



3S-WS

3S-WS Wind Speed Sensor

USER MANUAL

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1. Introduction

The Wind Speed Sensor is part of the SEVEN meteorological sensor series which includes professional and intelligent measurement sensors with a digital or analog interface for environmental and industrial applications such as photovoltaic installations. It is used to measure horizontal wind speed.



Figure 1 - Aluminum Wind Speed Sensor



Figure 2 - Plastic Wind Speed Sensor

Measured horizontal wind speed data is transmitted to data loggers and receiver units as analog or digital output signals according to the input requirements.

SEVEN products use reliable, high-quality components to deliver accurate meteorological data for environmental and industrial applications. They are specifically designed to meet the requirements of PV plant and meteorological monitoring systems.

The product list including product codes is provided in Table 1.



Note: SEVEN has the right to make modifications on this documentation without prior notice.

Type	Item Code	Housing Material	Output
1	3S-WS-PLS-A	Aluminum	Pulse
2	3S-WS-MB-A	Aluminum	Modbus RTU
3	3S-WS-I-A	Aluminum	Analog (4-20 mA)
4	3S-WS-PLS-P	Plastic (ASA)	Pulse
5	3S-WS-MB-P	Plastic (ASA)	Modbus RTU
6	3S-WS-I-P	Plastic (ASA)	Analog (4-20 mA)

Table 1 - Item List and Codes

3S-WS-PLS-A	3S-WS-MB-A	3S-WS-I-A
3S-WS-PLS-P	3S-WS-MB-P	3S-WS-I-P

Figure 3 - Models

2. Wind Speed Sensor Installation

It is suggested that the system be operated at ground level to make sure that all components are working properly prior to installation. A general diagram of the progress of the installation steps is given below.

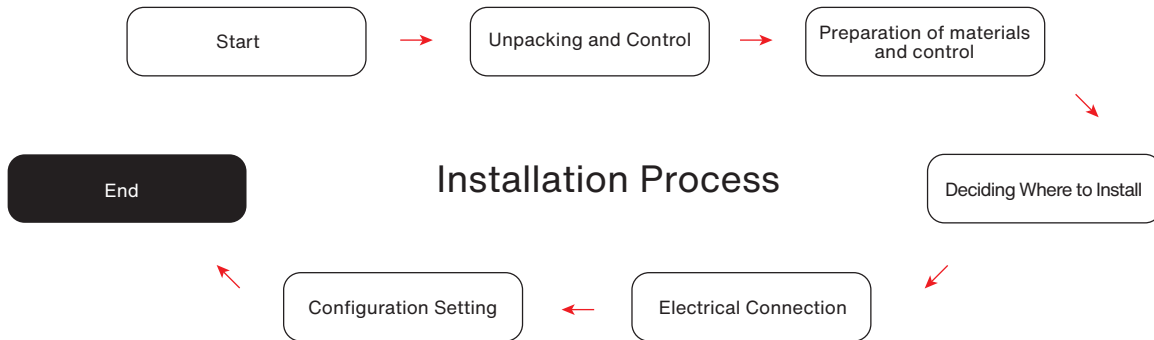


Figure 4 – Installation Process

2.1. Unpacking and Control

Upon receipt of the product, it must be carefully checked whether the package content is complete. SEVEN Sensor must be contacted if any of the components are missing, damaged or defective.

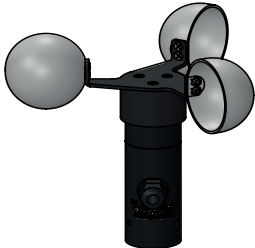
Plastic Wind Speed Sensor	
	
Qty:1	Qty:2
Plastic Wind Speed Sensor	M4 x 10 mm Socket Head Cap Screw
Aluminum Wind Speed Sensor	
	
Qty:1	Qty:3
Aluminum Wind Speed Sensor	M5 x 10 mm Socket Head Cap Screw

Figure 5 – Packing List



Note: Quantity and content of the received material may be different based on the confirmed order.

2.2 Field Requirements and Considerations

Each site is different and has its unique challenges. For this reason, the product installation may differ in each site. First it should be decided where the product will be installed. The Wind Speed Sensor can be affected by obstructions and local topography so it should be placed no closer than 10 times the height of any obstruction.

