# GSM and 4G Terminal
# User Manual




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# PROPER USE AND SAFETY REQUIREMENTS



Cut all the power when connecting and disconnecting the device to a panel.



Do not clean the device with a solvent or similar material. Only use a dry cloth.



Please do not intervene to the device when a technical problem is encountered and get in contact with a technical service within the shortest time.



If the warnings are not taken into account, our company or the authorized dealer shall not be held responsible for the negative consequences.



Do not dispose in the trash, the device must be delivered to the collection centers (electronic device recycling centers). It should be recycled or disposed of without harming human health and environment.



The installation, assembly, activation and operation of the device should be done and used by only expert professionals and in accordance with safety regulations and instructions.

# 1. INTRODUCTION

## 1.1. General Features

HT G13/G14 GSM communication terminal and HT G16/G17 4G communication terminal enable remote monitoring of electronic electricity meters and devices that support the Modbus protocol, such as power factor controllers and energy analyzers. It provides communication with electricity meters via optical, RS-232 (3-wire) or RS-485 (2-wire) communication ports, and with devices with Modbus protocol via RS-485 port.
In order for the communication terminals to establish an internet connection, a M2M (data) capable SIM card with a capacity of at least 100 MB must be inserted into the device. If a PIN code is defined on the SIM card, the PIN code must be canceled by inserting it into a mobile phone.
HT G16/G17 4G communication terminals query the data on the connected devices and send it to the Grup Arge servers over the 4G network (mobile phone network).
HT G13/G14 GSM communication terminals query the data on the connected devices and send it to the Grup Arge servers over the GSM network (mobile phone network).
If a 2G SIM card is inserted in the HT G16/G17 4G models or if a 4G network is not available, the terminal uses the 2G GSM network to communicate with the Grup Arge servers.
You can access the data of all your devices by visiting our website at www.enerjitakibi.com with your user account provided to you.
The main reports presented on the web interface are as follows:

- Active consumption reports
- Reactive rate reports
- Instantaneous electrical parameters such as current, voltage
- Step values (Only for power factor controllers)

In addition, in certain alarm situations, the system notifies the relevant persons via e-mail and SMS alerts.

## 1.2. Technical Features

- Microprocessor based.
- HT G13 GSM Terminal and HT G16 4G Terminal operate with 85-265 V AC and 9-24 V DC supply.
- HT G14 GSM Terminal and HT G17 4G Terminal operate with 85-265 V AC supply.
- Supports RS-485, RS-232 and optical port communication channels.
- It can communicate with all meters that support TS EN 62056-21 protocol.
- It can read 32 meters and 247 Modbus devices via RS-485.
- It has LEDs indicating RS-485/Optical/RS-232 (Communication), GSM/4G connection and internet status.
- Data sending period can be set between 1 min -240 min.
- It has a system architecture that does not require static IP.
- It has wired GSM antenna support for places where GSM network signal is weak.

- Compatible with M2M data lines of all GSM operators.
- The operating ambient temperature of the device is between -10 °C and +55 °C.
- Supply consumption power is less than 1 VA.
- IP40 protection class.
- Dimensions of the device are (Width-Length-Depth) 35 x 110 x 80 mm

## 1.3. Terminal Connections

| | | |
|---|---|---|
| **SIM Card** | | SIM Card Slot |
| **Antenna** | | Antenna Connector (SMA) |
| **AC 85 / 265 V**<br>**DC 9 / 24 V** | | AC / DC Power Input |
| **VDD** | | Optical Reader Power Supply (6.2 V DC) |
| **RS-232** | **TX** | Optical / RS-232 Data Transmit |
| | **RX** | Optical / RS-232 Data Receive |
| | **GND** | Optik / RS-232 Ground |
| **RS-485** | **A** | RS-485 Data + |
| | **B** | RS-485 Data - |

