3S-IS
IRRADIANCE SENSOR
USER INTERFACE MANUAL



SEVEN SENSOR SOLUTIONS

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1. Introduction

The **3S-IS Configuration Tool** is a software tool used to configure the Modbus communication parameters of the irradiance sensors, test communication and apply firmware updates.

2. Cable Connections

Connect the **green** wire of the communication and power cable to the **Data (+)** terminal of the USB-to-RS485 converter, the **yellow** wire to the **Data (-)** terminal, and the **red** wire to the **GND** terminal of the USB-to-RS485 converter.

Connect the **brown** wire to the power supply's **V (+)** terminal, the **white** wire to the power supply's **V (-)** terminal, and the **black** wire to the **protective earth** terminal.

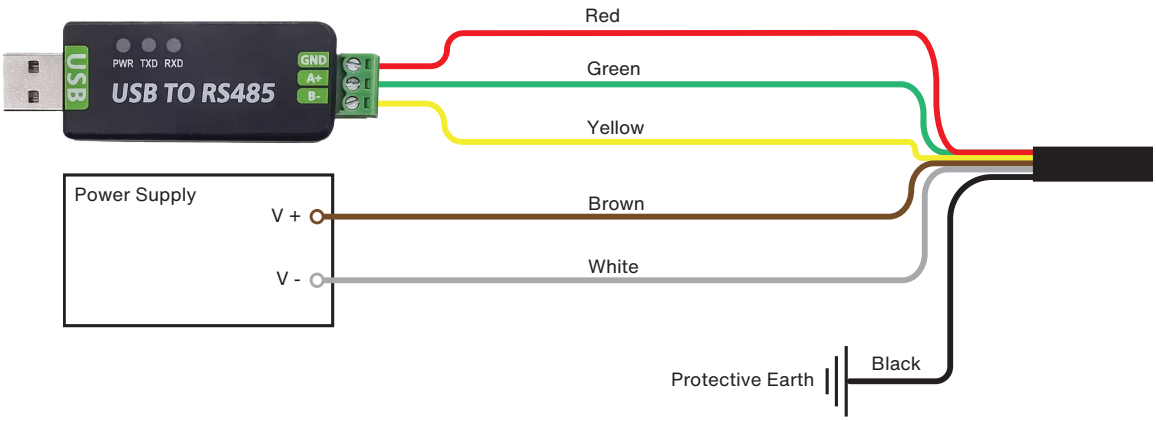


Figure 1 - Communication and Power Cable Connection

3. 3S-IS Configuration Tool (GUI)

After completing the communication and power cable connections, a computer with a Windows® operating system is required to use the Configuration Tool.

- Connect the USB-RS485 converter to the USB port of your computer.
- Download and install the 3S-IS Configuration Tool software on your computer. The download link is provided below: https://www.sevensensor.com/files/d/s/3S-IS_Irradiance-Sensor_GUI_v7.0.0.zip

Note: *If the sensor's firmware version is not one of 7.x, 8.x, 9.0, 9.1, 9.2, 9.3, 9.4, 9.5 or 9.6, use the download page below to obtain the compatible configuration tool:*
https://www.sevensensor.com/download

3.1. USB-RS485 Driver Check

- In order for your computer to detect the USB-RS485 converter, the converter must be recognized as a serial COM port.
- If the USB-RS485 converter is already recognized as a serial COM port on your computer, you may skip these steps and proceed to section **"3.2. Configuration Tool Connection".**
- If the USB-RS485 converter is not defined as a serial COM port on your computer:

a. Install the appropriate driver for the USB-RS485 converter you are using.

Note: *If the USB-RS485 converter was supplied by SEVEN Sensor, the required driver file will be provided to you by the SEVEN Sensor technical service team upon request.*

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b. Open **"Device Manager"** on your computer and follow the steps below.

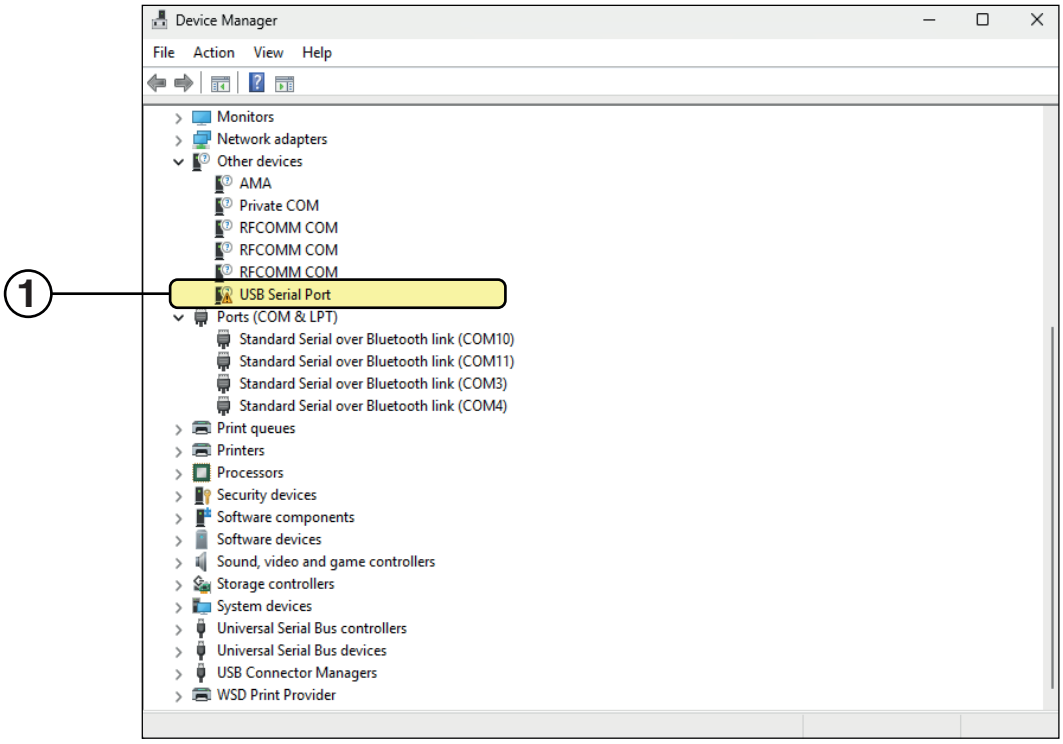


Figure 2 - Device Manager

Icon No	Instruction
1	Double-click the serial port to which the USB-RS485 converter is connected.

