WIRELESS AND COMMUNICATIONS

Is wireless worth it? If you answer YES to any of the following, wireless could be your solution.

Are there points you'd like to measure, but they're remote or difficult to justify the cost to run wires or conduit? Are there points you're measuring manually with a pickup truck and clipboard? Are there points you want to measure on a short-term basis to help diagnose problems with assets or processes? Do you have issues maintaining wiring due to burned cables, corrosion, water in the junction box, or other ambient conditions? Do you need to take measurements on equipment that's in motion, like a dryer or kiln? Do you ever need to repeat or relay existing 4-20 mA signals to another location?

	Prices Start at	See Page
Data Communication Products		
Banner Engineering SureCross DX80 Ethernet Gateway	$695.00	131
Honeywell OneWireless HART® Adapter	$795.00	151
Honeywell XYR6000 OneWireless Field Device Access Point	$2677.00	150
Phoenix Contact Wireless Ethernet Radios	$1750.00	138
Phoenix Contact Cellular Modems for Long Distances	$563.00	140
Phoenix Contact Two-Way Wireless Data Radios with I/O	$695.00	136
Phoenix Contact WirelessHART® Gateway and Adapter	$3556.00	143
Siemens WirelessHART to Ethernet Gateway	$1288.00	144
I/O Communication Products		
Banner Engineering DX80 Electrician's Pre-Mapped I/O Radios	$868.00	127
Banner Engineering DX80 Industrial Wireless I/O Gateways	$719.00	128
Banner Engineering DX80 I/O Node Radios	$719.00	129
Banner Engineering DX99 Intrinsically Safe Wireless I/O Node Radios	$950.00	130
Banner Engineering DX80 Performance DS Node Radio	$1475.00	129
Phoenix Contact Bluetooth Wireless for Short Distances	$500.00	141
Phoenix Contact One-Way Wireless I/O for Monitoring	$1468.00	134
Phoenix Contact Two-Way Wireless I/O for Control	$2638.00	135
Phoenix Contact Two-Way Wireless Data Radios with I/O	$695.00	136
Sensors and Transmitters		
Honeywell OneWireless Universal Mesh Network		148
Honeywell XYR6000 Wireless Field-Mount Transmitters	$1370.00	152
Siemens WirelessHART Field Instruments	$2052.75	145
Accessories		
Banner Engineering Antenna and Enclosure Kits	$246.00	132
Banner Engineering Power Supplies	$40.00	128
IP Cameras for Surveillance, Safety, and Quality Control	Call	
Phoenix Contact Antenna Options	$56.00	142
Articles and Reference Materials		
ISA100.a Industrial Wireless Networks		146
Where Does Industrial Wireless Work? Almost Anywhere!		133
Which Wireless is Right for You?		125
Wireless Solutions for Monitoring Rotating Equipment		158

What's New in Wireless Technology?

Industrial Wireless I/O Networks

What's New from Banner Engineering?

- Battery, solar, or DC line powered wireless field I/O modules
- Pre-mapped electrician's I/O radios
- Intrinsically safe field I/O devices for Class I, Div 1, and ATEX Zone 0 environments

Learn more on pages 126 to 132.

WirelessHART Field Transmitters

What's New from SIEMENS Industry Inc?

- WirelessHART field transmitters for pressure and temperature monitoring
- WirelessHART adapter for adding wired HART field devices to a wireless network
- WirelessHART gateway for connecting field devices to your plant network via Ethernet

Learn more on 144-145.

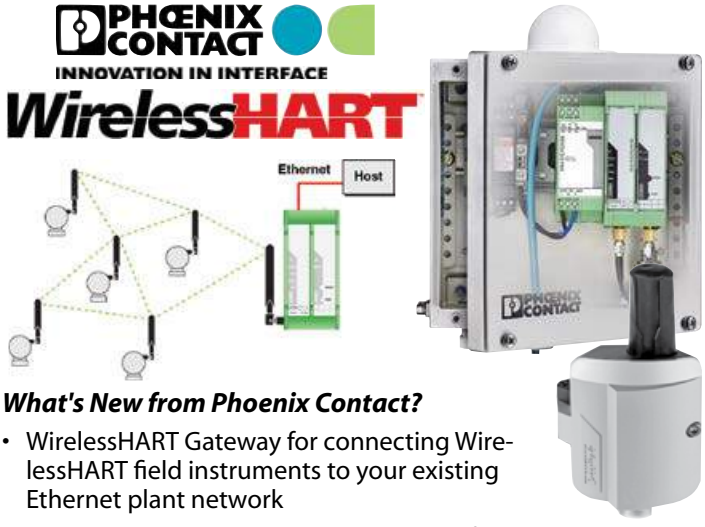
Expanded OneWireless Offering

What's New from Honeywell?

- Wireless Device Manager, a network appliance with integrated web server, so you can monitor and manage all your wireless network devices from your desktop, using a standard web browser
- Field Device Access Point, a rugged industrial access point for ISA100.11a field instruments only.
- OneWireless HART Adapter, for adding existing wired HART field instruments to the wireless network

Learn more on pages 146 to 158.

WirelessHART Gateway and Adapter



What's New from Phoenix Contact?

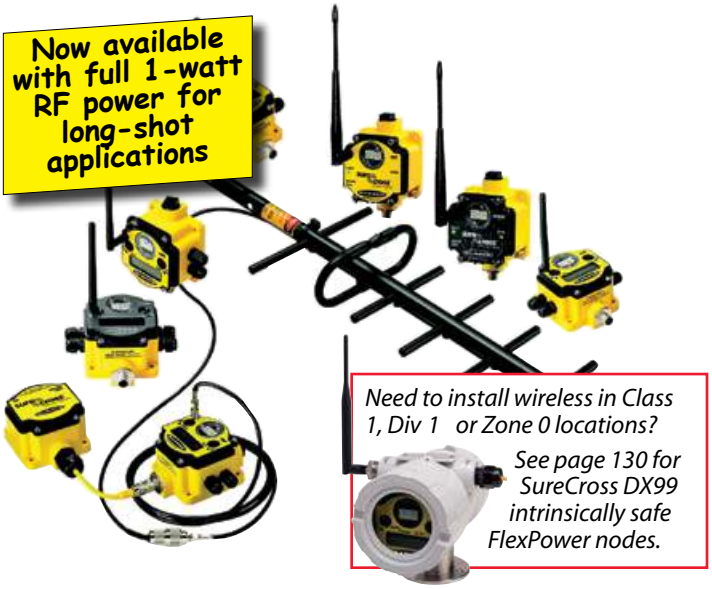
- WirelessHART Gateway for connecting WirelessHART field instruments to your existing Ethernet plant network
- WirelessHART adapter, to connect up to four legacy wired HART field devices to a wireless network per adapter
- NEMA 4X field-mount enclosure, complete with power and surge protection

Learn more on page 143.

Which Wireless is Right for You?

	Environment/ Enclosure	Function	I/O	Power	Protocols	Security	See Page
	Class I, Div 2 NEMA 4X	One-way wireless I/O for monitoring	One 4-20 mA loop and two digital signals	AC or DC line power	900 MHz Trusted Wireless ISM license-free band	Phoenix Contact proprietary security	134
	Radio: IP65 Mux: IP20	RS232/RS422/RS485 over Bluetooth for short distances	Analog, digital	24 VDC line power	2.4 GHz ISM band Bluetooth	Bluetooth password, device pairing, or device access list	141
	Class I, Div 2 IP20, IP54, IP67	Two-way wireless I/O for monitoring and control	Discrete, analog, serial, thermocouple, RTD, relative humidity	10-30 VDC, battery, or solar	900 MHz Modbus RTU, Modbus TCP, Serial, Ethernet IP	Banner Engineering proprietary security	126
	Class I, Div 1 Intrinsically Safe	Two-way wireless I/O for monitoring and control in extreme environments	Discrete, analog, thermocouple, RTD	10-30 VDC, battery, or solar	900 MHz Modbus RTU		131
	Class I, Div 2 NEMA1/IP30	Two-way wireless I/O for monitoring and control	Analog, digital, pulse, relay	24 VDC line power	900 MHz Trusted Wireless ISM license-free band	Phoenix Contact proprietary security	135
	Class I, Div 2 NEMA 1/IP30	Two-way wireless data radios for Modbus networks	Serial, analog, digital, pulse, relay	24 VDC line power	900 MHz Trusted Wireless ISM license-free band		136
	IP20, IP65, and IP67	Wireless Ethernet radios for wireless data and networking	Analog, digital, pulse, relay	24 VDC line power	900 MHz, 2.4 or 5.8 GHz, Modbus RTU/TCP-compliant	AES encryption, WEP, WPA, WPA2, MAC-address checking	138
	IP20	Cellular GPRS/GSM wireless for long distances	Two analog input, transistor output	24 VDC line power	TCP/IP-based GPRS Serial asynchronous UART/NRZ	GPRS CS1-CS4 encoding	140
	Zone 2 Hazardous Areas	WirelessHART® field transmitters for measurement WirelessHART® adapter for connecting legacy HART® devices	Pressure, temperature, Wired HART, 4-20 mA	3.6 VDC D-cell Lithium battery	2.4 GHz WirelessHART	HART standard 128-bit AES encryption	144
	Class I, Div 2, Class I, Zone 2 IP20	WirelessHART® adapter with WLAN for connecting legacy devices and extending wireless network	WirelessHART, Wired HART, Ethernet IP	24 VDC line power	WirelessHART, wired HART, 802.11b/g wireless Ethernet, wired Ethernet	WEP, WAP, WPA2 802.11i, 128-bit AES encryption	143
	Class I, Div 2 Class II, III Div 2 Class I, Zone 2 NEMA 4X, IP66/67	Field transmitters, ISA100.a wireless standard compliant	Pressure, temperature, analog, discrete, valve positioning	Two D-cell Lithium batteries	2.4 GHz ISM band, ISA100-11a	ISA100 Secure encrypted key	152
	Class I, Div 1, and Class I, Div 2 NEMA 4X, IP66	Management devices, ISA100.a wireless standard compliant	Sensor inputs, WLAN, HART®, analog outputs, wireless mesh network	10-36 VDC line power	2.4 GHz ISM band, ISA100.11a, WirelessHART, 10/100-base T Ethernet	128-bit AES encryption, secure key deployment	148

SureCross DX80 Industrial Wireless I/O Network



Need to install wireless in Class 1, Div 1 or Zone 0 locations?

See page 130 for SureCross DX99 intrinsically safe FlexPower nodes.

Features

- For temperature, analog, and discrete I/O
- 900 MHz radios for North American installations
- Transceiver pairs (gateway and node) replace signal cables — at cost savings averaging $90/foot
- Scalable networks can collect thousands of signals
- FlexPower™ nodes can be powered by your choice of DC line power, battery, or solar power
- Integrated site survey in the gateway for wireless link status
- Your choice of omnidirectional and Yagi antennae — get the optimal signal strength for your application
- Fiberglass enclosure kits protect field devices from sunlight and weather conditions
- IP20, IP54, IP67/NEMA 6, Class I, Div 2, and intrinsically safe enclosures

DX80 Gateways/Performance Masters

A DX80 gateway is the wireless network master that sends/collects data to/from the field node radios. It also controls network timing and holds the network configuration. Every network must have one gateway/master that schedules communication traffic and controls I/O configuration for field devices. Gateways should be powered with 10-30 VDC because they always need to be on and working. The network is a star point-to-multipoint topology that does not support repeaters.

Data Access: The gateway serves as the portal between the wireless network and your wired control system. Most gateways have internal wired I/O. All DX80 gateways are Modbus RTU (RS-485) slaves that can be accessed with a control system's Modbus RTU master. A DX83T Ethernet bridge can provide gateway data via Modbus/TCP or Ethernet/IP protocols. A DX85 I/O breakout box or relay box provides additional wired I/O.

What comes in the box

All radios include a rubber swivel 2dB omni antenna. IP67 models include a power cable and cable glands or plugs for the threaded ports. All housings have wall mount flanges. DIN rail adapters are optional. A printed Quick-Start guide and a CD with manuals and configuration software is included. The USB configuration cable must be ordered separately.

SureCross DX80 Nodes/Field

A DX80 node is a field radio with I/O. The node collects sensor data and sends it to the network's gateway. DX80 nodes are available with a variety of I/O options. Each gateway can handle up to 47 nodes. Flexpower nodes can run on battery, solar power or DC power. Nodes are available in either IP67/NEMA 66 enclosures (internal terminals) or IP 20 housing with exposed terminal strips. IP20 models are certified for Class 1, Div 2 areas.

The FlexPower Difference

Banner Engineering's FlexPower technology provides for a true wireless solution, by allowing devices to operate using either DC power, 3.6V Lithium D-cell batteries, or solar power.

Battery-powered FlexPower devices are best for sensors that require no or very little power, like dry contacts, RTDs, and thermocouples. For locations with existing line power, DC-powered devices offer an easy-to-install solution for sensing. If you need always-on operation, you can power a FlexPower node with a DC source, and use an external battery supply for backup power.

Using Wireless to Monitor Hard-to-Reach or Secure Environments

SureCross wireless works even when there's no existing power supply. Use FlexPower nodes and battery or solar power for new installations.

SureCross temperature nodes are ideal for monitoring temperature in controlled environments.

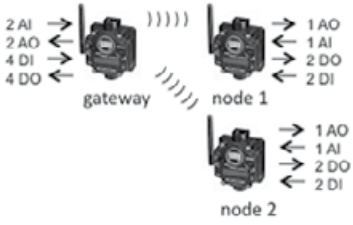
Wide Area Coverage: An entire waste water plant is covered by DX80 network.

New! DX80 Electrician's PM (Pre-Mapped) I/O Radios

The PM2 gateway and PM 2 node radios each have 2AI, 2AO, 4DI, and 4DO (DO are solid state).

N1 Layout – 1 gateway, 1 node

The N1 single node layout uses all the I/O on each radio.

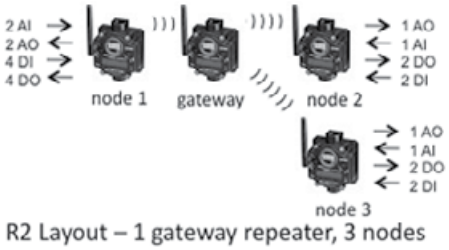


N2 Layout – 1 gateway, 2 nodes

The N2 dual node layout uses half of each node radio's analog and discrete I/O and all of the gateway's I/O.

R1 Layout
1 gateway repeater, 2 nodes

The R1 repeater layout uses the gateway as a repeater, all I/O points on each node are mapped to the other node; the gateway I/O is not used.



R2 Layout – 1 gateway repeater, 3 nodes

The R2 repeater layout uses the gateway as a repeater. Half of node 1's I/O is mapped to node 2, the other half is mapped to node 3. The gateway's I/O is not used.

Enclosures and higher gain antenna kits are optional, see page 132.

Features

- Simple, intuitive wired-in/wired out performance; what goes in one end comes out the other end.
- Simple pushbutton setup, no software, no cables
- Gateway repeater gets up and around obstacles, extends network distance
- Kits put everything you need into one package

PM radios have top and bottom 1/2" NPT threaded conduit connections (they do not have the four threaded ports on the side nor cable glands).

Banner Engineering's PM I/O radios are easy and install—perfect for a busy electrician. PM means 'pre-mapped', so software isn't required. They come out of the box, ready for wired-in/wired-out service, where an analog or discrete input on one end is a corresponding analog output or discrete output on the other end.

Installation of any radio network involves mounting and wiring, but PM radios are incredibly simple to start-up because they don't need any software configuration to map the I/O points.

Start-up involves using the pushbuttons to 'bind' the radios into a common network and then selecting one of 4 factory pre-configured layouts. Each layout is mapped for a specific I/O point to drive a corresponding I/O point on the other end, for instance, an analog input on one end is an analog output on the other end; wired-in/wired-out. There's no dipswitch settings, no I/O mapping, no USB configuration cable, no software to learn. The four available layout options are shown in the illustrations on the left.

In a PM network layout, a gateway can act as a repeater. Besides the obvious advantage of extending the distance your network can cover, repeater functionality can also get the radio signal around obstacles that typically block those signals, like building complexes or hills. The PM radio can extend the linear distance, the gateway can be in a corner location to get around an obstacle, or it can be mounted up high to see its nodes located at lower elevations. A repeater is the tool you need to get a signal up and out of a subterranean location, like a valley, pit, or sub-basement.

PM radios have top and bottom 1/2" NPT conduit connections for wiring, but they do not have the four threaded side ports (nor cable glands) like the non-PM Banner radios, at a corresponding lower cost to you.

Disable the PM layout mode, and these same PM radios can operate as conventional P2 nodes or a P2 gateway. Just use the USB UCT cable and free Banner UCT configuration software to custom map I/O points. Industrial I/O wireless follows the 80/20 rule — 80% are small networks that use one of the four layouts shown, making the PM Electrician's Radio choice ideal for basic point-to-point projects with low I/O counts layouts.

Specifications

Inputs: *Analog:* Two, 0/4-20 mA, 220 ohm input resistance; *Discrete:* Four, selectable NPN or PNP, max 3mA @ 30 VDC

Outputs: *Analog:* Two 0/4-20 mA, active sourcing powered by radio's power supply, can drive 600 ohms burden; *Discrete:* Four, PNP sourcing, 100 mA max at 30 VDC

Radio: 900MHz frequency hopping, 1 watt RF output, 10-30VDC power; -40° to 185° F temperature range; Gateway functions as Modbus RTU (RS-485) slave

Model Selection Guide

Description	Model Number	Price
Single node (N1) kit, without power supplies	PMKIT001	$868.00
Single node (N1) kit, with two 1A DIN rail power supplies	PMKIT002	948.00
Single node (N1) kit, with two 1A wall mount power supplies	PMKIT003	1046.00
Dual node (N2 or R1) kit, without power supplies	PMKIT004	1302.00
Dual node (N2 or R1) kit, with three 1A DIN rail power supplies	PMKIT005	1422.00
Dual node (N2 or R1) kit, with three 1A wall mount power supplies	PMKIT006	1569.00
Triple node (R2) kit, with no power supplies	PMKIT007	1736.00
Triple node (R2) kit, with four 1A DIN rail power supplies	PMKIT008	1896.00
Triple node (R2) kit, with four 1A wall mount power supplies	PMKIT009	2076.00

Kits Include paired PM radios, a 2dBi 9" swivel rubber antenna and DIN rail adapters. If specified, the kits will include 1Amp power supplies.

Build a wireless network — gateway, field nodes, power, antenna, enclosure

IP67/ NEMA 6

IP20/NEMA 1. Suitable for Class 1, Div 2, Groups A-D hazardous locations.

Steps to Building Your Banner Wireless System

1. Pick your Modbus RTU gateway/master device p128
Using Modbus TCP or serial networks? p131
2 Order a power supply for your gateway p128
3 Pick your wireless field I/O nodes p129
Need intrinsically safe field I/O nodes? p130
4 Order necessary power supplies for your field I/O p132
5 Order antenna kits for your gateway and field nodes p132
6 Put your field I/O nodes in a weather-safe enclosure p132
7 Configuration Cables p132

If you're still not sure what to buy, call us at 800-9LESMAN (953-7626).

Step 1: Select the necessary I/O gateway below. To complete system configuration, you'll need one SureCross User Configuration Tool. Software is free. Order one UTC cable (Step 7).

Wireless Gateways (Base Radio)

Power Supply	I/O Description	IP20 Model		IP67 Model	
		Catalog Number	Price	Catalog Number	Price
Performance P2 Gateway with Mixed Analog and Discrete I/O (Black Case, 1 Watt RF Power)					
10-30 VDC	Two 0/4-20 mA or 0-10V analog inputs, four selectable discrete inputs; Two 0/4-20 mA analog outputs plus four sourcing discrete outputs	18787	$719.00	17441	$719.00
Performance P8 Gateway with Discrete Inputs and Outputs (Black Case, 1 Watt RF Power)					
10-30 VDC	Up to 12 PNP inputs or 12 PNP outputs, or any mix totalling 12 I/O points	18792	719.00	17428	719.00
DX-80 Gateway with Analog Inputs and Outputs (Yellow Case, 150 mW RF Power)					
10-30 VDC	Four 0/4-20 mA analog inputs, four 0-20 mA outputs	83142	$719.00	78551	$719.00
	Four 0/4-20 mA analog inputs, four 0-10V outputs	83138	719.00	79396	719.00

Be sure to purchase a power supply for every gateway or node. FlexPower nodes can be powered by DC power, battery, or solar power.

Step 2: Choose your power supplies. To power your gateway, choose a 24 VDC power supply. For FlexPower nodes, you can choose from DC power, battery power, or solar power options below.

Power Supplies

Category	Description	Catalog Number	Price
DC Power	24 VDC 1 Amp DC power supply, DIN rail 24 VDC 1 Amp DC power supply in IP67 housing, wall mount	26008 26042	$40.00 89.00
Lithium Battery Power	FlexPower battery supply module. Delivers and manages DC voltage from one 3.6V Lithium D-cell battery. Compatible with replacement battery 78261	76972	100.00
	Single 3.6V Lithium D-cell battery. Fits 76972 module.	78261	36.00
	FlexPower battery supply module. Delivers and manages DC voltage from six 3.6V Lithium D-cell batteries.	77674	395.00
Solar Power	FlexPower Solar power supply. Includes solar panel, controller, and rechargeable battery pack.	81057	850.00
	Solar assembly hardware kit. Includes brackets, bolts, and set screws.	83244	12.00

Ready for the next step? Choose your I/O field devices on page 129 or 130.

