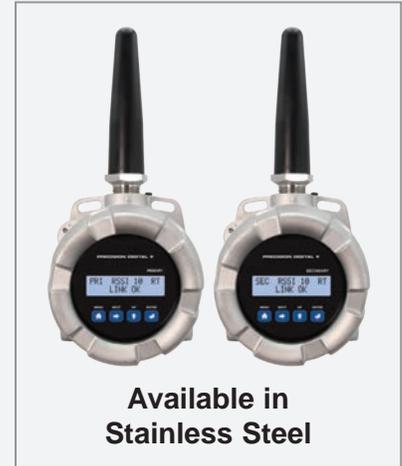


PDW30 Point-To-Point Wireless Bridge

Data Sheet



**PRECISION
DIGITAL** 
WIRELESS



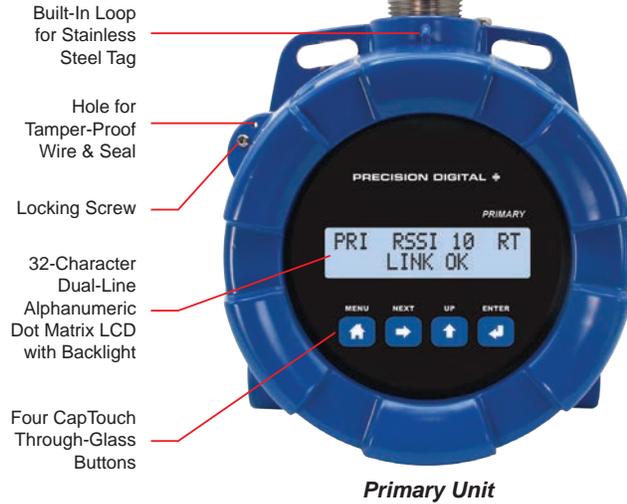
- Signal Wire Replacement Bridge Consisting of a Matched Pair of Wireless Field Units
- Virtually Plug and Play Right out of Box
- Range: 1 Mile Line-of-Sight Outdoor, 500 Feet Indoor; Repeaters Available to Extend Range
- Wireless Transmission Between Primary and Secondary Unit of
 - 4-20 mA (Separate Signals Going Both Ways)
 - Discrete (4 digital I/O Signals Going Both Ways)
 - RS-485 Modbus
- Inputs: (Wired to Units) 4-20 mA or 0-10 V (1), Discrete/Digital (up to 4), Modbus
- Outputs: (Wired to Units) 4-20 mA (1), Discrete/Digital (up to 4), Relays (2, optional), Modbus
- Isolated RS-485 Modbus Communications
- Loss of Signal (LoS) Digital Output
- PDA10 Signal Strength Survey Tool to "Try Before You Buy"
- Field Installable Relay Module with Two Form A (SPST) 5A Relays (Available for Both Units)
- Simple to Configure Using PDW Manager Programming Software and On-Board USB
- Backlit Display Provides Helpful Input & Output Information
- CapTouch Through-Glass Button Programming For Non-Advanced Settings
- Device Communication Secured by Enabling 128-bit AES Encryption
- Password Protection
- Remote Yagi Directional Antennas Available
- IP68, NEMA 4X Aluminum & Stainless Steel Enclosures With Plenty of Room for Field Wiring
- Operating Temperature Range: -55 to 75°C (-67 to 167°F)
- Conformal Coated PCBs for Dust & Humidity Protection
- Flange for Wall or Pipe Mounting; Loop for Stainless Steel Tag; Holes for Tamper-Proof Seal
- 9-30 VDC Power
- 3-Year Warranty

OVERVIEW

Front



1 MILE
OUTDOOR LINE-OF-SIGHT
500 FT
INDOOR RANGE



Primary Unit



Secondary Unit

Factory Installed Attached Antenna with 3/4" NPT Conduit Connection (Not fully pictured)

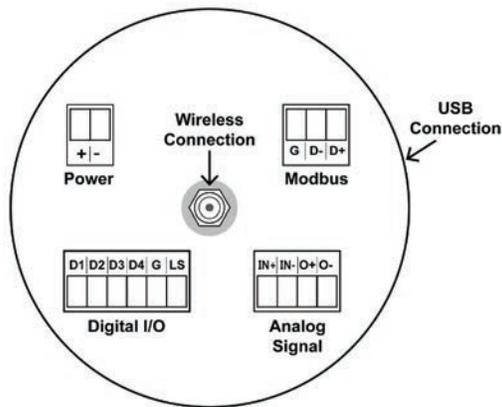
Flange for Wall or Pipe Mounting

IP68, NEMA 4X Die-Cast Aluminum & Stainless Steel Enclosures (Both units must be the same metal)

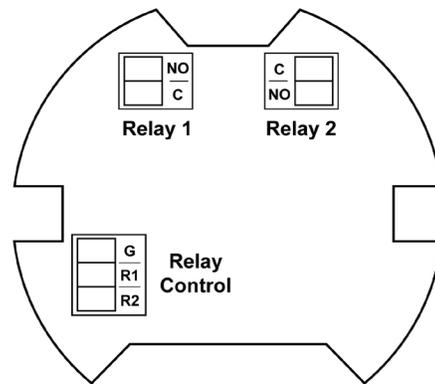
Label to Identify Primary or Secondary Unit

Two 3/4" NPT Conduit Openings for Wiring

Connections



PDW30 Display Module Connections



PDWM-2RY Relays Option Module Connections

Signal Wire Replacement Bridge for Industrial Wireless Applications

The Precision Digital PDW30 provides a simple, straightforward way to get an analog, discrete (digital) or Modbus signal from where you have it to where you need it – without having to run wires! It's a point-to-point wireless bridge that is virtually plug and play right out of the box.

The PDW30 consists of a primary and a secondary unit and communication between the two is by-directional. That means you can send 4-20 mA, discrete and Modbus signals from the primary unit to the secondary unit and also send completely different 4-20 mA, discrete and Modbus signals from the secondary unit to the primary unit. For instance, the primary unit could send a 4-20 mA signal to the secondary unit corresponding to the level in a tank and the secondary unit could send a 4-20 mA signal to the primary unit to control a valve.

Primary and secondary units are also equipped with four digital I/O that can each be independently programmed as an input or an output. A Loss of Signal warning is also available by connecting devices to the G and LS screw terminals.

To indicate alarm situations, both units can be equipped with an optional, field installable, two relay module. These relays are rated Form A (SPST) 5A.

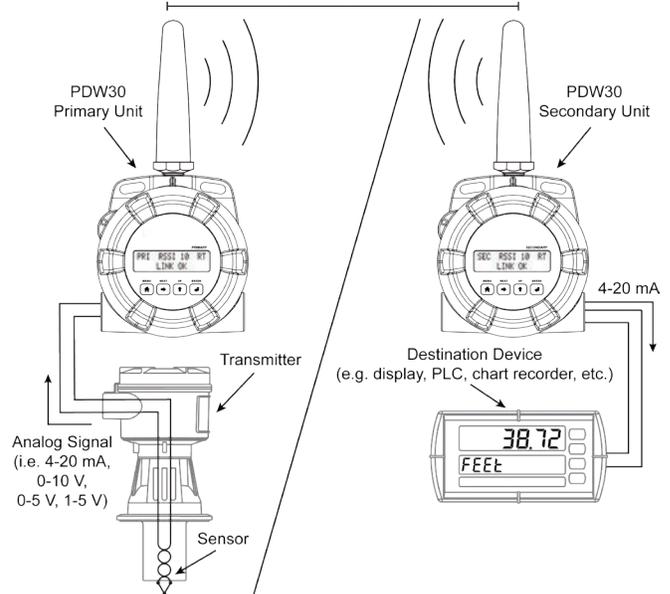
The specified range between the primary and secondary unit is 1 mile line-of-sight outdoor and 500 feet indoor and repeaters are available to extend the range. A low-cost wireless survey tool, Model PDA10, is available to test the signal strength of your application before you buy. And if the PDW30 system does not work in your application, you can return it for full credit!

The PDW30 is available in either aluminum or stainless steel NEMA 4X, IP68 enclosures and these enclosures contain plenty of room for field wiring connections.

Most applications require minimal programming and can be operational in minutes. However, free programming software is available and if touch ups are needed after installation, the instrument can be programmed without removing the cover using CapTouch buttons.

A wide range of accessories, including mounting kits, antenna-related accessories, and repeaters are available. The antenna comes attached to the unit and can also be remotely located. High gain directional antennas are also offered.

Range: 500 ft (152.4 m) Indoor, 1 mi (1.6 km) Outdoor / Line-of-Sight



KEY FEATURES

PDW Manager PC Software

PDW Manager PC Software allows for programming the PDW30 wireless primary units and secondary units from a PC with a USB connection. The units connect to a PC via the USB connection on the side of the display module behind the cover of the enclosure. Use of PDW Manager is required for programming advanced settings such as wireless encryption and analog signal calibration. PDW Manager is available for download at www.predig.com/pdwmanager.



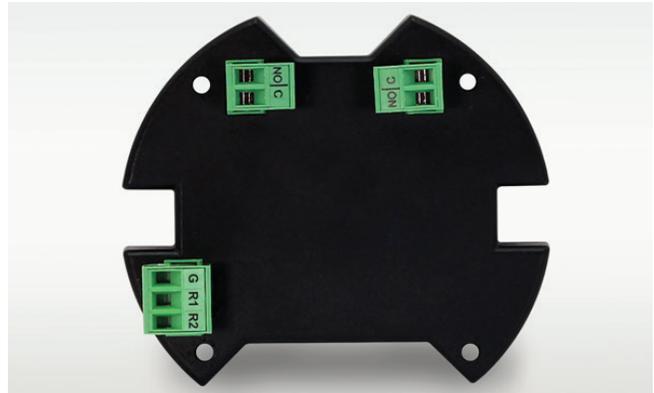
Easy-To-Install Display Module

The display module designed specifically for the PDW30 wireless units is easy to remove making it convenient for wiring the unit. The display module is completely enclosed for added protection when wiring and handling.



Relays Option Module

The PDW30 primary and secondary units are available with a relays option module that includes two Form A (SPST) relays. The module is easily installed by the user into the base of the enclosure with the four screws provided. The removable connector plugs makes wiring easy.