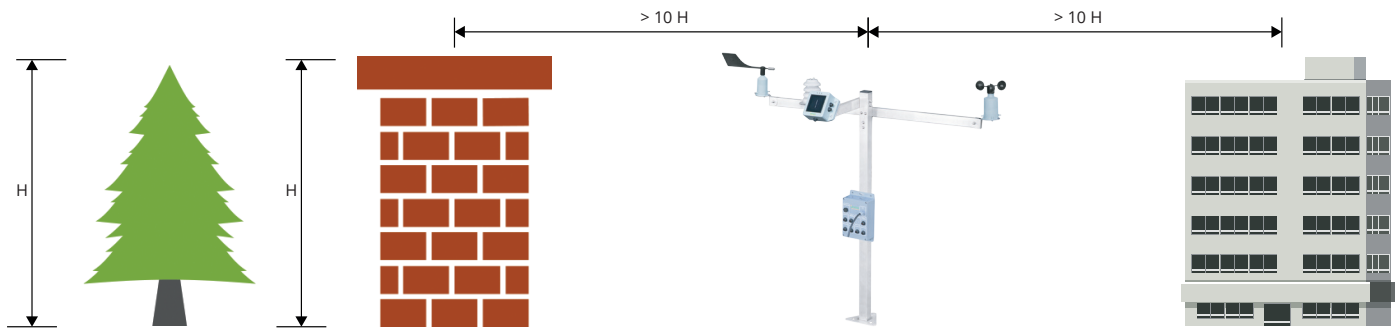


Figure 6 - Deciding Where to Install

If the Wind Speed Sensor is to be mounted on a roof, it should preferably be installed on the side of the building facing the prevailing wind direction. The sensor must be positioned on a strictly vertical axis.

Correct and Incorrect Field Installation

For the Wind Speed Sensor to measure accurately in the field, it must be installed in a location with unobstructed airflow, at a sufficient distance from obstacles, above the top level of the panel, and with proper vertical alignment. Installations under the panel, at a low level, or based on an incorrect reference point are considered incorrect installations. Examples of correct and incorrect field installations of the Wind Speed Sensor are shown in Figure 6.

