

INSTALLATION GUIDE

NI WSN-3294 Outdoor IP Enclosure

For NI WSN-9791 Ethernet Gateway

This installation guide describes how to install and use the National Instruments WSN-3294 outdoor IP enclosure. The NI WSN-3294 outdoor IP enclosure is an accessory that provides NI WSN-9791 devices with a minimum ingress protection (IP) rating of IP65 against dust and water in harsh outdoor or industrial environments. For more information about IP ratings, refer to the [Environmental](#) section. For the NI WSN-9791 device specifications, refer to the *device user guides* available at ni.com/manuals.

Figure 1 shows the NI WSN-3294 outdoor IP enclosure components.

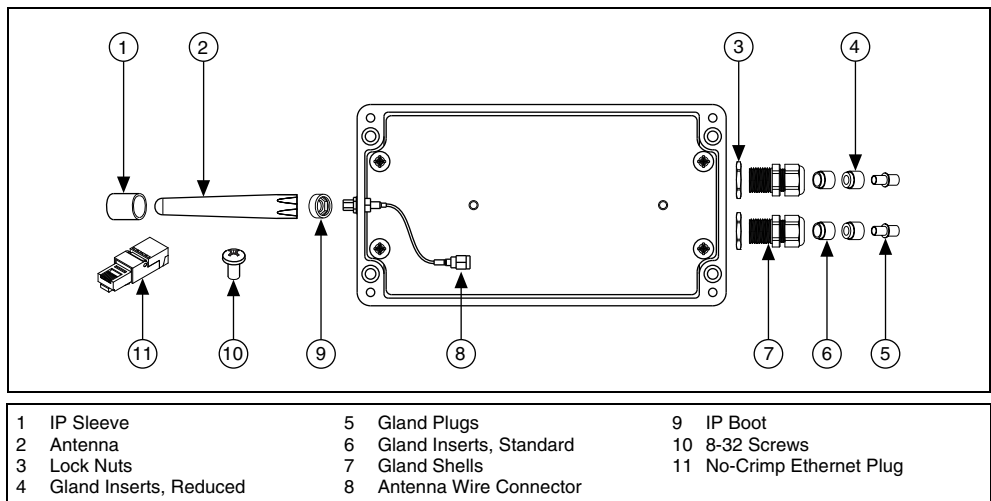


Figure 1. NI WSN-3294 Outdoor IP Enclosure Components



Note You need a #1 flat and a #2 Phillips screwdriver to install the NI WSN-3294.

The NI WSN-3294 kit includes the following items:

- NI WSN-3294
- Two M16 gland shells
- Two gland inserts, standard size
- Two gland inserts, reduced size
- Two gland plugs
- Two lock nuts
- Two 8-32 screws
- 2.4 GHz antenna
- IP Boot
- IP Sleeve

- Antenna wire connector
- No-crimp Ethernet plug

Dimensions

Figure 2 shows the NI WSN-3294 dimensions.

