# Connection & Settings of Seven Sensors to SMA Data Manager M

This document is prepared for SMA Data Manager M users. Steps are explained below to connect SEVEN Sensor Box to SMA Data Manager M.

Following meteorological data to be provided by Seven Sensor Box. Communication is provided via RS485 with Modbus RTU protocol.

1. 3S-IS, Solar Irradiance (W/m2)
2. Cell Temperature of Irradiance Sensor (°C)
3. 3S-MT-18B20, Module Temperature (°C)
4. 3S-AT-18B20, Ambient Temperature (°C)
5. 3S-WS-PLS, Wind Speed (m/s)
6. 3S-RH-I, Relative Humidity (%)

## 1. Cable Connection

Connect the green wire (RS485 A / Data (+)) of the output cable of the Sensor Box to Data (+) port of the SMA Data Manager M and connect the yellow wire (RS485 B / Data (-)) of the output cable of the Sensor Box to Data (-) port of the SMA Data Manager M.

White and brown wires power up the sensor box as shown in Table 1.

| | |
|---|---|
| Brown | Power (+) |
| White | Power (-) |
| Green | RS485 A / Data (+) |
| Yellow | RS485 B / Data (-) |

Table 1: Communication and Power Cable Color Coding

**Plug assignment:**

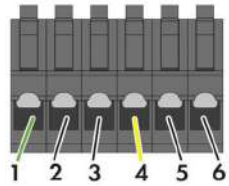
| Plug | Position | Assignment |
|---|---|---|
|  | 1 | Data+ (D+) |
| | 2 | Not assigned |
| | 3 | Ground (GND) |
| | 4 | Data- (D-) |
| | 5 | Line termination (optional) |
| | 6 | Line termination (optional) |



*Figure 1: Plug Assignment*

**NOTE :**
**4x0,22 mm2 LIYC11Y PUR** or **Cat6** cable can be used as the communication and power cable between the sensor and the datalogger.