Please note: All radios shown here are 900 MHz, and should be used in the United States only. Call for 2.4 GHz world-wide usage systems.

DX80 Node Radios — I/O in the Field

IP67/NEMA 6

IP20/NEMA 1. Suitable for Class 1, Div 2, Groups A-D hazardous locations.

Step 3: Choose the field I/O nodes necessary for your system. Be sure to order the necessary matching power supply for each. (Step 2)

Field I/O Nodes, Radios, and Remote I/O Modules

Power Supply	I/O Description	IP20 Model Catalog Number	IP20 Model Price	IP67 Model Catalog Number	IP67 Model Price
DX80 Performance P2 4-20 mA I/O Field Nodes (For P2 Gateways)					***1W RF***
10-30 VDC	Two 0/4-20 mA AI, Two 0/4-20 mA AO, Two DI, Two DO	—	—	17443	$ 719.00
DX80 Performance P3 Thermocouple Field Nodes (For P2 Gateways)					***1W RF***
Flex Power	Four T/C inputs, Two DI, One NMOS Sinking DO	18799	719.00	17446	719.00
DX80 Performance P4 RTD Temperature Field Nodes (For P2 Gateways)					***1W RF***
Flex Power	Four 3-wire RTD inputs	18801	719.00	17448	719.00
DX85 Remote I/O Modules (Breakout Box)					
10-30 VDC	Four analog 0-20 mA inputs, four 0-20 mA outputs	10205	475.00	79966	475.00
	Six PNP inputs, six PNP outputs	10202	475.00	77675	475.00
	Eight PNP inputs, eight PNP outputs	10203	475.00	79307	475.00
	Four discrete PNP inputs, four PNP outputs, two analog inputs, two 0-20 mA outputs	10201	475.00	77676	475.00
None	Breakout Box Six SPST Relays Rated 5 Amps Relay	—	—	11346	193.00
None	M12 Splitter Cable for IP67	—	—	75286	58.00

IP54 with Integral Battery

IP67/NEMA 6

A wireless radio can power a 4-20 mA transmitter!

The DX80 Performance D5 node radio powers a loop powered 4-20mA transmitter from the radio's battery on a scheduled, periodic, intermittent basis for true wireless performance. A non-contact ultrasonic or radar level transmitter can sample three times per hour with a 3-month battery life. A pressure transmitter can sample 12 times per hour with a 12-month battery life.

The D5 is a 150 mW node radio in the metal enclosure and comes with the dome antenna as shown. The D5 is an intrinsically safe device when used with an approved I/S transmitter. Certified for I/S operation in the following locations: Class I, Div 1, Groups A–D; Class II, Div 1, Groups E–G; Class III, Div 1; Zone 0 (Group IIC) and Zone 20 (Group II)

The field transmitter must be configured independent of the node radio using DC power, not the node radio battery. The D5 comes configured for 30 second initialization and a 20 minute sleep/sampling interval. Configuration can be modified with software and the Banner USB User Configuration Tool cable. Installation notes for Siemens LR260, LR560, Probe LU level transmitters and the P/DSIII pressure transmitters are available.

DX80 D5 Performance Node Radio

Description	Catalog Number	Price
D5 120mW Performance Field Node with Internal Battery	20178	$1475.00
Items for mounting housing direct to transmitter housing:		
1/2" NPT SS Hex nipple for close coupling to a transmitter	122SS8	6.50
3/4"x 1/2" NPT SS reducer for threaded port (dome antenna has 1/2" NPTM)	110SS12x8	5.95
For remote antenna connection		
1/2" NPT antenna feedthrough, external RPSMA-F antenna connector	11835	66.00
3/4" NPT antenna feedthrough, external RPSMA-F antenna connector	11834	62.00
18" 5 dBi rubber omni antenna, RPSMA-M connector, no swivel	HG905RD-RSP	49.00
18" 5 dBi rubber omni antenna, RPSMA-M connector, with lower swivel	17721	60.00
0.5 m (20") RPSMA x N-male adapter cable	77486	40.00

DX99 Intrinsically Safe Wireless I/O Nodes

Features

- State-of-the-art combination of wireless communication, battery technology, and intrinsically safe electronics
- All models are certified for operation in Class I, Division 1 and ATEX Zone 0 locations
- Discrete, analog, and temperature input nodes are available
- Battery power supply can provide power for third-party 4-20 mA and NAMUR process sensors
- Frequency hopping spread spectrum (FHSS) technology and time division multiple access (TDMA) control architecture
- Available in your choice of polycarbonate housing with external DX81H power supply, or metal housing with integral Lithium battery
- Unit ships complete with radio core, housing, integrated battery, flexible antenna extension cable and mounting screws

Specifications

Power: *FlexPower:* 3.6–5.5 VDC low power option; *DX99 FlexPower Polycarbonate Housing:* 3.6 VDC low power from DX81H battery supply modules; *Power Consumption:* Application dependent

Indicators: Two bi-color LEDs for RF link status and system errors

Switches: Two pushbuttons

Display: Six character LCD

External Cable Glands: Four PG-7 type, one 1/2" NPT

Operating Conditions: *Temperature:* -40° to 158° F; *Relative Humidity:* 95% max, non-condensing

Radiated Immunity: 10 V/m, 80-2700 MHz (en 61000-6-2)

Shock and Vibration: IEC 68-2-6- and IEC-68-2-7; *Shock:* 30g, 11 ms half sine wave, 18 shocks; *Vibration:* 0.5 mm p-p, 10–60 Hz

Range: 3 miles line-of-sight average with standard 2 dB rubber Omni antenna. For longer distances, see antenna options on page 132.

Enclosures	Polycarbonate	Metal
Ratings	IEC IP67, NEMA 4X	IEC IP68
Certifications	CSA Class I, Div 1, Groups A–D Ex IIC AEx ia IIC T4 LCIE/ATEX Zone 0 (Group IIC) Temperature Class T4, II 1G EX ia IIC T4	CSA Class I, Div 1, Groups A–D Class II, Div 1, Groups E–G Class III, Div 1 Ex ia IIC T4 AEx ia IIC T4 LCIE/ATEX Zone 0 (Group IIC) and Zone 20 (Group II) II 1 GD Ex ia IIC T4 Ex iaD 20 Ta +82° C IP68

Model Selection Guide

Power	Description	Polycarbonate Housing		Metal Housing	
		Catalog Number	Price Each	Catalog Number	Price Each
Flex Power	***DX99 SureCross 900 MHz Intrinsically Safe FlexPower Field Nodes***				
	Two discrete inputs, two 0-20 mA inputs, 20V boost power	82028	$950.00	82024	$1350.00
	Two discrete inputs, two 0-20 mA inputs, 12V boost power	82030	950.00	82026	1350.00
	Two discrete inputs, two 0-10 V inputs, 20V boost power	82037	950.00	82033	1350.00
	Two discrete inputs, two 0-10 V inputs, 12V boost power	82039	950.00	82035	1350.00
	Three thermocouple inputs (one thermistor), Two NPN discrete inputs, no boost power	82042	850.00	82041	1250.00
	Four RTD Inputs, no boost power	82045	850.00	82044	1250.00

See page 128 for compatible SureCross wireless base gateways and power supplies.

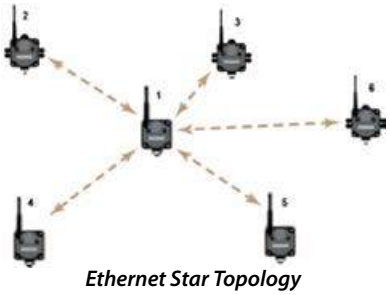
Please note: Radios shown here are 900 MHz, and are for U.S. use only. Call for 2.4 GHz world-wide usage systems.

Ethernet Data Radios

Ethernet MultiHop Data Radio

Create wireless Ethernet networks for point-to-multipoint communications.

- Selectable power levels of 250 mW or 1 Watt
- Frequency Hopping (FHSS) radios operate and synchronize automatically
- FlexPower® sources: 10–30 VDC, solar or battery for low power applications
- Simple Ethernet modem functionality
- No IP address configuration required
- Self-healing, auto-routing RF network with multiple hops extends the network's range
- Select either star or multihop (with repeater) network topology
- 256-bit cryptographic key Advanced Encryption Standard (AES)
- Built-in site survey mode checks location's RF transmission properties
- 300 Kbps Ethernet data throughput rate — can easily cover many square miles
- All radios can be configured as master, repeater, or slave radio



Ethernet Star Topology

Master Radio: All data is routed through the network's one master radio. To improve throughput, the master radio should connect to the PLC or HMI that generates the most data traffic.

Repeater Radio: Repeater radios are slaves that also repeat. Repeater radios should be stationary and always on; a moving or powered-off repeater causes a delay in communications.

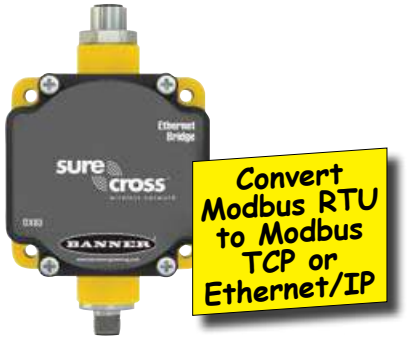
Slave Radios: Slave radios are used at network endpoints. Mobile radios and intermittent-use radios should be configured as slaves to prevent other devices from connecting through them to the master.

MultiHop Ethernet with Repeater

MultiHop Ethernet Data Radio

Description	Catalog Number	Price
SureCross MultiHop Ethernet Data Radio	***(Minimum Order Quantity: 2 Units)***	
900 MHz ISM Band, 10–30 VDC or 3.6–5.5 VDC Low Power Option	DX80ER9M-H	$695.00

DX83T Protocol Converter Gateway



Converts Gateway Radio's Modbus RTU to Modbus/TCP or Ethernet/IP

Description	Catalog Number	Price
DX83T Ethernet Bridge – Converts any DX80 gateway's Modbus RTU (RS-485) to either Modbus/TCP or Ethernet/IP. 10-30 VDC, IP67 enclosure. Includes Ethernet crossover cable with M12. *Requires splitter cable and straight-through Ethernet adapter cable.*	10334	$495.00
DX83T Gateway Pro – Combines a DX80 Performance 1 Watt gateway radio and the DX83 Modbus/TCP or Ethernet/IP protocol converter in one housing. 10-30 VDC, IP67 enclosure, includes power cable and crossover Ethernet cable with M12. *Straight-through Ethernet cables sold separately, below.*	18376	1195.00
Splitter Cable (connects gateway M12-to-DX83T/M12-to-DC power cable M12) 6′ (2 m) Straight-Through Ethernet Cable with M12 Connector 25′ (8 m) Straight-Through Ethernet Cable with M12 Connector	75286 77669 78469	58.00 41.00 71.00

DX80 Serial (RH, Temperature) Sensor Systems

Description		Catalog Number	Price
DX80 Serial Interface Systems			***150 mW RF***
DX80 Serial Interface FlexPower Gateway, IP67, Class I, Div 2 certified DX80 900 MHz Serial Data Radio		82047 18648	$570.00 495.00
Nodes	One-wire serial port to handle one serial sensor, integral battery pack One-wire serial port to handle up to two serial sensors. FlexPower	80969 79393	700.00 655.00
Sensors	Temperature and relative humidity sensor, 3.5% accuracy, NIST traceable Discrete ultrasonic sensor, 300 mm to 3 m range for FlexPower nodes	25895 75390	175.00 626.00

Wireless I/O System Accessories

Step 4: Choose the necessary power supply for your field I/O modules. You will need one power supply for each DC-powered node. For FlexPower nodes, choose from the DC power, battery power, or solar power options.

Power Supplies

Category	Description	Catalog Number	Price
DC Power	24 VDC 1 Amp DC power supply, DIN rail 24 VDC 1 Amp DC power supply in IP67 housing, wall mount	26008 206042	$40.00 89.00
Lithium Battery Power	FlexPower battery supply module. Delivers and manages DC voltage from one 3.6V Lithium D-cell battery. (Use replacement battery 78261)	76972	100.00
	Single 3.6V Lithium D-cell battery. Fits 76972 module.	78261	36.00
	FlexPower battery supply module. Delivers and manages DC voltage from six 3.6V Lithium D-cell batteries.	77674	395.00
Solar Power	FlexPower Solar power supply. Includes solar panel, controller, and rechargeable battery pack.	81057	850.00
	Solar assembly hardware kit. Includes brackets, bolts, and set screws.	83244	12.00

Step 5: Select a pre-built 900 MHz antenna kit, based on your distance, power, and mounting needs. Kits include the selected radio, a surge protector, and radio-to-antenna cable.

SureCross DX80 900 MHz Antenna Kits

Description	Antenna Power	Catalog Number	Price
900 MHz Antenna Kit: Includes a radio-to-surge protector adapter cable, and surge protector			
Direct connect to bulkhead-mounted surge suppressor	2dBi Rubber Omni, 9" Length 5dBi Rubber Omni, 18" Length	18955 18954	$246.00 281.00
Remote mounts with 18' low loss LMR400 antenna extension cable	6dB Fiberglass High Gain Omni, 6' 6.5dB Directional Yagi	18951 18957	582.00 341.00

Optional Cable Lengths (Radio to Antenna)	0.5m length, RP-SMA Male to N-Male 1m length, RP-SMA to RP-SMA bulkhead, straight model 2m length, RP-SMA to RP-SMA bulkhead, straight model 2m length, RP-SMA Male to N-Male	77486 78337 78338 77820	40.00 31.00 33.00 50.00
Optional Extension Cable (Cable to Antenna)	3m length, LMR400 N-Male to N-Female 15m length, LMR400 N-Male to N-Female 30m length, LMR400 N-Male to N-Female	77489 77821 77822	77.00 156.00 296.00

Step 6: Weather conditions and exposure to sunlight can age field nodes prematurely. Protect your field devices by installing them in a fiberglass field enclosure. A complete enclosure system consists of an enclosure, a DIN-rail mounting bracket, a feed-through cable, and a power supply.

Enclosure Kits

Protect field-mount devices from exposure to sunlight and other weather conditions.

Polycarbonate plastic enclosures with an opaque hinged door with two latches, includes tab flanges for wall mounting and one DIN rail with mounting screws. Subpanel only needed if DIN rail is not sufficient. Note: Power supply must be purchased separately.

Description	Enclosure Size	Catalog Number	Price
Field-Ready Plastic Enclosure with DIN Rail	8" H x 6" W x 4" D 10" H x 8" W x 4" D 14" H x 12" W x 6" D	87027 87028 87030	$98.00 120.00 195.00

Step 7: Order a User Configuration Tool (UTC) cable, for connecting your PC to Banner gateways, nodes, and DX85 remote I/O modules.

Download the Windows-based UTC software for free at BannerEngineering.com/wireless/. Look for **Software** under the **Wireless Sensor Networks** menu.

Configuration Tool (UTC) Cables

Description	Catalog Number	Price
USB User Configuration Cable	81325	$132.00
Y-Splitter Cable to Power 1 Watt Radio	14642	75.00

Where Does Wireless Work? Almost Anywhere!

Meeting Smoke Detection System Regulatory Requirements

A chemical plant faced two problems that spurred the search for a new direct reporting and data communication solution.

In a major business transaction, they had acquired several chemical storage warehouses that did not meet current requirements for smoke detection. Several of the warehouses had to comply with stringent explosion safety regulations, so fast smoke detection is required.

Plus, the only way to pass information about a smoke warning was by phone.

The customer installed wireless transmitters for real-time incident detection. They divided the warehouses into zones. Signals are collected at a smoke reporting unit outside the building. From there, they're transmitted to a central control system in the control room, sending alarm messages to the process operators working there.

They ruled out a conventional cable installation to eliminate the need for cable runs to each of three warehouses, into cable boxes, and then to the DCS in the factory control room. Existing cable runs were already at capacity, so the system would require running new cable lanes. At a total distance of 875 yards, the installation costs alone made it an ineffective solution.

After confirming that their smoke detection system could be run using field-mount wireless transmitters, they proceeded with the wireless solution, at a third of the original estimated installation costs.

Improving Data Integrity in Remote Plant Locations

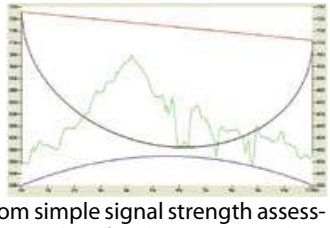
A cement manufacturer was suffering data integrity issues caused by signal transmission problems.

They were trying to access data in their cement plant control room, tapping signals from remote process control areas and distant locations. The long distances made maintenance and troubleshooting difficult and time-consuming for engineers.

A wireless solution extends their control network to remote locations, and provides seamless integration with existing control applications.

The new system has cut the cost of expensive cables, improved safety and compliance, decreased maintenance and operation costs, and increased reliability and process efficiency, by making data more available for better decision-making.

Making Wireless Work in Your Plant



To make sure wireless will work in your plant, and that you get the right antenna for your application, it's recommended that you perform a wireless instrument site survey. With years of wireless successes under our belts, Lesman's here to help.

Site surveys can include anything from simple signal strength assessment for I/O radios to full spectrum usage analysis for plant-wide wireless. They'll also determine coverage area and engineering recommendations for network topology, radio and antenna placement.

Just call us. We'll be glad to help!

Meeting FDA Compliance and Reporting Regulations

Pharmaceutical companies are bound by stringent FDA compliance and reporting regulations.

To make this compliance easier, and increase access and availability of data, a local company decided to upgrade its temperature monitoring systems.

They first considered a wired solution, since their building was already equipped with electronic temperature and humidity monitors. But, they realized the necessity to design a system that could change easily, and chose a wireless system instead.

Field-mount wireless transmitters send the data to their base radios. For redundancy and guaranteed uptime, these base radios are wired into remote transmission units, and also sent directly through the company's plant network. The system monitors temperature, humidity, and sensor battery life. If the process measurements run out of spec or a battery runs low, the system issues an alert in the control room.

The full implementation and validation process was completed in less than four months. The data is now shared across the plant network, so decision-makers have access to it no matter where they are. Plus, the customer was able to eliminate tons of paper charts, saving costs on consumables, and allowing employees to spend less time reviewing paper charts and more time on more critical concerns.

Improving Furnace Performance in a Harsh Steel Mill Environment

A steel mill needed to improve process operations on a furnace used to melt and recycle steel.

To support an increase in production levels, operations staff searched for a reliable way to monitor temperatures around the furnace in areas that had not previously been monitored.

A key requirement, to protect from product upsets, was to be able to instantaneously know the temperature inside the furnace, which can reach more than 1000°F. Another concern was the huge magnetic field that exists around the furnace, a result of running over 120,000 amps to the furnace, and its impact on transmitter functionality.

Mill engineers placed wireless temperature transmitters a few feet from the base of furnace flames, installed on the furnace cooling circuits in specially-built protective enclosures so they'd withstand the extreme heat.

Going wireless provided a better way of getting readings from an extreme process environment. It has allowed the customer to get readings from an area it had previously been unable to monitor. After their first wireless installation was a success, engineers expanded the wireless network across the entire mill.

Having real-time wireless data at their fingertips, they can do more preventive maintenance. Plus, it's decreased the reactive maintenance and troubleshooting that causes long process downtimes.

Wireless I/O for Monitoring and Control

PHOENIX CONTACT
INNOVATION IN INTERFACE

One-Way Wireless I/O for Monitoring

Features

- One 4-20 mA and two discrete signals
- 60 to 1000 ft range, no line-of-sight; Sets include 1/4 wave antenna
- Matched pair sold as a set. No programming, just wire it!
- Two models of 900 MHz transmitters
  - Conduit-mount: Weatherproof NEMA 4X, UL Class I, Div 2, Groups A-D; 110-240 VAC and 12-30 VDC powered units available
  - DIN-rail mount: UL Class I, Div 2, Groups A-D, 12-30 VDC power
- Receiver: DIN-rail mount UL Class I, Div 2, Groups A-D, 24 VDC power

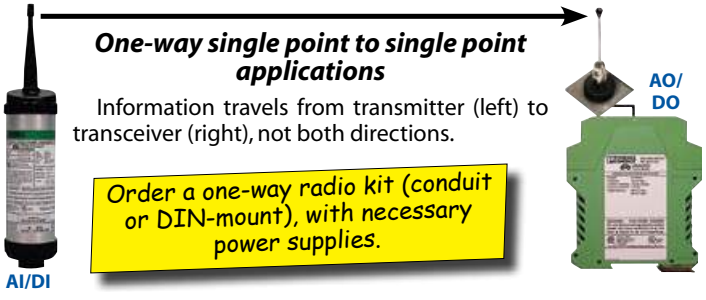
Information can only flow in one direction. A transmitter can send analog and discrete signals, but cannot receive any. The DIN-rail mount receiver can only receive signals. It cannot send any back to the field.

Industrial radios can

- Eliminate the expense, time, and costs of cable installations
- End dependence on expensive, potentially unreliable leased lines
- Offer an alternative to parts that wear out on moving devices — wiring harnesses and slip rings
- Provide monitoring and control of remote locations where cable installations are impractical and phone lines are unavailable

One-way single point to single point applications

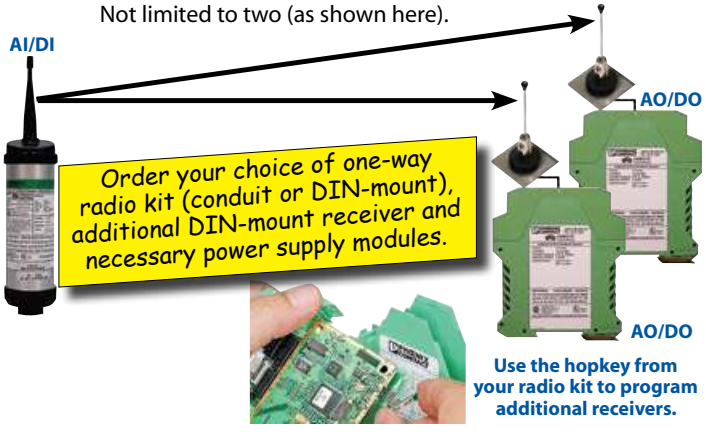
Information travels from transmitter (left) to transceiver (right), not both directions.



