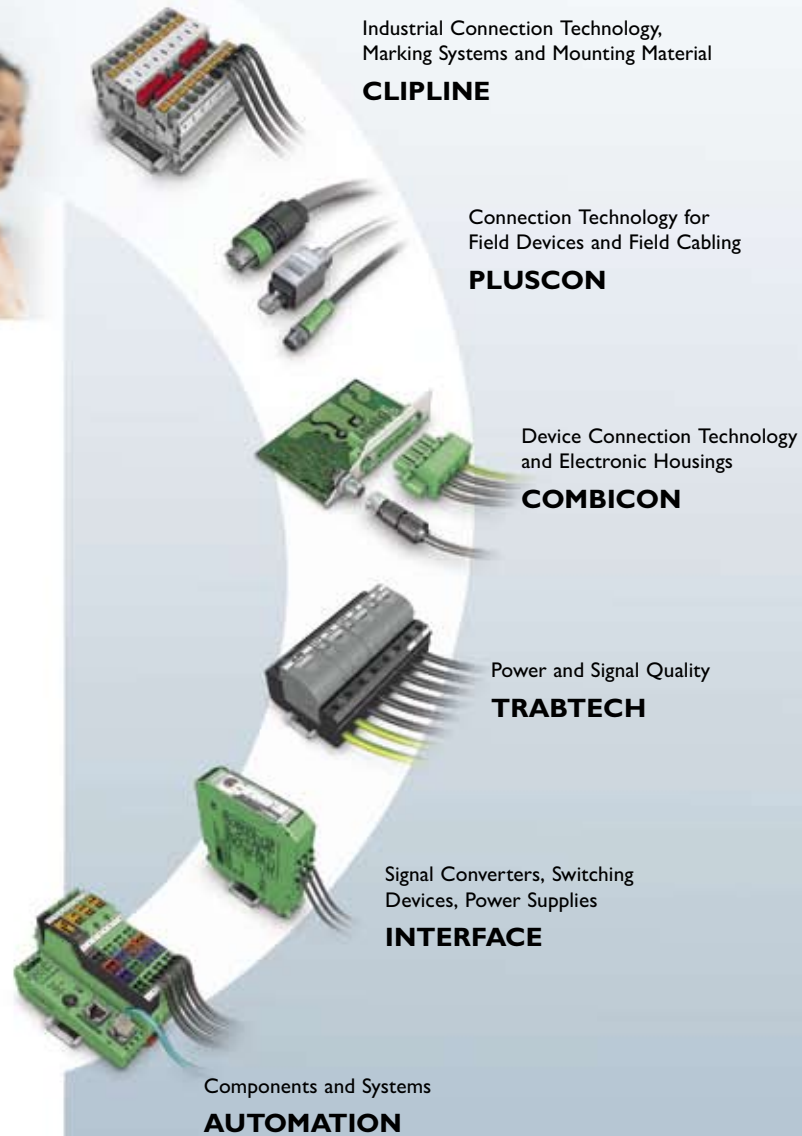


Further information on the products presented here and on the world of solutions from Phoenix Contact can be found at www.phoenixcontact.net/catalog

