WirelessHART® gateway- RAD-WHG/WLAN-XD

FAQs

1. What is HART?

HART (Highway Addressable Remote Transducer) communications protocol is a well established method of communicating digitally to field instruments typically used in process control and process automation applications. The protocol was developed by Rosemount (now part of Emerson) and standardized in 1986.

A unique feature of the protocol is that the digital information about the devices is transmitted over the same 4-20 mA signal wires as the process variable. Therefore, traditional 4-20 mA wiring can be done with HART-based instruments. The digital HART data can also typically be accessed locally at the instrument via a handheld HART communicator device. Over the last few decades, HART instruments have become popular versus standard 4-20 mA devices because of the additional data that can be accessed; however, many installations have never fully utilized the digital data available.

2. What is WirelessHART®?

WirelessHART is part of HART7, which is the newest revision of the HART standard from the HART Communication Foundation. All HART standards are backwards-compatible (to HART5), therefore any HART device in the field can be connected to a WirelessHART (HART7) network. To do this, an adapter is needed to allow the legacy HART device to communicate with the WirelessHART network. The commands used in HART7 are the same as in all previous standards, but the new HART7 protocol retrieves more information from devices than previous standards.

3. Is WirelessHART secure?

Yes. WirelessHART was designed for industrial applications and is in line with security for those applications. Over-the-air communications are secured using AES 128-bit encryption (the same as WPA2 in WLAN networks). Authentication verifies the sender of information, and channel hopping keeps the network from being static, preventing eavesdropping.

4. What is meant by a stranded HART device?

Sometimes this term is used to refer to HART-enabled field instruments that are not currently using the HART data. In other words, the user or application is only collecting the process variable from the devices, but the further diagnostics capabilities have never been fully implemented by an asset management system. This is one of the most exciting application potentials for WirelessHART. By using a WirelessHART adapter, the user can tap into this valuable data without the need for complex re-wiring of their plant.

5. How long will a battery last in a WirelessHART field device?

The design specification is five years, however environmental factors, such as how often the device is accessed or how often the device routes information from other devices, can affect this number. As part of the HART7 standard, battery life will be reported by all field devices. This number will be indicated in the gateway as days of battery life remaining.

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6. How far can a WirelessHART network communicate?

From radio to radio, WirelessHART will communicate 100 to 350 feet. However, WirelessHART uses mesh networking to allow all devices to communicate with each other. This means that although distances between radios is limited to less than 350 feet, the network can be extended by using other radios in the network to create as large a network as needed.

7. What is a mesh network?

A mesh network is a network topology that allows every device to communicate with every other device in the network. The advantage of this is that radios do not have to make "home run" shots back to a central station, allowing for lower power radios to be used. This yields lower power draw and allows battery-powered solutions. This also provides redundancy in the network because the network can heal itself if a connection goes bad.

8. Will the 802.11(WLAN) interface and the WirelessHART interface on the gateway interfere with each other?

No. WirelessHART has the ability to blacklist channels used by other devices, including the WLAN interface in the gateway.

9. What are the metal prongs on the radio for?

The prongs are for a HART programmer. HART programmers are commonly used in traditional HART networks for programming field devices. HART programmers offer a common means to program HART devices, regardless of the manufacturer. The Phoenix Contact WirelessHART gateway can be programmed in this standard manner and is one of the only gateways in the market which has this ability.

10. Does the radio ship with antennas? If not, what antennas should be used?

The radio does not ship with any antennas. All of the antenna connections on the radio are RP-SMA, and a minimum of one antenna is needed for the WirelessHART radio. If using the WLAN network, an additional antenna for the WLAN connection is needed.

11. How many field devices can be connected to a gateway?

Up to 250 remote devices can be connected using the Phoenix Contact WirelessHART gateway. In many cases, because of saturation and power consumption, network size will not reach 250 devices. Instead, the network should be broken into clusters using multiple gateways to backhaul the information.

12. A customer has a tank one mile away from the control room and wants to measure its level. Is WirelessHART the right technology for this application?

No. WirelessHART is designed for short distances and higher node count networks. In an application with greater distances, Trusted Wireless™ IO or data is the ideal wireless network interface.

USA
PHOENIX CONTACT
P.O. Box 4100
Harrisburg, PA 17111-0100
Phone: 800-888-7388
717-944-1300
Technical Service: 800-322-3225
Fax: 717-944-1625
E-mail: info@phoenixcon.com
Website: www.phoenixcontact.com

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