



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:

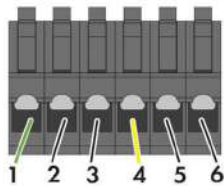
Plug	Position	Assignment
	1	Data+ (D+)
	2	Not assigned
	3	Ground (GND)
	4	Data- (D-)
	5	Line termination (optional)
	6	Line termination (optional)

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.

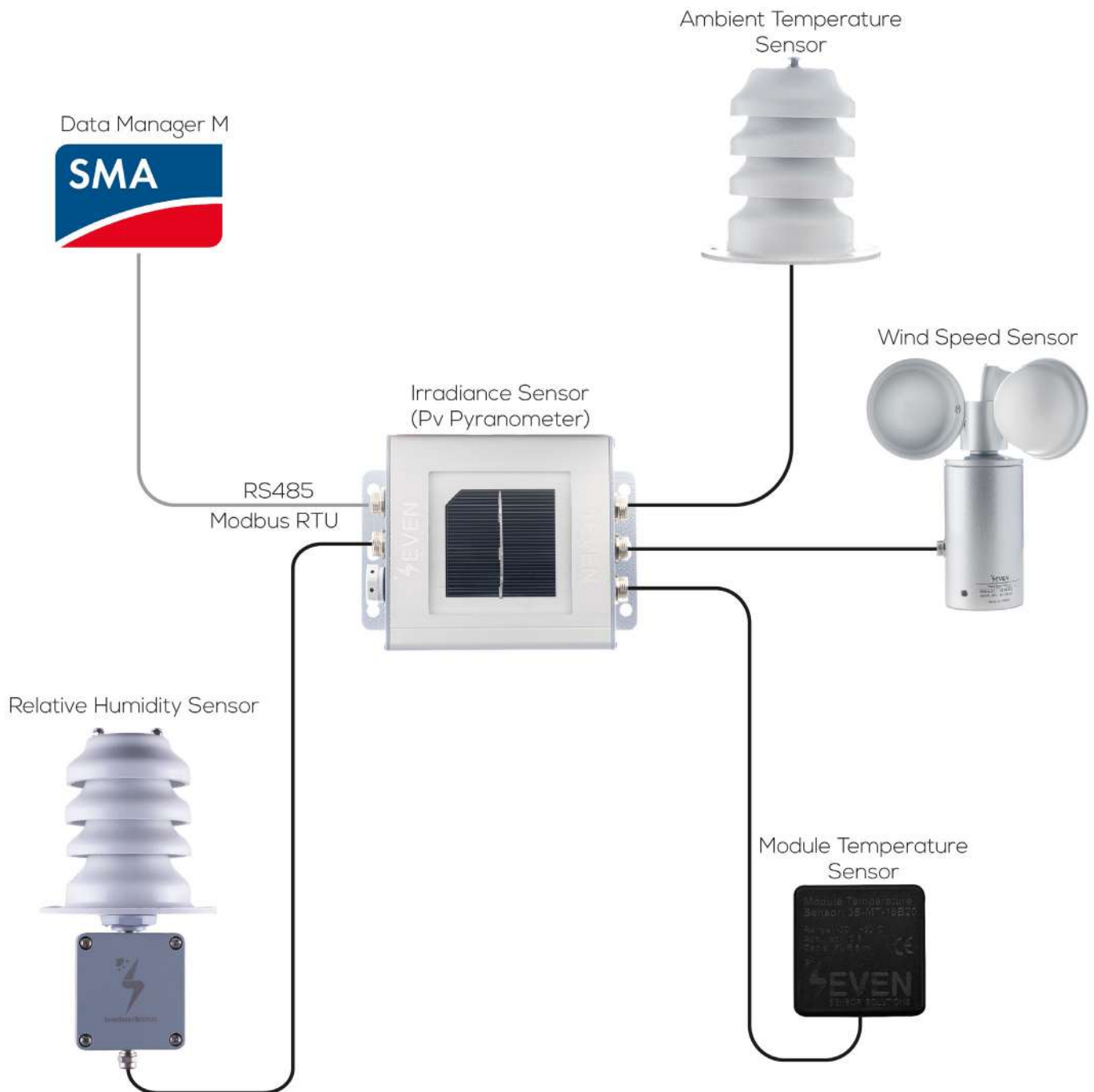


Figure 2: SMA Weather Station

TECHNICAL FILE - SMA DATA MANAGER M CONNECTION & SETTINGS




2. Settings

SEVEN Sensor Box will not be automatically detected by SMA Data Manager M. Therefore, 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.

