Columbia
Weather Systems

Magellan 420™
Weather Stations

Sonic Wind | Temperature | Humidity | Pressure | 4-20 mA Output

www.columbiaweather.com

Innovative Weather Monitoring

The Magellan 420 Weather Station™ offers a complete weather station for industrial PLC interface, featuring a high-tech, all-in-one sensor module with sonic wind direction and speed measurements, capacitive relative humidity, temperature and barometric pressure readings. Tipping bucket rain gauge is optional. The Magellan also incorporates an internal flux-gate compass. High accuracy and fine resolution make this system ideal for precision weather monitoring.

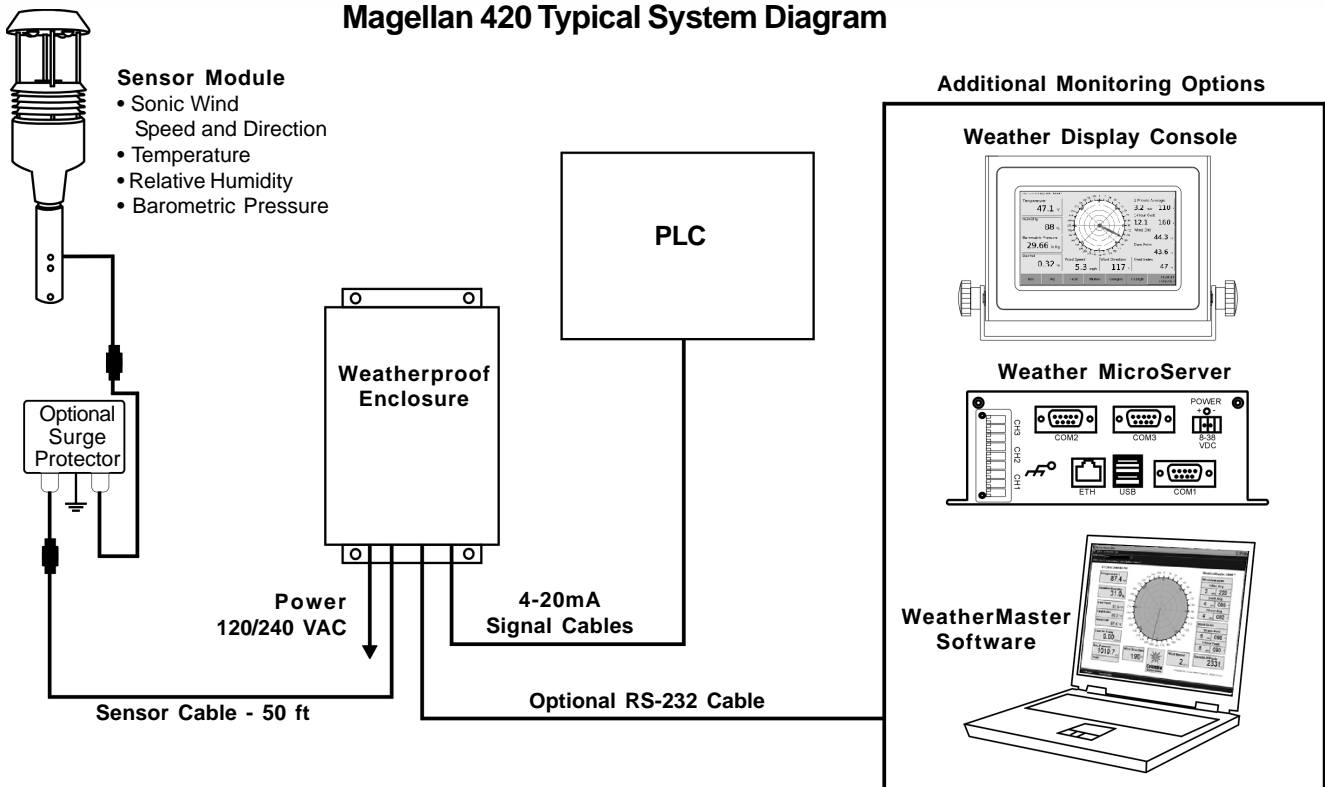Users can monitor weather data on PLC software such as Wonderware®.

Additional optional monitoring devices are our proprietary Weather Display Console, WeatherMaster™ Software and/or the Weather MicroServer.

