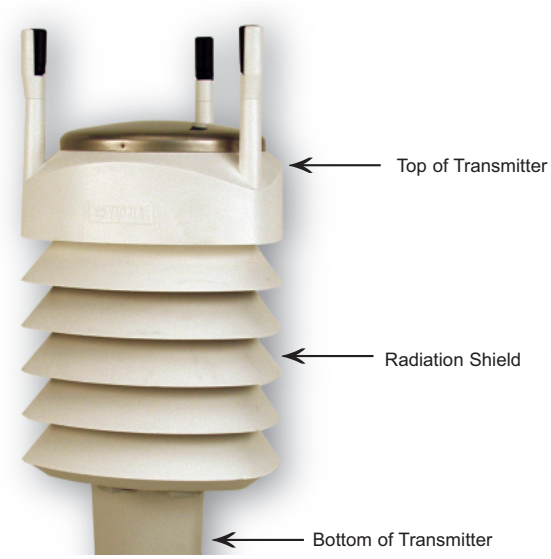
Weather Transmitter
Model WXT510

The WXT510 Weather Transmitter, manufactured by Vaisala, measures wind speed and direction, precipitation, barometric pressure, temperature, and relative humidity—all in a single device that has no moving parts. The WXT510's SDI-12 signal can be measured by any of our SDI-12 equipped dataloggers. The WXT510 is about the size of our larger Gill radiation shield, making it ideal for use with our CR200-series dataloggers in applications requiring quick, short-term deployment. However, the WXT510 is not intended for weather stations that require research-grade performance.



The WXT510 can be mounted on a CM202, CM204, or CM206 crossarm via the 18311 mounting pipe and the CM220 bracket. The 18311 pipe is shipped with the WXT510.

Wind Speed and Direction

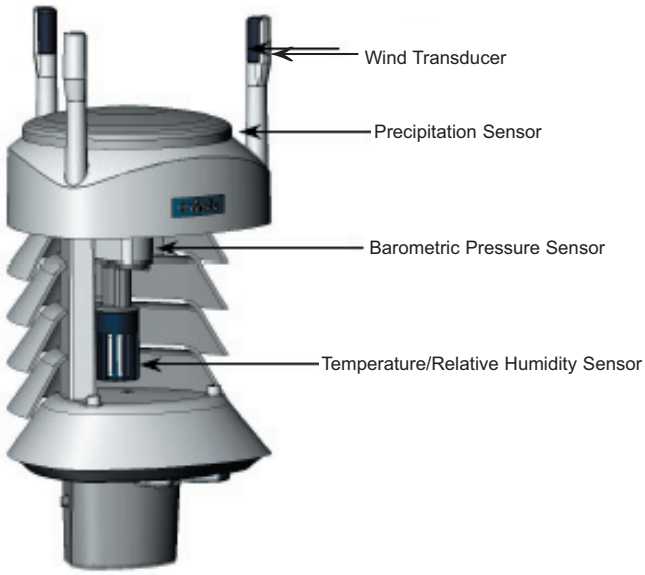
The WXT510's wind sensor consists of three equally spaced transducers that produce ultrasonic signals. Wind speed and direction are determined by measuring the time it takes for the ultrasonic signal of one transducer to travel to the other transducers.

Precipitation

Precipitation is measured one raindrop at a time. Whenever a raindrop hits the precipitation sensor, an electrical signal is produced that is proportional to the volume of the drop. From this signal, the precipitation is calculated.

Barometric Pressure, Temperature, and Relative Humidity

The WXT510 has a PTU module that contains a capacitive silicon BAROCAP® sensor for barometric pressure measurements, a capacitive ceramic THERMOCAP® sensor for air temperature measurements, and a capacitive thin film polymer HUMICAP® sensor for relative humidity measurements. The PTU is housed in a naturally-aspirated radiation shield that protects the PTU and reflects solar radiation.



A cut-away drawing of the WXT510 shows all of the sensors contained in this weather transmitter.

Note: A heated version is available; contact Campbell Scientific for more information.

Specifications

Wind speed

Measurement Range: 0 to 60 m s^{-1}

Accuracy: ±0.3 m s^{-1} or ±3% whichever is greater (0 to 35 m s^{-1}); ±5% (36 to 60 m s^{-1})

Wind Direction

Measurement Range: 0° to 360°

Accuracy: ±3°

Precipitation

Rainfall: cumulative accumulation after latest automatic or manual reset.

Accuracy: 5% (due to the nature of the phenomenon, deviations caused by spatial variations may exist in precipitation readings, especially in short time scale. The accuracy specification does not include possible wind induced error.)

Rain Duration: counting each ten second increment when droplet detected.

Rain Intensity: one minute running average in ten second steps.

Barometric Pressure

Measurement Range: 600 to 1100 hPa

Accuracy: ±0.5 hPa @ 0° to 30°C; ±1 hPa @ -52° to +60°C

Air Temperature

Measurement Range: -52° to +60°C

Accuracy: ±0.3°C @ +20°C

Relative Humidity

Measurement Range: 0 to 100% RH

Accuracy: ±3% RH @ 0 to 90% RH; ±5% RH @ 90 to 100% RH

Assembly

Input Voltage: 5 to 30 Vdc

Typical Current Drain: 3 mA with default measuring intervals

Output: SDI-12

Operating Range: -52° to +60°C; 0 to 100% RH

Dimensions: 9.4" (24.0 cm) height, 4.7" (12.0 cm) diameter

Weight: 1.43 lbs (650 g)

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