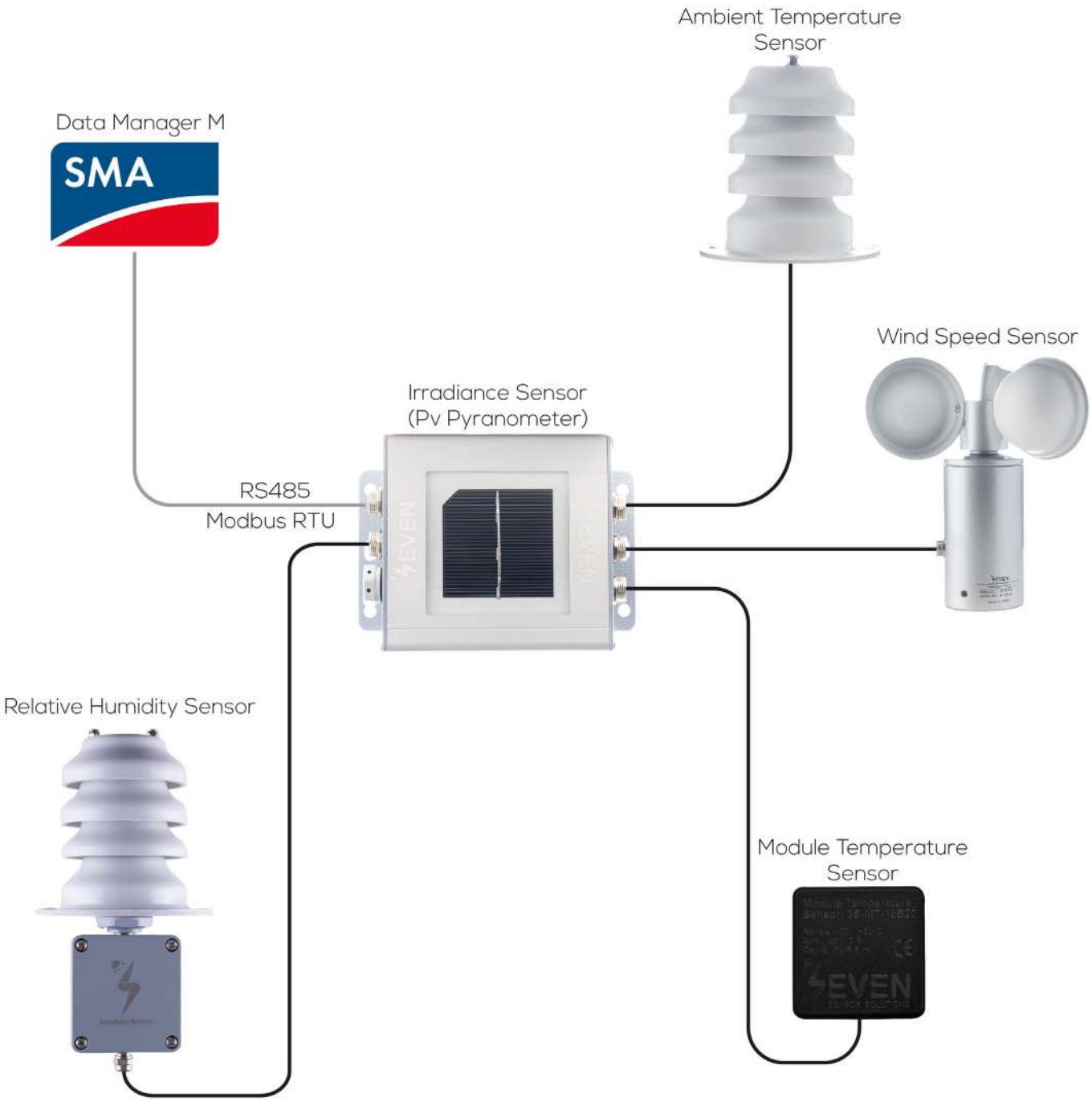



*Figure 2: SMA Weather Station*

## 2. Settings

SEVEN Sensor Box will not be automatically detected by SMA Data Manager M. Therafore, the settings shall be proceeded manually.

To login to enter the SMA Data Manager M user interface, enter the SMA Data Manager M IP address in the browser of your PC on the same network as SMA Data Manager M and login to user interface.


*Figure 3: Data Manager M Interface*

- Click on " Device administration " in the menu " CONFIGURATION ".
- Select the ⊕ button as seen in Figure 4.

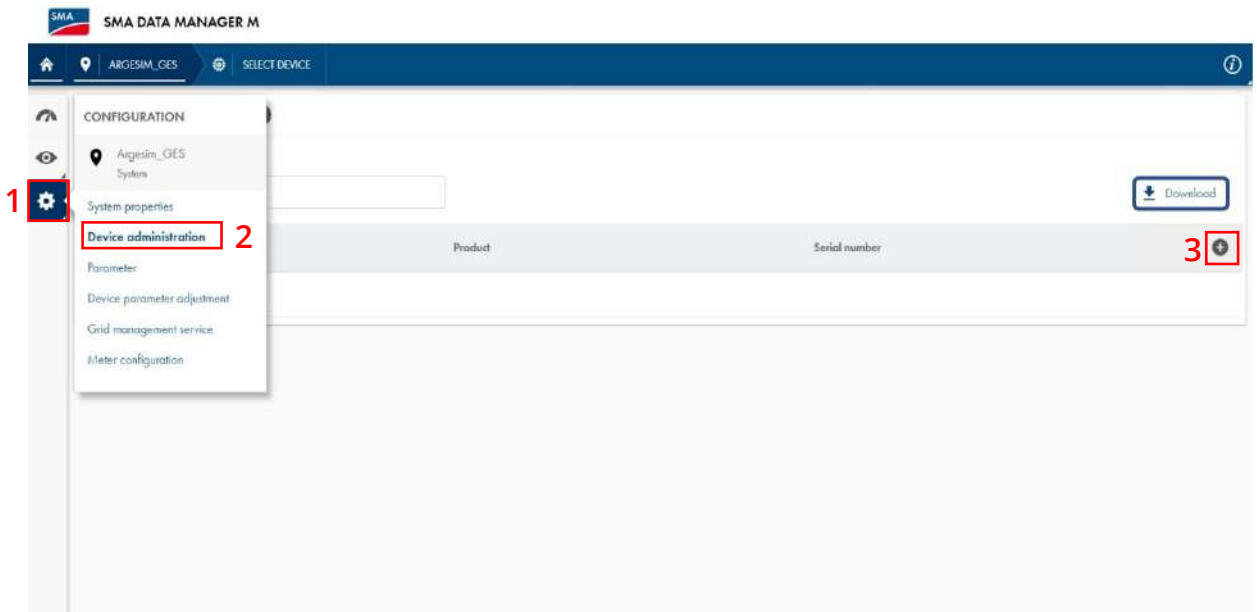



*Figure 4: Configuration Menu*

- Select "MODBUS DEVICES" and confirm with "Continue".
- Click on "Managing your own Modbus profiles".

