3S-WS

3S-WS Wind Speed Sensor

USER MANUAL

USER MANUAL TABLE OF CONTENTS

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 **/ Created** 21.09.2023

1. Introduction

The Wind Speed Sensor is part of the SEVEN meteorological sensor range, which includes professional and intelligent measuring sensors with a digital or analog interface for environmental and industrial applications such as PV plants.

Figure 1 – Wind Speed Sensor

It is a measuring transmitter used to measure the horizontal wind speed.

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

SEVEN products use reliable, high-quality components to provide accurate meteorological information in environmental and industrial applications. They are specially designed according to the requirements of PV plant monitoring systems.

Note: *SEVEN reserves the right to make changes in this entire document without prior notice.*

Models

3S-WS-PLS

Small and economical wind speed sensors with potentiometer output. They are ideal measurement transmitters with the best price and performance ratio for the standard requirements of industrial and environmental applications such as PV plants.

3S-WS-I / 3S-WS-I-H

Wind speed sensors with analog 4-20 mA output specially designed for advanced industrial applications and environmental conditions. The housings are made of seawater-resistant anodized aluminum, making them highly durable and resistant. 3S-WS-I-H Wind Speed Sensor with heating can be used safely in locations with a risk of icing.

3S-WS-MB

Professional and intelligent measuring sensors with a digital interface for environmental and industrial applications like PV plants. The measured value can be transmitted to monitoring instruments, data loggers and other receiving units via the serial RS485 interface with MODBUS RTU protocol.

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

2. Wind Speed Sensor Installation

It is suggested that the system be operated at ground level to ensure all components work properly before installation. A general diagram of the progress of the installation steps is given below.

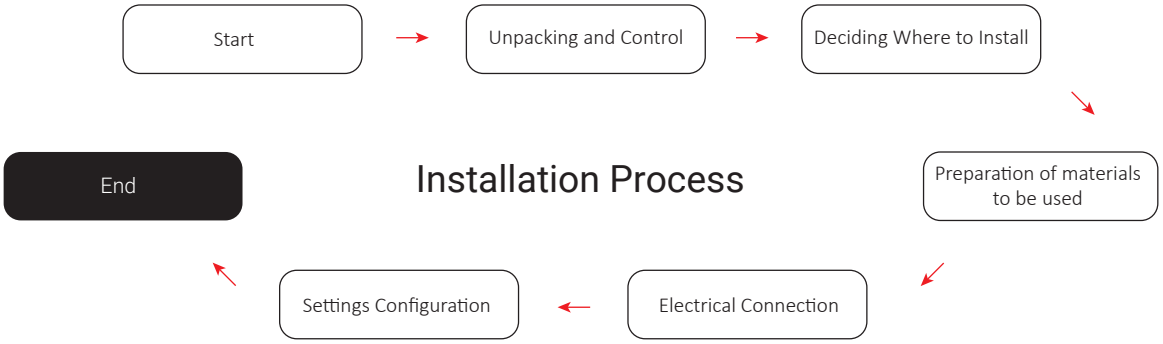


Figure 2 – Installation Process

2.1. Unpacking and Control

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

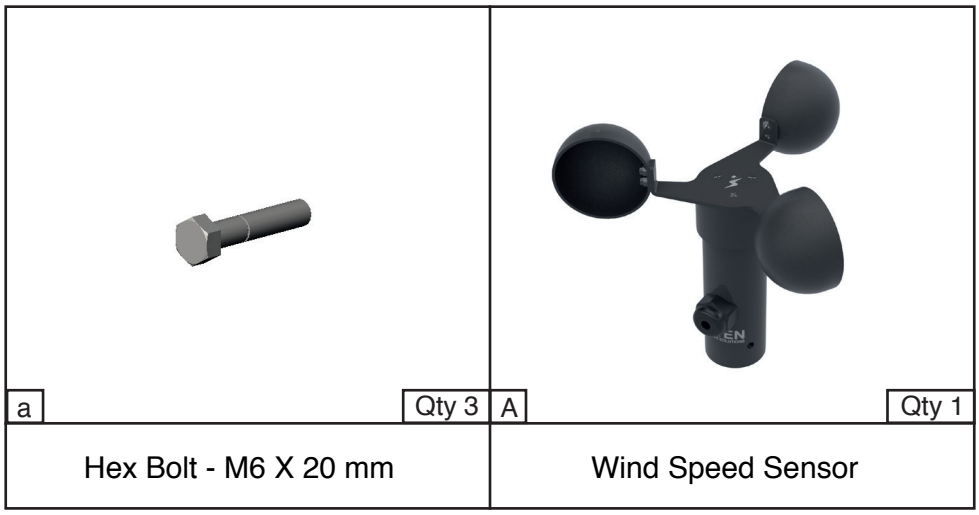


Figure 3 – Mounting Structure Packing List

Note: *The quantity and content of the received material may differ based on the customer's confirmed order.*

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

2.2. Site 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, the Wind Speed Sensor should be placed no closer than 10 times the height of any obstruction.