Order a one-way radio kit (conduit or DIN-mount), with necessary power supplies.

One-way point to multipoint application

Not limited to two (as shown here).

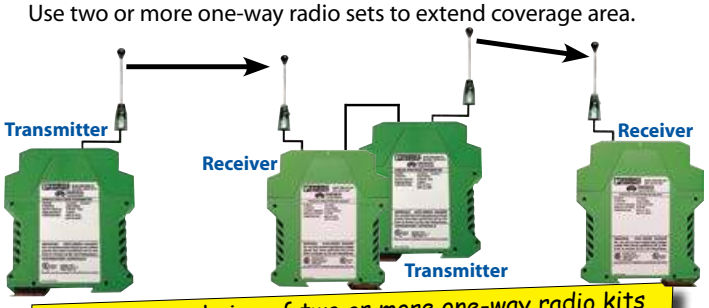


Order your choice of one-way radio kit (conduit or DIN-mount), additional DIN-mount receiver and necessary power supply modules.

Use the hopkey from your radio kit to program additional receivers.

One-way I/O with repeater

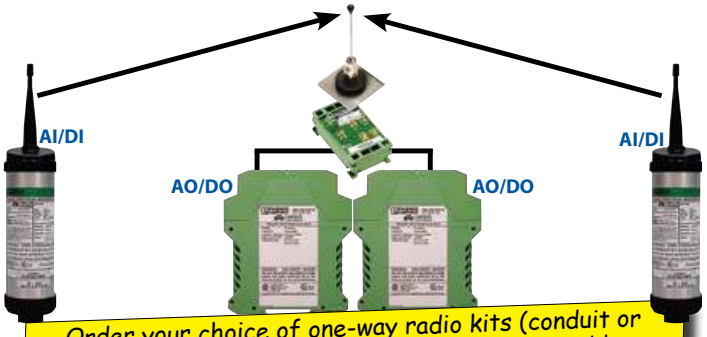
Use two or more one-way radio sets to extend coverage area.



Order your choice of two or more one-way radio kits (conduit or DIN-mount), and necessary power supplies.

Multiple one-way single point to single point applications

Use multiple one-way radio sets. An antenna splitter can be used to reduce the number of antennae at the central site.



Order your choice of one-way radio kits (conduit or DIN-mount), with necessary power supplies. Add an antenna splitter and cables as needed.

Model Selection Guide

900 MHz I/O Transmitter/Receiver Description		Catalog Number	Price
Wireless I/O Transmitter/ Receiver Kits	Conduit-Mount AC-Power Transmitter, DIN-Mount DC-Power Receiver Kit	2867021	$1551.00
	Conduit-Mount DC-Power Transmitter, DIN-Mount DC-Power Receiver Kit	2867034	1468.00
	DIN-Mount DC-Power Transmitter, DIN-Mount DC-Power Receiver Kit	2867102	1398.00
Receiver	DC-Power DIN-Mount Receiver for One-Way Multipoint Applications	2867047	732.00
Accessories	24 VDC 1 Amp Universal Power Supply (See note below.)	2938840	125.00
	Antenna Splitter	2867050	229.00
	Cable, Antenna to First Splitter	2867717	50.00
	Cable, Splitter to Splitter, or Splitter to Receiver	2867607	30.00

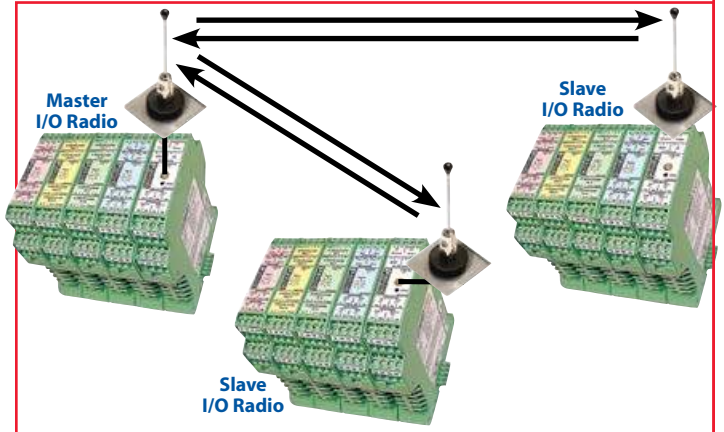
Note: Each DIN-mount module (transmitter or receiver) requires its own power supply. So, to make sure you have the necessary power, order one power supply for each 2867021 or 2867034 kit. Order two power supplies for each 2867102 kit or 2867047 receiver.

Two-Way Wireless I/O for Control

Features

- Modular DIN-rail mount 900 MHz transceiver and I/O
- No programming required
- CSA/UL Class 1, Div 2, Groups A-D; NEMA 1/IP30 rating
- 4-20 mA analog input and output, 5-36 VDC discrete inputs, normally open dry contact 250 VAC/5A discrete outputs
- 60 to 1000 ft range, no line-of-sight; Sets include two 1/4 wave antennae and L bracket mounts

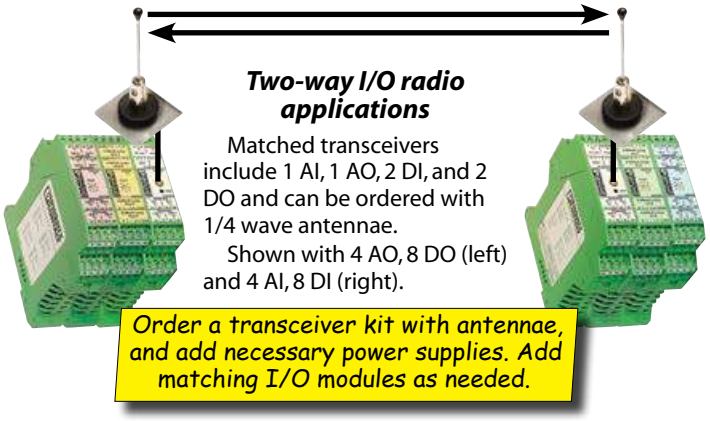
Data flows two ways, point to point. A transceiver sends and receives analog and discrete signals for process monitoring and control.



Two-Way Multipoint to Point Configurations

- Factory-configured systems — ships complete, ready to wire
- Analog and digital I/O only; Limited to eight I/O modules for a single master radio; Maximum 33 analog I/O and 66 digital I/O
- Same I/O functionality as standard two-way radios
- Repeater module required on all slave radios
- All antennae selections are optional. None included standard
- Slave A to Slave B configuration is possible — configure as Slave A to Master, and Master to Slave B.

One master radio with up to eight slaves. Uses same hardware as



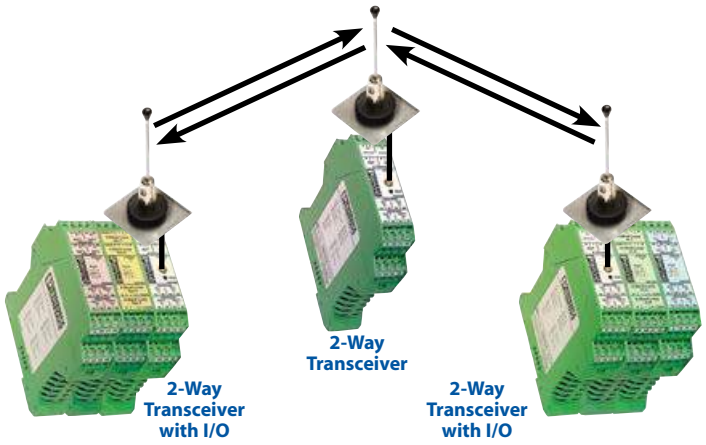
Two-way I/O radio applications

Matched transceivers include 1 AI, 1 AO, 2 DI, and 2 DO and can be ordered with 1/4 wave antennae.

Shown with 4 AO, 8 DO (left) and 4 AI, 8 DI (right).

Order a transceiver kit with antennae, and add necessary power supplies. Add matching I/O modules as needed.

Two-way I/O radio with repeater



Order a pair of transceivers with antennae, a repeater and hopkey for programming, and necessary power supplies. Add matching I/O modules as needed.

I/O Expansion Modules

- 4-channel analog input and output
- 2-channel pulse input and output
- 8-channel digital input
- 8-channel digital output with relays
- 8-channel combination I/O module

Model Selection Guide

900 MHz I/O Transceiver Description		Catalog Number	Price
Transceiver	Matched Transceivers Kit with 1/4 Wave Antennae	2867270	$2638.00
Repeater Module	Two-Way Transceiver Module (Repeater)	2867092	1266.00
	Hopkey for Programming Repeater	2867539	59.00
Matched I/O Modules	Four-Channel Analog Input Module	2867115	377.00
	Four-Channel Analog Output Module	2867128	420.00
	Eight-Channel 5-36 VDC Digital Input Module	2867144	307.00
	Eight-Channel Dry Contact Relay Output Module	2867157	366.00
	Two-Channel Pulse Input with Frequency/Counter Dip Switch	2885223	350.00
	Two-Channel Pulse Output with Frequency/Counter Dip Switch	2885236	280.00
	Combination Module (1 AI, 1 AO, 2 DI, 2 DO)	2867322	404.00
Accessories	24 VDC 1 Amp Universal Power Supply (See note below.)	2938840	125.00

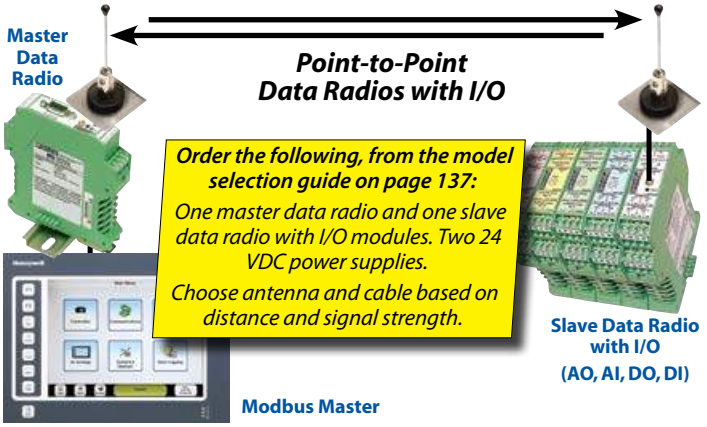
Note: Each DIN-mount module (transceiver) requires its own power supply. So, to make sure you have the necessary power, order two power supplies for each 2867270 kit and one for each 2867092 repeater.

Wireless Data Radios for Modbus Networks

PHOENIX CONTACT
INNOVATION IN INTERFACE

Features

- Modular DIN-rail mount 900 MHz transceiver and I/O
- Programmable through free RadLink software
- CSA/UL Class 1, Div 2, Groups A-D; NEMA 1/IP30 rating
- 4-20 mA analog input and output, 5-36 VDC discrete inputs, normally open dry contact 250 VAC/5A discrete outputs
- Compatible with Omni and Yagi antennae

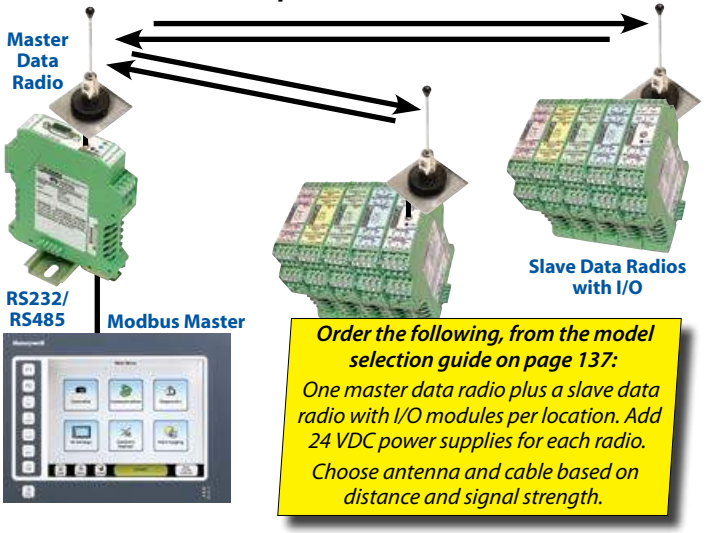


Order the following, from the model selection guide on page 137:

One master data radio and one slave data radio with I/O modules. Two 24 VDC power supplies.

Choose antenna and cable based on distance and signal strength.

Point-to-Multipoint Data Radios with I/O

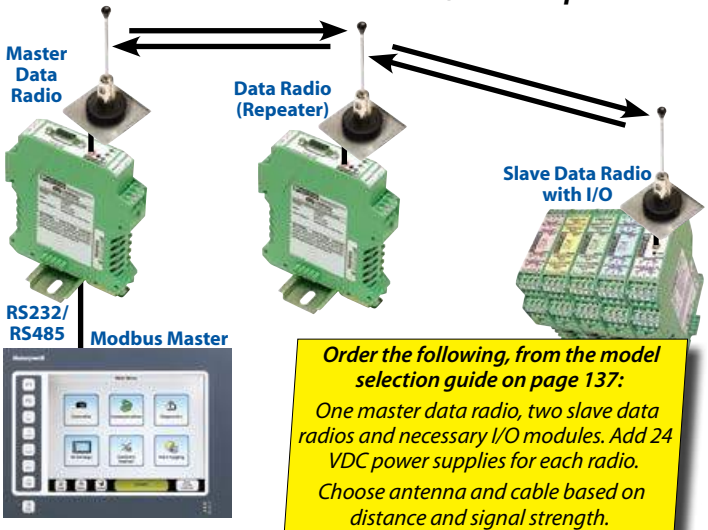


Order the following, from the model selection guide on page 137:

One master data radio plus a slave data radio with I/O modules per location. Add 24 VDC power supplies for each radio.

Choose antenna and cable based on distance and signal strength.

Point-to-Point Data Radio with I/O and Repeater



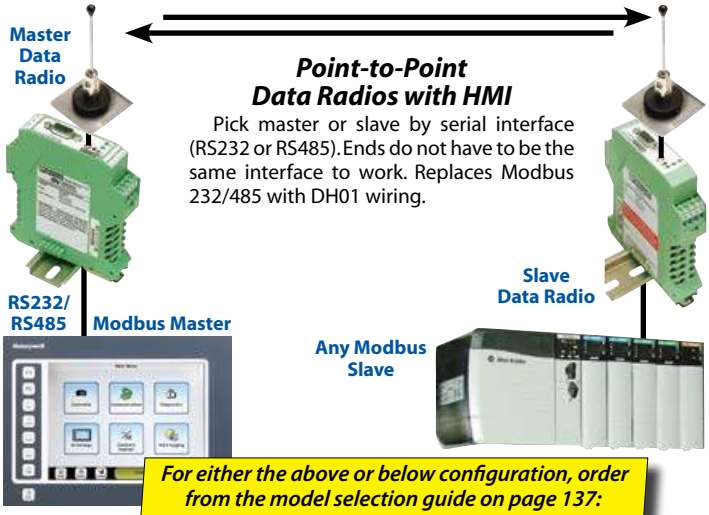
Order the following, from the model selection guide on page 137:

One master data radio, two slave data radios and necessary I/O modules. Add 24 VDC power supplies for each radio.

Choose antenna and cable based on distance and signal strength.

Point-to-Point Data Radios with HMI

Pick master or slave by serial interface (RS232 or RS485). Ends do not have to be the same interface to work. Replaces Modbus 232/485 with DH01 wiring.

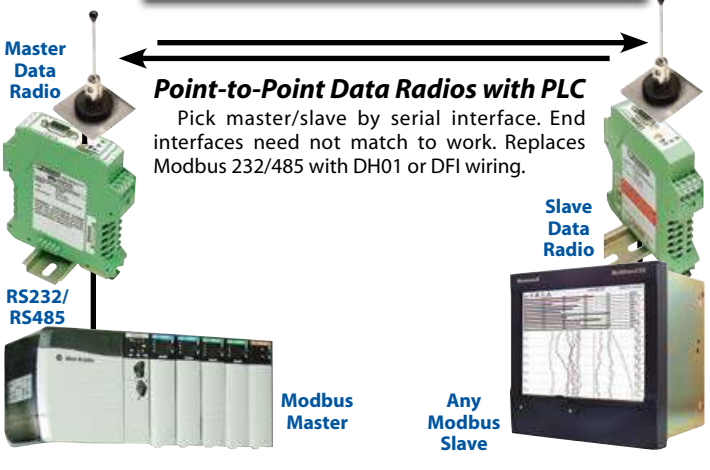


For either the above or below configuration, order from the model selection guide on page 137:

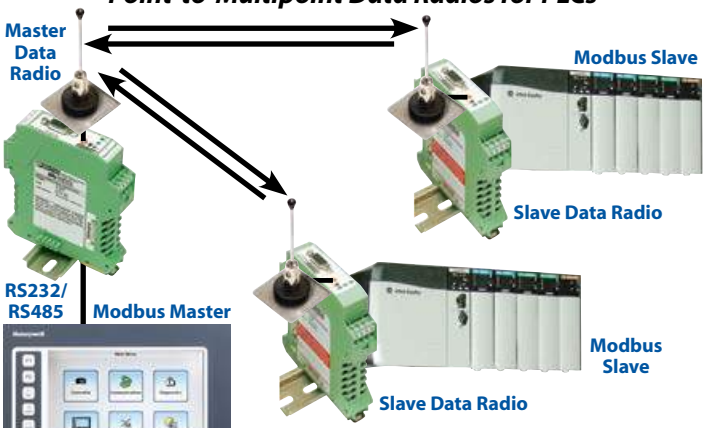
One master data radio and one slave data radio plus two 24 VDC power supplies. Choose antenna and cable based on distance and signal strength.

Point-to-Point Data Radios with PLC

Pick master/slave by serial interface. End interfaces need not match to work. Replaces Modbus 232/485 with DH01 or DFI wiring.



Point-to-Multipoint Data Radios for PLCs

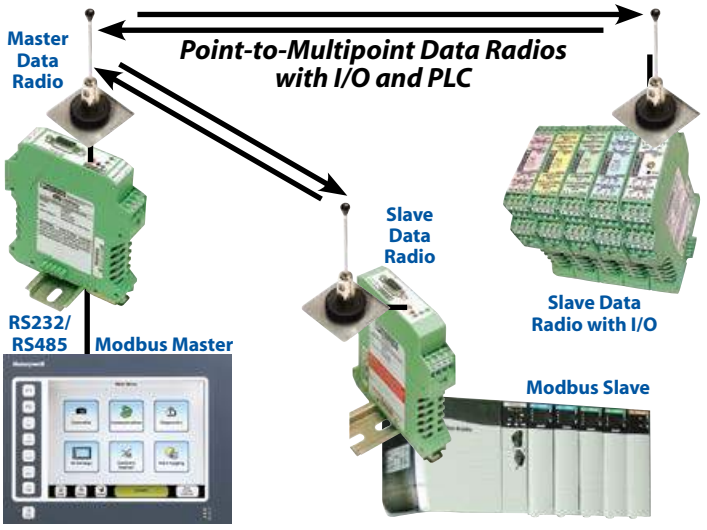


For the above or below configurations, order from the model selection guide below:

One master data radio, two slave data radios and necessary I/O modules. Add 24 VDC power supplies for each radio.

Choose antenna and cable based on distance and signal strength.

Point-to-Multipoint Data Radios with I/O and PLC



Compatible Antennae

At its most basic, an antenna is a length of conductive metal that radiates radio signals into the air. Most common antennae are designed to be one-quarter or one-half the wavelength of the radio signals they are transmit or receive.

Omnidirectional antenna

The omnidirectional antenna provides a signal in a full 360° radius, and can be used in either indoor or outdoor applications. This antenna type usually has the lowest gain and is used in point to multipoint links.

It's ideal for applications where you want to transmit from a central node to users scattered all around the area, or for picking up wireless signals within a 360° radius of your position.

Fiberglass construction provides great protection to the antenna from outdoor weather conditions.

Yagi-Uda array antenna

Known as the Yagi, this is a semi-directional antenna used for point-to-point network topology. It's sometimes used for point-to-multipoint, if long distance must be achieved.

A Yagi antenna is made of an array of elements running parallel to each other. The longest element in this array is the reflector. Next is the driven element, the one that actually transmits electromagnetic waves. The other elements are called directors.

The antenna propagates signal in the direction from the reflector to the directors. The director elements are set at a precise distance apart, and precise lengths (about half wavelength) to cause the antenna to operate most efficiently for a given radio frequency. A Yagi with more directors has a greater gain and antenna becomes longer.

See available 900 MHz antenna options on page 142.

