Honeywell

Product Information Note

OneWireless Network Overview

Honeywell's OneWireless™ Network seamlessly extends process control into the field. Users benefit from innovative wireless applications and services to help meet higher productivity goals and ever-stricter security and environmental regulations. Enabling users to meet immediate requirements, wireless technologies also bring flexibility to solve future challenges.

An Industrial Wireless Network

Honeywell's OneWireless™ Network brings immediate benefits to industrial sites:

- Cost-effective, quick roll out of battery-powered ISA100 Wireless™ field instruments to improve process efficiency, increase asset availability and meet health, safety and environmental (HSE) regulations at lower cost
- Empowering a mobile workforce with remote access to process data and other plant-related information
- Enhanced plant security with cost-effective wireless CCTV cameras
- Improved personnel safety with portable wireless and fixed gas detectors
- Connecting remote controllers to the central control system

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

From the field to the control room, Honeywell wireless technology allows you to seamlessly extend your process control network into the field

OneWireless Network Pillars

OneWireless Network draws on a flexible portfolio of interconnected components:

OneWireless Wireless Device Manager (WDM)

WDM manages all wireless field devices, including ISA100 Wireless field instruments and network infrastructure devices, such as OneWireless Field Device Access Points and the Cisco access points.

Assuming the roles of the wireless field instrument network gateway and system and security manager, WDM is used for initial wireless device configuration and storing wireless network system data that is used to configure wireless devices. It also generates issues and manages the security keys for all field devices that are required to join the secured network. Keys can be provisioned to a wireless field device via Infrared or over-the-air provisioning methods, as defined by the ISA100 Wireless Standard.

WDM hosts multiple interfaces required to send ISA100 data to your control application: Modbus (Serial and TCP/IP), OPC UA, OPC DA, HART, Gateway General Client Interface (GCI), Honeywell Enraf, and Experion® PKS CDA.

OneWireless Field Device Access Point (FDAP)

The FDAP is a rugged industrial access point for ISA100 Wireless 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 are the bridge between the sensor network and the wireless or wired infrastructure (backhaul).

Cisco Aironet 1552S Outdoor Access Point

For IEEE 802.11 a/b/g/n clients and ISA100 Wireless compatible field instruments, users can employ the Cisco® Aironet® 1552S Access Point. With Cisco's CleanAir® technology, it intelligently optimizes the network around radio frequency interference sources to improve the air quality, significantly increasing network performance and the user experience.

Cisco Wireless Controllers

Cisco Wireless Controllers reduce the operational costs of Cisco Aironet 1552S Access Point networks by extending the network policy and security from the wired network core to the wireless edge. Cisco Wireless Controllers bring a number of benefits:

- Flexibility to centrally configure wireless policy, management or security settings on remote access points through centralized provisioning and management
- Wireless intrusion prevention system (WIPS) capabilities
- Enforcement of centrally-defined policy across wired and wireless networks
- Support for advanced mobility services, including ClientLink, VideoStream and CleanAir technology

Honeywell OneWireless™ XYR 6000 Field Instruments

OneWireless XYR 6000 field instruments let customers capture information from locations where running wire is cost-prohibitive or measurement is in a hazardous location.

With ISA100 Wireless, XYR 6000 field instruments can be configured as routing devices to allow them to send not only their own data but also data received from neighboring field instruments. These devices can be upgraded to ISA100 Wireless with a simple over-the-air firmware update.

Advantages

Flexibility and Scalability

OneWireless Network gives users the options to design a network that perfectly fits their applications needs:

Meshing field instruments: Each ISA100 Wireless field instrument can communicate with two or more other field instruments to form a mesh network. Field instruments can send their own data and also route data received from neighboring field instruments, with data able to pass through multiple instruments before reaching the host gateway. Typically used to tactically implement a handful of battery-operated field instruments, this type of network is used for non-critical monitoring purposes that do not require fast update rates.