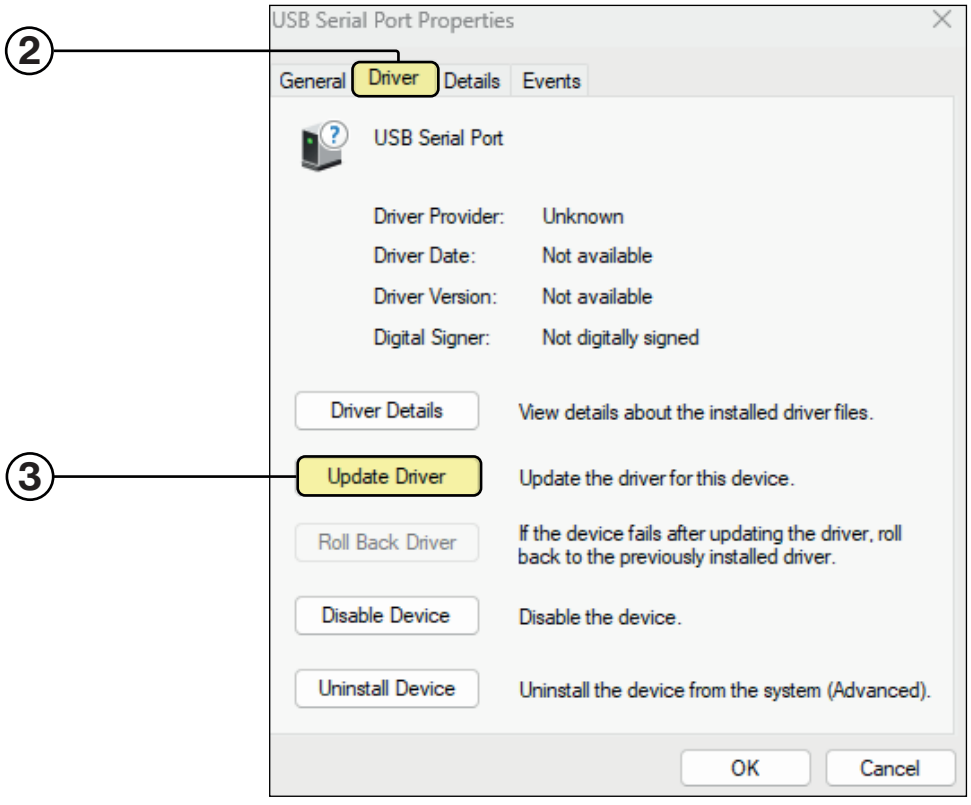


Figure 3 - USB Serial Port Properties

Icon No	Instruction
2	In the window that opens, go to the **"Driver"** section.
3	Click **"Update Driver".**

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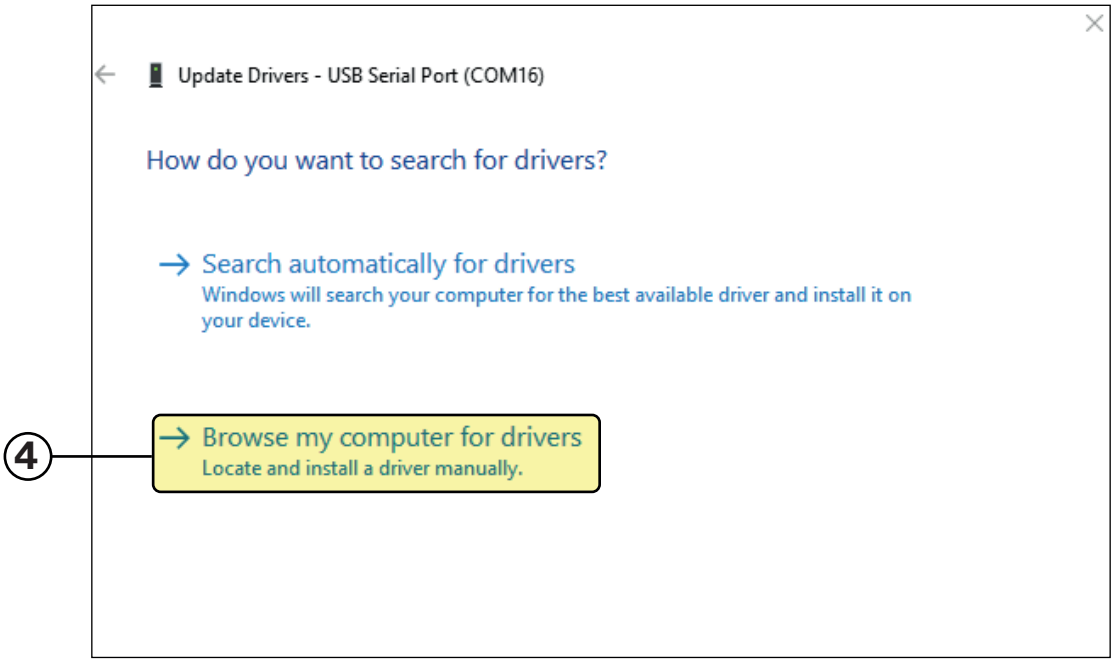


Figure 4 - Update Drivers

Icon No	Instruction
4	Click **"Browse my computer for drivers".**

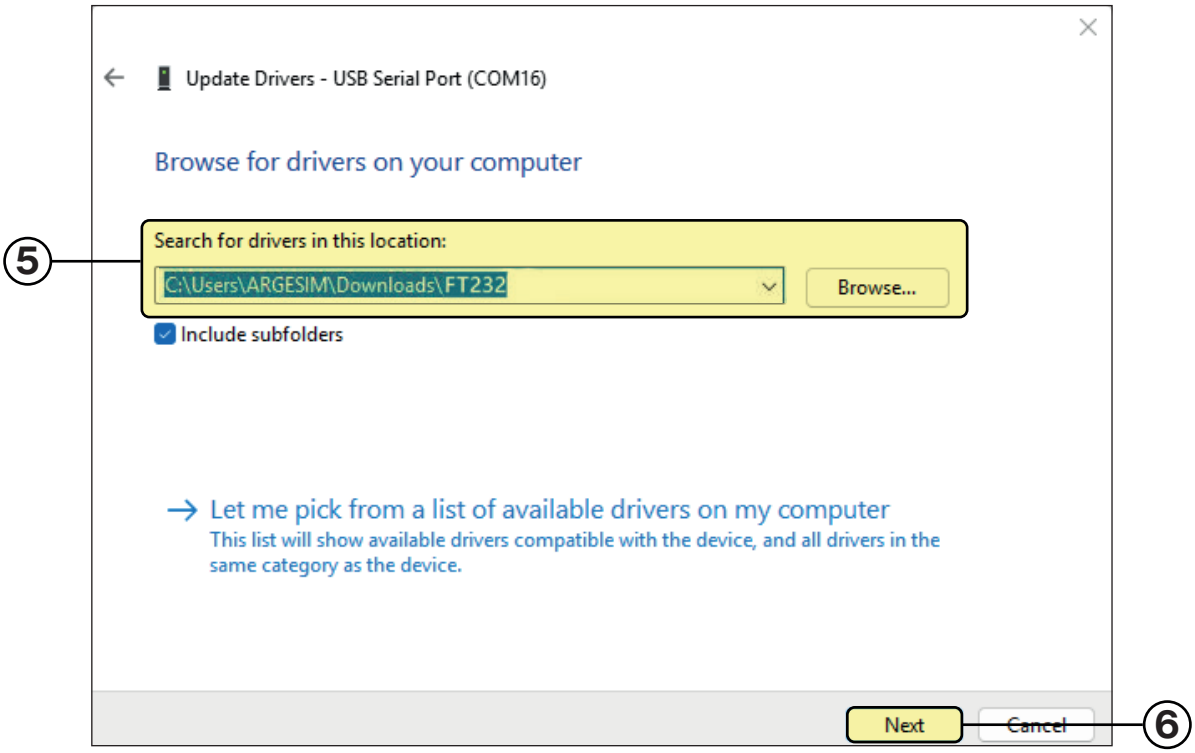


Figure 5 - Completing the Driver Update

Icon No	Instruction
5	Click **"Browse"** and select the driver file you downloaded.
6	Click **"Next"** to complete the driver update.