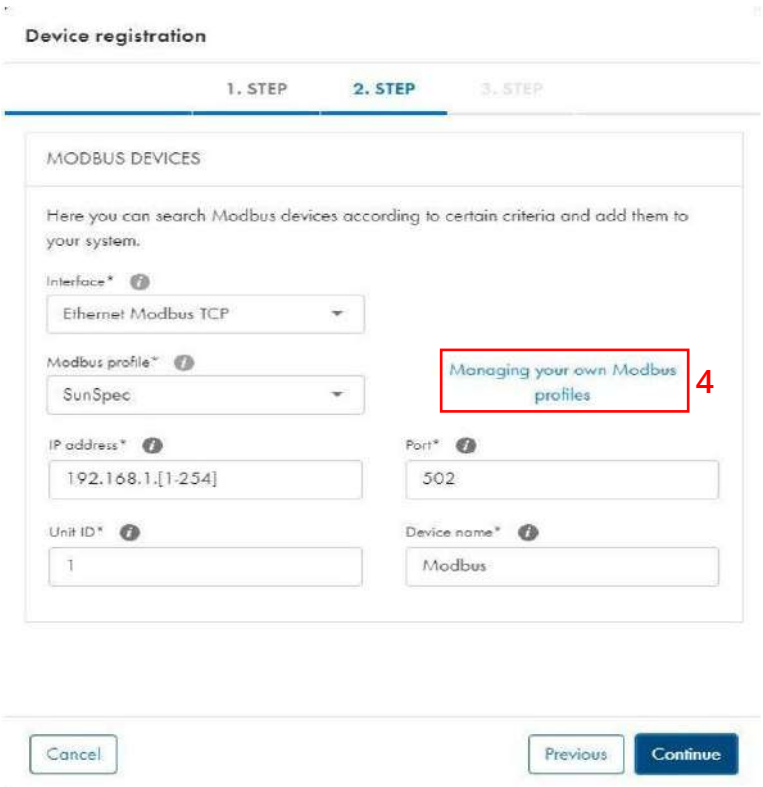



*Figure 5: Seven Sensor Box Configuration Settings*

- The settings to be proceeded as shown in Figure 6, Figure 7 and Figure 8.