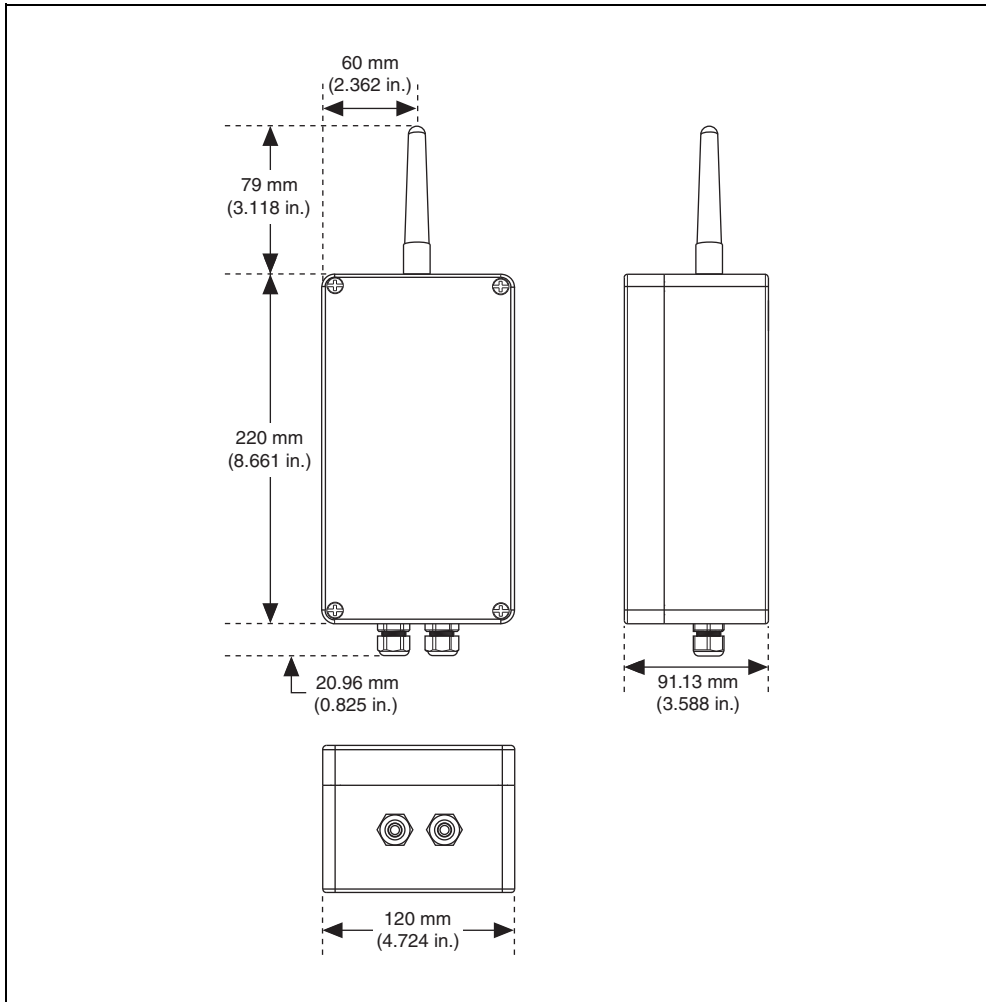


Figure 2. NI WSN-3294 Dimensions

Mounting the NI WSN-3294

Figure 3 shows the NI WSN-3294 mounting hole dimensions, which are molded on the enclosure back surface for convenience. NI recommends mounting the NI WSN-3294 before installing the NI WSN-9791 device and attaching the internal and external cables.



Tip Attach the cover after mounting the NI WSN-3294 and installing the NI WSN-9791 device, as shown in Figure 10.