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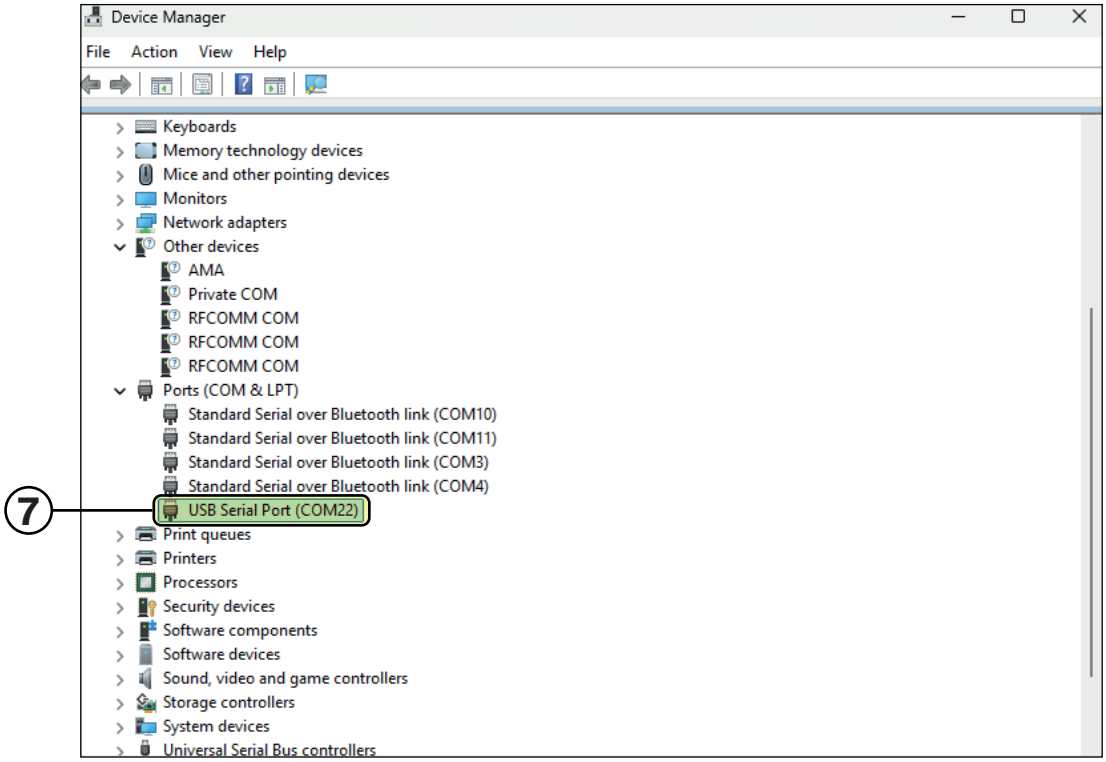


Figure 6 - Driver Update Completed

Icon No	Instruction
7	The serial port to which the USB-RS485 converter is connected will be displayed under the Ports (COM & LPT) list.

3.2. Configuration Tool Connection

Run the 3S-IS Configuration Tool. When the Configuration Tool starts, the following screen will appear.