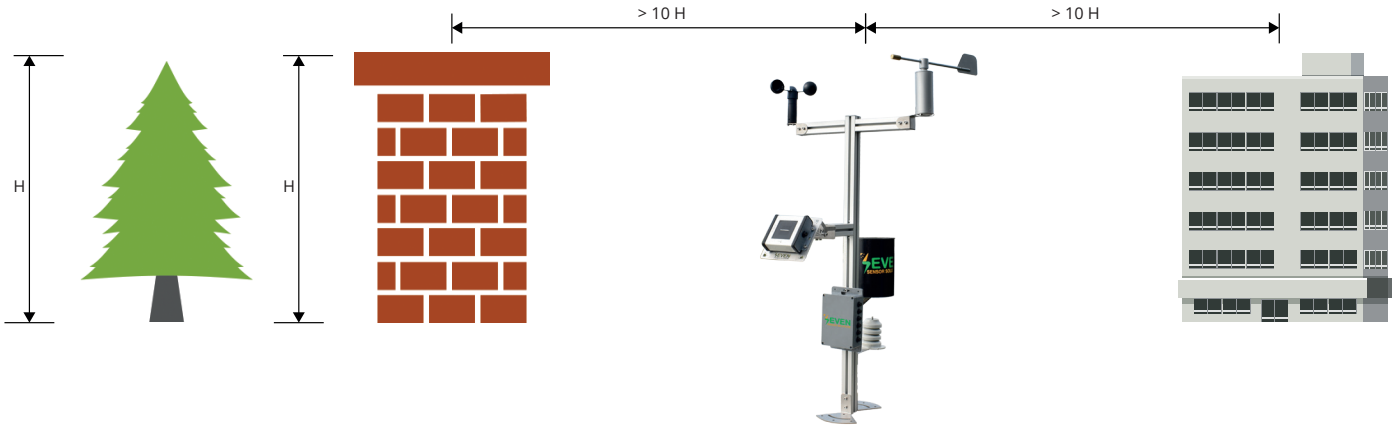


Figure 4 – Installation Site Selection

When the Wind Speed Sensor is to be mounted on a rooftop, it should preferably be mounted on the prevailing wind side of the building.

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.

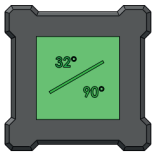
Materials		
		
Gloves	Meter	Drill
		
6 mm Concrete Screw Drill Bit	Spirit Level	Digital Compass

Figure 5 – Materials to be Used in Installation

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

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.

Pipe Mounting

1st Step

Wind Speed Sensor must be placed on the pipe parallel to the ground

2nd Step

M6 Bolts should be screwed into the holes on the sides of the sensor

3rd Step

Bolts should be tightened by a 10-11 wrench. The pipe must be fixed on a flat surface

Ground Mounting

1st Step

The mounting area must be flat and parallel to the ground

2nd Step

3 M6 bolts and nuts should be used for assembly

3rd Step

Bolts should be tightened by a 10-11 wrench

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

2.5. Inspection and Maintenance

Fastener tightness and cable conditions, looking for damage, deterioration, or disconnection of sensors and electrical enclosures, evidence of moisture or vermin in enclosures, loose wiring connections, embrittlement of attachments and other potential problems, should be checked periodically.

Note: *We recommend using 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.

3. Connections

The supply voltage for the Wind Speed Sensors is 12 - 30 V DC. Operation with a supply voltage of 24 V is recommended.

The communication and power cable of the Wind Speed Sensor should always be laid separately 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-MB)

The Wind Speed Sensor has an electrically isolated, half-duplex, 2-wire RS485 interface for configuration, communication and firmware updates.

Wire Assignment for Power & Communication	
RS485 A / Data (+)	Green
RS485 B / Data (-)	Yellow
Positive Supply Voltage	Brown
Supply Voltage Ground	White

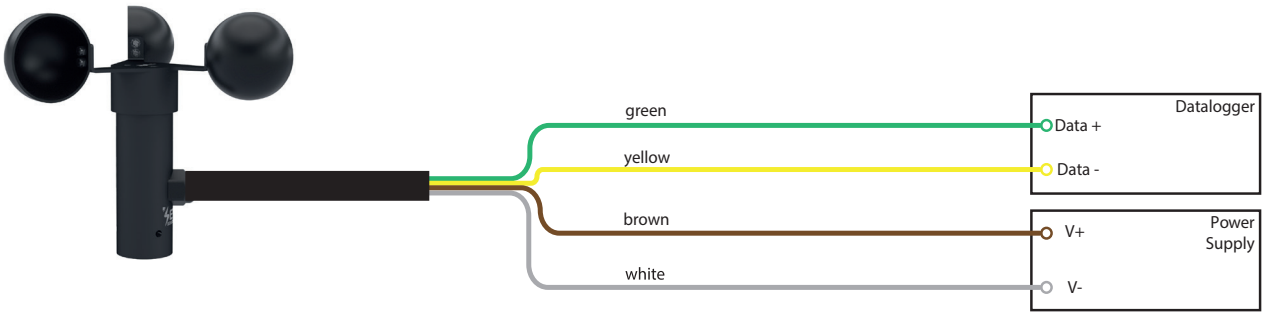


Figure 6 – Wire Assignment for Power & Communication

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

3.2. 4-20 mA Wind Speed Sensor (3S-WS-I)

