



Cisco Aironet Series Power Injectors AIR-PWRINJ-60RGD1= and AIR-PWRINJ-60RGD2= Installation Instructions

This document describes the Cisco Aironet Series Access Point Power Injectors AIR-PWRINJ-60RGD1= and AIR-PWRINJ-60RGD2= (referred to as the *power injector* in this document) and provides instructions for mounting them.

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Product Overview

Part Number	Description
AIR-PWRINJ-60RGD1=	60W outdoor rated power injector, with North America AC power plug.
AIR-PWRINJ-60RGD2=	60W outdoor rated power injector, International version with blunt-end cable.
AIR-PWRINJ-60-PMK=	Optional pole mount bracket for both the power injector models.

The power injector increases wireless LAN deployment flexibility of the access point by combining 55-VDC power with the data signal, and sending both to the connected access point.

The power injector combines 55-VDC power (supplied by internal power supply) with the data signal, sending both to the access point. The power injector provides up to 60 W over all four wire pairs of shielded, outdoor rated Ethernet cable.

The total length of the Ethernet cable from the AP to the switch must not exceed 320 ft (100 m). The wire gauge of the cable must be 26 AWG.

The Ethernet cable from the switch to the power injector must be a shielded CAT5e or higher Ethernet cable. The Ethernet cable from the power injector to the access point must be a shielded outdoor-rated CAT5e or higher Ethernet cable with a 0.20 to 0.35 inch diameter.

A shielded, outdoor Ethernet cable connects the power injector to a 10/100/1000 Ethernet switch, hub, or network, and another shielded, outdoor cable carries power and data to the access point's Ethernet port. The power injector's AC power receptacle connects an approved AC power cord to a wall outlet or power strip. The power injector can be mounted on most horizontal and vertical surfaces, but must be mounted in a vertical orientation to comply with safety requirements.

AIR-PWRINJ-60RGDx= Technical Specifications

Input voltage	90 to 264 VAC
Output voltage	55 VDC \pm 2%
Maximum current	2.0 A
Operating temperature	-40° to 122°F (-40 to 50°C) for 60W -40° to 131°F (-40 to 55°C) for 30W
Storage temperature	-40° to 185°F (-40° to 85°C)
Operating humidity	Maximum 95%, Non-condensing
Storage humidity	Maximum 95%, Non-condensing
Thermal Rating	45 BTU/Hr (@264VAC)
Weather Rating	IP66, NEMA 4X
Length	8.42 in. (214 mm)
Width	5.90 in. (150 mm)
Height	2.75 in (70 mm)
Weight	2.98 lbs (1.35Kg)
AC Power Cable Length	3.03 meters
Regulatory and Safety Compliance	
Regulatory Compliance	IEEE 802.3af, IEEE 802.3at, RoHS Compliant, WEEE Compliant, CE
Electromagnetic Emission & Immunity	FCC Part 15, Class B CE, EN50522 Class B, EN55024 VCCI EN61000-4-5 Class 5 (6kV CM)
Safety Approvals	UL60950-1 & UL60950-22 GS Mark
Surge Protection	Meets Surge Protection as specified in GR-1089-CORE Issue 4 ITU-T K.20 6 kV on AC lines



FCC Compliance of Class B Devices

The following information is for FCC compliance of Class B devices:

The equipment described in this manual generates and may radiate radio-frequency energy. If it is not installed in accordance with Cisco's installation instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

Modifying the equipment without Cisco's written authorization may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Cisco Systems, Inc. could void the FCC approval and negate your authority to operate the product.

Important Safety Information

- Installation and removal of the power injector must be carried out by qualified personnel only.
The power injector's "DATA IN" and "DATA PWR OUT" ports are shielded RJ45 data sockets. They cannot be used as Plain Old Telephone Service (POTS) sockets. Only RJ45 data connectors can be connected to these sockets.
- Read the installation instructions before connecting the power injector to its power source.
- Follow basic electricity safety measures whenever connecting the power injector to its power source.
- A voltage mismatch can cause equipment damage and may 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 this power outlet.
- The equipment is intended only for installation in a Restricted Access Location.
- All wiring and connections shall be in accordance with NFPA 70 (NEC)
- For AIR-PWRINJ-60RGD1=: This product is fitted with a NEMA 5-15P plug for connection to the branch circuit. If other attachment methods are required, please reference local codes and requirements for proper connection to the branch circuit.
- For AIR-PWRINJ-60RGD2=: This product is fitted with a unterminated, 3-wire AC power cable. Please refer to local codes for requirements for proper connection to the branch circuit.

- This product is not intended to become a permanent part of the building structure.
- Power supply cord must not be attached to the building surface nor run through walls, ceilings, floors and similar openings in the building structure.
- Measures must be taken to prevent physical damage to the power supply cord, including proper routing.

