSSSE24A						

Power units are divided into two categories:

- Communication adapters with built-in power supply (dc-dc)
- Expansion power supply

Expansion Power Unit

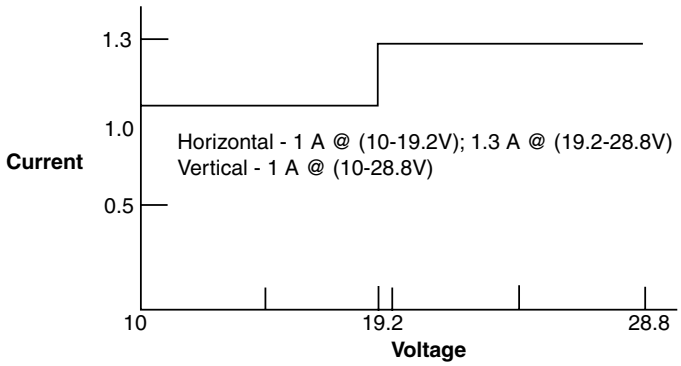
The PSSSE24A expansion power unit passes 24VDC field power to the I/O modules to the right of it. This unit extends the backplane bus power and creates a new field voltage partition segment for driving field devices for up to 13 I/O modules. The expansion power unit separates field power from I/O modules to the left of the unit, effectively providing functional and logical partitioning for:

- Separating field power between input and output modules
- Separating field power to the analog and digital modules
- Grouping modules to perform a specific task or function

You can use multiple expansion power units with any of the communication adapters to assemble a full system. If you are using the PSSCDM12A adapter, you may use a PSSSE24A expansion power unit to add additional modules. For example, if you had a 36 module system with a PSSCDM12A adapter, you would have at least two or more PSSSE24A expansion power units to provide more PointBus current for modules to the right of the supply.

- 24VDC to 5VDC converter
- 1.3A, 5VDC output (extend backplane power)
- Starts new voltage distribution
- Partitioning

PSSSE24A Current Derating for Mounting



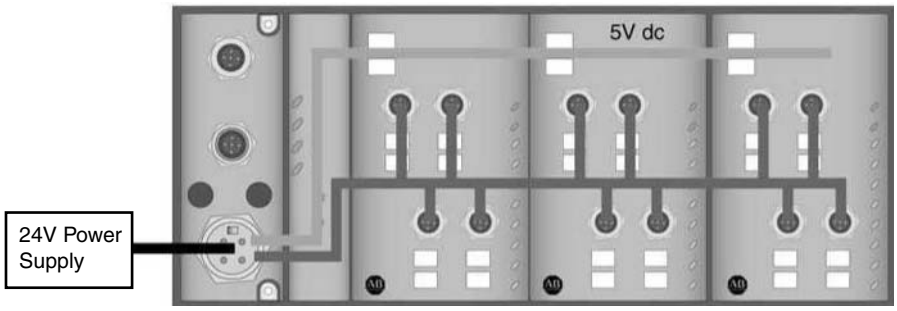
Power Distribution General Specifications

	PSSSE24A
Power Supply Requirements	Note: In order to comply with CE Low Voltage Directives (LVD), you must use a Safety Extra Low Voltage (SELV) or a Protected Extra Low Voltage (PELV) power supply to power this adapter
Field Side Power Requirements	24VDC (+20% = 28.8VDC max.) @ 400 mA
Inrush Current, Max.	6 A for 10 ms
Input Overvoltage Protection	Reverse polarity protected
Power Supply Interruption Protection	Output voltage will stay within specifications when input drops out for 10 ms at 10V with max load
Power Supply Input Voltage, Nom.	24VDC
Operating Voltage Range	10…28.8VDC
Power Consumption, Max.	9.8 W @ 28.8VDC
Power Dissipation, Max.	3.0 W @ 28.8VDC
Thermal Dissipation, Max.	10.0 BTU/hr @ 28.8VDC
Isolation Voltage	1250V rms
Field Power Bus Supply Voltage, Nom.	12VDC or 24VDC
Field Power Bus Supply Current, Max.	10 A

