

## Inversion System for Mosquito Abatement and Air Quality Applications

The WeatherHawk Inversion Detection System is designed for easy installation and use by mosquito control technicians and resource managers. This system is preconfigured to provide essential meteorological data and to alert users automatically when weather conditions indicate a temperature inversion. With accurate weather information, mosquito abatement managers can more efficiently use assets and they can save money through better management of chemical sprays.

The system is easy to set up and easy to use. It measures, displays, and logs real-time data, including air temperature at two levels, wind speed, wind direction, and relative humidity. The user sets a temperature threshold to signal an inversion, as well as an alarm to alert staff when a temperature inversion occurs. The inversion system monitors weather conditions, and when a temperature inversion is detected the software sends a visual software alert as well as an alert in the form of an SMS text message to one or multiple cell phones. This signals to resource managers that conditions are optimal for spraying.

The WeatherHawk Inversion system is shipped fully assembled and ready for use. The system includes meteorological sensors, with a weatherproof enclosure for the system controller (datalogger) and for the rechargeable battery. The system can be powered by external AC power or an optional solar panel. The Inversion system can be either:

- Mounted on a user supplied mast or tower, or
- Installed on a 30-ft mast purchased from WeatherHawk  
(Both temporary and permanent masts are available.)

Operationally, the WeatherHawk onboard microprocessor automatically measures the sensors, and then stores the data in an onboard datalogger before transmitting it to the user's remote computer (PC or Mac). Wireless versions of the system communicate with the computer using a 916-MHz spread-spectrum radio. With line-of-sight conditions, the WeatherHawk spread-spectrum radio can transmit over distances of up to one-half a mile.

Easy 4 Step Installation:

1. Assemble a 30 ft mast.
2. Install the WeatherHawk Inversion sensors, enclosure, and power supply.
3. Erect mast.
4. Install WeatherHawk XP/X Inversion Software.

The field installation is an easy 2-person setup, and a typical user can begin monitoring weather information directly in about 2 hours.



### WeatherHawk Inversion measures:

- Air Temperature at 3 ft & 30 ft
- Wind speed
- Wind direction
- Relative humidity

### WeatherHawk Inversion sends alerts:

- SMS alerts to cell phones
- Screen alerts on PC/Mac

### WeatherHawk

### Inversion software features:

- PC/Mac compatible
- Logs, graphs, and displays real-time data
- Internet compatible to produce an Inversion Alert Webpage with an optional IP server module (requires Ethernet connection to Host PC/Mac)
- Multi-user capable

# Specifications

WeatherHawk 232: serial data (wired) communications  
WeatherHawk 916: on-board 916 MHz spread spectrum  
radio communications, US/Canada

## Temperature Inversion System

Temperature Range: -40 to +158° F (140 to +70° C)

Data Storage: 128 kbytes of nonvolatile Flash  
RAM (~32,000 data points)

Power  
Requirements: 16 to 22 Vdc

Radio Type: Spread Spectrum

Frequencies: 916 MHz (WeatherHawk 916  
Inversion)

### **Wireless Radio – Campbell Scientific RF401**

Radio Type: Spread Spectrum  
Frequencies: 916 MHz (WeatherHawk  
Inversion 916)

I/O Data Rate: 9600 baud

Average Current  
Drain: 10 mA

### **Power Supply**

Battery: Integrated, 2.9 Ahr lead acid

(Optional Battery Chargers)

AC Converter: Wall adapter, 18 V

Solar Panel: 5 W

### **Antenna (Wireless Systems Only)**

Description: Omnidirectional, ¼ wave, whip  
(fully enclosed in weatherproof  
housing)

Gain: 0 dBd

Transmission

Range: ½ mile (0.8 km) line of sight

### **Sensors**

#### **Air Temperature (30 ft)**

Sensor: Thermistor

Operating Range: -58° to +158°F (-50 to +70°C)

Accuracy: ±1°F at -58° to +158°F  
(±0.6°C at -50 to +70°C)

#### **Air Temperature (3 ft)**

Sensor: Platinum Resistance  
Thermometer

Operating Range: -13° to +140°F (-25 to +60°C)

Accuracy: ±1°F at -13°F (±0.6°C at -25°C)  
±0.9°F at 32° F (±0.5°C at 0°C)  
±1.8°F at 140°F (±0.8°C at +60°C)

#### **Relative Humidity**

Sensor: Capacitive

Accuracy at 68°F: ±3% RH (0 to 90% RH)  
±5% RH (90 to 98% RH)

#### **Wind Direction:**

Sensor: Vane  
Range: 360° mechanical, 352° electrical  
Linearity: 1%  
Sensitivity: ~1m s-1 (2.2 mph)

#### **Wind Speed**

Sensor: Cup anemometer  
Starting Threshold: 0.78 m s-1 (1.75 mph)



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