Safety Precautions

Translated versions of the following safety warnings are provided in the *Safety Warnings* document that ships with the access point and is also available on Cisco.com.



IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.
Statement 1071

SAVE THESE INSTRUCTIONS



Do not work on the system or connect or disconnect cables during periods of lightning activity.
Statement 1001



Read the installation instructions before connecting the system to the power source. Statement 1004



This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated at not greater than 20A. Statement 1005



Only trained and qualified personnel should be allowed to install, replace, and service this equipment. Statement 1030



Ultimate disposal of this product should be handled according to all national laws and regulations.
Statement 1040



To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 131F (55C) Statement 1047


Warning

To prevent airflow restriction, allow clearance around the ventilation openings to be at least: **3 to 4 inches (7.6 to 10.1 centimeters)** Statement 1076


Warning

Installation of the equipment must comply with local and national electrical codes. Statement 1074


Caution

The power injector AC power termination must be accessible at all times, as it serves as the main disconnect device to the unit.


Warning

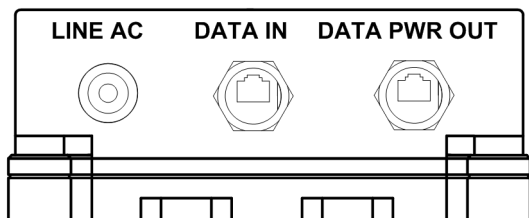
To reduce the risk of fire, use only **No. 26 AWG or larger telecommunication line cord**. Statement 1023

Connectors on the Power Injector

Figure 1 Earth Ground Connector on the Head of the Power Injector



Figure 2 Power and Data Connectors on the Base of the Power Injector



Unpacking the Power Injector

The following items are shipped with the power injector:

- A power injector with an AC line cord attached
- Two RJ45 male plug waterproof connectors (Figure 3)
- Ground cable (Figure 3)

If any item is missing or damaged, contact your Cisco representative or reseller.



Warning

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023



Note

You must use shielded outdoor rated Ethernet cables with this device.



Note

The power injector is not suitable for operation in a building's environmental air space and should not be installed in these environments.



Note

Ethernet cable from the switch to the power injector must be a shielded CAT5e or higher Ethernet cable. The Ethernet cable from the power injector to the access point must be a shielded outdoor-rated CAT5e or higher Ethernet cable with a 0.20 to 0.35 inch diameter.

Figure 3 *Factory-Shipped RJ45 Waterproof Connectors and Ground Cable*



Mounting the Power Injector on a Wall



Caution

All mounting methods on any wall surface is subject to the acceptance of local jurisdiction.

You can mount the power injector to most vertical or horizontal surfaces. The power injector does not ship with a mounting kit. You must provide the fasteners for the surface on which you intend to mount the access point. An optional pole mount kit, AIR-PWRINJ-60-PMK=, is also available.

The power injector has three mounting holes, one on the top end and two on the bottom end, that you can use to secure it to the surface. To mount the power injector using these screw holes, use three fasteners of at least 1-3/8 inches (35mm) in length, or of the appropriate type for the surface on which you are mounting the power injector on.



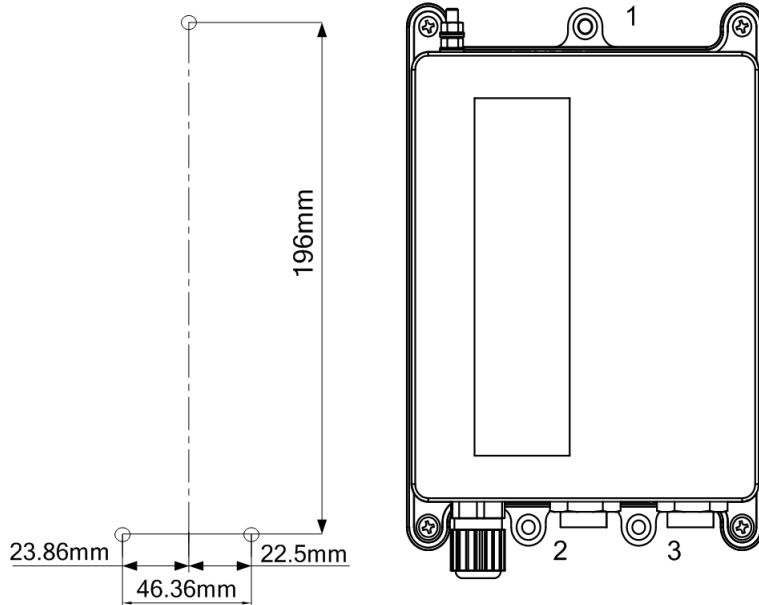
Note

Though there are no ventilation openings on the power injector, you are recommended to keep some clearance around the front of the product.

