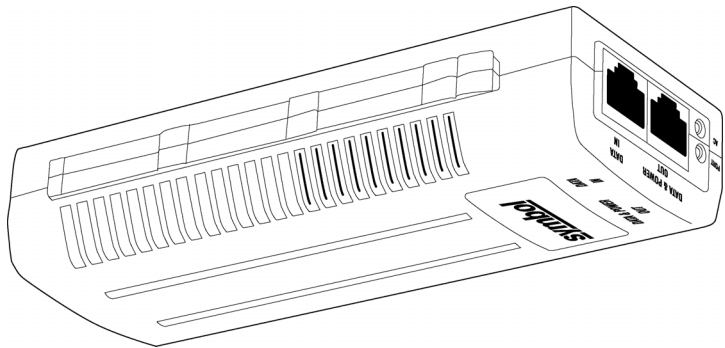




For the latest version of this guide go to: <http://www.symbol.com/manuals/>

United States	1-800-653-5350	Canada	905-629-7226
United Kingdom	0800 328 2424	Asia/Pacific	+65-6796-9600
Australia	1-800-672-906	Austria/Steirerich	1-505-5794-0
Denmark/Danmark	7020-1718	Finland/Suomi	9 5407 580
France	01-40-96-52-21	Germany/Deutschland	6074-49020
Italy/Italia	2-484441	Mexico/México	5-520-1835
Netherlands/Nederland	315-271700	Norway/Norge	+47 2232 4375
South Africa	11-8095311	Spain/España	91 324 40 00
Sweden/Sverige	84452900	Inside Spain	+34 91 324 40 00
Latin America	1-800-347-0178	Inside US	+1-954-255-2610
Sales Support		Outside US	+1-954-255-2610
Europe/Mid-East		Contact local distributor or call	
Distributor Operations			+44 118 945 7360



Power Injector

1-Port Power-over-Ethernet Installation Guide

This guide is intended for the technician responsible for installing the Symbol Power Injector.

It assumes the technician is familiar with basic Ethernet LAN-based networking and device installation concepts. This guide provides specifications, procedures and guidelines to use during the installation process. This guide does not provide site-specific installation procedures. For detailed site-specific installation procedures, refer to the site-specific documentation derived from site survey and site network analysis.

Verifying Package Contents

Inspect the package contents and report any missing or damaged items to your sales representative. The packages should contain the following:

- Power Injector (pt # AP-PSBIAS-1P2-AFR)
- This Power Injector Installation Guide (72-70762-01)

Warnings

- Read the installation instructions before connecting the Power Injector to a power source.
- Follow basic electricity safety measures whenever connecting the Power Injector to its power source.
- This product relies on the building installation for short-circuit (over current) protection. Ensure a fuse or circuit breaker no larger than 120 VAC, 3A U.S. (240VAC, 1.5A international) is used on the phase conductor.
- A voltage mismatch can cause equipment damage and could pose a fire hazard. If the voltage indicated on the label is different from the power outlet voltage, do not connect the Power Injector to that particular outlet.
- The Power Injector **Data In** and **Data & Power Out** ports are shielded RJ-45 sockets. Only RJ-45 data connectors should be connected to these sockets.

Safety Information

Before operating any equipment, review this document for any hazards associated with installation and use of the device. Also, review standard practices for preventing accidents.

- Only trained and qualified personnel should install and remove the Power Injector.
- A power cord is not supplied with the device. Use only a correctly rated power cord that's certified, as appropriate, for the country of operation.

The power cord must be a three-conductor type (two current-carrying conductors and one ground conductor) terminated on one end by an IEC 60320 appliance coupler (for Power Injector connection) and on the other end by a plug containing a ground (earth) contact.

The power cord must be rated for a minimum of 250VAC RMS operation, with a minimum rated current capacity of 5A [or a minimum wire gauge of 18AWG (0.75mm²)].

