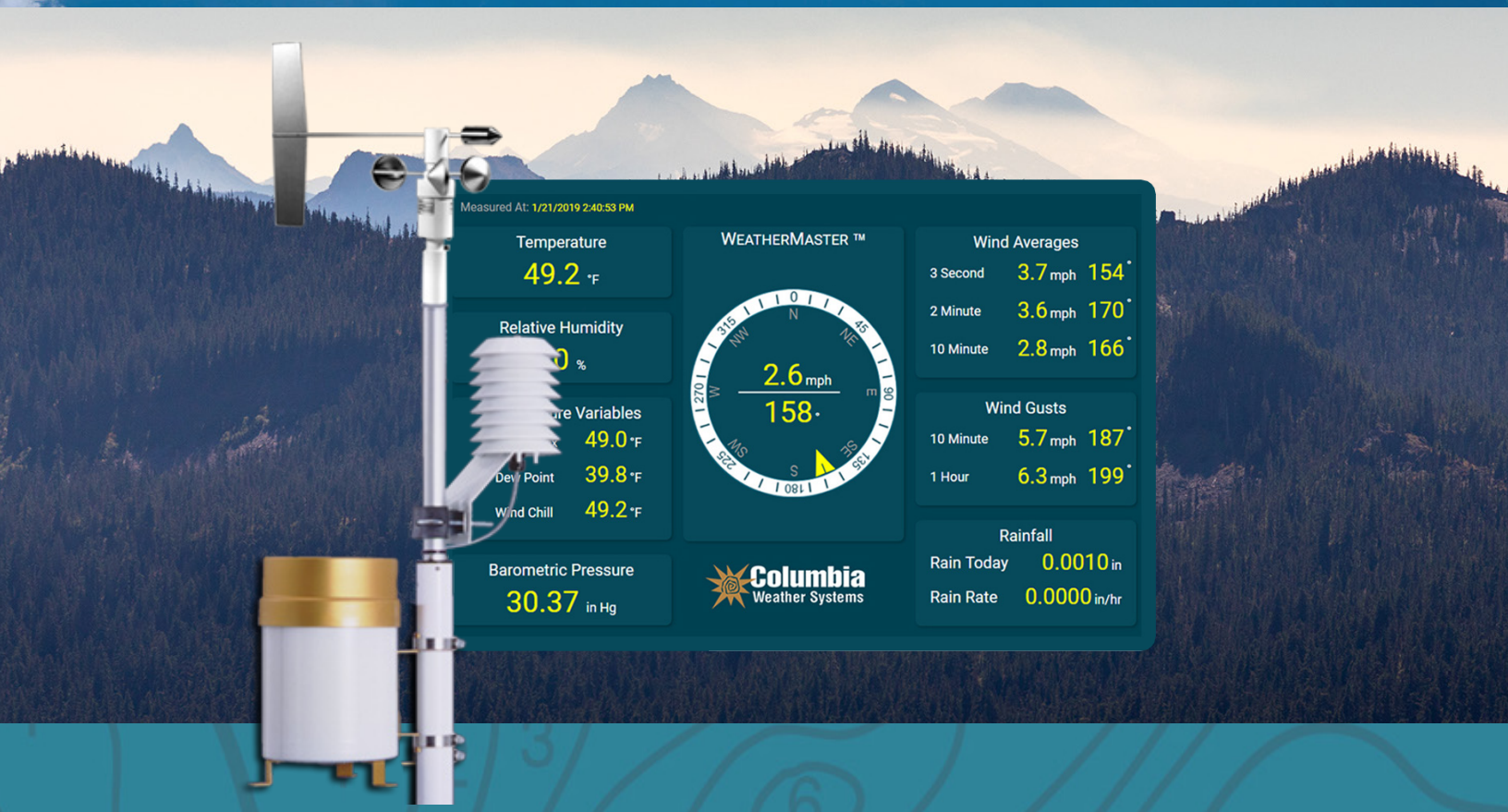
Capricorn FLX™

WEATHER STATIONS

Wind | Temperature | Humidity | Rainfall | Barometric Pressure | Solar Radiation



Columbia
Weather Systems

Modular, Reliable Meteorological Monitoring

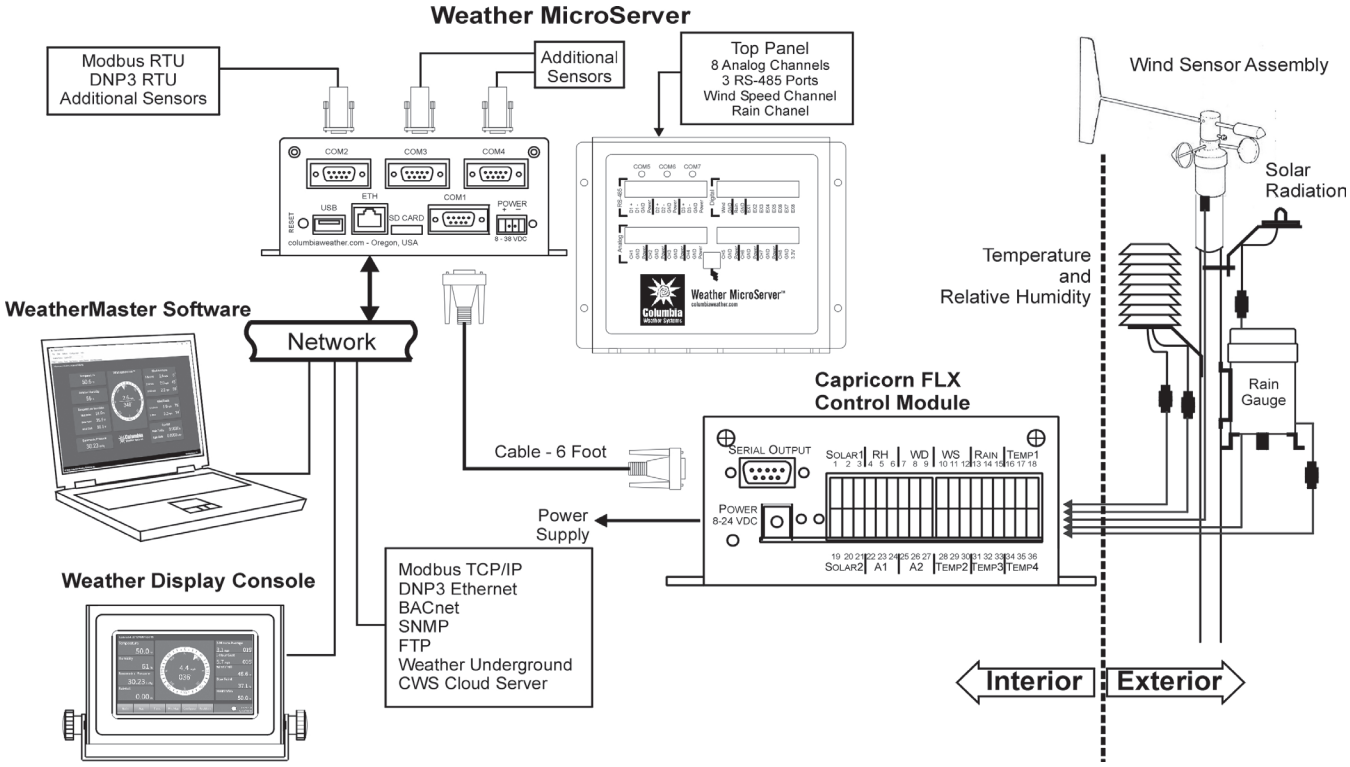
Capricorn FLX™ weather station's modular design offers flexible parameter selection for optimal sensor location. Low power consumption makes this system compatible with alternate power sources such as solar and battery where required.