CapTouch Through-Glass Buttons

The PDW30 primary and secondary units are equipped with four capacitive sensors that operate as through-glass buttons so that they can be operated without removing the cover (and exposing the electronics) in an unclean area.

CapTouch buttons are designed to work under any lighting condition and are not affected by random changes in light or shadows. To protect against false triggering a long button press of about 2 seconds is required to wake up the buttons when they have not been in use.



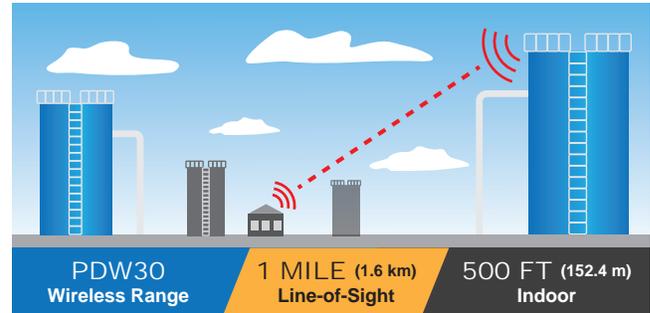
PDW30 Units Available in Aluminum or Stainless Steel

The PDW30 primary and secondary units are available in an IP68, NEMA 4X aluminum or stainless steel enclosure. The enclosures feature a built-in flange for wall or pipe mounting, built-in loop for a stainless steel tag, locking screw, and hole for a tamper-proof wire & seal. The enclosure also includes two 3/4" threaded conduit openings for wiring. The PDW30 units can operate in temperatures of -55 to 75°C (-67 to 167°F).



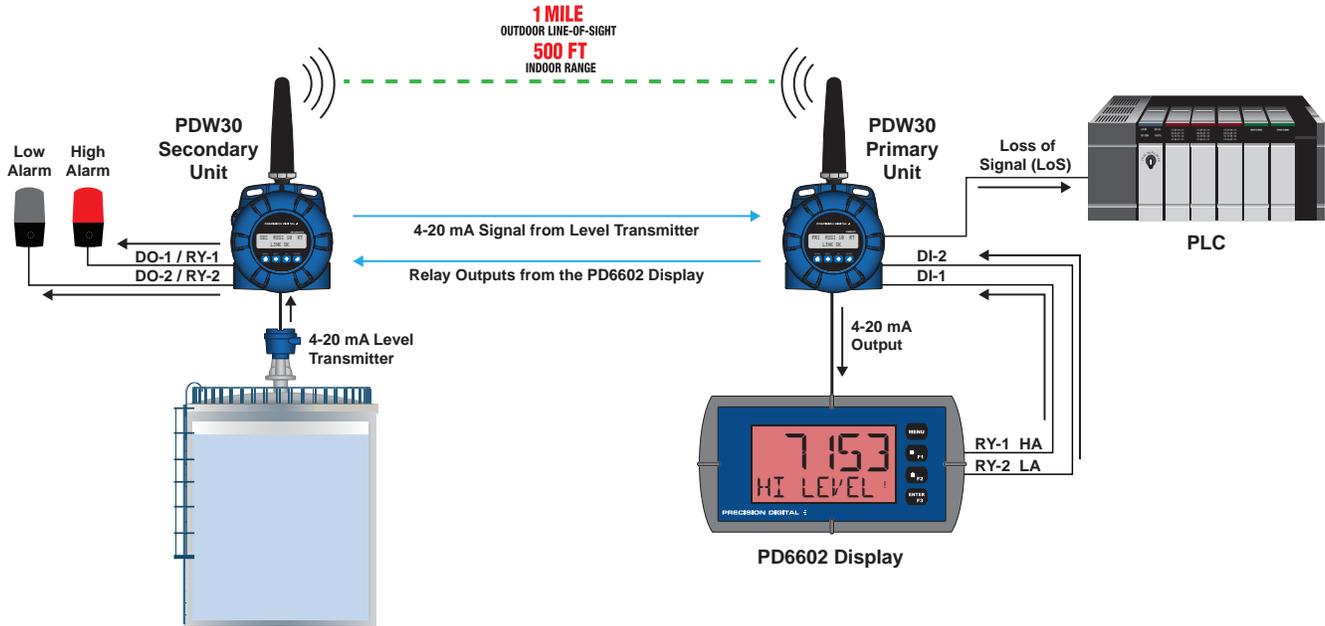
Wireless Solutions in Complex Areas

The PDW30 has a range of 500 ft. indoors and an outside line-of-sight range of 1 mile. Any wireless network can be negatively affected by certain factors, such as physical obstacles and improper equipment placement. Precision Digital sells several solutions for tricky wireless installations, such as remote antennas and repeater field units. Our PDA10 wireless survey kit allows for testing of the wireless signal strength prior to installation so that you know your wireless units will connect the first time.



APPLICATION EXAMPLES

Wireless Tank Level Monitoring



Note: Power requirements / connections not shown in diagram. Consult manuals for details.

- The 4-20 mA level transmitter is connected to the analog input of the secondary unit.
- The mA signal is transmitted to the primary unit.
- The primary unit's analog output is connected to a PD6602 loop-powered meter, which displays the 4-20 mA signal as volume in gallons.
- The PD6602 is programmed to indicate an alarm condition when the level exceeds 7000 gallons as displayed on the meter.
- Relay 1 on the meter connects to digital input 1 of the primary unit.
- The low and high alarm light / horn in the field are driven as follows:
 - Relay 1 (RY-1) in the PD6602 display is connected to digital input 1 (DI-1) on the primary unit. This signal is wirelessly transmitted to the secondary unit. (On the secondary unit) digital output 1 (DO-1) controls relay 1 (RY-1), which turns on the high alarm light / horn, warning the operator.
 - Relay 2 (RY-2) in the PD6602 display is connected to digital input 2 (DI-2) on the primary unit. This signal is wirelessly transmitted to the secondary unit. (On the secondary unit) digital output 2 (DO-2) controls relay 2 (RY-2), which turns on the low alarm light / horn, warning the operator.

Parts Needed for This System:

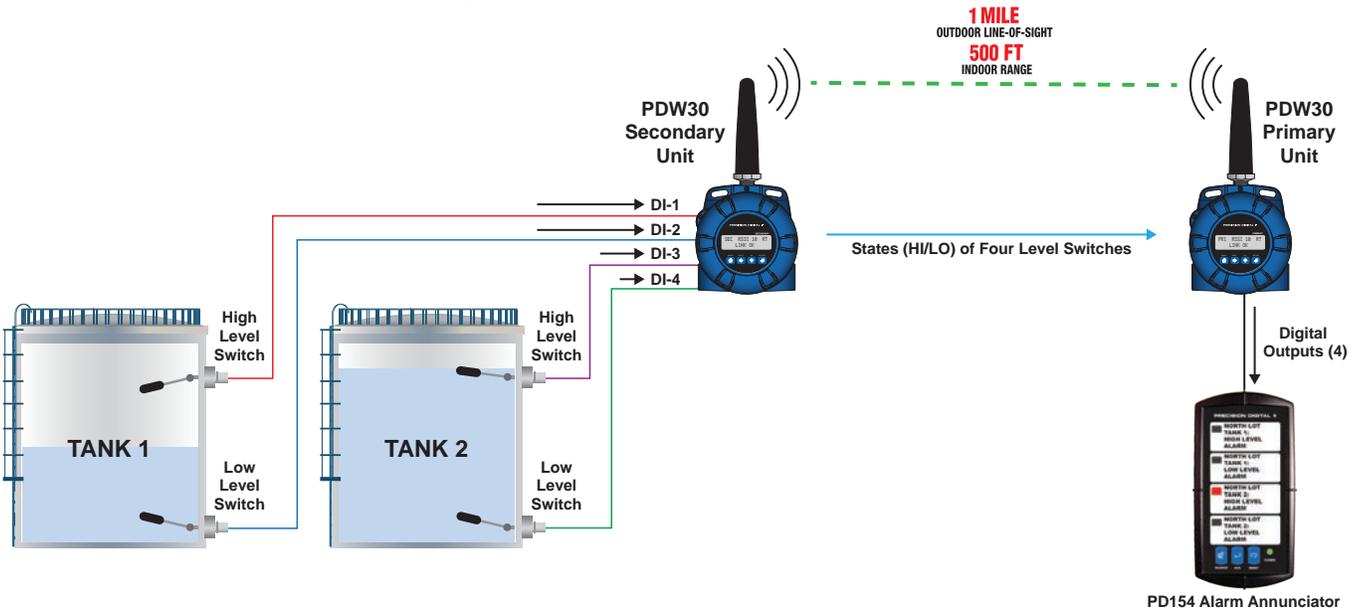
PDW30

Model Number	Qty	Description
PDW30-GP-AL-PAIR	1	PDW30 Point-to-Point Wireless Bridge (Primary and Secondary Units), Aluminum Enclosure
PDWM-2RY	1	Relays Option Module, Two Form A (SPST)

Other Products

Model Number	Qty	Description
PDA-LHR	2	Red Light / Horn
PD6602-L2N	1	1/8 DIN Loop-Powered Digital Panel Meter with Two Relays

Wireless Tank Level Monitoring of Level Switches



Note: Power requirements / connections not shown in diagram. Consult manuals for details.

- The switch contacts from the two level switches in each tank are connected to the digital inputs on the secondary unit.
- The states of the switch contacts are wirelessly transmitted to the primary unit.
- The digital outputs from the primary unit are connected to a PD154 Vigilante II 4-point annunciator.

