OneWireless Network Overview

Manufacturers are turning to innovative wireless services and applications to help them meet growing market demands, respond to stricter governmental regulations and enhance plant efficiency and safety. They recognize that innovative technologies can enable applications that will not only help with immediate requirements, but also solve problems in the future.

Honeywell’s OneWireless™ network, a multi-standard industrial wireless mesh network, addresses plant demands by seamlessly extending the process control network into the field which allows the site to:

- Empower a mobile workforce by providing anytime, anywhere remote access to process data and other plant related information.
- Cost-effectively and quickly roll-out battery-powered wireless transmitters to collect additional data to improve control strategies or meet new regulations at lower costs.
- Enhance a plant’s safety by implementing additional digital CCTV cameras and personnel awareness system
- Connect remote controllers to the process control network

Multi-functional Network

OneWireless is a secure, reliable, multi-standard wireless infrastructure that enables plants to take advantage of new and innovative applications as they arise. OneWireless end-users are continually benefiting from using wireless devices and applications to improve manufacturing efficiency, reliability, safety and security. These devices and applications include:

Wireless Field I/O Transmitters – Wireless field I/O transmitters enable automated monitoring in areas where traditional hard-wired transmitters are too costly, difficult or time-consuming to implement. Honeywell’s OneWireless 110 (and later) network includes hardware that is firmware upgradeable to ISA100 standard to interoperate with sensors from multiple ISA100 suppliers. Honeywell’s XYR™ transmitter family includes devices that accurately monitor gauge pressure, absolute pressure, differential pressure, temperature, and corrosion. The line also includes an analog input interface for adding wireless capabilities to 4-20 mA devices.
Wireless Tank Gauging System - The wireless SmartRadar FlexLine establishes new levels of precision and flexibility in tank inventory management. By combining new software algorithms with Honeywell Enraf’s planar antennae technology, the wireless SmartRadar FlexLine ensures the levels of precision demanded for custody transfer accuracy.

Mobile Station – A rugged Tablet PC, certified for use in hazardous environments, which allows your mobile workforce to view Experion process graphics and other critical process information such as historical data, graphics and asset management data directly in the field.

Equipment Health Monitoring – A wireless vibration and temperature monitoring system that can be deployed on pumps, compressors, motors, turbines, and any rotating equipment. Instead of spending time to collect data, staff can analyze the data and take immediate action when needed. The system is designed to monitor:

- machines in areas that are inaccessible or difficult to reach
- moving machine components where hard-wiring is not possible
- machines where installing cables is too expensive
- temporary installations
- equipment recently repaired

IntelaTrac PKS - An integrated software and hardware solution for wireless field data collection and intelligent asset management to automate operator rounds.

Gauge Reader - This unique device non-invasively clips to the front face of existing gauges to enable remote monitoring of gauge readings. Installation takes minutes and does not require removing old gauges, breaking pressure seals, performing leak checks, running wires or interrupting the underlying process. Adapters are available to fit most size and type of manual gauges for pressure, temperature, vacuum and other measurements.

Instant Location Solution – A real-time location solution used to improve plant staff safety by providing real time head count at mustering points and process units as well as location of missing or injured staff to the emergency response team.

XYR 6000 HART Interface - Monitor the health of your XYR 6000 transmitters as HART devices in your favorite asset management applications, such as Honeywell’s Field Device Manager or third-party systems.

An Industrial Wireless Network

The OneWireless network is the only modular industrial wireless network to support all hazardous certifications, industrial standards and field protocols needed for today’s industrial plants, such as the emerging ISA100 standards for wireless transmitters and IEEE 802.11 standards for 802.11-based devices such as handhelds, cameras, wireless transmitters and multiplexers.

The breakthrough value of the OneWireless network lies in the ability to seamlessly and securely integrate wireless clients such as wireless transmitters, handhelds and digital cameras, with the process control network. This provides one single easy-to-manage wireless network that can be monitored from the control room with OneWireless Server which hosts the applications required to support the mesh network itself and the connected wireless devices. The centralized management applications empower system engineers to easily manage the process control network and the integrated wireless network.

The OneWireless network is:

Universal – One network supporting many wireless standards and field protocols simultaneously
Simple – One system to learn, operate and maintain
Efficient – One platform enabling many applications with best bandwidth utilization and scalability

Universal

Multi-functional mesh: Single network supporting both wireless field I/Os and IEEE 802.11 based applications for simple network management. With just one network required to support multiple applications, deployment, network maintenance and security management are simplified.

Open and global with multi-protocol support: Provide choices based on existing 802.11 standards and integration or co-existence with existing field protocols and standards (Modbus, HART, OPC) for cost-effective solutions. This allows you to standardize on one wireless solution for world-wide facilities and enables connection to any plant system and inherently support transport of existing protocols.

