



## WIRELESS REMOTE ASSET MONITORING & CONTROL

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## SIGNALFIRE TOOL KIT

- Free, easy to use PC configuration and diagnostics software.
- Supports wireless configuration of remote devices.
- Configures HART devices wirelessly with PACTware.

## SENTINEL

- Tubing, Casing and Line Pressure
- Tank Level Monitoring
- Pump Performance Monitoring
- Remote Well Shutdown
- Temperature Monitoring



## ABOUT SIGNALFIRE

### SIGNALFIRE WIRELESS REMOTE SENSING SYSTEM™

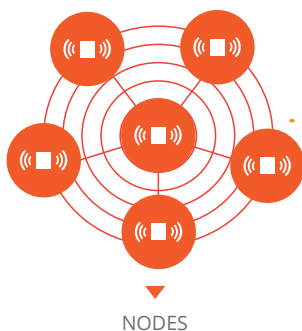
The SignalFire system is a robust, short-range mesh network designed to give asset managers access to valuable process data. Easy to install and sensor-agnostic, the wireless telemetry system can interface with many sensor types such as flow, level, pressure, and temperature, in controlling devices such as pumps, valves, heaters, fans, and lighting.

Designed for challenging industrial environments, the SignalFire Remote Sensing System has been deployed in oil and gas fields, petrochemical complexes, water treatment plants, and a variety of other remote applications.

Signalfire's break-through technology is also used in plants to allow plant managers to wirelessly transfer critical asset data from remote locations to gain greater control and visibility over process operations, while saving thousands in labor and system costs.

### BENEFITS:

- **Installation Savings** – eliminate conduit and wire costs, faster time to deploy
- **Quick Deployment of New Measurements** – add readings from new or existing sensors
- **Improved Operator Safety** – actuate valves and get data from safe location
- **Deterministic Data Transmission** – reliable communication in challenging environments



GATEWAY



INTERNET



SERVER



USER INTERFACE

SignalFire Remote Sensing Systems consist of nodes that integrate with different sensors to send data to a Gateway, where it is transferred to a monitoring & supervisory system.

## PRESSURE SCOUT

- Intrinsically Safe Pressure Sensor
- Tubing, Casing and Line Pressures
- Tank Level Monitoring
- Compressor Monitoring



## C1D1 SOLAR POWER

- Self contained, Intrinsically Safe solar power system.
- Powers both the Sentinel and attached sensor for continuous transmitter operations.



## MESH TECHNOLOGY

SignalFire's unique two-way 900MHz mesh technology provides the power and stability needed for reliable data transfer. We couple an innovative message-forwarding architecture with low-cost, high-power ISM-band radios, creating a simple, affordable system that's easy to deploy.

Our mesh-based technology is ideal for applications calling for many assets widely dispersed (up to 3 miles point-to-point); transfer of simple data in small volumes; and occasional rather than real-time reporting frequency. This system's use of 900MHz long-range radios solve the problem other wireless systems have with hills and buildings causing obstructions.

## SMART TECHNOLOGY

- Wireless nodes securely integrate themselves automatically into the network configuration
- Nodes analyze and adapt to network changes
- Transmits diagnostic data

## TRULY WIRELESS DATA TRANSFER

In battery-powered mode, the nodes enable truly autonomous sensor operation. As the batteries power the nodes and the sensor, external power lines are not necessary. Solar power units are also available.

## COMPATIBLE SENSOR TYPES:

- Analog 4-20 mA, 1-5 volt DC
- RS485 Modbus
- HART™
- Digital I/O, Counter/Totalizer
- Thermocouple, RTD
- Other Analog and Digital Interfaces
- Potentiometer

# INDUSTRIES/APPLICATIONS

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## VERSATILE, SENSOR-INDEPENDENT TECHNOLOGY FOR MANY INDUSTRIES

SignalFire's solutions and technology are applicable for O&G well pad automation, midstream/pipeline, refining, petrochemical, chemical processing, agriculture and water/wastewater facilities. The SignalFire platform enables users to make use of existing sensors and transmitters, regardless of brand or sensor type, making retrofits a breeze. Here are a few example industries:



### OIL & GAS FIELD

Onshore Well Pad Monitoring & Control - Due to the remote nature of this industry, onshore well pad operations are ideally suited to SignalFire's wireless telemetry networks. Our system is sensor independent, battery-powered, and C1D1 certified for use with a wide variety of system sensors used in the oil field.

- Tank level monitoring
- Tubing, casing, line pressure monitoring
- Remote well shutdown
- Chemical injection/flow measurement
- Gas monitoring (vented, flared, bio gas)
- Temperature monitoring
- Oil and water flow measurement
- Pump performance monitoring
- Valve position monitoring & actuation
- Plunger lift monitoring & control



### WATER & WASTEWATER

Precise systems management of a water treatment program is essential to reduce risks associated with under or over treating water, comply with current regulations, and improve plant productivity.

- Pump performance monitoring & control
- Lift station monitoring (sump level, pump runtimes/temp/vibration, AC power fail, flow blockage)
- Level monitoring (reservoirs, water towers, tanks)
- pH level monitoring



### PETROCHEMICAL

The chemical processing industry is another good fit for SignalFire products due to the vastness of the facilities, both inside and out. As in any processing industry, monitoring and control of numerous assets is needed on a continuous or scheduled basis. Adhering to safety standards and regulatory requirements require reliable data transmission.

- Tank level monitoring
- Chemical injection/flow measurement
- Batch processing/flow measurement
- Steam trap monitoring
- Pressure & temperature monitoring & control (process lines, cokers, heaters, boilers)
- Pump performance monitoring
- Valve actuation/pump control (pressure relief & shutoff valves)

# SIGNALFIRE PRODUCTS



## SENTINELS

### Intrinsically Safe Modules for Hazardous Areas

The Sentinel provides power and a wireless link to industry standard sensors.

