

mWS1 – WIND SPEED SENSOR “micro” series (Rev.4 010124)



Description

The anemometers *micro* series have been designed for use in applications requiring a low cost, reliability and durability. The sensors are made of sturdy anodized aluminum and are available with Frequency (AC, TTL and reed switch) and Analogic (4...20mA or 0...5Vdc, other outputs on request) outputs.

Advantages

- ✓ **MEASNET certifiability** for data bankability for investments in wind farms
- ✓ **Long life** for each applications in wind farms and anemometrical stations
- ✓ **Low cost**
- ✓ **Mechanical Robustness**
- ✓ **Reliability and versatility**



Typical installation on anemometric stations conforms to IEC61400-12

Main applications

- ✓ **Anemometric stations** - Wind resource assessment prior to the installation of wind turbines
- ✓ **Wind farms** – Calibration of wind turbines power-curve
- ✓ **Photovoltaic** - Wind Monitoring of photovoltaic power plants
- ✓ **Meteorology**
- ✓ **Agrometeorology and Irrigation systems**
- ✓ **Industrial Applications**

Technical features

Model	mWS1-N	mWS1-RS	mWS1-T	mWS1-I	mWS1-V
Typical range	0... >75m/s			0...50 m/s; gusts >75m/s	
Transducer	Magnetic with AC wave signal	Reed Switch	Magnetic with AC wave signal		
Signal Converter	none		Inside (standard) Outside (option on request, see accessories)		
Rotor	Robinson cup anemometer over bearings in oil bath				
Power supply	none		9...24Vdc		
Consumption	none		<5mA	4...20mA	<8mA
Output	AC sinusoidal wave	RS with inside pull-up 10KOhm@10mA max	TTL square wave	4...20mA	0...5Vdc (0...10Vdc on request)
Typ. anemometric constant	4,3 Hz/m/s	3,67 Hz/m/s	4,3 Hz/m/s	/	/
Accuracy	±0.01m/s (da 0.3 a 16m/s); ±0.05m/s (>16m/s)				
Threshold	<0.3m/s (start), <0.25m/s (stop)				
Maintenance	Check every 36 months				
Operative Temperature	-30...+70°C (without icing)				
Connector	IP68 plug circular connector (cable excluded)				
Mounting	Over vertical tubular pole ømax35mm øimin20mm (recommended 1" galvanized pipe)				
Materials	Anodized aluminium and stainless steel screws				
Dim. and weight	ø210xh100 mm, 200g		ø210xh133 mm, 270g		

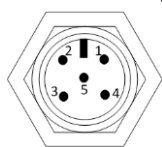
Accessories

Cable	Shielded cable for outdoor conditions. Available lengths: 4, 12, 22m (others on request)
Cod. CSxx (xx=cable meters)	Sensor Cable with IP68 connector (sensor side) and pins (datalogger side)
Cod. CSDxx	Sensor Cable with IP68 connector (sensor side) and terminal (Gieves datalogger side)
Brackets	
Cod. SBS1	Bracket for 1 anemometer with mounting on $\varnothing 25\ldots 60\text{mm}$ poles ($\varnothing 130\text{mm}$ on request)
Cod. SBS2	Double Bracket for 2 anemometers with mounting on $\varnothing 25\ldots 60\text{mm}$ poles ($\varnothing 130\text{mm}$ on request)
Interfaces/converters	
IAN420-2C	4... 20mA and 0... 10Vdc signal converter for anemometer mod. mWS1-N with galvanic isolation and supply voltage stabilizer. Application note: Recommended for applications where the anemometer is mounted at heights > 20m (e.g. wind turbines)
Cod. CF/TTL	Outside converter (IP65 housing), In: AC / Out: 5Vpp square wave (fmax typ. 320Hz)
Cod. CF/V	Outside converter (IP65 housing), In: AC / Out: 0...5Vdc
Cod. CF/I	Outside converter (IP65 housing), In: AC / Out: 4...20mA



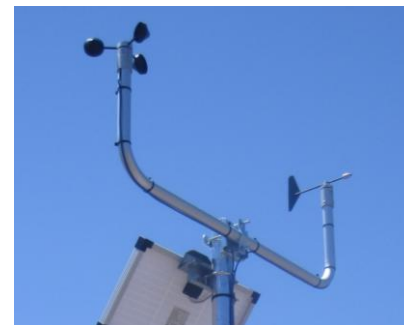
Electrical Connection

Anemometer model:	mWS1-N	mWS1-RS	mWS1-T	mWS1-I	mWS1-V
Output	AC sinusoidal wave	Reed Switch	TTL Square wave	4...20mA where 4mA=0m/s; 20mA=50m/s	0...5Vdc where 0Vdc=0m/s; 5Vdc=50m/s
Load resistance shunt				25...440 Ω (tip.100 Ω)	
IP68 Connector (sensor side)	Pin1: Out AC Pin2: Out AC Pin3: Pin4: Gnd Pin5:	Pin1: Out Hz Pin2: Pin3: Pin4: Gnd Pin5: +Vdc 1...24Vdc with 10K Ω pull-up	Pin1: Out TTL Hz Pin2: Pin3: Pin4: Gnd Pin5: +Vdc 9...24Vdc	Pin1: Iout+ Pin2: Pin3: Pin4: Pin5: +Vdc 9...24Vdc	Pin1: Vout+ Pin2: Vout- Pin3: Pin4: Gnd Pin5: +Vdc 9...24Vdc



Mounting

The anemometer mounting is performed on iron pipes $\varnothing_{\text{ext. max}} 35\text{mm}$, $\varnothing_{\text{int. min}} 20\text{mm}$ (recommended 1" standard pipe) or as an alternative on the SBS1 or SBS2 booms. These booms are suitable in meteorological applications, while in IEC61400-12 standards for wind energy must be dimensioned from time to time according to the diameters of the poles used.



Installation

Application	Installation height	Positioning and orienting
Meteorology (source WMO Annex 8)	2...10m from the ground	Installation in open field, at the top of the pole and no later than 10m height, away from vertical obstacles for at least 10 times the height of the obstacle. The sensor must be installed on cantilevered support of a width of at least 4 times the diameter of the main support pole. It is not recommended to install on the top of hills where turbulence may be present.
Wind energy (ref. IEC61400-12)	At least 2/3 of height hub of wind turbine	Installation on the top of the pole and, for the calculation of the coefficient α at lower heights down to 10 / 15m up to 30m from the ground. The tower anemometer installation shall be carried away from vertical obstacles for at least 10 times the height of the obstacle. The sensor must be installed on cantilevered support of a width of at least 8.2 times the diameter of the main pole, or 5.7 times the side of the lattice mast. The boom's orientation must be at 90 ° with respect to the prevailing wind direction (for lattice masts) or 45 ° for the tubular piles. It is not recommended to install on the top of hills or cliffs where turbulence may be present.