

WS103 (-H)

Rotary sensor of wind speed and gusts of wind



- *Robust all-metal design suitable for mountain climatic conditions*
- *Ceramic bearings for long-term operation without service interventions*
- *Wide measuring range 0.6 to 60 m / s*
- *Non-contact magnetic speed sensing*
- *Very low current consumption*
- *Communication via Rs485 on Modbus RTU: average and instantaneous wind speed, maximum wind gust*
- *Optional secondary output 0 to 60 m/s:*
 - *- voltage 0-1 V DC*
 - *- frequency 0-600 Hz*
 - *- pulses 0-600 pulses / sec*
 - *- ALARM signal 0/1*
- *Connection via M12 industrial connector hidden in the sensor body*
- *The WS103-H anemometer has built-in controlled heating for year-round operation*
- *Data output compatible with FIEDLER data loggers and telemetry stations*

Basic description

The WS103 rotary anemometer measures:

- Instantaneous wind speed**
- Average wind speed**
- Maximum wind gust**

All these measured or calculated quantities can be transmitted to the connected recording or control unit via the RS485 serial bus under the Modbus RTU or FINET protocols. Values are transmitted in m/s or km/h.

The RS485 bus is also used for user adjustment of the WS103 anemometer parameters or for setting a new calibration constant after recalibration of the sensor.

In addition to the RS485 bus, the M12 connection connector of the anemometer also contains a secondary output. It can be frequency, pulse or voltage and the instantaneous or average wind speed can be directed to it. The secondary output in the ALARM mode signals by exceeding (OC-NPN) the set wind speed or wind gust by switching on.

Mechanical design

The WS103 anemometer was designed with regard to reliable long-term operation even in extremely unfavorable climatic conditions of the mountain environment and therefore consists only of durable metal materials - stainless steel and anodized aluminum alloy. The operational reliability is also increased by the use of high-quality ceramic bearings, in which the anemometer rotor is mounted.

The WS103-H heated anemometer is designed for year-round operation. It has a heating element located at the rotor mounting point. Heating reduces the deposition of icing on the top of the sensor. In order to be able to operate the heated rain gauge only from the battery source, the heating is controlled by a microprocessor, which in the economy mode switches on the heating only for the necessary time at temperatures close to 0 or lower. At the same time, the anemometer measures the battery voltage and switches off the heating when its voltage drops (there is no risk of uncontrolled discharge of the battery).

WS103, WS103-H

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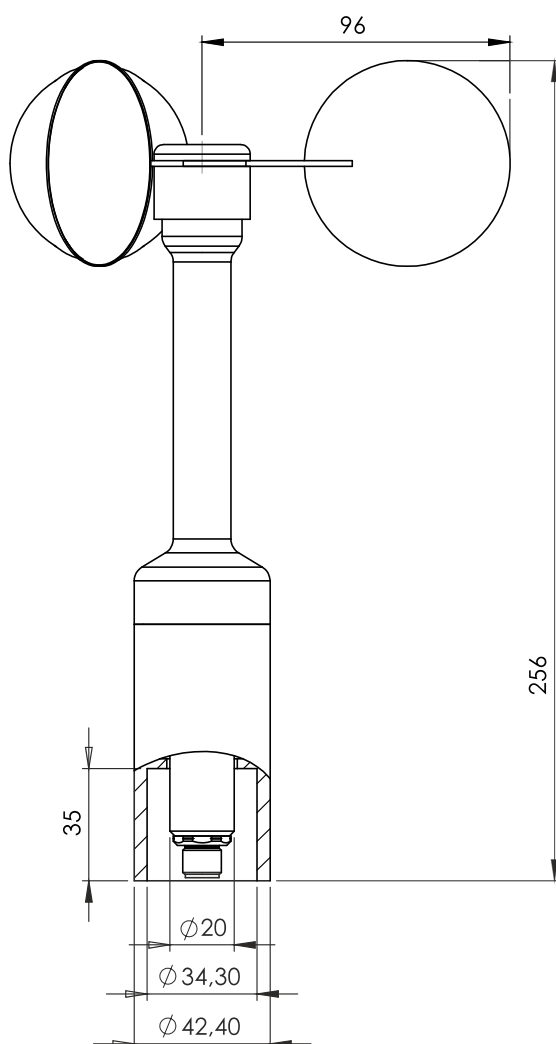
Secondary output signal

The WS103 anemometer can be connected to a datalogger or other evaluation unit via the RS485 data bus or via a secondary output connected to a separate pin of the connector.

The secondary output can be voltage in the range 0 to 1 VDC, frequency in the range 0 - 600 Hz or pulse in the range 0 to 600 pulses / s. All ranges already correspond directly to the wind speed 0 to 60 m / s. The pulse and frequency output consists of an open collector, which switches an external voltage of 3 to 30 V DC / 100 mA max.

The specification of the secondary output should be specified in the device order. Without this specification, the secondary output of the anemometer is set to pulse.

The secondary pulse output can also be converted to a binary ALARM output using the parameters of the anemometer, which switches on when the preset wind speed limit is reached. You can also enter a time delay in the device parameters, which determines the re-opening of this binary output after the measured wind speed falls below the set limit value. ALARM output can be used, for example, for acoustic or optical signaling, to control a connected control unit, etc.



Continuous sensor measurement

The electronic circuits of the WS103 anemometer have a very low current consumption, so that the entire device can be powered by a battery or accumulator.

Thanks to the extremely low consumption, the anemometer works from the energy stored in the capacitor of the sensor for at least 30 minutes after the supply voltage has been disconnected.

The measurement and calculation of the average wind speed and the evaluation of maximum wind gusts therefore take place continuously with the WS103 anemometer, even with periodically switched power supply to the sensors. Periodic power supply of the sensors is usual for measuring stations powered only by a battery or accumulator charged from a solar panel. Relevant results obtained for the entire measurement interval and not just "strobed" values acquired at the time of short-term switching on of the supply voltage are thus transmitted to the connected recording unit.

Technical parameters

Measuring range: 0.6 to 60 m / s

Primary output: RS485, ModbusRTU or FINET protocol

Secondary SV output: instantaneous speed 0.. 60 m/s:

- A) pulses 0 to 600 pulses / s
- B) frequency 0 to 600 Hz
- C) voltage 0 to 1 V DC
- D) alarm output, $U_{max} < 30 \text{ V DC}$, $I_{max} < 100 \text{ mA}$

Supply voltage: 5 to 28 V DC

Current consumption: type 0.25 mA, max 250 mA (after switching on)

Dimensions: height 256 mm, rotor diameter 192 mm

Material / weight: stainless steel, Al alloy / 420 g

Connecting connector: M12 / 5

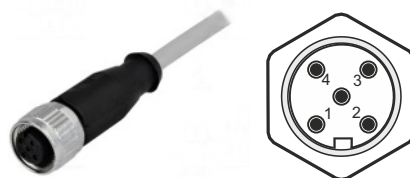
Sensor mounting: on a 33.7 mm (1") diameter pole

Optional accessories: WH700 boom for parallel installation of WS103 anemometer and WD360 rudder

Working temperature: -40 °C to +60 °C

Heater (WS103-H): 12 V / 5 W

Connecting connector / cable



Connector	1	2	3	4	5	
Signal	+Unap	GND	485-A	485-B	SV	
Cable	PUR - black	brown	green	yellow	white	gray
	PVC - gray	brown	white	blue	black	gr/yel

A 2 m, 5 m or 10 m PVC connection cable with IP67 connector protection can be ordered for the WS103 sensor.