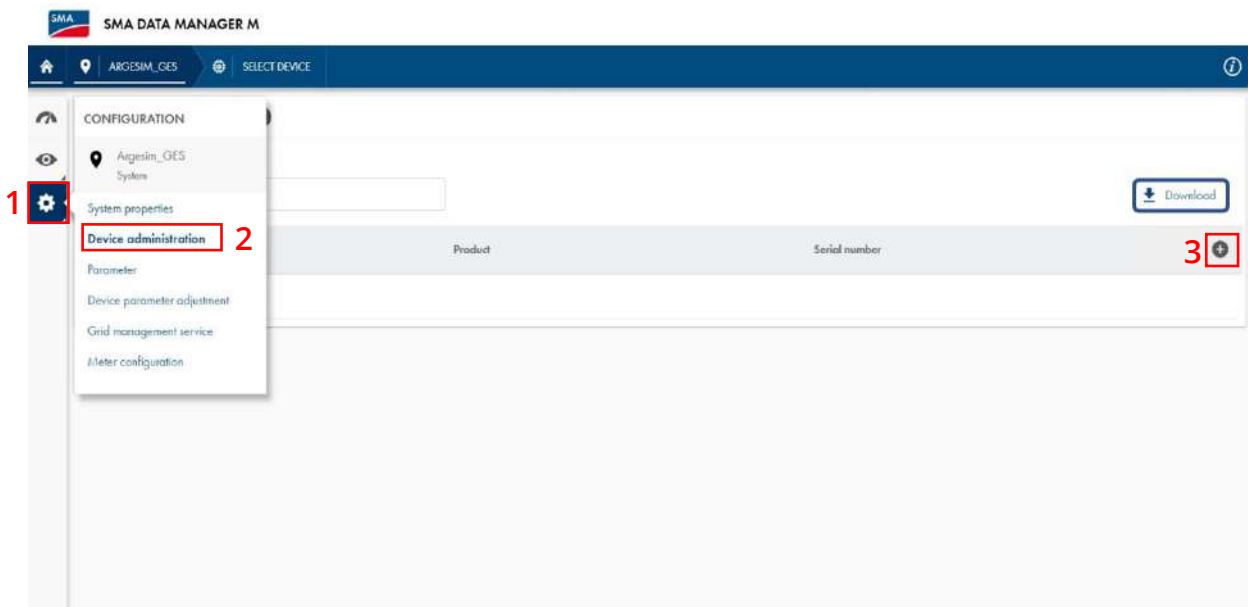
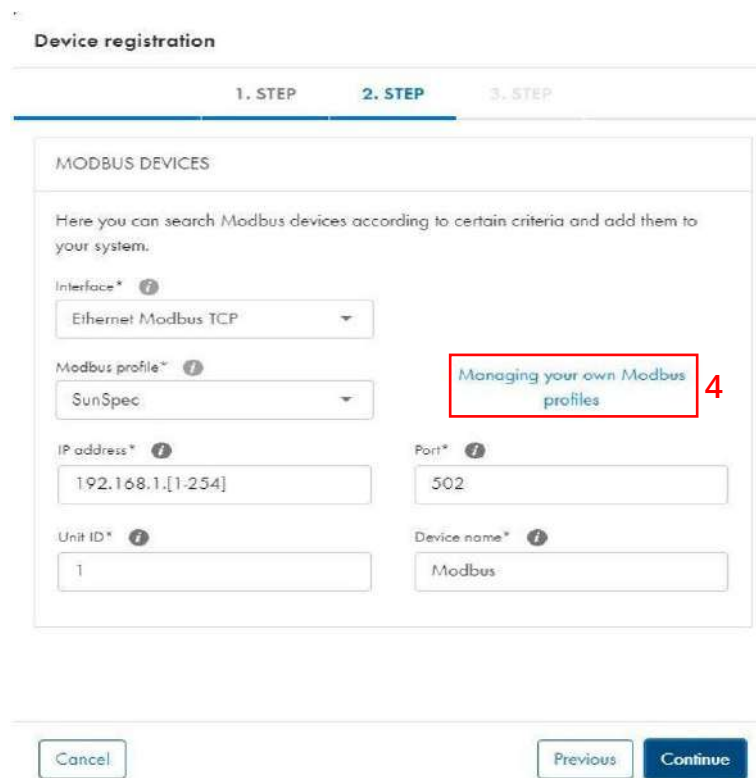