Magellan 420 Weather Station Features

- Five essential weather parameters measured in one instrument
- 4-20 mA current output for all parameters
- Sonic technology ensures excellent data availability and 360 degree wind measurement accuracy
- Internal flux-gate compass enables auto-alignment of wind direction - great for mobile or portable applications
- No moving parts means virtually no maintenance
- Easy to install with no field calibration or maintenance
- Compact and robust sensor in durable, corrosion-resistant housing
- Starting threshold for wind speed and direction is virtually zero
- Optional tipping bucket rain gauge

Magellan 420 Typical System Diagram

Additional Monitoring Options

Sensor Module
- Sonic Wind Speed and Direction
- Temperature
- Relative Humidity
- Barometric Pressure

PLC

Weatherproof Enclosure

Optional Surge Protector

Power 120/240 VAC

4-20mA Signal Cables

Sensor Cable - 50 ft

Optional RS-232 Cable

Weather Display Console

Weather MicroServer

WeatherMaster Software

Call or email for a quote • toll-free 1 888-508-7375 • info@columbiaweather.com

Optional Monitoring Devices

Color Weather Display Console™

Magellan 420™
Weather Stations

The Weather Display Console uses "intelligent" touch-screen technology. With its programmable microprocessor and abundant memory, the console displays weather information, performs complex computations, and stores data.

The Weather Display Console features a seven-inch, TFT color LCD panel with 800 x 480 pixels resolution. It can connect directly to the weather station with a serial port or to the Weather MicroServer utilizing existing Ethernet.

The display console is flexible and can be factory-programmed to suit specific market and industry requirements. It is available in three mounting options:

• Desktop/Wall-Mount • Panel Mount/Flush Mount • 19" Rack Mount

WeatherMaster™ Software
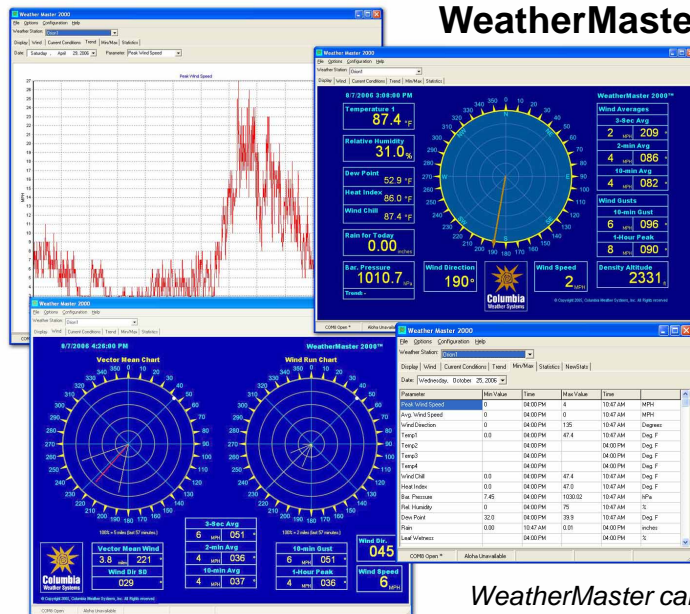
This professional-grade software is designed to optimize the capabilities of CWS Weather Stations. Providing real-time computer weather monitoring, WeatherMaster offers:

• Display and automatic logging of all measured and calculated parameters

• Downwind vector wind and wind character-plotting screens

• An open Microsoft Access® database for archival with easy retrieval and compatibility with other Windows® programs

• On-the-fly graphing and trend display of all parameters

• Alarm notification via computer, email, pager or cell phone

• Multi-station monitoring and data acquisition

• Quick-North orientation

• Interface with CAMEO/ALOHA software for plume modeling and evacuation corridor predictions

WeatherMaster can be customized to meet specific industry requirements.
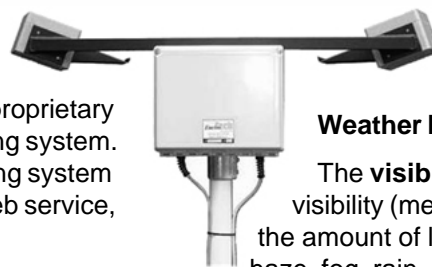
Weather MicroServer™

The Weather MicroServer is a self-contained, proprietary computer utilizing an embedded Linux operating system. It creates an "Internet-ready" weather monitoring system by automatically providing FTP output, XML web service, and Internet browser user interface.

SNMP and Modbus/OPC communication protocols are standard for Industrial Management applications.

The Weather MicroServer has datalogging capability. It connects to your network with an included Ethernet cable.

Two serial ports offer interface to both the Weather Display Console and additional peripheral devices or sensors such as visibility, solar radiation, and the Orion LT wind sensor.

The Weather MicroServer can provide real-time weather data to WeatherMaster Software over the network. This allows users to simultaneously monitor the weather using WeatherMaster on any network computer.