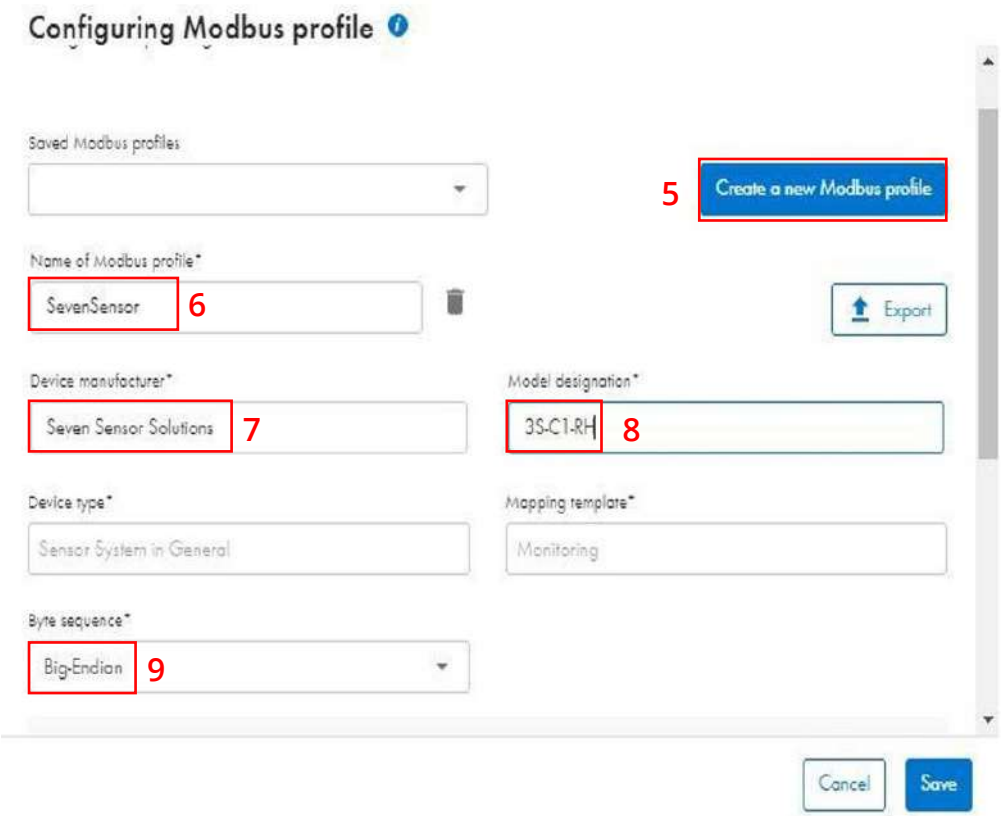



*Figure 6: Seven Sensor Box Configuration Settings*

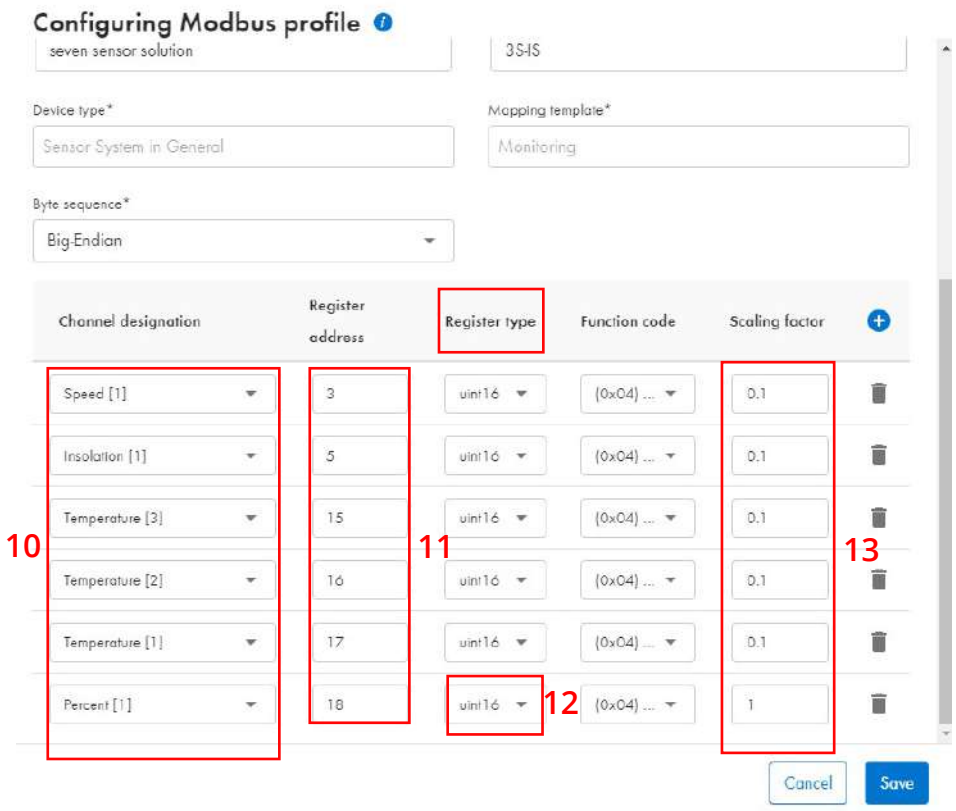



*Figure 7: Seven Sensor Box Configuration Settings*

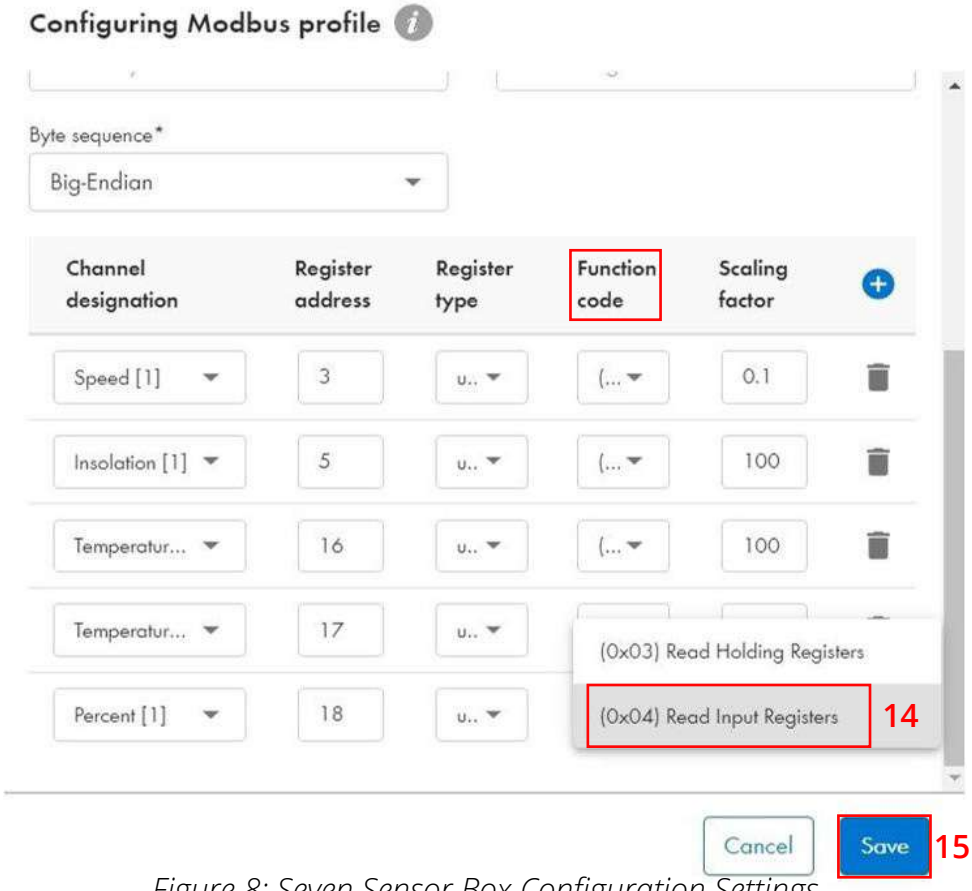



*Figure 8: Seven Sensor Box Configuration Settings*

- " MODBUS DEVICES " configuration is as shown in Figure 9.

- Factory default settings for the Sensor Box: 9600 Baud, 8N1, address: 1

