PDW30 Point-to-Point Wireless Bridge
Installation Guide

Thank you for your purchase of the PDW30 Point-to-Point Wireless Bridge.

This installation guide will briefly describe some common setup procedures and best practices for this device.

This guide includes:

Additional information about the PDW30 Wireless Bridge can be found in the instruction manual included on the CD or available at www.predig.com.

Menu Button – Access *Programming Mode* and to return to *Run Mode*.

Enter Button – Access a menu or accept an option in *Programming Mode*.

Previous Button – Return to a previous menu in *Programming Mode* or *Run Mode*. Increment selected digit during numeric input.

Display/Next Button – Advance to the next menu or select next digit in *Programming Mode*. Display the current analog and digital input values in *Run Mode.*

Programming buttons are located under the enclosure glass. They can be accessed by removing the enclosure cover.

233 South Street
Hopkinton MA 01748-2208 USA
Tel. (508) 655-7300   www.predig.com

Important Information

Read complete instructions prior to installation and operation of the instrument.

Read all product labels completely and follow all instructions and requirements listed on the labels for installation or service.

Wiring connectors are accessed by unscrewing and removing the enclosure cover. To access electrical connectors, remove the two securing screws and then remove the electronics module. Connectors are on the rear of the electronics module.


Installation and service should be performed only by trained service personnel. Service requiring replacement of internal sub-components must be performed at the factory.

Available Accessories

Optional accessories for the PDW30 include solutions for long distance wireless transmission, convenient mounting kits, and wireless surveying tools.
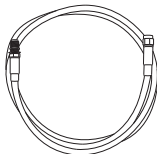
Directional Antennae

High gain directional antennae allow the PDW30 wireless units to broadcast wireless signals much farther with a clear line of sight.
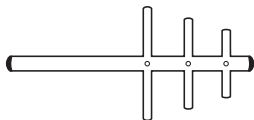
PDA3900

Antenna Extension Cables

Use antenna extension cables to mount the device antenna high above the ground in order to clear obstacles that could hinder signal strength.

**PDA3120 &
PDA3140**

Repeaters

For especially long range applications, wireless repeater modules are available.

PDW30-RNA

Order Accessories

To order accessories for the PDW30, please contact our sales team at:

Phone: (800) 343-1001 or (508) 655-7300
Fax: (508) 655-8990
Email: sales@predig.com
Web: www.predig.com

Basic Wiring of Wireless Units

In order to wire the wireless units, it is necessary to unscrew their covers and remove their electronics modules. Screw terminals are located on the reverse side of the electronics modules. Wires should be run through the conduit entry holes at the rear of the device enclosures. The following diagram shows screw terminal locations on the electronics module.
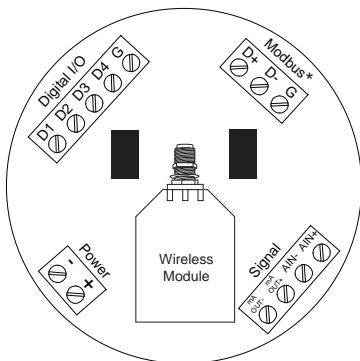
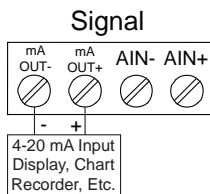***Note:** Modbus® I/O is covered in the instruction manual.

Analog Input Wiring

The analog input may be either 4-20 mA, 0-10 V, 0-5 V, or 1-5 V. The appropriate input type must be programmed for each unit.
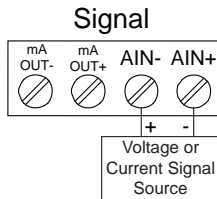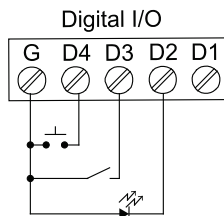

Analog Output Wiring

The output signal is 4-20 mA regardless of the input type on the other wireless module.


Digital Input/Output Wiring

The primary unit settings determine whether a digital connection is an input or an output.

Note: Each connection may be set independently as either an input or an output. In the diagram below, D4 & D3 are inputs and D2 is an output.


Device Power

Make sure that the power supplies being used to power each wireless unit can provide between 12 and 28 VDC.
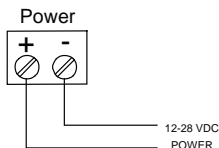
Wireless Installation

The diagram below shows a typical PDW30 installation. A transmitter is outputting an analog signal to the primary wireless unit. The analog signal is being wirelessly broadcasted to the secondary unit which then sends a 4-20 mA signal to the destination device. This guide will show you how to configure this type of installation.