Model Selection Guide

900 MHz Radio and I/O Modules Description		Catalog Number	Price
900 MHz Data Radios	Data Radio for RS-232 Serial Interface (Master)	2867555	$695.00
	Data Radio for RS-232/485/422 Serial Interface (Master)	2867131	828.00
	Slave Data Radio (for use with I/O Modules)	2867296	977.00
Matched I/O Modules	Four-Channel Analog Input Module	2867115	377.00
	Four-Channel Analog Output Module	2867128	420.00
	Eight-Channel 5-36 VDC Digital Input Module	2867144	307.00
	Eight-Channel Dry Contact Relay Output Module	2867157	366.00
	2-Channel Pulse Input, Frequency/Counter Dip Switch	2885223	350.00
	2-Channel Pulse Output, Frequency/Counter Dip Switch	2885236	280.00
	Combination Module (1 AI, 1 AO, 2 DI, 2 DO)	2867322	404.00
Accessories	24 VDC 1 Amp Universal Power Supply (See note below.)	2938840	125.00
	5dB Omni Antenna,7 dBi Gain	2867199	240.00
	20 Ft Cable, Type N Connectors (16 dB Loss/100 Ft)	2867212	65.00

Note: Each DIN-mount data radio requires its own power supply.

Wireless Ethernet Radios

PHOENIX CONTACT
INNOVATION IN INTERFACE

Industrial Wireless Ethernet

- IP67 wall-mount and IP20 DIN-rail mount models available
- Supports 900 MHz, 2.4 GHz, and 5 GHz frequency bands
- Security features WEP, WPA, WPA2, and 128-bit AES encryption
- RS-232 and RS-422/485 ports for integrating serial devices into Ethernet network; Simulcasts Modbus (RS-232 or RS-485) and Ethernet "ComServer" function
- Programming and network diagnostics through web server — no additional software needed
- Modbus RTU/TCP-compliant for industrial process applications

Model	Frequency Band	802.11 Standard	Transmission Power	Temperature Range	I/O Expansion Bus	Ports	Security
Trusted Wireless Ethernet (RAD-ISM-900-EN-BD/BD-BUS)							
 ***2900016 (Ethernet)*** ***2900017 (Ethernet I/O)***	900 MHz	—	1 W	-40° to 149° F	Yes	RS232, RS422/485, RJ45 Ethernet	128-bit, 192-bit, and 256-bit AES encryption
Standard WLAN (RAD-80211-XD/XD-BUS/XD-WM, and FL WLAN 24s)							
 ***2885728 (Wireless LAN)*** ***2885757 (Wireless LAN/IO)***	5 GHz (802.11a) 2.4 GHz (802.11b/g)	802.11 a/b/g 802.11i WPA2	100 mW	32° to 149° F	Yes	RS232, RS422/485, RJ45 Ethernet	WEP, WPA, WPA2 (802.11i), 128-bit AES encryption, MAC-address checking
 ***2700448 (Access Point)*** ***2700451 (Dual Access Point)*** ***2700449 (Client Only)***		802.11 a/b/g/h 802.11i WPA2/PSK		-4° to 131° F	No	RJ45 Ethernet	WEP, WEPplus, WPA/PSK, WPA/Radius
Basic WLAN (RAD-80211-XDB)							
 ***2990011 (Basic Wireless LAN)***	5 GHz (802.11a) 2.4 GHz (802.11b/g)	802.11 a/b/g 802.11i WPA2	100 mW	32° to 149° F	No	RS232, RS422/485, RJ45 Ethernet	WEP, WPA, WPA2 (802.11i), 128-bit AES encryption, MAC-address checking
High Power WLAN (RAD-80211-XD-HP/HP-BUS)							
 ***2900046 (Wireless LAN)*** ***2900047 (Wireless LAN I/O)***	2.4 GHz	802.11 b/g	400 mW	-40° to 140° F	Yes	RS232, RS422/485	WEP, WPA, WPA2 (802.11i), 128-bit AES, MAC-address checking

Protect Your Radio with a NEMA 4X Enclosure Kit

- Prewired NEMA 4X control cabinet
- 24 VDC power supply/UPS, 24 VDC backup battery and 2 Amp fuse
- Surge protection for line input and antenna connections

Order enclosure 2917188, $1400.00 and pole-mount kit 2900038 $74.00

New IP65 Wireless LAN Ethernet Access Points

- Provide Ethernet access in locations all over the plant
- Dual access points provide a wireless backbone for your Ethernet network and allow for redundant Wireless LAN structures; Uses spanning tree protocol for uninterrupted network operation
- Your choice of static or dynamic IP addressing; Access point can provide DHCP server functionality
- Roaming capabilities: Your wireless device looks to the access point with the strongest signal
- Supports 802.11 a/b/g wireless devices
- Maximum security with 802.11i AES encoding, support for 802.1x radius with authentication
- Quality-of-Service (QoS) manages priority of data traffic
- Compatible with Power-over-Ethernet (802.3.af) for mounting in locations without power, or as redundant voltage supply
- Interact with access point via password-protected web interface; Setup wizards walk you through all necessary parameters
- Units come standard with two (single channel) or four (dual channel) 5 dBi omni antennae for optimal radio signals
- Basic client model available to connect a single wired device or multiple wired devices to the wireless network; Does not serve as a wireless access point itself, only as a bridge

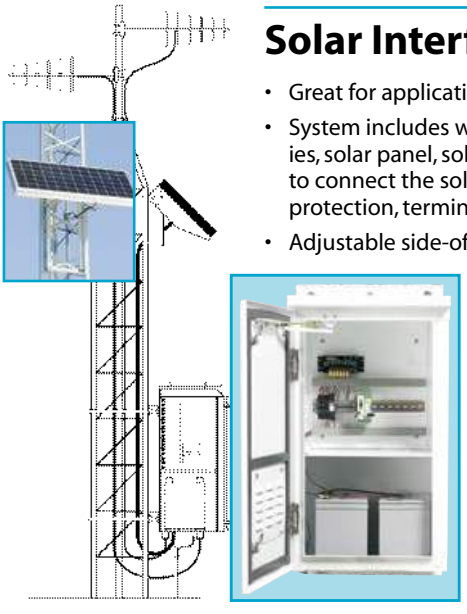
I/O Modules

- 4-channel analog input
- 4-channel analog output
- 8-channel digital input
- 8-channel digital output with relays
- 8-channel digital input and 2-channel digital output
- Pulse input
- Pulse output

Wireless Ethernet Radio Model Selection Guide

Description	Catalog Number	Price
900 MHz 1W Trusted Wireless Ethernet	2900016	$1750.00
900 MHz 1W Trusted Wireless Ethernet with I/O Bus	2900017	1880.00
2.4-5 GHz 100 mW Wireless LAN	2885728	1438.00
2.4-5 GHz 100 mW Wireless LAN with I/O Bus	2885757	1546.00
2.4-5 GHz IP65 Wireless Single Access Point	2700448	1340.00
2.4-5 GHz IP65 Wireless Dual Redudant Access Point	2700451	1855.00
2.4-5 GHz IP65 Wireless Client Only	2700449	758.00
2.4-5 GHz 100 mW Basic Wireless LAN	2990011	1015.00
2.4 GHz 400 mW High Power Wireless LAN	2900046	1648.00
2.4 GHz 400 mW High Power Wireless LAN with I/O Bus	2900047	1751.00
24 VDC 1 Amp Universal Power Supply, DIN-Mount	2938840	125.00
Expansion Modules for I/O Bus Radios		
8-Channel Digital Input	2867144	$307.00
8-Channel Digital Output with Relays	2867157	366.00
4-Channel Analog Input	2867115	377.00
4-Channel Analog Output	2867128	420.00
8-Channel Digital Input, 2-Channel Digital Output	2867322	404.00
2-Channel Pulse Input, Frequency/Counter Dip Switch	2885223	350.00
2-Channel Pulse Output, Frequency/Counter Dip Switch	2885236	280.00
100cm Adapter Cable, MCX to SMA	2867678	42.00
50cm Adapter Cable MCX to N	2867681	45.00
NEMA 4X Enclosure Kit with Power, Surge Suppression	2917188	1400.00
Pole Mounting Kit for NEMA 4X Radio Enclosure Box	2900038	74.00

See page 142 for Phoenix Contact antenna options. Antenna and radio frequencies must match.



Solar Interface System to Power Wireless Applications

- Great for applications where local power isn't available!
- System includes weatherproof enclosure, solar batteries, solar panel, solar panel bracket, cable and conduit to connect the solar panel to the enclosure, circuit protection, terminal blocks, and battery charger
- Adjustable side-of-pole or tower mounting hardware
- Deep-cycle, gelled electrolyte, solar battery — completely maintenance free!
- Rugged NEMA 4 enclosure with separate sealed NEMA 3R (weatherproof) battery compartment
- Average 4.8 Amphours/day system production (based on solar radiation map for Illinois, Indiana, Wisconsin)

Model Selection Guide

Description	Catalog Number	Price
24V 100W Solar Power Interface System	5605943	4215.00
Combination Arrester for Power and Circuit	2839318	112.75
Replacement Gas Tube	2818203	17.95
24V 10A Battery Charge Controller	2885443	141.00

Cellular Modems for Long Distances

Wireless Modems and Text Messaging Alarm Relays

- Reliable industrial modems are optimized for harsh industrial environments — fluctuating voltages, extreme temperatures, and electromagnetic interference
- Safe communication channels and data integrity with VPN connections, firewalls, and IPsec encryption
- GSM Edge data transmission for Internet IP communications at up to 210 KBPS (10x improvement over GPRS)

GSM/GPRS Serial Modem

The DIN-rail mount GSM/GPRS modem is designed for remote monitoring and alarm generation. It has adjustable selective call acceptance, connection with password protection, and call-back function to protect the system against unauthorized access.

Its strength lies in its configurable warning/alarm inputs. If the inputs are activated, the modem calls user-defined numbers, and sends stored status alerts by fax or text message. Using the switching output, other functions can be controlled via text message. The modem has an integrated automatic Sleep function to increase battery life.

Serial Modem Specifications

Interface: RS-232 interface for serial asynch UART/NRZ data

Inputs/Outputs: Two switching inputs for messages to local RS-232 interface, text message, fax, or output control; Switching transistor output to the backplane, activated by input control, text message, or local AT command; Alarm signals flash for error messages to be sent, or steady for triggered alarm

Enclosure: IP20 green ABS-V0 plastic enclosure with DIN-rail mount

SMS Text Messaging Relay Modem

The SMS (Simple Messaging System) Relay is a compact remote control and signaling system. Six digital or configurable analog/digital inputs and four relay outputs with PDT contacts can be monitored and controlled using text messages over any GSM mobile phone network.

At each status change, the input sends a text message to any receiver in the unit's 50-number phone book. Text messages can be used to enable or disable outputs, so you can acknowledge or remove errors. Relay outputs can be switched for a predefined period, then returned to their initial state. Integrated password protection prevents unauthorized access.

SMS Relay Modem Specifications

Inputs/Outputs: *110-240 VAC Model:* Six digital inputs, four digital relay outputs; *12-48 VDC Model:* Six digital or analog inputs, four digital relay outputs

Enclosure: IP20 Noryl SE1, Lexan EXL9330 housing with screw terminal block

GSM/EDGE Ethernet Modem

The GSM/EDGE modem is a high-performance router for industrial Ethernet networks. Its integrated firewall and virtual private network (VPN) support protect your application from unauthorized access. Six switching inputs let you independently send text messages, email, or both to one or several recipients. Four integrated switching outputs can be activated, so you can monitor system status remotely.

GSM/EDGE Ethernet Modem Specifications

Inputs/Outputs: Six switching inputs, four switching outputs, plus signaling alarm (red LED)

Interface: 10/100 MBps Ethernet interface, RJ45 socket for TCP/IP, UDP, TFTP, HTTP, Modbus TCP, PPP, ProfiNet, Ethernet/IP, and CHAP

Enclosure: IP20 green PA 6.6-FR VO plastic enclosure with DIN-rail mount

Phoenix Contact cellular devices (left to right): Quad-band cellular modem with RS-232 interface, quad-band cellular modem with Ethernet interface, and remote SMS text message relay system.

Quad-Band Cellular Antenna Options

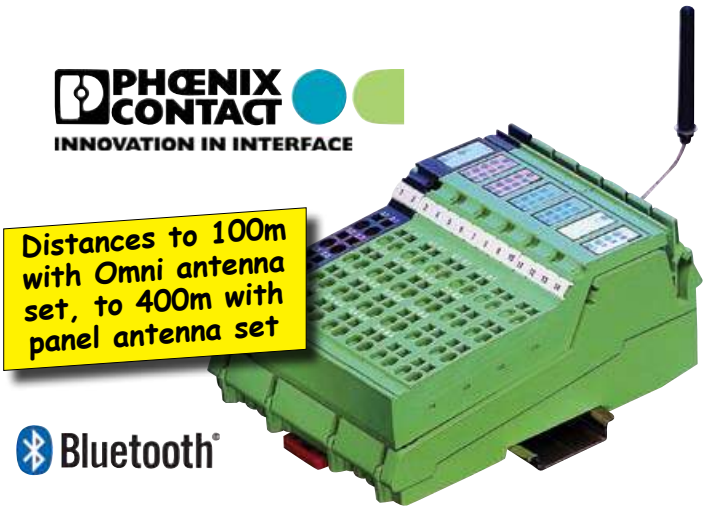
Frequency	Quad band (850/900/1800/1900/2100 MHz) omnidirectional		
Impedance	50Ω	50Ω	50Ω
Gain	1 dB	1 dB	2 dBi
VSWR	≤ 2.0	≤ 2.0	≤ 1.4
Ambient Temp	-40° to 221° F	-40° to 221° F	-40° to 176° F
Connection	SMA male	SMA male	SMA round
Model	2313371	2313342	2900982

* Voltage Standing Wave Ratio

Model Selection Guide

Description	Catalog Number	Price
Cellular GSM/GPRS Wireless Modem, RS-232	2313106	$563.00
Cellular GSM/EDGE Wireless Modem, Ethernet	2313355	754.00
SMS Relay System, 6 Digital Inputs, 4 Relay Outputs	2313513	603.00
SMS Relay, 6 Analog/Digital Inputs, 4 Relay Outputs	2313520	614.00
UTMS/GSM Quad Band 1 dB Low-Profile Antenna	2313371	93.00
UTMS/GSM Quad Band 1 dB Gain Antenna	2313342	45.00
UTMS/GSM Quad Band 2 dBi Gain Antenna	2900982	92.00
100-240 VAC, 24 VDC Power Supply	2866983	164.00
DIN-Rail Connector (3 Required)	2709561	8.86
V.24 RS-232 Cable (9 Pos D-Sub Female/Female)	2799474	48.00

See page 142 for antenna options, cables, and accessories.



Bluetooth Wireless MUX

- Unpack, connect, switch on, and you're up and running — no configuration or settings
- The fixed "pairing" of the two MUX modules automatically takes care of setting up the connection and transmitting the signals
- 128-bit data encoding
- Transmission in the 2.4 GHz frequency bandwidth makes it insensitive to the usual sources of industrial interference
- Not visible to other Bluetooth devices
- Wireless LAN 802.11 b/g and Wireless MUX will not interfere with each other. Channels that are occupied by a WLAN-802.11b/g network are automatically recognized and not used by the MUX

Does installing signal cable cause you problems? Is the work involved and expense too high? Do moving signal lines wear out too quickly?

Phoenix Contact's wireless MUX transmits digital and analog signals between two points. Its function is simple: The input signal at one module is an output at the corresponding paired module.

The Wireless MUX is sold as a ready-to-use package. Unpack, connect, power up, and the wireless link is working, transmitting automatically and cyclically within 10 mSec. The module includes 16 digital input and 16 digital outputs plus two analog 0-10V or 0-20 mA inputs and outputs.

Each kit includes two permanently-paired wireless MUX modules, two omni or panel antennae with mounting brackets, and two 3' antenna cables.

Model Selection Guide

Description	Catalog Number	Price
Wireless MUX Set with 2 dBi gain Omni Antenna	2884208	$1348.00
Wireless MUX Set with 8 dBi gain Panel Antenna	2884509	1593.00

Bluetooth for Short Distances

Wireless Bluetooth Modem

RS232/RS422/RS485 for distances less than 1000 feet

Use this Bluetooth device to establish point-to-point connections or local wireless networks with up to seven devices.

- Ranges to 150 m in indoor industrial areas, up to 200 m outdoors
- Problem-free parallel use of WLAN-802.11 and Bluetooth networks
- 128-bit data encoding and device authentication

This Bluetooth modem is specifically designed to work reliably in industrial environments. With fully integrated protocol stacks, it operates without the need for software drivers.

Phoenix Contact's Bluetooth modem meets the high requirements for interference-free data transmission, sending data via frequency hopping spread spectrum (FHSS) within the 2.4 GHz band

Phoenix Contact's Bluetooth converter features the following:

- Transmission speeds up to 187.5 Kbps
- One unit can be set to V.24 (RS-232), RS-422, or RS-485
- Supports all popular 10/11-bit UART data formats
- Choice of external antenna for optimum positioning
- Bluetooth access protected by password, fixed device pairing, or device access list
- Scalable transmission power (-28 to 20 dBm) for specific localization of the radio cell
- Integrated Bluetooth path diagnostics indicate the signal quality of the radio connection

Model Selection Guide

Description	Catalog Number	Price
RS-232/RS-422/RS-485 to Bluetooth Modem	2313805	$500.00
100-240 VAC, 24 VDC Power Supply	2866983	164.00
DIN-Rail Connector (3 Required)	2709561	8.86
V.24 RS-232 Cable (9 Pos D-Sub Female/Female)	2799474	48.00

Compatible with 2.4 GHz antennae, page 142.

IP Camera for Surveillance, Safety, and Quality Control

- Remote viewing from anywhere, anytime via a Web browser.
- Better image quality than closed circuit TV (CCTV) analog systems.
- Uses existing IP infrastructure, and is highly scalable.
- Flexible camera placement: WiFi eliminates need for hard-wired cable, Power over Ethernet eliminates need for local power source
- Encrypt data across the network. Without authentication, outsiders can't steal video data or feed false video into the system. Interruption to the data stream can automatically trigger alarms and alerts.

PHOENIX CONTACT INNOVATION IN INTERFACE

Antennae and Accessories

Don't forget to order cables and surge protection!

Antenna Options for 900 MHz Radios

*** Note: Antenna and radio frequency must match.**

900 MHz Radio Antenna	Type	Operating Frequency		Nominal Gain	Beamwidth (°-3dB)		Front-to-Back Ratio	Connector	Catalog Number	Price
		Bottom	Top		Horizontal	Vertical				
	Low Profile	806 MHz	960 MHz	2.14 dBi	—	—	—	17' RG-58 cable, N-male	5606175	$170.00
	Omni	902 MHz	928 MHz	7.0 dBi	100°	17°	—	N-type female, L-mount bracket	2867199	240.00
	Fiberglass Omni	902 MHz	928 MHz	3.0 dBd	360°	28°	—	N-type female	2867791	325.00
				6.0 dBd		15°			2885579	435.00
	Yagi	890 MHz	960 MHz	3.0 dBd	160°	78°	10 dB	2' RG-213, N-type female	2867801	229.00
				6.5 dBd	100°	62°	15 dB		2867814	245.00
				10 dBd	56°	46°	20 dB		5606614	276.00

Antenna Options for 2.4 GHz Radios

*** Note: Antenna and radio frequency must match**

2.4 GHz Radio Antenna	Type	Operating Frequency		Nominal Gain	Impedance	Radiation Pattern		Connector	Catalog Number	Price
		Bottom	Top			Horizontal	Vertical			
	Omni	2.4 GHz	2.5 GHz	2 dBi	50 ohm	360°	75°	MCX male	2867461	$56.00
	Omni	2.4 GHz	2.5 GHz	6 dBi	50 ohm	360°	30°	N-type female	2885919	243.00
	Omni	2.4 GHz	2.5 GHz	9 dBi	50 ohm	360°	15°	N-type female	2867623	323.00
	Panel	2.4 GHz	2.5 GHz	8 dBi	50 ohm	75°	70°	SMA female	2867610	160.00

Other lengths available. Call for pricing.

Coaxial antenna cables, N-male connector both ends

Cable Type	Temp Rating	Attenuation (per 100 ft)	Cable Length	Catalog Number	Price
RG-58U	-40° to 167° F	13.7 dB	10 ft	5606124	$69.00
			20 ft	2867212	65.00
RG-213U	-40° to 176° F	7.6 dB	25 ft	2867597	88.00
			40 ft	2867377	110.00
			50 ft	2867225	132.00

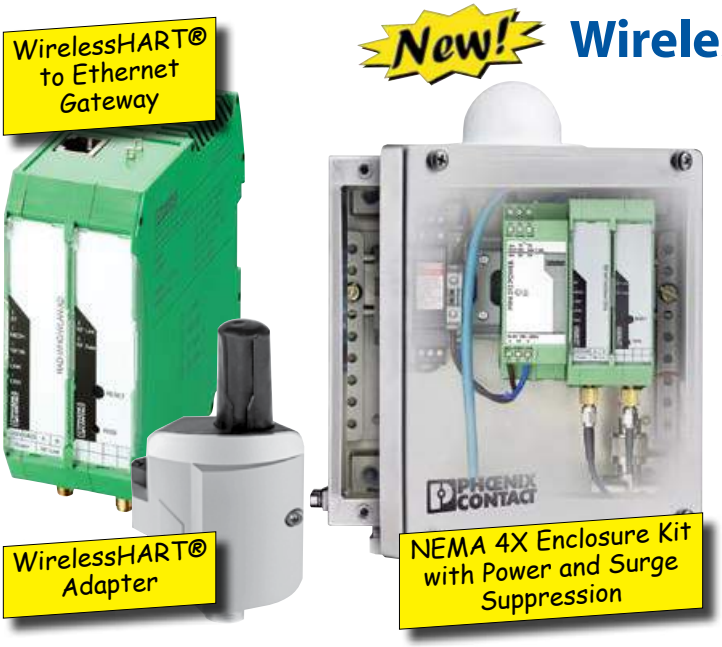
Cable Type	Temp Rating	Attenuation (per 100 ft)	Cable Length	Catalog Number	Price
LMR-400	-40° to 185° F	3.9 dB	20 ft	5606125	$87.00
			100 ft	2867238	224.00
LMR-500		3.13 dB	25 ft	5606126	248.00
LMR-600		2.5 dB	125 ft	2885171	446.00
Surge Protection Adapter, 900 MHz				5603859	84.46
Surge Protection Adapter, 2.4 GHz				2838490	150.53

Protect Your Radio and I/O Hardware!