Interfaces available:

- HART
- Analog
- Digital
- Modbus
- Turbine
- Thermocouple
- RTD
- Potentiometer
- SDI-12

Optional Class 1, Division 1 solar/battery module



- Powers sensor and radio for years with a internal battery
- Class I Division 1 intrinsically safe system
- Optional Class I Division 1 solar module with integrated charger, battery panel, and mounting bracket
- Costs less than 60ft of installed conduit
- Rugged design for demanding outdoor environments
- Up to 2600 feet (800 meters) range
- Sensor independent
- ½" NPT conduit interface
- Self configures as a star or mesh network
- Simple to install and maintain

## GATEWAYS

### Integrated Gateway and High-Gain Antenna

The Gateway is the central point of the wireless network. All data from remote nodes is collected at the Gateway.

Interfaces available:

- Gateway DIN Mount
- Gateway-In-a-Stick
- Ethernet Gateway



- Modbus interface (RS485 RTU or Modbus TCP with optional Ethernet Gateway Interface Module)
- Up to 3+ mile (5 km) range
- Stores all sensor data in Modbus format
- Manages outbound communications
- Low power consumption
- Integrated high-gain omnidirectional antenna and Gateway electronics
- Supports wireless configuration of remote nodes and HART devices via PACTware or Radar Master

## FLOW TOTALIZER

Class I Division 1 Intrinsically Safe Wireless Flow Totalizer with Local Display



- Local display with flow rate, totalizer and diagnostics
- Integrates with industry standard turbine meters
- Up to 2600 feet (800 meters) range
- Real-time clock with battery backup
- Built-in 30-day data historian/backup storage

# SIGNALFIRE PRODUCTS



## PRESSURE SCOUT

### Intrinsically Safe Wireless Pressure Transmitter

The Pressure Scout is a wireless pressure transmitter with integrated radio and battery. Available in various pressure ranges.

- Powers integrated pressure sensor and radio for 10 years with an internal battery
- Class 1 Division 1 intrinsically safe system
- Rugged design for outdoor environments
- Up to 2600 feet (800 meters) range
- ½" NPT process connection standard
- Rapid pressure sampling with configurable alarms and report by exception

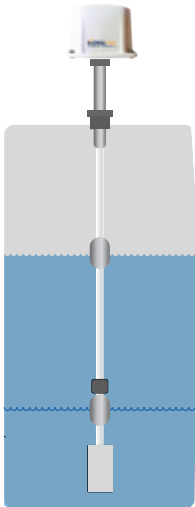


## TILT SCOUT

### Intrinsically Safe Wireless Inclinometer Sensor

The TiltScout is a wireless solid state inclinometer that measures an angle from horizontal with two modes: Hatch detection and Pump Jack detection.

- 3 Axis Accelerometer constantly monitors angle and reports status. Will report on state change.
- Hazardous Location Certified – Class 1 Division 1
- Rugged design for outdoor environments
- Magnetic mounting or with built-in installation holes
- Pushbutton zeroing
- Long battery life (greater than 5 years)
- Up to ¼ mile range



## FLOAT SCOUT

### Intrinsically Safe Wireless Tank Level Monitoring System

Complete tank level system, available with flexible or rigid magnetostrictive level probe with single or dual floats for level and interface measurements.

- Rugged oil field proven
- Complete wireless tank level monitoring solution
- Wireless configuration
- Flexible or rigid probe
- Wide range of lengths
- Multiple float and temperature probes



## REMOTE SHUTDOWN SYSTEM

Gateway or PLC controlled asset monitoring and shutdown system

- No PLC programming required
- Simple table-based configuration logic
- Configurable failsafe features
- Up to 3+ mile (5 km) range



## WIRELESS I/O MODULE

### DIN Mounted Node for Wireless Network

Operates as a pair in point-to-point mode for I/O mirroring applications or as a remote node as part of a SignalFire network.

- 4 analog inputs
- 4 analog outputs (0-20mA or 0-5V)
- 2 digital inputs
- 2 digital outputs (1 DPDT, 1 SPST)
- Acts as a repeater for other SignalFire wireless devices
- Wide range DC power input (10-30VDC)
- Up to 3-mile (5km) range
- DIN rail mount with pluggable screw terminal blocks
- Status LEDs



## A2 LONG RANGE NODE

Multiple-input modules for sophisticated data transmission over distances of up to three miles between nodes. Available interfaces include Analog (1-5V, 4-20mA), HART™ (4 devices multi-drop), Modbus, and Thermocouple

- Powers sensor and radio for years with an internal battery
- Optional solar power package
- Costs less than 60ft of installed conduit
- Rugged design for outdoor environments
- Up to 3-mile (5 km) range
- Sensor independent
- ½" NPT conduit interface



## OTHER INTERFACE MODULES

SignalFire provides a variety of interface modules specifically designed for easy connectivity and communication with their suite of wireless networking products. Choose the best module for your system, or a SignalFire representative can help you design a system that meets your needs.

- Connector Breakout Board – to configure and connect to “Stick” products
- Remote Shutdown Device – for use with the RSD Stick
- Ethernet Interface Module – with Modbus TCP interface
- Gateway Output Module – with 8 analog outputs and 2 relay outputs
- Multi I/O Stick System – with 8 analog and 6 digital inputs, can be connected to a variety of devices, for use with Modbus Stick System
- Totalizer Module – stores the last 30 daily totals, ideal for flare monitoring



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