

Orion™

Weather Stations

Ultrasonic Wind | Temperature | Relative Humidity | Rainfall | Barometric Pressure



columbiaweather.com



Innovative Weather Monitoring

The Orion Weather Station™ includes a high-tech, all-in-one sensor module with ultrasonic wind direction and speed measurements, a highly-accurate impact rain sensor, capacitive relative humidity, temperature and barometric pressure readings.

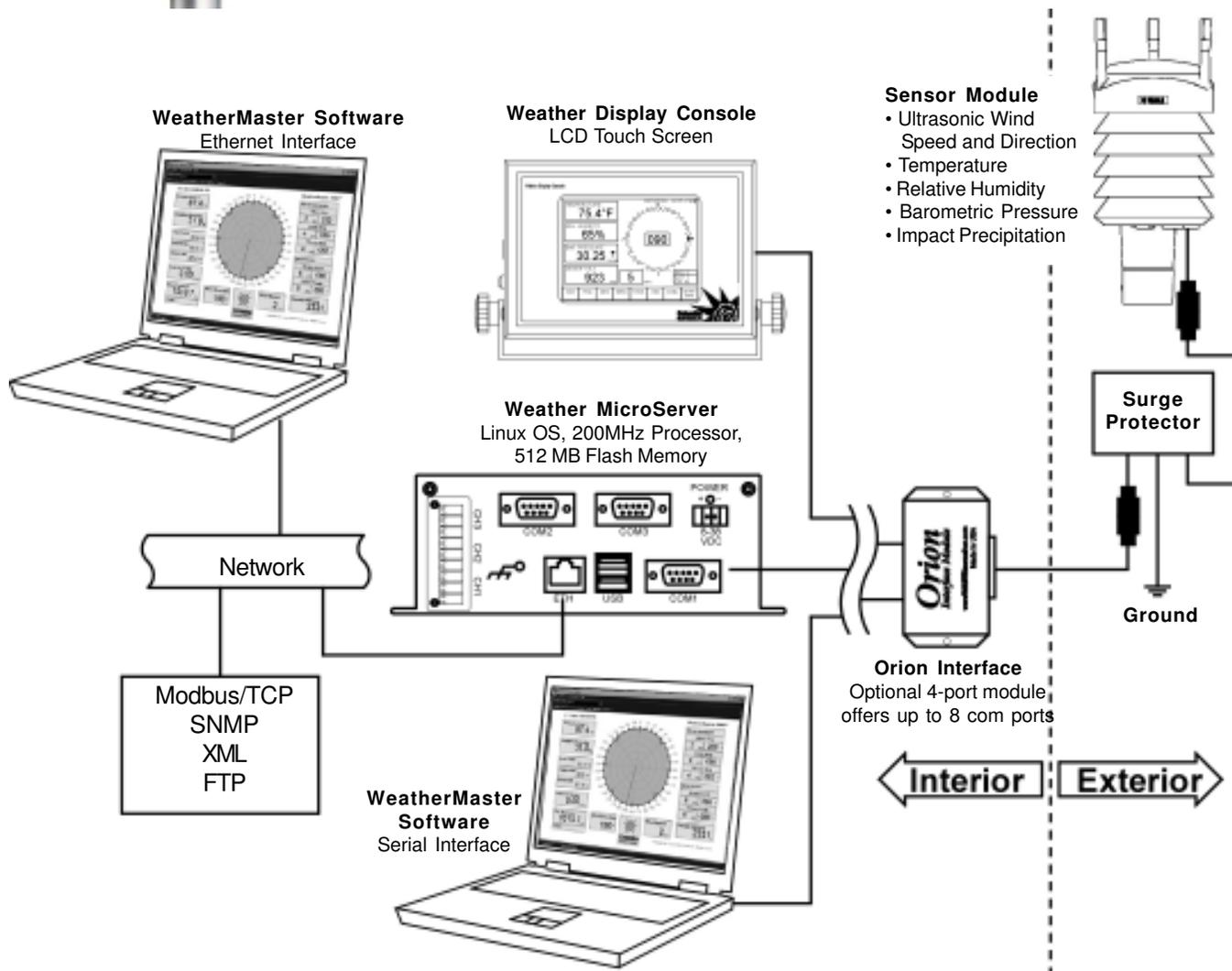
High accuracy and fine resolution make this system ideal for precision weather monitoring.

Available in three types of systems – **fixed-mount, vehicle-mount, and the Orion Nomad™ portable weather station** – Orion data can be monitored with our proprietary Weather Display Console and/or WeatherMaster™ Software.

Orion LX™ weather stations include the Weather MicroServer for Internet-ready output as well as industrial automation interfaces including Modbus/TCP.

Orion Weather Stations Feature

- Various sensor configuration options
- Accurate and stable measurement
- Ultrasonic wind sensor and impact precipitation sensor
- No moving parts means virtually no maintenance
- Low power consumption improves reliability and longevity
- Compact and lightweight with a single cable for quick and easy installation
- Optional Weather MicroServer for Internet-ready data and Industrial interfaces
- LCD touch-screen display console and powerful software options



Orion™ Weather Stations

Color Weather Display Console™

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.

