

METEOROLOGY HYDROLOGY

ENVIRONMENTAL MONITORING

## Ultrasonic wind speed and direction sensor

## Description

The Compact Weather Sensor is belongs to the product family of professional intelligent measurement transducers with digital interface for environmental applications.

Ultrasonic sensor technology is used to take the measurements for :

- Wind direction
- Wind speed

Measurement output can be accessed by the following protocols:

- UMB Binary;
- UMB ASCII;
- SDI-12;
- NMEA (PCTAN013; PCTAN016)
- MODBUS.

The wind meter uses 4 ultrasonic sensors which take cyclical measurements in all directions. The resulting wind speed and direction are calculated from the measured run-time sound differential. The sensor delivers a quality output signal indicating how many valid readings were taken during the measurement interval.

In accordance with the specified sampling rate, the value of the last measurement is transmitted when the current measurement value is requested. Each measurement is stored in a circular buffer for the subsequent calculation of minimum, maximum and average values.

When requesting the minimum and maximum values, the corresponding value is calculated - via the circular buffer at the interval (1 - 10 minutes) specified in the configuration - and transmitted.

When requesting the average value, this is calculated - via the circular buffer at the interval (1 - 10 minutes) specified in the configuration - and transmitted. In this way moving averages can also be calculated.

For some values the standard deviation is calculated for the same interval. The calculation of standard deviation will only be activated after the related UMB channel has been requested for the first time.

For wind measurement, values are calculated vectorially. To this end, the average values of the vectors are generated internally. Hence the value (wind speed) and angle (wind direction) of the vector are calculated.

Technical specifications may be varied without prior notice













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rechnical specifications	
WIND DIRECTION	
Measuring principle	Ultrasonic
Measuring range	0 359,9
Accuracy	<3° <2° (PCTAN016)
Resolution	0,1°
Sampling rate	250ms ; 1 —10 sec.
WIND SPEED	
Measuring principle	Ultrasonic
Measuring range	0 75m/s 0 90m/s (PCTAN013; PCTAN016)
Accuracy	0,3m/s or 3% (0 35 m/s) of the reading - $\pm$ 5% (>35m/s) 0,2m/s or 2% (0 65 m/s) of the reading - $\pm$ 5% (>65m/s) (PCTAN016)
Resolution	0,1m/s
Sampling rate	1 sec / 10 sec (internal sampling frequency 15Hz) 250ms; 1 – 10 seconds (PCTAN013; PCTAN016)
VIRTUAL TEMPERATURE (PCTAN013; PCTAN016)	
Measuring principle	Ultrasonic
Measuring range	-50 +70°C
Accuracy	$\pm 2.0^{\circ}$ C (unheated and without solar irradiation or wind speed above 4m/s)
Resolution	0,1°C
GENERAL FEATURES	
Interface	RS 485, 2-fili, half duplex RS 485, 2 o 4-fili, half o full duplex (PCTAN013; PCTAN016)
Power supply	12 24V ±10% (12V without heater)
Heater	20VA @ 24Vdc 240VA @ 24Vdc (PCTAN016)
Operating humidity	0 100%rh
Operating temperature	-40 +60°C
Protection rate	IP66
Dimensions	Approx. Ø 150mm x 194mm
Weight	Approx. 0,8kg

## **Ordering codes**

Ultrasonic wind speed and direction sensor (digital serial output)	PCTAN012
Ultrasonic wind speed and direction sensor (with 4 $\dots$ 20mA converter - power supply: 24V) - Plastic version	PCTAN013
Ultrasonic wind speed and direction sensor (with 4 20mA converter - power supply: 24V) - <b>Metal version for extreme conditions</b>	PCTAN016

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