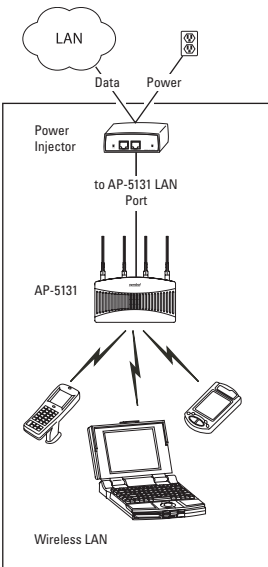
- The AC wall-socket outlet must be near the Power Injector and easily accessible.
- The Power Injector **Data** and **Data & Power** interfaces are qualified as SELV (Safety Extra-Low Voltage) circuits according to IEC 60950. These interfaces can only be connected to SELV interfaces on other equipment.

Introduction

When users purchase a Symbol WLAN solution, they often need to place access points in obscure locations. In the past, a dedicated 24-hour, 90-264 VAC power source was required for each access point in addition to the Ethernet infrastructure. This often required an electrical contractor to install power drops at each access point location. With the Symbol Power Injector solution (pt # AP-PSBIAS-1P2-AFR), centralized power can be provided for devices without a local power supply for each.

Product Description

The Symbol Power Injector (pt # AP-PSBIAS-1P2-AFR) is a single-port, 802.3af compliant Power over Ethernet hub combining low-voltage DC with Ethernet data in a single cable connecting to an AP. The Power Injector's single DC and Ethernet data cable creates a modified Ethernet cabling environment eliminating the need for separate Ethernet and power cables.



(3)

The Power Injector is a small lightweight unit with a RJ-45 Ethernet cord input connector from the hub on the front right-hand side of the unit and a RJ-45 data and power output connector to the AP on the front left-hand side of the unit. On the back of the unit is a 110-220 VAC power input.

A separate Power Injector is required for each device comprising the network. The Symbol Power Injector supports the following Symbol device product families (all models of the those listed):

- AP 100
- AP 200
- AP 300
- AP-5131



Caution - Using the Power Injector with an unsupported Symbol device could render the device inoperable and void your warranty.

The Power Injector has the following features:

- Independent power controller (SPEAR™), CPU controller and input (Data) and output (Data + Power) shielded RJ-45 connectors
- Supports standard 10/100BaseT Ethernet networks over a standard TIA/EIA-568 Category 5 (or higher) cabling
- Meets the IEEE 802.3af standard
- Universal AC Input: 110/220 V, 60/50 Hz.
- Minimum port output continuous allowable power of 15.4W at 48V (minimum 12.95W at the PDTE)
- Underload, overload, short-circuit & under/over voltage port protection.

(4)

- Port Status and Main power LED indicators
- Standalone or wall mount installation support
- Interconnection option with other Power Injector units.

Technical Specifications

Physical Specifications

Width	58.5mm
Height	31mm
Depth	145mm
Weight	450gr

Environmental Specifications

Operating Temperature	0°C to 40°C (32°F to 104°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Operating Humidity	10% to 93% Non-condensing
Storage Humidity	10% to 93% Non-condensing

Electrical Specifications

Input Voltage	90VAC to 264VAC (47Hz - 63Hz)
Maximum Output Power	15.4 W
Nominal Output Voltage	48VDC

Ethernet Interface

Input (Data In)	Ethernet 10/100Base-T (RJ-45 female socket)
Output (Data & Power Out)	Ethernet 10/100Base-T, plus 48VDC RJ-45 female socket, with DC voltage on pairs 7-8 and 4-5

(5)

Installation

Preparing for Site Installation

The Power Injector can be installed free standing, on an even horizontal surface or wall mounted using the power injector's wall mounting key holes.

The following guidelines should be adhered to before cabling the Power Injector to the Ethernet source and Symbol device:

- Verify the device receiving converged power and Ethernet from the Power Injector is a product approved by Symbol (AP100, AP200, AP300 and AP-5131).
- Do not block or cover airflow to the Power Injector.
- Keep the Power Injector away from excessive heat, humidity, vibration and dust.
- The Power Injector is not a repeater, and does not amplify the Ethernet data signal. For optimal performance, ensure the Power Injector is placed as close as possible to the network data port. Do not configure the cable length between the Ethernet network source, the Power Injector and the Symbol AP beyond 100 meters (333ft).

Cabling the Power Injector

To install the Power Injector to an Ethernet data source and Symbol device:



Caution - Ensure AC power is supplied to the Power Injector using an AC cable with an appropriate ground connection approved for the country of operation.