Wire Assignment for Power & Communication	
4-20 mA (+)	Green
4-20 mA (-)	Yellow
Positive Supply Voltage	Brown
Supply Voltage Ground	White

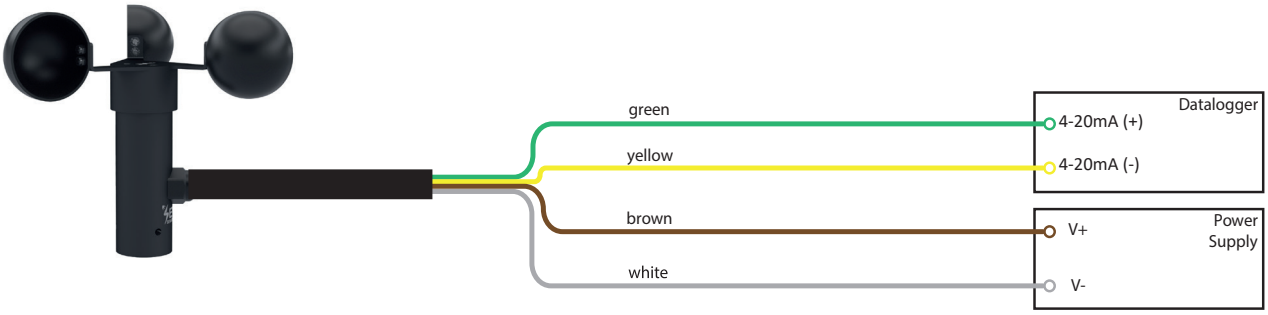


Figure 7 – Wire Assignment for Power & Communication

Enter the 4-20 mA Sensor configuration information in your datalogger as follows.

Running Parameter	
Lower Threshold	0,9 m/s
Upper Threshold	50 m/s
Start mA	4 mA
End mA	20 mA

4. Configuration and Communication

Once the Wind Speed Sensor has been installed and connected correctly, the sensor takes measurements autonomously.

Attention must be paid to the following points:

- A measurement request should be made to the wind speed sensor with the 3S-WS Configuration Tool to check whether it is correctly operating on the site.
- If several Modbus Devices are operated on a 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. 3S-WS-I Wind Speed Sensor model does not need any configuration.*

Follow SEVEN instructions to configure the Wind Speed Sensor on dataloggers.

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

4.1. 3S-WS Configuration Tool

3S-WS Configuration Tool is software for testing communication and adjusting Modbus parameters on the Wind Speed Sensor. The 3S-WS Configuration Tool can also be used to update the firmware of the Wind Speed Sensor.

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

Download the software 3S-WS Configuration Tool and install it on your computer. The download link is below.
https://www.sevensensor.com/files/d/s/v1.0_3S_WS_Configuration_Tool.zip

Note: *If the serial COM port does not appear when the 3S-WS Configuration Tool is connected to the computer via USB to RS485 Converter, the serial COM port driver must be updated.*