Figure 4: Configuration Menu

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

TECHNICAL FILE – SMA DATA MANAGER M CONNECTION & SETTINGS



Device registration

1. STEP **2. STEP** 3. STEP

MODBUS DEVICES

Here you can search Modbus devices according to certain criteria and add them to your system.

Interface* *i*
Ethernet Modbus TCP

Modbus profile* *i* **Managing your own Modbus profiles** **4**
SunSpec

IP address* *i*
192.168.1.[1-254]

Port* *i*
502

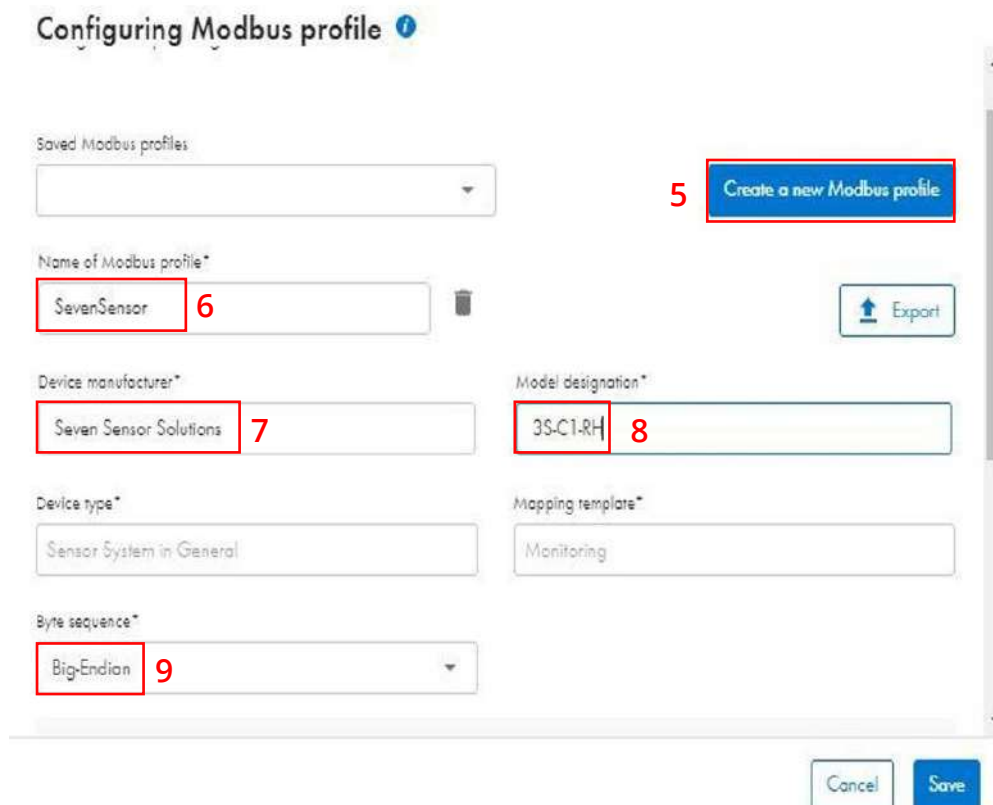
Unit ID* *i*
1

Device name* *i*
Modbus

Cancel Previous **Continue**

Figure 5: Seven Sensor Box Configuration Settings

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



Configuring Modbus profile *i*

Saved Modbus profiles:
[Empty dropdown]