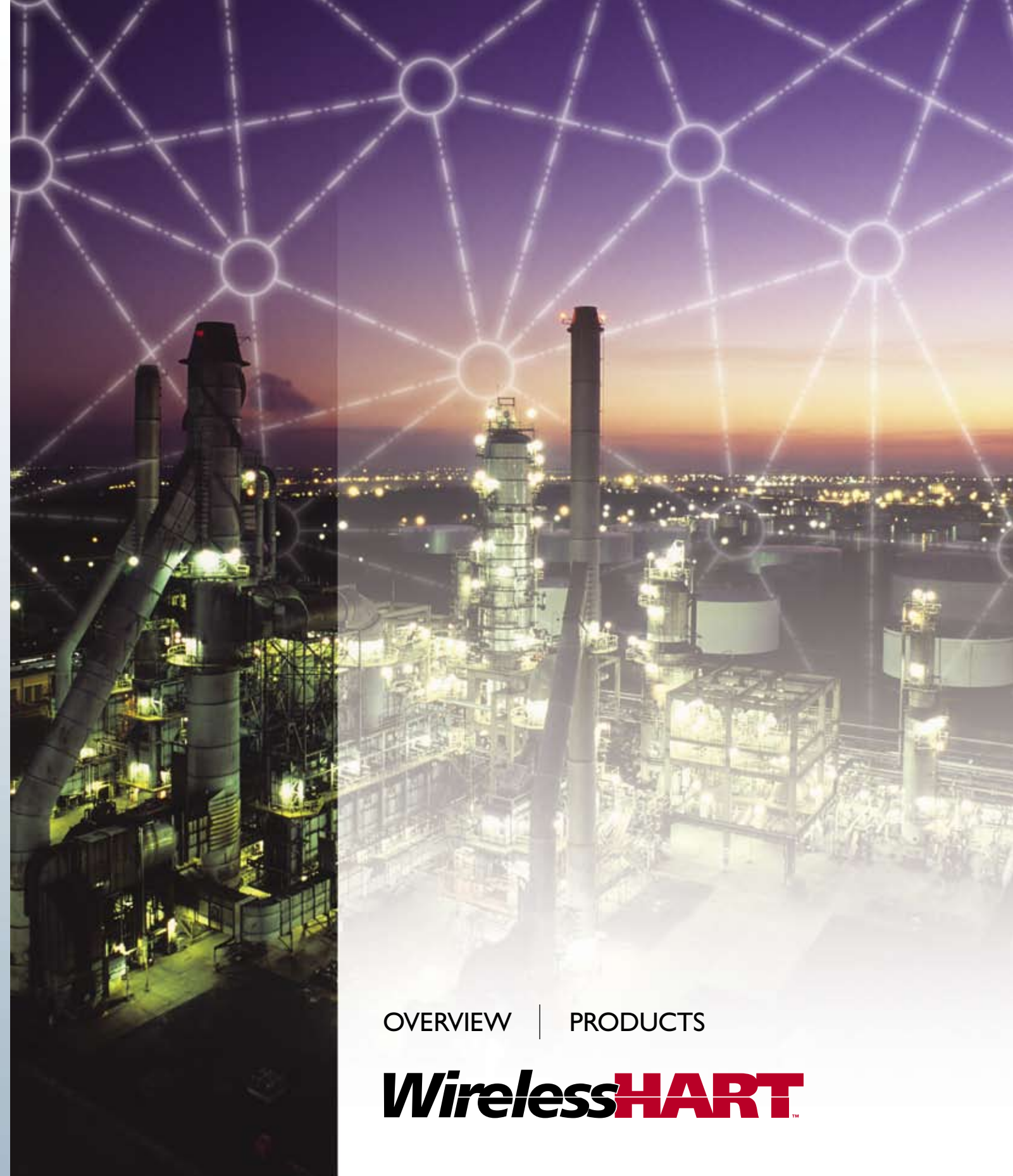


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OVERVIEW | PRODUCTS

WirelessHART™

WirelessHART™ ...

The evolution of a technology

HART® (Highway Addressable Remote Transducer) protocol is the global standard for smart process instrumentation. More than 30 million HART-enabled devices are currently installed in plants around the world, but only 10 percent of the devices are used to their fullest potential. A wireless standard was developed to help users more effectively utilize their HART-enabled devices.



HART devices represent 40% of all process instrumentation products worldwide.



HART 7: WirelessHART, 4-20 mA signal with digital data

- Report by exception
- Time stamp
- Wireless networking, devices, and diagnostics

2007

HART 6: AMS Integration

- 32 character tag
- All variables with status
- Digital loop check

2001

HART server introduced

1999

HART accepted by instrument technicians

1995

HART 5: 4-20 mA signal with digital data

- Process Variable
- Device Status
- Device Configuration

1989

WirelessHART™

For more information about HART and WirelessHART, visit the HART Communication Foundation website at www.hartcomm.org

WirelessHART enhances existing systems and enables new applications

Wired HART systems can be expanded without replacing legacy equipment.