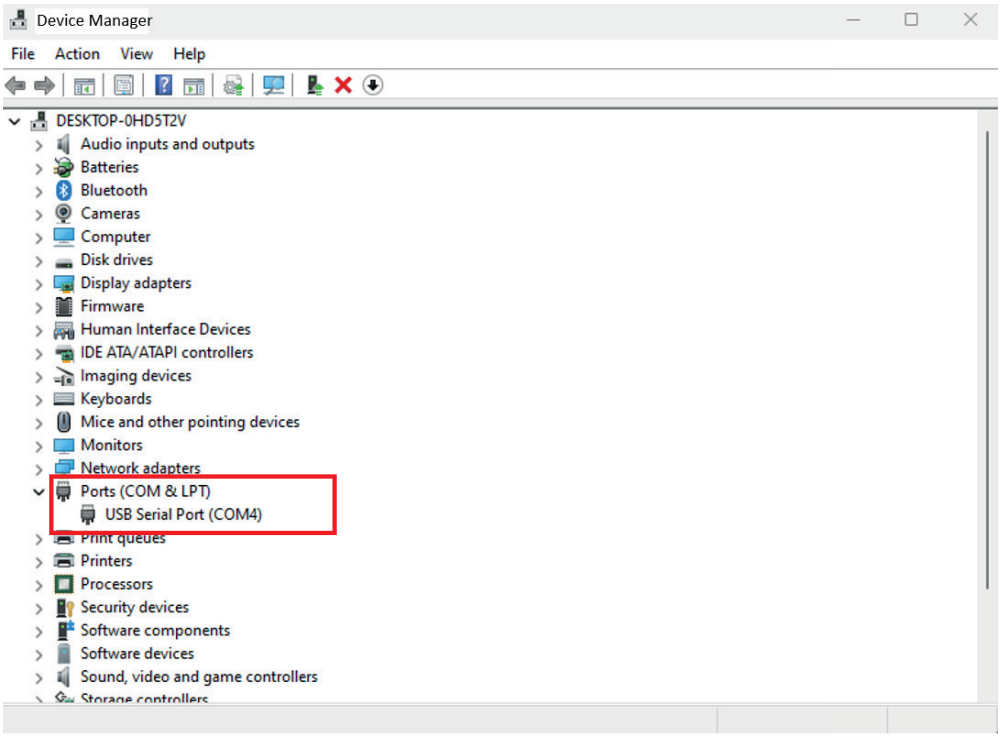


Figure 8 – Serial COM Port

Note 2: *Always make sure to use the correct and current version of the 3S-WS Configuration Tool for Wind Speed Sensor configuration.*

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

4.1.1. Establishing Connection

The Wind Speed Sensor is connected to the computer via USB to RS485 Converter by making a cable connection as described in the “4. Connections” section. After launching the 3S-WS Configuration Tool, the following screen will appear.

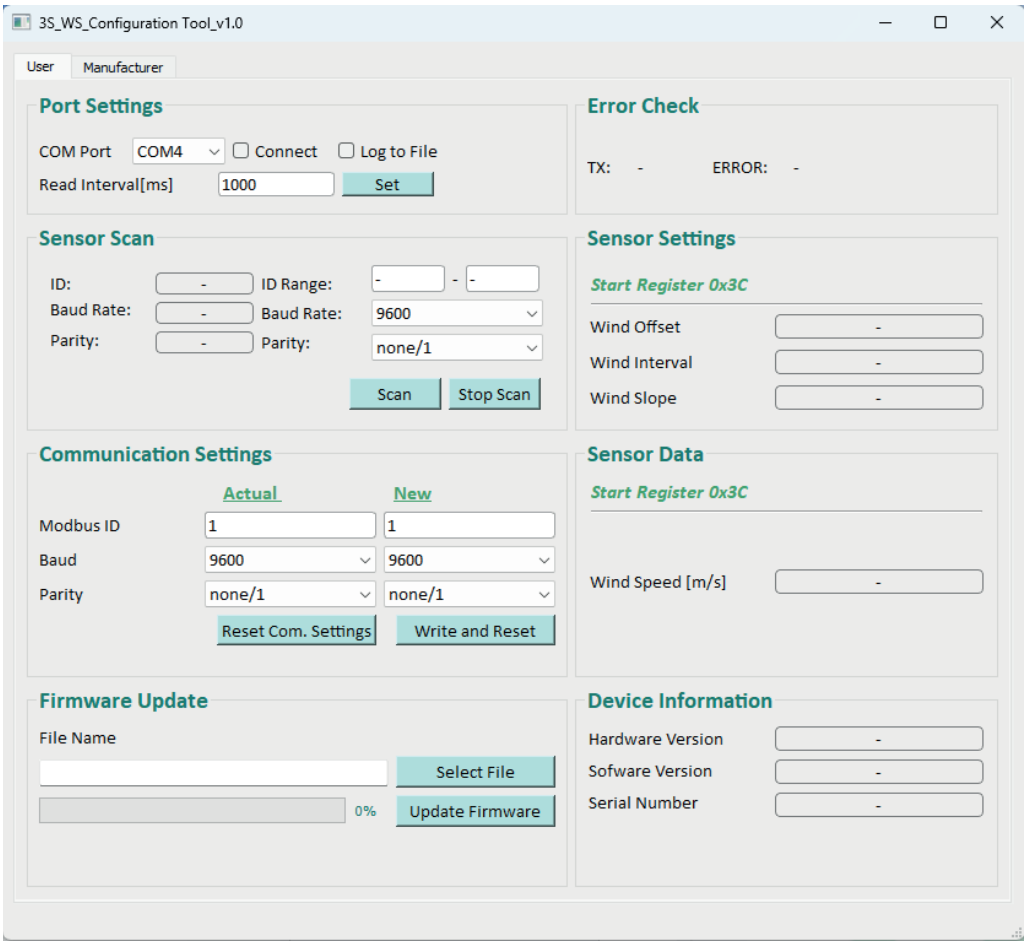


Figure 9 – 3S-WS Configuration Tool

Follow the steps below to connect to the Wind Speed Sensor with the 3S-WS Configuration Tool.