To mount the power injector on a horizontal or vertical surface, follow these steps:

- Step 1** Use the power injector to mark the positions of the mounting tab holes on the surface where you want to mount the power injector. See [Figure 4](#).
- Step 2** Drill holes at the locations you marked and insert the wall anchors. The holes need to be 9/32_inches (7mm) long. Use M5 or #10 wall anchors.
- Step 3** Mount the power injector on the wall and align it with the screw holes. Use fasteners of at least 1-3/8 inches inches (35mm) in length. Insert the fasteners into the mounting tab holes and tighten.
- Step 4** Ground the power injector, using the ground wire shipped with the power injector. Attach one end to the Earth Ground connector on the head of the power injector (see [Figure 1](#)), and attach then other end to a permanent ground connection. The ground lug used is an M6 stud.
- Step 5** Proceed with the [“Connecting Data and Power to the Injector”](#) section on page 11.

Figure 4 Locations of Mounting Screw Holes – Marked 1, 2, 3



Pole Mounting the Power Injector Using AIR-PWRINJ-60-PMK=

You can mount the power injector on poles of up to 8 inches (25.4 mm to 203.2 mm) in diameter, using the optional pole mount kit, AIR-PWRINJ-60-PMK=.

The AIR-PWRINJ-60-PMK= pole mount kit consists of:

- Metal bracket
- 2 x Worm screw clamps
- 3 x M5X16 countersunk head Screw
- 4 x M6*110 hexagon head screw
- 8 x M6 flat washer
- 4 x M6 lock washer
- 4 x M6 hexagon nut



Note

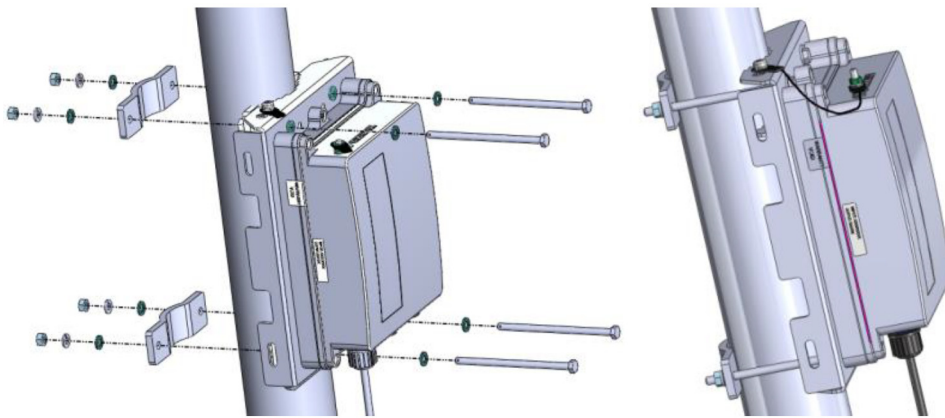
Though there are no ventilation openings on the power injector, you are recommended to keep some clearance around the front of the product.

To mount the power injector on a pole, use for guidance, and follow these steps:

- Step 1** Mount the metal bracket of the AIR-PWRINJ-60-PMK= at the required position on the pole.
- Step 2** Fasten the bracket to the pole using the worm screw clamps and the M6*110 hexagon head screw, flat washers, lock washers, and hexagon nuts. See [Figure 5](#).

- Step 3** Mount the power injector on pole bracket. The power injector has three mounting holes, one on the top end and two on the bottom end, that you can use to secure it to the pole bracket (see [Figure 4](#)). Mount the power injector using these screw holes and the three M5X16 countersunk head screws.
 - Step 4** Ground the power injector, using the ground wire shipped with the power injector. Attach one end to the Earth Ground connector on the head of the power injector (see [Figure 1](#)), and attach then other end to a permanent ground connection.
 - Step 5** Proceed with the [“Connecting Data and Power to the Injector”](#) section on page 11.
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Figure 5 Pole-Mounting the Power Injector



Connecting Data and Power to the Injector



Warning

To reduce the risk of fire, use only **No. 26 AWG or larger telecommunication line cord**. Statement 1023



Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables. Statement 1021

To connect the data cables and to power up the power injector, follow these steps:

Step 1 Plug a shielded outdoor rated Ethernet cable, using the factory-shipped waterproof RJ45 connector, into the DATA PWR OUT port on the power injector. Assembling of the waterproof RJ45 connector is shown in [Figure 6](#).

Step 2 Plug the other end of the Ethernet cable into the Ethernet Port on the access point.



Note For detailed information about connecting the Ethernet cable to an access point, see the *Hardware Installation Guide* for that access point.