Parts Needed for This System:

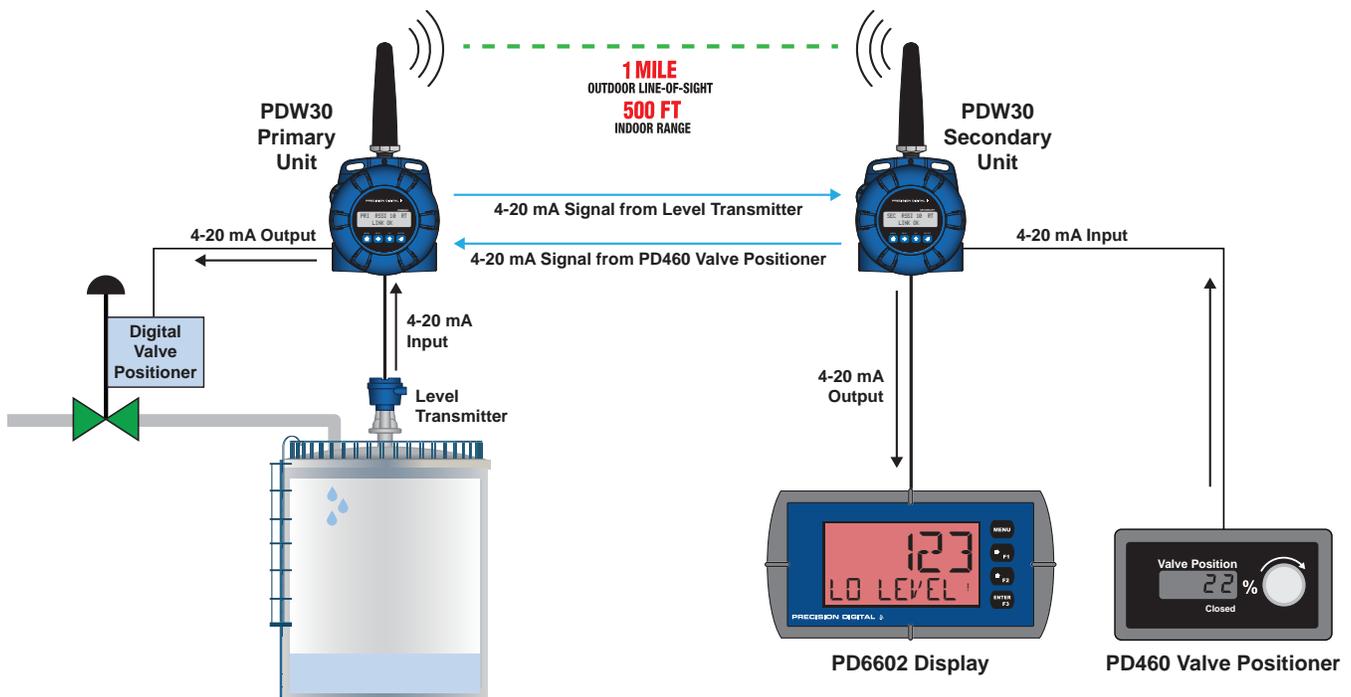
PDW30

Model Number	Qty	Description
PDW30-GP-AL-PAIR	1	PDW30 Point-to-Point Wireless Bridge (Primary and Secondary Units), Aluminum Enclosure

Other Products

Model Number	Qty	Description
PD154-6R2-1	1	1/8 DIN 4-Input Alarm Annunciator

Wireless Remote Valve Control



Note: Power requirements / connections not shown in diagram. Consult manuals for details.

- The level transmitter's 4-20 mA signal is connected to the primary unit's analog input.
- The PDW30 primary unit then wirelessly transmits the level signal to the secondary unit located in the control room, where the secondary unit's 4-20 mA output duplicates the signal.
- The secondary unit's 4-20 mA output is connected to a PD6602 that displays the level and operates a high and low alarm. In this example, the meter is indicating a low alarm.
- The operator uses a PD460 valve positioner to send a mA signal to the secondary unit's analog input.
- That valve position signal is wirelessly transmitted to the primary unit located in the field at the tank, where the primary unit's 4-20 mA output duplicates the signal.
- The primary unit's 4-20 mA output is connected to a digital valve positioner. The valve is opened, and the tank starts to fill again.
- The operator monitors the level rising on the PD6602 and uses the PD460 valve positioner to close the valve when the tank reaches the desired level.

Parts Needed for This System:

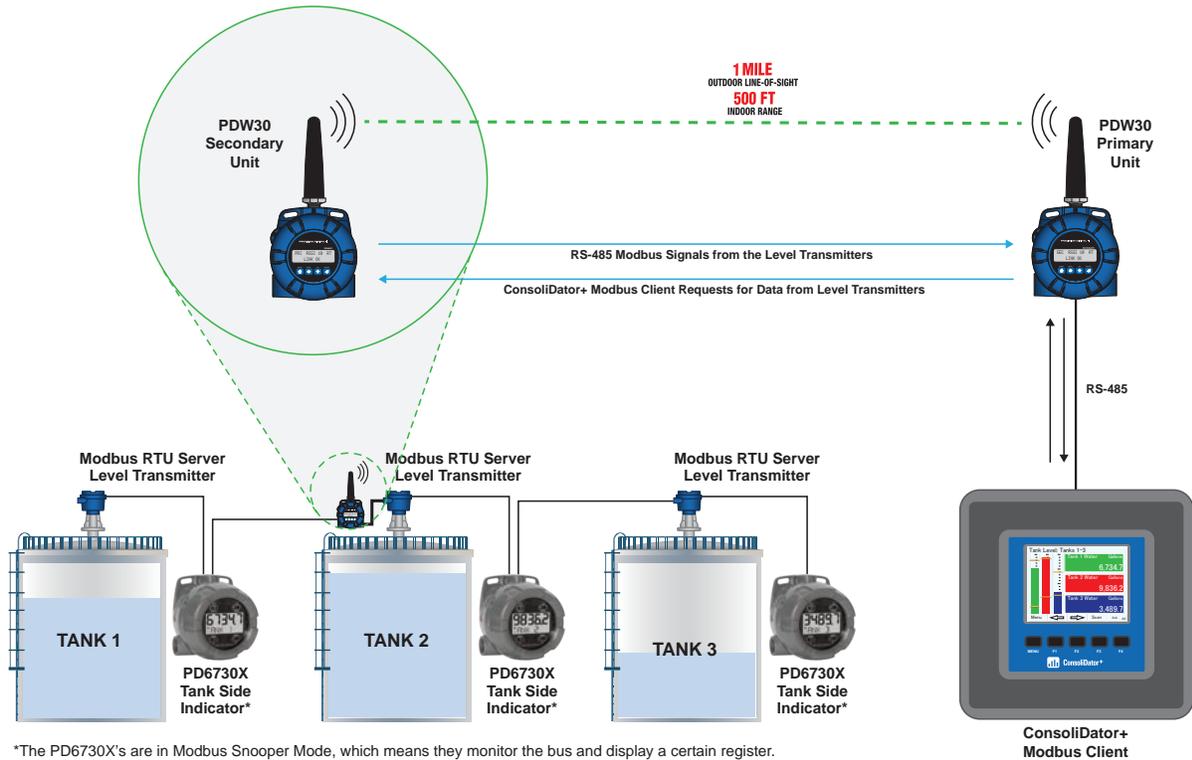
PDW30

Model Number	Qty	Description
PDW30-GP-AL-PAIR	1	PDW30 Point-to-Point Wireless Bridge (Primary and Secondary Units), Aluminum Enclosure

Other Products

Model Number	Qty	Description
PDA-LHR	2	Red Light / Horn
PD6602-L2N	1	1/8 DIN Loop-Powered Digital Panel Meter with Two Relays
PD460	1	Panel Mount 4-20 mA Valve Positioner

Wireless Transmission of Modbus Inputs and Outputs



*The PD6730X's are in Modbus Snooper Mode, which means they monitor the bus and display a certain register.

Note: Power requirements / connections not shown in diagram. Consult manuals for details.

- Tank level is measured by Modbus enabled level transmitters.
- The ConsoliDator+ Modbus client is connected to the primary unit and sends requests to the level transmitters.
- The ConsoliDator+ processes the data and displays it in engineering units.
- The PD6730X Modbus scanners provide tank side indication of level, temperature, interface and other Modbus variables.

IMPORTANT

- The Modbus Client *must* be connected to the primary RS-485.

Parts Needed for This System:

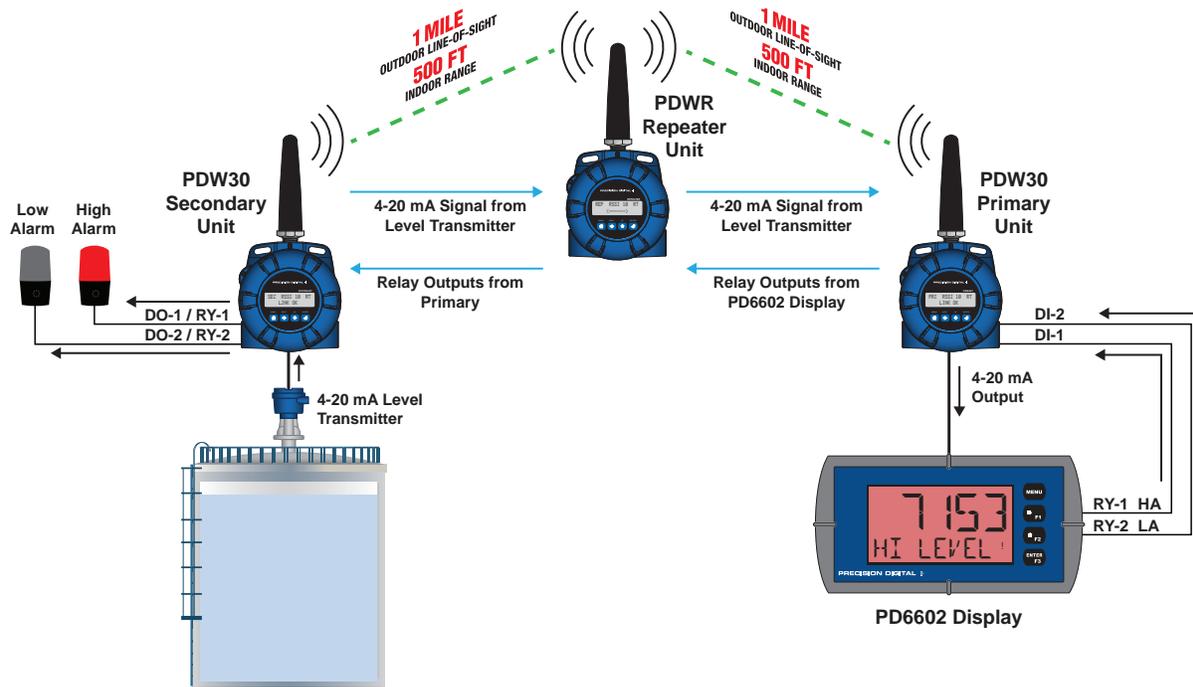
PDW30

Model Number	Qty	Description
PDW30-GP-AL-PAIR	1	PDW30 Point-to-Point Wireless Bridge (Primary and Secondary Units), Aluminum Enclosure

Other Products

Model Number	Qty	Description
PDA-LHR	4	Red Light / Horn
PD6730-AX0-I-2	3	General Purpose Modbus Scanner for Tank Side Level Indication

Extending Signal Range with PDWR Repeaters



Note: Power requirements / connections not shown in diagram. Consult manuals for details.