5 **Create a new Modbus profile**

Name of Modbus profile* **6**
SevenSensor

Device manufacturer* **7**
Seven Sensor Solutions

Model designation* **8**
3S-C1-RH

Device type*
Sensor System in General

Mapping template*
Monitoring

Byte sequence* **9**
Big-Endian

Export

Cancel Save

Figure 6: Seven Sensor Box Configuration Settings

TECHNICAL FILE – SMA DATA MANAGER M CONNECTION & SETTINGS

Configuring Modbus profile ⓘ

seven sensor solution 3S4S

Device type* Sensor System in General Mapping template* Monitoring

Byte sequence* Big-Endian

Channel designation	Register address	Register type	Function code	Scaling factor	
Speed [1]	3	uint16	(0x04) ...	0.1	
Insolation [1]	5	uint16	(0x04) ...	0.1	
Temperature [3]	15	uint16	(0x04) ...	0.1	
Temperature [2]	16	uint16	(0x04) ...	0.1	
Temperature [1]	17	uint16	(0x04) ...	0.1	
Percent [1]	18	uint16	(0x04) ...	1	

Cancel Save

Figure 7: Seven Sensor Box Configuration Settings

Configuring Modbus profile ⓘ

Byte sequence* Big-Endian

Channel designation	Register address	Register type	Function code	Scaling factor	
Speed [1]	3	u..	(...)	0.1	
Insolation [1]	5	u..	(...)	100	
Temperatur...	16	u..	(...)	100	
Temperatur...	17	u..	(...)		
Percent [1]	18	u..	(...)		

(0x03) Read Holding Registers
(0x04) Read Input Registers

Cancel Save

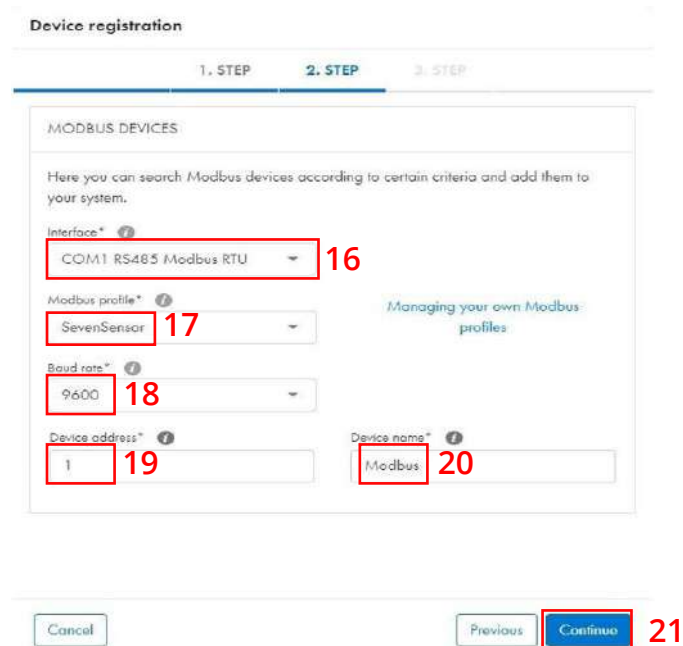
Figure 8: Seven Sensor Box Configuration Settings

TECHNICAL FILE - SMA DATA MANAGER M CONNECTION & 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.