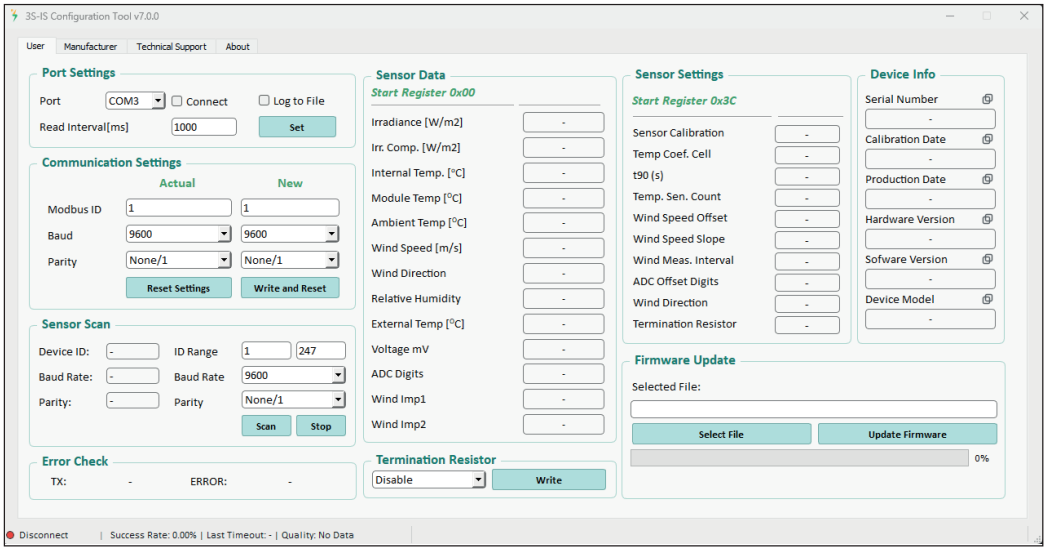


Figure 7 - 3S-IS Configuration Tool

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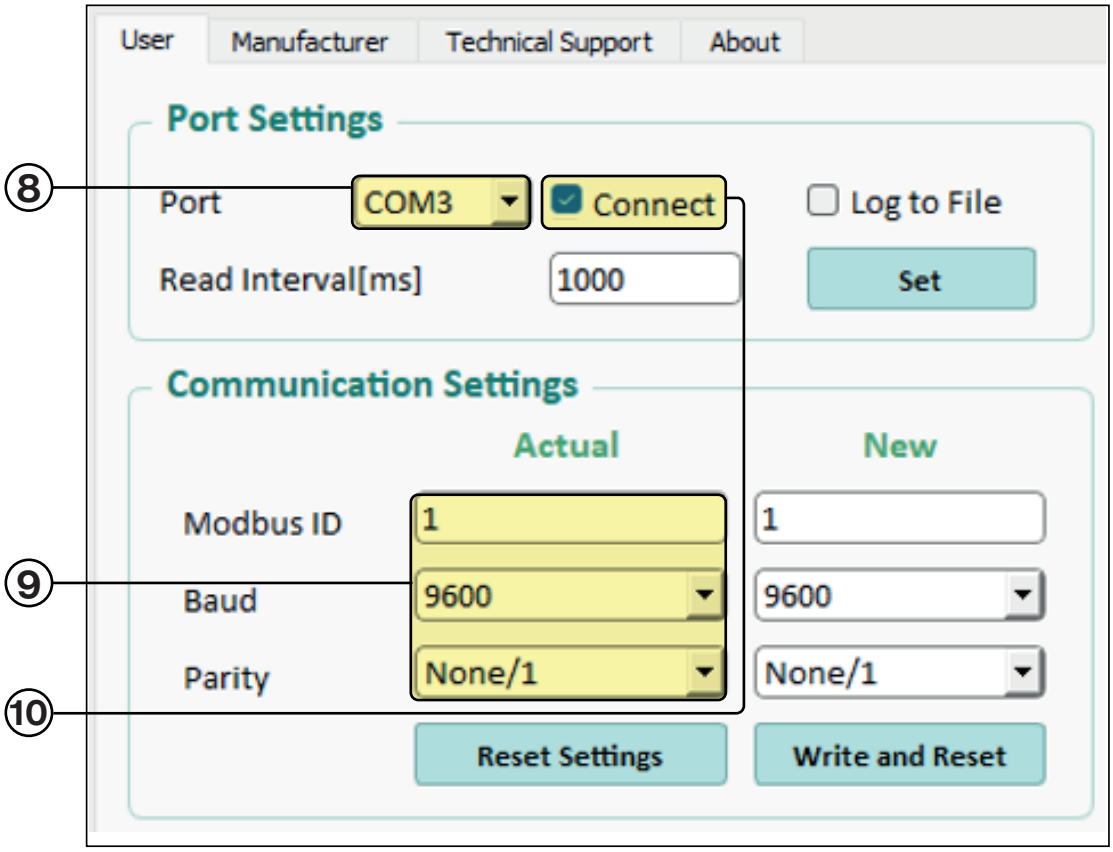


Figure 8 - Configuration Tool Connection

Icon No	Instruction
8	Select the COM port to which the device is connected.
9	Enter the device's Modbus communication parameters in the **"Actual"** field of the **"Communication Settings"** section.
10	Click the **"Connect"** button.

Note: *The factory default settings are Modbus ID: 1, Baud Rate: 9600 and Parity: None/1.*

Note: *The sensor must be* ***powered on*** *in order to connect to the Configuration Tool.*

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When the connection is successfully completed, the data will be displayed as shown in Figure 9.

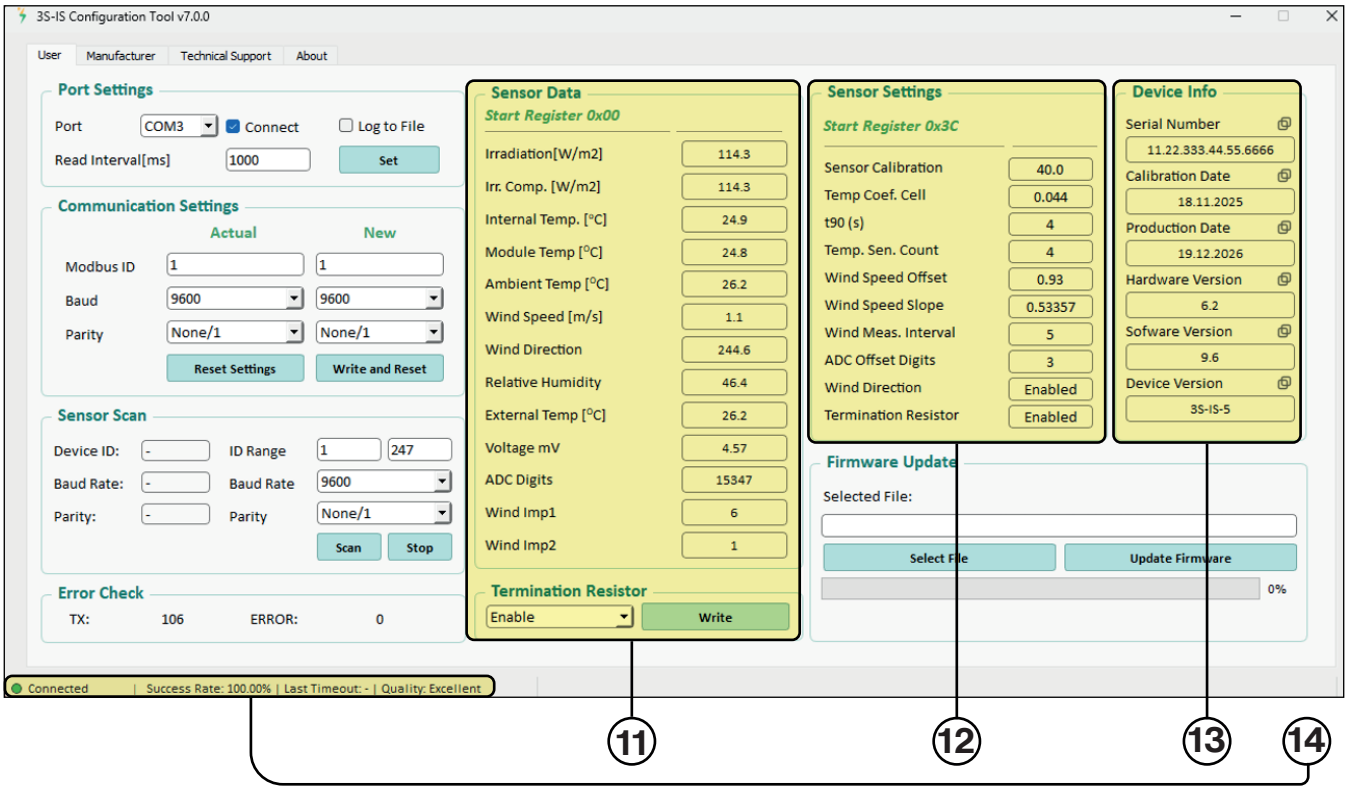


Figure 9 - 3S-IS Configuration Tool Data

Icon No	Instruction
11	The **"Sensor Data"** section displays the real-time measurement data read from the device.
12	The **"Sensor Settings"** section displays the sensor's calibration and operating settings.
13	The **"Device Info"** section displays the device's serial number, version information, calibration date, and production date.
14	The **status bar** displays the device's connection status, communication success rate, last timeout information and connection quality.

3.3. Finding the Modbus Communication Parameters

If a connection to the sensor cannot be established, the Modbus communication parameters entered in the **"Actual"** field may not match the current parameters of the device. In this case, the correct Modbus communication parameters can be found by entering the relevant values in the **"Sensor Scan"** section.