- The 4-20 mA level transmitter is connected to the analog input of the secondary unit.
- The mA signal is transmitted to the repeater unit and then retransmitted to the primary unit.
- The primary unit's analog output is connected to a PD6602 loop-powered meter, which displays the 4-20 mA signal as volume in gallons.
- The PD6602 is programmed to indicate an alarm condition when the level exceeds 7000 gallons as displayed on the meter.
- Relay 1 on the PD meter connects to digital input 1 of the primary unit and transmits the signal to the secondary unit via the repeater unit.
- The low and high alarm light / horns in the field are driven as follows:
 - Relay 1 (RY-1) in the PD6602 display is connected to digital input 1 (DI-1) on the primary unit. This signal is wirelessly transmitted to the secondary unit via the PDWR repeater. (On the secondary unit) digital output 1 (DO-1) controls relay 1 (RY-1), which turns on the high alarm light / horn, warning the operator.
 - Relay 2 (RY-2) in the PD6602 display is connected to digital input 2 (DI-2) on the primary unit. This signal is wirelessly transmitted to the secondary unit via the PDWR repeater. (On the secondary unit) digital output 2 (DO-2) controls relay 2 (RY-2), which turns on the low alarm light / horn, warning the operator.

Parts Needed for This System:

PDW30

Model Number	Qty	Description
PDW30-GP-AL-PAIR	1	PDW30 Point-to-Point Wireless Bridge (Primary and Secondary Units), Aluminum Enclosure
PDWR-GP-AL-REP	1	PDWR Repeater to Extend Wireless Distance, Aluminum Enclosure
PDWM-2RY	1	Relays Option Module, Two Form A (SPST)

Other Products

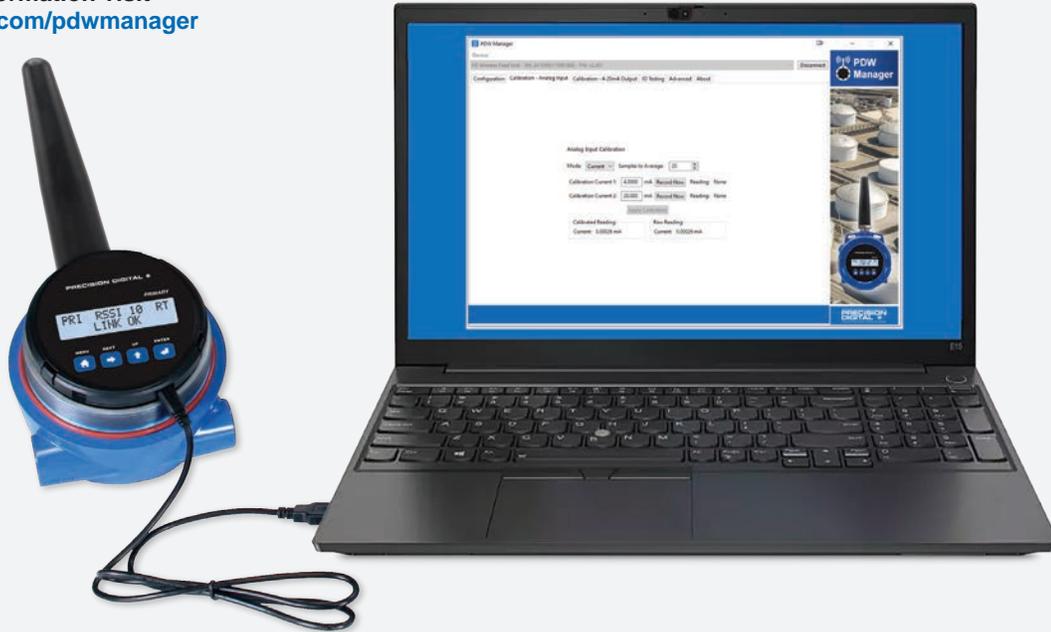
Model Number	Qty	Description
PDA-LHR	2	Red Light / Horn
PD6602-L2N	1	1/8 DIN Loop-Powered Digital Panel Meter with Two Relays

PDW MANAGER PC PROGRAMMING SOFTWARE

PDW Manager allows you to program the PDW30 wireless units from a PC with a USB connection. Units connect to a PC via the micro USB connection on the side of the electronics module, underneath the enclosure cover. Use of PDW Manager is required for programming advanced settings such as digital I/O logic (high or low), loss of signal (LoS) digital output state or analog output value, wireless encryption, and analog signal calibration.

PDW Manager is available for download at www.predig.com/pdwmanager.

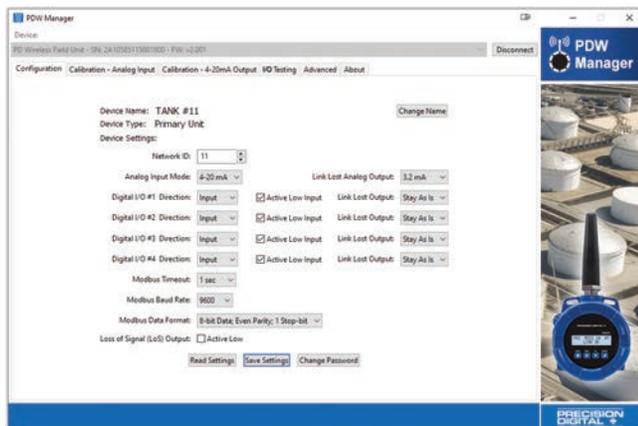
For more information visit www.predig.com/pdwmanager



Refer to the PDW30 manual for details on programming with PDW Manager Software

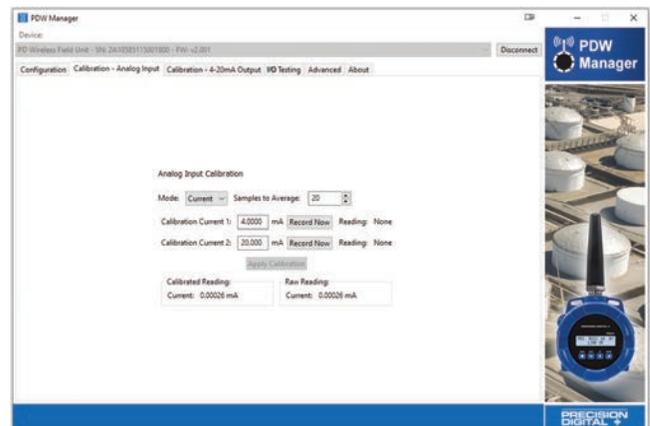
Configuration Screen

The menu options displayed will vary depending on what type of unit is connected. The PDW30 primary unit will have more options than the secondary unit. The image below shows the available options on the *Configuration* tab while the primary unit is connected.



Analog Input Calibration

The devices' analog inputs can be calibrated using the *Calibration - Analog Input* tab. The calibration mode can be set for current or voltage. The input calibration can be used to record a high and low analog input range from the calibration device and apply calibration to the wireless unit.

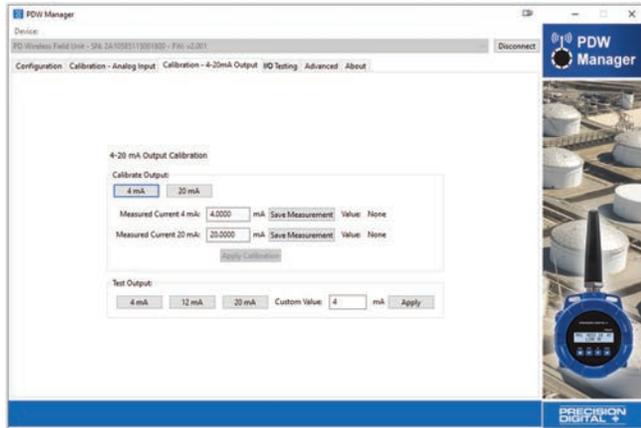


Analog 4-20 mA Output Calibration

The devices' 4-20 mA analog outputs can be calibrated using the *Calibration - 4-20 mA Output* tab.

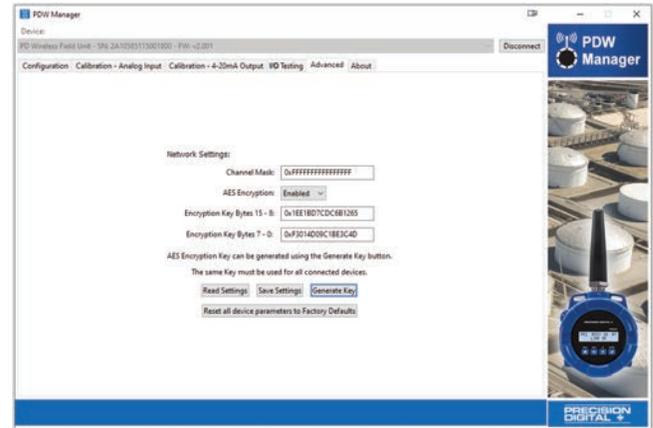
The output can be tested by forcing the unit to output 4 mA, 12 mA, 20 mA, or a custom value.

The output calibration can be used to force a 4 mA and 20 mA signal to be measured by a calibrator. That measured reading can then be entered and saved as the new calibrated value.