**NOT:** Baudrate and Modbus ID can be changed via the SEVEN Sensor Box Configuration Tool and the configuration process can be continued with these values.

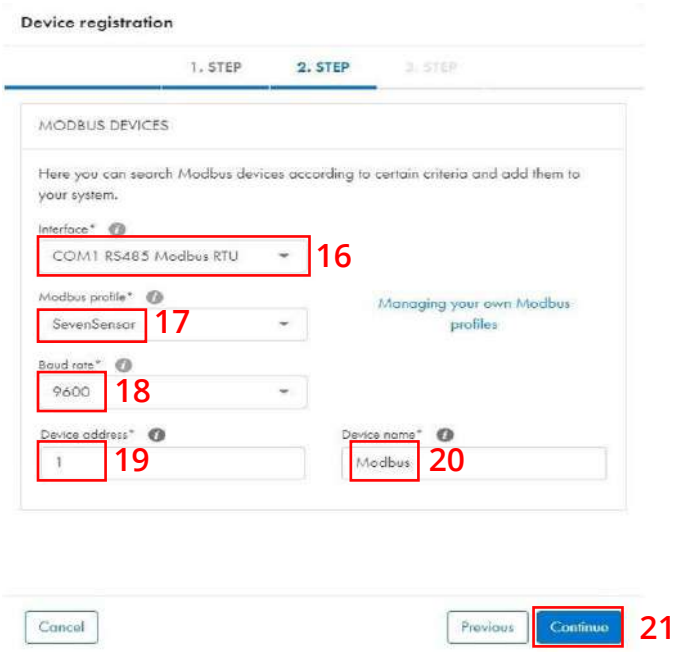



*Figure 9: Seven Sensor Box Configuration Settings*

- Select the Modbus device found as a result of the scan, enter the serial number and device name then click on “Save” as seen in Figure 10.