Table 1.1

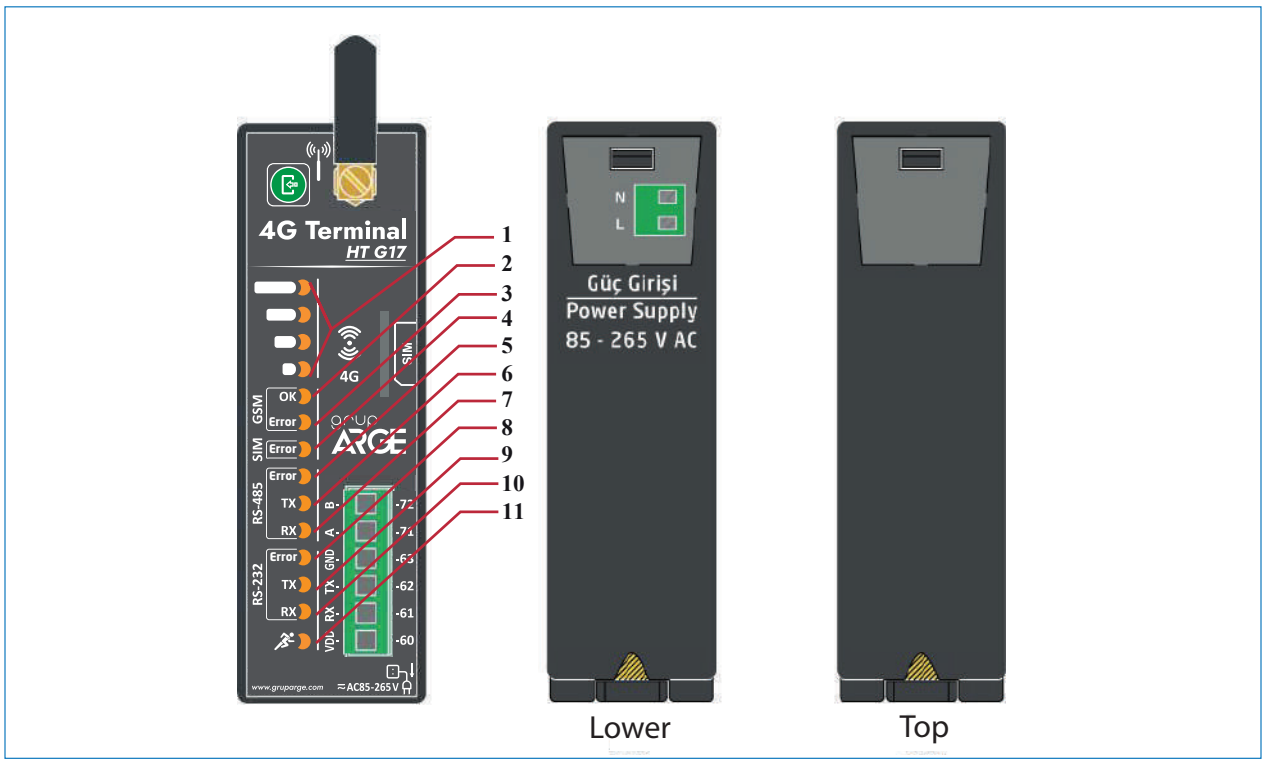



Figure 1.1

*WARNING! Do not energize VDD , TX , RX , GND , A , B terminals.*

## 1.4. GSM and 4G Model Comparison Table

| Product Code | Product Name | Product Description | Communication | Power Supply | Protocol |
|---|---|---|---|---|---|
| **GA3113** | HT G13 | GSM TERMİNAL-AC/DC | 2G | 85-265 V AC/9-24 V DC | Meter/Modbus |
| **GA3114** | HT G14 | GSM TERMİNAL-AC | 2G | 85-265 V AC | Meter/Modbus |
| **GA3116** | HT G16 | 4G TERMİNAL-AC/DC | 4G | 85-265 V AC/9-24 V DC | Meter/Modbus |
| **GA3117** | HT G17 | 4G TERMİNAL-AC | 4G | 85-265 V AC | Meter/Modbus |