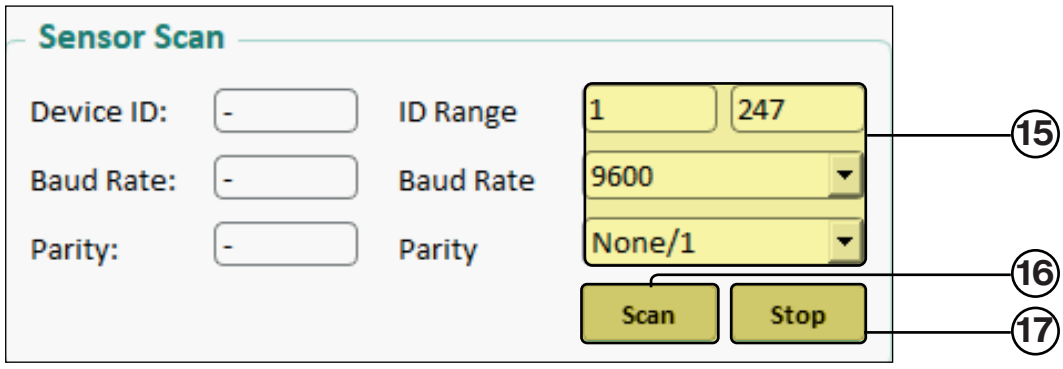


Figure 10 - Scanning the Modbus Communication Parameters

Icon No	Instruction
15	Enter the ID range to be scanned, along with the **Baud Rate** and **Parity** values.
16	Click **"Scan"** button to start the scanning process.
17	Click **"Stop"** button to manually terminate the scanning process at any time.

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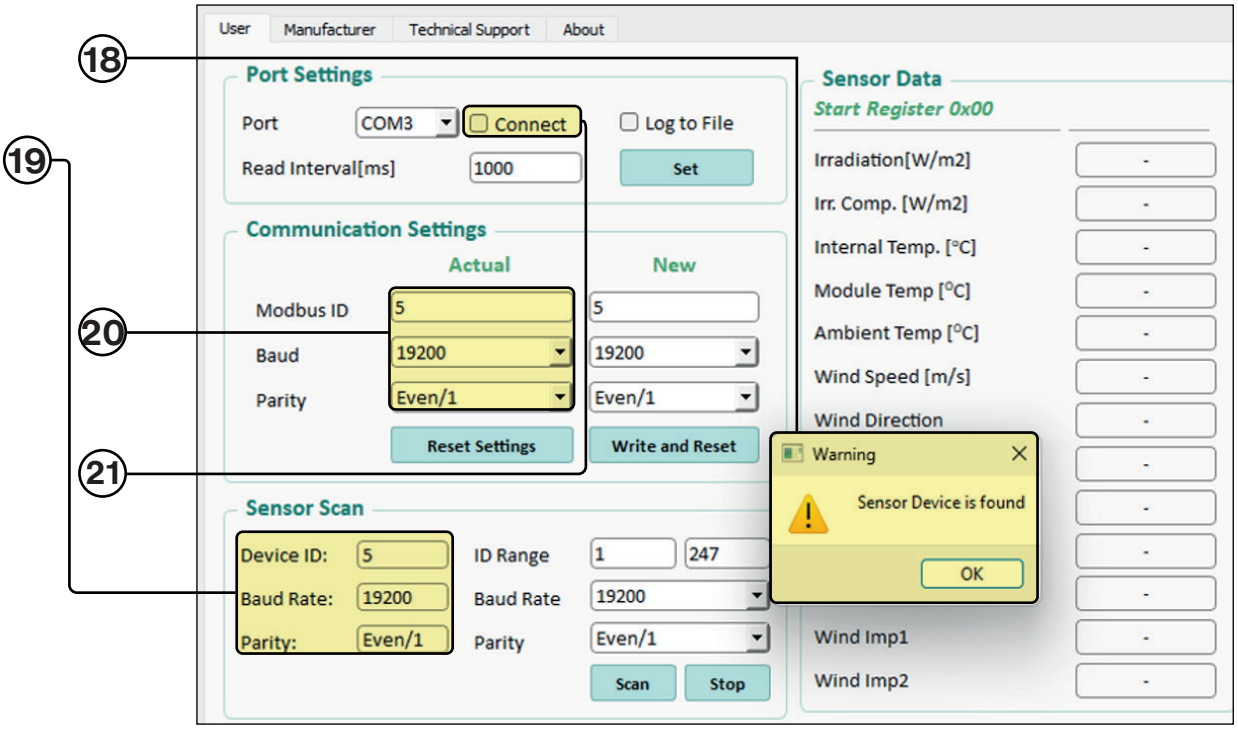


Figure 11 - Detected Modbus Communication Parameters

Icon No	Instruction
18	When the scanning process is completed and the sensor parameters are found, an information message is displayed on the screen.
19	The detected Modbus communication parameters of the sensor are displayed.
20	The detected parameters are automatically entered into the **"Actual"** field in the **"Communication Settings"** section.
21	Click the **"Connect"** button to establish a connection with the sensor.

Note: *If the ID fields are left blank, the Sensor Scan process scans the ID range from 1 and 247 by default.*

3.4. Configuring the Modbus Communication Parameters

To configure the Modbus communication parameters (Modbus ID, Baud Rate and Parity), follow the steps shown in Figure 12 while the sensor is connected.

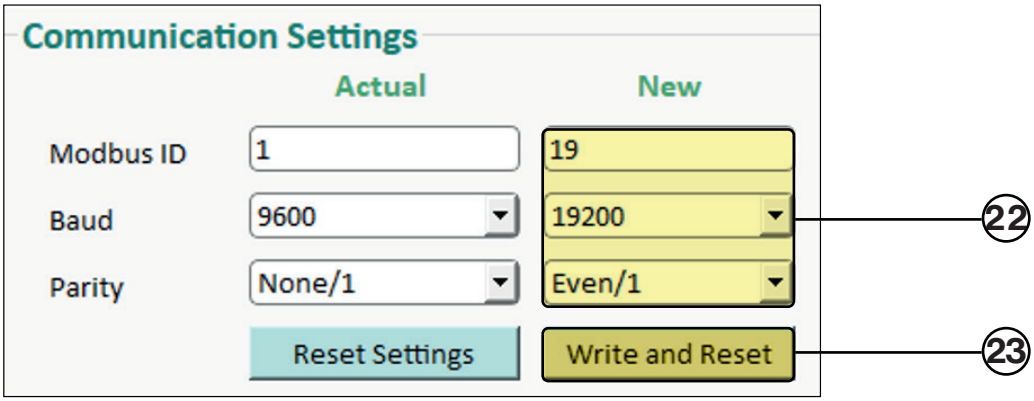


Figure 12 - Configuring the Modbus Communication Parameters

Icon No	Instruction
22	Enter the new Modbus communication settings to be assigned in the **"New"** fields of the **"Communication Settings"** section.
23	Click the **"Write and Reset"** button.

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3.5. Resetting the Sensor's Modbus Communication Parameters to Default Factory Settings

If the sensor's Modbus communication parameters are unknown or cannot be detected, the sensor communication settings can be restored to the factory default settings. To perform this operation, follow the steps shown in Figure 13.