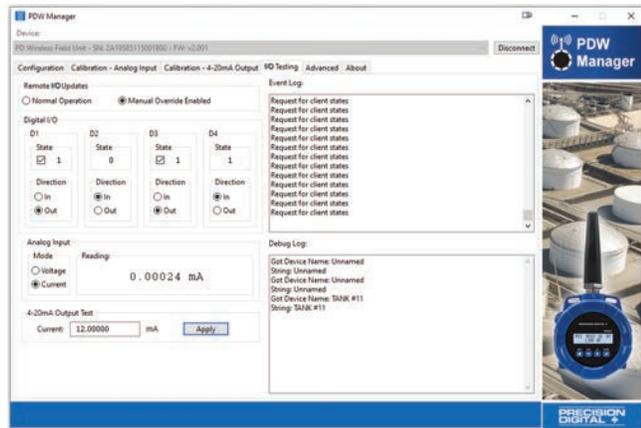
Networking Settings and Security

Device communication can be secured by enabling 128-bit AES encryption. A channel mask may also be set for interference immunity. The encryption key and channel mask may be entered on the *Advanced* tab.



I/O Testing

The *I/O Testing* tab allows for diagnostics and testing on the units. This screen allows for testing of the Input/outputs and monitoring of the current analog input / 4-20 mA output. This screen also displays device logs with technical information for testing and debugging purposes.



ACCESSORIES

PDWR Wireless Signal Repeaters



PDWR wireless signal repeaters are used to retransmit wireless signals when connectivity is an issue. They are simple to install as they only require power and a network ID. Any PDW units in range of the repeater with the same network ID will retransmit through it, thus increasing signal strength. Use repeaters to broadcast over very long distances or around permanent obstacles.

Model Number	Description
PDWR-GP-AL-REP	PDWR Repeater to Extend Wireless Distance, Aluminum Enclosure
PDWR-GP-SS-REP	PDWR Repeater to Extend Wireless Distance, Stainless Steel Enclosure

PDWA6963-SS Pipe Mounting Kit



The PDWA6963-SS provides a convenient way to mount one PDW30 primary/secondary, PDWR repeater, or PDW90 field unit to a horizontal or vertical 1.5" or 2" pipe such that the antenna is not right on top of the metal pipe.

Model Number	Description
PDWA6963-SS	Stainless Steel Pipe Mount Kit for One PDW30 Primary/Secondary Unit, PDW90 Field Unit or PDWR Repeater Unit
Note: (2) Two PDWA6963-SS mounting kits are required for mounting a PDW unit on a horizontal pipe.	

PDA10 Wireless Surveying Tool Kit



The handheld and target units are used to survey wireless signal strength throughout nonhazardous areas of a facility prior to PDW30 or PDW90 equipment installation. The target unit is set in a desired installation location and the handheld unit is brought to another installation location. The handheld unit will provide an indication of signal strength between the two units.

Model Number	Description
PDA10	PDW Wireless Signal Strength Survey Tool Kit

Yagi High Gain Directional Antennas



The PDA3900 Yagi antennas are made to work with point-to-point applications. These high gain antennas are ideal to use with Precision Digital's PDW wireless products because they give you the flexibility of installing the antenna exactly where you need to bridge your point-to-point wireless process signals while keeping the PDW unit in a convenient location for monitoring.

Each Yagi is factory tuned on a network analyzer for best power match and lowest VSWR, offering the best possible performance. The PDA3900 also comes complete with a mounting kit with stainless steel hardware.

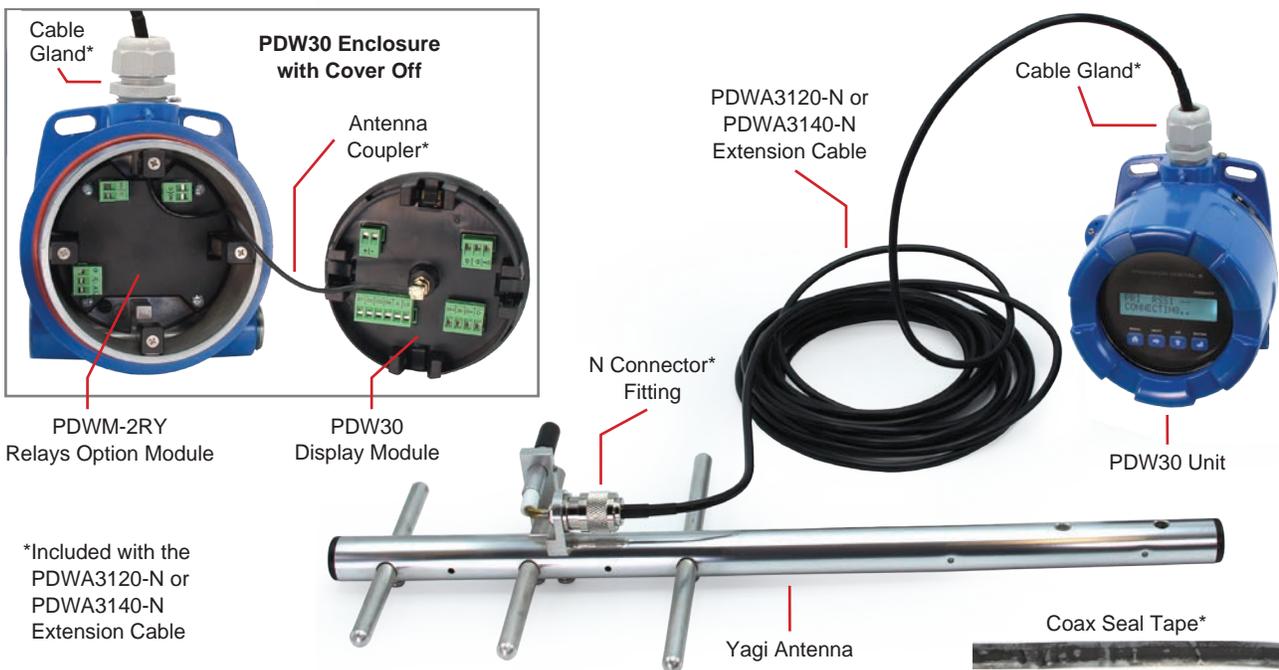
Extension cable accessories are available to extend the distance between the Yagi antenna and the PDW30 or PDW90 wireless units.

Model Number	Description
PDWA3900-6Y-N	Remote 6 dB Yagi High-Gain Directional Antenna
PDWA3900-9Y-N	Remote 9 dB Yagi High-Gain Directional Antenna

Specifications

Frequency	900 MHz
Gain	PDWA3900-6Y-N: 6 dBd; PDWA3900-9Y-N: 9 dBd
Termination	N-Female connector
Mounting Kit	Included for 1 1/4" pipe
Dimensions	PDWA3900-6Y-N: 17.125" x 6.875" (435 mm x 75 mm) PDWA3900-9Y-N: 28" x 6.875" (711 mm x 175 mm)
Weight	PDWA3900-6Y-N: 11.2 oz (318 g) PDWA3900-9Y-N: 16.8 oz (476 g)

Connecting the Yagi Antenna to the PDW30 Unit

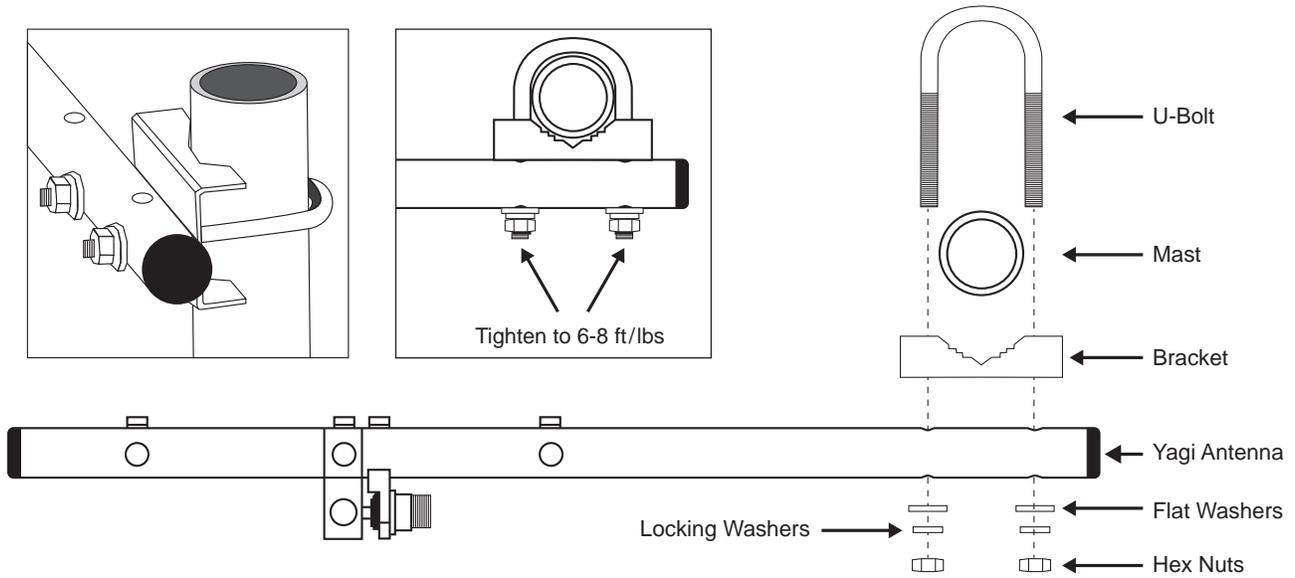


*Included with the PDWA3120-N or PDWA3140-N Extension Cable

CAUTION

- Do not use excessive force when attaching coupler to PDW30 display module.

Mounting the Yagi Antenna



PDWA3100 Antenna Extension Cables



The PDWA3120-N and PDWA3140-N are 20-foot and 40-foot extension cables used to extend the distance between the Yagi Antenna and the PDW30 or PDW90 wireless units. The extension cables also come with an antenna coupler to connect the PDW wireless device to the antenna extension cable, coax seal tape, and a 3/4" NPT cable gland.

Model Number	Description
PDWA3120-N	20-Foot RP-SMA F to N Male Extension Cable for Yagi Antenna
PDWA3140-N	40-Foot RP-SMA F to N Male Extension Cable for Yagi Antenna

CONNECTIONS

To access the connectors, remove the enclosure cover and unclip the display module by pulling it from the enclosure. Signal and power connections are made to removable connectors on the back of the display module. Relay output connections (if installed) are made to removable connectors on the relays option module mounted in the base of the enclosure. The display module may be disconnected from the relays option module to facilitate wiring. Grounding connections are made to the two ground screws provided on the base of the enclosure, one internal and one external.