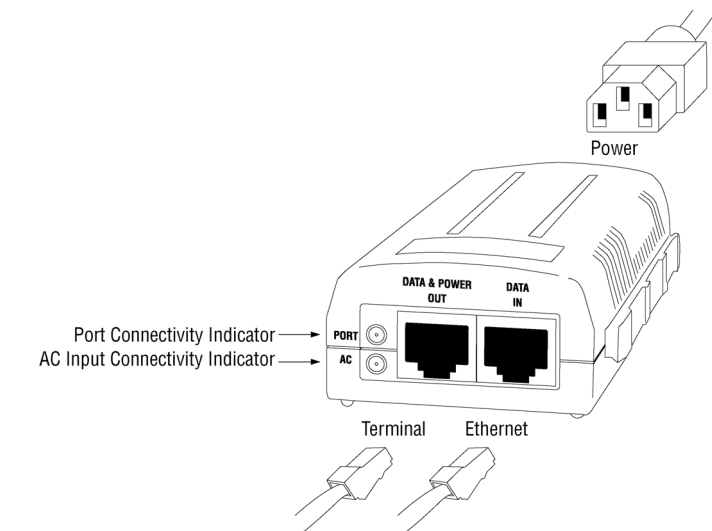
1. Connect the Power Injector to an AC outlet (110VAC to 220VAC).
2. Connect RJ-45 Ethernet cable between the network data supply (host) and the Power Injector **Data In** connector.
3. Connect a RJ-45 Ethernet cable between the Power Injector **Data & Power Out** connector and the Symbol device receiving converged power and Ethernet.

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Ensure the cable length from the Ethernet source (host) to the Power Injector and Symbol device receiving converged power and Ethernet does not exceed 100 meters (333 ft).

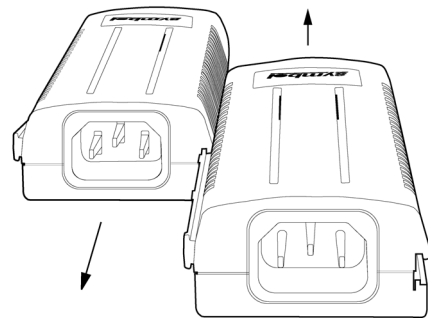


The Power Injector has no On/Off power switch. The Power Injector receives power and is ready for Symbol device connection and operation as soon as AC power is applied.

Multiple Power Injector Installations

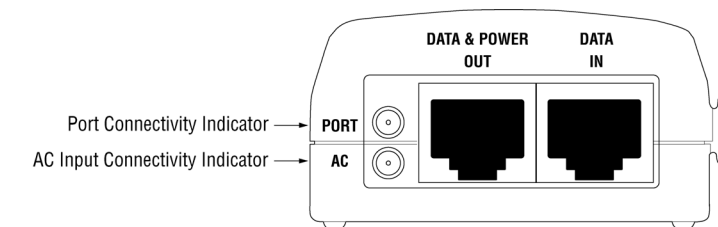
Each Power Injector has a coupling rail designed to connect Power Injectors together to support multiple device installations. Align the power injectors and slide the units together using the coupling rail to connect the units. Cable each device as described in the *Cabling the Power Injector* section of this document. Only one Symbol device (AP 100, AP 200, AP 300 or AP-5131) can be powered from a single Power Injector.

(7)



Power Injector LED Indicators

The Power Injector demonstrates the following LED behavior under normal and/or problematic operating conditions:



(8)

LED	AC (Main)	Port
Green (Steady)	Power Injector is receiving power from AC outlet	Indicates a device is connected to the Power Injector's outgoing Data & Power cable
Green (Blinking)	Output voltage source is out of range	The Power Injector is overloaded or has a short circuit

Troubleshooting

The following potential Power Injector problem scenarios should be addressed as follows:

Power Injector does not power up properly

1. Verify the power cord power cord is operational for the intended country of operation
2. Verify the voltage at the power inlet is between 100 and 240 VAC.
3. Remove and reapply power to the Power Injector and verify the LED behavior during the powering sequence.