Mesh network for field instruments only: Adding access points for wireless field instruments enables users to build a plant-wide wireless mesh network capable of supporting hundreds of field instruments sending data at update rates as fast as one second. This network is typically implemented by users who want reliable wired-like performance for battery-operated field instruments used in critical monitoring and control while maximizing battery life.

Mesh network for field instruments and Wi-Fi devices: Multi-application access points capable of communicating with ISA100 Wireless field instruments and IEEE 802.11 devices enable users to design a plant-wide multi-application network. This network also supports Wi-Fi devices to allow users to implement handhelds for the mobile workforce, and personnel safety and plant security systems, including Ethernet devices such as digital security cameras. At the same time, it can support hundreds of field instruments for monitoring and control. The network combines Wi-Fi coverage with the best features of meshing field instruments and mesh networks for field instruments only.

Universal Network

OneWireless Network supports all communication standards and field protocols required for industrial applications.

Multi-standard network: OneWireless Network supports the ISA100 Wireless Standard for wireless field instruments, IEEE 802.11 for Wi-Fi devices and IEEE 802.3 for Ethernet-based devices.

Multi-protocol network: End-users can easily integrate ISA100 Wireless data with their existing applications using legacy field protocol interfaces, including Modbus (serial and TCP), HART, and OPC. WDM also offers a number of unique interfaces, including a GCI for ISA100 Wireless devices tunneling proprietary protocols, an Enraf interface for Honeywell Enraf FlexLine radar gauges, and an Experion PKS CDA interface for peer-to-peer communication with Honeywell's Experion controllers and server.

With Experion PKS CDA, ISA100 Wireless field instruments, once powered on and authenticated, are automatically recognized by Experion and ready to be used without any data mapping.

A multi-standard, multi-protocol network drastically reduces costs associated with wireless network deployment, maintenance and security management.

High Performance Network

Wired-like performance: ISA100 Wireless access points such as the Cisco Aironet 1552S Access Point and FDAP deliver wired-like performance with wireless field instruments. With these access points, users can configure their wireless field instruments as routing or non-routing field instruments. Non-routing field instruments consume less power, enabling OneWireless Network users to get more than three years' battery life from their field instruments while retaining one-second update rates.

Self-contained and predictable power management: Without power efficiency, the benefits of wireless field instruments can be eroded by battery costs. Honeywell offers efficient instruments with a 10-year battery shelf life at fast update rates. Honeywell's wireless field instruments use commercial, off-the-shelf batteries for low lifecycle costs.

End-to-end industrial security: Honeywell 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 Wireless field instruments can be configured and upgraded over the air, saving one to two hours of labor per update for each field instrument.

High Data Availability

Honeywell offers the best data availability for wireless field instruments:

Redundant paths: Each ISA100 Wireless field device can auto-discover neighboring ISA100 devices and establish a communication path with them. Similarly, each Cisco Aironet 1552S Access Point can auto-discover neighboring counterparts to establish communication paths. This feature allows the formation of multiple paths between the client device and application, increasing data availability.

Data segregation: OneWireless Network uses virtual local area networks (VLANs) to segregate the data and QoS tagging to guarantee expected performance levels by prioritizing data transported across the VLANs.

By default, all process data are assigned to a dedicated VLAN tagged with the highest priority, ensuring critical information from wireless instruments is always received first.

Channel blacklisting: OneWireless Network users can determine and configure the channels available for communication in the network.

This method can be used to improve network performance by preventing interference between devices.

Antenna diversity: Antenna diversity is used to enhance both Wi-Fi and field-instrument wireless coverage reliability in multi-path environments.

Investment Protection

Honeywell's industrial wireless portfolio is future-proof thanks to adoption of communications standards.

ISA100 Wireless and IEEE 802.11 a/b/g/n: Standards ensure users' freedom of choice. Wi-Fi and ISA100 Wireless certification means users can be confident of complete interoperability for compliant field devices from multiple vendors.

Support for all key field protocols: Leveraging the network's multi-protocol capability, users can easily integrate wireless field instruments with their existing applications using Modbus, HART, OPC, GCI, Enraf, and Experion PKS CDA.

