



Capricorn FLXTM

Weather Stations

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



ColumbiaWeather.com



Innovative Weather 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 meteorological sensors:

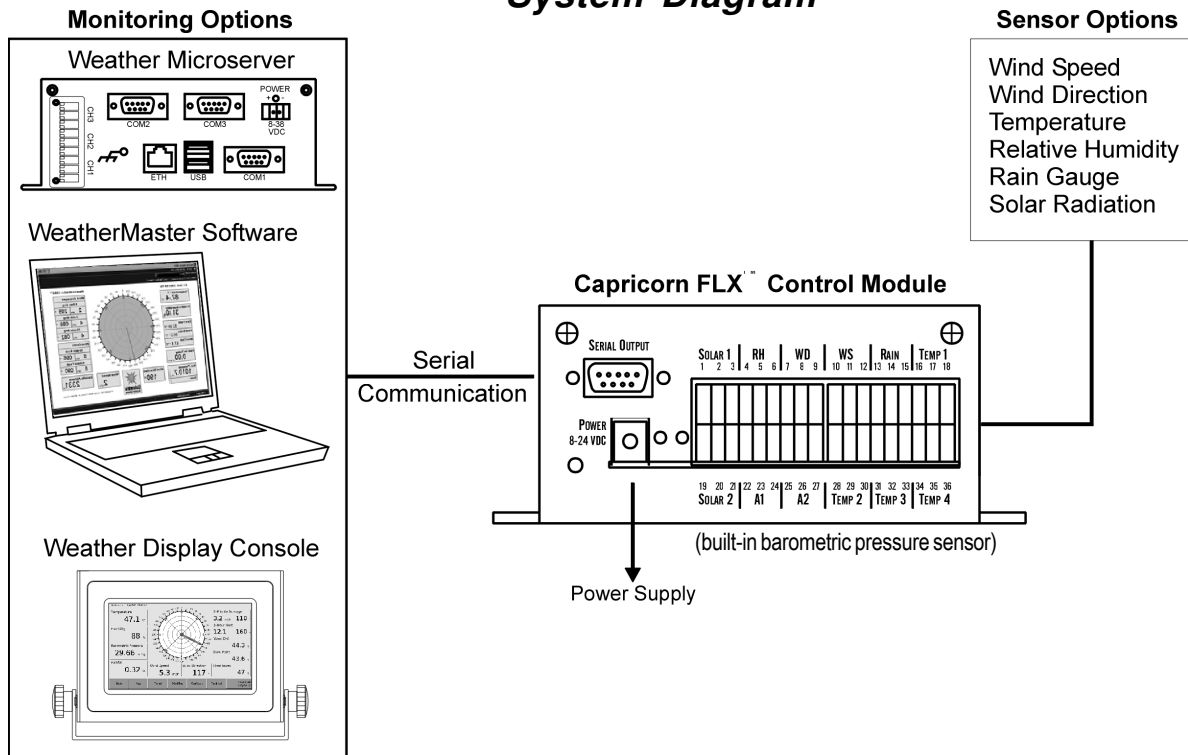
- Mechanical wind direction and speed (heavy-duty, heated available)
- Relative humidity
- Temperature (up to four total; air, soil and/or water)
- Barometric pressure (internal to Control Module)
- Rain gauge (tipping bucket)
- Solar radiation (up to two total)
- Two general purpose analog channels for additional sensors

The Capricorn FLX is available in three configurations: **fixed-mount**, **vehicle-mount**, and **the Pegasus FLX™ portable weather station**.

Meteorological data can be monitored with:

- Weather Display Console™
- Weather Master™ Software
- Weather MicroServer™
- 4-20 mA signal output

Capricorn FLX Weather Monitoring System Diagram



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Capricorn FLX™ Weather Stations

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.

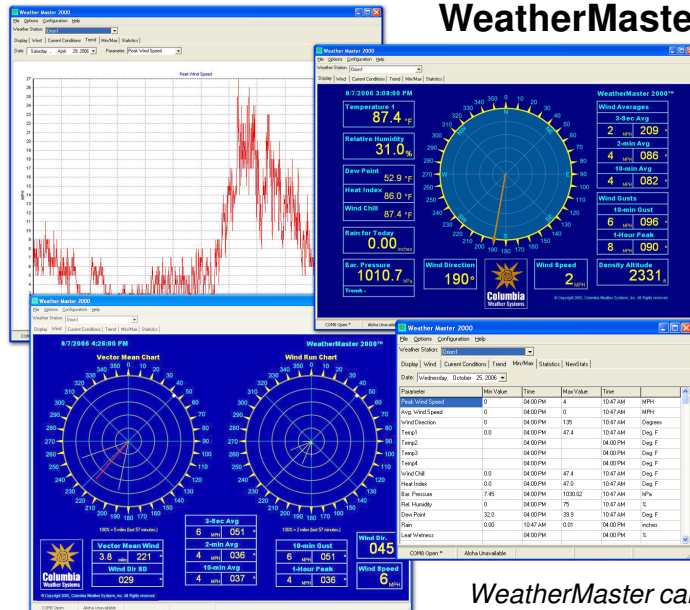
The Weather Display Console features a seven-inch, TFT color LCD panel with 800 x 480 pixels resolution. It can connect directly to the weather station with a serial port or to the Weather MicroServer utilizing existing Ethernet.

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 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.

4-20 mA Signal Output

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

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Sensor Specifications

Temperature: Digital semiconductor type
Accuracy: $\pm 0.9^{\circ}\text{F}$ from $+14^{\circ}$ to 185°F
 $\pm 3.6^{\circ}\text{F}$ 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, $\pm 1\%$ 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: $\pm 3\%$ (or better) from 10 to 90% RH
Temperature Effect: less than $\pm 1.5\%$ RH
Stability: $\pm 2\%$ RH over 2 years
Reporting Resolution: 1% RH

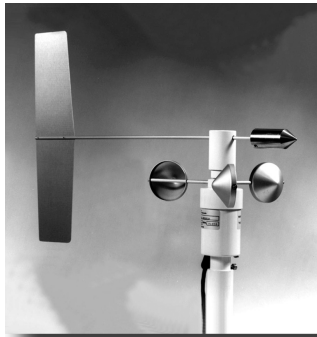
Rainfall: Tipping bucket
Accuracy: $\pm 1\%$ at 2 in./hr or less
Resolution: 0.01 inch

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



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Capricorn FLX™ Weather Stations



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.

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.

Additional Temperature Options:

Panel-mount for solar panel monitoring.

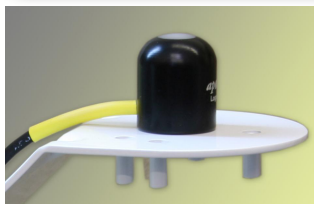
Soil/Water Temperature sealed in thermally conductive epoxy for protection against corrosion and moisture.

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 m^{-2} . Self-cleaning dome-shaped head prevents water accumulation. Sensor head is potted solid to prevent internal condensation in humid environments.



System Configurations

Fixed-Mount Weather Stations Optional accessories:

- Monitoring options
- 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. Monitoring options.

Pegasus Portable Weather Stations include wireless transceivers, batteries, transportation case and tripod with telescoping mast. Monitoring options.

Please contact us for a free quotation!