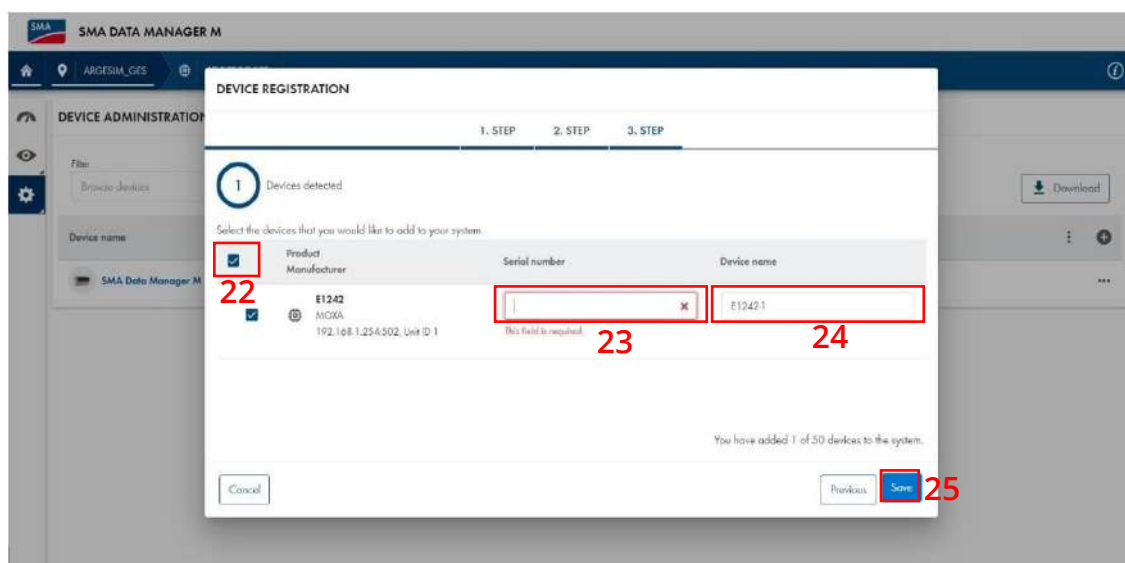
The image shows the 'Device registration' window in the SMA Data Manager M software, specifically the '2. STEP' for 'MODBUS DEVICES'. The window contains several fields for configuration:

- Interface*:** A dropdown menu showing 'COM1 RS485 Modbus RTU' (labeled 16).
- Modbus profile*:** A dropdown menu showing 'SevenSensor' (labeled 17).
- Baud rate*:** A dropdown menu showing '9600' (labeled 18).
- Device address*:** A text input field showing '1' (labeled 19).
- Device name*:** A text input field showing 'Modbus' (labeled 20).

At the bottom right, there are three buttons: 'Cancel', 'Previous', and 'Continue' (labeled 21).

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.



The image shows the 'DEVICE REGISTRATION' window in the SMA Data Manager M software, specifically the '1. STEP' for 'Devices detected'. The window displays a table of detected devices with columns for 'Product Manufacturer', 'Serial number', and 'Device name'.

Product Manufacturer	Serial number	Device name
<input checked="" type="checkbox"/> E1242 MOXA	<input type="text" value=""/>	<input type="text" value="E1242 1"/>

The first row is selected (labeled 22). The 'Serial number' field is empty (labeled 23) and the 'Device name' field contains 'E1242 1' (labeled 24). At the bottom right, there are three buttons: 'Cancel', 'Previous', and 'Save' (labeled 25).

Figure 10: Seven Sensor Box Configuration Settings

TECHNICAL FILE - SMA DATA MANAGER M CONNECTION & 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.