WARNINGS

- Static electricity can damage sensitive components.
- Observe safe handling precautions for static-sensitive components.
- Use proper grounding procedures/codes
- Observe all safety regulations. Electrical wiring should be performed in accordance with all agency requirements and applicable national, state, and local codes to prevent damage to the device and ensure personnel safety.

Installing Display & Relays Option Modules

The display module snaps into built-in rails on the enclosure ensuring a secure and perfect fit every time. No tools are needed to install or remove it. The relays option module is screwed into the base of the enclosure with the four screws provided. Both modules are completely enclosed to protect their printed circuit boards.



Display Module (Left) and Relays Option Module (Right)



Display Module Connected to Antenna
(Connect the antenna to the display module using the included antenna coupler)



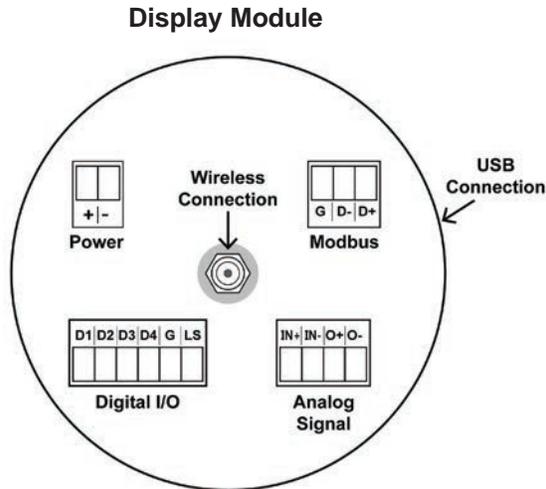
Relays Option Module Mounted on the Bottom of Enclosure
(Install the module using the four screws provided)



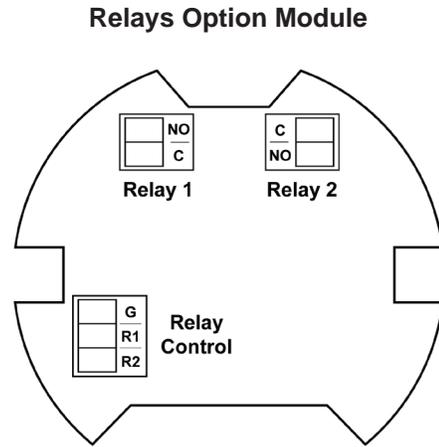
Display Module Mounted on Built-In Rails
(Snap the module into place lining it up with the rail caps)

Connectors Labeling

The following diagrams show the locations of the connectors on the back of the display module and on the relays option module on the base of the enclosure.



PDW30 Display Module Connectors



PDWM-2RY Relays Options Module Connectors

⚠ IMPORTANT

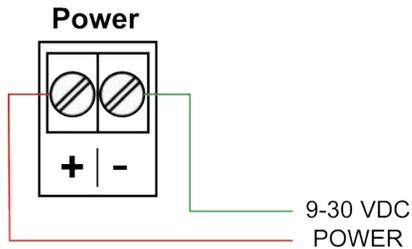
- Use a flat screwdriver to loosen up the removable terminal blocks

WIRING DIAGRAMS

Power Connections

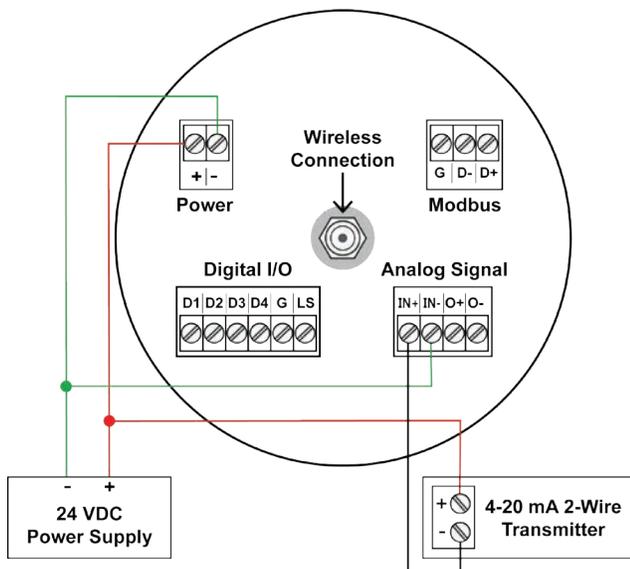
Power connections are made to a two-terminal connector labeled POWER. The PDW30 is reverse polarity protected; it will not be damaged if wired backward.

Make sure that the power supply can provide between 9 and 30 VDC to the wireless device.



Power PDW30 and 2-Wire Transmitter from Same Power Supply

The PDW30 wireless units may be powered from the same power supply that powers the 2-wire (loop-powered) transmitter, assuming that the supply provides enough voltage and current for both units. To power both devices from the same supply, wire the devices to the supply as shown below.

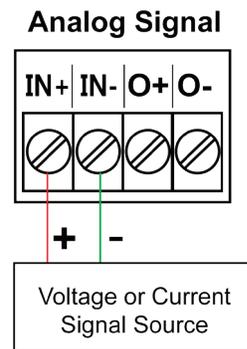


Input Signal Connections

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.

Once the appropriate input type has been programmed, wire the analog signal source to the device as shown in the diagram below.

The analog input will not interfere with any existing HART signal on a 4-20 mA current loop. However, the HART signal will not be transmitted wirelessly.



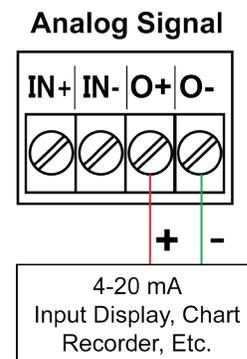
4-20 mA Output Connections

The 4-20 mA output corresponds with the analog input signal on the paired wireless device. The analog output signal is always 4-20 mA, regardless of the input type on the other wireless device.

For instance, if the analog input type on the first device was 0-10 V and the input value was 5 V, the second device would output 12 mA.

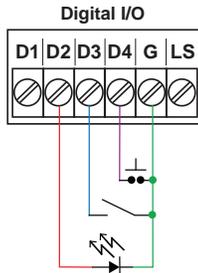
Connect the mA OUT terminals to a device scaled to read a 4-20 mA signal.

The analog output is internally powered; no external power supply is required.



Digital I/O Connections

All digital connections are referenced to ground. The primary unit digital I/O settings determine the settings of the secondary unit (e.g. if D1 of the primary unit is an input then D1 of the secondary unit is an output).



Note: Each connection may be set independently in the device settings as either an input or an output. In the diagram above, D4 & D3 are digital inputs and D2 is a digital output.

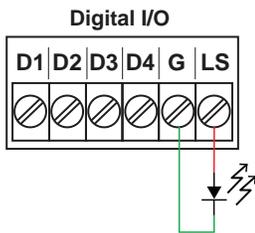
Loss of RF Signal Connections

The Loss of Signal terminal (LS) can be used to alert another device, such as a PLC, that the wireless signal has been lost. After approximately 15 seconds of trying to reconnect, the Loss of Signal function will occur and result in the Loss of Signal digital output going to the Link Lost Output state selected via the PDW Manager software.

Active: Logic high (5 V)

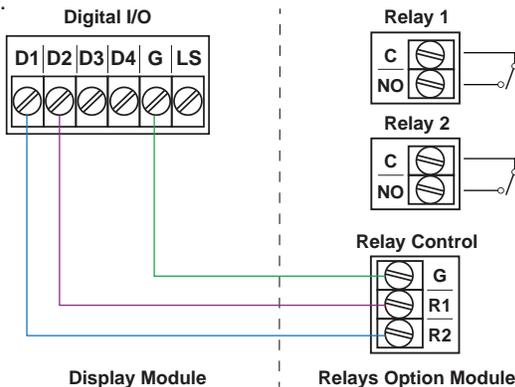
Inactive: Logic low (0 V)

Stay as Is: State does not change.



Relays Option Connections

The relays are controlled by the digital outputs on the display module so it is necessary to connect R1 and R2 terminals on the relays option module to digital outputs on the display module.

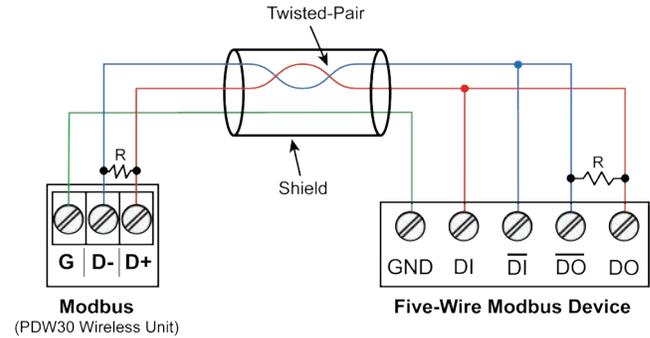


Note: Connections between relay control connection and relays are with traces on PCB.

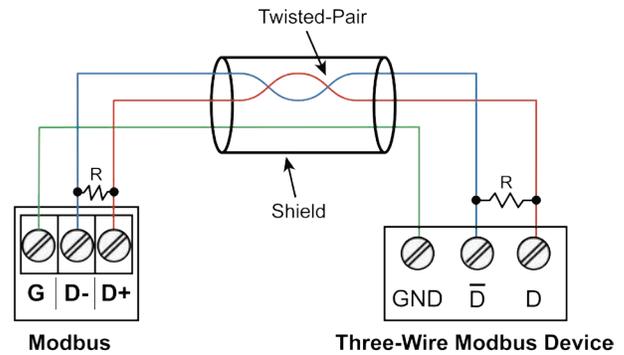
Modbus RTU Serial Communications

The PDW30 acts as a simple pass-through for Modbus communications. As such, multiple Modbus enabled devices may be transmitted wirelessly using the PDW30 Wireless Bridge.

