

## ■ Meteorologic Sensors

Geoves weather sensors are designed and built in conformity to the Annex 8 of WMO (World Meteorological Organization). All sensors are made in stainless materials suitable to work in critical operative and environmental conditions (thermic variations, salinity, ice, etc...); they are also supplied by universal connector to facilitate the electrical connection and by pole mounting system.

Model	BAR – Barometer with static port (outdoor applications) mPA – Micro Barometer (indoor applications)
Range (typical)	800...1100 hPa (on request 600...1100 hPa for sites over 1000m above s.l.)
Transducer	Piezoresistive
Accuracy	BAR: $\pm 0.3$ hPa @ 25°C; mPA: $\pm 0.4$ hPa @ 25°C
Output signals	-V 0...5Vdc; -I 4...20mA



Model	mWS1 – Wind speed sensor
Range	0...50 m/s (typical) gusts >75m/s
Transducer	Magnetic with sinusoidal AC signal not powered
Accuracy	$\pm 0.1$ m/s
Output signals	-N freq. AC; -RS freq. reed switch SqW (Square Wave); -T freq. TTL SqW; -V 0...5Vdc; -I 4...20mA



Model	mWD1 – Wind direction sensor
Range	0...359°
Transducer	Linear Potentiometer with continuous 360°
Accuracy	$\pm 2^\circ$
Output signals	-N: 10KOhm potentiometer; -V: 0...5Vdc; -I: 4...20mA



Model	WS2 – Wind speed sensor high performance (available with anti-icing heater)
Range	0...50 m/s (typical) gusts >75m/s
Transducer	Magnetic with sinusoidal AC signal not powered
Accuracy	$\pm 0.02$ m/s, $R \geq 0.99998$ (typ.)
Heating	12Vdc@1W (vers.WS1R)
Output signals	-N freq. AC; -T freq. TTL SqW; -V 0...5Vdc; -I 4...20mA



Model	WD2 – Wind direction sensor: high performance (available with anti-icing heater)
Range	0...359°
Transducer	Linear Potentiometer with continuous 360°
Accuracy	$\pm 1.5^\circ$
Heating	12Vdc@1W (vers.WD1R)
Output signals	-N: 10KOhm potentiometer; -V: 0...5Vdc; -I: 4...20mA



Model	IAN420-2C – Anemometers interface with galvanic insulation and thermostatisation
Typical applications	– Wind Turbines – Anemometer installations beyond 20m (cableways, lattice masts, cranes, lighting towers, etc...)
Power supply	12...24Vdc $\pm 10\%$
Inputs	
Wind speed sensors:	freq. AC 500Hz 100mVpp; freq. square wave 1000Hz 5V
Wind direction sensors:	potentiometer 1K...50K $\Omega$ (Ref. 200mV)
Electrical outputs	0...10Vdc; 4...20mA; others on request
Insulation	Galvanic
Thermostat set point	Automatic, On <5°C Off >5°C $\pm 0.3^\circ\text{C}$





<b>Model</b>	RG200, RG400 – Rain gauges (available with anti-icing heater)
<b>Range</b>	infinite
<b>Orifice area</b>	RG200: 200cm <sup>2</sup> ; RG400: 400cm <sup>2</sup>
<b>Transducer</b>	Double contact (n.o.) tilting bucket
<b>Accuracy</b>	Class B UNI 11452:2012 (class A with connection to the Geoves' datalogger)
<b>Resolution</b>	0.2 mm/commutation (or 0.1mm 400cm <sup>2</sup> version)
<b>Power supply</b>	Without heater: none With heater (Vers.-R): 12-24Vdc 60W
<b>Output signals</b>	-N pulses; with device CP-VI: 0...10Vdc or 4...20mA



<b>Model</b>	CP-VI – Rain gauges interface with galvanic insulation and thermostatisation
<b>Power supply</b>	12...24Vdc ±10%
<b>Input</b>	Pulses rain gauges
<b>Electrical outputs</b>	0...10Vdc; 4...20mA; others on request
<b>Insulation</b>	Galvanic
<b>Thermostat set point</b>	Automatic, On <5°C Off >5°C ±0.3°C
<b>Automatic Reset</b>	– Achievement of 100 f.s. pulses (default), 250 or 500 – After 60 minutes from the last pulse without rain



<b>Model</b>	EVAS – Evaporimeter with class A pan
<b>Range of the measure sensor</b>	0...30mm
<b>Power supply</b>	8...28Vdc
<b>Transducer</b>	Capacitive with polynomial temperature compensation
<b>Accuracy (between 10...50°C)</b>	<0.1% f.s.
<b>Evaporimeter accessories</b>	Wooden platform with protective coatings AISI304 stainless steel pan, class A in compliance with WMO Annex 8 guidelines.
<b>Output</b>	4...20mA



<b>Model</b>	PIRSC – Silicon cell pyranometer
<b>Measuring range</b>	0...2000 W/m <sup>2</sup>
<b>Spectral Range</b>	0.4...1.1µm
<b>Transducer</b>	Silicon cell
<b>Accuracy (typ.)</b>	±3%
<b>Available Certifications</b>	Geoves calibration report with comparison to 1st Class CM6 Kipp&Zonen
<b>Output signals</b>	-N 10µV/W/m <sup>2</sup> ; -V 0...5Vdc; -I 4...20mA