GCI allows third-party client applications to interoperate with the WDM and ISA100 Wireless field devices leveraging the ISA100 Wireless tunneling feature. Tunneling encapsulates non-ISA100 Wireless native data (proprietary, HART or Foundation Fieldbus) in an ISA100 Wireless packet and carries the data within the ISA100 Wireless network. No interpretation of the packet content is necessary. Several field device manufacturers already use this feature to transport proprietary protocols over the ISA100 Wireless network.

The Enraf interface leverages the enhanced tunneling feature of the ISA100 Wireless Standard to allow Honeywell Enraf's FlexLine Radar tank level gauge to natively communicate with the Honeywell Enraf Entis application.

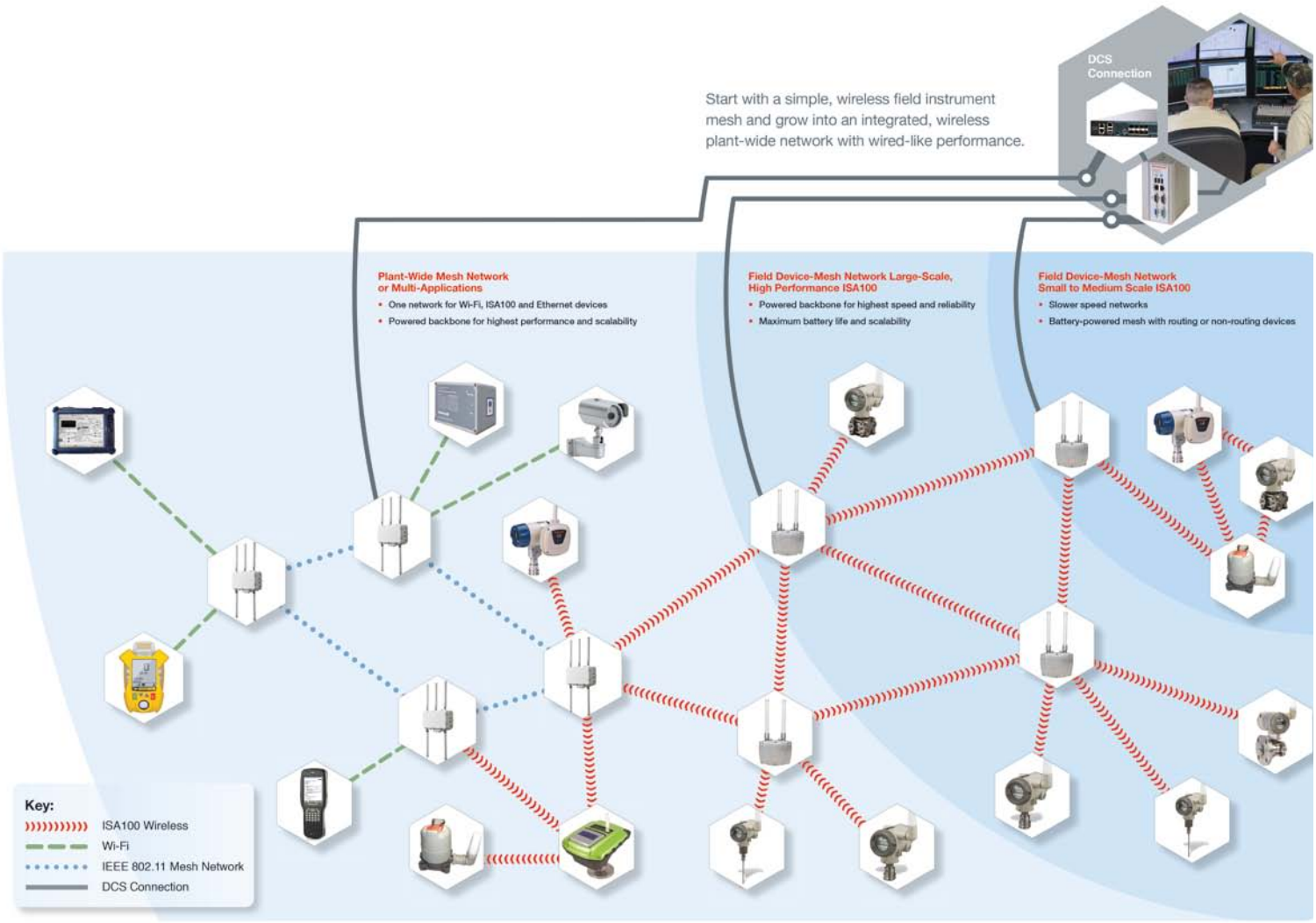
Experion Integration: Experion users can take advantage of full OneWireless Network integration. Using the WDM's Experion PKS CDA interface, Experion PKS nodes such as C300 controllers and ACE nodes can communicate natively with ISA100 Wireless field devices. This tight integration significantly reduces time spent incorporating ISA100 Wireless field instruments into control strategies and displays.