- **Stranded I/O points and diagnostics can be integrated into a process without decommissioning the existing system.**

New systems can be installed in a fraction of the time it takes to install a hardwired network resulting in:

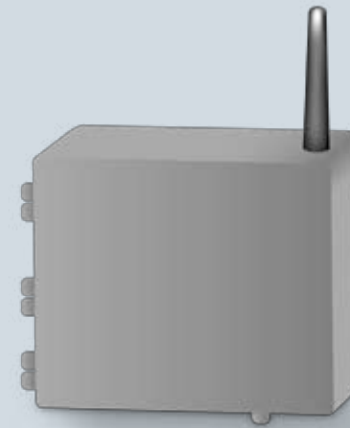
- **Lower installation costs (than wired solutions)**
- **Labor savings**
- **Reduction of permits and delays**
- **Lower material cost**

WirelessHART

- **Uses the same maintenance and diagnostic tools as traditional wired HART devices**
- **Requires little additional training**
- **Does not require extensive RF planning**

WirelessHART™

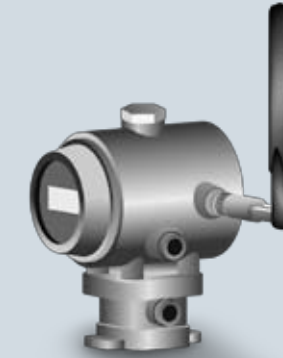
There are 3 basic WirelessHART device types defined in the HART 7 standard:



WirelessHART Gateway

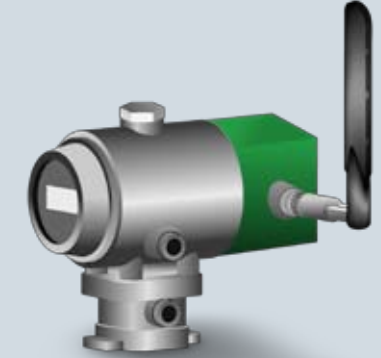
Consists of 3 pieces according to HART 7

- **Access Point Radio:** The WirelessHART radio that communicates with the remote devices
- **Network Manager Software:** Controls the mesh networking and security
- **Gateway Connection:** The interface to the host, includes protocols and physical connections



WirelessHART Instrument

- **Contains a radio integrated with process measurement or monitoring capabilities**
- **No wiring is required, all diagnostic and process variable data is transmitted to the WirelessHART gateway**
- **May be solar, line, loop or battery powered**



WirelessHART Adapter

- **Connects an existing wired HART device into a WirelessHART network**
- **The original 4-20mA signal remains intact and functional**
- **HART data is transmitted to the WirelessHART gateway**
- **The adapter can be loop, line, or battery powered**

WirelessHART™ Network Topology

WirelessHART

Features



- **IEEE 802.15.4 radio**
 - 250 kbps over-the-air
 - Uses 2.4 GHz ISM band with 15 channels
 - 10 mW radio for global use



- **Time-synchronized communication**
 - Utilizes pre-scheduled time slots for transmission to avoid collisions
 - Ultra low power draw allows devices to be battery powered
 - Implements channel "hopping" to tolerate interference - each transmission is sent on a different channel