Typical Configurations

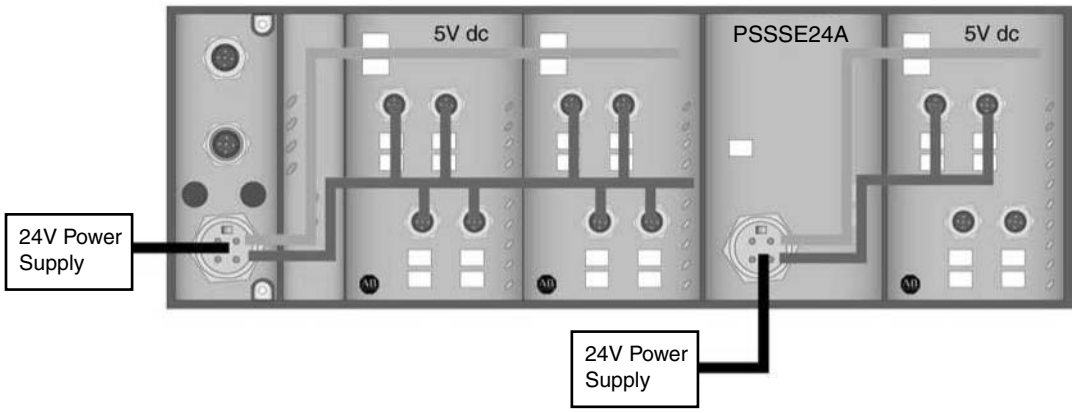
Power Distribution Options

Isysnet Communication Adapter and I/O Modules



An auxiliary 24VDC power supply provides power to the PointBus backplane and I/O modules. You can connect up to 13 I/O modules and an adapter with a maximum of 10 A field power, using the auxiliary power.

Isysnet System with 24VDC Expansion Power Unit (PSSSE24A)



The auxiliary power supports up to 13 I/O modules and an adapter with a maximum of 10 A field power. The 24VDC expansion power unit (PSSSE24A) extends the backplane bus power to support up to 13 more I/O modules. Connect additional expansion power units to expand the I/O assembly up to the maximum of 63 I/O modules.

Step 4 - Select Cables and Cordsets
Selecting Accessories

Cables and Cordsets

Isysnet Digital Input Module Cables

Catalog Number	For Using:	Recommended Rockwell Automation Patchcord (double-ended)	Recommended Rockwell Automation Male Cordset (single-ended)
PSSN8M12A PSSP8M12A	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-y
PSSN8M8A PSSP8M8A	3-pin pico connectors	889P-F3ABPM-x	889P-M3AB-y
	4-pin pico connectors	889P-F4ABPM3-x	
PSSN8M23A PSSP8M23A	—	889M-F12AHMU-z	889M-F12AH-y

x = length in meters (1, 2, 3, 5, and 10 standard)
y = length in meters (2, 5, and 10 standard)
z = length in meters (1, 2, and 3 standard)

For more cables and cordsets, please refer to www.connector.com

Isysnet Digital Output Module Cables

Catalog Number	For Using:	Recommended Rockwell Automation Patchcord (double-ended)	Recommended Rockwell Automation Male (single-ended)
PSST8M12A	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-y
PSST8M8A	3-pin pico connectors	889P-F3ABPM-x	889P-M3AB-y
	4-pin pico connectors	889P-F4ABPM3-x	

x = length in meters (1, 2, 3, 5, and 10 standard)
y = length in meters (2, 5, and 10 standard)

For more cables and cordsets, please refer to www.connector.com

Isysnet Relay Output Module Cables

Catalog Number	Recommended Rockwell Automation Patchcord (double-ended)	Recommended Rockwell Automation Male Cordset (single-ended)
PSSTR4M12A	889D-F4ACDM-x	889D-M4AC-y

x = length in meters (1, 2, 3, 5, and 10 standard)
y = length in meters (2, 5, and 10 standard)

For more cables and cordsets, please refer to www.connector.com

Isysnet Specialty Module Cables

Catalog Number	Recommended Rockwell Automation Patchcord (double-ended)	Recommended Rockwell Automation Male Cordset (single-ended)
PSSS23A	889D-F4ACDM-x	889D-M4AC-y

x = length in meters (1, 2, 3, 5, and 10 standard)
y = length in meters (2, 5, and 10 standard)

For more cables and cordsets, please refer to www.connector.com

Isysnet DeviceNet and Auxiliary Power Cables

Catalog Number	Network	Recommended Rockwell Automation Network Cable	Recommended Rockwell Automation Auxiliary Power Cables
PSSCDM12A PSSCDM18PA	DeviceNet	KwikLink Flat Media system standard drop cable: 1485K-PzF5-R5 Thin Round system standard drop cable: 1485R-PzN5-M5 Thick Round system standard drop cable: 1485C-PzN5-M5	Standard Cordset (single-ended): 889N-F5AFC-y Standard Patchcord (double-ended) 889N-F4AFNM-x
PSSCCNA	ControlNet	—	
PSSCENA	EtherNet/IP	—	
PSSCPBA	PROFIBUS DP	—	Standard Cordset (single-ended): 889N-F5AFC-y

x = length in meters (1, 2, 3, and 6 standard)
y = length in feet (6, 12, and 20 standard)
z = length in feet (1, 2, 3, 4, 5, and 6 standard)

