HUAWEI

# Connection & Settings Instructions for SEVEN Sensors to Huawei Smartloggers

## 1. Introduction

This document is prepared for Huawei Smartlogger 1000, 1000A, 2000 & 3000A users. The steps are explained below to connect SEVEN Sensor Box to Huawei Smartlogger.

The following meteorological data can be provided by SEVEN Sensor Box. The communication is provided via RS485 with Modbus RTU protocol.

1. 3S-IS, Irradiance Sensor (W/m²)
2. 3S-MT-PT1000, Module Temperature Sensor (°C)
3. 3S-AT-PT1000, Ambient Temperature Sensor (°C)
4. 3S-WS-PLS, Wind Speed Sensor (m/s)
5. 3S-WD, Wind Direction Sensor (°)

## 2. Cable Connection

Connect the green wire (RS485 A / Data (+)) of the output cable of the Sensor Box to COM3 (+) port of the Smartlogger and connect the yellow wire (RS485 B / Data (-)) of the output cable of the Sensor Box to COM3 (-) port of the Smartlogger. Another free port also can be selected for connection (COM1/COM2) for the same purpose.

White and brown wires of the output cable of the Sensor Box 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

⚠ A cable with magnetic field protection must be used as communication and power cable between the sensor and the datalogger. Please don't use CAT 6 cable.

⚠ SEVEN sensors are supplied with a voltage of 12-30 VDC. The recommended voltage value is 24 VDC. A high quality power supply must be used for the sensor supply.

⚠ SEVEN has the right to make modifications on this documentation without notice.

