
WIND DIRECTION SENSORS INSTALLATION AND USER MANUAL



VISIONSEN



Sensor Technology



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INFO

Wind direction sensors are a type of sensor that measures which direction the wind is coming from. It is used in meteorological stations, airports, marine applications, power plants, and wherever environmental monitoring is needed.

Wind direction sensors make a measurement based on the response of a piece, generally known as a wind vane, to the strength of the wind. The wind vane gives a specific reading when it rotates and aligns itself with the direction the wind is coming from. This reading is interpreted and used to determine the direction of the wind.

The advantages are:

- Reliable Data Collection
- Direct Reading
- Durability
- Low Maintenance Requirement
- Fast Response Time
- Wide Usage Area

Wind direction sensors have an important role in various sectors to collect reliable data and inform users about environmental conditions.

PRODUCT INTRODUCTION

Wind direction sensors, produced under the Visionsen brand, are widely used in areas that require meteorological measurement, especially in solar power plants, energy, maritime, aviation, agriculture and greenhouse cultivation.

Depending on the end user's system preference, both analog outputs and digital communication via Modbus® are available.

Visionsen wind direction sensors contain a microprocessor structure that stores calibration data, eliminating the need to reprogram data loggers or SCADA systems when installing a new power plant.

Wind direction sensors have a wind rose structure. Thanks to its durable aluminum structure, it is not affected by environmental conditions.

It has a wide measurement range that can be measured with infinite turn potentiometers or magnetic field sensors. The sensors used for measurement have high sensitivity and accuracy.

Visionsen wind direction sensors provide durability and reliability for outdoor environments with IP69K standard communication and power cables. It also provides easy installation during the installation phase with the M8 circular connector.

INSTALLATION

Wind direction is defined as the direction of the source of the wind flow, measured in degrees from true north at an increasing angle clockwise. A potentiometer is mounted directly on the shaft and rotates with the shaft. Changes in wind direction are detected by a balanced vane assembly and this rotation moves the potentiometer.

The output from the potentiometer shaft is interpreted by reading it in terms of voltage.

To report accurate weather information, you must be careful when deciding where to place your weather station.

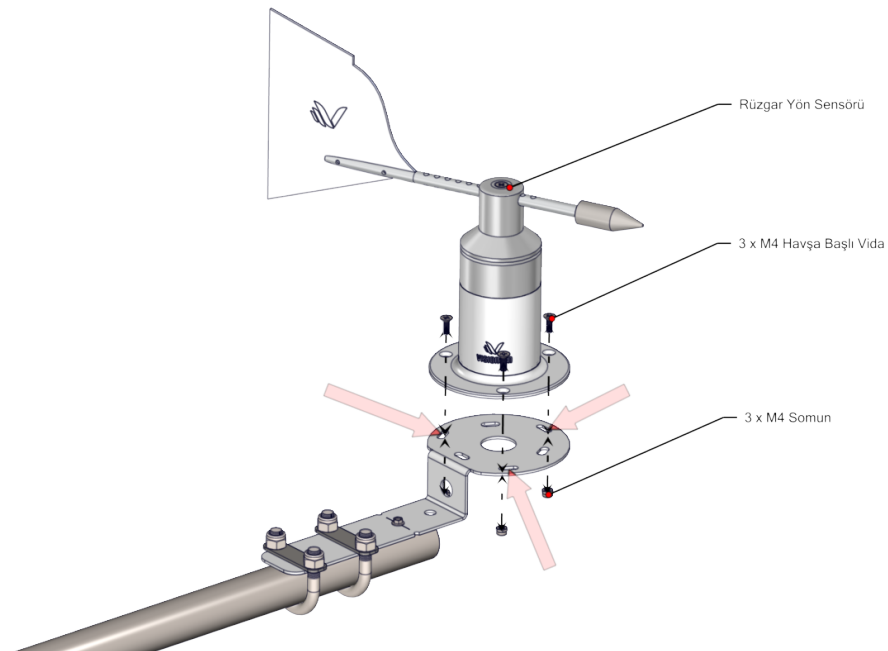
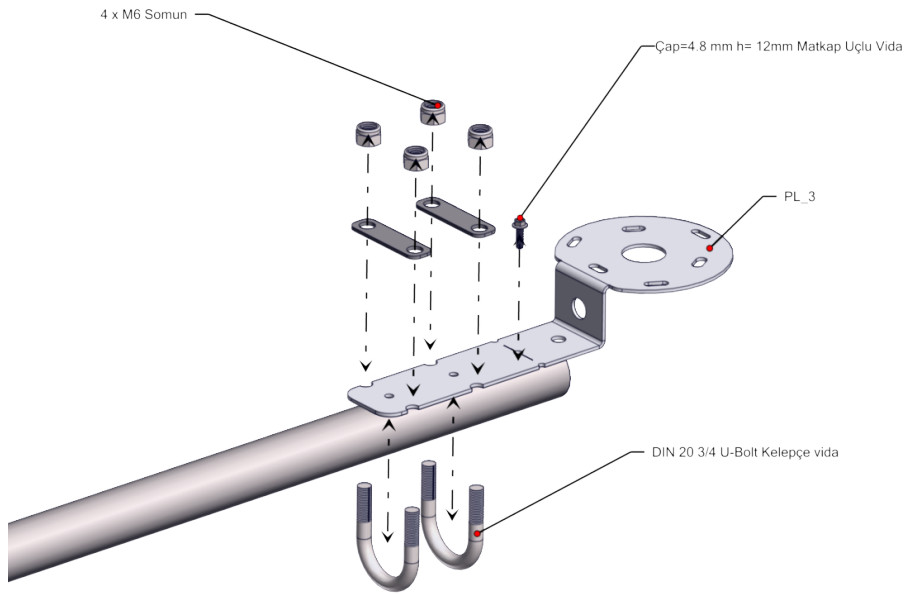
Positioning is the most important factor in ensuring accurate readings. In fact, location affects the accuracy of weather measurements much more than the quality of weather devices. Use the following guidelines to determine the best location to mount the wind direction sensor.