A Power Injector port indicator is not illuminated and the Symbol AP does not operate

1. The Power Injector did not detect the AP and thus the port is not enabled.
2. Ensure you are using a standard 5/5e/6, straight-wired cable with four pairs.
3. Verify the input Ethernet cable is connected to the Power Injector **Data In** port.
4. Verify the Symbol AP is connected to the Power Injector **Data & Power** port.
5. Reconnect the Symbol AP to a different Power Injector. If the AP receives power, there is probably a faulty port or RJ-45 connection on the Power Injector.
6. Verify there is not a short over any of the twisted pair cables or over the RJ-45 connectors.

Symbol AP receives power but no Ethernet

1. Verify the Ethernet cable is connected to an active hub or switch port on the network.
2. Verify the port indicator on the front panel is continuously illuminated.
3. Verify you are using a standard UTP/FTP Category 5 straight (non-crossover) cabling with all four pairs.
4. Ensure the Ethernet cable length is less than 100 meters from the Ethernet data source to the Power Injector.
5. Reconnect the Symbol AP to a different Power Injector. If the AP receives power, there is probably a faulty port or RJ-45 connection on the Power Injector.

(9)

Customer Support

Symbol Technologies provides its customers with prompt and accurate customer support. Use the Symbol Support Center as the primary contact for any technical problem, question or support issue involving Symbol products. If the Symbol Customer Support specialists cannot solve a problem, access to all technical disciplines within Symbol becomes available for further assistance and support. Symbol Customer Support responds to calls by email, telephone or fax within the time limits set forth in individual contractual agreements.

When contacting Symbol Customer Support, please provide the following information:

- Serial number of unit
- Model number or product name
- Software type and version number

North American Contacts

Inside North America, contact Symbol at:

For sales and product information:

Symbol Technologies, Inc.
One Symbol Plaza
Holtsville, New York 11742-1300
Telephone: 1-631-738-2400/1-800-SCAN 234
Fax: 1-631-738-5990

For product support and service:

Symbol Global Support Center:
Telephone: 1-800-653-5350, +1-631-738-6213 (Outside North America)
Fax: 631-563-5410
Email: support@symbol.com

Or see the Symbol Web for additional local contact numbers <http://www.symbol.com/services/contactsupport>

(10)

International Contacts

Outside North America, contact Symbol at:
Symbol Technologies, Inc.
Symbol Place
Winnersh Triangle, Berkshire, RG41 5TP
United Kingdom
Telephone: 0800-328-2424 (Inside UK), +44 118 945 7529 (Outside UK)

For other sales offices, use the Symbol Services Web site for contact information

http://www.symbol.com/services/howto/howto_contact_us.html

Web Support sites

Comprehensive On-line support is available at the MySymbolCare Web-site. Registration is free and a variety of services can be linked through this Web-portal.

MySymbolCare - RMA repair requests

<http://www.symbol.com/services/msc/msc.html>

Symbol Services Homepage

<http://www.symbol.com/services/>

Symbol Software Updates

<http://www.symbol.com/services/downloads/>

Symbol Developer Program Web Site

<http://devzone.symbol.com/>

Additional Information

Obtain additional information by contacting Symbol at:

- 1-800-722-6234, inside North America
- +1-631-738-5200, in/outside North America
- <http://www.symbol.com/>

(11)

Regulatory Information

All Symbol devices are designed to comply with rules and regulations in locations they are sold and will be labeled as required. Any changes or modifications to Symbol Technologies equipment, not expressly approved by Symbol Technologies, could void the user's authority to operate the equipment.

Local language translations are available at the following website:

<http://www.symbol.com/services/manuals/>

EMI Compliance: Category 5 foiled twisted-pair cables must be used to ensure compliance with Class B emission limits.

Radio Frequency Interference Requirements



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for assistance

Radio Frequency Interference Requirements – Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

(12)

Marking and European Economic Area (EEA)

CE Statement of Compliance

Symbol Technologies, Inc., hereby declares that this device is in compliance with all the applicable Directives, 89/336/EEC, 73/23/EEC. A Declaration of Conformity may be obtained from <http://www2.symbol.com/doc/>

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Patents

This product is covered by one or more of the patents listed on the Web site: www.symbol.com/patents

(13)

(14)