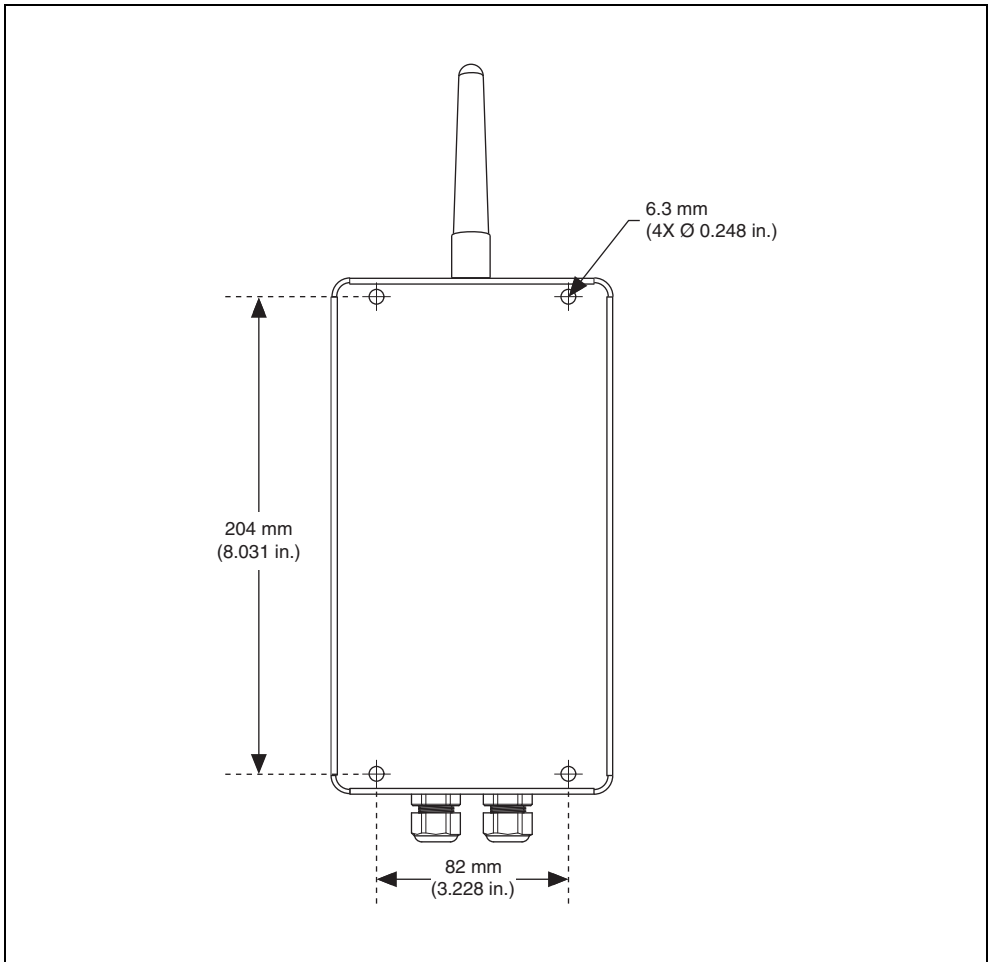


Figure 3. NI WSN-3294 Mounting Hole Dimensions and Locations

Setting Up and Installing the NI WSN-3294

Complete the following steps to set up and install the NI WSN-3294:

Step 1: Unpack and Inspect the Kit Contents

Remove the device from the package and inspect the device and kit contents. Contact NI if the device appears damaged. Do *not* install a damaged device or use kit contents that appear damaged.

Step 2: Unscrew and Detach the NI WSN-3294 Cover

The cover of the NI WSN-3294 is equipped with captive screws. Use a #2 Phillips screwdriver to remove the cover.

Step 3: Connect Antenna Wire Connector

The NI WSN-3294 ships with an internal antenna cable to connect the NI WSN-9791 device to the IP rated antenna connector on the inside of the NI WSN-3294.

Step 4: Install the NI WSN-9791 Device

Install the front screw, shown in Figure 4, then back it out until the NI WSN-9791 just slides under it (approximately 0.08 in.). Ensure that NI WSN-9791 is oriented as shown in Figure 4. Secure the NI WSN-9791 by installing the rear screw, shown in Figure 5, through the back of the enclosure.