<b>Model</b>	PIR2S, PIR01, PIR02 – Thermopile Pyranometers
<b>Measuring range</b>	0...2000 W/m <sup>2</sup>
<b>Spectral Range</b>	0.3...3µm
<b>Transducer</b>	Thermopile with single dome: mod. PIR02 (2nd class) Thermopile with double dome: mod. PIR01 (1st Class) and PIR2S (Secondary Standard Class)
<b>Accuracy Class (ISO9060 and WMO)</b>	PIR02: 2nd class o "Moderate quality" PIR01: 1st class o "Good quality" PIR2S: Secondary Standard Class o "High quality"
<b>Available Certifications</b>	ISO9001 in conformity to ISO9847 norms
<b>Output signals</b>	-N 10µV/W/m <sup>2</sup> ; -V 0...5Vdc; -I 4...20mA; -S RS485 Modbus



<b>Model</b>	NSR – Net Radiometer
<b>Measuring range</b>	±2000 W/m <sup>2</sup>
<b>Transducer</b>	Thermopile with spectral range 0,3...100µm
<b>Sensitivity</b>	10µV/W/m <sup>2</sup>
<b>Available Certifications</b>	ISO9001 in conformity to ISO7726 norms
<b>Output signals</b>	-V 0...5Vdc; -I 4...20mA



	mSTA – Outdoor air temperature sensor mSTAUR – Outdoor air temperature-humidity sensor
<b>Output signals</b>	-V 0...5Vdc; -I 4...20mA; -N 4 wires Pt100 (T) and 0...5Vdc (RH)
<b>Temperature - Range</b>	-40...+60 °C
<b>Transducer</b>	Pt100 with anti-radiation shields
<b>Accuracy</b>	±0.2°C
<b>Rel. Humidity - Range</b>	0...100 %
<b>Transducer</b>	Capacitive with anti-radiation shields
<b>Accuracy</b>	±2%



<b>Model</b>	STQ – Soil/water temperature probe
<b>Range</b>	-40...+60 °C
<b>Transducer</b>	Pt100 1/3DIN with AISI316 stainless steel head
<b>Accuracy</b>	±0.2°C
<b>Output signals</b>	-N 4 wires Pt100; -V 0...5Vdc; -I 4...20mA



<b>Model</b>	STC – Contact sticky temperature probe for walls and photovoltaic panels
<b>Range</b>	-50...+100 °C
<b>Transducer</b>	Pt100 1/3DIN with aluminium sticky head
<b>Accuracy</b>	±0.2°C
<b>Output signals</b>	-N 4 wires Pt100; -V 0...5Vdc; -I 4...20mA



<b>Model</b>	STP – Penetration temperature probe for bio-compost and dumps
<b>Range</b>	-40...+60 °C
<b>Transducer</b>	Pt100 1/3DIN with ø5x1000mm stainless steel probe
<b>Accuracy</b>	±0.2°C
<b>Output signals</b>	-N 4 wires Pt100; -V 0...5Vdc; -I 4...20mA



<b>Model</b>	mSTI – Air temperature sensor (indoor application) mSTS – Air surface temperature sensor
<b>Range</b>	-40...+60 °C
<b>Transducer</b>	Pt100 with anti-radiation shield
<b>Accuracy</b>	±0.2°C
<b>Output signals</b>	-V 0...5Vdc; -I 4...20mA; -N Pt100 4 wires



<b>Model</b>	RHT – Soil moisture probe
<b>Typ. Range</b>	0...50% VWC (soil Volumetric Water Content)
<b>Transducer</b>	Dielectric
<b>Power supply / consumption</b>	+12Vdc / 1mA
<b>Typical output</b>	4...20mA
<b>Accuracy / Resolution</b>	±3% VWC / 0,08% VWC



<b>Model</b>	WLS – Leaf wetness sensor
<b>Measuring range</b>	0...100% of leaf wetness and wetness duration (s)
<b>Transducer</b>	Capacitive
<b>Typical output</b>	0,5...3Vdc
<b>Operative Temperature</b>	-30...+60°C



Model	SFTH – Fuel moisture temperature sensor for monitoring of forest fires
Output signals	-V 0...5Vdc; -I 4...20mA;
Temperature - Range	-40...+60 °C
Transducer	Pt100 with certified ponderosa pine stick
Accuracy	±0.2°C
Rel. Humidity - Range	0...100 %
Transducer	Capacitive with certified ponderosa pine stick
Accuracy	±2%



Model	BRINO – Detector of Frost/Ice-Dew-Rain-Snow-Hail atmospheric events
Transducer	Cpu with acoustic transducer combined to a thermo-hygrometer and a wetness leaf sensor
n.4 Analog outputs (0...5000mV)	Out n°1: 0Vdc=no event, 5Vdc=Hail Out n°2: 0Vdc=no event, 2.5Vdc=Rain, 5Vdc=Snow Out n°3: 0Vdc=no event, 5Vdc=Ice/Frost Out n°4: 0Vdc=no event, 5Vdc=Condensation/Wetting
Power and consumption	12...24Vdc ±10% <15mA @ 24Vdc
Power supply for heating system	12...24Vdc 250mA Max @ 24Vdc
Optional thermostat (cod. TERMST)	On <5°C Off >5°C ±0.3°C



## ■ Meteorological Sensors and accessories for special applications

**Solar radiation sensor** for special applications:

- Pyranometers with ventilation/heating unit
- Pyranometers with shade ring for diffuse radiation measuring
- Albedo measuring sensors
- Sunshine duration sensors
- Solar radiation device for automatic measuring of global and diffuse radiations (calculation of direct radiation by datalogger) and sunshine duration
- Pyrheliometers
- Pyrgeometer
- UVA and UVB Radiometers
- PAR



**Sonic anemometers**, biaxial and triaxial available also in multi-parametric and heated version with RS232, 485, SDI-12 and ModBus serial ports or with some analog outputs.



**Meteorological shelters** made in treated and painted wood built in conformity to WMO guidelines. Self-recording meteorological sensors (rain gauges, thermometers, barometers, etc...)