Note: *While restoring the sensor's Modbus communication parameters to the default factory settings, make sure that no other device is connected to the RS485 communication line.*

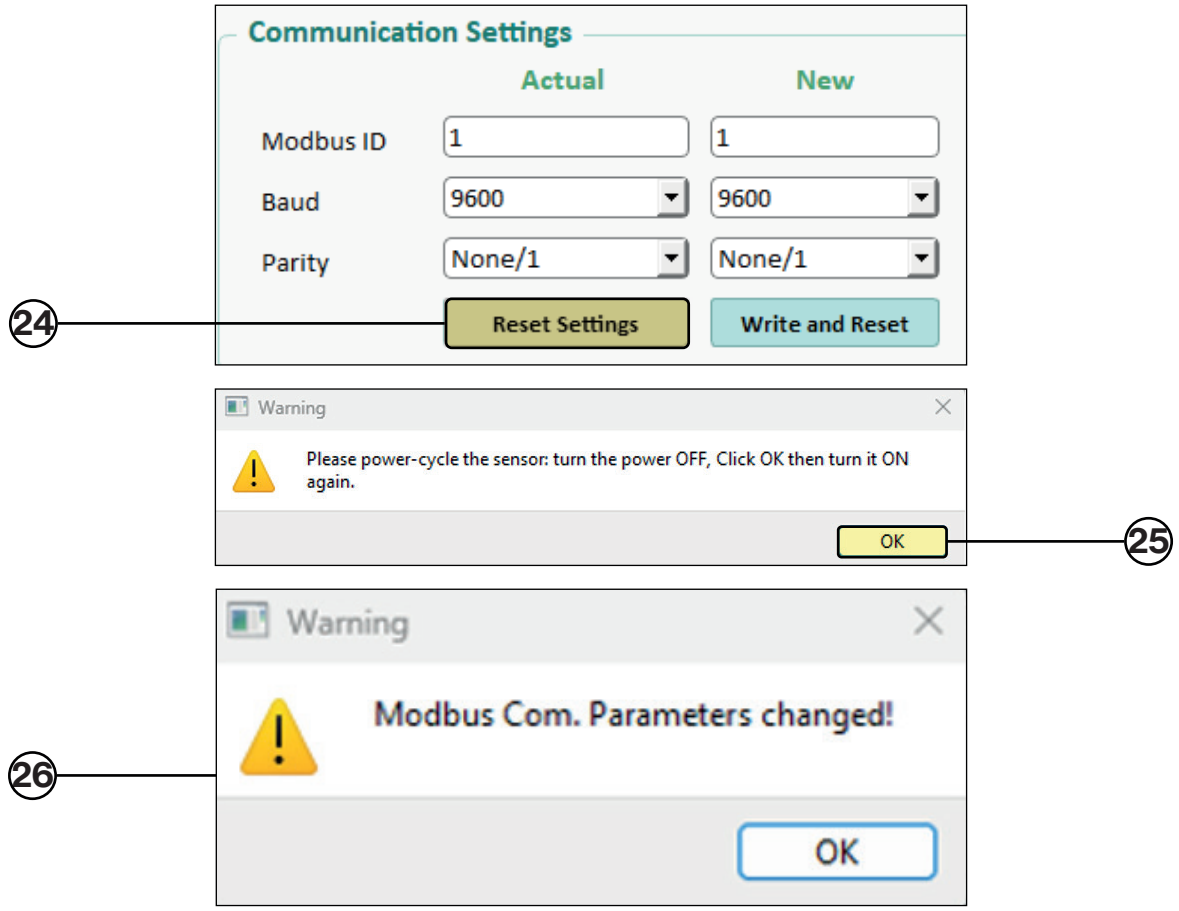


Figure 13 - Resetting the Modbus Communication Parameters to Factory Settings

Icon No	Instruction
24	Click the **"Reset Com. Settings"** button in the **"Communication Settings"** section.
25	An information message regarding the operation to be performed will be displayed on the screen. **[Disconnect the sensor's power, click the "OK" button, and then power the sensor again]**
26	When the operation is completed successfully, an information message will be displayed on the screen.

3.6. Updating the Sensor Firmware

The sensor firmware may be updated as part of the development activities carried out by SEVEN Sensor.

Note: *The firmware update file (.bin) is provided by the SEVEN Sensor technical team.*

Note: *During the firmware update process, make sure that no other device is connected to the RS485 communication line.*

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When a firmware update is required, follow the steps shown in Figure 14 in accordance with the instructions provided by the SEVEN Sensor technical team while the sensor is connected.

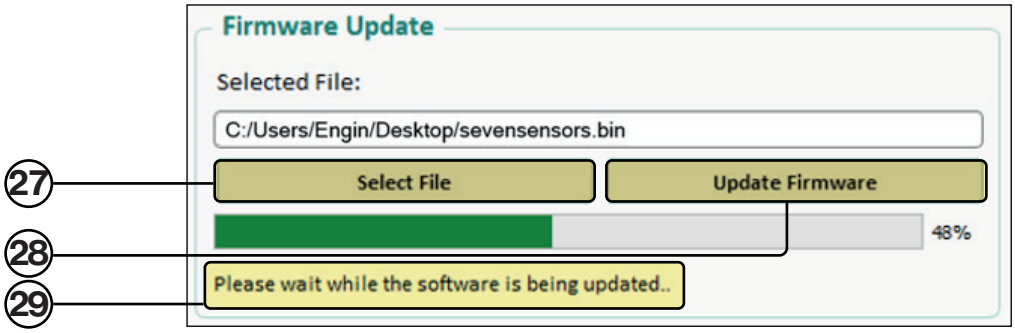


Figure 14 - Updating the Sensor Firmware

Icon No	Instruction
27	In the **"Firmware Update"** section, click the **"Select File"** button to select the firmware update file (.bin).
28	Click the **"Update Firmware"** button.
29	When the update process starts, an information message is displayed below the progress bar. The upload progress is shown by the progress bar and the percentage value.

When the firmware update process is complete, an information message is displayed on the screen as shown in Figure 15.

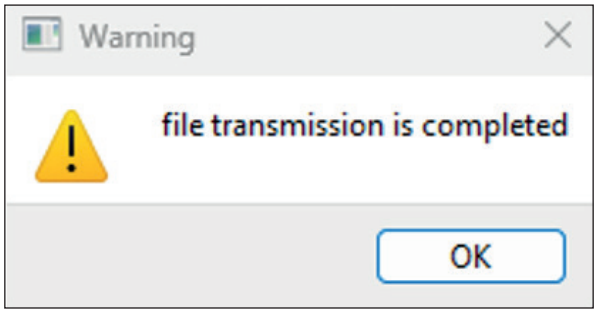


Figure 15 - Sensor Firmware Update Information Message

3.7. Data Logging

To record the sensor data read in real time by the Configuration Tool, follow the steps shown in Figure 16.