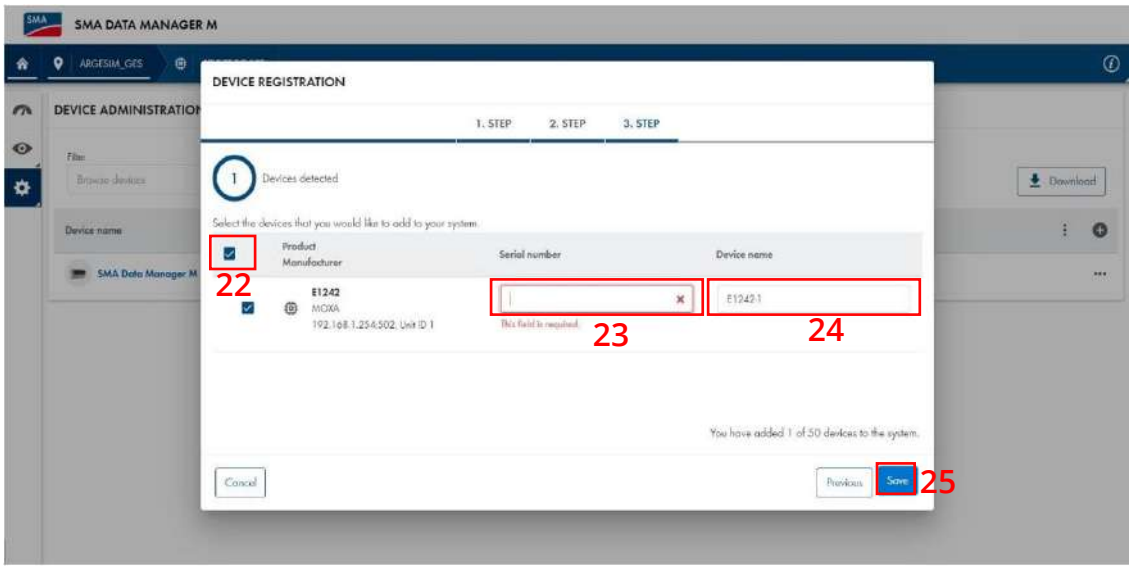



*Figure 10: Seven Sensor Box Configuration Settings*

- Click on " Modbus " in the menu " Select Device " on SMA Data Manager M user interface home page as shown in Figure 11.


*Figure 11: Select Device Menu*

- After completing all the settings, meteorological data will appear on the "Instantaneous values" page as shown in Figure 12.