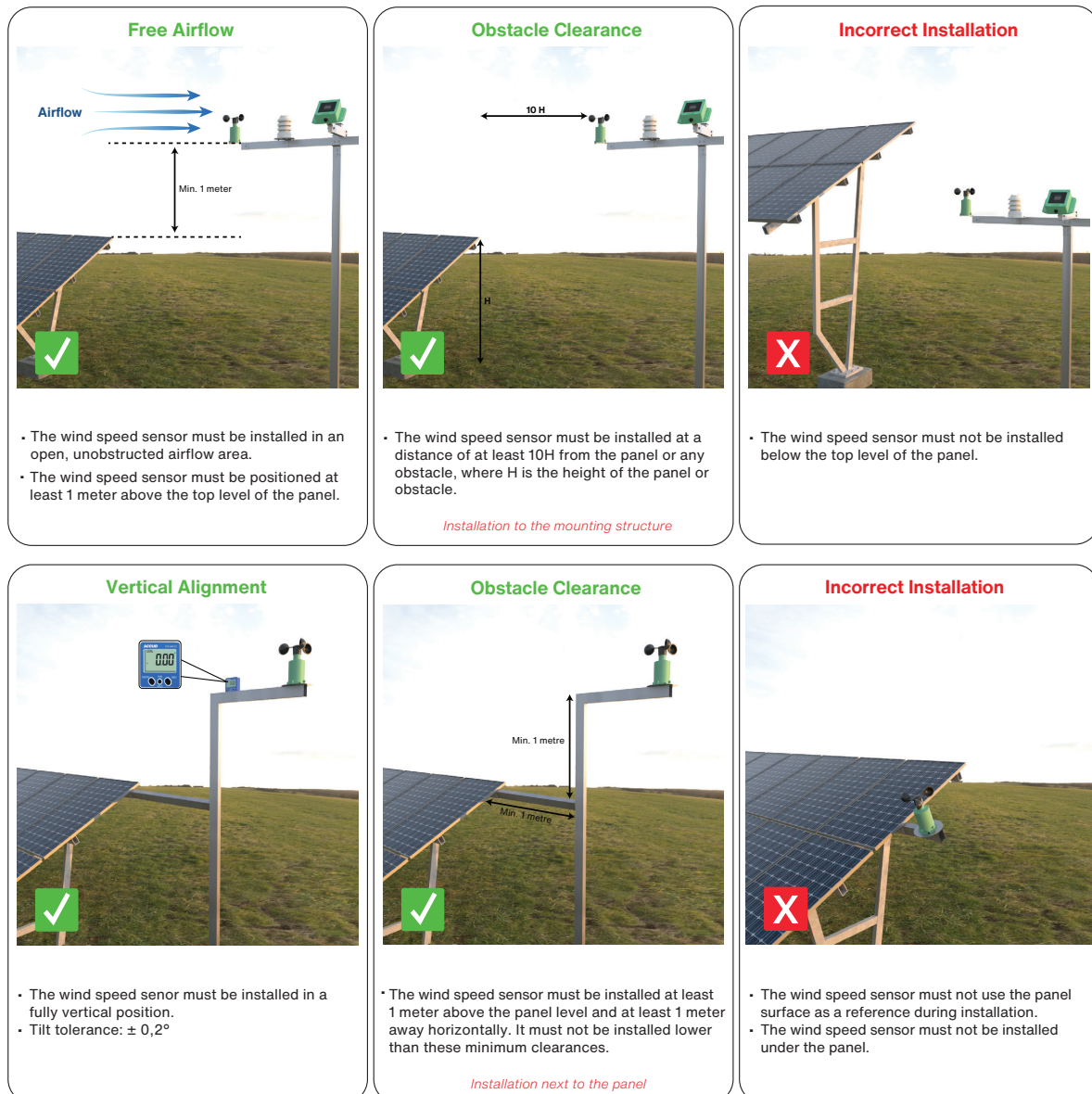


Figure 7 - Correct and Incorrect Field Installation

2.3. Preparation of Materials to be Used in Installation

The materials needed during installation are provided by SEVEN. The user should only prepare the following hand tools and personal protective equipment.

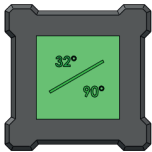
Materials		
		
Gloves	Tape Measure	Drill
		
3 mm - 4 mm Allen Key	Spirit Level	Digital Inclinometer

Figure 8 – Materials to be Used in Installation

2.4. Installation

3S-WS Wind Speed Sensor is designed with the Plug & Run principle. The installation can be easily completed by a qualified electrician by following SEVEN instructions.

2.4.1. Pipe Mounting

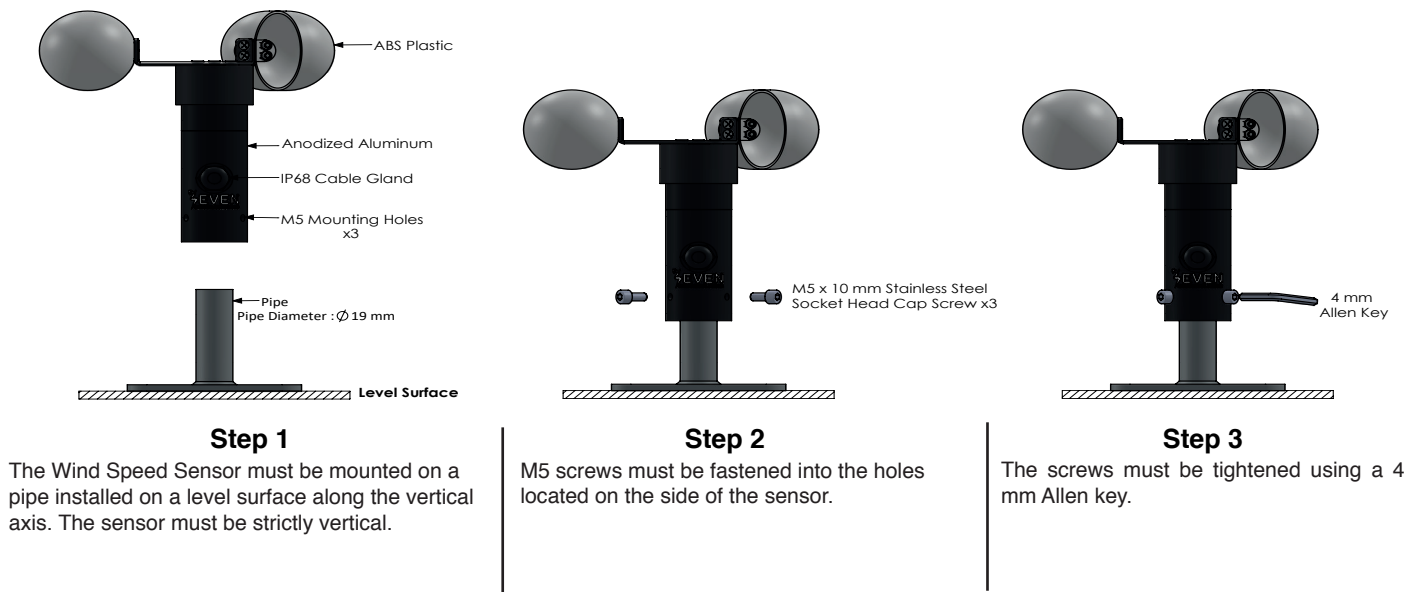
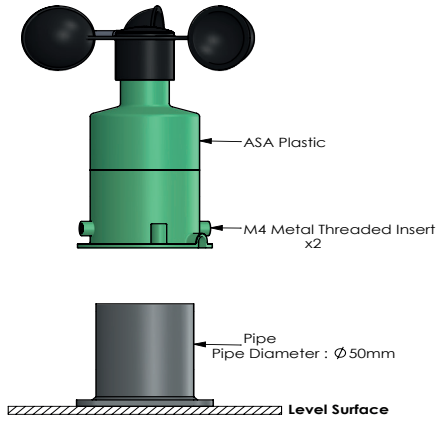
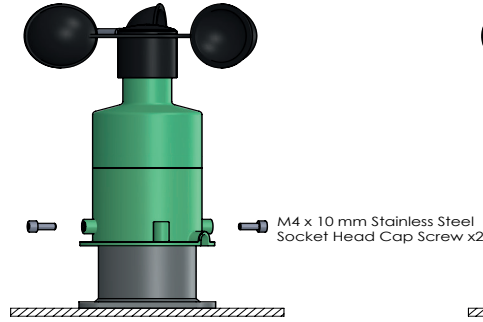