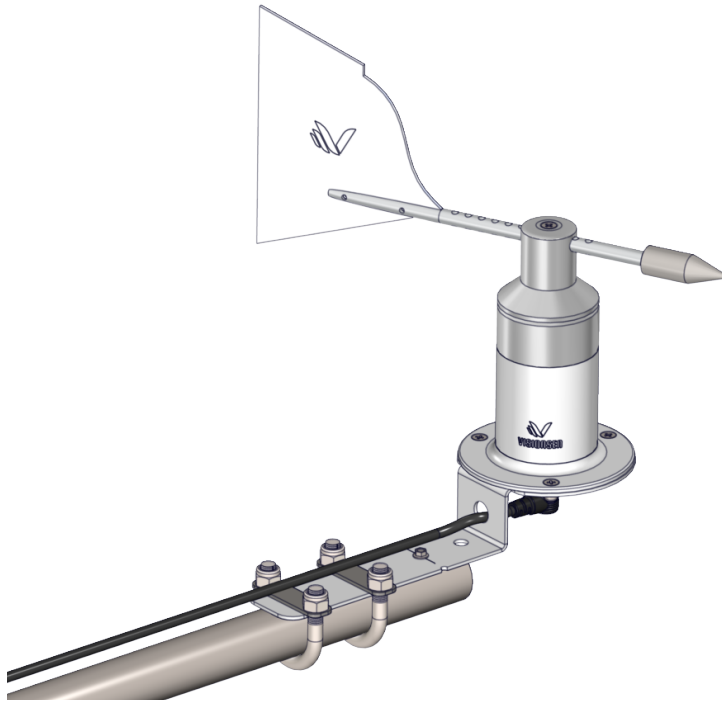
- Mount the fin on the north side (in the northern hemisphere) of your PV array, flush with unobstructed air
- Mount the direction sensor in a location where wind flow is not obstructed by trees and nearby buildings.
- Mount the sensor at least 2m above obstacles that may obstruct wind flow, such as trees or buildings.

MECHANICAL INSTALLATION

The wind direction sensor comes with PL_3 mounting bracket. 3 M4 screws located under the sensor come mounted on the apparatus.

You can mount it by using the 3 holes on the mounting bracket and following the instructions in the installation section. If it is desired to be placed on a pipe, it can be mounted with the help of 2 3/4 U-Bolt Clamp screws.





ELECTRICAL INSTALLATION

Wind direction sensors are produced with 3 or 4 wires, 3 m high quality PUR FLEX cable and waterproof IP68 connector, depending on the model.

POWER CONNECTION

The minimum supply voltage for MB and AN Series wind direction sensors models is 9 V DC. 12V DC voltage is recommended to ensure reliable performance. It is recommended to protect the output of the power supply with a fast-blow fuse with a maximum rating of 250 mA.

POWER CONSUMPTION

Wind Direction Sensor Voltage (V DC)	Current (mA)	Power (mW)
9	8	72
12	6	72
24	3	72

Maximum power consumption 72 mW at highest input voltage.