Using the Wi-Fi connectivity offered by the OneWireless Network, end users can access Experion data and displays through mobile devices, including tablets, handhelds and laptops, for greater responsiveness to operational changes.

The Only Network You Will Ever Need

Honeywell's OneWireless Network extends the process control network into the field with the most effective solution and lowest total cost of ownership:

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



OneWireless Network is reliable, flexible and scalable

Summary

OneWireless Network Architecture

OneWireless Network is composed of the WDM, FDAPs, Cisco 1552S Access Points, Cisco Wireless WLAN Controller, and XYR 6000 field instruments. The network can be tailored to satisfy diverse application requirements, from a simple wireless sensor network to a multi-application, plant-wide wireless network.

Highlighted Features

- Self-organizing, self-healing and high-speed IEEE 802.11 a/b/g/n based wireless mesh network
- Self-organizing, self-healing ISA100 Wireless based wireless mesh network
- Industrial meshing access points (Cisco Aironet 1552S Access Points) providing secure and reliable wireless coverage for ISA100 Wireless and IEEE 802.11 a/b/g/n wireless devices.
- Industrial meshing access points (Field Device Access Points) providing secure and reliable wireless coverage for ISA100 Wireless devices.
- Self-contained and predictable power management designed for 10-year sensor battery life
- System wide multi-path capability with dual path connectivity at the ISA100 Wireless field device level, multi-path at the wireless network level (ISA100 and IEEE 802.11 a/b/g/n) and gateway redundancy.
- MIMO technology and antenna diversity used to improve Wi-Fi and ISA Wireless coverage and reliability
- ISA100 Wireless field instruments with up to one second reporting with latency control
- Routing and non-routing ISA100 Wireless field instruments
- Ability to configure ISA100 Wireless field instruments with different update rates
- End-to-end industrial security with industry standard 128-bit encryption
- Over-the-air firmware upgrades and configuration
- Support for all key legacy field protocols (Modbus Serial/TCP, HART Serial/IP, OPC UA/DA)
- Peer-to-peer communication with Experion nodes using Experion's CDA communication protocol
- Certified for use in hazardous environments
- Dedicated Virtual LAN and Quality of Service for sensor traffic

Network Standards

- 2.4 GHz and 5.8 GHz IEEE 802.11 a/b/g/n for use in facilities worldwide
- 2.4 GHz ISA100 Wireless for wireless field instruments

Network Security

End-to-end security:

- AES 128-bit encryption for process data
- 802.11i, Wi-Fi protected access (WPA2), WPA
- 802.1X authentication, including extensible authentication protocol and protected EAP (EAP-PEAP), EAP transport layer security (EAP-TLS), EAP-tunneled TLS (EAP-TTLS), and Cisco LEAP
- Advanced encryption standards (AES), temporal key integrity protocol (TLIP)
- VPN pass through
- IP Security (IPsec), Layer 2 Tunneling Protocol (L2TP)

Supported Field Protocols Interfaces

Modbus TCP/Serial, HART IP/Serial, OPC UA, OPC DA, CDA (Honeywell Experion® PKS communication protocol), Gateway Client Interface (GCI), Enraf Interface

For More Information
To learn more about Honeywell's Wireless solutions, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

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