The Control Module can accept signal inputs from the following met sensors:

- Mechanical Wind Direction and Speed (heavy-duty, heated available)
- Relative Humidity
- Temperature (up to four total; air, soil and/or water)
- Barometric Pressure (internal to Control Module)
- Rain Gauge (tipping bucket)
- Solar Radiation (up to two total)
- Two general purpose analog channels for additional sensors such as Leaf wetness and Soil Moisture

Capricorn FLX data can be monitored with our proprietary Weather Display Console™, WeatherMaster™ Software, and/or the Weather MicroServer™ for Internet-ready output as well as industrial automation interfaces including Modbus TCP/IP. All systems come standard with a one-year warranty.

System Diagram



Monitoring Options

Weather MicroServer™

Self-contained, proprietary weather data logger and powerful communication device. Compatible with all CWS weather stations and offers:

- Browser interface
- Data logging with 1-year capacity at 1-min interval
- "Internet-ready" weather monitoring with FTP output, XML, and Internet interfaces
- Industrial communication protocols (Modbus, DNP3, BACnet, and SNMP)

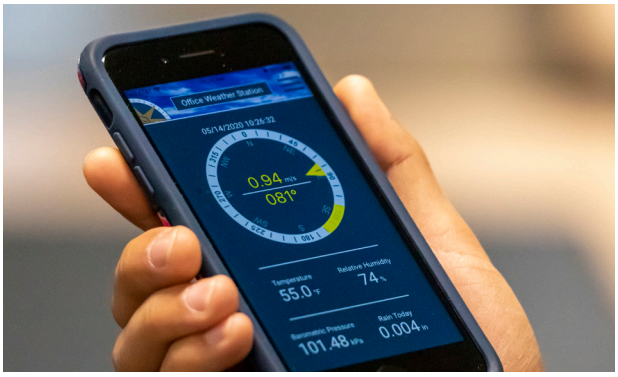
Four serial ports offer interface to the weather station and additional sensors such as visibility and ultrasonic wind sensors. Analog and digital channels available for additional sensor such as temperature, solar radiation, and rain gauge. The MicroServer provides real-time weather data to WeatherMaster software and the Display Console over the network. This allows users to simultaneously monitor the weather over the network.

Cloud Weather Server™

Free with the Weather MicroServer, this service offers real-time weather data monitoring on the Internet.

- View display screen remotely from any device using a web browser
- Data uploaded every five seconds
- Be alerted to critical weather conditions with alarm feature that generates email and push notifications
- For one or more weather stations

CWS Weather Monitor App™



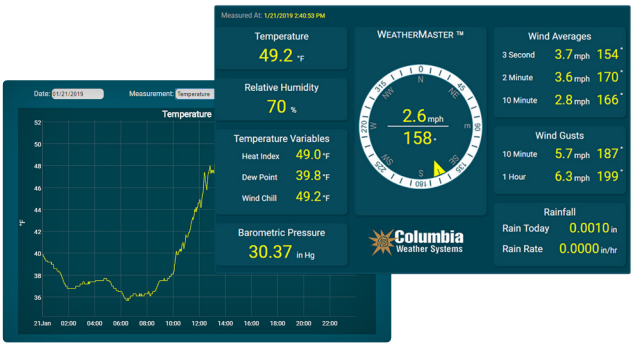
Check current conditions quickly from a hand-held mobile device for decision-making in the field. The CWS Weather Monitor App is compatible with all CWS weather stations that include the Weather MicroServer.

The app includes three real-time monitoring screens which display standard meteorological parameters. Access to a Cloud Weather Server account is required.

Color Weather Display Console™

"Intelligent" touch-screen technology incorporates programmable microprocessor and abundant memory to display weather information, perform complex computations, and store data.

- Seven-inch, TFT color LCD panel with 800 x 480 pixels resolution
- Connect directly to the weather station with a serial port or to the Weather MicroServer utilizing existing Ethernet
- Three mounting options: Desktop/Wall-Mount, Panel Mount/Flush Mount, 19" Rack Mount



WeatherMaster™ Software

Professional-grade software providing real-time computer weather monitoring with display and automatic logging of all measured and calculated parameters.