- Select the serial COM port to which the USB to RS485 converter is connected.
- Enter the Modbus ID, Baud rate and Parity of the Wind Speed Sensor in the “**Actual**” section of the “**Communication Settings**”.
- Click on “**Connect**”.

Note: *Factory defaults of the Wind Speed Sensor: Modbus ID **1**, Baud rate **9600**, Parity **none/1**.*

Once the connection is successfully completed, the data received from the device will be displayed in the “**Sensor Data**” section. Wind Speed Sensor details are in the “**Device Information**” section.

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

4.1.2. Change the Modbus Parameters

To change the Modbus parameters (Modbus ID, Baud rate and Parity) of the device, enter the values you want to assign in the "**New**" section of the "**Communication settings**" and click on "**Write and Reset**".

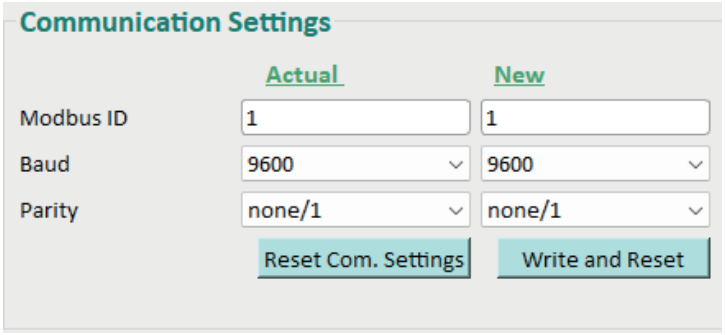


Figure 10 – Changing Modbus Parameters

4.1.3. Find the Modbus Parameters

If Modbus parameters are changed and the connection cannot be established with the device, the following steps should be followed to find the Modbus parameters of the Wind Speed Sensor.

- Modbus parameters of the device can be found with the "**Scan**" button in the "**Port Settings**" section.

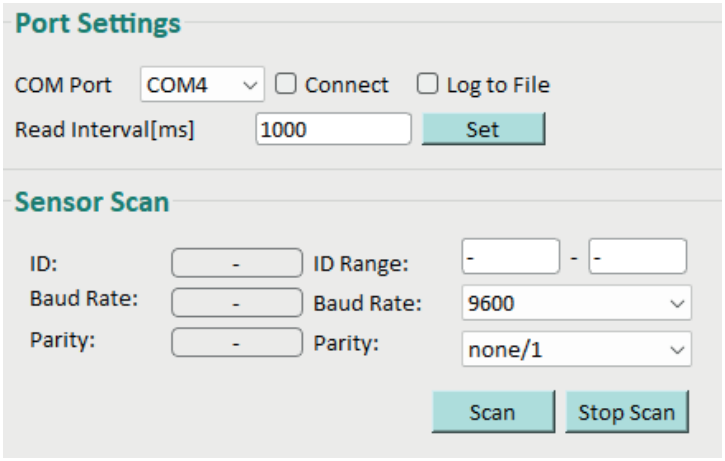


Figure 11 – Finding Modbus Parameters

- When the search is completed and the Modbus parameters of the device are found, a message "**Sensor Device is found**" (as in Figure 4) will appear on the desktop. The found parameters are filled in automatically.

Figure 12 – Sensor Device is found

- Reconnect with the **"Connect"** button.

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

Note: *Modbus parameters search can be stopped at any time with the* **"Stop Scan"** *button.*

4.1.4. Firmware Update

Wind Speed Sensor firmware can be updated by SEVEN depending on product developments. SEVEN provides this updated firmware to users free of charge. If the Wind Speed Sensor firmware needs to be updated, the following steps should be followed.

- Clicking on the **"Select File"** button in the **"Firmware Update"** section, the current firmware file with the **".bin"** extension is selected.
- The firmware update is started with the **"Update Firmware"** button. The update process is confirmed in the pop-up message box and can be followed on the loading bar.

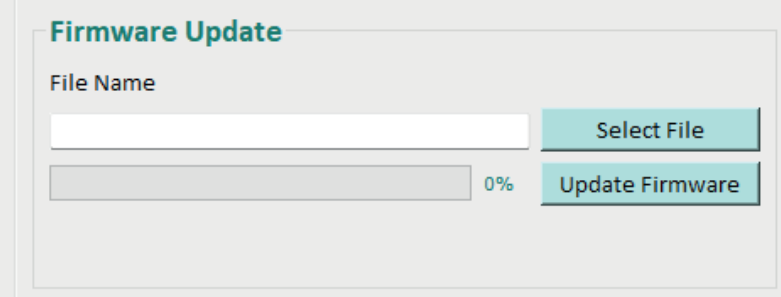


Figure 13 – Software Update Process

- After the firmware update process is completed, reconnection can be established clicking on the **"Connect"** button.