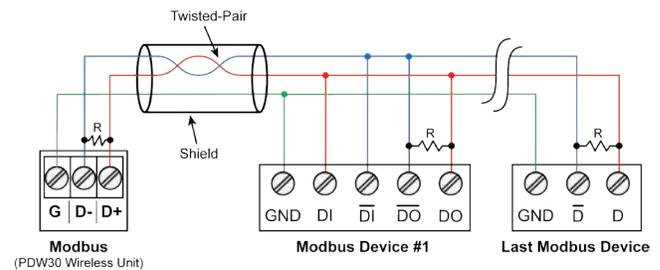
Note: Modbus Client must be connected to Primary Wireless Unit.



Five-Wire RS-485 Modbus Connections



Three-Wire RS-485 Modbus Connections



Multiple Device RS-485 Modbus Connections

Notes:

1. Termination resistors are optional, and values depend on the cable length and characteristic impedance. Consult the cable manufacturer for recommendations.
2. Use shielded cable, twisted-pairs plus ground. Connect ground shield only at one location.

SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

General

System	PDW30 consists of a Primary and Secondary unit with built-in antennas.
Display	32-character dual-line alphanumeric dot matrix LCD display with backlight Visual Area: 2.54" x 0.63" (64.6 x 16.0 mm) Character Height: 0.2" (5.5 mm) Display used for programming assistance and displaying communications link status, signal strength, values for the analog inputs and outputs, and status of digital inputs and outputs.
Network ID	Field selectable: 0 - 99
Peak Antenna Gain	1.8 dBi +/- 1.0
Programming Methods	Programming (complete): PC with PDW Manager software Programming (all but advanced): Four CapTouch through-glass buttons
Recalibration	All inputs and outputs are calibrated at the factory. Recalibration is recommended at least every 12 months.
Process/Digital I/O Display	Press the Next button once to display the present analog input and output. Press the Next button again to display digital I/O states.
Password	A programmable password restricts modification of program settings.
Input Power	9-30 VDC, 2.5 W max Note: If analog and digital outputs are off: 1.0 W min
Non-Volatile Memory	All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.
Isolation	500 V
Environmental	Operating temp. range: -55 to 75°C (display inoperable < -20 °C) Storage temp. range: -55 to 85°C Relative humidity: 0 to 90% non-condensing Printed circuit boards are conformally coated
Connections	Removable screw terminal blocks accept 12 to 26 AWG wire.
Connectors Tightening Torque	4.5 lb-in (0.5 Nm)
Mounting	May be mounted directly to conduit. Built-in flange for 1.5" to 2" pipe or wall mounting. See manual for mounting space requirements.
Overall Dimensions	5.25" x 11.63" x 4.80" (133 mm x 295 mm x 122 mm) (W x H x D)
Weight	Aluminum: 5.6 lbs (2.5 kg) Stainless Steel: 9.8 lbs (4.4 kg)
Warranty	3 years parts and labor. See Warranty Information and Terms & Conditions on www.predig.com for complete details.

Enclosure

Material	-AL Models: ASTM A413 LM6 die-cast aluminum, copper-free, enamel coated. -SS Models: ASTM A743 CF8M investment-cast 316 stainless steel
Gasket	Fluoroelastomer
Rating	NEMA 4X, IP68
Color	-AL: Blue; -SS: Silver
Window	Borosilicate glass
Conduits	Three ¾" NPT threaded conduit openings; One used for mounting the antenna (factory installed), the other two available for field wiring. M20 conduits are available. See Ordering Information for details.
Flange	Built-in flange for wall and pipe mounting.
Tamper-Proof Seal	Enclosure lid may be secured with tamper-proof seal.
Instrument Tag Loop	Built-in loop for securing stainless steel tag.

Analog Input

Field Selectable Input	4-20 mA, 0-10 V, 0-5 V, 1-5 V
Accuracy	±0.03% of calibrated span ±1 count
Temperature Drift	0.005% of calibrated span/°C max from 0 to 65°C ambient, 0.01% of calibrated span/°C max from -40 to 0°C ambient
Input Impedance	Voltage ranges: greater than 110 kΩ; Current ranges: less than 220 Ω
HART Transparency	HART signals will not transmit wirelessly. The 4-20 mA signal value will transmit normally (without any HART information) even if a HART signal is present. The analog input will not interfere with HART communications within the wired 4-20 mA loop.

Isolated 4-20 mA Transmitter Output

Output Source	Analog input from connected wireless unit	
Calibration	Factory calibrated: 4.000 to 20.000 = 4-20 mA output	
Accuracy	± 0.1% of span ± 0.004 mA	
Loop Power Supply	Internally powered; no external supply needed	
Temperature Drift	0.4 µA/°C max from 0 to 65°C ambient, 0.8 µA/°C max from -40 to 0°C ambient	
Loss of Signal (RF)	After approximately 15 seconds of trying to reconnect, the Loss of Signal function will occur and result in the mA output going to the Link Lost Output value selected via the PDW Manager software (i.e. 3.2, 3.5, 3.8, 20.5, 20.8, 23.0 mA, or Stay as Is).	
External Output Loop Resistance	Power supply	Minimum
	24 VDC	10 Ω

Digital Inputs / Outputs

Channels	(4) Four (discrete) digital I/O connections, independently field selectable as either inputs or outputs
DI Logic High	3 to 24 VDC (30 V tolerant)
DI Logic Low	0 to 1.1 VDC
DI Contact	Dry contact to ground can be used to activate the input (Active Low)
DO Logic High	3.0 to 5.0 VDC
DO Logic Low	0 to 0.5 VDC
Output Source Current	20 mA maximum output current
Input Sink Current	0.5 mA minimum input current

IMPORTANT

I/O Operation Configured with PDW Manager

- Active Low Digital Input: A closed dry contact from a digital input terminal to GND will result in a digital output high on the corresponding output pin of the other unit.
- Active High Digital Input: To reverse the output logic, deselect the corresponding digital input box in the PDW Manager software. An open circuit or a logic high at the input will result in a digital output high on the corresponding output pin of the other unit.

Loss of Signal (RF)

Connections Function	Terminals G and LS on the Digital I/O connector
	After approximately 15 seconds of trying to reconnect, the Loss of Signal function will occur and result in the Digital output going to the Link Lost Output state selected via the PDW Manager software.
	Active: Logic high (5 V)
	Inactive: Logic low (0 V)
	Stay as Is: State does not change

Optional Relays

Number of Relays	(2) Two Form A (SPST)
Rating	250 VAC @ 5 A resistive load 30 VDC @ 5 A resistive load 250 VAC @ 2 A inductive load 30 VDC @ 2 A inductive load
Relay Isolation (Dielectric Strength)	3,000 VAC, 50/60 Hz for 1 min
Noise Suppression	Metal oxide varistors across contacts
Relay Control	Relay coils are controlled by the digital outputs (e.g. DO-1 & DO-2)

IMPORTANT

- The relays option module is sold separately, and it is installed on the base of the enclosure by the user. See page 19 for wiring instructions.

Wireless Radio

Frequency	900 MHz
Range	500 ft (152.4 m) indoor, 1 mi (1.61 km) outdoor (line-of-sight)
Encryption	AES 128-bit encryption available using PDW Manager software.
Interference Reduction	Frequency Hopping Spread Spectrum (FHSS)
Power Output	24 dBm (250 mW)
Sensitivity	-101 dBm

RS-485 Modbus® RTU Serial Communications

IMPORTANT

- The Modbus Client *must* be connected to the primary wireless unit.

Compatibility	EIA-485
Connectors	Removable screw terminal connector
Max Distance	3,937' (1,200 m) max
Baud Rate	1200 – 57,600 bps
Data	8 bit (1 start bit, 2 stop bits)
Parity	Even, Odd, or None with 1 or 2 stop bits
Modbus Timeout	0.5, 1, 2, 3, 4, 5 seconds; user selectable
Isolation	1500 VRMS

PDW Manager Software

System Requirements	Microsoft® Windows® 10/11
Communications	USB 2.0; Micro-USB Type B
Configuration	Configure devices one at a time. Analog inputs on the primary unit are automatically configured as outputs on the corresponding secondary unit.
Compatibility	The PDW Manager v2.00 is compatible with firmware version 1.10; there is a possibility of issues in the GUI (Graphical User Interface), but it should not be a problem configuring the supported features.
Availability	Download from predig.com/pdwmanager

PDWR REPEATER SPECIFICATIONS

General

Display	32-character dual-line alphanumeric dot matrix LCD display with backlight Visual Area: 2.54" x 0.63" (64.6 x 16.0mm) Character Height: 0.2" (5.5 mm) Display used for programming assistance and displaying communications link status and signal strength.
Number of Repeaters	Up to 3 repeaters per system
Network ID	Field selectable: 0 - 99
Peak Antenna Gain	1.8 dBi +/- 1.0
Programming Methods	Four CapTouch through-glass buttons or PC with PDW Manager software.
Password	A programmable password restricts modification of program settings.
Power	9-30 VDC, 1.0 W max
Non-Volatile Memory	All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.
Isolation	500 V
Environmental	Operating temp. range: -55 to 75°C (display inoperable < -20 °C) Storage temp. range: -55 to 85°C Relative humidity: 0 to 90% non-condensing Printed circuit boards are conformally coated
Connections	Removable screw terminal blocks accept 12 to 26 AWG wire.
Connectors Tightening Torque	4.5 lb-in (0.5 Nm)
Mounting	May be mounted directly to conduit. Built-in flange for 1.5" to 2" pipe or wall mounting. See manual for mounting space requirements.
Overall Dimensions	5.25" x 11.63" x 4.80" (133 mm x 295 mm x 122 mm) (W x H x D)
Weight	Aluminum: 5.6 lbs (2.5 kg) Stainless Steel: 9.8 lbs (4.4 kg)
Warranty	3 years parts and labor. See Warranty Information and Terms & Conditions on www.predig.com for complete details.