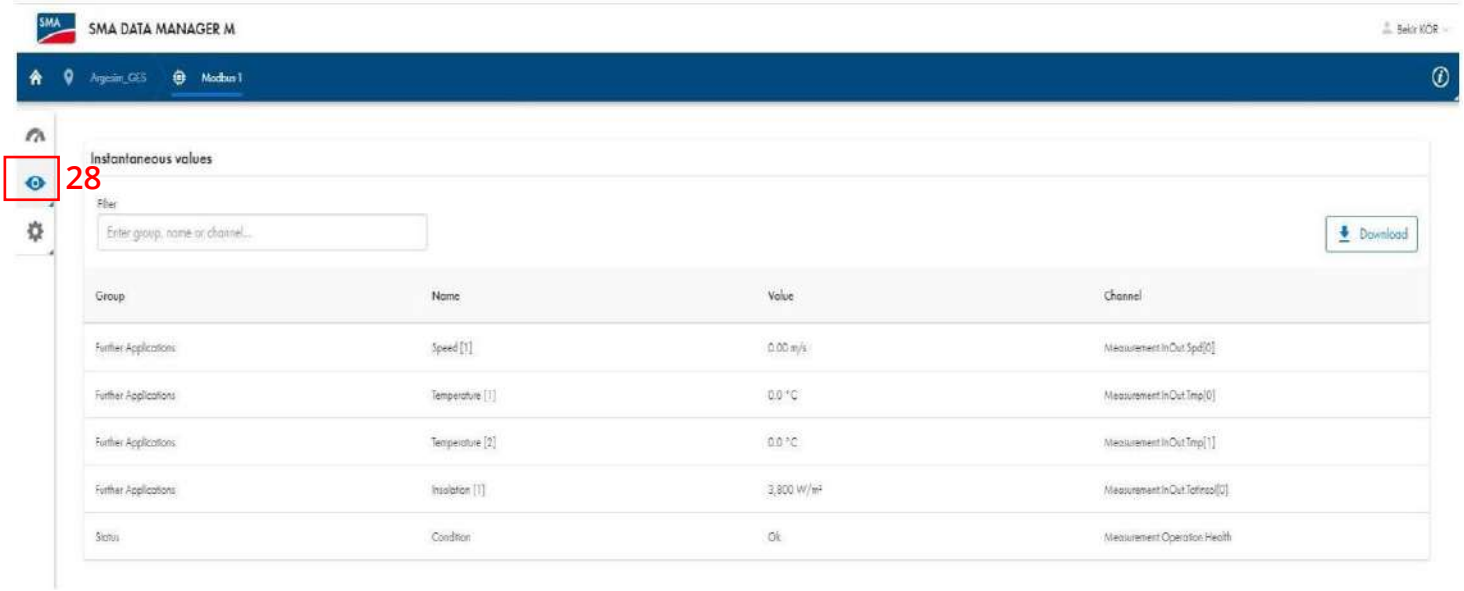



*Figure 12: The Data of Seven Sensor Box*

**Register Map:**

| ID-Dec. | ID-Hex | Value |
|---|---|---|
| 3 | 0x03 | Wind speed in 1/100 m/s 0...6000 |
| 5 | 0x05 | Temperature compensated Irradiance value 0...16000 in 0.1Watt/m² |
| 15 | 0x0F | Cell temperature as 'sign value' -550 ... +1250 [range -55 ... +125°C] in 0.1°C |
| 16 | 0x10 | Ext. temp. 1 as 'sign value' -550 ... +1250 [range -55 ... +125°C] in 0.1°C |
| 17 | 0x11 | Ext. temp. 2 as 'sign value' -550 ... +1250 [range -55 ... +125°C] in 0.1°C |
| 18 | 0x12 | External relative humidity 0...100 [%] |
| 19 | 0x13 | Wind direction 0...359 in 1° |

- After completing all the settings, meteorological data will appear on the dashboard screen of Sunny Portal monitoring system as shown in Figure 13.

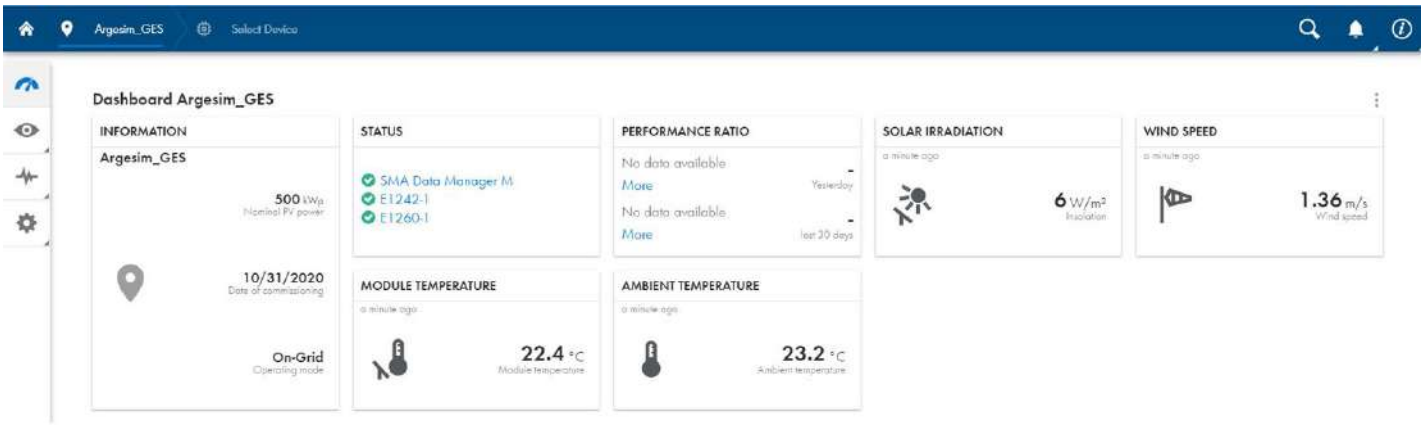



*Figure 13: Sunny Portal Monitoring System*

**Contact Informations:**

Please feel free to contact our technical team if you face any difficulties during settings.

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