Prewired NEMA 4X control cabinet with 24 VDC power supply/UPS, 24 VDC backup battery and 2 Amp fuse, surge protection for power and antenna connections.

NEMA 4X enclosure kit: 2917188, $1400.00
Pole-mount hardware: 2900038 $74.00

Omni and parabolic antennae for 5 GHz radios also available. Prices start at $250.00



New! WirelessHART® Gateway and Adapter

PHOENIX CONTACT WirelessHART
INNOVATION IN INTERFACE

- Gateway supports up to 250 WirelessHART® devices
- Single WirelessHART® adapter can support up to four wired HART® field devices
- 2.4 GHz ISM band 15-channel 802.15.4 radio, 250 Kbps over the air transmission
- Converts HART to Modbus TCP
- Simple programming via web browser or HART handheld
- 802.11 b/g wireless LAN with WEP, WPA or WPA2/802.11i security and 128-bit AES encryption for HART data
- Full mesh routing with self-organizing and self-healing capabilities to keep the network stable over time
- ATEX/FM/CSA Class I, Zone 2

The technical advantages and cost benefits of WirelessHART® provide new opportunities for process monitoring.

Installing wireless systems to replace infrastructure and signal cabling drastically reduces the time to engineer and develop the expansion or construction of a process unit.

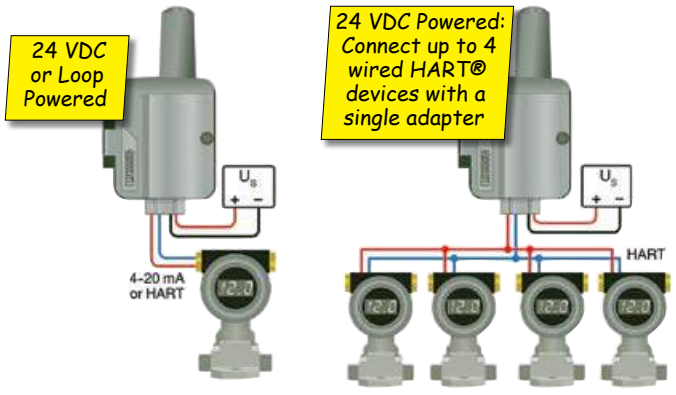
A signal that previously took days to bring online using traditional wiring can now be commissioned within hours. This time savings and flexibility lets maintenance crews deploy wireless nodes for temporary troubleshooting or to add stranded measurement points for safety or improved efficiency.

The Phoenix Contact 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 for easy integration into most asset management systems.

The WirelessHART gateway features integrated Wi-Fi connectivity, HART modem programmability and is DIN rail-mountable. The gateway radio is configurable via a HART programmer or through a standard web browser, using the unit's embedded web server. System diagnostics are also available through the web server or locally.

A WirelessHART adapter, like the RAD-WHA-1/2NPT, connects an existing wired HART device into a WirelessHART network. The adapter connects to the 4-20 mA wiring to gather the HART signal while the 4-20 mA signal remains intact and functional.

A single WirelessHART adapter can collect HART signals from multiple devices, resulting in a lower installation cost. It can be loop-, line-, or battery powered. It's ideal for gathering data from existing installed HART devices that are connected to a host that doesn't have HART capability.



Gateway Specifications

WirelessHART® Interface: 2.4-2.4835 GHz frequency, 15 channels, 5 MHz channel separation, RP-SMA female antenna connection

WLAN (802.11) Interface: 2.4-2.4720 GHz, 13 channels, 5 MHz channel separation, two RP-SMA female antenna connections

Ethernet Interface: RJ-45 (autocross) port connection, 10-100 Base-T transmission rate

Indicators: Unit initializing/active, WirelessHART device connections, LAN connections, WLAN links, Tx/Rx on wired and wireless LANs, and error status

RSSI Test Voltage: 0-35 VDC

Enclosure: IP20 rated Polyamide PA, non-reinforced, NS35 mount

Operating Conditions: *Temperature:* -40° to 158° F; *Relative Humidity:* 10-90% non-condensing

Voltage: *Nominal:* 24 VDC; *Supply:* 9-30 VDC; *Power Consumption:* 4.1 W typical, 7.2 W max.

Approvals: *cCSAus:* Class I, Div 2, Groups A-D Ex nA IIC, Class I, Zone 2, Group IIC; AEx nA IIC T4; CE

Adapter Specifications

Radio Interface: 2.4-2.4835 GHz frequency, 15 channels, 5 MHz channel separation, Type N female antenna connection

Electrical Data: *Nominal Power Supply:* 24 VDC; *Supply Voltage:* 11-30 VDC; *Connections:* 18" flying leads

Enclosure: IP67 cast aluminum, 1/2" NPTF thread mount

Model Selection Guide

Description	Catalog Number	Price
WirelessHART Gateway with 802.11b/g WLAN	2900178	$3556.00
WirelessHART Adapter with Integral Antenna	2900100	850.00
2.4 GHz Antenna Options for WirelessHART Gateway		
3 dBi Omni Antenna with Vandalism Protection, IP55	2885867	125.00
6 dBi Omni Linear Vertical Antenna, IP55	2885919	243.00
8 dBi Omni Panel Antenna, IP55	2867610	160.00
19 dBi Parabolic Linear Vertical Antenna, IP65	2867885	414.00
RSMA Female to SMA Female Antenna Adapter	2884538	30.00
NEMA 4X Enclosure with Power, Surge Suppression	2917188	1400.00
Pole Mounting Hardware for NEMA 4X Enclosure	2900038	74.00

See page 142 for 2.4 GHz antenna, cables, and accessories.

WirelessHART® Networks

WirelessHART answers the challenge!

- Cost-effective: For remote facilities and locations that are difficult to reach due to environmental or technical conditions. It offers significant cost savings for cabling, commissioning, and engineering, as well as reduced operating costs from increased plant efficiency and lower maintenance expenses.
- Flexibility: For installation, replacement or upgrading; Ideal for temporary measurements or for measuring rotating equipment
- Maintenance-friendly: Easy and timely access to valuable diagnostic information lets you put predictive maintenance strategies in place. Maintenance and troubleshooting of cables and connections is no longer required, and there's no more manual checking of equipment status.

WirelessHART® Adapters and Gateways

Connect legacy HART devices to a wireless network!

SITRANS AW210 WirelessHART Adapter

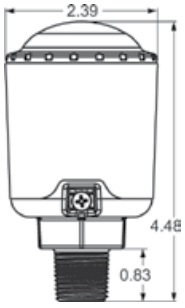
- Connect up to eight standard wired HART® devices or one 4–20 mA to a WirelessHART network
- Integrated power management enables efficient use of external power source
- Get access to analog-wired HART device diagnostics at the maintenance station
- Now available with intrinsically safe (Ex ia), non-incendive (Ex nA) and explosion proof (Ex d) approvals

Input: One point-to-point with HART device or 4–20 mA device; Up to four externally powered HART devices can operate in multidrop mode

Communication: HART v7.0 or earlier, or 4–20 mA current signal

Output: 2.4 GHz WirelessHART radio

Power supply: 3.6V D-cell Lithium battery; *Battery life:* 5 years @ 1 update/min



Model Selection Guide

Description		Catalog Number	Price
SITRANS AW210 WirelessHART Adapter		7MP3111-1AB00-0AA0	$1288.00
Power	Lithium Battery (Required)	7MP1990-0AA00	71.90
Device Adapter	G-1/2 Thread Adapter 1/2"-14 NPT Thread Adapter	7MP1990-0BB00 7MP1990-0BA00	56.30 56.30
Hardware	304SS Mounting Bracket Kit	7MF4997-1AJ	62.91

IE/WSN-PA Link WirelessHART Gateway

- Gateway for connecting up to 100 WirelessHART field devices to industrial Ethernet
- Open TCP/IP communication and Modbus TCP via Ethernet interface
- Can be used with HART-OPC servers
- Approved for use in Zone 2 hazardous areas
- Two RJ45 ports, RS485 screw terminal for connection to Modbus RTU, 24 VDC screw terminal connection
- Web-based configuration
- Available with integral or remote antenna

SITRANS MDS Maintenance and Diagnostic Station

Free with Gateway

- Included FREE with the purchase of every WirelessHART Gateway (IE/WSN-PALink
- Reads field device diagnostic information from the wireless gateway and sends data to SIMATIC PDM
- Device list shown in tree form, with properties and maintenance data in a column
- Selectable update interval for all devices
- Visualization of maintenance status with SIMATIC icons
- Ability to archive recent events for each device
- User-editable reporting

Model Selection Guide

Description	Catalog Number	Price
IE/WSN PA Link WirelessHART Gateway with Integral Omni Antenna	6GK1411-6CA40-0AA0	$3990.00

WirelessHART® Field Transmitters

Battery-powered transmitters for remote measurements, for installation in harsh environments, for temporary measurements, and for the expansion and replacement of legacy wired field device networks.

Features

- Large 90° and 180° turnable backlit LCD display
- Configurable with pushbuttons, SIMATIC PDM, and handheld HART® communicators
- Three pushbuttons for maximum efficiency in setup, diagnostics, communication, and security — no special tools needed
- Extension cable for remote mounting sensors
- Physical HART® maintenance port for quick commissioning
- Sleep mode for efficient battery life management
- Battery status display on LCD and in network overview
- Average 5-year battery life

Specifications

SITRANS TF280 WirelessHART Temperature Transmitters

Input: Pt100 sensor, IEC 60751

Measuring range: -328° to 1562° F (-200° to 850° C)

Engineering units: ° C or ° F

Accuracy: Typically ±0.25° C to a max ±0.5° C, includes hysteresis and repeatability; *Ambient temperature effect:* ±0.1° C/10K

Connection: 2-, 3-, or 4-wire circuit

Sensor current: 100 mA

Output: 2.4 GHz WirelessHART radio

Power supply: 3.6V D-cell Lithium battery; *Battery life:* 5 years @ 1 update/min

SITRANS P280 WirelessHART Pressure Transmitters

Input: Piezoresistive ceramic sensor, dry measuring cell

Measuring range: Gauge pressure and absolute pressure, 0–29 to 0–5800 PSIG

Engineering units: PSI, mBar, bar, inHG, inH2O, FtH2O, and more

Accuracy: Typically ±0.25% full scale, max ±0.35% full scale, includes hysteresis and repeatability; *Ambient temperature effect:* ±0.025% full scale/K

Connection: 1/2"–14 NPT or G1/2"

Output: 2.4 GHz WirelessHART radio

Power supply: 3.6V D-cell Lithium battery; *Battery life:* 5 years @ 1 update/min

Model Selection Guide

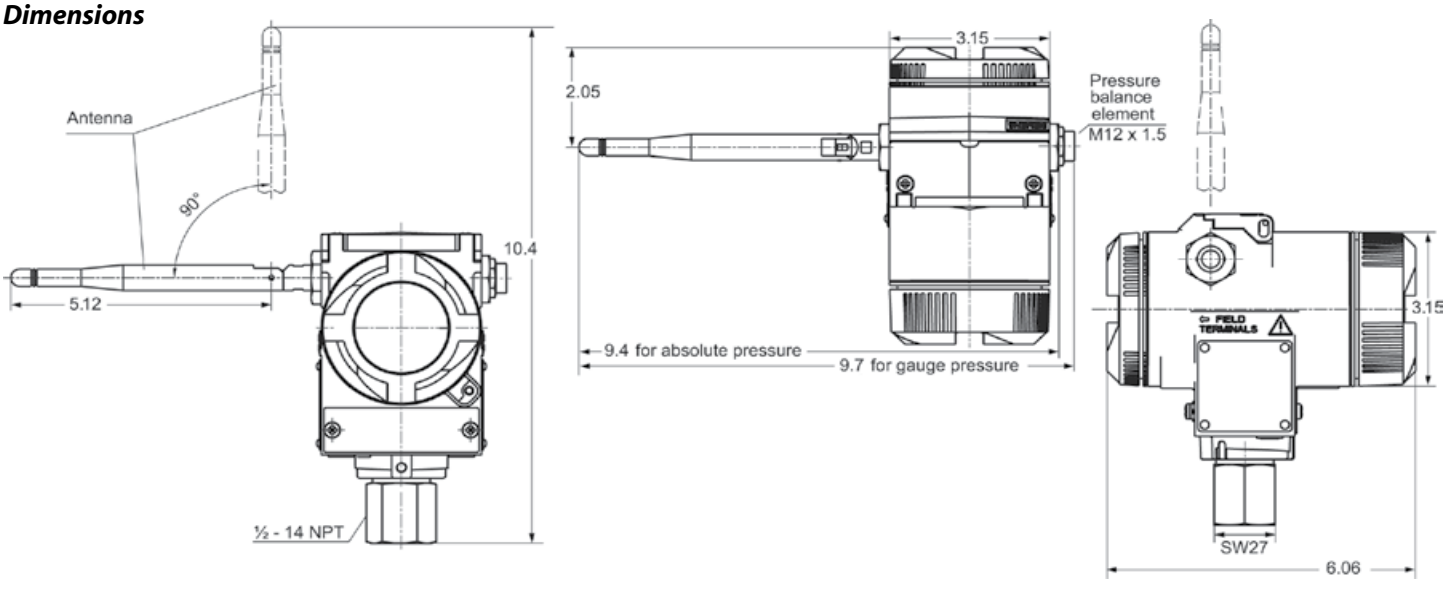
Description		Catalog Number	Price
SITRANS P280 Pressure Transmitter Digital Display, Aluminum Enclosure		7MP1120-	$2052.75
Measuring Range	0–29 PSIG	0DK11-1AA0	0.00
	0–145 PSIG	0EK11-1AA0	0.00
	0–725 PSIG	0FK11-1AA0	0.00
	0–2900 PSIG	0GK11-1AA0	0.00
	0–5800 PSIG	0HK11-1AA0	0.00
Power	Lithium Battery (Required)	7MP1990-0AA00	71.90

Call for absolute pressure ranges. See TF280 model selection guide for mounting accessories and HART® modems.

Model Selection Guide

Description		Catalog Number	Price
SITRANS TF280 Temperature Transmitter Digital Display, Die-Cast Aluminum Enclosure		7MP1110-	$1920.50
Sensor Connection	M20x1.75 Cable Gland (Standard)	0AC11	0.00
	Integral Pt100 Sensor	0AD11	64.40
Power	Lithium Battery (Required)	7MP1990-0AA00	71.90
Mounting Bracket	Carbon Steel Bracket Kit	7MF4997-1AC	36.80
	Stainless Steel Bracket Kit	7MF4997-1AJ	62.91
Accessories			
HART® Modem	HART® Modem, RS-232 Interface	7MF4997-1DA	449.65
	HART® Modem, USB Interface	7MF4997-1DB	591.10

Dimensions



Why an ISA100.11a industrial wireless network CAN grow with you!

Here's what typically happens in a large plant...

Call it the "right hand doesn't care what the left hand is doing" or the "can't see the forest for the trees" approach to industrial wireless, and why wireless has such a bad rap.

Think back to your childhood, sharing walkie-talkies with your best friend. Remember what happened when you both hit the "Talk" button at the same time? Both units would hiss and screech from the overload, and neither of you could hear with the other was saying.

Competing wireless protocols in your plant are behaving the same way. As the networks start to talk over each other, they create noise and interruptions. The more interruptions, the slower your data gets delivered. Eventually the data gets where it needs to go, just not always when you need it to get there.

As you add more wireless networks, they have to fight even harder for air space, stepping all over each other's signals, and making the whole process go that much slower.

For each department that wants to use wireless, there's a protocol with the right reach, speed, and function to best serve its purpose. You can't force all applications to use one protocol. And you can't change the frequency band to make sure the protocols don't collide.

So, it's important that you plan around the noise by finding a wireless system that can take charge of managing the overlapping messages, so they all get where they need to go when they need to get there.

The P is for Performance, not for Proprietary

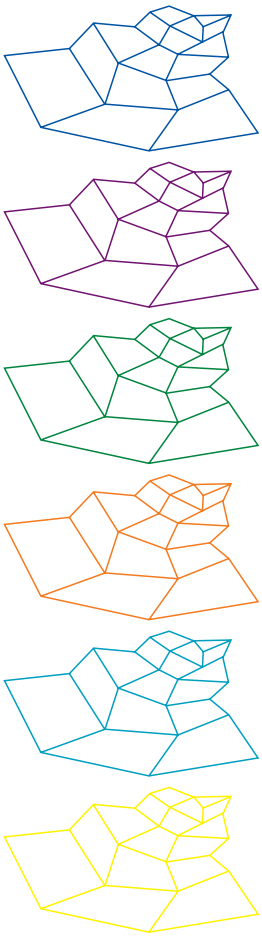
A true feat of forward-thinking and innovation, Honeywell took all the concerns about wireless, and built a flexible, expandable, secure wireless design that turns data into knowledge.

Honeywell OneWireless supports DeviceNet, Profibus, Foundation Fieldbus, Ethernet, HART, and a variety of other technologies. It's capable of monitoring processes, locating people and assets, and expanding the range of existing networks, without the cost of wires, or the data collision issues of overlapping wireless networks in a plant.

Building a network to comply with the new ISA100 standard for industrial automation wireless systems, Honeywell brings you a wireless network that grows and adapts to your changing process and management needs.

ISA100 Wireless COMPLIANT

Protocols Battling for the Bandwidth



Wireless DeviceNet

Used for control, configuration, and data collection between simple industrial devices, like sensors and actuators, and higher-level devices like PLCs.

Wireless Profibus

Used for transfer of inputs and outputs from field devices to a process control unit. Profibus supports large area, low speed networks as well as small area, high speed systems.

Wireless Foundation Fieldbus

All-digital, serial, two-way communication system for field devices or I/O subsystems, for basic or discrete control.

Wireless HART

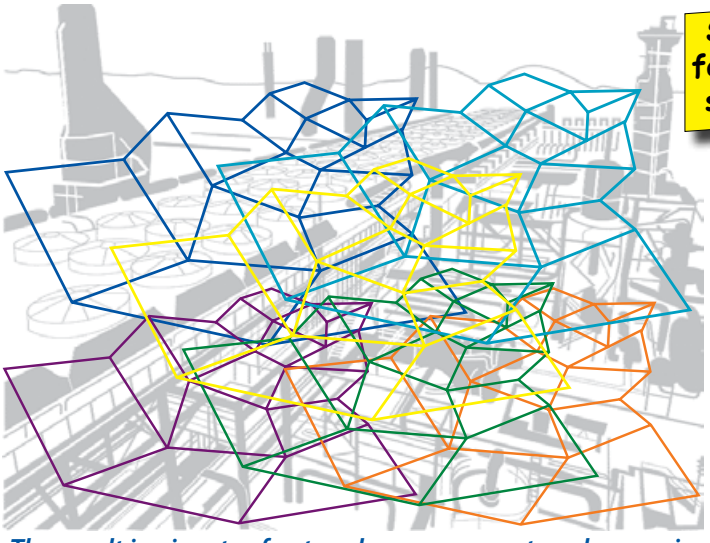
Enables wireless access to existing HART process field devices, using the same configuration, maintenance, and diagnostic tools and procedures.

Wireless Personal Area Networks

For simple applications, using small digital radios. Zigbee, Bluetooth, and other short-range devices help mobile professionals avoid the restrictions of cables and cords.

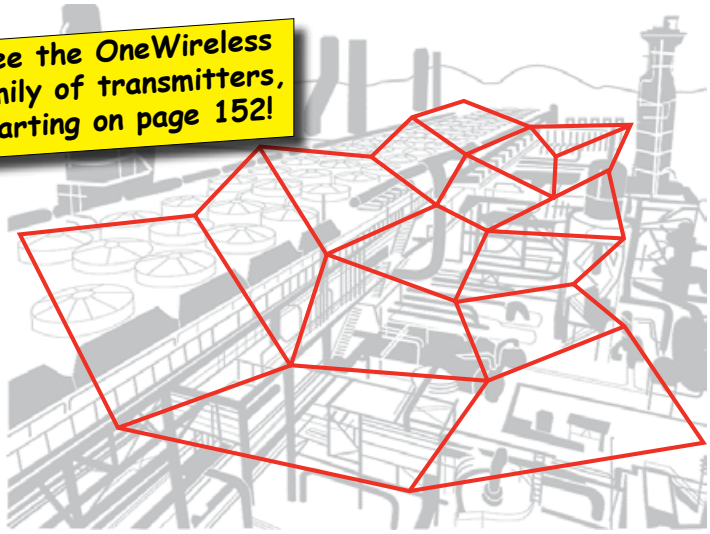
Wireless LAN (802.11) — Wi-Fi

Supports handheld devices and laptop computers that tie into your wired Ethernet plant network. The 2.4 GHz frequency band is shared by Bluetooth devices and cordless phones, and is susceptible to interruption.



The result is: six sets of network management packages, six security protocols, six device management packages, six sets of field devices (each with its own proprietary spare parts, and six different trainings courses to attend.

See the OneWireless family of transmitters, starting on page 152!



OneWireless says it all! One network to purchase, deploy, manage, and maintain. One security model to implement. Many host systems coexisting on one network — optimized for efficient use of bandwidth, for best capacity, availability, and reliability. Maximizing performance, reducing costs.