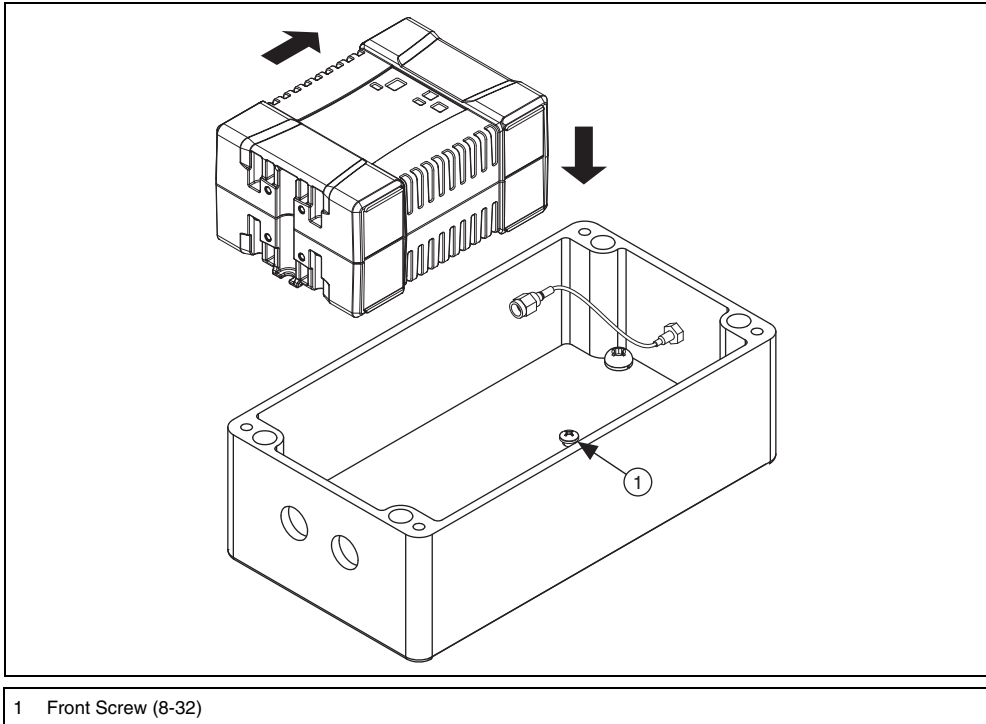


Figure 4. Installing the NI WSN-9791 Device

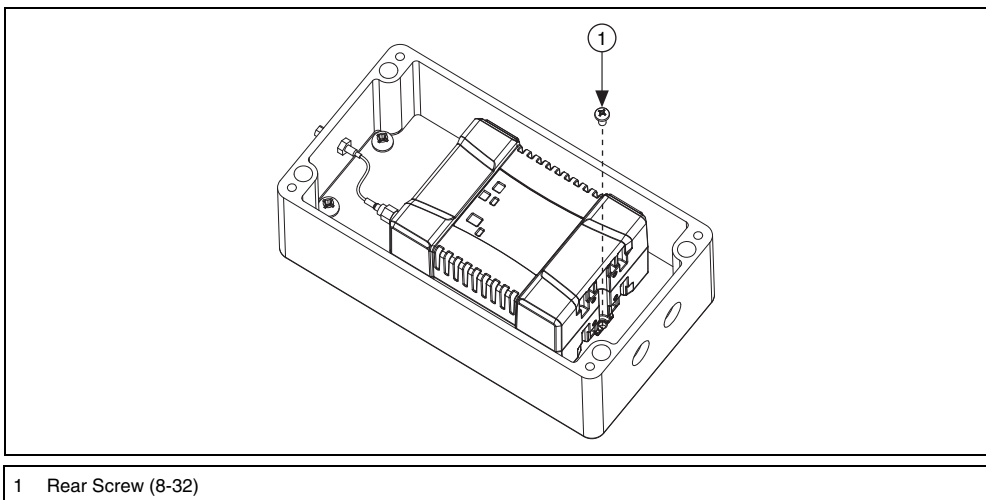


Figure 5. Securing the NI WSN-9791

Step 5: Install the Antenna

Refer to Figure 6 to install the antenna assembly.