Figure 9 - Aluminum Wind Speed Sensor Pipe Mounting



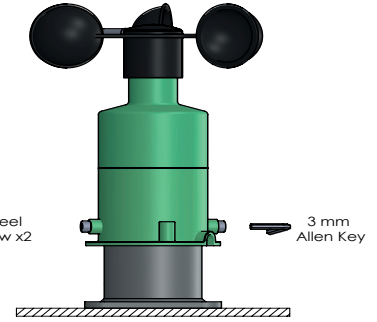
Step 1

The Wind Speed Sensor must be mounted on a pipe installed on a level surface along the vertical axis. The sensor must be strictly vertical.



Step 2

M4 screws must be fastened into the holes located on the side of the sensor.

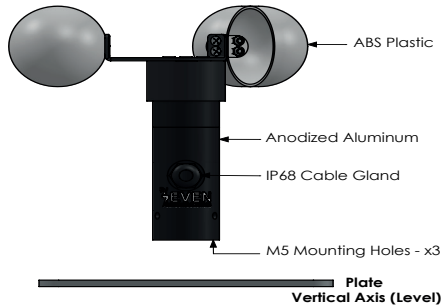


Step 3

The screws must be tightened using a 3 mm Allen key.

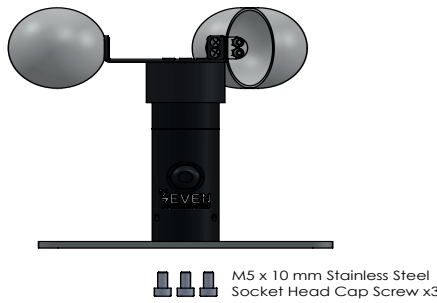
Figure 10 - Plastic Wind Speed Sensor Pipe Mounting

2.4.2. Ground Mounting



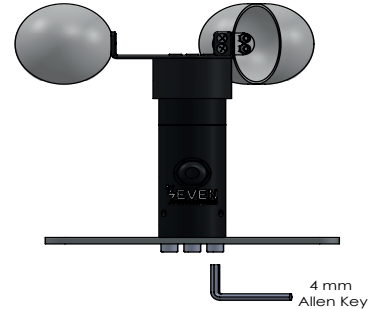
Step 1

The Wind Speed Sensor must be mounted on a plate placed on a level surface along the vertical axis. The sensor must be strictly vertical.



Step 2

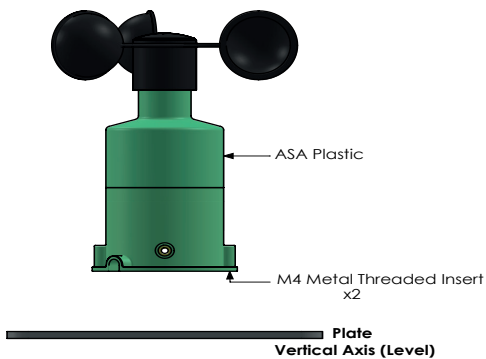
The M5 screws must be fastened into the holes located on the bottom side of the sensor.



