

mSTAU_RK – OUTDOOR AIR THERMOHYGROMETERS (Rev.3 260326)



Description

The mSTAU_RK thermo-hygrometers are air relative humidity and temperature sensors, microprocessor based.

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

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

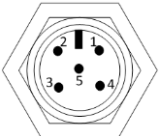
Models	mSTAU-I_RK	mSTAU-V_RK
Measure Range (typical)	Air Temperature: -40...+60 °C (-30...+70°C or other ranges upon request) Relative Humidity: 0...100%	
Transducer	Air Temperature: Pt100 1/3DIN Relative Humidity: Capacitive with anti-radiation shields	
Electrical Outputs	Out1 (T): 4...20mA Out2 (RH): 4...20mA	Out1 (T): 0...5Vdc Out2 (RH): 0...5Vdc
Power supply	+12...24Vdc	+12...24Vdc
Consumption	4...40mA	5mA
Accuracy	Temperature: ±0.2°C	

	Rel. Humidity: $\pm 2\%$
Resolution	Temperature: 0.01°C ; Rel. Humidity: 0.01%
Repeatability:	Temperature: $\pm 0.1^{\circ}\text{C}$
Hysteresis:	Rel. Humidity: $\pm 1\%$
Long term stability	Temperature: $<0,04^{\circ}\text{C}/\text{anno}$; Rel. Humidity: $<0,5\%\text{RH}/\text{anno}$
Sampling rate	1s
Response time (63%)	$<8\text{s}$
Maintenance	Check >24 mesi
Working Temperature	$-40\ldots+80^{\circ}\text{C}$
Connector	IP68 Rapid connection (cable excluded)
Bracket	universal bracket to fasten along horizontal or vertical masts $\varnothing:25\ldots42$ or $40\ldots64\text{mm}$
Materials	Polycarbonate and stainless steel
Dimensions and weight	$\varnothing138 \times h189$ (staffa esclusa), 430g

Accessories

Cable	Shielded for outdoors. 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-I_RK	mSTAUR-V_RK
Electrical output (T=temperature, RH=rel. humidity)	Out1 (T): $4\ldots20\text{mA}$ Out2 (RH): $4\ldots20\text{mA}$ (where $4\text{mA}=\text{RH}:0\%$ and $T: -40^{\circ}\text{C}$; $20\text{mA}=\text{RH}:100\%$ and $T: +60^{\circ}\text{C}$)	Out1 (T): $0\ldots5\text{Vdc}$ Out2 (RH): $0\ldots5\text{Vdc}$ (where $0\text{Vdc}=\text{RH}:0\%$ and $T: -40^{\circ}\text{C}$; $5\text{Vdc}=\text{RH}:100\%$ and $T: +60^{\circ}\text{C}$)
Shunt resistive load	$25\ldots440\Omega$ (tip. 100Ω)	
IP68 Sensor connector 	Pin1: Iout+ (T) Pin2: Pin3: Iout+ (RH) Pin4: Gnd Pin5: +Vdc ($12\ldots24\text{Vdc}$)	Pin1: Vout+ (T) Pin2: Vout- (T); Vout- (RH) Pin3: Vout+ (RH) Pin4: Gnd Pin5: +Vdc ($12\ldots24\text{Vdc}$)

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 was absent); not install the sensor above asphalt surfaces or that can radiate heat; besides not install where the airflow was stagnant or in presence of hard airflow (eg. close to doors, canyons, etc...). Distance from possible obstacles $>1,5\text{m}$. SIGNAL TRANSMISSION Transducer electronics is developed to obtain a signal that grows linearly with humidity and temperature increasing. In presence of cables that transmit high currents or machines that generate electromagnetic noises, it is needed to 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.