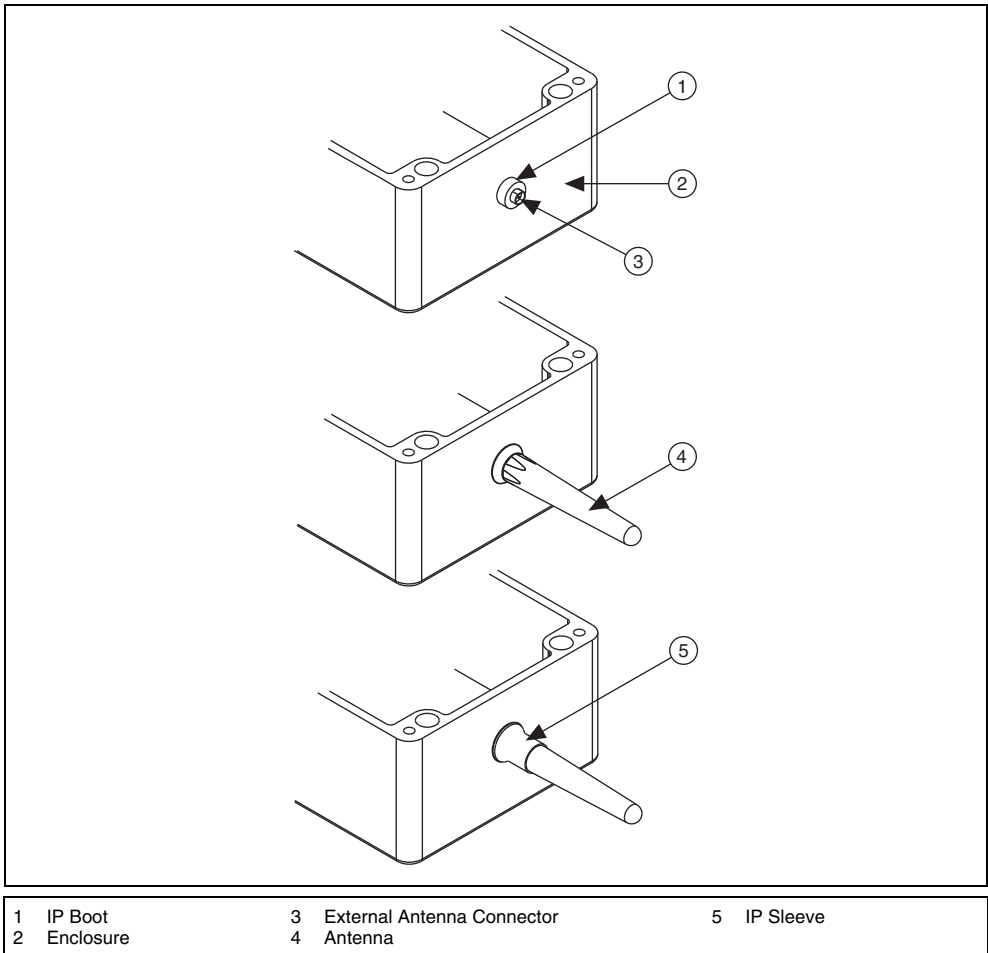


Figure 6. Antenna Assembly Installation

On the outside of the enclosure, place the IP boot onto the external antenna connector with the smaller diameter hole out. Screw the antenna onto the external antenna connector until it bottoms out. Slide the IP sleeve down the antenna and over the IP boot until the IP sleeve touches the enclosure.

Step 6: Attach External Cables and Assemble Glands

The NI WSN-3294 ships with two different insert sizes to use with the included gland shells. The larger insert can accept cables with a diameter from 4–8 mm, while the smaller insert can accommodate cables from 2–6 mm. For the larger 4–8 mm insert, NI recommends the Ethernet cable (NI Part Number: 182219-05) and the power cord (Part Number: 780703-01) available from ni.com.

The NI WSN-3293 inserts accessory kit (NI Part Number: 195738-01) provides additional wiring options and is available at ni.com. Table 1 shows the insert sizes.

Table 1. NI WSN-3292 Insert Sizes

Number of Holes	Wire Size
2	3 mm
4	1.7 mm
6	1.4 mm
10	1.4 mm
Solid Plug*	—

* The solid plug can be frozen and drilled to any size and configuration needed.

Once the cable(s) and corresponding inserts are selected, complete the following steps to assemble the cable glands:

1. Assemble the selected inserts into the gland shell as shown in Figure 7.

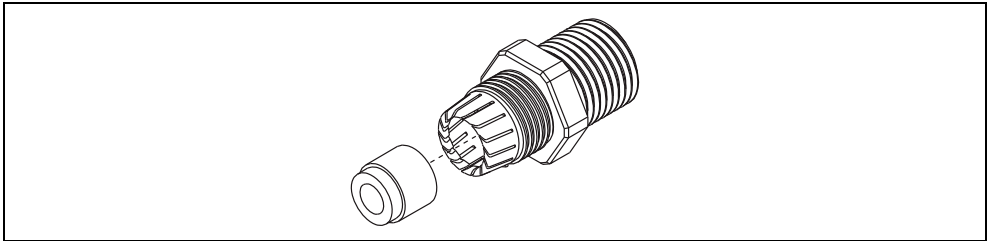
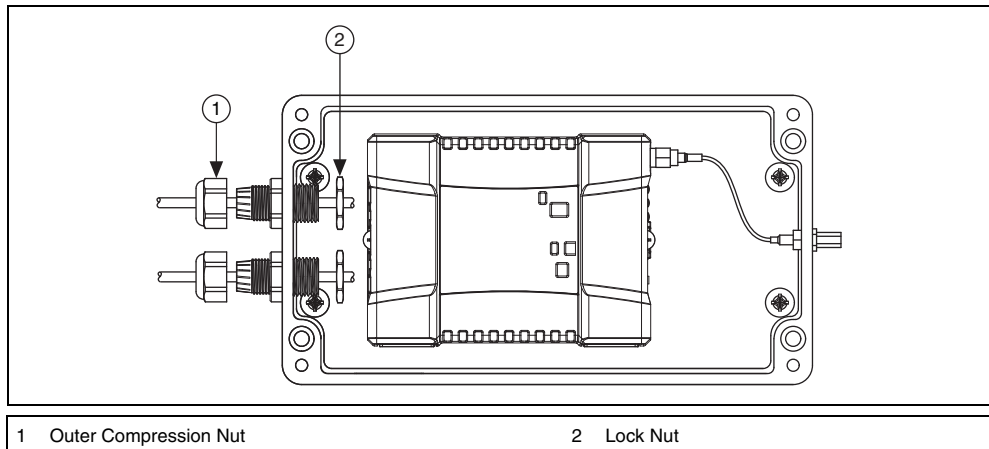