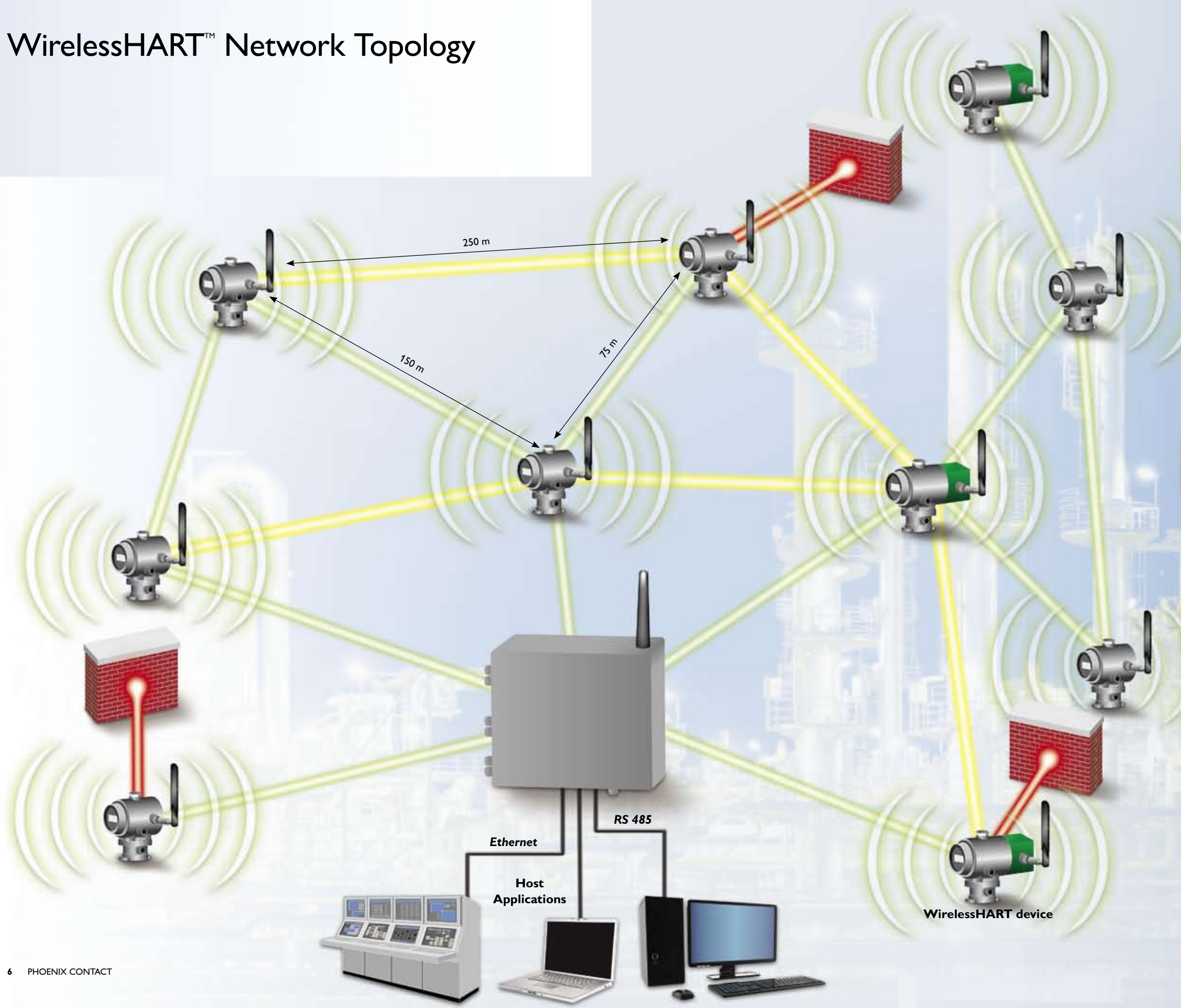


- **Full-mesh routing**
 - Automatic network formation for easy network installation
 - Every device has multiple communication paths
 - Self-organizing and self-healing capabilities keep the network stable over time



- **Secure message transfer**
 - Encryption guarantees information cannot be read by other parties
 - Authentication verifies the sender's validity
 - Integrity ensures that the message is delivered unaltered

- Active path**
- Alternate path**
- Obstructed path**



WirelessHART Gateway with Integrated WLAN

Extend the reach of WirelessHART

A WirelessHART gateway typically connects to an Asset Management System (AMS) or host via RS485 or Ethernet. This is very simple to install, but the control room is often farther than the reach of WirelessHART, requiring long runs of network cable.