ISA100 Wireless-Compliant Industrial Network Devices

Honeywell built OneWireless for industrial users who want to extend their process control networks into the field, and turn more information into knowledge across the plant. They've proven through a growing number of successful installations across the country that implementing wireless can lead to optimized productivity, improved safety, better device reliability, and better environmental compliance.

OneWireless adds a vital missing piece to the adaptable wireless network system — the ability to install a mesh network for monitoring and control of field instruments. It's a cost-effective solution for our customers who want to install a wireless mesh network for field-mount transmitters, but don't need to support Wi-Fi devices.

OneWireless is scalable. The same system can support a handful of field instruments, and easily expand to include wireless Ethernet to support thousands of field instruments and Wi-Fi devices.

OneWireless network users can design a single network with different types of wireless coverage at different areas of their facilities. Depending on your application needs, the network can be adjusted to offer wireless coverage strictly for field instruments or to support both wireless field instruments and Wi-Fi.

What is New in OneWireless?

- Field Device Access Point (FDAP), a rugged industrial access point that provides access to ISA100.11a field instruments only. It does not include Wi-Fi support
- Wireless Device Manager, a network appliance that manages all wireless field devices. WDM assumes the roles of wireless field instruments network gateway, system manager, and security manager
- ISA100-compliant firmware for field instruments and network devices
- OneWireless HART Adapter, connecting wired HART field instruments to the wireless network to transmit diagnostics and process variable data
- Field instrument routing: wireless field instruments can send their own data and also route data received from neighboring field transmitters, creating a mesh network without requiring an FDAP

ISA100 Wireless COMPLIANT

Flexibility/Scalability

- OneWireless offers you a choice of a field instrument-only network (over a Field Device Access Point) or multi-application network for field instruments and Wi-Fi devices.
- OneWireless can exchange process data with your plant control system via Modbus, HART, OPC or generic tunneling.

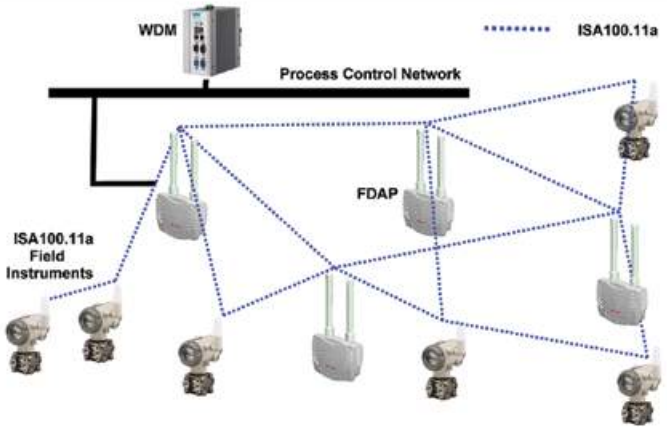
Performance

- OneWireless supports both monitoring and control over wireless, with update rates from 1 to 60 seconds, comparable to existing wired devices.
- OneWireless offers the longest battery life for wireless field instruments in the market.
- With the right integral or remote antenna, OneWireless offers the market's longest transmission range for wireless field instruments.
- Honeywell's OneWireless radio board was designed exclusively for use in industrial environments, so OneWireless field instruments have better power management and outperform the competition in industrial multi-path environments.

Ease of Use

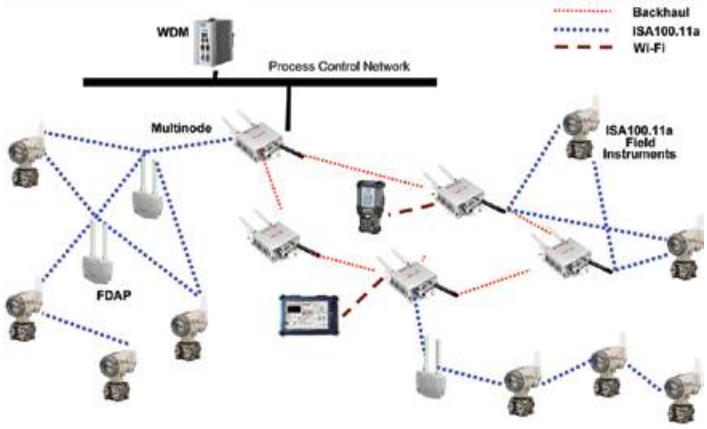
- OneWireless lets you manage the entire plant's wireless field network and instruments from one management application.
- Wireless Device Manager automatically selects the fastest and most reliable path to channel data between the control system and field instruments
- OneWireless lets you monitor and configure wireless field instruments without leaving your desk, using the Wireless Device Manager's built-in web tool, or your current field instrument management application, like Honeywell Field Device Manager or Emerson AMS.

Field Instruments Only Wireless Mesh Network



OneWireless lets you implement a network that provides wireless coverage for field instruments only, using the Field Device Access Point. It fully supports the one-second update rate of ISA100 field devices.

Multi-Application Wireless Mesh Network



By adding a wireless access point, OneWireless supports coverage for field transmitters plus Wi-Fi and Ethernet devices. Mix or match different networks and manage them all using the Wireless Device Manager.

ISA100 Wireless-Compliant Industrial Network Devices

What's involved in a wireless radio survey?

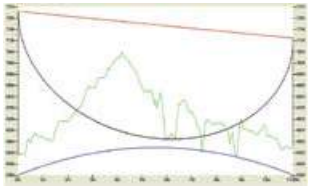
To make sure wireless will work in your plant, and that you get the right antenna for your application, it's recommended that you perform a wireless instrument site survey. With years of wireless successes under our belts, Lesman's here to help.

Application questions

Get the right network setup for your process and environment, start with these questions:

- What data and network are you using? Field I/O, serial, Ethernet?
- How many location points do you want to monitor or manage?
- Where's the data going? What's the distance between points?
- Is your application all indoors, going floor-to-floor, between buildings, outdoors to indoors, or all outdoors? Are there hazardous environments involved?
- How is the data to be handled? I/O, Modbus, OPC? What are the existing device protocols you'll need to tie together?
- Is power readily available and easily accessible?

Site surveys can include anything from simple signal strength assessment for I/O radios to full spectrum usage analysis for plant-wide wireless. They'll also determine coverage area and engineering recommendations for network topology, radio and antenna placement.



Which OneWireless Devices Do You Need?

Wireless Device Manager

- **Required component** of any OneWireless network
- Manages wireless field instrument network and all field devices.
- Generates and authenticates security keys that add devices to the network; Transmits key to field devices via Honeywell Dolphin 9700 handheld
- Serves as gateway/router between wireless and wired networks

Field Device Access Point *(Pg 150)*

- Provides wireless coverage **for ISA100.11a field devices only**
- No Wi-Fi wireless Ethernet support
- For Class I Div 1 or Class I Div 2 areas
- Supports up to 80 ISA100.11a field devices (depending on reporting rate)

Field Instruments *(Pgs 152–158)*

- Any combination of OneWireless field devices for process monitoring.
  > Analog and discrete inputs
  > Temperature
  > Pressure
  > Valve position sensing

OneWireless Adapter *(Pg 151)*

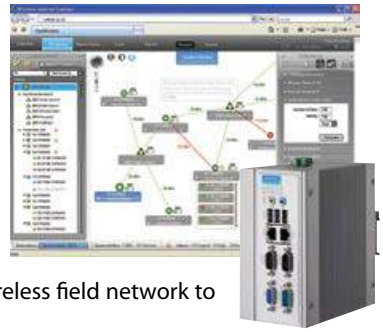
- Provides access to wireless network **for wired HART® field devices**
- Add older wired HART field transmitters and devices to your network
- Access configuration and troubleshooting data on a HART device, across your wireless network

Make it easy! Order a OneWireless ISA starter kit

- OneWireless FDAP (Class I, Div 2) with 6dB Antenna
- Wireless Device Manager with DIN mounting kit and power supply
- Two Universal I/O OneWireless Field Transmitters
- Honeywell Dolphin PDA for security key commissioning

Honeywell

OneWireless Wireless Device Manager



Wireless Device Manager lets you design, commission, configure and monitor the wireless field network and devices connected to it from a centralized location, to simplify day-to-day operations and reduce your cost of ownership.

WDM is a compact DIN-rail mountable embedded device and web server. Its front offers all ports necessary to easily connect the wireless field network to another network.

System Management Features

With its intuitive web interface, Wireless Device Manager lets you design, commission, configure and manage the wireless network, network devices (Field Device Access Points and all ISA100.11a field instruments.

ISA100 Wireless COMPLIANT

Users with valid user names and passwords can manage the wireless field instrument network from a PC with a standard web browser over a secure Ethernet (HTTPS) connection.

- View key performance indicators for the network and field devices
- Add, configure and commission wireless field devices. Smart buttons hide/unhide information (signal strength, process value, battery life) so you only see the data you need.
- Alarms/Events view displays system events and alarms
- Display data from a single point or a group of points on a trend
- Access pre-configured reports to maintain and optimize the network and field devices

Gateway Features

WDM manages the communication between wireless field instruments and process control applications. It can be connected to the wired process control network at Level 2 or the wireless DMZ.

- **Modbus:** WDM supports Modbus RTU over RS-485 serial and Modbus TCP/IP over 10/100-base T Ethernet, so any standard measurement, status, or parameter can be read by your Modbus application.
- **HART®:** WDM lets users access data from their current diagnostics software application via a HART interface. So, your ISA100.11a field instruments can be monitored like any other HART field instrument.
- **OPC:** WDM hosts an OPC Unified Architecture (UA) server for open communication to current, historical and alarm/event data. A UA Proxy enables communication between a DCOM/COM-based OPC client and the WDM.
- **Experion PKS CDA:** WDM supports the Experion PKS (R410 or later) CDA communication protocol, allowing nodes such as C series controllers and ACE nodes to communicate directly with the WDM and ISA100 Wireless field devices. All ISA100 field instruments associated to a WDM are automatically detected and displayed in Experion Control Builder. Users can configure the field instruments and incorporate them in their control strategies. Users do not need to do any data mapping or non-value-added engineering such as custom faceplates and custom-detailed displays.
- **Gateway General Client Interface (GCI):** GCI lets third-party client applications communicate with the WDM and ISA100 Wireless devices that are leveraging the ISA100 Wireless's tunneling feature. ISA100Wireless can tunnel or encapsulate other protocols (e.g., proprietary, HART, FOUNDATION™ fieldbus) and transport data between the host application and device. The GCI specification is defined by the Wireless Compliance Intitute (WCI) and several field device manufacturers already are utilizing this capability.

Security Features

When it comes to protecting process data, security is a primary concern for the process automation community. OneWireless network data is encrypted and decrypted at the field device and Wireless Device Manager level to provide full end-to-end security.

To meet ISA100 standards for authenticating devices on the network, WDM creates a unique authentication key for each field unit. The key is loaded onto a handheld infrared device, and from there, downloaded to the field device. Once a wireless field transmitter, or Field Device Access Point, gets its key, and the WDM authenticates it, the device automatically joins the network.

By default configuration, each device's key is deployed exactly once. To improve security, you can configure "rolling keys" that require field devices to obtain new security keys on a periodic basis.

Authentication device software manages the infrared handheld device. It also lets you view configured settings of transmitters and access points, and lets you receive and transmit calibration commands to field transmitters. The software runs a Honeywell Dolphin 9700 PDA running Windows Mobile 5.0.

Specifications

Network Capacity: 40 Cisco Aironet 1552S or Field Device Access Points, up to 100 ISA100.11a field instruments

Communication: Modbus RTU at 300-115,200 bps, Modbus TCP/IP, HART®, OPC DA, OPC UA, CDA (Honeywell Experion® PKS), GCI (Gateway General Client Interface)

Power: *Req'd:* 48 Watt min. (10–36 VDC), 24V @ 1A; *Consumption:* 24 Watt typical

Hardware: Celeron M 1.0 GHz processor, 512 MB DDR SDRAM, hard disk storage, PS2 keyboard and mouse ports, DB15 VGA connector for monitor resolution 1600 x 1200, audio in/out ports, two RS-232 ports, one RS-232/422/485 (DB9) port with RS-485 data flow control. Two 10/100-Base T Ethernet ports, four USB2 ports. Indicators for power, IDE, LAN active/status, Serial Tx/Rx, and one user-defined LED and buzzer

Operating Conditions: *Temperature:* -4° to 140° F (-20° to 60° C); *Humidity:* 20-95% non-condensing

Shock Protection: IEC 68 2-27; *CompactFlash:* 50 G @ wall mount, half sine, 11 ms; *HDD:* 20G @ wall mount, half sine, 11 ms

Vibration Protection: IEC 68 2-64 (Random 1 Oct/min, 1 hr/axis); *CompactFlash:* 2Grms @ 5-500 Hz, *HDD:* 0.5 Grms @ 5-500 Hz

Enclosure: DIN-rail or wall mount aluminum + SECC enclosure

Certification: CE, FCC Class A, UL, CCC

Ordering Instructions

Build your model number by choosing one option from each table section below. A finished wireless device manager catalog number looks like this: WDMX-_ _-_ _-000-00

The WDMX kit includes DIN-rail mounting hardware, power connector, PS2 keyboard/mouse adapter (does not include keyboard or mouse), OneWireless release notes, and a OneWireless license.

Be sure to order one Dolphin PDA for your OneWireless network.

Model Selection Guide

Description		Catalog Number	Price
Wireless Device Manager		WDMX-	$4699.00
Power Supply	None	00-	0.00
	24 VDC Power Supply	PS-	192.00
Manuals	Documentation on CD Only	DD-000-00	0.00
Dolphin 9700 Handheld Authentication PDA		HSM-9700HPS	1971.00

OneWireless Field Device Access Point

Honeywell

Key Features

- Great for multi-path and non-line-of-sight (NLOS) environments
- Reduces number of ISA100.11a routing devices needed to support wireless field devices, and reduces the cost of wireless I/Os
- Enable the use of wireless field instruments for applications requiring fast update rates (<10 sec.) and short latency (<250 ms) and in areas where Wi-Fi radios are not allowed

OneWireless™ Field Device Access Point (FDAP) is an industrial mesh access point for monitoring and control of ISA100.11a field instruments. It comes standard with an Ethernet port for connecting to a wired network or a Wi-Fi wireless access point.

FDAP uses spatial diversity (two similar-strength antennae) to improve communication in multi-path environments and long ranges. It extends wireless coverage 1.5 times farther than ISA100.11a routing devices without diversity.

All FDAP configuration parameters are accessible from the Wireless Device Manager, which centralizes all key functions needed to manage the network and wireless field devices.

Self-Configuring and Self-Healing Mesh

Field Device Access Points can be installed where power is available. The device self-discovers neighboring ISA100.11a routing devices — Wi-Fi, FDAPs and routing ISA100.11a field instruments — to form a reliable and secure wireless mesh network capable.

The Field Device Access Point receives and transmits ISA100.11a data simultaneously using all 15 channels available on the 2.4 GHz ISM band.

Honeywell's intelligent wireless routing algorithm lets the access point dynamically identify the best route to send data to and from wireless field devices. This algorithm enables the mesh network to dynamically re-optimize itself when FDAPs are added to or removed from the network.

General Specifications

Supported Field Devices: Up to 20 ISA100.11a field instruments max at one-second reporting rate, Up to 80 ISA100.11a field instruments max at five seconds or longer reporting rate

Standards/Field Protocols: ISA100.11a

Ports and Connections: *External:* Two antenna ports for 2.4 GHz ISA100.11a field instruments; *Internal:* One 10/100 Mbps auto negotiation Ethernet port, one shielded power cable, one grounding cable

Data Rates: *Radio:* 250 Kbps, DSSS/OQPSK; *Wire:* 10/100 MBPS Fast Ethernet

Frequency Band: Unlicensed ISM Band (2.4–2.483 GHz)

Operating Channels: 15 DSSS channels for ISA100.11a

Network Interface: 10/100-Base T Ethernet, autosensing

Network Security: 128-bit AES encryption; Secure key deployment

Quality of Service: Supported

Transmit Power: DSSS, 18 dBm max.

Receive Sensitivity: DSSS, 2.4 GHz: -95 dBm @ 250 kbps typical

Operating Conditions: *Temperature:* -40° to 167° F; *Humidity:* 0–100% non-condensing

Hazardous Environment Ratings: *FM/CSA:* Class I, Div 1 Group C, D / Zone 1 Group IIB T4; Class I, Div 2 Group A–D / Zone 2 Group IIC T4; *ATEX:* II 3G Ex nA nL IIC T4; *IECEx:* Ex nA nL IIC T4

Environmental Ratings: IP66, NEMA Type 4X, G3 Corrosion resistance per ANSI/ISA-S71.04-1985; *Mechanical Shock:* 4G

Compliance: *Radio Approvals:* FCC Part 15.247 Subparts B and C; *CE Mark:* R&TTE Directive 1999/5/EC, EMC Directive 2004/108/EC, LVD Directive 73/23/EEC, ATEX Directive 94/9/EC

Power: 24 VDC ±10% at 5 Watts

Warranty: 1 Year

Ordering Instructions

Build your model number by choosing one option from each table section below. Check the availability column to be sure the unit you need is available.

A finished FDAP catalog number looks like this:
FDAP_-F_ _ _ _ _ - F_ _ _ _ _ - _ _ - DD-0000

Model Selection Guide

Description		Catalog Number	Availability	Price
Field Device Access Point, Class I, Div 2 (Zone 2)		FDAP2-	↓	$2677.00
Field Device Access Point, Class I, Div 1 (Zone 0)		FDAP1-	↓	2883.00
DSSS Antenna 1				
Antenna Type	None	F0 _ _ _ _-	•	0.00
	5 dBi Integral Omni	F1 _ _ _ _-	•	81.00
	6 dBi Integral Omni	F6 _ _ _ _-	•	153.00
	8 dBi Remote Omni	F8 _ _ _ _-	•	205.00
Lightning Surge Arrestor	None	_ _ 00 _ _-	•	0.00
	Integral	_ _ SA _ _-	•	153.00
	Remote	_ _ RS _ _-	•	174.00
Cable	None	_ _ _ _ 00-	•	0.00
	3.2′ (1 m)	_ _ _ _ 01-	•	174.00
	9.8′ (3 m)	_ _ _ _ 03-	•	308.00
	32′ (10 m)	_ _ _ _ 10-	•	349.00
DSSS Antenna 2				
Antenna Type	None	F0 _ _ _ _-	•	0.00
	5 dBi Integral Omni	F1 _ _ _ _-	•	81.00
	6 dBi Integral Omni	F6 _ _ _ _-	•	153.00
	8 dBi Remote Omni	F8 _ _ _ _-	•	205.00
Lightning Surge Arrestor	None	_ _ 00 _ _-	•	0.00
	Integral	_ _ SA _ _-	•	153.00
	Remote	_ _ RS _ _-	•	174.00
Cable	None	_ _ _ _ 00-	•	0.00
	3.2′ (1 m)	_ _ _ _ 01-	•	174.00
	9.8′ (3 m)	_ _ _ _ 03-	•	308.00
	32′ (10 m)	_ _ _ _ 10-	•	349.00
Accessories and Options				
None		00-	•	0.00
Wall Mounting Kit		WM-	•	256.00
Pole Mounting Kit (2.5″ Max. Diam.)		PM-	•	256.00
OneWireless Network Documentation CD		DD-0000	•	0.00

Wireless HART® adapter mounted on a Honeywell HART® transmitter

Unlock Stranded HART® Diagnostics!

Connect wired HART devices to your OneWireless network

Key Features

- ISA100.11a-compliant with infrared security provisioning
- Transmit diagnostics and process variable data
- 1000 foot line-of-sight range
- Powered from 4-20 mA loop and D-cell battery
- Diagnostics indicated by front-panel LEDs
- FM, CSA, IEC, and ATEX approvals

ISA100 Wireless COMPLIANT

In process applications, there are many devices that use the HART protocol to configure and monitor device parameters, variables and status information reflecting the device health status. Honeywell's OneWireless Adapter (WA100) transforms a wired HART device into a wireless device to transmit this valuable information back to a host system.

The OneWireless Adapter is an easy and cost-effective solution for bringing HART information from two-wired or four-wired HART field devices in remote and hazardous locations into an ISA100.11a-compliant system. The wireless adapter helps you improve operational efficiency and optimize resource use by eliminating the need to send employees to collect field device readings. The OWA also eliminates the need to install long cable runs, and automates data collection for improved efficiency and productivity.

In addition to the primary process variables that can be accessed, the OWA provides access to four HART dynamic variables (PV, SV, TV, and FV), multivariable data, performance information, calibration information, diagnostics, and device configuration parameters.

Using the OWA to integrate HART devices into the ISA100.11a field network leverages the ISA100 standard's meshing technology and provides a single network for all functions of scale within your site applications. It also provides secure and reliable communications for your process industry requirements.

The OneWireless Adapter is designed to connect to existing HART devices and integrate them seamlessly with OneWireless architecture without impacting your host system. The OneWireless Network provides reliable and fast transmission of field information into any control and SCADA system via the OPC or Modbus TCP protocol.

Each WA100 HART Adapter scavenges power from the 4-20mA loop, in addition to being battery powered by a long-life D-size Lithium battery. The wireless adapter's transmission range is 1,000' (305 m) line of sight (LOS) under ideal conditions.