Note: *Please get in touch with SEVEN sales team for the current firmware version.*

4.2. Modbus RTU Specifications

4.2.1. Supported Bus Protocol

The Modbus Wind Speed Sensor has an RS-485 communication port that supports Modbus RTU commands. The Modbus Wind Speed Sensor can be configured to operate in different communication parameters. The table that follows describes each supported bus protocol.

Baud Rate	4800, 9600, 19200, 38400
Parity	None, Even, Odd
Stop Bit	1, 2 (only at None parity)
Factory Default	9600 Baud, 8N1, address: 1

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

4.2.2. Supported Function Codes

The Modbus Wind Speed Sensor supports a specific subset of Modbus RTU commands. The table that follows lists each supported function code.

0x03	Read Holding Registers
0x04	Read Input Registers
0x46	Read & Change Parameters
0x08	Reset Communication Command

Note: *All checksums of the Modbus protocol are omitted in this document. These checksums must always be calculated and sent during communication.*

4.2.2.1. Read Holding Registers (0x03)

Master Request:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x03
Start Register	2 Byte (Big Endian)	see the register table below
Number of Register	2 Byte (Big Endian)	see the register table below

Slave Response:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x03
Number of Bytes	1 Byte	0 to 255 (2xN) N = Number of Registers
Data	2 Byte x N (Big Endian)	see the register table below

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

Holding Register Map

The Modbus Wind Speed Sensor holding register map is based on the "**SunSpec Alliance**" communication standards.

Start	End	Value	Type	Units	Scale Factor	Constant
40000	40001	SunSpec ID	uint32	N/A	N/A	"SunS"
40002	40002	SunSpec Device ID	uint16	N/A	N/A	0x0001
40003	40003	SunSpec Length	uint16	Registers	N/A	65
40004	40019	Manufacturer	String (32)	N/A	N/A	"SevenSensor"
40020	40035	Model	String (32)	N/A	N/A	"3S-4IS"
40036	40043	Hardware Version	String (16)	N/A	N/A	"1.1"
40044	40051	Software Version	String (16)	N/A	N/A	"2.0"
40052	40067	Serial Number	String (32)	N/A	N/A	"23.12.345.65.0013"
40068	40068	Device ID	uint16	N/A	N/A	1
Sunspec Device Model Measurement Registers						
40069	40069	Block ID	int16	N/A	N/A	307
40070	40070	Length	int16	Registers	N/A	11
40071	40071	Air Temperature	int16	°C	0.1	Measured
40072	40072	Relative Humidity	int16	%	0	Measured
40073	40073	Barometric Pressure	int16	hPa	0	Measured
40074	40074	Wind Speed	int16	m/s	0.1	Measured
40075	40075	Wind Direction	int16	°	0	Measured
40076	40076	Rain Gauge (Hour)	int16	mm/hour	0	Measured
40077	40077	Snow	int16	inches	0	N/A
40078	40078	PPT Type	int16	inches	N/A	N/A
40079	40079	Electric Field	int16	V/m	0	N/A
40080	40080	Surface Wetness	int16	KOhms	0	N/A
40081	40081	Soil Moisture	int16	%	0	N/A
Irradiance Model Registers						
40082	40082	Block ID	int16	N/A	0	302
40083	40083	Length	int16	Registers	0	5
40084	40084	Global Horizontal Irradiance	uint16	W/m²	0.1	Measured
40085	40085	Plane of Array	uint16	W/m²	0.1	Measured
40086	40086	Diffuse Irradiance	uint16	W/m²	0	N/A
40087	40087	Direct Irradiance	uint16	W/m²	0	N/A
40088	40088	Other Irradiance	uint16	W/m²	0	N/A
Back of Module Temperature Registers						
40089	40089	Block ID	int16	N/A	N/A	303
40090	40090	Length	int16	Registers	N/A	2
40091	40091	Modul Temp 1	int16	°C	0.1	Measured
40092	40092	Modul Temp 2	int16	°C	0.1	N/A
Device Model Measurement Registers						
40093	40093	Block ID	int16	N/A	N/A	308
40094	40094	Length	int16	Registers	N/A	4
40095	40095	Total Effective Irradiance	int16	W/m²	0.1	N/A
40096	40096	Modul Temp1	int16	°C	0.1	Measured
40097	40097	Modul Temp2	int16	°C	0.1	N/A
40098	40098	Wind Speed	int16	m/s	0.1	Measured
End of Block Registers						
40100	40100	End of SunSpec Block	uint16	N/A	N/A	0xFFFF
40101	40101	Length	uint16	Registers	0	0
Device Address Read/Write Register						
40199	40199	Modbus ID – Write Register	uint16	N/A	N/A	1

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

4.2.2.2. Read Input Registers (0x04)

Master Request:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x04
Start Register	2 Byte (Big Endian)	see the register table below
Number of Register	2 Byte (Big Endian)	see the register table below

Slave Resonse:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x04
Number of Bytes	1 Byte	0 to 255 (2xN) N = Number of Registers
Data	2 Byte x N (Big Endian)	see the register table below

Input Register Map

ID-Dec	ID-Hex	Value	Range	Resolution
30017	0x11	Wind Speed	0…50 m/s	0.1 m/s
30018	0x12	Wind sensor number of pulses since the last Modbus read out (high-word) (raw data)	Pulse	1
30019	0x13	Wind sensor number of pulses since the last Modbus read out (low-word) (raw data)	Cycle	1

Additionally, the following internal data marked in bold can be read individually or in blocks.

