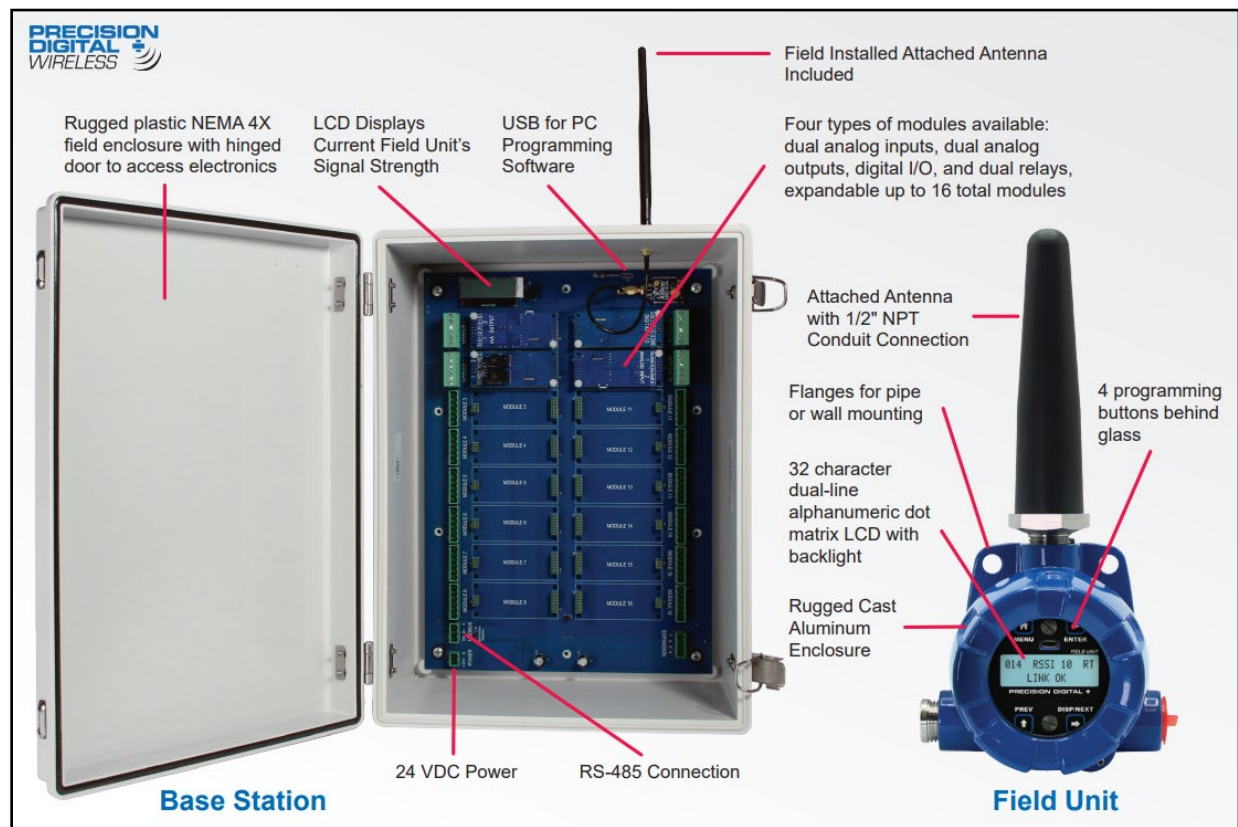


Wireless Transmission of 4-20 mA and Modbus Signals at an Industrial WWTP

Application Note



Precision Digital PDW90 Point to Multi-Point Wireless System

Summary

Eight analog and Modbus signals from locations throughout an industrial wastewater facility needed to get back to their control room.

Products

A PDW90 Wireless System with 7 Field Units were installed to reliably get all the signals back to the control room.

Key Features

- Economical signal wire replacement
- Reliable 900 MHz FHSS (Frequency Hopping Spread Spectrum)
- Range of 1 mile line-of-sight outdoors or 500 feet indoors
- Connect to multiple rugged cast aluminum NEMA 4X IP 68 Field Units from the Base Station
- Easily configured with free PDW Manager Software
- PDA10 Wireless Survey Kit ensures success prior to installation

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Wastewater Treatment Facility

Application

A large food & beverage company had a wastewater treatment facility that processed over a million gallons of effluent per day. The plant had 4 flow and 4 analytical measurement signals that needed to get back to the control room.

