Wireless sensor network replaces traditional 4-20mA wired network

CUSTOMER CHALLENGES

Sensors are available everywhere at factories, and they are present in all systems for measuring parameters such as steam pressure, pipeline temperatures, water tank level. Although there are different types and brands, the sensors usually have an output of analog signal 4-20mA and are connected to the center by a signal wire. Therefore, if the factory adopts a wireless sensor network, it will help to eliminate the difficulties of a wired network as follows:

- High deployment costs because they include cable costs and labor costs for wiring and installation.
- Negative effect on existing system if factory expands the system or installs additional sensors.
- Complicated installation if many sensors are located in high and touch places.
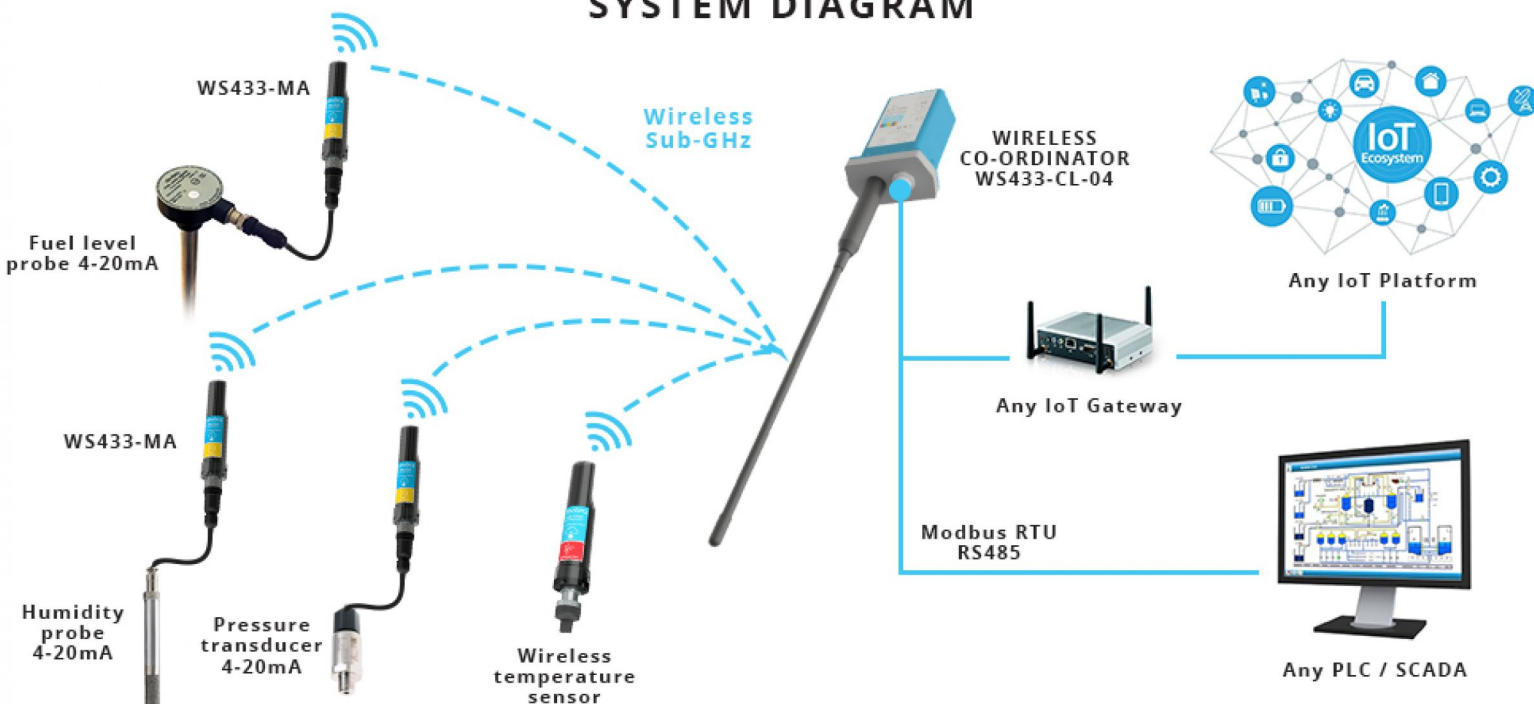- High cost and much effort to identify the wire-break position and to re-connect the faulty cable.

SOLUTION

To overcome these difficulties, Daviteq, as a researcher, developer, and manufacturer of wireless sensors, applied Sub-Ghz wireless transmission technology to develop the WS433-MA analog signal transmitter to making it easy for factories to convert traditional 4-20mA sensors into wireless sensors. The 4-20mA transmitters connect directly to the 4-20 mA sensor and transmit the signal to the wireless receiver with an RS485 port to form a wireless sensor network.

- Connect smoothly with all sensors on the market with 4-20mA signal output (temperature, humidity, pressure, level sensor, ultrasonic...)
- Integrate easily into all available PLC, SCADA, or IoT Platform systems via RS485 communication standard with Modbus RTU protocol.
- Be available an additional transmitter health parameters such as % remaining battery, RF wireless signal level, connection status and data status.
- Integrate other types of wireless sensors manufactured by Daviteq into the same wireless network without affecting the operating system

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SOLUTION DIAGRAM

SYSTEM DIAGRAM

FEATURES

- Install and deploy 4-20 mA wireless network quickly and upgrade and expand easily.

- Apply Texas Instrument Sub-1GHz wireless technology with AES-128 security mechanism and a transmission range up to 500m.

- Adopt wireless transmission technology with ultra-low power for 10-year operation using only 1 AA battery.

- Design in industrial standard with high-grade Poly-carbonate plastic material - IP67, and explosion-proof version.

BENEFITS

Applying a wireless sensor network helps the factory eliminate the shortcomings of the above-wired 4-20mA analog signal network, optimize project investment costs, reduce operation and maintenance costs. Detailed main benefits are as follows:

- ⊘ Optimize cable and labor costs when installing new sensors, especially in areas where cable trays are not available.
- ⊘ Save network operation and maintenance costs and especially costs incurred when the signal line breaks.
- ⊘ Install 4-20 mA sensors in elevated, hard-to-reach locations easily with a completely wireless transmitter.
- ⊘ Increase factory's brand name, become a smart factory model by applying advanced wireless technology Sub-Ghz.

PRODUCTS USED

SKU#	PRODUCT
STHC	Smart IoT Gateway - iConnector
WS433-MA	Wireless Sensor 0-20mA current input
WS433-CL	LONG RANGE WIRELESS CO-ORDINATOR

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