ID-Dec	ID-Hex	Value		Range
30060	**0x3C**	**Hardware Version**		**Manufacturer Parameters Read Only**
30061	**0x3D**	**Software Version**		
30070	**0x46**	**T90 value**		
30071	**0x47**	**Wind Speed Offset Value**		
30072	**0x48**	**Serial Number**	**Production Year**	
30073	**0x49**		**Production Code**	
30074	**0x4A**		**Cell Serial Number**	
30075	**0x4B**		**Board Serial Number**	
30076	**0x4C**		**Box Serial Number**	
30077	**0x4D**		**Sensor Serial Number**	
30078	**0x4E**	**Production Date**	**Production Day**	
30079	**0x4F**		**Production Month**	
30080	**0x50**		**Production Year**	
30113	**0x71**	**Wind Speed Sensor Offset Value**		**User Parameters Read / Write**
30114	**0x72**	**Wind Speed Sensor Slope High Value**		
30115	**0x73**	**Wind Speed Sensor Slope Low Value**		
30116	**0x71**	**Wind Speed Sensor Offset Value**		

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

4.2.2.3. Read & Change Parameters (0x46)

Sub Function (0x04): Write Device Address

Master Request:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x04
New Address	1 Byte	1 to 247

Slave Response:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x04
New Address	1 Byte	1 to 247

Sub Function (0x06): Write Communication Parameters

Master Request:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x06
New Baud Rate	1 Byte	0 to 3, see table below
New Parity / Stop Bit	1 Byte	0 to 3, see table below

Slave Response:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x06
New Baud Rate	1 Byte	0 to 3, see table below
New Parity / Stop Bit	1 Byte	0 to 3, see table below

Note: *When the "Write Communication Parameters" command is used, the "Write Device Address" command must also be used before the restart communication command.*

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

Communication Parameter Settings

Parameter changes will take effect after the restarting of the sensor by a power-on reset or restart communication command.

Baud Rate	Value	Parity / Stop Bit	Value
4800	**0**	**None/1**	0
9600	**1**	**None/2**	1
19200	**2**	**Odd**	2
38400	**3**	**Even**	3

Sub Function (0x07): Read Hardware & Software Versions

Master Request:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x04

Slave Response:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x07
Hardware Version	2 Byte (Little Endian)	0 to 65535
Software Version	2 Byte (Little Endian)	0 to 65535

Sub Function (0x08): Read Serial Number - Production Date - Calibration Date

Master Request:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x08

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

Slave Response:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x46
Sub Function Code	1 Byte	0x08
Production Year	1 Byte	0 to 99
Production Code	1 Byte	0 to 99
Cell Serial Number	2 Byte (Little Endian)	0 to 999
Board Serial Number	1 Byte	0 to 99
Box Serial Number	1 Byte	0 to 99
Sensor Serial Number	2 Byte (Big Endian)	0 to 9999
Production Day	1 Byte	1 to 31
Production Month	1 Byte	1 to 12
Production Year	1 Byte	0 to 99
Calibration Day 1	1 Byte	1 to 31
Calibration Month 1	1 Byte	1 to 12
Calibration Year 1	1 Byte	0 to 99
Calibration Day 2	1 Byte	1 to 31
Calibration Month 2	1 Byte	1 to 12
Calibration Year 2	1 Byte	0 to 99
Calibration Day 3	1 Byte	1 to 31
Calibration Month 3	1 Byte	1 to 12
Calibration Year 3	1 Byte	0 to 99
Calibration Day 4	1 Byte	1 to 31
Calibration Month 4	1 Byte	1 to 12
Calibration Year 4	1 Byte	0 to 99

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

4.2.2.4. Restart Communication Command (0x08)

Master Request:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x08
Restart Code	4 Byte	0x00000000

Slave Response:

Address	1 Byte	1 to 247
Function Code	1 Byte	0x08
Restart Code	4 Byte	0x00000000

5. Specifications

3S-WS measures Wind Speed. The Wind Speed Sensor provides these measurements as a digital output.

The Wind Speed Sensor must be used in conjunction with a suitable power supply and a data acquisition system that uses the Modbus communication protocol over RS485. It has an RS485 communication port that supports a subset of Modbus RTU commands. Baud rates of 4800, 9600, 19200 and 38400 are supported. Hold and input logs are supported.

