METEOROLOGY
HYDROLOGY
ENVIRONMENTAL MONITORING

Air temperature sensor with standard outputs

Description

The Pt100 transducer (platinum thermoresistance) is mounted on the top of a cylindrical support screwed to the sensor body. This support is made of plastic material to minimize heat transfer from the base towards the sensing element. To avoid influences coming from heat absorption due to direct solar radiation, all the elements of the sensors are made of white plastic based material or white powder coated metallic material.

Sensor body is inserted inside a natural ventilation shield made of a wedge-shaped plates drilled in the middle (so to have space for sensor housing) and air circulation is guaranteed by thermodynamic characteristics of the structure. On the top, three plates not drilled are mounted to protect the transducer form direct and diffuse solar radiation, rain, hail and in general dust or dirt contamination.

The screen is made of polycarbonate added with glass fiber, material with a high resistance to ultraviolet radiation and atmospheric corrosion: this material keeps its properties stable and it doesn't polymerize even if it's been mounted for a long time outdoor. This, combined with its geometry, guarantees that the shield doesn't affect the sensor response time, important to reach the thermal equilibrium.

The sensor body is made in anticorodal aluminum, a material which guarantees a substantial durability and high resistance to corrosion. To reduce the influence of solar radiation the sensor body is white painted.

On the bottom end of the sensor there is a connector for the signal and supply cable. The connector is watertight and has a screw connection.

For the calibration of the sensor, a certified instrument is used (reference ACCREDIA). The calibration based on comparison allows to maintain continuity with the metrological chain and assigns a scientific value to the measurement.

Sensor installation doesn't require particular adjustments: it's available a support to be fixed with a bracket to masts with external diameter of 50 or 60 mm.

Forced ventilated radiation shield (option)

The shelter is made by combining different cylindrical parts in order to obtain a cavity where it is possible to house the transducer. On the upper side it's placed a convex plate to protect the probe from the rain or snow. In the lower part, a dedicated disk allows the blocking of the transducer inside the shield with forced ventilation. A fan located under the top plate sucks air from the cavity in which the transducer is housed. The system is powered by 12Vdc and is able to generate an air flow of about 7m/s. The fact that the air is sucked prevents that the thermal energy generated by the fan can influence the transducer. In this way you can get to thermal equilibrium with the environment.

Thermometer with shielding with natural ventilation

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

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Technical specifications

GENERAL CHARACTERISTICS	
Power supply	10 … 24Vdc
Typical power consumption	≤10mA @ 12Vdc (+ segnale elettrico in uscita versioni 4-20mA)
Operating temperature	-30 … +70°C
Sensor dimensions	H = 250mm max. diameter = 40mm
Weight	0,6 kg
Protection rate	IP65
Electrical transient protection	Fast zener diodes
Maintenance	Annual cleaning of the shield
Calibration (suggested)	Annual periodicity
Radiation shield technical specifications	H = 190mm - Diameter = 120mm - weight = 0,5Kg
TEMPERATURE SENSOR	
Sensor type	Platinum thermoresistance (Pt100) class 1/3 DIN
Measuring principle	Resistance variation
Measuring range	-30…+70 °C
Accuracy	±0,1 °C (@0°C) ≤±0,2°C in the range -30 … +50°C ≤±0,3°C for temperatures lower than -30°C or over +50°C
Resolution	0,03°C (output 4...20mA)
Long-term stability	0,05% / year
Electrical output	0 … 1V; 0...2V; 0...5; 4 … 20mA; RS485 (Modbus)
Response time	< 1min.

Ordering codes

Temperature sensor with electrical output 0 … 1V; 0 … 2V; 0 … 5V, with naturally ventilated shield	**FAR023AA**
Temperature sensor with electrical output 4 … 20mA, with naturally ventilated shield	**FAR023BA**
Temperature sensor with electrical output 0 … 1V; 0 … 2V; 0 … 5V with forced ventilation shielding	**FAR023CA**
Temperature sensor with electrical output 4 … 20mA, with forced ventilation shielding	**FAR023DA**
Temperature sensor with electrical output RS485 Modbus, with naturally ventilated shield	**FAR023EA**

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Capitale Sociale: € 100.000,00 i.v.
web: www.mtx.it – e-mail: sales@mtx.it – PEC: mtxsrl@pec.mtx.it

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