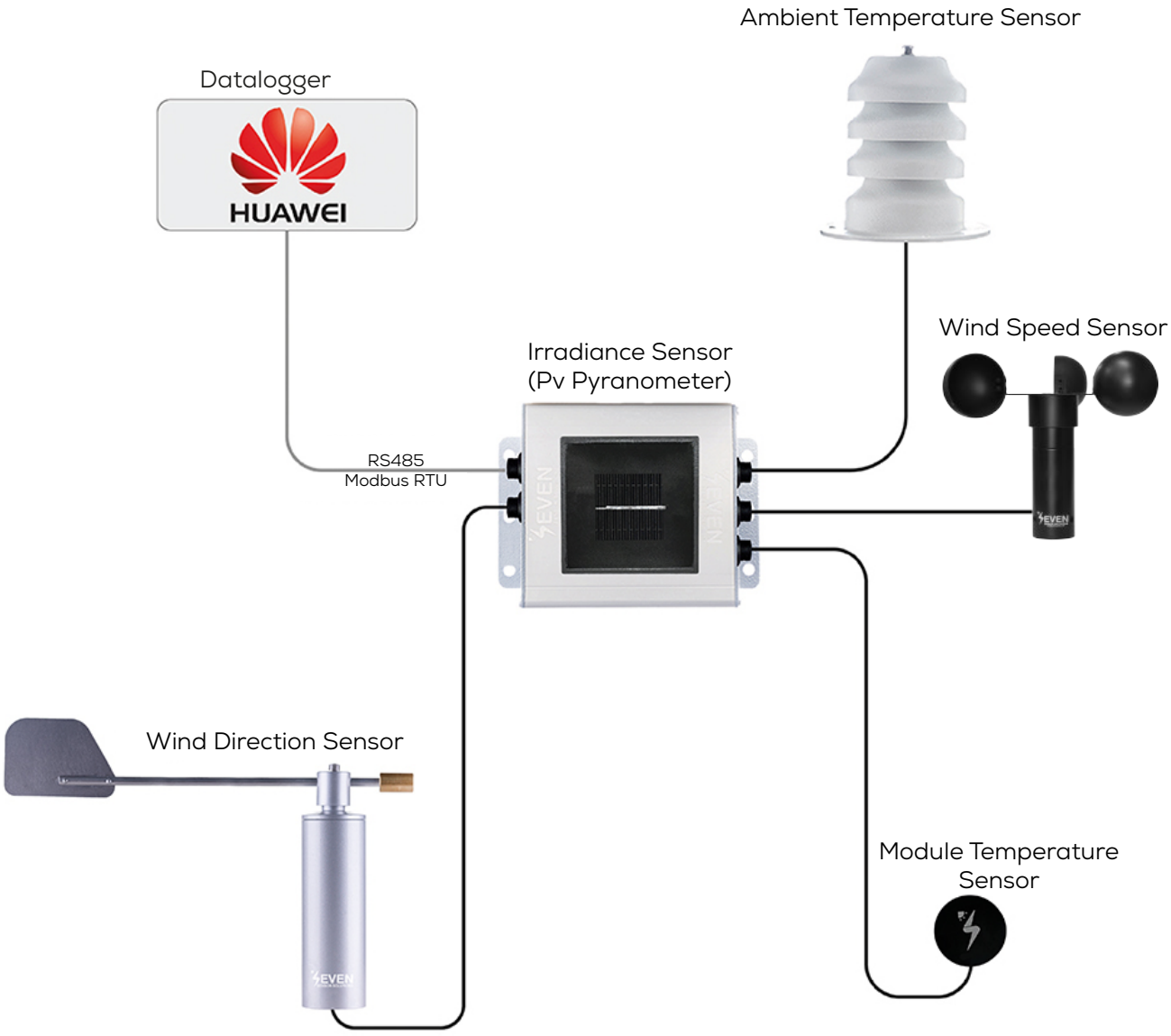


*Figure 1: Huawei Weather Station*

⚠ The sensor model can be different as per the customer's request.

⚠ If your sensor model sensor model is 3S-2IS, 3S-3IS, 3S-4IS or 3S-CWS, enter each orientation's module number to the configuration tool to monitor total effective irradiance and total effective module temperature before configurating in Huawei Monitoring System.

## 3. Settings

SEVEN Sensor Box will not be automatically detected by Smartlogger. Therefore, the settings shall be proceeded manually.

To log in to the Smartlogger user interface (Enspire), you need to log in to the same network as Smartlogger. Enter the Smartlogger IP address in your computer's browser.

**Step 1 :** To log in to the Enspire interface, choose User Name as Advanced User, enter your password and click on the "Log In" button**.**

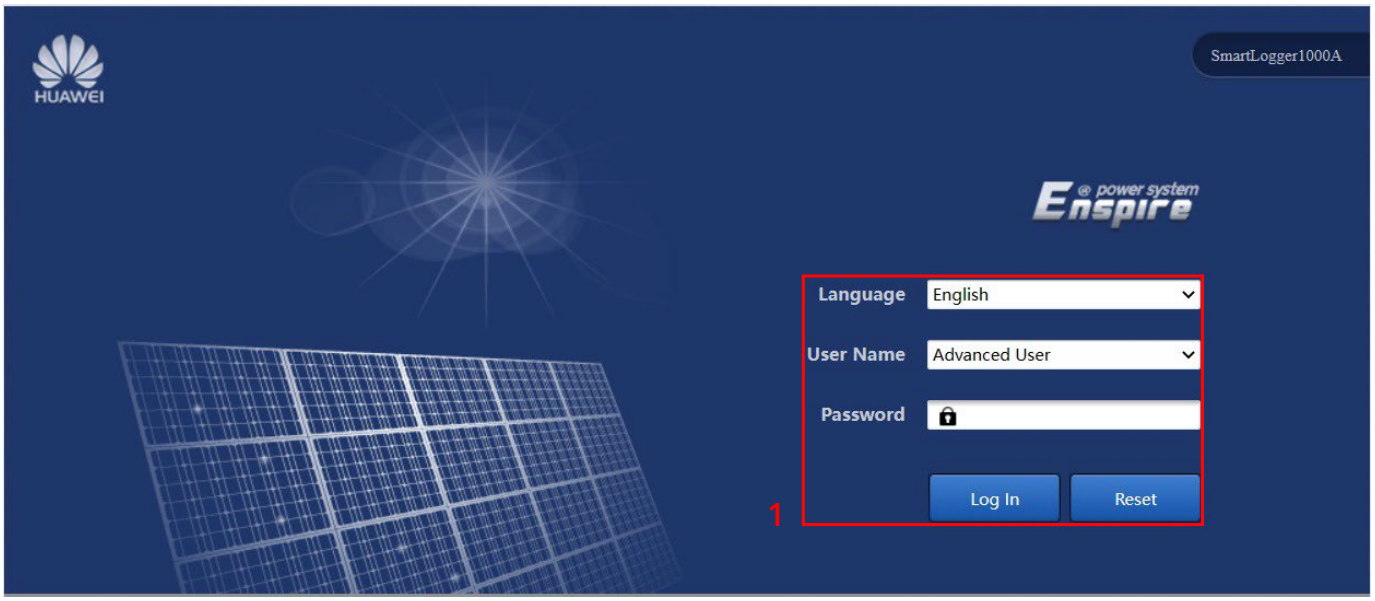


*Figure 2: Enspire Interface Home Page*

Follow the steps below to configure communication parameters.