Weather MicroServer Optional Sensors:

The **visibility** sensor measures atmospheric visibility (meteorological optical range) by determining the amount of light scattered by particles (smoke, dust, haze, fog, rain, and snow) in the air that pass through the optical sample volume. A 42-degree forward scatter angle ensures performance over a wide range of particle sizes.

The **solar radiation** sensor measures the shortwave radiation reaching the Earth's surface.

Self-cleaning convex lens to measure even low-angle radiation directly from the sun in the morning and evening. Dome-shaped head prevents water accumulation.

Also Available: **Orion LT Wind-Only Sensor**

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Sensor Specifications

Magellan 420™ Weather Stations

Temperature

Range: -40 to +60°C (-40 to +140°F)
Accuracy: ±0.2°C (0 to 60°C);
   ±0.5°C (-40 to 0°C)

Resolution: 0.1°C (0.1°F)
Operating Temperature: -50 to +70°C

Barometric Pressure

Range: 17.50 to 32.50 InHg (600 to 1100 hPa)
Accuracy: ±0.5 hPa (at 25°C)
Resolution: 0.1 hPa

Wind Speed

Range: 0-134mph (0-60 m/s)
Accuracy: +/-0.5 m/s or 5% of reading
Resolution: 0.2 mph (0.1 m/s)

Wind Direction

Range: 0 to 360°
Accuracy: ± 5° at wind speed > 2.2 m/s
Resolution: 1.0°

Relative Humidity

Range: 0 to 100%
Accuracy: ±3% at 25°C
Resolution: 1.0%

Compass

Accuracy: ±2°
Resolution: 1°

Optional Tipping Bucket Rain Gauge
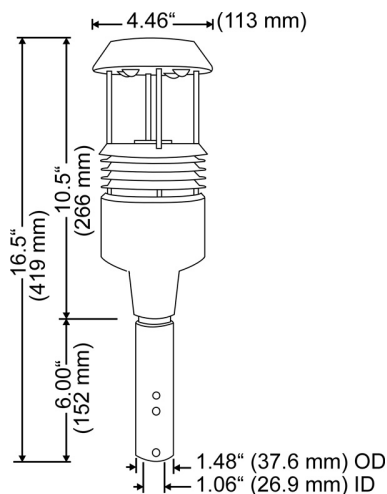
Accuracy: ±1% at 2 in./hr or less
Resolution: 0.01 inch

Physical

Materials: Anodized aluminum and stainless
   steel with white gloss powder coat
Weight: 0.91 kg (2.0 lbs)
Mounting: Accepts 1" (25.4mm) OD pole

4.46" (113 mm)
16.5" (419 mm)
10.5" (266 mm)
6.00" (152 mm)
1.48" (37.6 mm) OD
1.06" (26.9 mm) ID

Parameter Measurements

Temperature

The temperature sensor in the Magellan uses a precision triple-element thermistor. This provides highly accurate and stable temperature readings.

Humidity

The relative humidity sensor is a capacitive polymer sensor. The humidity sensor elements' construction provides excellent resistance to wetting, dust, dirt, oils, and common environmental chemicals.

Barometric Pressure

The barometric pressure sensor is a stable transducer using nano-technology, yielding a linear and repeatable sensor with low hysteresis. The piezoresistive pressure sensor module is mounted on a small electronic circuit board.

A microcontroller controls the operation of the sensor and the data interface. The microcontroller polls the pressure sensor module once per second for the barometric pressure and ambient temperature. The raw readings are temperature corrected by the microcontroller.

Wind Measurement

A unique folded-path, low-power sonic anemometer operates on the principle that the speed of the wind affects the time it takes for sound to travel from one point to a second point. If the sound is traveling in the direction of the wind, then the transit time is decreased. If the sound is traveling in a direction opposite the wind, then the transit time is increased.

Fluxgate Compass

The internal compass module is low power and compact. It employs a pair of magneto-inductive sensors which change inductance with varying magnetic field strengths, to sense the Earth's magnetic field.

The microprocessor measures the output of the internal compass and then corrects wind direction data for the orientation of the sensor. The output of the wind direction is relative to magnetic North. A user programmable value of Magnetic Declination may be entered through terminal mode to enable output relative to True North rather than Magnetic North.

Optional Tipping Bucket Rain Gauge

Complex spun collector funnel with a knife edge that diverts the water to a tipping bucket mechanism. For each tip, a magnet causes an electronic pulse that is recorded. The rainfall sensor is completely automatic - spent water drains out of the bottom of the housing, requiring no servicing.

System Includes:

- Magellan Sensor Transmitter with 50 foot cable and mounting adapter
- Weatherproof Enclosure with two 4-20 mA converter modules and power supply

Recommended: Surge Suppressors

Optional: Tipping Bucket Rain Gauge

Please contact us today for a free quotation!