- Expandable SQL database to archive measured and calculated parameters
- Graphing and trend display of all parameters
- Alarm notification via computer, email, and/or text
- Multi-station monitoring and data acquisition
- Interface with CAMEO/ALOHA software for plume modeling and evacuation corridor predictions
- Interface with Weather Underground

4-20 mA Signal Output

For industrial PLC interface, the Orion 420™ offers 4-20mA signal output to interface to PLC, DCS, and SCADA systems.

Specifications

Temperature: Digital semiconductor type
Accuracy: ± 0.9°F from +14° to 185°F
± 3.6°F from -67° to 257°F
Resolution: 0.01°F

Barometric Pressure: MEMS; temperature compensated and calibrated
Accuracy: ± 0.03 in. Hg (1 hPa)
Range: 14.8 to 32.5 in. Hg (500 to 1100 hPa)
Resolution: 0.001 in. Hg (0.01 hPa)

Wind Speed: Sealed reed switch
Accuracy: ± 0.25 mph from 0 to 23 mph, ± 1% from 24 to 160 mph
Range: 0 to 160 mph (139 knots)
Resolution: 1 mph
Starting Threshold: 0.9 mph

Wind Direction: Precision Potentiometer
Resolution: 2 degrees
Range: 0 to 360 degrees
Accuracy: ± 4 degrees

Relative Humidity: Capacitance
Accuracy: ± 3% (or better) from 10 to 90% RH
Temperature Effect: less than <±1.5% RH
Stabiltiy: ± 2% RH over 2 years
Reporting Resolution: 1% RH

Rainfall: Tipping bucket
Accuracy: ± 1% at 2 in./hr or less
Resolution: 0.01 inch

Solar Radiation: Silicon photodiode
Cosine Response: 45° zenith angle ± 1%, 75°zenith angle ± 5%
Absolute Accuracy: ± 5%
Uniformity: ± 3%
Repeatability: ± 1%
Output Responsivity: 0.200 mV per W/m^2
In full sunlight: 220 mV (1,100 W/m^2)
Linear Range: 0 - 350 mV (0 - 1,750 W/m^2)
Sensitivity: 5.00 W/m^2 per mV

Parameter Measurements

Wind Measurement: Durable aluminum/stainless steel wind sensor assembly. Wind direction sensor uses precision potentiometer. Wind speed sensor uses a sealed reed switch.

Barometric Pressure: The on-board barometric pressure sensor provides accurate pressure data with full temperature compensation. The sensor outputs are digitized by a high-resolutions 24-bit analog to digital converter.

Ambient Temperature: Up to four temperature sensors can be connected. Digital, semiconductor-type probes all connect to a single port, reducing susceptibility to noise interference, reducing cost, and increasing accuracy

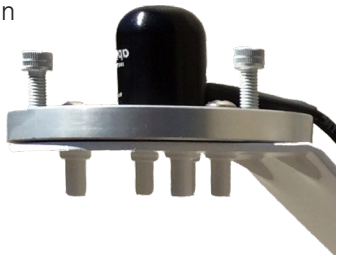
Panel-Mount Temperature: For solar panel monitoring.

Soil/Water Temperature: Sealed in thermally conductive epoxy for protection against corrosion and moisture.

Humidity: This compact capacitive sensor can be installed in a radiation shield for protection from the elements. This sensor offers long-term stability with minimal drift and resistance to contamination.

Rainfall: Tipping bucket electronic rain gauge composed of a 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 to be recorded. The rainfall sensor is completely automatic and requires no servicing.

Solar Radiation: The pyranometer or solar radiation sensor is calibrated to measure the shortwave radiation reaching the Earth's surface, measured in Watts per square meter. Self-cleaning dome-shaped head prevents water accumulation. Sensor head is potted solid to prevent internal condensation in humid environments.



System Configurations

The Capricorn FLX weather station includes:

- Control Module with barometric pressure
- Select sensors with cable
- Select desired monitoring option(s) from previous page
- One-year warranty
- 50-ft sensor cables. Optional sensor mast, mounting hardware, and extra-length cable available.

Contact us today for a free quotation!

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