Table 1.2

## 1.5. LED Indicators Description

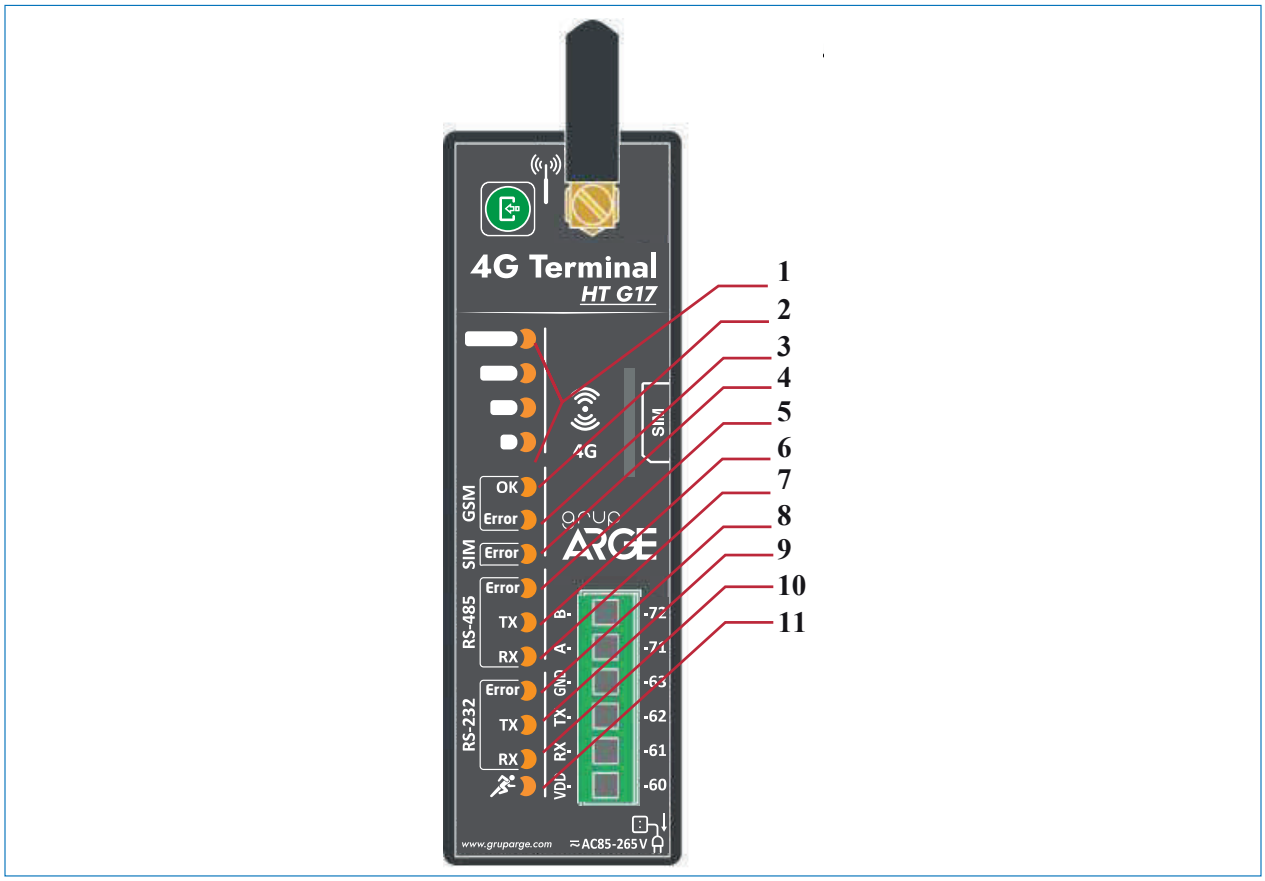



Figure 1.2

1. **Signal Strength LEDs (1–4):** Indicates GSM/4G network signal strength. If all 4 LEDs are lit, signal strength is excellent. If only 1 LED is lit or none are lit, it is recommended to use an external wired antenna to improve signal quality.
2. **Server Connection Status:**
   **Steady On:** Successfully connected to the server.
   **Blinking:** Attempting to establish server connection.
3. **Server Communication Error:** Indicates that the terminal could not connect to the server.
4. **SIM Card Error:** Indicates that the SIM card is either not inserted or the PIN code has not been disabled.
5. **RS-485 Communication Error:** Indicates a communication problem on the RS-485 line.
6. **RS-485 Query Transmission:** Indicates that a query is being transmitted from the terminal via the RS-485 port.