Figure 7. Assembling Insert into Gland Shell

2. Insert the cables into cable glands, then insert the glands into the NI WSN-3294 enclosure cutout.
3. Loosely thread the included lock nut onto the gland shell as shown in Figure 8.

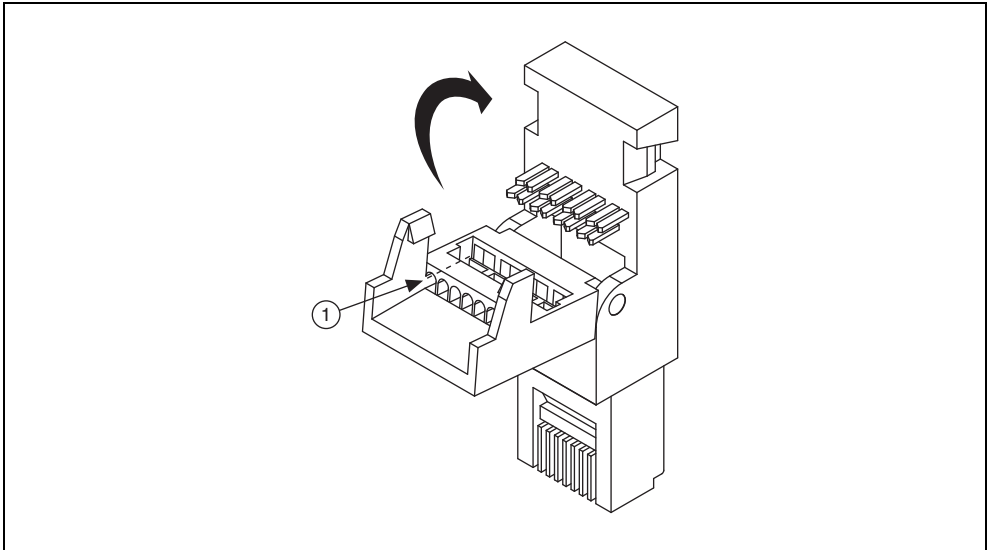


1 Outer Compression Nut

2 Lock Nut

Figure 8. Cable Installation

4. Tighten the lock nut to approximately $3.75 \text{ N} \cdot \text{m}$ (33.2 lb · in.) ensuring that the O-ring is pressed flat against the enclosure wall. Tighten the outer compression nut to approximately $2.50 \text{ N} \cdot \text{m}$ (22.1 lb · in.) to seal the cable.



1 Wire Connection

Figure 9. No-Crimp Ethernet Plug

5. If you are using the included no-crimp Ethernet plug, start by lining the colored wires up with the chart on the inside of the plug. Use the **A** chart for older CAT5 cables or the **B** chart for most new CAT5e cables. Then, insert the wires into the tunnels, ensuring that they protrude all the way to the back of the plug. Finish by snapping shut the lid as shown in Figure 9. To verify all the wires are properly connected, use a DMM to check connectivity. Refer to the *NI WSN-9791 User Guide and Specifications* for information about wiring power.

Step 7: Attach the Cover

The cover of the NI WSN-3294 is equipped with captive screws. Use a #2 Phillips screwdriver to install the cover as shown in Figure 10.

