



## HD52.3D 2 AXES ULTRASONIC ANEMOMETERS

### 2 axes ultrasonic Anemometers series HD 52.3D....

The instruments of the series HD52.3D... are 2 axes ultrasonic static anemometers for measuring:

- Wind speed and direction, U-V Cartesian components of wind speed,
- Relative Humidity and Temperature (**optional, code '17'**),
- Diffuse Solar Radiation (**optional, code 'P'**),
- Barometric pressure (**optional, code '4'**).

All models are equipped with compass.

RS232, RS485, RS422 and SDI-12 serial interfaces are available with **NMEA, MODBUS-RTU** and **SDI-12** communication protocols.

All versions have two analogical outputs, both for wind speed and for direction, factory configurable among 4÷20mA (**standard**), 0÷1V, 0÷5V, 0÷10V (**to be specified when ordering**).

Optionally available, (ACCREDIA) **ILAC-MRA** traceable factory calibration.

### Advantages:

- The absence of moving parts minimizes maintenance;
- High sensitivity for detecting very low speeds, which are not detectable by traditional methods;
- The low power of the instrument allows installation in remote sites, with power from solar panel and battery;
- The heating option '**R**' prevents the accumulation of snow and ice from forming, allowing accurate measurements in all environmental conditions;
- Fast and easy installation (on 40mm diameter pole, optional installation kit HD2004.20), alignment facilitated by built-in compass;
- The available measurement options join together in one single, compact and lightweight instrument, the main variables of interest in weather stations;
- MODBUS-RTU output allows instrument networking.

### Typical applications:

- Weather stations
- Environmental monitoring
- Agriculture
- Sports facility
- Marine and Harbour applications
- Airports
- HVAC
- Construction
- Renewable energy
- Building automation

### Technical specifications:

<b>Wind speed</b>	
Employed sensor type	Ultrasonic
Measuring Range	0...60 m/s
Resolution	0.01 m/s
Accuracy	Whichever is greater $\pm 0,2$ m/s or $\pm 2\%$ , (0...35 m/s) $\pm 3\%$ (> 35 m/s)
<b>Wind direction</b>	
Employed sensor type	Ultrasonic
Measuring Range	0...360°
Resolution	0.1°
Accuracy	$\pm 2^\circ$ RMSE from 1.0 m/s
<b>Compass</b>	
Employed sensor type	Magnetic
Measuring Range	0...360°
Resolution	0.1°
Accuracy	$\pm 1^\circ$
<b>Air temperature (option 17 is requested)</b>	
Employed sensor type	Pt100
Measuring Range	-40...+60 °C
Resolution	0.1 °C
Accuracy	$\pm 0,15^\circ\text{C} \pm 0,1\%$ of the measure
<b>Relative Humidity (option 17 is requested)</b>	
Employed sensor type	Capacitive
Measuring Range	0...100%RH
Resolution	0.1%
Accuracy (@ T = 15...35 °C)	$\pm 1,5\%$ UR (0..90%RH), $\pm 2\%$ RH (remaining field)
Accuracy (@ T = -40...+60 °C)	$\pm (1,5 + 1,5\%$ of the measure)%RH
<b>Barometric Pressure (option 4 is requested)</b>	
Principle	Piezoresistive
Measuring Range	600...1100 hPa
Resolution	0.1 hPa
Accuracy	$\pm 0,5$ hPa @ 20°C
<b>Solar Radiation (option P is requested)</b>	
Employed sensor type	Thermopile
Measuring Range	0...2000 W/m <sup>2</sup>
Resolution	1 W/m <sup>2</sup>
Accuracy	2 <sup>nd</sup> class Pyranometer
<b>General features</b>	
Power supply	10...30 Vdc
Power Consumption	26mA @ 12Vdc without heater, 6W with heater
Serial Outputs	RS232, RS485, RS422 and SDI-12
Communication Protocols	NMEA, MODBUS-RTU, SDI-12
Analog Outputs	2 analog outputs for wind speed and direction. Output type to be specified when ordering among 4...20mA ( <b>standard</b> ), 0...1V, 0...5V and 0...10V ( <b>option 0...10V requires power supply 15...30Vdc</b> )
Electrical connection	male connector M23 19 poles
Working temperature	-40...+60 °C
Dimensions	H=179mm, Ø=150mm (HD52.3D, HD52.3D4) H=200mm, Ø=150mm (HD52.3DP, HD52.3DP4) H=336mm, Ø=150mm (HD52.3D17, HD52.3D147) H=357mm, Ø=150mm (HD52.3DP17, HD52.3DP147)
Weight	about 1 Kg (full version, HD52.3DP147)
Housing	Plastic material: LURAN®S (ASA) Metallic parts made of AISI 316
Protection degree	IP66

**DIMENSIONS (mm)**

<p>HD 52.3D Wind speed and direction.</p> <p>HD 52.3D4 Wind speed, wind direction and barometric pressure.</p>	<p>HD 52.3DP Wind speed, wind direction and solar radiation.</p> <p>HD 52.3DP4 Wind speed, wind direction, solar radiation and barometric pressure.</p>
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<p>HD 52.3D17 Wind speed, wind direction, temperature and relative humidity.</p> <p>HD 52.3D147 Wind speed, wind direction, temperature, relative humidity and barometric pressure.</p>	<p>HD 52.3DP17 Wind speed and direction, solar radiation, temperature, relative humidity.</p> <p>HD 52.3DP147 Wind speed, wind direction, solar radiation, temperature, relative humidity and barometric pressure.</p>
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**ORDERING CODES**