The RAD-WHG/WLAN-XD is a WirelessHART gateway with integrated 802.11b/g WLAN transceiver. It can connect up to 250 WirelessHART field devices and convert the HART data to Modbus TCP or HART UDP for easy integration into almost any host system, including the HART Server.

The WLAN transceiver can also be disabled, and the host connection can be made via the standard Ethernet port.

The integrated WLAN can be used as the backhaul connection, allowing the gateway to be installed in the field, closer to the monitored devices. This also allows the user to create a "clustered" network topology. Clustered topology reduces demand on battery-powered nodes for routing, resulting in increased battery life.

HART maintenance port
- Allows HART programmer to be connected for gateway programming

Ethernet port
- For simple programming and diagnostics using embedded web server

RAD-WHG/WLAN-XD
(Part number 2900178)

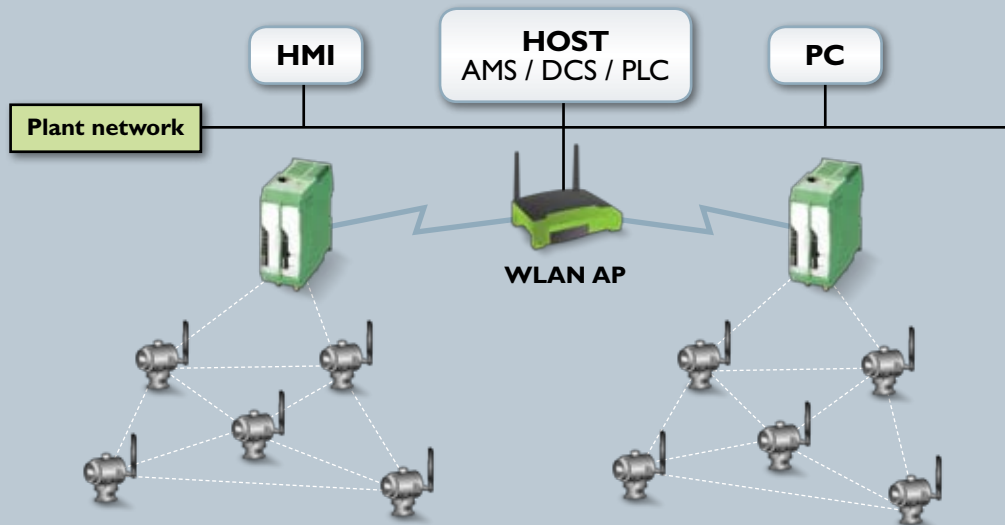


WiHART antenna connection

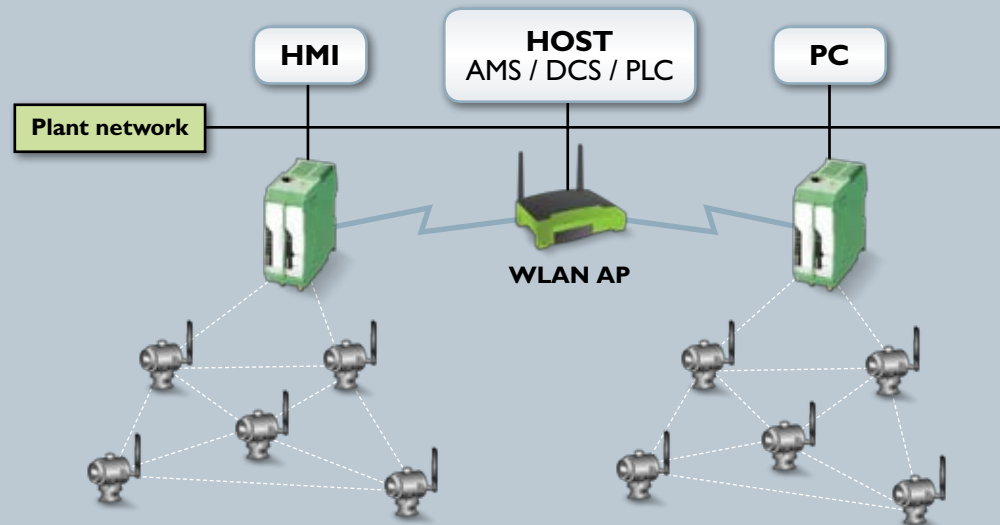
Dual WLAN antenna connection
- RPSMA connectors allow the use of high-gain antennas

