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.

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.

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)