OneWireless HART® Adapter

Specifications

Input: Any two- or four-wire HART device

Communication: ISA100.11a Wireless Compliant; 2.4 GHz Industrial, Scientific and Medical (ISM) band per FCC 15.247/ IEEE 802.15.4-2006. Every data packet transmitted in either direction is verified (CRC check) and acknowledged by the receiving device. FCC and IC certified

RF Transmitter Power: 125 mW (20.9 dBm) max transmit power not including antenna per FCC/IC, or 400 mW (26.0 dBm) max EIRP including antenna

Data: *PV data publish cycle time:* Configurable 5 sec to 1 minute, (HART PV every 5 seconds minimum); *Rate:* 250 Kbps; ISA100.11a Compliant output

Antenna: Integral 2.5 dBi omnidirectional monopole; *Signal range:* OWA100 to FDAP: Nominal 1000 feet (305 m), clear line of sight; Two OWAs, TX power at 14 dBm: 790 feet (240m), clear line of sight; **Note:** Varies based on site topography.

Parameter Routing vs Non-Routing: Unit can be set as Field Routing or non-Field Routing; the number of routing devices is set by the system manager. Using the device as a routing device will reduce battery life.

Operating Conditions: *Temperature:* -40° to 185° F (-40° to 85° C); *Humidity:* 0-100% RH; *Vibration:* 4g max over 15–200 Hz; *Shock:* 40g max

Power: *Battery powered:* Size D 3.6V Lithium Thionyl Chloride non-rechargeable battery, Battery life @ reference conditions with 30 second publish cycle time set for non-Routing is 3+ years; *Loop power:* 7-30 VDC, 25 mA for power scavenging; *Loop voltage drop due to adapter:* 2.52 VDC max over ambient temperature range across the loop; *Loop load resistance:* 250Ω min.

Mounting: 1/2"NPT or M20 316 Stainless Steel fitting attaches directly to the conduit entry of any 2- or 4-wire HART device; Optional remote mounting kit available. **Note:** Mounting must result in vertically-oriented antenna

Housing: Molded Polycarbonate UL rating F1 for outdoor use, UV stabilized and V-0 rating. Meets Type 4X (hosedown and corrosion resistant), IP66 (dust-tight/hosedown).

CE Conformity: Conforms with the protection requirements of European Council Directives: 2004/108/EC, the EMC Directive and 1999/5/EC, the Radio & Telecommunications Directive per EN 300 328, V1.7.1 (2004-11), EN 300 489-1, V1.6.1 (2005-09), EN 300 489-17, V1.2.1 (2002-08), EN 301 893 V1.4.1 and EN 61326-1:2005, Electrical Equipment for Measurement, Control and Laboratory Use, EMC Requirements

Hazardous Location Certifications

CSA: *Intrinsic Safety Entity:* Class I-III, Div 1, Groups A-G; T4 Ta = 85° C; Ex ia IIB; T4; Ex tb IIIC T90° C IP66; Ambient Temp: -40° C ≤ Ta ≤ 70° C; Enclosure: Type 4x/ IP46; *Non Incendive:* Class I, Div 2, Groups C,D; Class II, Div 2, Groups F, G; Suitable for Class III, Div 2; T4; Class I, Zone 2 AEx nA IIB, T4; Ambient Temp: -40° C ≤ Ta ≤ 85° C; Enclosure: Type 4x/ IP46

Ordering Instructions

Build your model number by choosing one option from each table section below. A finished catalog number looks like this: WA100-2110P0-A-000

Model Selection Guide

Description		Catalog Number	Availability	Price
OneWireless HART® Adapter		WA100-	↓	$795.00
Housing Options	316SS M20 Conduit Adapter	1 _ _ _ _-_	•	0.00
	316SS 1/2" NPT Conduit Adapter	2 _ _ _ _-_	•	0.00
Battery Option	Holder Only, No Battery Incl.	_ 0 _ _ _-_	•	0.00
	D-Cell Battery Included	_ 1 _ _ _-_	•	20.00
Approvals	None	_ _ 0 _ _-_	•	0.00
	CSA cus, IECEx, ATEX	_ _ 1 _ _-_	•	0.00
	FM	_ _ 2 _ _-_	•	0.00
Manual	User Manual on CD	_ _ _ 0C0-	•	0.00
	Printed User Manual	_ _ _ 0P0-	•	20.00
Country	North America	A-000	•	0.00

Honeywell XYR6000 Field-Mount Wireless Transmitters

Implement the value of wireless technology today

- Measure remote access points simply, safely, and securely
- Collect and use information previously inaccessible due to high wiring cost or hazardous locations
- Easily meet regulatory requirements
- Improve process efficiency
- Enhance flexibility to monitor applications that have no access to power, that are remote or difficult to reach, that may require frequent reconfiguration, or where manual readings have been required previously.
- Building on the tremendously successful ST3000 series transmitter line; Honeywell brings simple, safe, and secure wireless technology to its measurement portfolio in the XYR 6000 wireless transmitters.

Measurement and information without wires! The XYR 6000 wireless transmitters series let you obtain data and create information from remote and hazardous measurement locations without the need to run wires, where running wire is cost prohibitive and/or the measurement is in a hazardous location. Without wires, transmitters can be installed and operational in minutes, quickly providing information back to your system.

XYR 6000 wireless transmitters send data to a field device access point (FDAP), creating a MESH infrastructure. Wireless System Gateways (WSG) provide the path to bring that information into Experion PKS or any other control system wirelessly via OPC client or Modbus/TCP.

Transmitter power is supplied by two "D" size lithium batteries with an expected lifetime of up to ten years. Transmitter range with the integral antenna is 1000' (305 m) under ideal conditions.

General Specifications

Communications

Wireless Communication: 2,400 to 2,483.5 MHz (2.4 GHz) Frequency Hopping Spread Spectrum (FHSS); USA – FCC Certified; Canada – IC Certified; European Union – RTTE/ETSI Conformity

RF Transmitter Power: 125 mW (20.9 dBm) maximum per FCC/IC not including antenna, or 400 mW (26.0 dBm) max EIRP including antenna for USA and Canadian locations. 100 mW (20.0 dBm) max EIRP per RTTE/ETSI with antenna for EU locations.

Data Rate: 250 Kbps

Antennae: *Integral:* 2 dBi omnidirectional monopole; *Remote:* 8 dBi omnidirectional monopole or 14 dBi directional parabolic with up to 20 m cable and lightning surge arrester.

Signal Range: Nominal 305 m (1,000 feet) between field transmitter and FDAP or gateway unit with a clear line of sight.*

Lightning Surge Arrester (Remote antennae only): *Frequency range:* 0 – 3 GHz, 50 Ohms, VSWR = 1:1.3 Max, Insertion Loss = 0.4 dB; *Connectors:* Type N Female; *Max Gas Tube Element:* 90 V ± 20%, Impulse Breakdown; Voltage = 1000 V ± 20%, Maximum Withstand Current = 5 KA.

Approvals

CE Conformity: 89/336/EEC, EMC Directive and 1999/5/EC, Telecommunications Directive per EN 300 328V1.7.1, EN301 893V1.3.1, EN301 489-17V1.2.1, EN301 489-1 V1.6.1 and EN61326-1 (1st Edition, 2002-02, Industrial Locations). Electrical Equipment for Measurement, Control and Laboratory Use.

Approvals: *FM/CSA:* Intrinsically safe, non-incendive, non-sparking, and

Common Physical Characteristics

Materials: *Mounting Bracket:* Carbon Steel (zinc-plated) or Stainless Steel angle bracket or Carbon Steel flat bracket available; *Electronic Housing:* Epoxy-Polyester hybrid paint. Low Copper-Aluminum. Meets NEMA 4X and IP 66/67

Process Connections: 1/2" NPTF, 1/2" NPTM, 9/16 AMINCO, DIN 19213, unless stated otherwise on individual model specification

Mounting: Can mount in almost any position on 2" (50 mm) vertical or horizontal pipe using the standard mounting bracket.

Power: Two D-cell Lithium batteries. Expected lifetime up to 10 years

Honeywell

XYR6000 for Analog/Discrete Input

The STIW turns any sensor with an analog output into a wireless transmitter. Use it to convert any legacy 4-20mA or 1-5V output into a wireless input for analytical, flow, or level measurements. The STXW converts any discrete dry contact closure output (like a limit or level switch) into a wireless input.

Specifications

Analog Input: 0/4-20 mA, 0/1–5V. Only 0/4-20 mA input units carry intrinsically safe approvals

Stability: ±0.1% of upper range limit per year

Loop Resistance (0/4-20 mA Input): 24.9 Ohms

Discrete Input: Single SPST dry contacts. To maintain IS rating, contacts must be limited to simple switches.

ISA100 Wireless COMPLIANT

Ordering Instructions

Make one selection from each table section below. Check any restriction letters or notes to be sure the unit is available. A finished catalog number looks like this: STIW600-000-0000-_ _ _ _ _-_ _,_ _,_ _ - XXXX

Model Selection Guide

Description		Catalog Number		Availability	Price
0/1-5V and 0/4-20 mA Analog Input Interface		STIW600-		a	$2396.00
Three SPST Dry Contact Inputs Interface		STXW500-		•	2396.00
Future Options		000-0000		•	0.00
Antenna	2 dBi Integral Right-Angle, Vertical	V_ _ _ _		d	0.00
	2 dBi Integral Straight, Horizontal	S_ _ _ _		d	0.00
	4 dBi Integral Right-Angle, Vertical	R_ _ _ _		d	180.00
	8 dBi Remote Omnidirectional	M_ _ _ _		e	216.00
	14 dBi Remote Omnidirectional	D_ _ _ _		e	216.00
Cable A for Remote Antenna	None	_00_ _		•	0.00
	1M Remote Cable A, TNC-R-N	_01_ _		•	52.00
	3M Remote Cable A, TNC-R-N	_03_ _		•	77.00
	10M Remote Cable A, TNC-R-N	_10_ _		•	103.00
Cable B to Antenna, Lightning Protection	None	_ _ _00		•	0.00
	Lightning Protection, 1M Cable B	_ _ _01		•	77.00
	Lightning Protection, 3M Cable B	_ _ _03		•	103.00
	Lightning Protection, 10M Cable B	_ _ _10		•	129.00
Radio	2.4 GHz FHSS		XF	•	36.00
	2.4 GHz DSSS, 802.15.4		XD b	•	0.00
	ISA100.11a 2.4 GHz DSSS-FH, 802.15.4		XS	•	0.00
Power	Battery		BA b	•	30.00
	24 VDC (Not ATEX/IEC/SAEx Approved)		DC	•	77.00
Stainless Customer Wired-On Tag			TG	g	25.00
Carbon Steel Transmitter Mounting Bracket			MB b	•	35.00
304 SS Transmitter Mounting Bracket			SB	•	80.00
Printed Copy of User's Manual			UM	•	72.00
1 Year Warranty Extension			W1	•	22.00
2 Year Warranty Extension			W2	•	37.00
Approval Type	Location/Classification				
No Hazardous Locations Approvals			9X	•	0.00
FM	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking		1C b	•	25.00
CSA us	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking		2C	•	25.00

Restrictions

a Only 0/4-20 mA input is certified as Intrinsically Safe
b Select only one option from this group.
d Available only with antenna and cable options _0000
e Requires a Cable A option (01, 03, or 10)
g Customer-supplied tag information, four lines, 28 characters per line

XYR6000 for Temperature

The temperature transmitter supports three thermocouple inputs, two RTD inputs, or one thermocouple and one RTD without sharing field wiring terminals. It can simultaneously support an integral probe and external inputs.

When the integral probe is a thermocouple, two external thermocouples or one external RTD can be wired to the transmitter. When the integral probe is an RTD, one external thermocouple or one external RTD can be wired to the transmitter.

Temperature Input Specifications

Compatible Inputs: Pt100, Pt200, and Pt500 RTDs, Thermocouple types E, T, J, N, K R, S, and B; Millivolts: 0 to 10, 0 to 50, 0 to 100; Resistance (Ohms): 0 to 100, 0 to 200, 0 to 500, 0 to 1000

Temperature Effect: ±0.01% full scale per ° C.

Stability: ±0.1% of upper range limit per year

Cold Junction Accuracy: ±0.5 ° C.

ISA100 Wireless COMPLIANT

Ordering Instructions

Make one selection from each table section below. Check any restriction letters or notes to be sure the unit is available. A finished catalog number looks like this: STIW600-000-0000-_ _ _ _ _-_ _,_ _,_ _ - XXXX

Model Selection Guide

Description		Catalog Number		Availability	Price
Temperature Transmitter (User-Supplied Sensor)		STTW400		•	$2396.00
Temperature/Discrete Input Transmitter		STTW401		•	2396.00
Future Options		000-0000		•	0.00
Antenna	2 dBi Integral Right-Angle, Vertical	V_ _ _ _		d	0.00
	2 dBi Integral Straight, Horizontal	S_ _ _ _		d	0.00
	4 dBi Integral Right-Angle, Vertical	R_ _ _ _		d	180.00
	8 dBi Remote Omnidirectional	M_ _ _ _		e	216.00
	14 dBi Remote Omnidirectional	D_ _ _ _		e	216.00
Cable A for Remote Antenna	None	_00_ _		•	0.00
	1M Remote Cable A, TNC-R-N	_01_ _		•	52.00
	3M Remote Cable A, TNC-R-N	_03_ _		•	77.00
	10M Remote Cable A, TNC-R-N	_10_ _		•	103.00
Cable B to Antenna, Lightning Protection	None	_ _ _00		•	0.00
	Lightning Protection, 1M Cable B	_ _ _01		•	77.00
	Lightning Protection, 3M Cable B	_ _ _03		•	103.00
	Lightning Protection, 10M Cable B	_ _ _10		•	129.00
Radio	2.4 GHz FHSS		XF	•	36.00
	2.4 GHz DSSS, 802.15.4		XD b	•	0.00
	ISA100.11a 2.4 GHz DSSS-FH, 802.15.4		XS	•	0.00
Power	Battery		BA b	•	30.00
	24 VDC (Not ATEX/IEC/SAEx Approved)		DC	•	77.00
Stainless Customer Wired-On Tag			TG	g	25.00
Carbon Steel Transmitter Mounting Bracket			MB b	•	35.00
304 SS Transmitter Mounting Bracket			SB	•	80.00
Printed Copy of User's Manual			UM	•	72.00
1 Year Warranty Extension			W1	•	22.00
2 Year Warranty Extension			W2	•	37.00
F3399 Calibration Test Report, Cert of Conformance			F1	•	35.00
Approval Type	Location/Classification				
No Hazardous Locations Approvals			9X	•	0.00
FM	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking		1C b	•	25.00
CSA us	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking		2C	•	25.00

Honeywell XYR6000 Field-Mount Wireless Transmitters

XYR6000 for Pressure

Pressure transmitters bring a proven technology to a wide spectrum of applications, from furnace combustion airflow rate to hydrostatic tank gauging.

STGW gauge pressure and STDW differential pressure transmitters can be used with any primary flow element to provide proven, repeatable flow measurements.

STAW absolute pressure transmitters can be used in applications where high accuracy in the vacuum pressure range is needed. Typical applications include low-pressure measurement in vacuum distillation columns, where energy savings are directly proportional to the vacuum in the column.

Specifications

Operating Conditions

Ambient Operating Temperature: -40° to 185° F

Humidity: 0 to 100%RH

Vibration: 4g max. over 15 to 200Hz.

Shock: 40g max.

Performance Under Rated Conditions

Accuracy: Greater of ±0.10% calibrated span or upper range value (URV), terminal based. *(Includes combined effects of linearity, hysteresis, and repeatability, and residual error after averaging successive readings)*

Zero Elevation/Suppression: No limit except minimum span from absolute 0 to 100% URL. Specifications valid over this range.

STGW Gauge Pressure Transmitter Specifications

Operating Conditions

Meter Body Temperature: -40° to 257° F

Minimum Operating Pressure (Vacuum Region): 2mmHgA, 1"WCA

Maximum Allowable Working Pressure (MAWP): *STGW944/94L:* 500 psi, 35 bar; *STGW974/97L:* 3000 psi, 210 bar; *STGW98L:* 6000 psi, 415 bar. Units can withstand overpressure of MAWPx1.5 without damage.

Performance Under Rated Conditions

Upper Range Limit: 500 psi to 6000 psi (depending on model)

Minimum Span: 20 psi to 500 psi (depending on model)

Zero Temperature Effect per 50° F: *STGW944/94L:* ±0.15% span; *STGW974/97L/98L:* ±0.20% span

Combined Zero/Span Temperature Effect per 50° F: *STGW944/94L:* ±0.225% span; *STGW974/97L/98L:* ±0.30% span

Stability: *STGW944/94L:* ±0.015% URL per year; *STGW974/97L/98L:* ±0.03% URL per year

STAW Absolute Pressure Transmitter Specifications

Operating Conditions

Meter Body Temperature: -40° to 176° F

Minimum Operating Pressure (Vacuum Region): Above 25 mmHgA (33 mbarA). Short term exposure (2 hours at 70° C/158° F) to full vacuum will not result in damage.

Maximum Allowable Working Pressure (MAWP): 750 psia, 52 barA; Units can withstand overpressure of 1.5X MAWP without damage.

Performance Under Rated Conditions

Upper Range Limit: 500 psia, 35 barA

Minimum Span: 20 psia, 1.4 barA

Zero Temperature Effect per 50° F: ±0.15% of span.

Combined Zero/Span Temperature Effect per 50° F: ±0.225% of span.

STDW Differential Pressure Transmitter Specifications

Operating Conditions

Meter Body Temperature: -40° to 257° F

Minimum Pressure (Vacuum Region): 2 mmHgA; 1"WCA

Maximum Allowable Working Pressure: 4500 psi (310bar)

Performance Under Rated Condition

Upper Range Limit: *STDW924:* 400" WC, 1000 mbar; *STDW930:* 100 psi, 7 mbar; *STDW974:* 3000 psi, 210 bar

Minimum Span: *STDW924:* 10" WC, 25 mbar; *STDW930:* 5 psi, 0.35 mbar; *STDW974:* 100 psi, 7 bar

Zero Elevation/Suppression: -5 to 100% URL; *STDW974:* -0.6 to 100% URL

Accuracy: Greater of ±0.10% calibrated span or URV; *STDW974:* Greater of ±0.175% calibrated span or URV

Zero Temperature Effect per 50° F: ± 0.15% span; *STDW974:* ± 0.20% span

Combined Zero and Span Temperature Effect per 50° F: ±0.225% span; *STDW974:* ±0.30% span

Zero Static Pressure Effect per 1000 psi: ±0.1625% span; *STDW974:* ±0.1625% span

Combined Zero/Span Static Pressure Effect per 1000 psi: ±0.30% span

Stability: ±0.015% URL per year; *STDW974:* ±0.03% URL per year

Ordering Instructions

Make one selection from each table section below. Check any restriction letters or notes to be sure the unit is available. A finished catalog number looks like this: ST_W9_ _-_ _ _-00000-_ _ _ _ _ - _ _ ,_ _ ,_ _ - XXXX

Model Selection Guide

Description				Catalog Number	Availability		Price
Dual Head Gage Pressure (GP) XYR6000 Wireless Transmitter Models							
0-20 to 0-500 PSI/0-1.4 to 0-35 bar				STGW944	↓		$2982.00
0-300 to 0-3000 PSI/0-21 to 0-210 bar				STGW974	↓		3119.00
Differential Pressure (DP) XYR6000 Wireless Transmitter Models							
0-10" to 0-400" H2O/0-25 to 0-1000 mbar				STDW924		↓	2982.00
0-5 to 0-100 PSI/0-0.34 to 0-7 bar				STDW930		↓	3084.00
0-100 to 0-3000 PSI/0-7 to 0-210 bar				STDW974		↓	3140.00
	Process Head	Vent/Drain Valve	Barrier Diaphragm				
Material	Carbon Steel	316 SS	316L SS	A _ _	•	•	0.00
	316 SS	316 SS	316L SS	E _ _	•		77.00
	316 SS	316 SS	316L SS	E _ _		•	79.00
	316 SS	316 SS	Hastelloy C	F _ _	•		160.00
	Hastelloy C	Hastelloy C	Hastelloy C	J _ _	•		917.00
Fill Fluid	Silicone DC200			_ 1 _	•	•	0.00
	CTFE			_ 2 _	•	•	58.00
Process Head	1/4" NPT			_ _ A	•	•	0.00
	1/2" NPT with Adapter (on 1/4" NPT Head)			_ _ H		k	0.00
No Selection				00000	•	•	0.00
Antenna	2 dBi Integral Right-Angle, Vertical			V _ _ _ _	d	d	0.00
	2 dBi Integral Straight, Horizontal			S _ _ _ _	d	d	0.00
	4 dBi Integral Right-Angle, Vertical			R _ _ _ _	d	d	180.00
	8 dBi Remote Omnidirectional			M _ _ _ _	e	e	216.00
	14 dBi Remote Omnidirectional			D _ _ _ _	e	e	216.00
Cable A for Remote Antenna	None			_ 00 _ _	•	•	0.00
	1M Remote Cable A, TNC-R-N			_ 01 _ _	•	•	52.00
	3M Remote Cable A, TNC-R-N			_ 03 _ _	•	•	77.00
	10M Remote Cable A, TNC-R-N			_ 10 _ _	•	•	103.00
Cable B to Remote Antenna	None			_ _ _ 00	•	•	0.00
	Lightning Protection, 1M Cable B			_ _ _ 01	•	•	77.00
	Lightning Protection, 3M Cable B			_ _ _ 03	•	•	103.00
	Lightning Protection, 10M Cable B			_ _ _ 10	•	•	129.00
Radio	2.4 GHz FHSS			XF	b	•	36.00
	2.4 GHz DSSS, 802.15.4			XD		•	0.00
	ISA100.11a 2.4 GHz DSSS-FH, 802.15.4			XS		•	0.00
Power	Battery			BA	•	•	30.00
	24 VDC (Not ATEX/IEC/SAEx Approved)			DC	•	•	77.00
Custom Calibration, ID in Memory				CC	•	•	37.00
Transmitter Configuration, ID in Memory				TC	•	•	37.00
Stainless Customer Wired-On Tag				TG	g	g	25.00
NACE A286SS Bolts, 304SS Nuts for Process Heads				CR	b	•	180.00
316SS Nuts and Bolts for Process Heads				SS		•	46.00
316SS 1/2" NPT Adapter Flange, Carbon Steel Bolts				S2	c	c	46.00
316SS 1/2" NPT Adapter Flange and Bolts				S3	bc	c	62.00
Hastelloy C 1/2" NPT Adapter Flange, 316 SS Bolts				T3	c	c	185.00
Side Vent/Drain (End Vent/Drain Std.)				SV	•	•	39.00
Carbon Steel Transmitter Mounting Bracket				MB	b	•	35.00
304 SS Transmitter Mounting Bracket				SB		•	80.00
Printed Copy of User's Manual				UM	•	•	72.00
Clean Transmitter for Oxygen or Chlorine Service				0X	h	h	220.00
F3399 Calibration Test Report, Cert of Conformance				F1	•	•	35.00
1 Year Warranty Extension				W1	b	•	22.00
2 Year Warranty Extension				W2		•	37.00
Approval Type	Location/Classification						
No Hazardous Locations Approvals				9X	•	•	0.00
FM	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking			1C	b •	•	25.00
CSA us	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking			2C	•	•	25.00