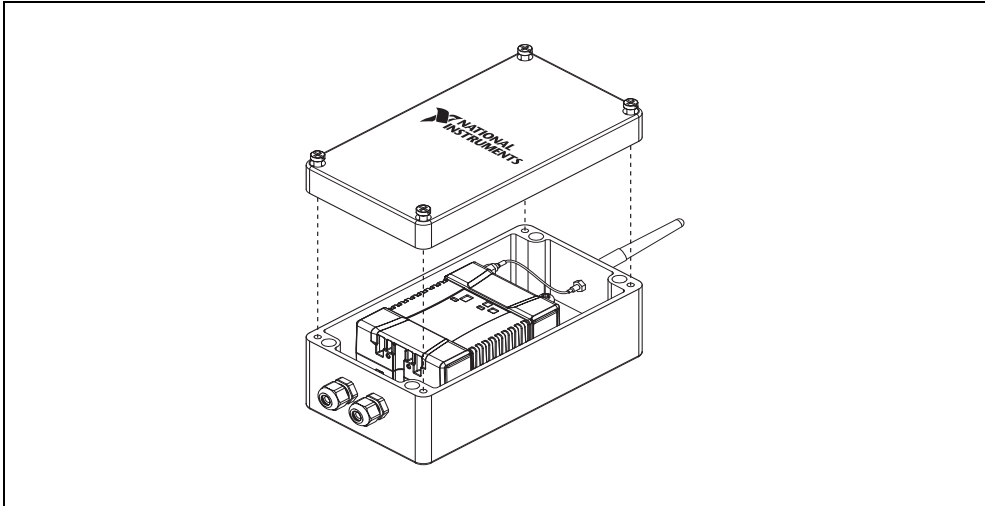


Figure 10. Attaching the NI WSN-3294 Cover

Environmental



Caution The NI WSN-3294 is intended for outdoor use in most environments, but does have the following limitations. NI recommends accounting for these limitations when using the NI WSN-3294.

- The NI WSN-9791 device can cause the enclosure internal temperature to rise up to 6 °C.
- Placing the NI WSN-3294 in direct sunlight causes the internal temperature to rise above the outdoor ambient.

Understanding IP Ratings

Proper use and installation of an NI WSN-9791 device in an NI WSN-3294 outdoor IP enclosure provides a minimum IP rating of IP65 from harsh outdoor and industrial environments. An IP rating of IP65 protects against entry by dust particles and low pressure water jets.

The two-digit ingress protection (IP) rating is defined by the IEC 60529 standard and specifies the degree to which the enclosures protect against the intrusion of solid particles (represented by the first digit) and water (represented by the second digit). Table 2 lists the degree of protection.

Table 2. IP Ratings

First Number (Protection Against Solid Objects)		Second Number (Protection Against Water)	
0	No protection	0	No protection
1	Protects against objects greater than 50 mm	1	Protects against vertically dripping water
2	Protects against objects greater than 12.5 mm	2	Protects against direct sprays up to 15° from vertical
3	Protects against objects greater than 2.5 mm	3	Protects against direct sprays up to 60° from vertical
4	Protects against objects greater than 1 mm	4	Protects against direct sprays from all angles
5	Dust-protected (no harmful deposit)	5	Protects against low pressure water jets
6	Dust-tight	6	Protects against high pressure water jets
—	—	7	Immersible in water up to 1 m
—	—	8	Immersible in water beyond 1 m

Environmental Management

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)



EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）



中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息, 请登录 ni.com/environment/rohs_china。(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

Where to Go for Support

The National Instruments Web site is your complete resource for technical support. At ni.com/support you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs. For telephone support in the United States, create your service request at ni.com/support and follow the calling instructions or dial 512 795 8248. For telephone support outside the United States, contact your local branch office:

Australia 1800 300 800, Austria 43 662 457990-0, Belgium 32 (0) 2 757 0020,
Brazil 55 11 3262 3599, Canada 800 433 3488, China 86 21 5050 9800,
Czech Republic 420 224 235 774, Denmark 45 45 76 26 00, Finland 358 (0) 9 725 72511,
France 01 57 66 24 24, Germany 49 89 7413130, India 91 80 41190000, Israel 972 3 6393737,
Italy 39 02 41309277, Japan 0120-527196, Korea 82 02 3451 3400, Lebanon 961 (0) 1 33 28 28,
Malaysia 1800 887710, Mexico 01 800 010 0793, Netherlands 31 (0) 348 433 466,
New Zealand 0800 553 322, Norway 47 (0) 66 90 76 60, Poland 48 22 328 90 10,
Portugal 351 210 311 210, Russia 7 495 783 6851, Singapore 1800 226 5886,
Slovenia 386 3 425 42 00, South Africa 27 0 11 805 8197, Spain 34 91 640 0085,
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