Range: 500 ft (152.4 m) indoor, 1 mi (1.6 km) outdoor/line-of-sight
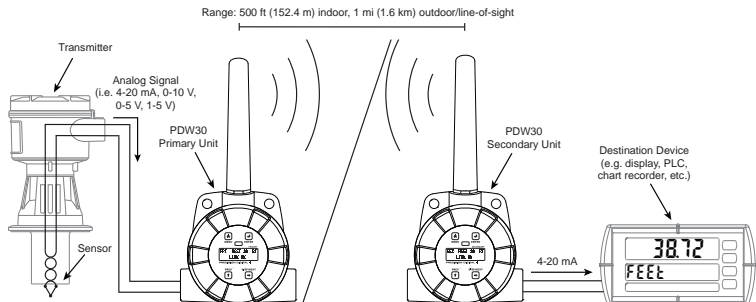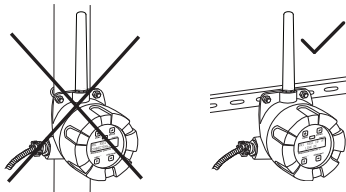
Installation Tips

Any wireless network can be negatively affected by certain factors, such as physical obstacles and improper equipment placement. Please review the wireless installation tips below in order to avoid some common installation mistakes.

Note: As is the case with any equipment installation, a little leg work at the beginning can go a long way. Take the time to verify that the wireless units can communicate with each other from the desired mounting locations prior to installation.
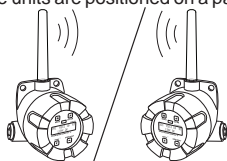
Obstacles

Check that there are no obstacles blocking the wireless signal path. Do not install the wireless units with their antennae abutting pipes or other metal objects.

Note: Make sure to install as high as practicable, above the height of any known obstacles.

Signal Noise

Wireless networks can be impeded by other wireless signals and electrical noise. In order to limit signal noise from other 900 MHz wireless signals, ensure vertical separation of at least 26 inches (66 cm).

Orientation

The antennae broadcast in a horizontal pattern. Make sure that the units are positioned on a parallel plane.

Environmental Interference

Intermittent environmental factors, such as rain, snow, and humidity, can affect wireless reception. Make certain that the *received signal strength indicator* (RSSI) on the device is at least 5 in clear conditions in order to account for non-optimal conditions.

PRECISION DIGITAL +

4

Programming the Wireless Units

It is necessary to program a few settings on each device in order for them to work with your particular system. Follow the instructions below on the *primary* and *secondary* wireless units to get up and running. The following page offers additional programming instructions.

Primary Device Setup

The *primary* wireless unit determines network protocol and digital I/O settings for the *secondary* unit, simplifying the setup process. If a digital connection is programmed to be an **input** on the *primary* unit, that same connection will be an **output** on the *secondary* unit.

1
• Press 🏠 to access the device menu.
• Press ◀ to access the ANALOG INPUT menu.

2
• If the desired input type is not 4-20 mA, press ◀. Press ➡ to select the desired input type and press ◀.
• Press ➡ so the display reads BACK TO SETUP MENU and press ◀.

3
• Press ➡ and then press ◀ to access the DIGITAL IO menu.
• The I/O setting of each digital connection can be viewed by pressing ➡ and ⬆.

4
• To change whether a digital connection is an input or output, press ◀. Press the ➡ button to select the appropriate setting and then press ◀.
• Press ➡ until the display reads BACK TO SETUP MENU and press ◀.

5
• Press ➡ and then press ◀ to access the NETWORK AND MODBUS SETUP menu.

6
• If it is necessary to change the network ID, press ◀. Press ➡ to change which digit is selected and press ⬆ to increment the selected digit. Press ◀ when done.
• Press 🏠 to return to *run mode*.
Note: The primary and secondary units must share the same unique network ID in order to communicate.

Secondary Device Setup

The *secondary* wireless unit has fewer menu options than the *primary* unit. It is only necessary to verify the *secondary* unit's network ID and analog input type.

1
• Press 🏠 to access the device menu.
• Confirm that the network ID is the same as for the *primary* wireless unit.
• If it is necessary to change the network ID, press ◀. Press ➡ to change which digit is selected and press ⬆ to increment the selected digit. Press ◀ when done.

2
• Press ➡ to view the ANALOG INPUT menu.
• If the desired input type is not 4-20 mA, press ◀ to edit and ➡ to select a different input type. When done, press ◀.
• Press 🏠 to return to *run mode*.

Setting a Password

Both the *primary* and *secondary* wireless units may be protected with a four digit numeric password in order to prevent unauthorized tampering. When a password has been set, you will be prompted to enter that password in order to access the device menu.

1

• Press ⌂ to access the device menu.

2

• Press ➡ until the display reads PASSWORD SETUP and press ◀ to access.

3

• To edit the password, press ◀. Press ➡ to change which digit is selected and press ⬆ to increment the selected digit.
• If you would like to disable the password, set it to 0000.

4

• Press ◀ when done.
• Press ⌂ to return to *run mode*.

Accessing a Password Protected Device

Once a password has been set on the device, you will be required to enter that password before being allowed to access the device menu.

1

• From *run mode*, press ⌂ to access the device menu. The device will display ENTER PASSWORD.