The Wind Speed Sensor must be powered by an external power supply. The power supply input is nominally rated for 24 V DC but can accept a voltage in the 12 to 30 V DC range. The inputs are reverse polarity and overvoltage protected. The power supply and RS485 bus are isolated from each other.

The device is classified according to IEC 61724-1 and should be used in accordance with the recommended practices of IEC, WMO and ASTM.

5.1. Technical Specifications

	3S-WS-PLS	3S-WS-MB	3S-WS-I	3S-WS-I-H
Sensor Type	Cup Star Anemometer (Reed Switch)			
Measuring Range	0,9 to 40 m/s	0,9 to 50 m/s		
Accuracy	±0,3 m/s or ±0,3 m/s of Measuring Value	±0,1 m/s or ± 1 m/s of Measuring Value		
Resolution	0,1 m/s			
Threshold	0,9 m/s			
Survival Speed	60 m/s	80 m/s		
Data Output	Read Relay	RS485 up to 38400 Baud	Analog 4-20 mA	
Communication Protocol	-	Modbus RTU	-	
Power Supply	-	12 to 30 V DC		
Power Consumption	-	-	-	Available
Electrical Connection	3 m LIYY Cable, UV and Weather Resistant	3m LIYYC11Y PUR Cable, UV and Weather Resistant		
Operating Temperature Range	-40°C to +85°C (Ice Free)			-40°C to +85°C
Dimensions	Ø 180 x 145 mm	Ø 180 x 235 mm		
Weight	0,2 kg	0,6 kg		
IP Rating	IP 54 (Optional IP 65)			
Housing Material	Polyamide			
Vane Material	Anodized Aluminum			
Mounting Method	Pipe or Ground Mounting			
Standard	Compliant to IEC 61724-1:2021			
Origin	TÜRKİYE			

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 / **Created** 21.09.2023

6. Terms of Warranty

Limited Sensor Warranty

SEVEN Sensor Solutions guarantees that its products comply with the specifications published by SEVEN, and are completely free from all manufacturer defects for 2 years from the invoice date.

Firmware

SEVEN guarantees that the firmware included in the sensor, when used with the hardware specified by SEVEN and installed correctly, will operate according to the published specifications for 5 years from the invoice date.

Exceptions to the 5-year warranty period, if any, will be specified in the sensor manual, user manual, or other sensor documentation provided by SEVEN.

Solutions for The Manufacturing Defects

SEVEN commits to the clients to repair or replace the defective sensor if the problem is related to the production.

First; define the problem. Then, prepare a technical report and share the problem with the SEVEN technical team, who will work on resolving it.

Clients must return the defective item, part or component to SEVEN with handling shipping charges.

If SEVEN confirms that the sensor has a defect covered by the warranty, the repaired or replaced sensor will be warranted for the remainder of the original sensor warranty period.

Warranty Limitations

- Before using the sensor, clients should determine the suitability of the sensor for its intended use. Thus, the clients assume all risks and responsibilities arising from misuse.
- SEVEN disclaims all responsibilities for any damages arising from the ordinary and improper use of the sensors.
- SEVEN does not warrant the following;
  - Sensors subjected to misuse, negligence, improper storage, installation or accidental damage.
  - Defects caused by improper or insufficient site preparation and maintenance of the site by the customer.
  - Indirect damages resulting from loss or alteration of data and loss of profits or unrealized savings resulting from these damages.
  - Any damage caused by using sensors other than the original cables and accessories of the sensors.
  - Damage caused by a lack of equipment inspections, timely calibration, and proper maintenance or cleaning.
  - Damage caused by the unauthorized opening of the sensor case.
  - Damage due to natural disasters such as hail, hurricane storms, flooding, fire, lightning…etc.

Besides, SEVEN reserves the exclusive right to decide, whether the warranty covers the sensor or not. A sensor found damaged or defective under warranty may be repaired or replaced, at the sole discretion of SEVEN. The replacement sensor is warranted for the remainder of the original sensor warranty period if a sensor fails prematurely.

7. Additional Documents and Software

The following documents and software can be downloaded from www.sevensensor.com or requested from SEVEN Sensor Solutions.

User Manual	This document
Datasheet	Wind Speed Sensor Brochure
3S-WD Configuration Tool	Windows® software for testing, firmware updates and configuration of the device
Firmware	Current device firmware

Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **Email:** sales@sevensensor.com

Revision 0.0 **/ Created** 21.09.2023

8. Contact Details

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

Address Pinarcay OSB Mahallesi Organize Sanayi Tesisleri Teknokent Idare Binasi No: 7, D:1, 19100 Merkez / Corum / Turkey
Phone +90 530 889 8019
Email sales@sevensensor.com
Website www.sevensensor.com