Challenge

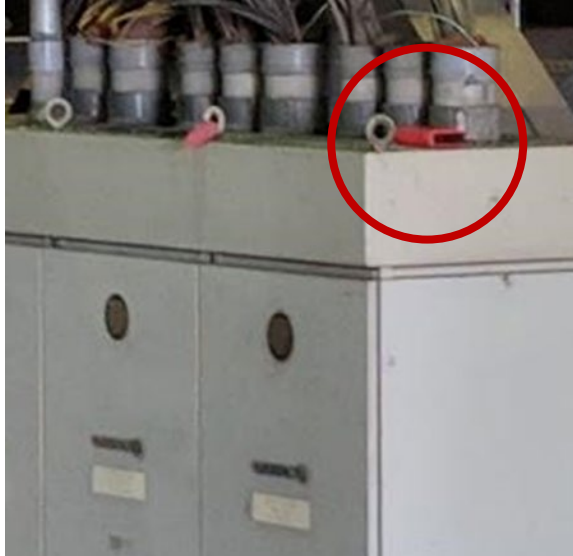
The measurements were scattered all over the plant. Running conduit and wires all the way back to the control room was undesired from a labor and cost standpoint. They wanted a wireless solution but wanted to make sure that the wireless signals could reliably get back from each measurement point to the control room.

Solution

A wireless survey was conducted using the Precision Digital PDA10 Wireless Survey Kit. The red Target Unit was left inside the control room on top of a cabinet. The blue Handheld Unit was used to determine the signal strength at all eight measurement locations. If the signal strength stays above 75% during the wireless survey, then a reliable signal will be attained when the actual PDW Field Unit is installed. Each location produced a 90% - 100% signal.



PDA10 Wireless Survey Kit



Red Target Unit Placed on Cabinet

The three open channel flowmeters are shown below with the PDW Field Units mounted behind each of them.



Open Channel Flowmeters

Each PDW Field Unit can transmit a 4 – 20 mA, RS-485 Modbus, and up to four digital inputs to the PDW90 Base Station.



Blue Handheld Unit at Measurement

The eight measurements included three open channel flowmeters, one area-velocity flowmeter, one RAS (return activated sludge) sensor, one TSS (total suspended solids) sensor and two pH transmitters.



PDW Wireless Field Units

One of the pH transmitters was adjacent to the TSS sensor. Since the pH transmitter had a 4 – 20 mA output and the TSS sensor output was RS-485, only one PDW Field Unit was needed at this measurement location. This allowed the plant to save money by just purchasing seven Field Units to get all the measurement signals to the PDW Base Station.



PDW30 Field Unit Transmitting Two Measurement Signals

Precision Digital offers 20' and 40' antenna extension cables to enhance the signal strengths in PDW wireless systems. The base station was connected to a 20' antenna extension cable, which allowed the antenna to be mounted on the roof of the control room building. This provided an even more reliable signal in case more measurement points were added later.



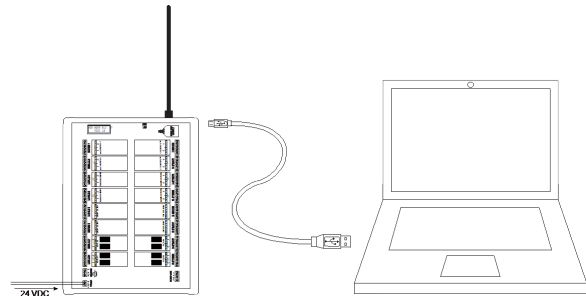
PDW90 Base Station with Remote Antenna

No analog or relay output modules were needed in the PDW90 Base Station since the plant used the RS-485 Modbus connection.



Inside the Base Station, No I/O Cards are Needed as all Readings were Modbus

The PDW90 Wireless System was easily configured using the PDW Manager Software. This software is a free download and the USB cable is included with the shipment.



Program the PDW90 Industrial Wireless System with Free PDW Manager Software

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