Step 3

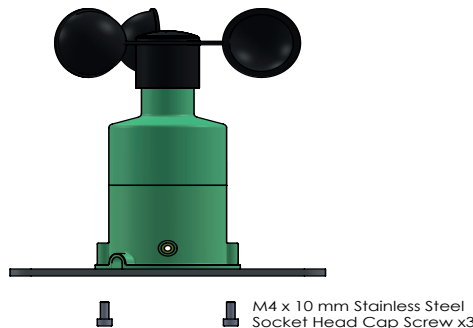
The screws must be tightened using a 4 mm Allen key.

Figure 11 - Aluminum Wind Speed Sensor Ground Mounting



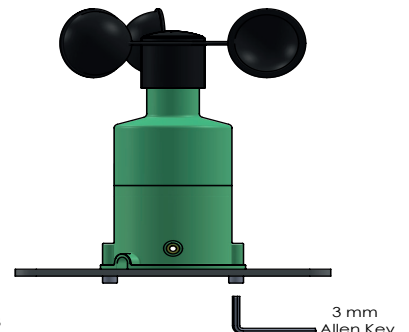
Step 1

The Wind Speed Sensor must be mounted on a plate placed on a level surface along the vertical axis. The sensor must be strictly vertical.



Step 2

The M4 screws must be fastened into the holes located on the bottom side of the sensor.



Step 3

The screws must be tightened using a 3 mm Allen key.

Figure 12 - Plastic Wind Speed Sensor Ground Mounting

2.5. Inspection and Maintenance

It is important to check the tightness of connection elements, the condition of cables, and for any damage, degradation, or disconnection in sensors and electrical enclosures. Additionally, observe the sensor enclosures for signs of moisture or pests and regularly inspect for potential issues such as loose cable connections or brittle connections.



Note: It is recommended to use thread-locking fluid for fasteners.

According to IEC 61724-1:2021, the monitoring system should be inspected at least annually and preferably at more frequent intervals.

2.6. Waste Disposal



This symbol indicates that the product is subject to European Union regulations on separate waste disposal. This applies to both the product itself and any accessories bearing the same symbol. Such products must not be disposed of as unsorted household waste.

3. Cable Connections

The voltage supply for the Wind Speed Sensor is 12 - 30 V DC. Operation with a voltage supply of 24 V is recommended. The communication and power cable of Wind Speed Sensor should be always laid separated from AC/ DC cables.



Note: The installation and electrical connections of SEVEN sensors should be carried out by a qualified electrician.

3.1. Wind Speed Sensor (3S-WS-PLS)

The Wind Speed Sensor is designed to measure wind speed in m/s via a reed relay output. The Wind Speed Sensor is fully compatible with SEVEN Irradiance Sensors, Sensor Box models, and all data loggers or receiver units that support pulse signal input.