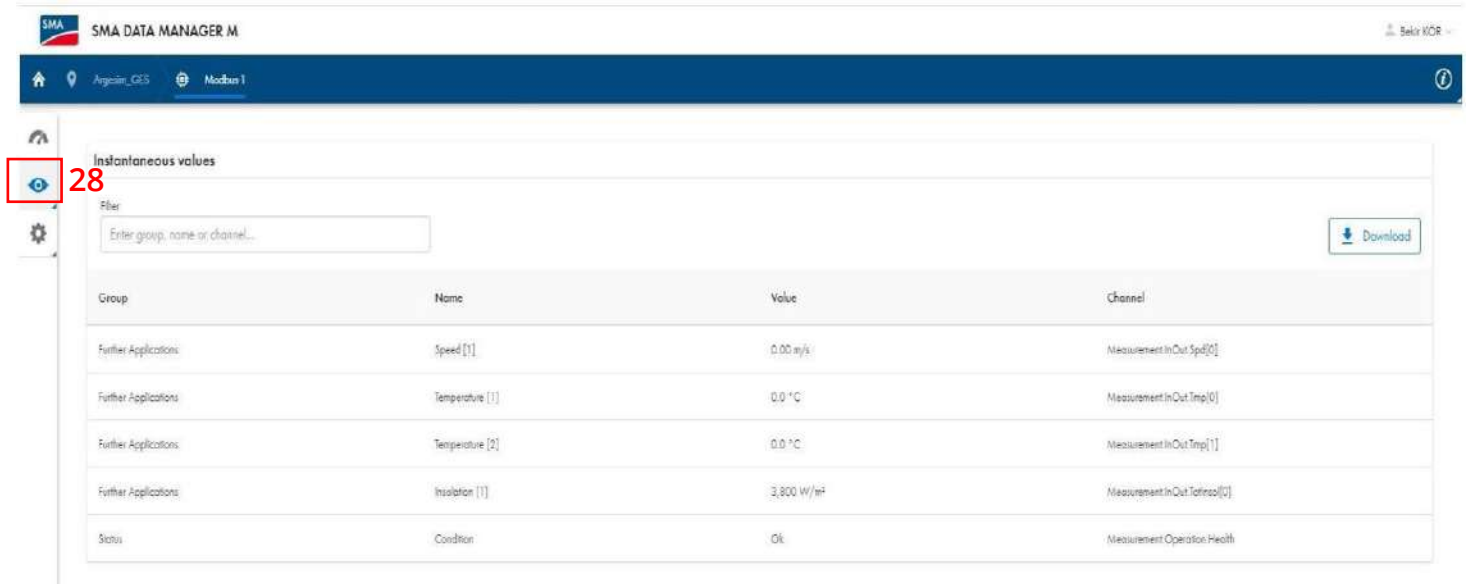


Figure 12: The Data of Seven Sensor Box

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/m ²
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.

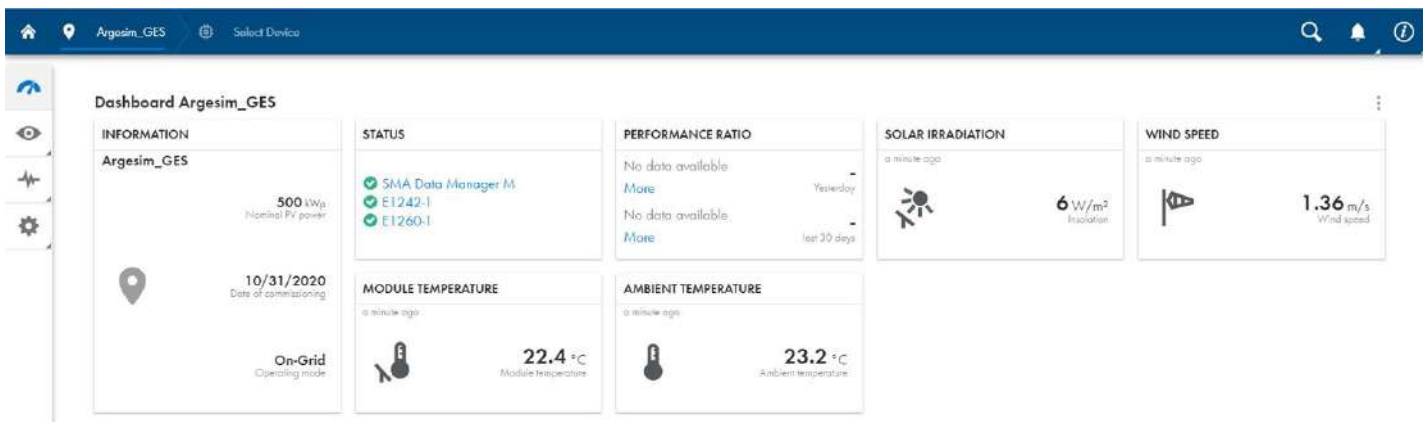


Figure 13: Sunny Portal Monitoring System

Contact Informations:

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

Can GÜNDÜZ

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