**Step 2, 3 and 4 :** Settings ⟶ Comm. Param. ⟶ RS485

**Step 5 :** Choose communication parameters of device.
*Factory default settings for SEVEN Sensor Box:*

- *Address: 1*
- *Baudrate: 9600*
- *Parity: None*
- *Stop Bit: 1*

**Step 6 :** Click on "Submit" button.

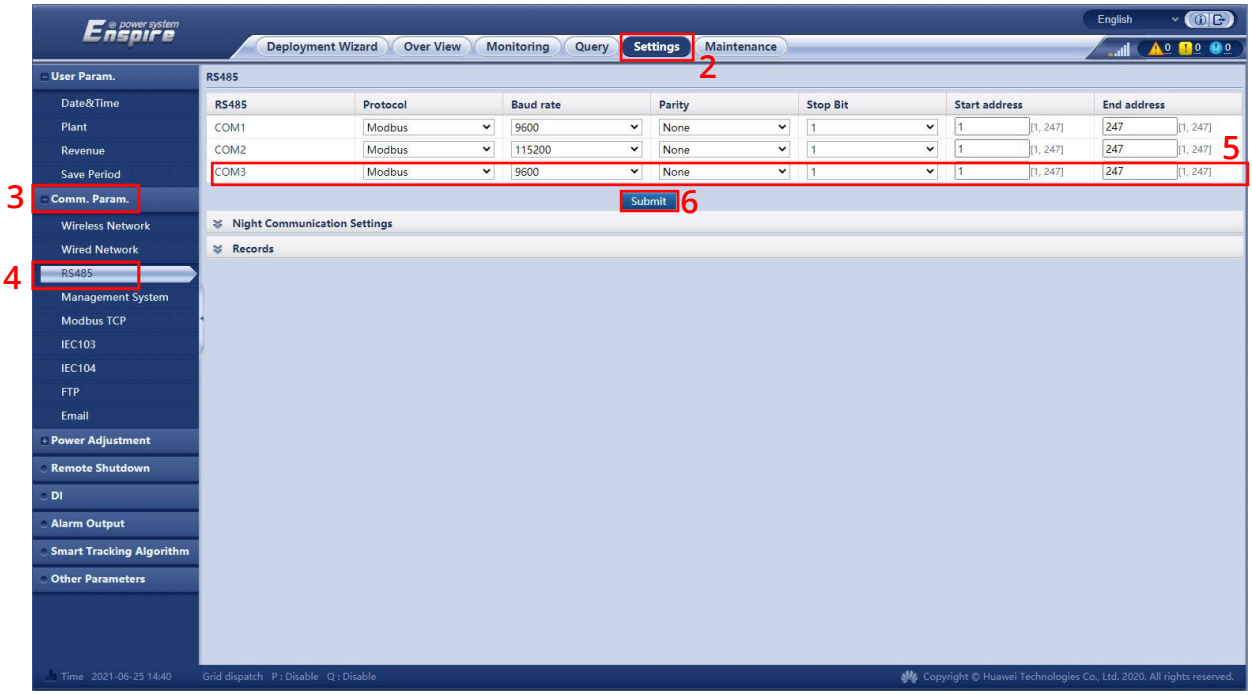


*Figure 3: RS485 Settings*

Follow the steps below to add a new EMI device (SEVEN Sensor Box):

**Step 7, 8 and 10 :** Maintenance ⟶ Device Management ⟶ Connect Device ⟶ Add Devices

**Step 11 :** Select Device Type as EMI, Connection mode as Modbus RTU, and Port number as COM3 (or any other, where you connected your Sensor Box to). Then, enter the Address of sensor.

ID of SEVEN Sensor Box is 1 as factory default. If this value is changed by the user, please enter the new value.

In case more than one device is connected to the port you have connected the sensor to, device ID's must be different while baudrate and parity values must be the same. You can change the device ID via SEVEN configuration tool.

