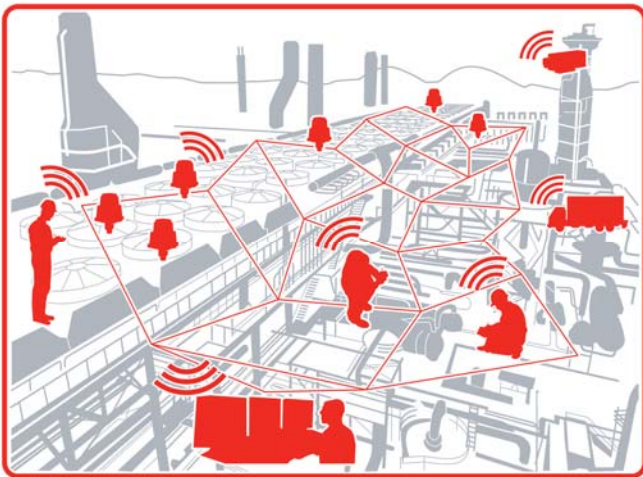


## OneWireless Network Overview



Manufacturers are turning to innovative wireless applications and services to help meet higher productivity goals and respond to stricter security and environmental regulations. They recognize that wireless technologies can enable applications that will not only help meet immediate requirements, but also solve problems in the future.



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Honeywell's OneWireless process control network seamlessly extends the process control network into the field which allows the site to:

- Cost effectively and quickly roll out battery-powered wireless transmitters to collect additional data to improve control strategies or meet regulations at lower costs
- Empower a mobile workforce by providing remote access to process data and other plant-related information
- Enhance a plant's security by cost effectively implementing wireless CCTV cameras
- Improve personnel safety thanks to wireless personnel safety system
- Connect remote controllers to the central control system

### An Industrial Wireless Network

The OneWireless Network is a multi-application, multi-standard wireless network that can be tailored to offer the wireless coverage needed for industrial applications, from a simple wireless field instrument network to a completely integrated plant wide multi-application wireless network.

### Flexibility and Scalability

OneWireless network offers users the choice to design the network that best fit their applications needs:

**Meshing field instruments:** Each ISA100 field instrument can communicate with more than one other field instrument to form a mesh network. Field instruments can not only send their own data but route data received from neighboring field instruments. The data can jump through multiple field instruments before reaching the host gateway. This type of network is typically implemented for users who want to tactically implement a handful of battery operable field instruments to be used for noncritical monitoring purposes and do not require fast update rates.

**Mesh network for field instruments only:** Access points for wireless field instruments enable users to build a plant-wide wireless mesh network for field instruments capable of supporting hundreds of field instruments sending data at fast update rates. This type of network is typically implemented by users who want reliable wired- like performance with fast update rates from their battery operated field instruments for critical monitoring and control. This network does not provide wireless coverage for Wi-Fi devices such as handhelds or Ethernet devices such as digital security cameras.

**Mesh network for field instruments and Wi-Fi devices:** Multi-application access points capable of communicating with ISA100.11a field instruments and IEEE 802.11 devices enable users to design a plant-wide multi-application network. This type of network is typically implemented for users who want to implement handhelds for their mobile workforce, personnel safety and plant security systems as well as hundreds of field instruments for monitoring and control purposes.

Users will implement these different types of network devices throughout their plant based on the type of coverage needed and monitor the network via a single network management application.

### Universal

OneWireless supports all standards required to support industrial applications:

**Multi-standard network:** OneWireless network supports ISA100.11a standard for wireless field instruments, IEEE 802.11 for Wi-Fi devices and IEEE 802.3 for Ethernet-based devices. A multi-standard network drastically reduces the cost associated with the deployment, maintenance and security management of a wireless network.

**Multi-protocol network:** Users can easily integrate ISA100.11a data with their existing applications using HART, Modbus (serial and TCP) and OPC. A generic tunnel is also offered to enable native communication between client/server transmitter and host systems using any protocol. For instance, Honeywell uses this feature to support the Bi-Phase Mark III protocol used by its Enraf Entis applications.

### Performance

**Wired-like performance:** OneWireless access points allow users to achieve wired-like performance from their wireless field instruments. With access points, wireless field instruments don't have to route data from other field instruments. Users will get five years or more battery life from their field instruments at one-second update rates.

### Self-contained and predictable power management:

Without power efficiency, many of the cost-saving benefits of wireless field instruments can be lost to costs associated with battery changing. OneWireless offers a power efficient solution with 10-year battery shelf life from wireless field instruments at fast update rate.

**End-to-end industrial security:** OneWireless protects plant information and ensures safe operations with industry standard 128-bit encryption at the mesh, Wi-Fi and wireless field instrument level.

**Over the air firmware upgrades and configuration:** All ISA100.11a wireless field instruments can be configured and upgraded over the air savings several hours of labor during the wireless field instrument life.

### Availability

OneWireless offers the best data availability for wireless field instruments.

**Data and Channel Segregation:** OneWireless network ensures interoperability between Wi-Fi devices and ISA100.11a wireless field instruments. The network also provides automatic prioritization of data ensuring that critical information from wireless instruments is always received first.

With a high-speed and self-organizing mesh network, OneWireless delivers flexible channel allocation and a robust architecture with latency control and redundancy for safe wireless control.

### Antenna diversity for wireless field instruments access point:

The antenna diversity offered with wireless field instruments access points enhances the field instruments' wireless coverage in multi-path environments.