For more cables and cordsets, please refer to www.connector.com

Isysnet Valve Driver Module Harness Assemblies

	Parker Kit Number	
	1 to 24 Outputs	25 to 32 Outputs
Isys HA and HB Valve	PS5624P	PS5632P
Isys H1, H2, and H3 Valve	PS4024P	PS4032P

Step 5 – Placing Isysnet Modules

Determining Mounting Requirements

The producer/consumer model multicasts messages. This means that multiple nodes can consume the same data at the same time from a single device. Where you place I/O modules in the control system determines how the modules exchange data.

For a Rockwell controller to control Isysnet, the I/O must be:

- On the same network as the controller **or**
- On a ControlNet network that is local to that controller **or**
- On an EtherNet/IP network that is local to that controller

Maximum Size Layout

	PointBus Current (mA)	Maximum I/O Modules with 24VDC Backplane Current at 75 mA each	Maximum I/O Modules with Expansion Power Supplies	Maximum Number of I/O Module Connections
PSSCDM12A on DeviceNet	1000	Up to 13	63	
PSSCDM18PA on DeviceNet				
PSSCCNA on ControlNet				5 rack and 20 direct
PSSCENA on EtherNet/IP				20 total connections including rack and direct
PSSCPBA on PROFIBUS				Not to exceed scanner capacity
PSSSE24A Expansion Power	Horizontal mounting: 1A@5Vdc for 10...19.2V input; 1.3A @ 5VDC for 19.2...28.8V input Vertical mounting: 1A @ 5VDC for 10...28.8V input			

Power Supply Distance Rating

Modules are placed to the right of the power supply. Each Isysnet module can be placed in any of the slots to the right of the power supply until the usable backplane current of that supply has been exhausted. An adapter provides 1 A current to the PointBus. The PSSSE24A provides up to 1.3 A and I/O modules require from 75 mA (typical for the digital and analog I/O modules) up to 90 mA or more.

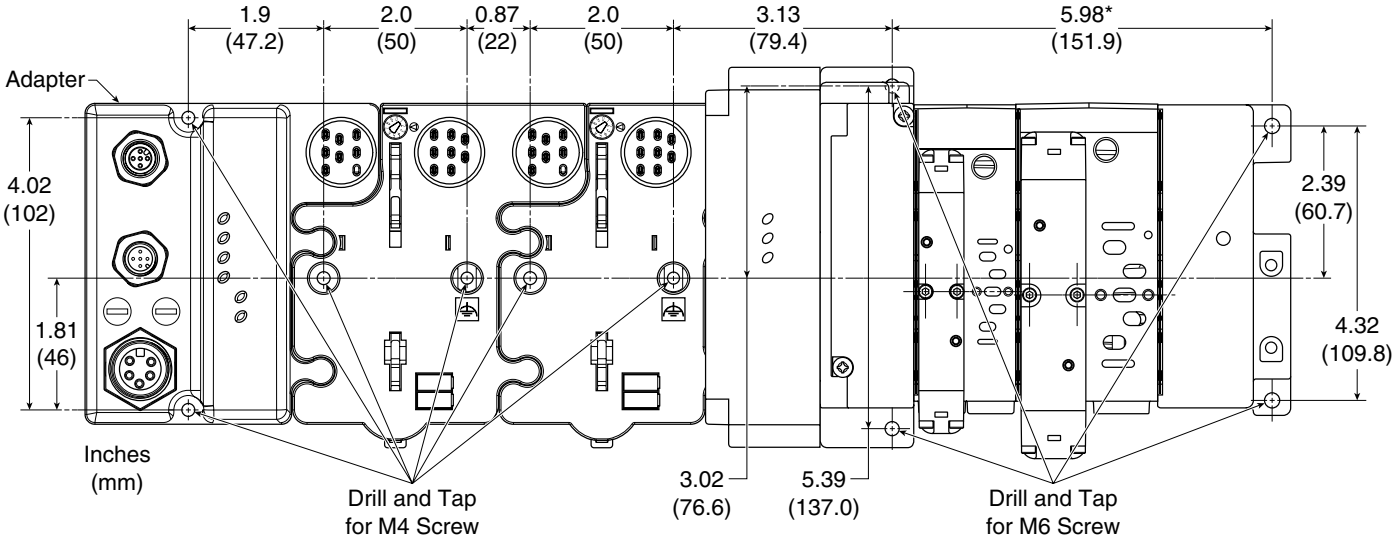
PointBus Current Requirements

Catalog Number	PointBus Current Requirements
PSSN8xxx	75 mA
PSSP8xxx	
PSST8xxx	
PSSTR4MRA	90 mA
PSSNACM12A	75 mA
PSSTACM12A	
PSSNAVM12A	
PSSTAVM12A	
PSSS23A	75 mA
PSSV32A	