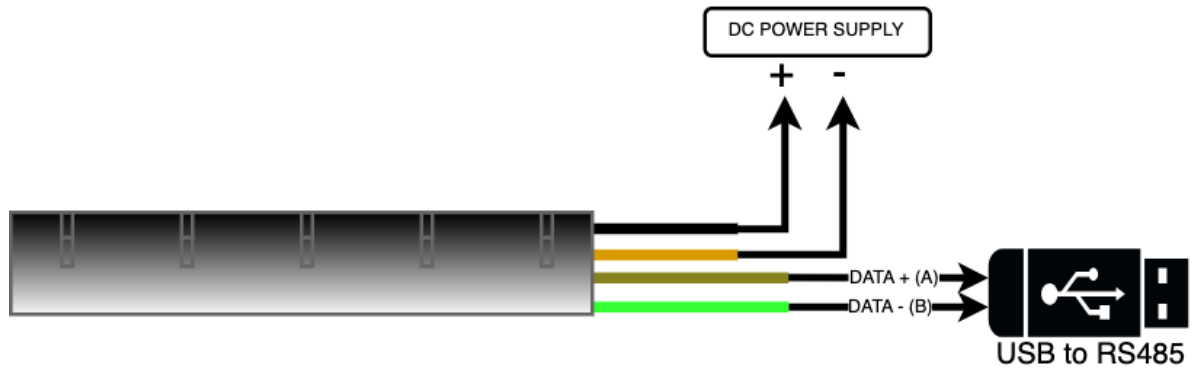
- Maximum input current 3 mA at lowest input voltage.
- Maximum inrush current 100 mA.

AN series (current output versions) include a 4 mA output representing 0° and a 20 mA full-scale output representing 360°, and a 0 V output representing 0° and a 1.5 V full-scale output representing 360°. It is set to represent .

COMPUTER CONNECTION



Power supply units for portable computers such as laptops can produce large voltage peaks. This may damage the digital interface of the device. Make sure there is galvanic separation between the inputs and outputs of the transducer.



Cable Color	Definition
White	9-28 V DC (+)
Brown	9-28 V DC (-)
Yellow	Data (+)
Green	Data (-)

COMMUNICATION

Visionsen Smart Tool software allows configuring Modbus® based wind direction sensors and observing real-time data.

CONNECTION SETTINGS

After connecting it to your computer with the USB-RS485 converter, you can observe the COM Port, Baud Rate, Stop Bits, Parity and Address settings of the sensor with Modbus® RTU communication protocol with the help of the Visionsen Smart Tool software you downloaded from www.visionsen.com after the connection is made. After configuring your new connection settings, you can click the "Send Settings" button.

The screenshot displays the Visionsen Smart Tool software interface. The window title is "Visionsen Smart Tool". The interface is divided into four tabs: "Bağlantı Ayarları" (selected), "Register Adresleri", "Cihaz Ayarları", and "Kalibrasyon".

The "Bağlantı Ayarları" tab is active and contains two sections:

- Seri Bağlantı Ayarları**: This section includes fields for COM Port (set to COM3), Baud Rate (set to 9600), Stop Bits (radio buttons for 1 and 2, with 1 selected), Parity (checkboxes for None, Even, and Odd, with None selected), and Address (set to 1). A "Yenile" button is located next to the COM Port field, and a "Bağlantıyı Kes" button is at the bottom.
- Yeni Bağlantı Ayarları**: This section includes fields for Baud Rate (set to 9600), Stop Bits (radio buttons for 1 and 2, with 1 selected), Parity (checkboxes for None, Even, and Odd, with None selected), and Address (empty). An "Ayar Gönder" button is at the bottom.

REGISTER ADDRESSES

If you want to change the register addresses defined in the Modbus® map, the desired address can be written in the section of the relevant sensor and a new register address can be defined after pressing the "Send Settings" button.

Visionsen Smart Tool
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Bağlantı Ayarları
Register Adresleri
Cihaz Ayarları
Kalibrasyon

Işınım 1	31
Işınım 2	32
Sıcaklık 1	15
Sıcaklık 2	19
Nem	16
Basınç	17
Rüzgar Yön	21
Rüzgar Hız	20
Oransal Işınım	0
Kirlilik Anlık	0
Kirlilik Oto	33
Sıcaklık 3	40

Adresleri Değiştir
Ayar Gönder

Işınım 1	61 W/m ²	Basınç	NA	Kirli. Oto	NA
Işınım 2	0 W/m ²	Rüz Yön	NA	Oran. Işın.	NA
Sıcaklık 1	NA	Rüz Hız	NA		
Sıcaklık 2	NA	Sıcaklık 3	NA		
Nem	NA	Kirli. Anlık	NA		

Bağlantı Başarılı
⋮

MODBUS® TABLE AND CONFIGURATION SETTINGS

Default communication parameters for MB series wind direction sensors are as follows:

Modbus® Baud Rate:9600

Parity: None

Data Bits:1

Stop Bits:1

Address:1

If you are using the software on-premise, make sure the software is pre-installed on the laptop.

For more details about installation, monitoring and data recording, you can contact the contact addresses.

Address		Type	Gain	Unit	Description
Hexadecimal	Decimal				
0x15	21	uint16	10	0-360°	Irradiance 1 (Temp. Comp.)

TECHNICAL DRAWINGS

WIND DIRECTION SENSORS MODELS

- WDS-P
- WDS-AN
- WDS-MB