### Investment Protection

OneWireless is future proof thanks to the adoption of communication standards.

**ISA100.11a and IEEE 802.11 a/b/g:** Standards offer the freedom of choice and interoperability requested by users. Existing OneWireless users can migrate their existing infrastructure to ISA100.11a compatible via a simple over the air firmware upgrade. ISA100.11a ensures interoperability between wireless field instruments from different vendors..

**Support of all key field protocols:** Leveraging its multi-protocol capability, users can easily integrate wireless field instruments with their existing applications using Modbus, HART, OPC and ISA100.11a generic tunnel.

### OneWireless Pillars

The OneWireless network can be composed of four interconnected components: Wireless Device Manager, Field Device Access Points, Multinodes and XYR 6000 field instruments.

#### Wireless Device Manager

Wireless Device Manager (WDM) manages all wireless field devices, which includes the ISA100.11a wireless field instruments and field instrument network devices such as Field Device Access Points and Multinodes. WDM assumes the roles of wireless field instruments' network gateway, system manager and security manager. It is used for initial wireless device configuration and to store wireless network system data for configuring wireless devices. It is also the trust for the wireless field instrument network by generating, issuing and managing security keys which all field devices require in order

to join the secured network. Finally it hosts all the interfaces required to connect the sensor data to your control application via Modbus, HART OPC and proprietary protocols.

#### **Field Device Access Point**

Field Device Access Point (FDAP) is a rugged industrial access point which provides access to ISA100.11a field instruments. Once deployed in the field, FDAPs self-discover and self-organize into a managed, secure and redundant wireless field instrument mesh network. They act as bridges between the sensor network and the wireless or wired infrastructure (backhaul).

#### **Multinode**

A multinode is a rugged industrial access point and mesh-bridge nodes which provide access to IEEE 802.11 a/b/g clients as well as ISA100.11a compatible field instruments. Once deployed in the field, multinodes self-discover and self-organize into a managed, secure and redundant mesh network. They also act as bridge between IEEE 802.11 network and the wireless and wired backhaul. Existing OneWireless users can upgrade their multinode to ISA100.11a via a simple over the air firmware.

#### **XYR 6000 Field Instruments**

XYR 6000 field instruments enable customers to obtain data and create information typically from locations where running wire is cost prohibitive and/or the measurement is in a hazardous location.

With ISA100.11a, XYR 6000 field instruments can be configured as routing or non-routing devices. Routing field instruments can send their own data but also data received from neighboring field instruments. These devices can be upgraded to ISA100 via a simple over the air firmware.

#### **The Only Network You Will Ever Need**

Honeywell's OneWireless Network extends your process control network into the field. It is:

- The most flexible and scalable network in the industrial market
- The easiest system to commission and maintain
- The most performing and reliable network – field proven for best uptime
- The most cost efficient network

## Details

Network Architecture	
OneWireless network is composed of Wireless Device Manager, Field Device Access Points, Multinodes, XYR 6000 field instruments and other ISA100.11a field instruments. It can be tailored to satisfy diverging applications requirements, from a simple wireless field instrument network to a completely integrated plant wide wireless network.	
Highlighted Features	
<ul style="list-style-type: none"> <li>• IEEE 802.11 a/b/g high-speed, self-organizing, self-healing mesh network for multi-applications</li> <li>• ISA100.11a self-organizing, self-healing mesh network</li> <li>• Routing and non routing field instruments operating at different update rates</li> <li>• Full performance, flexible channel allocation for plant wireless governance</li> <li>• Up to 6 miles (10 km) infrastructure node to node communication</li> <li>• Up to 2,000 ft (0.6 km) wireless field instrument to infrastructure node communication</li> </ul>	<ul style="list-style-type: none"> <li>• Class 1, Div 2 and Class 1, Div 1 wireless field device</li> <li>• Built-in wireless field instrument redundancy for assured communication</li> <li>• Built-in read-write messaging for configuration and priority alarms - optimized performance for all functionality</li> <li>• Radio receivers with high selectivity for coexistence</li> <li>• Protocol tolerant to missing packets with automatic repeat requests</li> <li>• Up to one second reporting with latency control and the ability to configure sensors on the same network at different update rates</li> </ul>
Network Standards	
<ul style="list-style-type: none"> <li>• 2.4 GHz IEEE 802.11 b/g for use in facilities worldwide</li> <li>• 5.8 GHz IEEE 802.11 a for use in facilities in most countries</li> <li>• 2.4 GHz ISA100.11a for wireless field instruments</li> </ul>	
Network Security Management	
End-to-end security: WPA2, AES-based, device authentication, FIPS 140-2 based encryption, 128-bit encryption	
Field Protocols	
Modbus TCP/Serial, HART, OPC	
Other Interfaces	
OneWireless Adapter Interface – interface tunneling HART data collected from wired HART devices to HART clients	
Field Instrument Power Management	
Self-contained and predictable power management designed for 10-year sensor battery life (rain or shine)	

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### More Information

To learn more about Honeywell's wireless solutions, visit [www.honeywell.com/ps/wireless](http://www.honeywell.com/ps/wireless) or contact your Honeywell account manager.

### Automation & Control Solutions

Process Solutions

Honeywell

1860 W. Rose Garden Lane,

Phoenix, AZ, 85027

Tel: ++ 800-822-7673

[www.honeywell.com/ps](http://www.honeywell.com/ps)

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