Enclosure

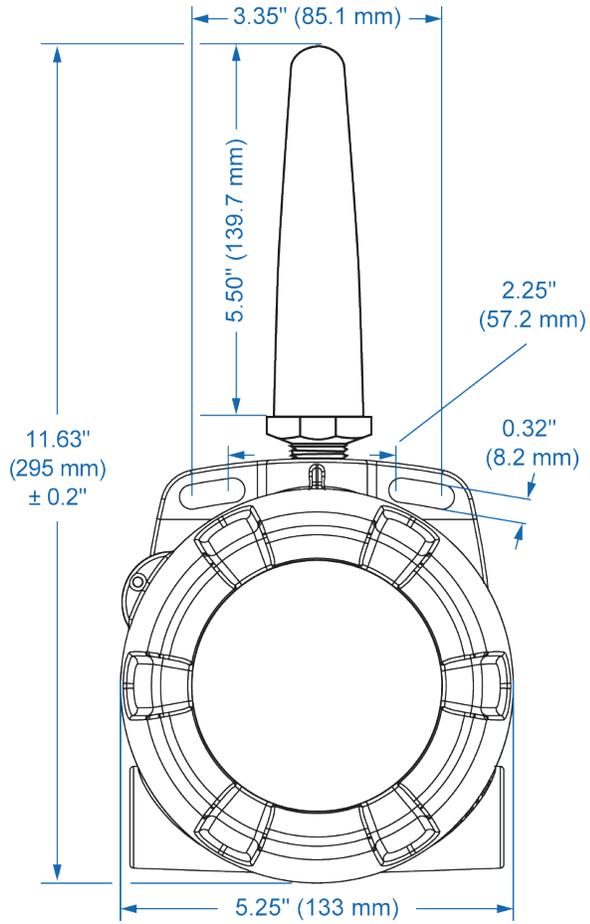
Material	-AL Models: ASTM A413 LM6 die-cast aluminum, copper-free, enamel coated. -SS Models: ASTM A743 CF8M investment-cast 316 stainless steel
Gasket	Fluoroelastomer
Rating	NEMA 4X, IP68
Color	-AL: Blue; -SS: Silver
Window	Borosilicate glass
Conduits	Three ¾" NPT threaded conduit openings; One used for mounting the antenna (factory installed), the other two available for field wiring. M20 conduits are available. See Ordering Information for details.
Flange	Built-in flange for wall and pipe mounting.
Tamper-Proof Seal	Enclosure lid may be secured with tamper-proof seal.
Instrument Tag Loop	Built-in loop for securing stainless steel tag.

Wireless Radio

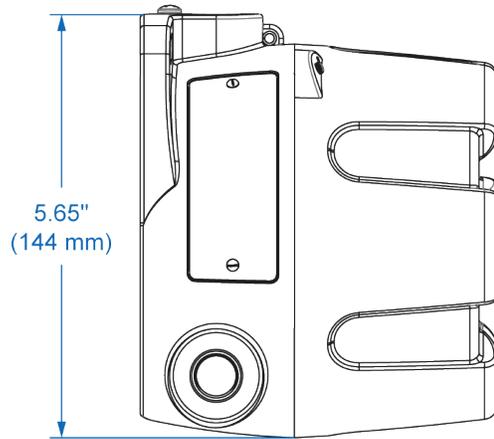
Frequency	900 MHz
Range	500 ft (152.4 m) indoor, 1 mi (1.61 km) outdoor (line-of-sight)
Encryption	AES 128-bit encryption available using PDW Manager software.
Interference Reduction	Frequency Hopping Spread Spectrum (FHSS)
Power Output	24 dBm (250 mW)
Sensitivity	-101 dBm

See the [PDWR Wireless Repeater Manual](#) for more information on how to extend the range of wireless signals.

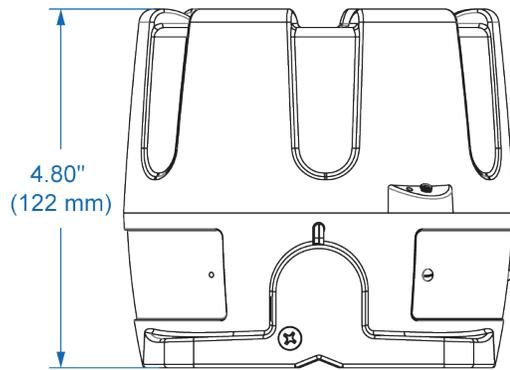
DIMENSIONS



Enclosure & Antenna Dimensions - Front View



Enclosure Dimensions - Side View



Enclosure Dimensions - Top View

PDWA6963-SS STAINLESS STEEL PIPE MOUNTING KIT



The PDWA6963-SS provides a convenient way to mount PDW30, PDWR, and PDW90 wireless field units to horizontal or vertical 1.5" or 2" pipes such that the antenna is not right on top of the metal pipe.

The components in the mounting kit are made from 316 stainless steel and all necessary hardware is provided to mount one unit on a vertical pipe. To mount a unit to a horizontal pipe, two kits are required.



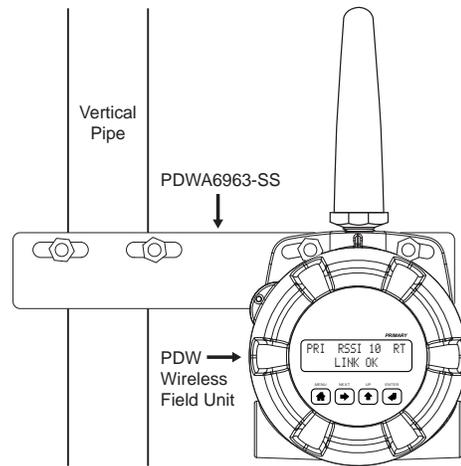
Vertical Pipe Mounting



Horizontal Pipe Mounting

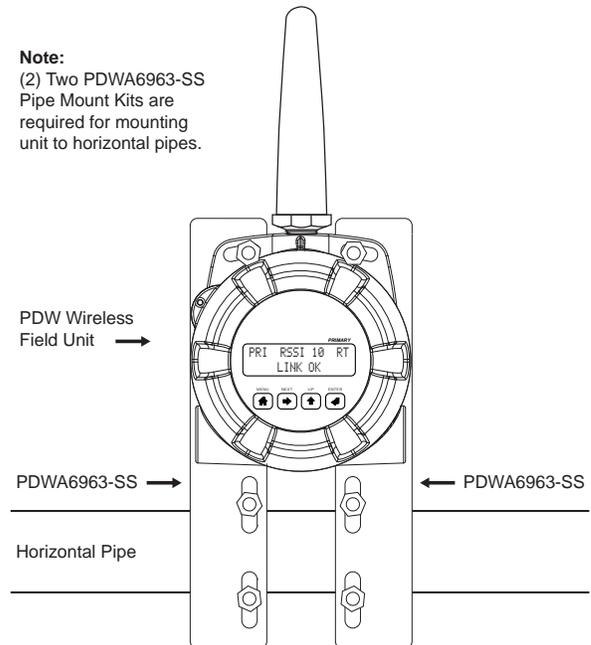
Mounting Instructions

1. Attach the mounting plate to the PDW wireless unit with the provided hardware using the round holes on the plate.
2. Mount the plate to the pipe with the provided U-bolt / hardware using the slotted holes on the mounting plate.
3. For best results, mount unit so antenna is as far away from metal devices as possible.
4. Two PDWA6963-SS mounting kits are required for mounting a PDW unit on a horizontal pipe.



PDW Unit Mounted to Vertical Pipe with One PDWA6963-SS Kit

Note:
(2) Two PDWA6963-SS Pipe Mount Kits are required for mounting unit to horizontal pipes.



PDW Unit Mounted to Horizontal Pipe with Two PDWA6963-SS Kits

ORDERING INFORMATION

PDW30 Point-to-Point Wireless System	
Model	Description
PDW30-GP-AL-PAIR	PDW30 Point-to-Point Wireless Bridge (Primary and Secondary Units), Aluminum Enclosure ¹
PDWR-GP-AL-REP	PDWR Repeater to Extend Wireless Distance, Aluminum Enclosure ¹
PDW30-GP-SS-PAIR	PDW30 Point-to-Point Wireless Bridge (Primary and Secondary Units), Stainless Steel Enclosure ¹
PDWR-GP-SS-REP	PDWR Repeater to Extend Wireless Distance, Stainless Steel Enclosure ¹
PDWM-2RY	Relays Option Module, Two Form A (SPST) ²

Notes:

1. The PDW30 wireless units come standard with two 3/4" NPT conduit holes. To order models with M20 conduit holes instead, add -22 at the end of the part number (e.g. PDW-GP-AL-PAIR-22)
2. The PDWM-2RY Relays Option Module is installed by the customer using the four screws provided.
3. Antenna extension cables include the following parts:
(1) Extension Cable, (1) Antenna Coupler, (1) 8" Length of Coax Seal Tape, (1) 3/4" NPT Cable Gland
4. (2) Two PDWA6963-SS mounting kits are required for mounting a PDW unit on a horizontal pipe.

Accessories	
Model	Description
PDA10	PDW Wireless Signal Strength Survey Tool
PDWA3120-N	20' RP-SMA F to N Male Extension Cable for Yagi Antenna ³
PDWA3140-N	40' RP-SMA F to N Male Extension Cable for Yagi Antenna ³
PDWA3120-S	20' RP-SMA M/F Extension Cable for Omnidirectional Antenna ³
PDWA3140-S	40' RP-SMA M/F Extension Cable for Omnidirectional Antenna ³
PDWA3900-6Y-N	Remote 6 dB Yagi High-Gain Directional Antenna
PDWA3900-9Y-N	Remote 9 dB Yagi High-Gain Directional Antenna
PDWA3900-20-N	PDW 900 MHz Omnidirectional Antenna, M20
PDWA3900-34-N	PDW 900 MHz Omnidirectional Antenna, 3/4" NPT
PDWA6963-SS	Stainless Steel Pipe Mount Kit for One PDW30 Primary/ Secondary Unit, PDW90 Field Unit or PDWR Repeater Unit ⁴
PDAPLUG75	3/4" Metal Conduit/Stopping Plug
PDARED-M75-F50	M-3/4" NPT to F-1/2" NPT Reducer with Approvals
PDARED-M75-FM20	M-3/4" NPT to F-M20 Reducer with Approvals
PDA-MICROUSB	Micro-USB PC Programming Cable for Field Unit (supplied)
PDA-SSTAG	Custom Stainless Steel Tag (See website for convenient ordering form)

Your Local Distributor is:

⚠ WARNING

Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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