Wire Assignment for Power & Communication

Pulse (+)	Brown
Pulse (-)	White
Protective Grounding	Black

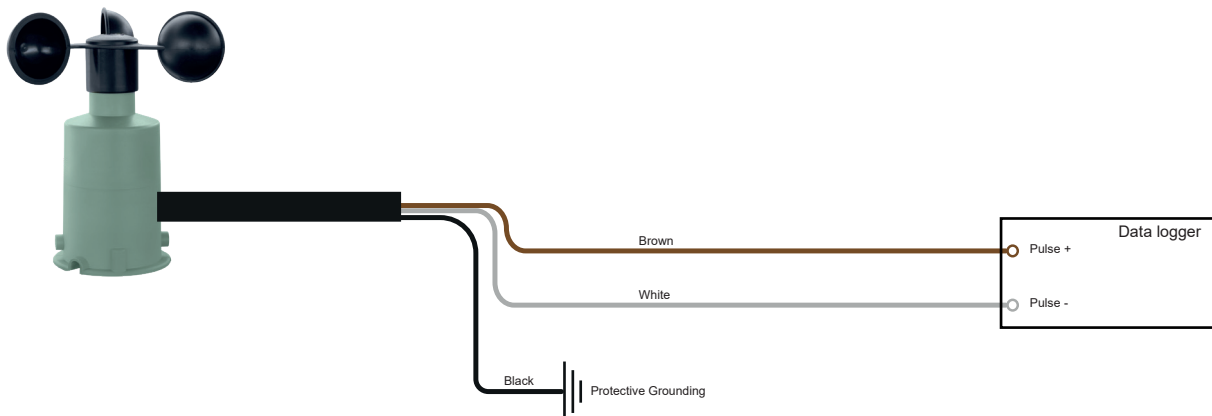


Figure 13 - 3S-WS-PLS-P Wire Assignment for Power & Communication

Wire Assignment for Power & Communication

Pulse (+)	Brown
Pulse (-)	White
Protective Grounding	Black
Sensor Housing Ground	Provided by the customer

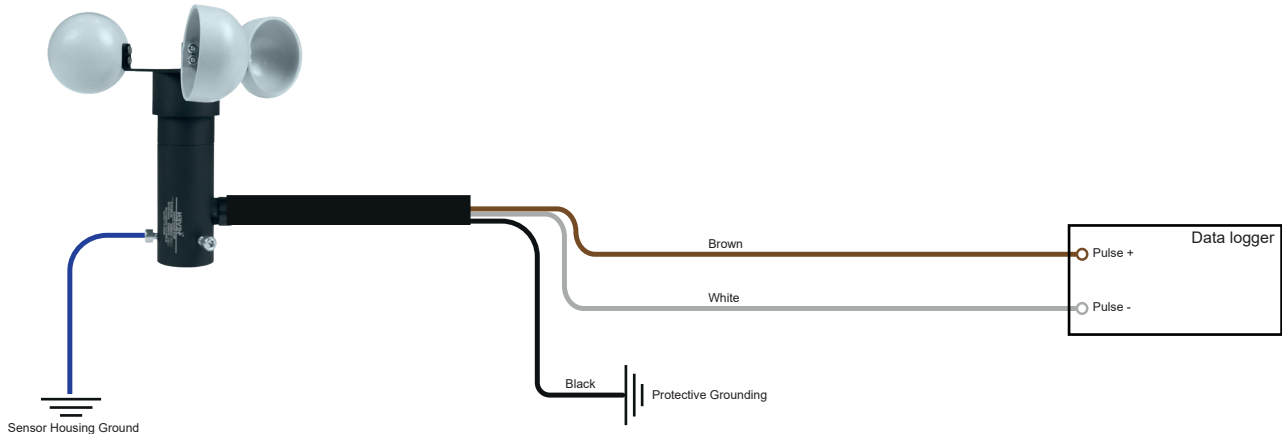


Figure 14 - 3S-WS-PLS-A Wire Assignment for Power & Communication

3.2. Wind Speed Sensor (3S-WS-MB)

The Wind Speed Sensor features an electrically isolated, half-duplex, 3-wire RS485 interface for configuration, communication, and firmware updates.

Wire Assignment for Power & Communication

Signal Ground	Red
RS485 A / Data (+)	Green
RS485 B / Data (-)	Yellow
Power (+)	Brown
Power (-)	White
Protective Grounding	Black