**HD 52.3D**

**R** = heater option  
**Blank** = not heated

**P** = solar radiation option (pyranometer)  
**4** = barometric pressure option  
**17** = relative humidity and temperature option  
**P4** = solar radiation and barometric pressure option  
**P17** = solar radiation, relative humidity and temperature option  
**147** = barometric pressure, relative humidity and temperature option  
**P147** = solar radiation, barometric pressure, relative humidity and temperature option  
**No characters** = basic version: **wind speed and direction**

Analog outputs for wind speed and direction: 4...20mA standard; to be requested: 0...1V, 0...5V or 0...10V (**0...10V option requires power supply 15...30Vdc**).

**HD52.3D...**: 2 axes ultrasonic static anemometers for the measure of wind speed and direction, U-V Cartesian components of wind speed, relative humidity and temperature (**optional**), diffuse solar radiation (**optional**) and barometric pressure (**optional**). A compass is supplied. RS232, RS485, RS422 and SDI-12 serial outputs, **NMEA**, **MODBUS-RTU** and **SDI-12** communication protocols. Two analogical outputs, for wind speed and direction, factory configurable among 4÷20mA (**standard**), 0÷1V, 0÷5V or 0÷10V (**to be specified when ordering**). Heater option is available. Power supply: 10...30Vdc (15...30Vdc for 0÷10V analog outputs). Installation on a pole: external Ø 40mm and internal Ø 36mm. Input with M23 19-pin male connector and M23 19-pin female flying connector. **Optional 5m or 10m cable with a connector on one side and open wires on the other.**





HD 2004.20

**ACCESSORIES**

- HD52.3D-S:** Further copy of CD-ROM with HD52.3D-S software for PC connection, instrument configuration and monitor. For Windows® operating systems.
- RS 52 :** Serial connection cable with built-in USB/RS232 converter. USB connector for the PC and screw terminals on the instrument side. The cable is used to configure the instrument before the installation. Length 1.5 m.
- CP52.5:** Connection cable with M23 19-pin female flying connector on one side, free wires on the other. 5m long.
- CP52.10:** Connection cable with M23 19-pin female flying connector on one side, free wires on the other. 10m long.
- CP52.15:** Connection cable with M23 19-pin female flying connector on one side, free wires on the other. 15m long.
- CP52.20:** Connection cable with M23 19-pin female flying connector on one side, free wires on the other. 20m long.
- CP52.C:** Further M23 19-pin female flying connector.
- HD2004.20:** Tripod kit for installing anemometers on a flat base. Height 3m.
- HD2004.22:** 1200x530x34mm Solar panel mounting kit to a Ø 40÷50mm pole. AISI 304 stainless steel.



HD 32MT.1



HD 32.35FP

Environmental analysis

**HD2004.30:** 80W monocrystalline solar panel. Dimensions 1200 x 530 x 34 mm. Model MD5000080 – CS EVOLUTION.

**HD32.35:** Outdoor-box for complete weather station acquisition system. **Material: AISI 304 stainless steel.** Screen to protect the box from solar radiations. Powder-coated, anodized aluminium white colour. Double lock, one with a key. Dimensions: 450 x 300 x 210 mm. Protection degree: IP66. Equipped with the accessories to mounting on a mast diameter 36 ÷ 52 mm. Provided for 100÷240Vac mains power supply, includes: HD32MT.1 datalogger, power supply unit AC / DC with battery charger, rechargeable 12V battery, surge protection, breakers, power distribution terminals and connectors for connection to external sensors.

**HD32.35FP:** Outdoor-box for complete weather stations acquisition system. **Material: AISI 304 stainless steel.** Screen to protect the box from solar radiations. Powder-coated, anodized aluminium white colour. Double lock, one with a key. Dimensions: 450 x 300 x 210 mm. Protection degree: IP66. Equipped with the accessories to mounting on a mast diameter 36 ÷ 52 mm. For power supply by solar panel, includes: HD32MT.1 logger, solar panel charge controller, and power distribution terminal block connectors for connection to external sensors.

**HD32.36:** Outdoor-box for complete weather stations acquisition system. **Material: Polyester reinforced with hot-moulding Fiberglass.** Screen to protect the box from solar radiations. Powder-coated, anodized aluminium. White colour. Key lock. Dimensions: 415 x 310 x 170 mm. Protection degree: IP66. Equipped with the accessories to mounting on a mast diameter 36 ÷ 52 mm. Provided for 100÷240Vac mains power supply, includes: HD32MT.1 datalogger, power supply unit AC / DC with battery charger, rechargeable 12V battery, surge protection, breakers, power distribution terminals and connectors for connection to external sensors.

**HD32.36FP:** Outdoor-box for complete weather stations acquisition system. **Material: Polyester reinforced with hot-moulding Fiberglass.** Screen to protect the box from solar radiations. Powder-coated, anodized aluminium. White colour. Key lock. Dimensions: 415 x 310 x 170 mm. Protection degree: IP66. Equipped with the accessories to mounting on a mast diameter 36 ÷ 52 mm. For power supply by solar panel, includes: HD32MT.1 logger, solar panel charge controller, and power distribution terminal block connectors for connection to external sensors.



HD 32.35