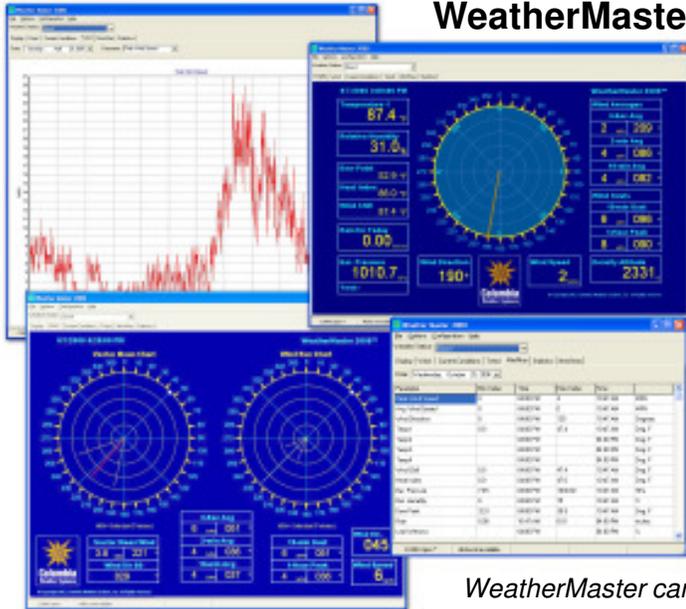
The Weather Display Console features a seven-inch, TFT color LCD panel with 800 x 480 pixels resolution. It can connect directly to the weather station with a serial port or to the Weather MicroServer utilizing existing Ethernet.

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 Orion 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 is used to ensure performance over a wide range of particle sizes.

For applications requiring additional **wind speed and direction**, the Orion LT wind-only sensor module offers ultrasonic technology for high accuracy and stability. Triangular design ensures excellent data availability and 360° measurement accuracy with a starting threshold of virtually zero. A heated model is available.



Temperature

Range: -60 to 140°F (-52 to +60°C)
 Accuracy: ±0.5°F (±0.3°C) at 68°F (+20°C)
 Resolution: 0.1°F (0.1°C)
 Units Available: °F, °C

Barometric Pressure

Range: 17.50 to 32.50 InHg (600 to 1100 mbar)
 Accuracy: ±0.015 InHg (0.5 mbar) at +32 to 86°F (0 to 30°C)
 Resolution: 0.01 InHg (0.1 mbar)
 Units Available: KPa, mbar, InHg, HPa

Wind Speed

Range: 0 - 135 mph (0 - 60 m/s)
 Accuracy: ±3% at 10 m/s
 Resolution: 1 mph (1 m/s)
 Units Available: knots, mph, km/hr, m/s

Wind Direction

Azimuth: 0 - 360°
 Accuracy: ±3°
 Resolution: 1°

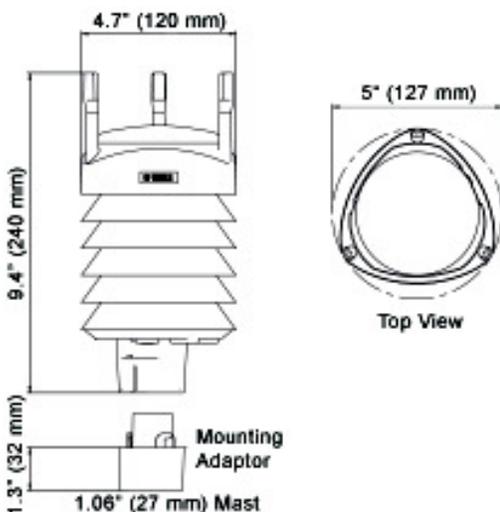
Relative Humidity

Range: 0 - 100%RH
 Accuracy: ±3%RH (0-90%), ±5% (90-100%)
 Resolution: 1%RH
 Units Available: %RH

Rainfall

Range: cumulative
 Collection Area: 60 cm²
 Accuracy: ±5% (spatial variations may exist)
 Resolution 0.001 in. (0.0254mm)
 Units Available: mm, inches

Orion Transmitter/Sensor Module



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Parameter Measurements

Barometric Pressure, Temperature, and Humidity are combined in a tri-sensor module utilizing a capacitive measurement method for each parameter.

A radiation shield protects the sensors from both scattered and direct sunlight and precipitation. The composite material in the plates offers excellent thermal characteristics and UV stabilized construction. The white outer surface reflects radiation, while the black inside absorbs accumulated heat.

The internal sensor module is easily replaceable and available as a spare part.

Barometric pressure is measured using a silicon-based sensor. The temperature sensor is ceramic. Relative humidity measurement is highly accurate with negligible hysteresis and excellent long-term stability in a wide range of environments.

Wind Measurement

Wind speed and direction are measured using advanced ultra-sonic technology. Three equally-spaced ultrasonic transducers on a horizontal plane ensure accurate wind measurement from all directions, without blind angles or corrupted readings.

Rainfall Measurement

Rainfall is measured with an impact sensor which detects the size and impact of individual rain drops. The resulting signals are proportional to the volume of the drops. Hence, the signal from each drop can be converted directly to the accumulated rainfall.

This measurement method eliminates scattering, flooding and clogging, as well as wetting and evaporation losses.

Additional Calculated Parameters

Data from these sensors are computed to provide calculated parameters including Dew Point, Heat Index, Wind Chill, Degree-Day Temperatures and Density Altitude.

System Configurations

Orion weather stations are available in Fixed-Mount, Vehicle-Mount and Orion Nomad™ Portable system configurations.

All systems include the Orion Interface Module with dual communication ports and the Orion Transmitter Module with the following sensors:

- Ultrasonic wind speed and direction sensor with alignment adapter
- Impact rainfall sensor
- Barometric pressure, temperature, humidity sensor module in radiation shield

Fixed-Mount Weather Stations include 50-ft cable. Optional accessories:

- Sensor mast and mounting hardware options
- Extra cable length
- Wireless Transceivers

Vehicle-Mount Weather Stations include a detachable 8-ft telescoping sensor mast and mounting hardware.

Orion Nomad Portable Weather Stations include wireless transceivers, batteries, transportation case and tripod with telescoping mast.

Weather Monitoring Options

- WeatherMaster Software
- Weather Display

Please contact us for a free quotation!