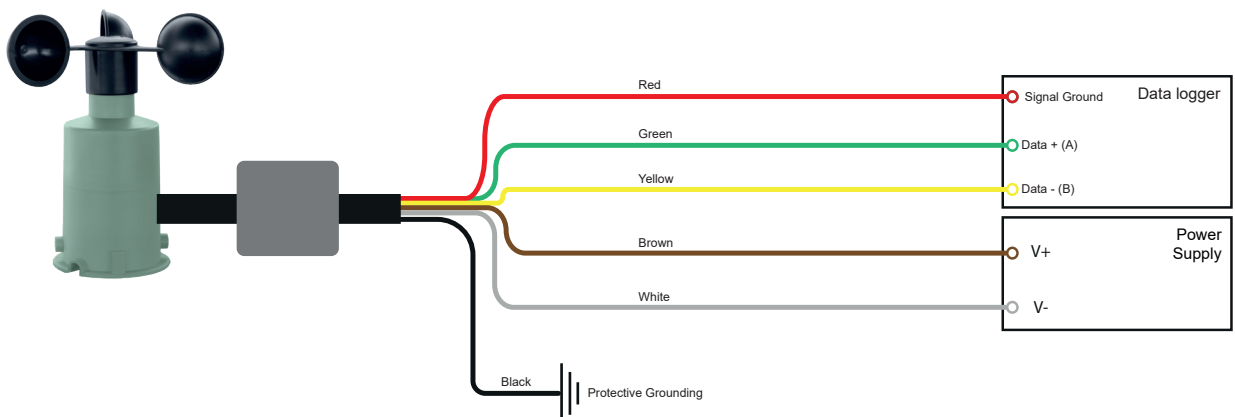


Figure 15 - 3S-WS-MB-P Wire Assignment for Power & Communication

Wire Assignment for Power & Communication

Signal Ground	Red
RS485 A / Data (+)	Green
RS485 B / Data (-)	Yellow
Power (+)	Brown
Power (-)	White
Protective Grounding	Black
Sensor Housing Ground	Provided by the customer

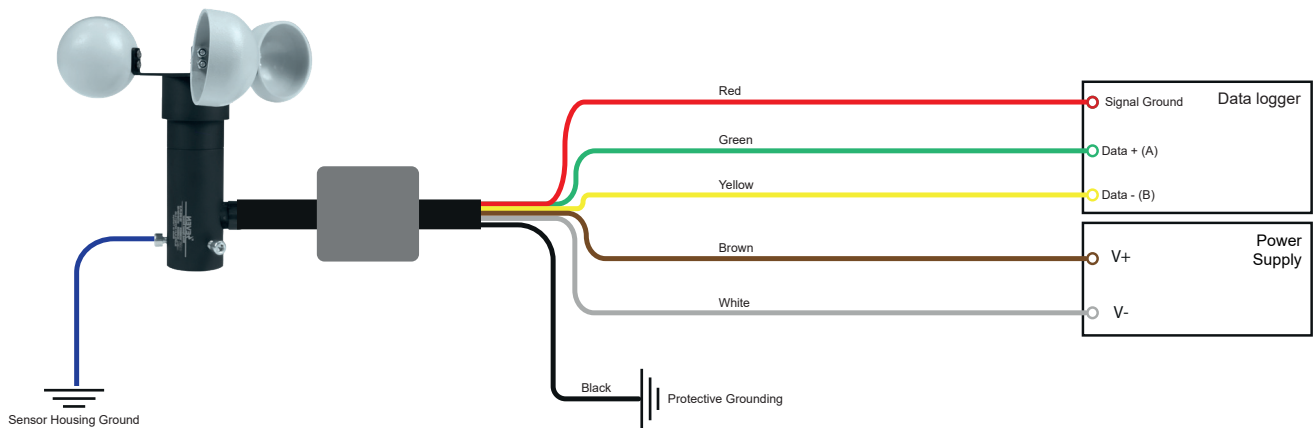


Figure 16 - 3S-WS-MB-A Wire Assignment for Power & Communication

3.3. Wind Speed Sensor (3S-WS-I)

Wire Assignment for Power & Communication

4-20 mA (+)	Green
4-20 mA (-)	Yellow
Power (+)	Brown
Power (-)	White
Protective Grounding	Black

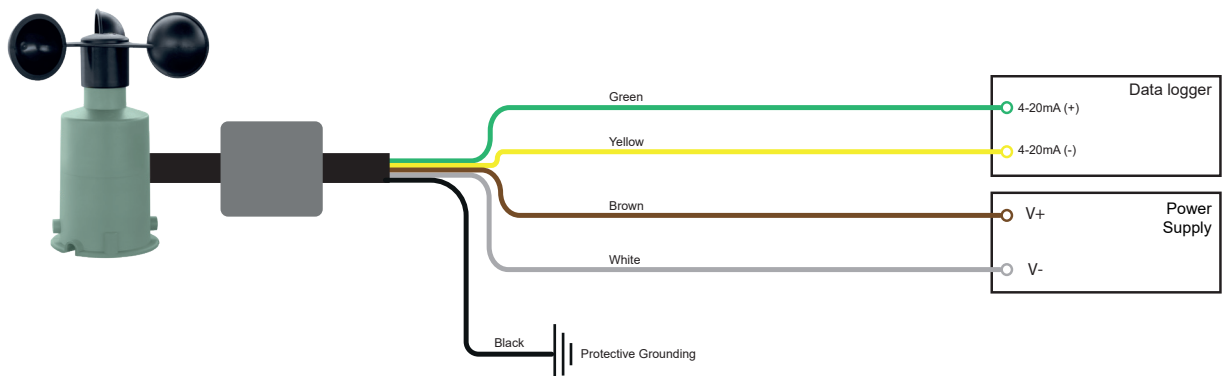


Figure 17 - 3S-WS-I-P Wire Assignment for Power & Communication

Wire Assignment for Power & Communication

4-20 mA (+)	Green
4-20 mA (-)	Yellow
Power (+)	Brown
Power (-)	White
Protective Grounding	Black
Sensor Housing Ground	Provided by the customer

