

mSTAUR – Air TEMPERATURE AND HUMIDITY SENSOR FOR OUTDOOR (Rev.3 010418)



Descrizione

The Micro series thermo-hygrometers are relative humidity and air temperature microprocessor based transducers.

The transducer is mounted inside special protection screens against the solar radiation, made in aluminum and treated with special white paints to allow easy cleaning and maintenance of the white color over time.

Besides screens are protected from the sensors bracket that works as covering avoiding that snow or other debris being deposited on sensor: in this way the screens are kept more clean and white, avoiding blackening that can alter the temperature measurements, besides the screens remains depositions free maintaining the right ventilation of the sensor.

The humidity sensor is of the capacitive type, while the temperature sensor is a thermistor Pt100 Platinum 1/3DIN (100Ω @ 0°C).

Operation Principle

The relative humidity sensor is a capacitor whose dielectric is formed by a hygroscopic polymer. Since the dielectric constant for water is about 80, a strong variation of the capacity is reached with variations of polymer moisture content. The temperature sensor is a Platinum resistance thermometer (Pt 100Ω @ 0 °C). The variation Pt100 resistance is converted into a current signal or linear voltage with temperature.

Advantages

- ✓ Quick response time
- ✓ Reliability
- ✓ Good linearity
- ✓ Lifetime
- ✓ Humidity transducer unaffected by temperature changes

Main Applications

- ✓ Meteorology – weather measures
- ✓ Agro- meteorology and irrigation systems
- ✓ Hydrogeology
- ✓ Photovoltaic – accurate measurements of temperature and air temperature
- ✓ Environmental monitoring

Technical Specs

Models:	mSTAUR-N	mSTAUR-I	mSTAUR-V
Measure Range (typical)	Air Temperature: -40...+60 °C (-30...+70°C or other ranges upon request) Relative Humidity: 0...100%		
Transducer	Air Temperature: Pt100 1/3DIN Relative Humidity: Capacitive with anti-radiation shields		
Electrical Outputs	Out1 (T): 4 fili Pt100 Out2 (RH): 0...5Vdc	Out1 (T): 4...20mA Out2 (RH): 4...20mA	Out1 (T): 0...5Vdc Out2 (RH): 0...5Vdc

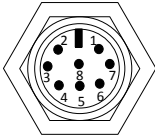
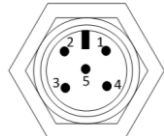


Power supply	+9...24Vdc		
Consumption	5mA max	4...40mA	5mA max
Accuracy	Temperature: ±0.1°C Rel. Humidity: ±1.5%	Temperature: ±0.2°C Rel. Humidity: ±1.5%	
Resolution	Temperature: 0.01°C ; Rel. Humidity: 0.01%		
Repeatability:	Temperature: ±0.1°C		
Hysteresis:	Rel. Humidity: ±1%		
Long term stability	Temperature: <0,04°C/year; Rel. Humidity: <0,5%RH/year		
Sampling rate	1s		
Response time (63%)	<8s		
Maintenance	Check >24 months		
Working Temperature	-50...+85°C		
Connector	IP68 Rapid connection (cable excluded)		
Bracket	universal bracket to fasten along horizontal or vertical masts ømax:43mm		
Materials	Aluminum white painted, Polycarbonate and stainless steel		
Dimensions and weight	ø170 x 170 x 100mm, 430g		

Accessories

Cable	Shielded for outdoor. Available lengths: 4, 12, 22m (others upon request)
Cod. CSxx (xx= meters of cable)	Sensor cable with IP68 connector (sensor side) and open wires (datalogger side)
Cod. CSDxx	Sensor- Geoves' datalogger cable with IP68 connector (sensor side) and terminal (datalogger side)

Electrical Connection

Model	mSTAUR-N	mSTAUR-I	mSTAUR-V
Electrical output (T=temperature, RH=rel. humidity)	Out1 (T): 4 fili Pt100 Out2 (RH): 0...5Vdc (where 0Vdc=0% and 5Vdc=100%)	Out1 (T): 4...20mA Out2 (RH): 4...20mA (where 4mA= RH:0% and T:-40°C; 20mA=RH:100% and T:+60°C)	Out1 (T): 0...5Vdc Out2 (RH): 0...5Vdc (where 0Vdc= RH:0% and T:-40°C; 5Vdc=RH:100% and T:+60°C)
Shunt resistive load		25...440 Ω (tip.100 Ω)	
IP68 Sensor connector 	Pin1: High Pt100 I+ (1mA) Pin2: High Pt100 V+ Pin3: Low Pt100 V- Pin4: Low Pt100 Gnd Pin5: +Vdc (9...24Vdc) Pin6: Gnd Pin7: Vout+ (RH) Pin8: Vout- (RH)		
IP68 Sensor connector 		Pin1: Iout+ (T) Pin2: Pin3: Iout+ (RH) Pin4: Gnd Pin5: +Vdc (9...24Vdc)	Pin1: Vout+ (T) Pin2: Vout- (T); Vout- (RH) Pin3: Vout+ (RH) Pin4: Gnd Pin5: +Vdc (9...24Vdc)

Installation

Application	Height of mounting	Localization e orienting
Meteorology (ref. WMO Annex 8)	1,2...2 m from the ground	It's recommended above grass or natural surface (when the grass were absent); not install the sensor above asphalt surfaces or that can radiate heat; besides not install where the airflow were stagnant or in presence of hard airflow (eg. close to doors, canyons, etc...). Distance from possible obstacles $>1,5\text{m}$. SIGNAL TRANSMISSION Transducer electronic is developed to obtain a signal that grows linearly with increasing of the humidity and temperature. In presence of cables that transmit high currents or machines that generate electromagnetic noises is need install the sensor cable in separate cable duct or at a specified distance to shield the noises. In the voltage model it's recommended to use always a shielded cable.