**Step 12 :** Click on **"Add Devices"** button.

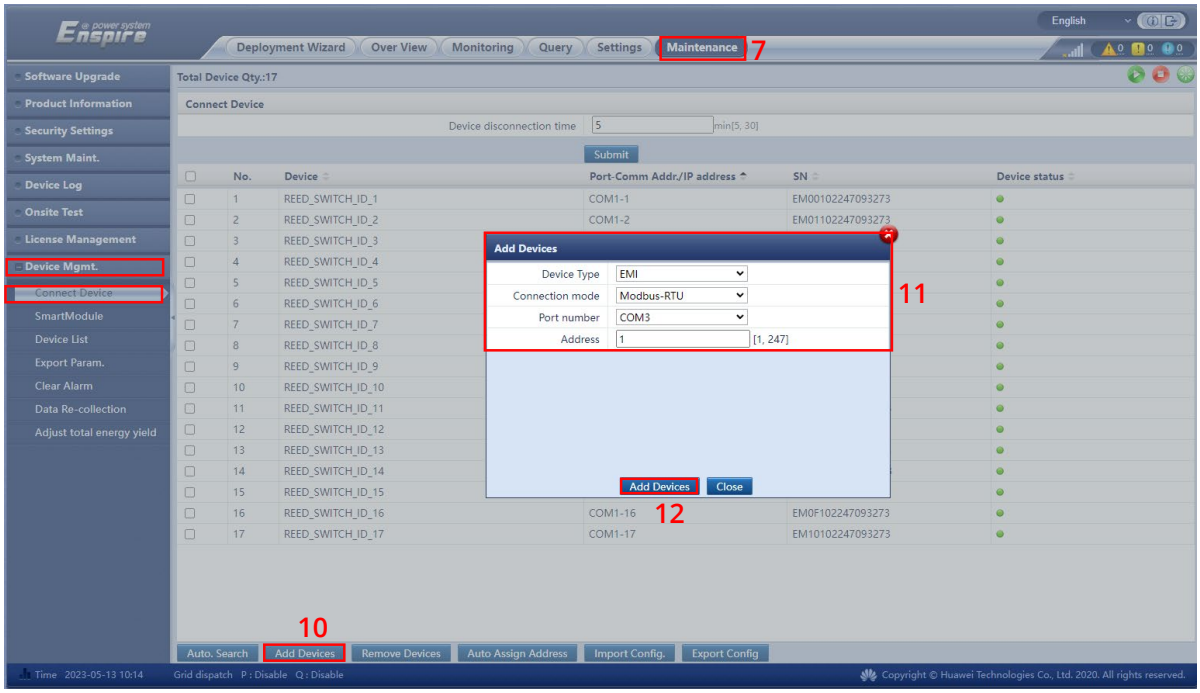


*Figure 4: COM Port Settings*

After completing the adding device process, follow the steps below for configuration settings.

**Step 13, 14 and 15 :** Monitoring ⟶ EMI (SEVEN Sensor) ⟶ Running Param.

**Step 16, 17 and 18 :** Default EMI settings should be changed according to SEVEN Sensor Box as shown in Figure 5. Modbus RTU register adresses (signal address) are given in Table 2.*

**Step 19 :** Click on **"Submit"** button.

While the register addresses are entered on Enspire, you must only enter the used sensors register addresses. You must enter 65535 in the signal address section for non measured values.