- 12-30 V DC operating voltage
- -40 to 70°C operating temperature
- IECEx/CSA Class I, Zone 2

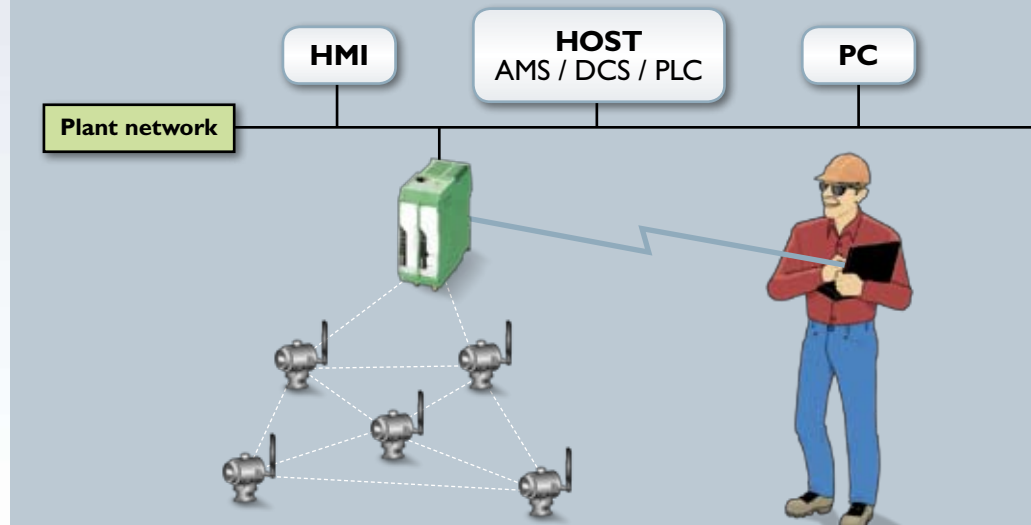
WIRELESS BACKHAUL



"REDUNDANT" BACKHAUL



MOBILE WORKER



Wireless solutions



Phoenix Contact, a long-time member of the HART Communication Foundation, is a leading global provider of industrial wireless solutions. Today, with more than 25,000 installed units, Phoenix Contact's wireless products provide dependability and security while monitoring and controlling signals such as level, temperature, frequency and digital alarms.

Phoenix Contact strives to meet customer needs with both standard and application-specific wireless products designed to effectively endure and operate in an extensive variety of industrial environments. Cable-based circuits create increasingly high installation costs and limit alteration flexibility. Wireless solves these challenges with easy-to-alter permanent or temporary communication.

Whether serial or I/O data, Fieldbus or Ethernet communications, Phoenix Contact offers the solution for every application, utilizing technologies ranging from Bluetooth to WLAN, GSM/GPRS, proprietary Trusted Wireless or WirelessHART.



Wireless I/O

Wireless I/O systems are optimized for the transmission analog and digital signals. Wireless I/O can be used in point-to-point or point-to-multipoint configurations for both monitoring and control.

Wireless Serial

With Wireless Serial modems, the limitations of RS-232/422/485 can be overcome with flexible network configurations and long distance communication.

Wireless Ethernet

Wireless Ethernet modems allow IP-based protocols such as TCP/IP, Modbus TCP, or Profinet to be easily transmitted over short or long ranges, and use different Wireless technologies optimized for the application.