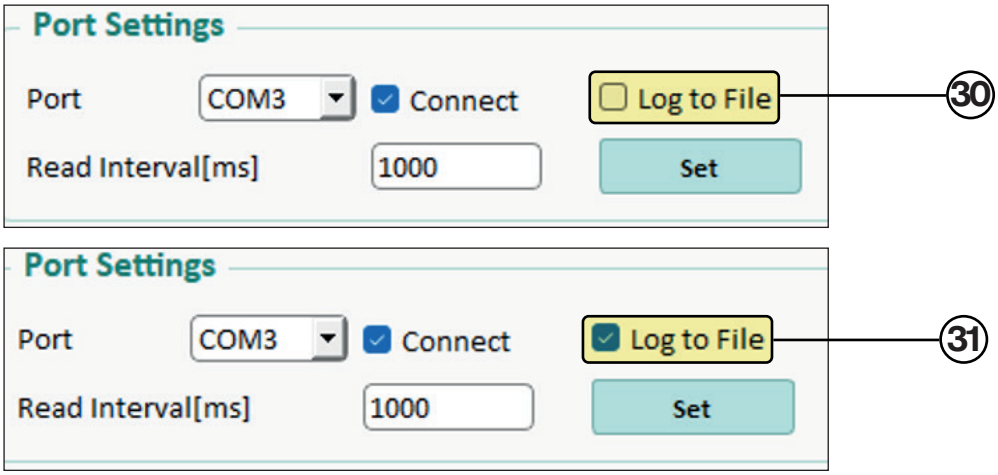


Figure 16 - Data Logging Process

Icon No	Instruction
30	To start data logging, click the **"Log To File"** button.
31	To stop data logging, click the same button again.