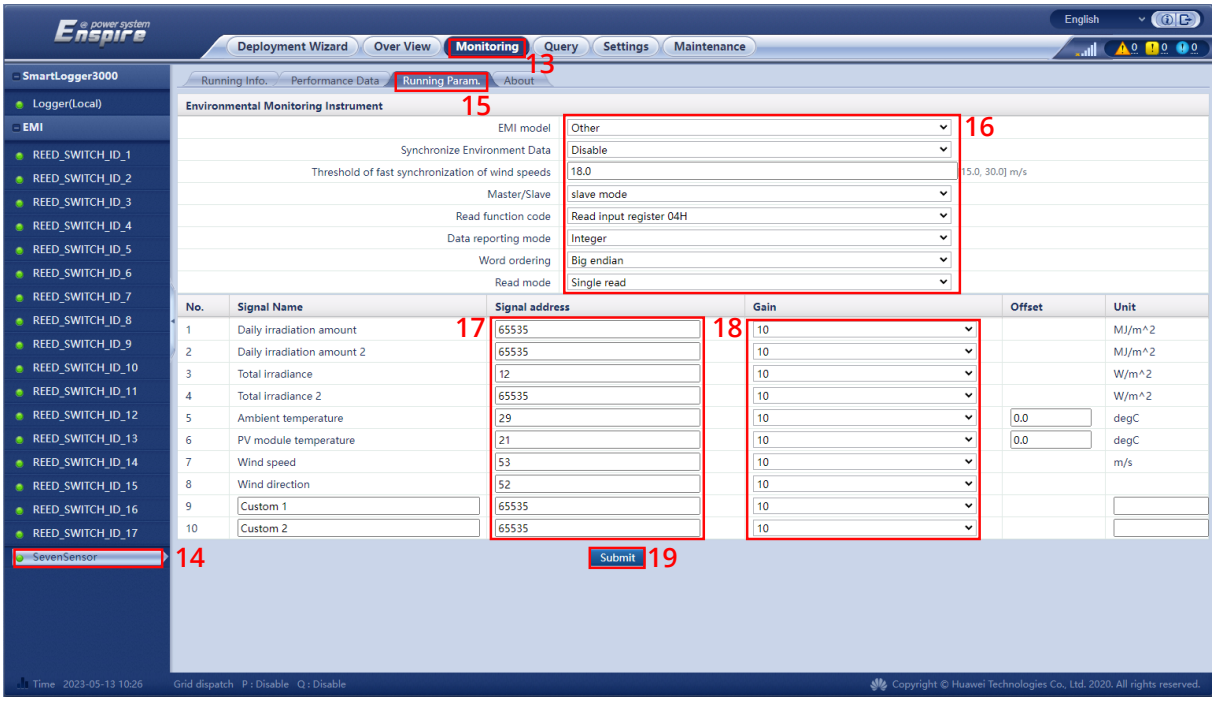


*Figure 5: Seven Sensor Box Settings*

*The Modbus Map can be different as per the software version of the sensor.