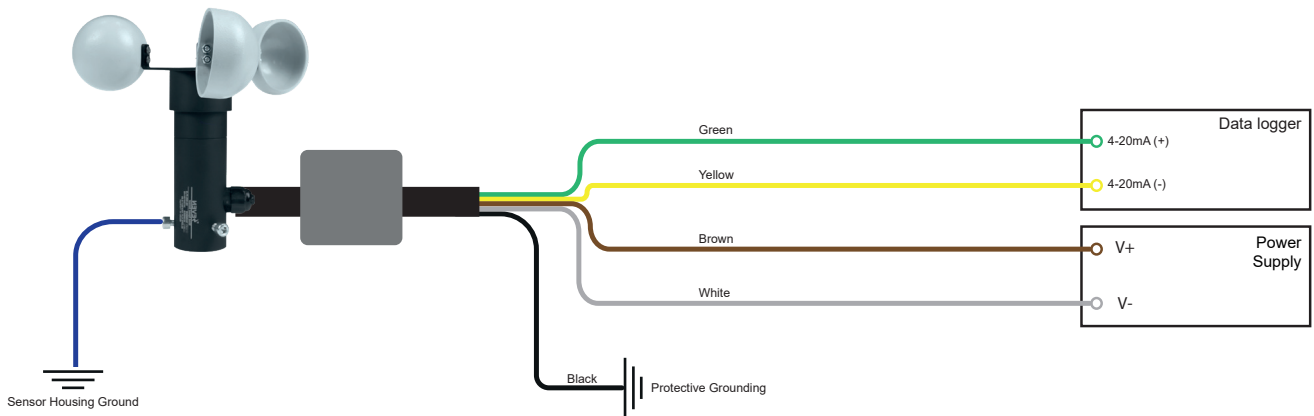


Figure 18 - 3S-WS-I-A Wire Assignment for Power & Communication

Enter the 4–20 mA sensor configuration information into your data logger as shown below.

Operating Parameter

Lower Limit	0,9 m/s
Upper Limit	60 m/s
Start mA	4 mA
End mA	20 mA

4. Configuration and Communication

After the Modbus Wind Speed Sensor has been correctly installed and connected, the sensor starts measuring autonomously.

Attention must be paid to the following points:

- A measurement test must be performed on the Wind Speed Sensor using the 3S-WS Configuration Tool, and its proper operation in the field must be verified.
- If multiple Modbus devices are operated on the same network, a unique device ID must be assigned to each device.



Note: The 3S-WS Configuration Tool is used for the 3S-WS-MB Wind Speed Sensor model.

4.1. 3S-WS Configuration Tool

The 3S-WS-MB Configuration Tool is a software tool used to test the communication of the Modbus Wind Speed Sensor and configure its Modbus parameters. It can also be used to update the software of the Modbus Wind Speed Sensor.

For configuration and testing, a Windows® PC with a serial bus interface set as a serial COM port, the 3S-WS-MB Configuration Tool software, and a USB-to-RS485 Converter are required.

For more details, please refer to the 3S-WS-MB Configuration Tool User Manual.

https://www.sevensensor.com/files/d/en/3S-WS_Configuration_tool_v1.0.pdf

4.2. Modbus Map

The Modbus addresses and features required to configure the Wind Speed Sensor with systems such as data loggers are specified in the table below.

ID-Dec	ID-Hex	Parameter	Range	Resolution	Description
30053	0x35	Wind Speed	0,9 - 60 m/s	0,1 m/s	Horizontal Wind Speed

Table 2 - Modbus Addresses



Note: The table above lists the addresses that need to be monitored by the user for the Wind Speed Sensor software version 3. If additional Modbus and SunSpec addresses or the software-specific features of these addresses are required, you can download the detailed Modbus map from the link below.

<https://www.sevensensor.com/download>

5. Contact Details

Please feel free to contact us if you face any difficulties during installation or configuration.

Address	Pınarcay OSB Mah. Organize San. Tesisleri 11. Cad. No:35 Merkez / Corum
Phone	+90 553 228 7455
Email	teknik@sevensensor.com
Website	www.sevensensor.com