Step 3 Plug a shielded outdoor rated Ethernet cable, using the factory-shipped waterproof RJ45 connector, into the DATA IN port on the power injector. Assembling of the waterproof RJ45 connector is shown in [Figure 6](#).

Step 4 Plug the other end of the Ethernet cable into your Ethernet switch, hub, or network.

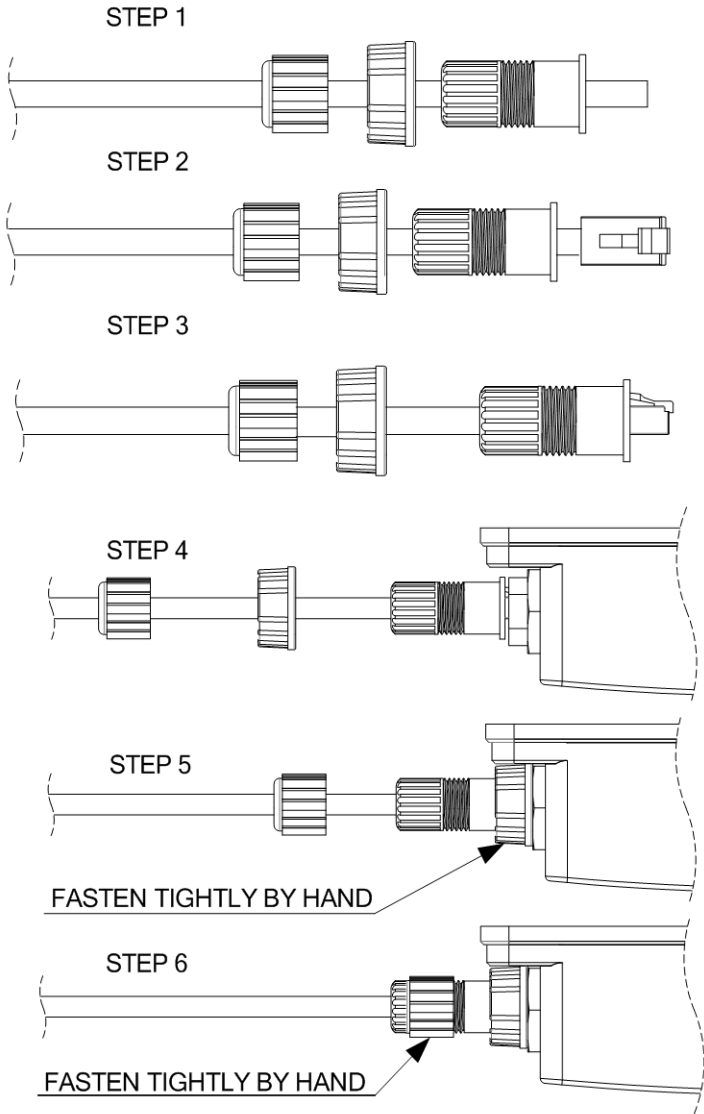
Step 5 Plug in the AC power cord. For the RGD1=, plug the AC connector into suitable a AC receptacle. For the RGD2 = follow local codes to terminate the three wires of the AC cable. For AC power cord and wire sizes, see [Table 1](#).

Step 6 Connect the other end of the power cord into a 100-VAC to 240-VAC power source

Table 1 AC Power Cord and Wire Sizes

Type	AC Cord Sizes	Individual AC Wire Sizes
RGD2=	6.8mm +/-0.4mm	0.75mm/3C
RGD1= (for reference only)	8mm +/-0.4mm	18AWG/x3C

Figure 6 *Assembling of Factory-Shipped Waterproof RJ45 Connectors*



Power Injector Input and Output Connections

This section describes the pin signals of the power injector input and output connectors. [Table 2](#) describes the RJ-45 pin signals of the power injector input connector (DATA).

Table 2 *Power Injector Input Connector (DATA) Pinouts*

Pin Number	Signal Name
1	Ethernet signal pair (10/100/1000Base-T)
2	
3	Ethernet signal pair 10/100/1000Base-T)
6	
4	Ethernet signal pair (1000Base-T)
5	
7	Ethernet signal pair (1000Base-T)
8	
Shield	Chassis ground

[Table 3](#) describes the RJ-45 pin signals for the power injector output connector (DATA PWR OUT).

Table 3 *Power Injector Output Connector (DATA PWR OUT) Pinouts*

Pin Number	Signal Name
1	Ethernet signal pair (10/100/1000Base-T) and 55 VDC return
2	
3	Ethernet signal pair (10/100/1000Base-T) and 55 VDC (+)
6	
4	Ethernet signal pair (1000Base-T) and 55 VDC (+)
5	
7	Ethernet signal pair (1000Base-T) and 55 VDC return
8	
Shield	Chassis ground

