METEOROLOGY
HYDROLOGY
ENVIRONMENTAL MONITORING

Multiparametric sensor

Description

The sensor belongs to a family of multiparameter systems, with digital interface, for the measurement of multi parametric environmental values. The sensor integrates the following measurements into one instrument:

- Air temperature;
- Relative humidity;
- Barometric pressure;
- Wind direction;
- Wind speed;
- Solar radiation.

RS232, RS485, RS422 and SDI-12 serial interfaces are available with NMEA, MODBUS-RTU and SDI-12 communication protocols. The MODBUS-RTU output allows the creation of instrument networking. All versions have two analogical outputs, both for wind speed and for direction, factory configurable in 4...20mA (standard) or 0...1V, 0...5V, 0...10V (to be specified in order).

The absence of moving parts minimizes maintenance operations. The instrument has a high sensitivity for the detection of very low speeds, which are not detectable by traditional methods.

The low power consumption of the instrument allows installation in remote sites with power supply from solar panel and back-up battery. Installation operations are fast and easy; all models are equipped with a compass to facilitate alignment.

Air temperature is measured by a pt100 element, while relative humidity is measured by means of a capacitive sensor. In order to keep the effects of external influences (e.g. solar radiation) as low as possible, these sensors are located in a ventilated housing with radiation protection. This allows significantly more accurate measurement during high radiation conditions.

Barometric pressure is measured by way of a piezoresistive sensor.

The wind meter uses 2 axes ultrasonic static anemometers to measure wind speed and direction, U-V cartesian components of wind speed.

The heating option prevents the accumulation of snow the forming of ice, allowing accurate measurements in all environmental conditions.

In stead of the solar radiation measure, the sensor can be supplied with a raingauge which has a collector area of 127cm^2.

The available measurement options, combined in one single, compact and lightweight instrument, produce all main variables of interest for automatic weather stations.

Typical applications: automatic weather stations, environmental monitoring, sports facilities, marine and harbour applications, airports, renewable energy and building automation.

Multiparametric sensor

Typical installation

Technical specifications may be varied without prior notice

MTX S.r.l.
Via Zamboni, 74 – 41011 Campogalliano (MO) (I)
Tel. +39 059 2551150
C.F. - P.IVA - R.I. 04343730281
R.E.A. MO 370886
Capitale Sociale: € 100.000,00 i.v.
web: www.mtx.it – e-mail: sales@mtx.it – PEC: mtxsrl@pec.mtx.it

METEOROLOGY
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Technical specificaations

GENERAL	
Power supply	10....30V
Power consumption	26mA @ 24V without heater, 8W with heater
Dimensions/weights (indicative):	357 mm x 150 mm - 1,0 kg
Protection rate	IP66
Operating conditions	-40°C ... +70°C ; 0 ... 100% RH
Interface	RS232, RS485, RS422, SDI-12
Analog outputs	2 wind speed and direction analogue outputs , 4...20mA (standard) e 0...1V, 0...5V, 0...10V (specify in order)
Material	Plastic
AIR TEMPERATURE	
Measuring principle	pt100
Measuring range	-40°C ... +70°C
Resolution	0.1°C
Accuracy	±0.15°C; ±0.1% of the measure
RELATIVE HUMIDITY	
Measuring principle	Capacitive
Measuring range	0 ... 100% RH
Resolution	0.1% RH
Accuracy (@T 15...35°C)	±1.5% RH (0..90% RH), ±2% RH remaining
Accuracy (@T –40...60°C)	± (1.5 + 1.5% measure) %RH
PRESSURE	
Measuring principle	Piezoresistive
Measuring range	300...1100 hPa
Resolution	0.1 hPa
Accuracy	± 0.5 hPa @20°C
SOLAR RADIATION	
Measuring principle	Thermopile
Measuring range	0...2000 W/m^2
Resolution	1 W/m^2
Accuracy	II class Pyranometer

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Technical specifications

WIND SPEED	
Measuring principle	Ultrasound
Measuring range	0 … 60m/s
Resolution	0.01m/s
Accuracy	±0.2 m/s o ±2%, the biggest (0...35 m/s), ±3% (>35 m/s)
WIND DIRECTION	
Measuring principle	Ultrasound
Measuring range	0 … 360°
Resolution	0.1°
Accuracy	± 2° RMSE from 1.0 m/s
COMPASS	
Measuring principle	Magnetic
Measuring range	0 … 360°
Resolution	0.1°
Accuracy	± 1°
RAIN GAUGE	
Sensor	Tipping Bucket
Resolution	0.2mm
Accuracy	99% to 120mm/h
Sampling area	127cm^2
Rain intensity	2000mm/h

Ordering codes

Two-axis ultrasonic anemometer	**PCTMP013**
Multi-parametric sensor that integrates the following measures: air temperature, relative humidity, speed and wind direction	**PCTMP014**
Multi-parametric sensor that integrates the following measures: air temperature, relative humidity, air pressure, wind speed and direction and solar radiation	**PCTMP010**
Multi-parametric sensor that integrates the following measures: air temperature, relative humidity, air pressure, wind speed and direction and solar radiation with heater	**PCTMP011**
Multi-parametric sensor that integrates the following measures: air temperature, relative humidity, wind speed and direction and solar radiation	**PCTMP007**
Multi-parametric sensor that integrates the following measures: air temperature, relative humidity, wind speed and direction and solar radiation with heater	**PCTMP012**
Multi-parametric sensor that integrates the following measures: air temperature, relative humidity, air pressure, wind speed and direction and precipitation	**PCTMP016**
Multi-parametric sensor that integrates the following measures: air temperature, relative humidity, air pressure, wind speed and direction	**PCTMP006**

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