Mounting the Isysnet System

You can panel mount the Isysnet system in the horizontal or vertical orientation.

Isysnet with PSSCDM12A, PSSCDM18PA, PSSCCNA, PSSCENA, PSSCPBA Mounting Dimensions



* Depending on the type and number of manifolds, this dimension may vary. Refer to Catalog 0600P-# for additional information.

Related Documentation

Additional user documentation presents information according to the tasks you perform and the programming environment you use. Refer to the table below for information on Isysnet products.

Isysnet Related Publications*

	Catalog Number	Description	Publication Number
General Information	—	Industrial Automation Wiring and Grounding Guidelines	E115P
		Safety Guidelines for the Application, Installation and Maintenance of Solid State Control	E116P
Pinout Wiring Diagram	PSSN8xxx, PSSP8xxx, PSST8xxx	Pinout Guide for Isysnet Digital I/O Modules	PSS-WD001
	PSSTR4M12A	Pinout Guide for Isysnet Relay Module	PSS-WD002
	PSSNACM12A, PSSNAVM12A, PSSTACM12A, PSSTAVM12A, PSSS23A	Pinout Guide for Isysnet Analog and Serial Modules	PSS-WD003
	PSSCDM12A, PSSCDM18PA, PSSCCNA, PSSCPBA, PSSCENA, PSSE24A	Pinout Guide for Isysnet Adapters and Power Supply	PSS-WD004
Communication Interfaces	PSSCDM12A	Isysnet DeviceNet Adapter Module, Drop or Pass-through, with male and female M12 connectors	E101P, Installation Instructions PSS-UM001, User Manual
	PSSCDM18PA	Isysnet DeviceNet Adapter Module, Drop or Pass-through, with male and female M18 connectors	
	PSSCCNA	Isysnet Redundant ControlNet Adapter Module	E103P, Installation Instructions PSS-UM003, User Manual
	PSSCENA	Isysnet Ethernet/IP 10/100 Mbps Adapter Module	E104P, Installation Instructions PSS-UM004, User Manual
	PSSCPBA	Isysnet PROFIBUS Adapter Module	E102P, Installation Instructions PSS-UM002, User Manual
Valve Driver Module	PSSV32A	32 Point Valve Driver Module	E100P
DC I/O	PSSN8M8A	24VDC 8 Sink Input w/8 M8 connectors	E106P
	PSSN8M12A	24VDC 8 Sink Input w/4 M12 connectors, 2 points per connector	
	PSSN8M23A	24VDC 8 Sink Input w/1 M23 connector	
	PSSP8M8A	24VDC 8 Source Input w/8 M8 connectors	
	PSSP8M12A	24VDC 8 Source Input w/4 M12 connectors, 2 points per connector	
	PSSP8M23A	24VDC 8 Source Input w/1 M23 connectors	
	PSST8M8A	24VDC 8 Source Output w/1 M23	E107P
	PSST8M12A	24VDC 8 Source Output w/4 M12	
	PSST8M23A	24VDC 8 Source Output w/8 M8	
Analog	PSSNACM12A	24VDC Analog Current Input w/ 2 M12 connectors	E110P
	PSSNAVM12A	24VDC 2 Analog Voltage Input w/ 2 M12 connectors	
	PSSTACM12A	24VDC Analog Current Output w/ 2 M12 connectors	E111P
	PSSTAVM12A	24VDC Analog Voltage Output w/ 2 M12 connectors	
Serial Interface Module	PSSS23A	RS-232 ASCII Serial Interface Module	E112P
Power Unit	PSSSE24A	24VDC Expansion Power Supply	E105P
Relay Output	PSSTR4M12A	4 From A isolated (normally open) electromechanical relays	E109P

* Contact your local Parker distributor for information on ordering any of the above publications.
For electronic copies of these publications, go to: **http://www.parker.com/pneu/isysnet**

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