2

• Using ➡ to change which digit is selected and ⬆ to increment the selected digit, enter the same four digit number entered in step 3 above. Press ◀ when done. The device will display ACCESS GRANTED.

Restoring Factory Defaults

If a mistake has been made while programming either the *primary* or *secondary* device, and it is unclear where the error occurred, the best option may be to perform a factory reset of the device and begin again.

1

• Press ⌂ to access the device menu.

2

• Press ➡ until the display reads RESTORE DEFAULTS and press ◀ to access.

3

• The device will ask if you are sure that you want to load the factory defaults. Press ➡ until YES is displayed and then press ◀.

4
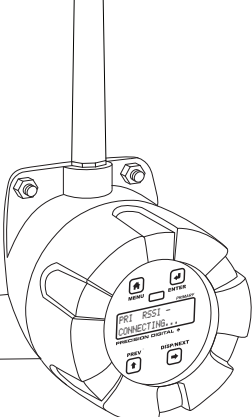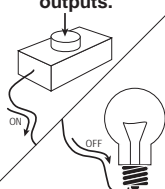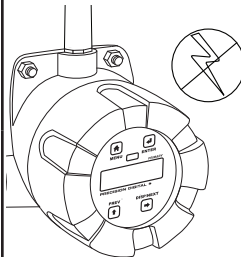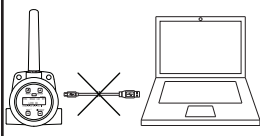
• The device will load the factory default settings and reboot.

Troubleshooting Guide

If you are experiencing difficulties with your wireless installation, consult the troubleshooting steps listed below. For best results, identify the symptoms of the problem you are having and attempt all of the corrective actions listed for the particular symptom.

Symptom	Possible Cause	Corrective Action
Devices will not connect.	Devices have mismatched network IDs.	• Devices will not connect if they do not have the same network ID. Verify that both devices share the same network ID by following the directions on page 5.
	Devices are out of range or there are obstacles blocking the wireless path.	• Bring devices closer together to see if it alleviates the issue. Units will display LINK OK if they are connected. If devices connect, consider placing closer together permanently, removing any obstacles, or mounting higher. • Ensure antennae are on parallel plane. Devices that are vertically separated will not have as strong of a connection. • If communicating over distance of miles, consider installing high gain directional antenna.
	Multiple wireless devices in the area with the same ID.	• If there are multiple PDW30 wireless systems, verify that each pair has its own unique network ID.
Intermittent signal issues.	Signal is too poor.	• Check RSSI. If signal is too low, consider moving devices closer together, clearing obstacles in wireless path, or mounting devices higher. • Ensure devices are on parallel plane. • If communicating over distance of miles, consider installing high gain directional antenna.
	Temporary obstacles are blocking the wireless path.	• Temporary obstacles, such as large trucks or heavy equipment, can interfere with wireless path. Consider moving wireless units higher or to an area with less traffic.
Destination device reads out of range, zero, or incorrect.	Wireless device has mismatched input type.	• Make sure that input type on the device is correct for the analog input being used. Options are 4-20 mA, 0-10 V, 0-5 V, or 1-5 V.
	Destination device is not scaled properly.	• Destination device must accept 4-20 mA signal and be scaled to properly display the signal. Check the manufacturer's instruction manual for how to do this.
	Signal connections are improperly wired.	• Double check to make sure all of the signal connections are properly wired to all devices. Check wiring diagrams on page 3.

Symptom	Possible Cause	Corrective Action
Digital inputs are not corresponding with digital outputs.	Devices have mis-matched input/output settings.	• Check to make sure the digital connection is programmed appropriately as either an input or an output as described in steps 3 & 4 on page 5.
	Devices are improp-erly wired.	• Check to make sure all digital inputs and outputs are properly wired to all devices. Check wiring diagrams on page 3.
Device will not power on.	Not enough voltage is coming from the power supply.	• Devices require at least 12 VDC each in order to power on. Check that the power supply is providing enough voltage to the device and that there are not too many devices drawing from the supply.
	Devices are improp-erly wired.	• Check to make sure all power connections are properly wired to all devices. Check wiring diagrams on page 3.
Device will not connect to PC via USB	Wireless device is not powered.	• The device must be powered by a 12/24 VDC power supply in order for the PC to recognize it. Power the wireless device and try again.
	Software version is outdated	• Check that you are running the latest soft-ware version. The latest version of PDW Manager can be downloaded at **www.predig.com/PDWManager**.
	USB cable is faulty	• Try connecting the wireless device using a known good micro USB cable. Any standard USB A to micro USB B cable should work.
Other Issue	If you are experiencing a symptom not listed here, or the suggested troubleshooting steps do not alleviate your problem, please contact technical support at: **Phone:** (800) 610-5239 or (508) 655-7300 **Fax:** (508) 655-8990 **Email:** support@predig.com **Web:** www.predig.com	