**Step 20 :** After completing all settings on Enspire, open **"Running Info"** to see the data.

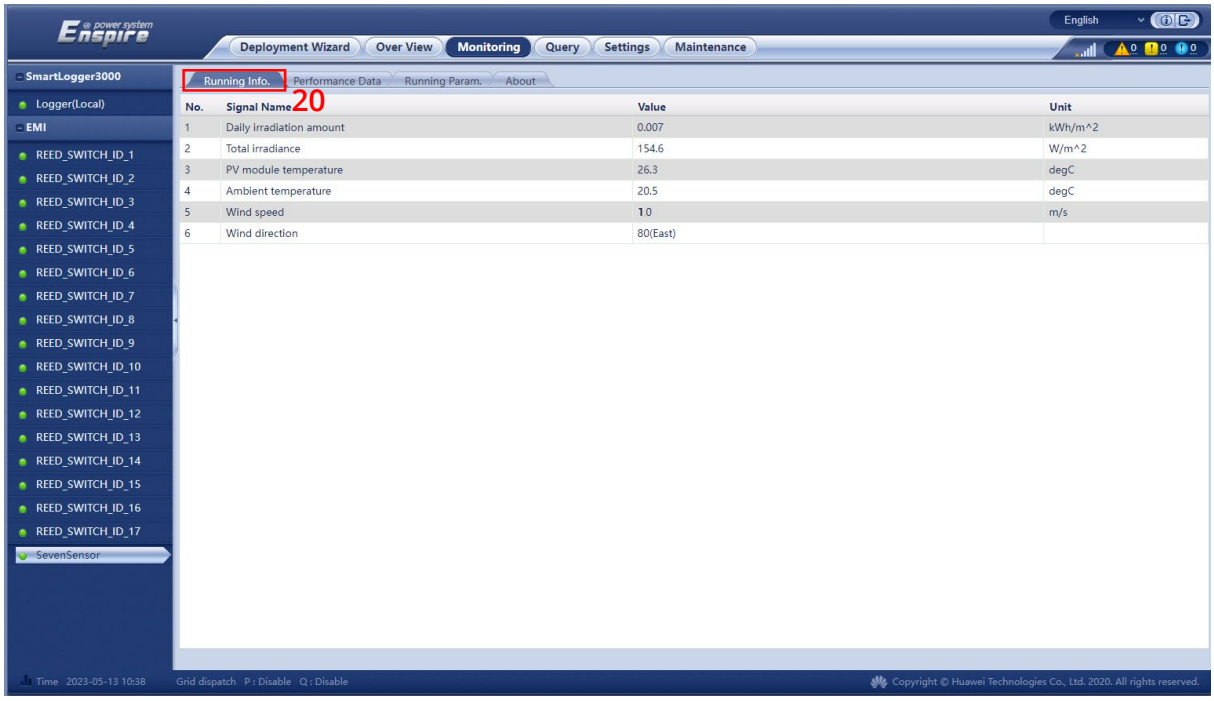


*Figure 6: Data Monitoring*

### 3. Monitoring System

After completing all the string settings on NetEco or Fusion Solar, Total Irradiance and Performance Ratio will appear on the main screen.


*Figure 7: NetEco Monitoring System*

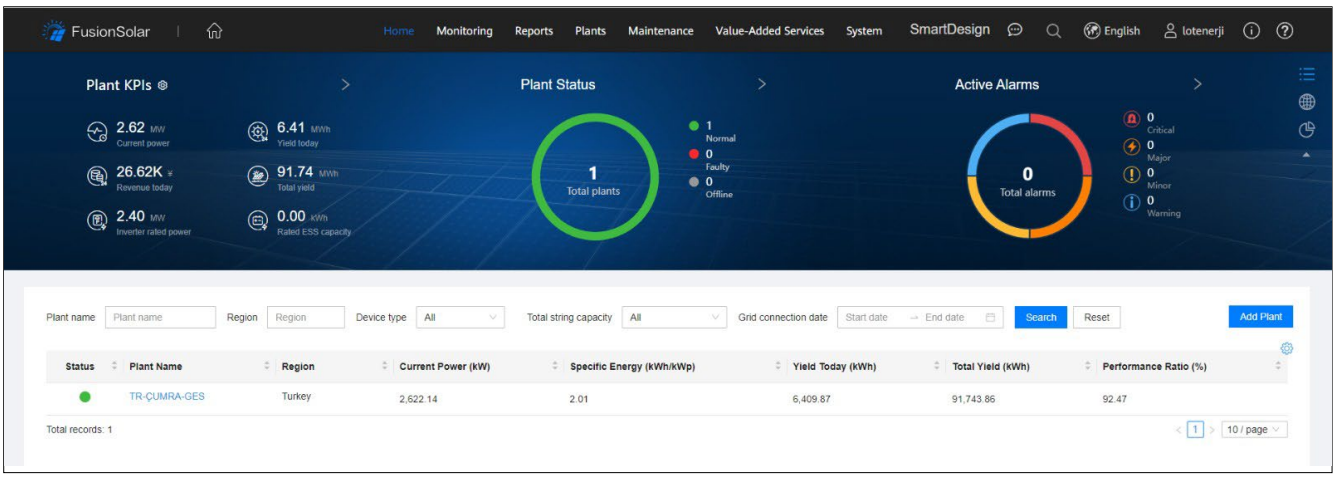


*Figure 8: Fusion Solar Monitoring System*

## Modbus RTU Specifications

**Supported Bus Protocol**
**BaudRate:** 3800, 9600, 19200, 38400
**Parity:** None, Even, Odd
**Stop Bit:** 1, 2 (only at no parity)
**Factory Default:** 9600 Baud, 8N1, Address: 1
**Transmission mode:** MODBUS RTU
**Supported function codes:** 0x04: Read Input Register

## Register Map:

The following Modbus data can be read individually or in blocks.

| ID-Dec. | ID-Hex | Value | Data Type |
|---|---|---|---|
| 53 | 0x35 | Wind Speed, 0...6000, 1/100 m/s | US |
| 12 | 0x0C | Temperature Compensated Irradiance Value, 0...1600 in 0.1 W/m² | US |
| 15 | 0x0F | Cell Temperature, -400 ... +850 [range -40 ... +85°C] in 0.1°C | S |
| 21 | 0x15 | External Temperature 1, -400 ... +850 [range -40 ... +85°C] in 0.1°C | S |
| 29 | 0x1D | External Temperature 2, -400 ... +850 [range -40 ... +85°C] in 0.1°C | S |
| 33 | 0x21 | Relative Humidity, 0...100 [%] in 1% | US |
| 52 | 0x34 | Wind Direction, 0...359 in 1° | US |

*Table 2: Modbus Map**

*This Modbus Map is valid for Software 8 and newer versions.

## Contact Informations:

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

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