Simple

Self-contained and predictable power management: Ensure uptime, day or night, with no additional devices and with optimal use of the 10-year battery shelf life. The network uses multinode gateways, not the wireless transmitters, to form
Unleash the Value in Your Plant with Honeywell’s OneWireless Network

the backbone to support independent field instrument reporting rates for optimal battery life.

**End-to-end industrial security:** Protect plant information and ensure safe operations with advanced communications encryption.

Efficient

**Reliability and performance:** Optimize performance with efficient use of the ISM bandwidth and prioritize messages so critical information is 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.

Scalable: Customize to meet your business needs, from a single wireless field I/O device to a total in-plant network utilizing limited bandwidth.

**Multi-speed monitoring:** Meet plant condition monitoring needs for alarms and events with one-second updates and standard configurations.

**Investment protection:** Support and expand existing products with a solution ready for emerging ISA100 and new 802.11 standards. With multi-protocol, OneWireless allows connection to any plant system to continue benefiting from your current installation.

**OneWireless Infrastructure**

The OneWireless network is composed of five interconnected components: the multinode, the Wireless System Gateway, OneWireless Server, the OneWireless Firewall (optional) and the OneWireless Knowledge Base.

**Multinodes**

Multinodes are rugged industrial access point/gateway/mesh-bridge nodes which provide access to IEEE 802.11 a/b/g clients as well as ISA100 transmitters. Once deployed in the field, multinodes self-discover and self-organize into a managed, secure and redundant mesh network. Multinodes released with R110 are designed to meet the hardware specifications of ISA100.11a and are firmware upgradeable to the emerging ISA100 wireless standard to protect your initial investment.

**Wireless System Gateway**

The Wireless System Gateway is a configured multinode which connects wireless field I/O devices to the wired control system. Wireless System Gateways can be paired to provide redundancy and improve the reliability of the network.

**OneWireless Server**

The OneWireless Server is a PC-based server which hosts the Wireless Server tools. The server acts as the center of trust for the network by generating, issuing and managing security keys. All devices must be authenticated to join the secured network. The server is used for initial wireless device configuration and to store wireless network system data for configuring wireless devices. Associated software includes Key Server Manager, Wireless Builder, Directory Server, Security Server, Network Tools Server and OPC Server.

**OneWireless Knowledge Base**

The OneWireless Knowledge Base is an intuitive knowledge database that guides you through during OneWireless network implementation and later on, maintenance.

**OneWireless Firewall**

The OneWireless Firewall is a security appliance designed specifically for the Honeywell Experion Process Knowledge System which enables the Wireless System Gateway to be connected to a Level 2 Fault Tolerant Ethernet switch.

**It’s the Only Network You Will Ever Need**

The OneWireless Network extends your process control network into the field and is capable of supporting multiple wireless standards, such as IEEE802.11 a/b/g and the emerging ISA100 standards for wireless transmitters. The wireless network provides the following benefits:

- Lowest initial cost with a single plant wide infrastructure
- Lowest operational cost
- Most secure system
- Most reliable network – field proven for best uptime
- Most flexible and upgradeable system
**Details**

### Network Architecture

| Integrated multi-functional 802.11 mesh network supporting handheld and sensor devices, including XYR 5000 and XYR 6000 wireless transmitters including SmartRadar FlexLine, Mobile Station, Equipment Health Monitoring, IntelaTrac PKS, Instant Location Solution, Wireless Gauge Reader and other 3rd-party devices |
| Control ready with built-in redundancy and managed message routes |

### Network Security Management

- End-to-end security: WPA2, AES-based, device authentication, FIPS 140-2 based encryption

### Network Communications

- Integrated 802.11 high-speed, self-organizing mesh network
- Class 1, Div 2 for general plant deployment
- Full performance, flexible channel allocation for plant wireless governance
- Up to 6 miles (10 km) multinode to multimode communication; sensor to multinode designed for over 2,000 ft (.6 km)
- Frequency hopping spread spectrum
- Built-in sensor redundancy for assured communication

- Built-in read-write messaging for configuration and priority alarms - optimized performance for all functionality
- Radio receivers with high selectivity for co-existence
- Protocol tolerant to missing packets with automatic repeat requests
- Multi-speed monitoring – One second reporting with latency control and the ability to configure sensors on the same network at different rates

### Network Protocols

- 2.4 GHz IEEE 80211 b/g for use in facilities worldwide
- 5.8 GHz IEEE 802.11a for use in facilities
- 2.4 GHz ISA100 Ready/DSSS radio
- 2.4 GHz FHSS radio

### Field Protocols/Standards

- Modbus
- HART
- OPC
- CDA (used by Experion)

### Sensor Power Management

- Self-contained and predictable power management designed for 10-year sensor battery life (rain or shine)

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OneWireless and XYR are trademarks and Experion is a registered trademark of Honeywell International Inc.

* IntelaTrac is a registered trademark of Invensys.

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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.

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