Ordering Instructions

Make one selection from each table section below. Check any restriction letters or notes to be sure the unit is available. A finished catalog number looks like this: ST_W9_ _-_ _ _-00000-_ _ _ _ _ - _ _ ,_ _ ,_ _ - XXXX

Model Selection Guide

Description				Catalog Number	Availability	Price
In-Line Gage Pressure (GP) XYR6000 Wireless Transmitter Models						
0-20 to 0-500 PSIG/0-1.4 to 0-35 bar				STGW94L	↓	$2982.00
0-300 to 0-3000 PSIG/0-21 to 0-210 bar				STGW97L	↓	3101.00
0-500 to 0-6000 PSIG/0-35 to 0-415 bar				STGW98L	↓	3163.00
0-500 to 0-10000 PSIG/0-35 to 0-690 bar				STGW99L	↓	3291.00
Absolute Pressure (AP) XYR6000 Wireless Transmitter Model						
0-20 to 0-500 PSIA/0-1.4 to 0-35 barA				STAW94L	↓	3283.00
	Process Head	Vent/Drain Valve	Barrier Diaphragm			
Material	316 SS	Teflon-Coated	316L SS	E _ _	•	0.00
	316 SS	Teflon-Coated	Hastelloy C	F _ _	•	87.00
Fill Fluid	Silicone DC200			_ 1 _	•	0.00
	CTFE			_ 2 _	•	58.00
Process Connect	1/2" NPT Female			_ _ G	•	0.00
	1/2" NPT Male			_ _ H	•	16.00
No Selection				00000	•	0.00
Antenna	2 dBi Integral Right-Angle, Vertical			V _ _ _ _	d	0.00
	2 dBi Integral Straight, Horizontal			S _ _ _ _	d	0.00
	4 dBi Integral Right-Angle, Vertical			R _ _ _ _	d	180.00
	8 dBi Remote Omnidirectional			M _ _ _ _	e	216.00
	14 dBi Remote Omnidirectional			D _ _ _ _	e	216.00
Cable A for Remote Antenna	None			_ 00 _ _	•	0.00
	1M Remote Cable A, TNC-R-N			_ 01 _ _	•	52.00
	3M Remote Cable A, TNC-R-N			_ 03 _ _	•	77.00
	10M Remote Cable A, TNC-R-N			_ 10 _ _	•	103.00
Cable B for Remote Antenna with Accessories						
Lightning Protection Cable B to Antenna	None			_ _ _ 00	•	0.00
	Lightning Protection, 1M Cable B			_ _ _ 01	•	77.00
	Lightning Protection, 3M Cable B			_ _ _ 03	•	103.00
	Lightning Protection, 10M Cable B			_ _ _ 10	•	129.00
Radio	2.4 GHz FHSS			XF	b •	36.00
	2.4 GHz DSSS, 802.15.4			XD	•	0.00
	ISA100.11a 2.4 GHz DSSS-FH, 802.15.4			XS	•	0.00
Power	Battery			BA	b •	30.00
	24 VDC (Not ATEX/IEC/SAEx Approved)			DC	•	77.00
Custom Calibration, ID in Memory				CC	•	37.00
Transmitter Configuration, ID in Memory				TC	•	37.00
Stainless Customer Wired-On Tag				TG	g	25.00
Carbon Steel Transmitter Mounting Bracket				MB	b •	35.00
304 SS Transmitter Mounting Bracket				SB	•	80.00
Printed Copy of User's Manual				UM	•	72.00
Clean Transmitter for Oxygen or Chlorine Service				0X	h	220.00
F3399 Calibration Test Report, Cert of Conformance				F1	•	35.00
1 Year Warranty Extension				W1	b •	22.00
2 Year Warranty Extension				W2	•	37.00
Approval Type	Location/Classification					
No Hazardous Locations Approvals				9X	•	0.00
FM	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking			1C	b •	25.00
CSA us	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking			2C	•	25.00

Restrictions

- b Select only one option from this group.
- c Available only with Process Head option _ _ G
- d Available only with antenna and cable options _ 0000
- e Requires a Cable A option (01, 03, or 10)
- g Customer-supplied tag information, four lines, 28 characters per line
- k Available only with material options S2, S3, and T3.

Honeywell XYR6000 Field-Mount Wireless Transmitters

XYR6000 Universal Multiple I/O Transmitter

Save time and money by eliminating the manual reading of field devices and avoid the cost of installing long runs of cable by using an XYR6000 wireless universal I/O transmitter.

Improve monitoring capabilities by using a flexible I/O transmitter to automate data collection from remote field devices that are either difficult or cost-prohibitive to reach.

The STUW700 universal I/O transmitter supports up to three inputs, which can be a combination of one to three high level 0/4-20 mA analog inputs, one to two thermocouple inputs or one to two discrete inputs.

The STUW701 Universal I/O transmitter supports two inputs, which can be a combination of one to two high level 0/4-20 mA analog inputs (0-20 mA/4-20 mA) or one to two thermocouple inputs or one to two discrete inputs plus one discrete output.

Specifications

Analog Inputs: *High level:* 0-20 or 4-20 mA; *Thermocouple:* Types B, E, J, K, N, R, S, and T; *Linear ranges:* 0-10, 0-50, and 0-100 mV

4-20 mA Input Loop Resistance: 24.9Ω

Discrete Input: Single SPST dry contacts. To maintain Intrinsically Safe rating, contacts must be limited to simple switches only. Maximum ON contact resistance 300Ω, minimum OFF contact resistance 100 KΩ

Discrete Output (STUW701 only): AC/DC voltage supply 30V max., Load current 0.5 Amps max.

Accuracy: ±0.10% range in mV at reference conditions for linear inputs; *Cold junction accuracy:* ±0.5° C

Temperature Effect: ±0.01% full scale per ° C

Stability: ±0.10% upper range limit (URL) per year

Battery Life: 5% duty cycle, approximately 1 year with digital output

Lightning Surge Arrester: Remote antenna only, *Frequency range:* 0-3 GHz, 50Ω, VSWR=1:1.3 max; *Insertion loss:* 0.4 dB; *Connectors:* Type N female; *Gas tube element:* 90V +20% max; *Impulse breakdown voltage:* 1000V +20%; *Withstand current:* 5 KA max.

Allowable Channel Combinations

STUW700			STUW701		
Channel 1	**Channel 2**	**Channel 3**	**Channel 1**	**Channel 2**	**Channel 3**
DI	DI	Always a high level analog input.	DI	DI	Always a discrete output.
DI	HLAI		DI	HLAI	
DI	T/C or mV		DI	T/C or mV	
HLAI	DI		HLAI	DI	
HLAI	HLAI		HLAI	HLAI	
HLAI	T/C or mV		HLAI	T/C or mV	
T/C or mV	DI		T/C or mV	DI	
T/C or mV	HLAI		T/C or mV	HLAI	
T/C or mV	T/C or mV		T/C or mV	T/C or mV	

Ordering Instructions

Make aselection from each section below. Check restriction letters to be sure the unit is available. A finished catalog number looks like this: STIW600-000-0000-_ _ _ _ _ - _ _ ,_ _ ,_ _ - XXXX

Model Selection Guide

Description		Catalog Number	Avail-ability	Price
Three Analog and Discrete Inputs		STUW700-	•	$2396.00
Two Inputs and One Discrete Output		STUW701-	•	2396.00
Future Options		000-0000	•	0.00
Antenna	2 dBi Integral Right-Angle, Vertical	V_ _ _ _	d	0.00
	2 dBi Integral Straight, Horizontal	S_ _ _ _	d	0.00
	4 dBi Integral Right-Angle, Vertical	R_ _ _ _	d	180.00
	8 dBi Remote Omnidirectional	M_ _ _ _	e	216.00
	14 dBi Remote Omnidirectional	D_ _ _ _	e	216.00
Cable A for Remote Antenna	None	_ 00 _ _	•	0.00
	1M Remote Cable A, Type N	_ 21 _ _	•	52.00
	3M Remote Cable A, Type N	_ 23 _ _	•	77.00
	10M Remote Cable A, Type N	_ 29 _ _	•	103.00
Cable B to Antenna, Lightning Protection	None	_ _ _ 00	•	0.00
	Lightning Protection, 1M Cable B	_ _ _ 01	h	77.00
	Lightning Protection, 3M Cable B	_ _ _ 03	h	103.00
	Lightning Protection, 10M Cable B	_ _ _ 10	h	129.00
Radio	2.4 GHz DSSS, 802.15.4	XD (b)	•	0.00
	ISA100.11a 2.4 GHz DSSS-FH, 802.15.4	XS (b)	•	0.00
Power	Battery	BA (b)	•	30.00
	24 VDC (Not ATEX/IEC/SAEx Approved)	DC (b)	•	77.00
Stainless Customer Wired-On Tag		TG	g	25.00
Carbon Steel Transmitter Mounting Bracket		MB (b)	•	35.00
304 SS Transmitter Mounting Bracket		SB (b)	•	80.00
Printed Copy of User's Manual		UM	•	72.00
1 Year Warranty Extension		W1	•	22.00
2 Year Warranty Extension		W2	•	37.00
Approval Type	Location/Classification			
No Hazardous Locations Approvals		9X (b)	•	0.00
FM	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking	1C (b)	•	25.00
CSA us	Intrinsically Safe, Explosion-Proof, Non-Incendive and Non-Sparking	2C (b)	•	25.00
Zinc-Plated Carbon Steel 1/2 NPT Socket Plug		50021832-501		61.58
Stainless Steel 1/2 NPT Certified Conduit Plug		50021832 -502		79.70
Surge Arrester for FHSS Antenna		50018279-590		204.07

Restrictions

b Select only one option from this group.
d Available only with antenna and cable options _0000
e Requires a Cable A option (01, 03, or 10)
g Customer-supplied tag information, four lines, 28 characters per line
h Includes surge arrester accessory, when ordered at time of purchase. To order surge arrester separately, use P/N 50018279-501.

Honeywell

XYR 6000 Valve Position Sensor

Lower System and Commissioning Costs

- Reduce wiring material and labor costs
- Quickly retrofit existing equipment
- Reduce system complexity
- Configure set points electronically
- Eliminate conduit easements
- Reduce the need for additional permits

Reliable Operations

- Real-time accurate monitoring of process parameters
- Rapid disaster recovery capability
- Identify stuck valve conditions
- Monitor true valve position to minimize risk of fluid mixing or cross-contamination

Higher Efficiency and Productivity

- Accurate valve position monitoring increases process efficiencies
- Electronic tagging of all system valves
- Improve efficiency of scheduled maintenance by targeting valves that have degraded
- Ability to add or move valve position sensors makes system scalable and flexible
- Eliminating manual valve checks reduces monitoring costs

Enhance Safety, Reduce Risk

- Reduce potential for unintended mixing of fluids
- Identify true valve position to reduce risk of unwanted fluid release
- Reduce need for human site monitoring in high-risk environments

Honeywell's XYR6000 valve position sensor allows remote, reliable valve position monitoring to help you avoid the time and safety risk of manually monitoring valves in hazardous areas and remote installations. Wireless technology eliminates the need for communications cabling or power line installation, saving time and money.

The XYR6000 valve position sensor is based on the proven and reliable MICRO SWITCH™ CX series hazardous location limit switch. These robust sensors are built to withstand the pressure of an internal explosion.

By combining the proven functionality of MICRO SWITCH technology with an enabler like the OneWireless network, these sensors can be used for remote monitoring applications, including: positioners, manual process valves, safety shower notification, tank level indication, door position, louver/damper position, or any other presence, absence or position sensing application where installing wires is inefficient or cost-prohibitive.

Need wireless for tank level? Call us!

- Gateway redundancy
- Historian functions
- OneWireless interface for Enraf tank level devices
- Peer-to-peer communications between Wireless Device Manager (WDM) and Experion systems and controllers

Specifications

ISA100 Wireless COMPLIANT

Operating temperature: -40° to 158° F

Approvals: *cCSAus:* Class I, Div 1, Groups A-D; Class II Groups E-G; Class III; *ATEX/IEC:* Ex – Ex d [ia] IIC T6 Gb; Ex tb IIIC T85C IP66/67 Db; *Radio and EMC:* FCC Part 15.247 Subparts B and C; *IC Method:* RSS-210, RSS-Gen Issue 2, ICES-003, Issue 4; *ETSI:* EN300 328 V1.7.1 EN301 893 V1.3.1 EN 301 489-17 V2.1.1 EN 301 489-1 V1.8.1 EN61326-1, 2006; *CE Mark:* Per EMC, LVD, and R&TTE Directives; ATEX Directive 94/9/EC; AS NZs 4771-2000; TNTC approved

Construction: *Housing and cover:* A380 Die Cast Aluminum Alloy; *Shafts and antenna adapter:* 303 stainless steel; *Antenna:* Use existing antenna options; *Conduit Plug:* Plated low carbon steel; *Nameplate:* Aluminum

Enclosure: NEMA 1, 3, 4, 6, 6P, 13, IP66, IP67; *Shock:* IEC 60068-2-27 (40g); *Vibration:* IEC 60068-2-6 (5g)

Mounting: Mounting holes tapped or through hole by request. Manual valve mounting bracket not included; call for custom brackets

Non-Sparking Actuator: Not included; Required on "splined shaft versions" but application specific

Removable Cover: The cover can be removed by trained service technicians to provide clear access to the IR port of the transmitter. The removal of the cover also facilitates access to calibration points and batteries.

Electrical Conduit/Antenna Interface: Two accesses in base, holes are tapped 3/4-14 NPT (six full threads min.); Product ships with a 2 dBi integral right-angle antenna assembly installed

Mechanical Options: Mounting holes are available as thru holes and tapped holes; Able to use all existing Honeywell antennae

Shaft Options: Spline shaft (non-sparking actuators required), D-shaped shaft, or NAMUR-style shaft interface; NAMUR mounting adapter plate available

Calibration: Done electronically by setting values for start point, range

Battery: Two C-cell Lithium batteries shipped installed

Kit Includes: CD with quick start guide, installation guide, and DD files

Ordering Instructions

Build your model number by choosing one option from each table section below. Check the availability column to be sure the unit you need is available. A finished catalog number looks like this: WCX1- _ - NA1AO _ _- _ _

Model Selection Guide

Description	Catalog Number	Availability	Price
XYR6000 Valve Position Sensor	WCX1-	↓	$1410.00
CSA North American Certifications	2-	•	0.00
ATEX European Certifications	3-	•	0.00
IEC Australia/New Zealand Certifications	C-	•	0.00
CSA, ATEX, and IEC Certified	A-	•	0.00
Standard Enclosure, Cover, Analog Output	NA1A0_-	•	0.00
Splined Shaft	_ _ _ _ _ A-	•	0.00
Direct Coupled Flattened Shaft	_ _ _ _ _ B-	•	0.00
Splined Shaft, Spring Return	_ _ _ _ _ C-	•	0.00
Direct Coupled Flat Shaft, Spring Return	_ _ _ _ _ D-	•	0.00
NAMUR Shaft, Spring Return	_ _ _ _ _ M-	•	0.00
NAMUR Shaft	_ _ _ _ _ N-	•	0.00
Standard 0.33"Thru Mounting Holes	A _-	•	0.00
3/18"-24 Thru Mounting Holes	B _-	•	0.00
Standard NPT Conduit Threads	_ 0-	•	0.00
M25 Conduit Threads	_ M-	•	0.00
Integral 2dBi Antenna, 90° Elbow, Right Side	V1	•	0.00
Integral 2dBi Antenna, 90° Elbow, Left Side	V2	•	0.00
Integral 2dBi Antenna, Straight, Right Side	S1	•	0.00
Integral 2dBi Antenna, Straight, Left Side	S2	•	0.00

Wireless Solutions for Monitoring Rotating Equipment

Honeywell OneWireless Rotating Equipment Solution Reduces Maintenance Costs by $20,000 per Asset per Year

ISA100 Wireless COMPLIANT

- Improve your plant's safety by monitoring key assets and detecting hazardous events and life-threatening incidents before they happen.
- Improve asset uptime by detecting problems early.
- Reduce maintenance costs and save $20,000 to $50,000 per asset per year.
- Reduce risk, costs and start-up time for Greenfield sites.
- Prevent repeated equipment failures.
- Reduce data collection costs which amount to $600 to $1,200+ per asset per year.

Customer Challenges

Rotating equipment failure is one of the main causes of plant downtime, accounting for 80% of a plant's maintenance budget. Still, 90% of rotating assets in industrial plants are not monitored, due to the high cost of wiring vibration monitoring systems.

Instead, these assets are checked manually by under-trained plant technicians or not checked at all, leading to a lack of information regarding the condition of plant assets, infrequent data collection, limited skilled resources to collect and analyze the data, and unexpected downtime and secondary equipment damage.

More and more plant managers are realizing that manual inspection is not sufficient to monitor vital assets or prevent equipment damage and plant downtime. They need a solution that is cost effective, easy to deploy and provides timely assessments of rotating assets via regular equipment status reports.

Proven Applications

A large U.S. paper mill wanted to extend the life of critical roller bearings on a costly asset. The mill routinely ran a biweekly walk-around to perform vibration and lubrication checks on rotating machinery. Technicians discovered high vibration on a press roll, but the mill production schedule required the equipment to remain in operation for another five days until the next scheduled shutdown.

During the shutdown, the bearings were lubricated and, in just a few hours, a wireless monitoring solution was installed. Over the next five days, bearing vibration was monitored closely and was kept in check by lubricating the bearings multiple times. The mill continued production, with an estimated savings of $100,000 in averted downtime. Without a wireless monitoring solution and the ability to continuously check the status of the bearings, the mill would have made the decision to shut down the asset.

In another case, an Italian chemical plant wanted to improve reliability and simultaneously reduce maintenance costs of their cooling tower fans. The fans were subject to periodic failure, so they required frequent monitoring, but they were difficult to access for maintenance. In the past, they used portable condition monitoring equipment to watch the fans: a wired solution would have been difficult and costly to install.

The plant opted for a wireless solution to monitor the fan bearings and gear boxes. Uptime for these critical production assets was significantly improved. They also saw reduced data collection and repair costs, improved safety for their maintenance team, and an increase in the capacity of the cooling tower.

Components

Honeywell's OneWireless Rotating Equipment Solution provides everything necessary to capture and analyze the condition of your plant assets. It consists of five key components: XYR 6000 Multiplexer Vibration model, Asset Manager software, OneWireless infrastructure, SKF @ptitude Analyst software, sensors and cables, and associated wireless and reliability services.

The XYR 6000 Multiplexer Vibration model is at the heart of the solution, and offers significant installation cost savings and faster project implementation than its wired alternatives. This field instrument supports four accelerometers with integrated temperature inputs. It also contains a powerful on-board processing engine to compute spectrums, time waveforms, and necessary pre-processing.

Vibration multiplexer is designed for FM Class 1 Div 2, CSA Div 2, and ATEX Zone 2 IS certification. It can be powered by internal batteries or a 9-30 V power supply. Input ports are IP 67 rated and don't require conduit as long as they're wired with the appropriate cables. The field instrument also supports remote antenna options.

Asset Manager Release 400 helps maintenance and operations workers focus their attention on the most critical issues that impact production. Asset Manager provides native support for vibration monitoring and contains several built in algorithms to detect rolling element bearing, gearbox, machine imbalance, and impeller failures. It also provides a common interface to monitor the health and performance of automation and production assets.

Asset Manager provides visual at-a-glance plant asset displays, like links to supporting documents, control loop performance, and symptom fault reports and graphs on demand and in multiple user-defined views.

The interface presents tree maps, trends and fault histories to enable a complete understanding of the health of plant assets and their continuous monitoring. Asset Manager also manages information such as asset-specific documentation and links as well as an extensive array of reports.

SKF @ptitude Analyst: SKF @ptitude Analyst is a comprehensive software solution with powerful diagnostic and analytical capabilities. SKF @ptitude Analyst provides fast, efficient and reliable storage, analysis, and retrieval of complex asset information and makes the information accessible throughout your organization. The software scales to your specific needs, whether it's used for operator inspection rounds, condition monitoring data collection or in-depth vibration analysis and expert advice.