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```
Seven Sensor - Modbus Irradiance Sensor
ID: 1 - Baud Rate: 9600 - Parity: N - Start Reg. Adr. 0
Serial Number 11.22.333.44.55.6666
Time Stamp, IRR, Temp Comp IRR, mV, ADC, Int Temp, Module Temp, Ambiant Temp, External Temp, Humidity, Wind Speed, Wind Direction
2026_01_29__16_46_20,113.3,113.1,4.6,322,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_21,113.3,113.1,4.61,323,30.6,24.9,3276.8,22.9,39.3,0.0,126.3
2026_01_29__16_46_22,113.3,113.1,4.6,322,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_23,113.0,112.7,4.6,322,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_24,113.0,112.7,4.61,323,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_25,113.3,113.1,4.6,323,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_26,113.0,112.7,4.6,322,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_27,112.6,112.3,4.6,322,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_28,86.8,86.6,0.21,18,30.6,24.9,3276.8,22.9,39.4,0.0,126.2
2026_01_29__16_46_29,1.0,1.0,0.04,5,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_30,1.0,1.0,0.02,4,30.6,24.9,3276.8,22.9,39.3,0.0,126.3
2026_01_29__16_46_31,0.7,0.7,0.02,5,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_32,1.0,1.0,0.02,4,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
2026_01_29__16_46_33,1.0,1.0,0.02,4,30.6,24.9,3276.8,22.9,39.3,0.0,126.2
```

Figure 17 - Data Log File Example

3.8. Activating the Termination Resistor

To change the termination resistor setting, follow the steps shown in Figure 18.

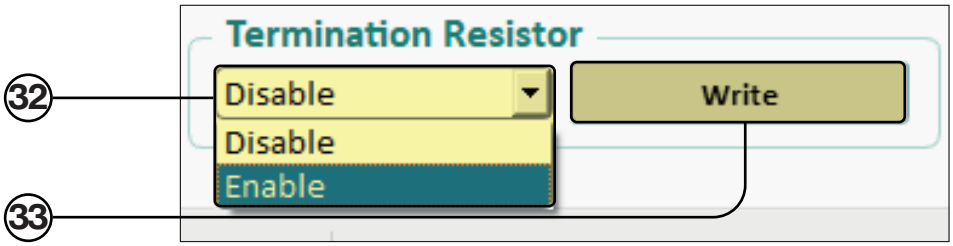


Figure 18 - Activating the Termination Resistor

Icon No	Instruction
32	To enable the termination resistor, select **"Enable"** from the drop-down list; to disable it, select **"Disable".**
33	Click the **"Write"** button.

Note: *When the product is used as a standalone device, enabling the termination resistor is optional. In a daisy-chain connection, the product at the end of the line must be set to* ***Enable.***

3.9. About and Support Information

The **"About"** tab displays the application's version information, support links, user documents and update options.

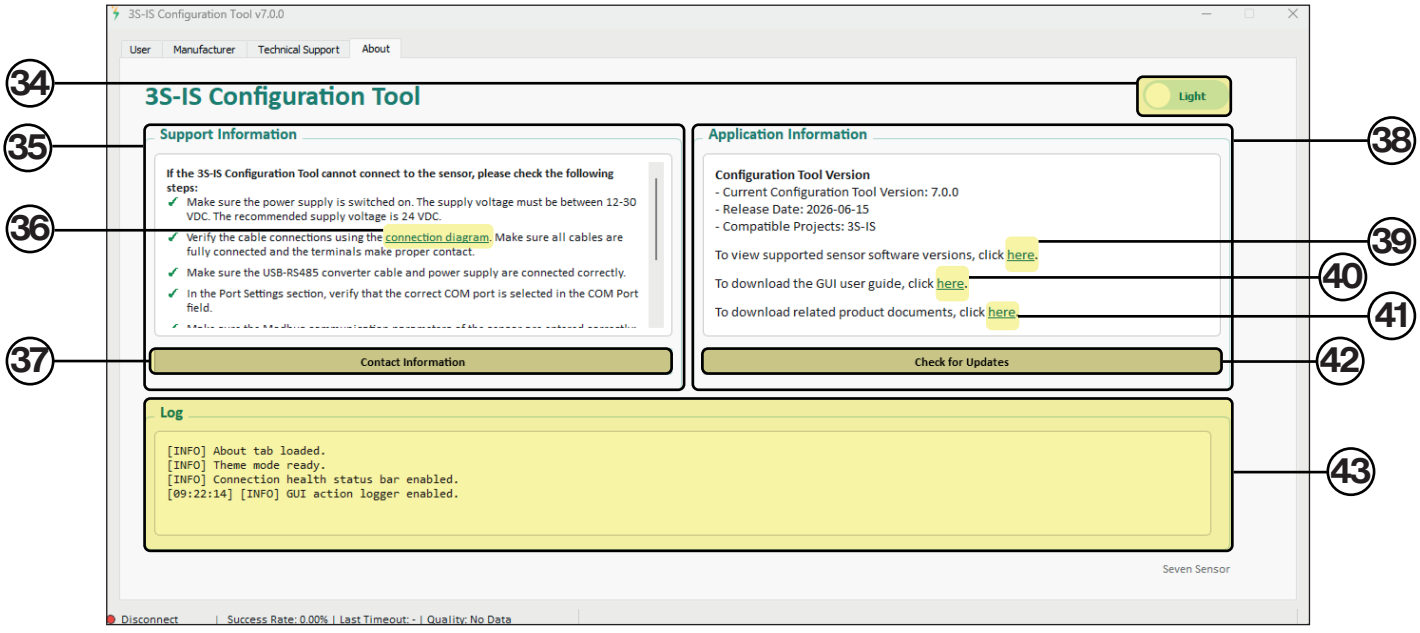


Figure 19 - About and Support Information Screen

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Icon No	Instruction
34	Use the theme switch to change the application's light/dark theme appearance.
35	The troubleshooting steps that can be applied in case of connection problems are displayed in the **"Support Information"** section.
36	To view the sensor connection diagram, click the **“Connection Diagram”** link.
37	To view the contact information, click the **“Contact Information”** button.
38	The application version, release date and compatible project information are displayed in the **"Application Information"** section.
39	To view the supported sensor firmware versions, click the relevant **“here”** link.
40	To download the GUI user manual, click the relevant **“here”** link.
41	To download the product-related documents, click the relevant **“here”** link.
42	To check for the current version of the application, click the **“Check for Updates”** button.
43	The operations performed in the application and the system messages are displayed in the **"Log"** section.

3.10. Configuration Tool Update

When the Configuration Tool is launched for the first time, or when the **“Check for Updates”** button in the **“About”** tab is clicked, the application checks for updates. If a new version is detected, an update notification message is displayed on the screen as shown in Figure 20.

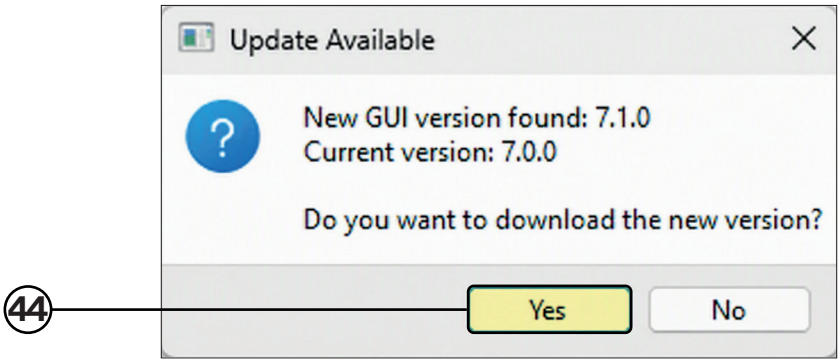


Figure 20 - Configuration Tool Update Notification Message

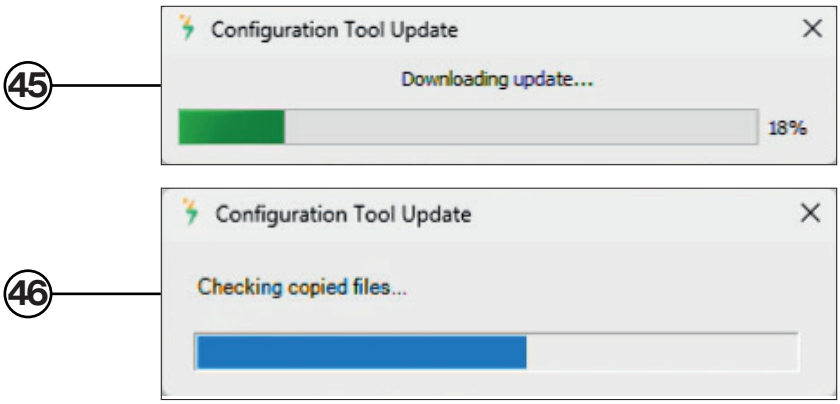


Figure 21 - Configuration Tool Update

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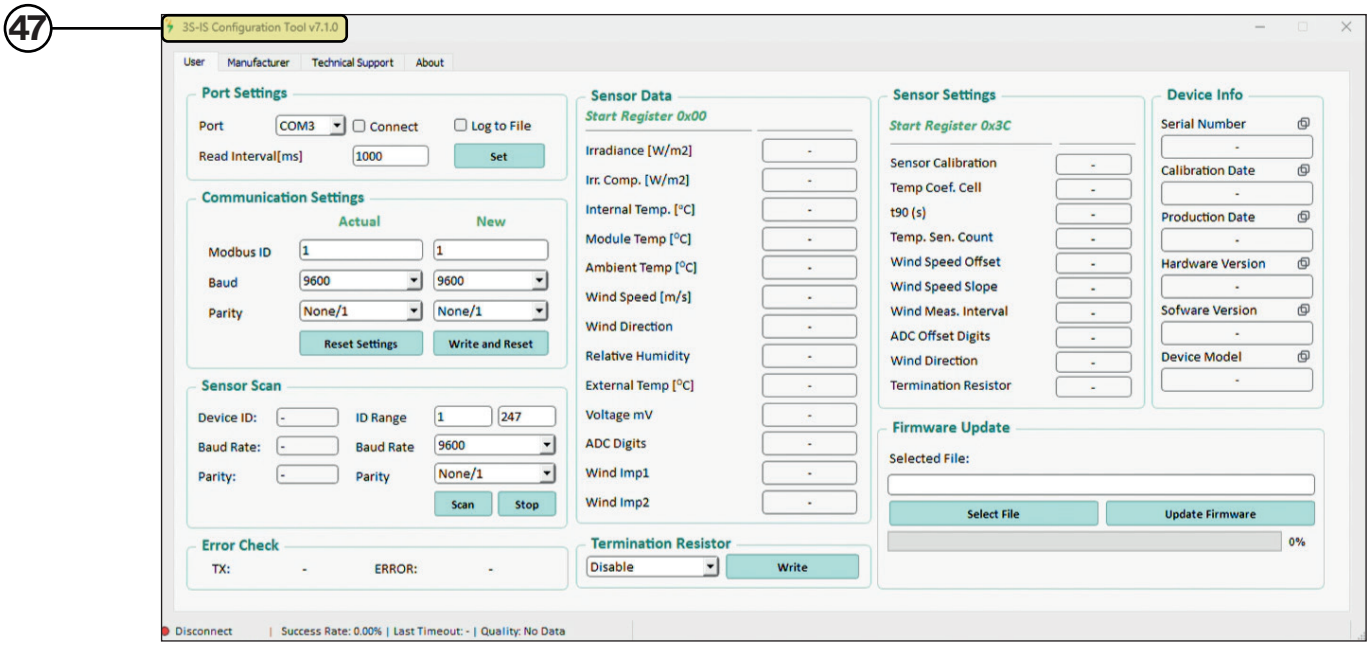


Figure 22 - Updated Configuration Tool Screen

Icon No	Instruction
44	To start the update, select **"Yes".**
45	The download status of the update files can be monitored using the progress bar in the update window.
46	The progress of the file copying and installation process is displayed on the next update screen.
47	After the update is complete, the configuration tool restarts with the new version.

4. Troubleshooting Connection Problems

If a connection to the sensor cannot be established with the 3S-IS Configuration Tool, check the following steps:

1. Make sure that the power supply is turned on. The supply voltage must be between 12–30 V DC. The recommended supply voltage is 24 V DC.

2. Verify that the cable connections have been made as shown in Figure 1. Make sure that all cables are fully inserted and are making proper contact.

3. Verify that the USB-RS485 driver is installed and up to date.

4. Verify that the correct port to which the sensor is connected is selected in the "COM Port" field under the "Port Settings" section.

5. Make sure that the correct values are entered for the sensor's Modbus communication parameters (Modbus ID, Baud Rate and Parity).

6. If a connection still cannot be established despite performing all of the above checks, turn the power supply off and then back on. Then unplug the USB-RS485 converter from the computer and plug it back in. After that, try to establish the connection again.

7. An industrial-type USB-RS485 converter should be used to ensure reliable communication.

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5. Contact Details

If you encounter any problems during installation or configuration, please do not hesitate to contact us.

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