

## mWD1 – WIND DIRECTION SENSOR “micro” series (Rev.2 010617)



### 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 aluminium and are available with Frequency (AC, TTL and reed switch) and Analogic (4...20mA or 0...5Vdc, other outputs on request) outputs.

### Advantages

- ✓ **Long life** both for wind farms and for 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
- ✓ **Wind farms** – Calibration of wind turbine power-curve
- ✓ **Photovoltaic** - Wind Monitoring of photovoltaic power plants
- ✓ **Meteorology, Agrometeorology and Irrigation systems**
- ✓ **Industrial Applications**


### Technical features

Models	mWD1-N	mWD1-I	mWD1-V
Range	0...359° (actual electric angle 0...352° ±4°)		
Transducer	Linear Potentiometer 360° (continuous angle)		
Rotor	bearings in oil bath		
Output (other on request)	Potentiometer 10KOhm	4...20mA	0...5Vdc
Power supply	+1...24Vdc (ref.)	+9...24Vdc	
Power consumption	0,5mA @Vref. 5Vdc	4...20mA	<5mA
Accuracy	±2°		
Resolution	<±0.5°		
Threshold	0.3m/s		
Maintenance	Check every 36 months or more		
Working 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	Aluminium and stainless steel screws		
Dimensions and weight	ø300x140 mm, 200g	ø300x173 mm, 250g	


### Accessories

<b>Cable</b>	Shielded cable for outdoor conditions. Available lengths: 4, 12, 22m (others on request)
<b>Cod. CSxx</b> (xx=mt of cable)	Sensor Cable with IP68 connector (sensor side) and pins (datalogger side)
<b>Cod. CSDxx</b>	Sensor Cable with IP68 connector (sensor side) and terminal (Geoves datalogger side)
<b>Brackets</b>	
<b>Cod. SBS1</b>	Bracket for 1 anemometer with mounting on ø25...60mm poles (ø130mm on request)
<b>Cod. SBS2</b>	Double Bracket for 2 anemometers with mounting on ø25...60mm poles (ø130mm on request)
<b>Interfaces/converters</b>	
<b>IAN420-2C</b>	4... 20mA and 0... 10Vdc signal converter for anemometer mod. mWS1-N with galvanic isolation and supply voltage stabilizer. <b>Application note:</b> Recommended for applications where the anemometer is mounted at heights > 20m (e.g. wind turbines)



Cod. CV/V	Outside converter (IP65 housing), In:Potentiometer 10KOhm / Out: 0...5Vdc	
Cod. CV/I	Outside converter (IP65 housing), In:Potentiometer 10KOhm / Out: 4...20mA	

### Electric Connection

Anemometer model:	mWD1-N	mWD1-I	mWD1-V
Output	Potentiometer 10KOhm	4...20mA where 4mA=0°; 20mA=360°	0...5Vdc where 0Vdc=0°; 5Vdc=360°
Load resistance shunt	25...440Ω (tip.100Ω)		
IP68 Connector (sensor side)	 Pin1: Vout+ Pin2: Vout- Pin3: Pin4: Gnd Pin5: +Vref. 1...24Vdc	Pin1: Iout+ Pin2: Pin3: Pin4: Pin5: +Vdc 9...24Vdc	Pin1: Vout+ Pin2: Vout- Pin3: Pin4: Gnd Pin5: +Vdc 9...24Vdc

### Mounting and orienting of wind direction sensor

The anemometer mounting is performed on iron pipes **øext.max 35mm, øint.min 20mm** (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.



The fixing of the wind direction sensor mod. mWD1 must be made properly orienting North. This is done as follows:

1. Turn the vane until the two arrows indicating the NORD match (one on a fixed part and one on a moving part)
2. With the aid of a compass locate the NORTH

Holding the vane together with the sensor body, rotate it so that the tip of the vane is perfectly oriented to the North, then attach the sensor to the tubular support. The accuracy of this operation is critical to the accuracy of the wind direction data stored as the angular sensor output is always referred to as amplitude NORTH set.

### Installation

Application	Installation height	Positioning and orienting
<b>Meteorology (source WMO Annex 8)</b>	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.
<b>Wind energy (ref. IEC61400-12)</b>	At least 2/3 of height hub of wind turbine	Installation on the top of the pole and, for the calculation of the coefficient $\alpha$ 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.