7. **RS-485 Response Reception:** Indicates that a response is received at the terminal via the RS-485 port.
8. **Optical/RS-232 Communication Error:** Indicates a communication problem on the optical or RS-232 channel.
9. **Optical/RS-232 Query Transmission:** Indicates that a query is being transmitted from the terminal via the optical or RS-232 channel.
10. **Optical/RS-232 Response Reception:** Indicates that a response is received at the terminal via the optical or RS-232 channel.
11. **Power LED:** Indicates whether the device is powered

## 2. ASSEMBLY INFORMATION

### 2.1. Assembly Information

1. Fix the device in a suitable place in the panel (suitable for rail mounting).
2. Make the supply connection to the terminal named "AC 85 / 265 V" or "DC 9 / 24 V". Make sure that the cables are not energized.
   *WARNING! When AC voltage is applied to DC powered devices, the device is out of warranty.*
3. Connection with the device to be communicated:
   **a.** Electricity Meter / Optical Port: See Figure 3.1
   **b.** Electricity Meter / RS-232: See Figure 3.3
   **c.** Electricity Meter / RS-485: See Figure 3.4; 3.5; 3.6; 3.7; 3.8; 3.9
   **d.** Modbus Device (PFC, analyzer, etc.) / RS-485: See Figure 4.1; 4.2
4. Cancel the PIN code of the SIM card and insert it into the SIM card slot as shown on the device.
5. After checking all connections for the last time, you can start the device by energizing it.
6. After a while, you can log in to the SmartPower Energy Monitoring System and check whether your device is sending data or not. If you do not have internet access in the field, you can get help from our technical support service.

### NOTE

1. If the GSM signal power is insufficient, the rod antenna on the device should be removed and replaced with a cable antenna.
2. If more than one electricity meter will be connected via RS-485, the meter serial numbers should be introduced to the system by calling the technical support service.
3. Modbus devices to be read via RS-485 must be introduced to the system. Modbus addresses of all devices on the same line must be different. For this, it may be necessary to change the modbus address by entering the menu of the relevant device.

### 2.2. How to Use the Authorization Code?

1. Log in to SmartPower Energy Monitoring System and go to the "Modem" page.
2. Click on the "Add Modem Authorization" button and enter the information on the "Authorization Code" sheet that comes out of the product box on the page that opens.
3. If the information is entered correctly, the device will be automatically transferred to your account.
4. Once the process is complete, destroy the authorization code card for security.

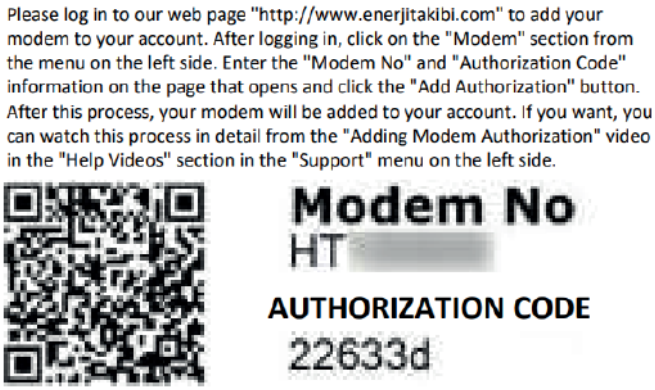



Figure 2.1

# 3. SUPPLY CONNECTIONS

## 3.1. AC Supply Connection

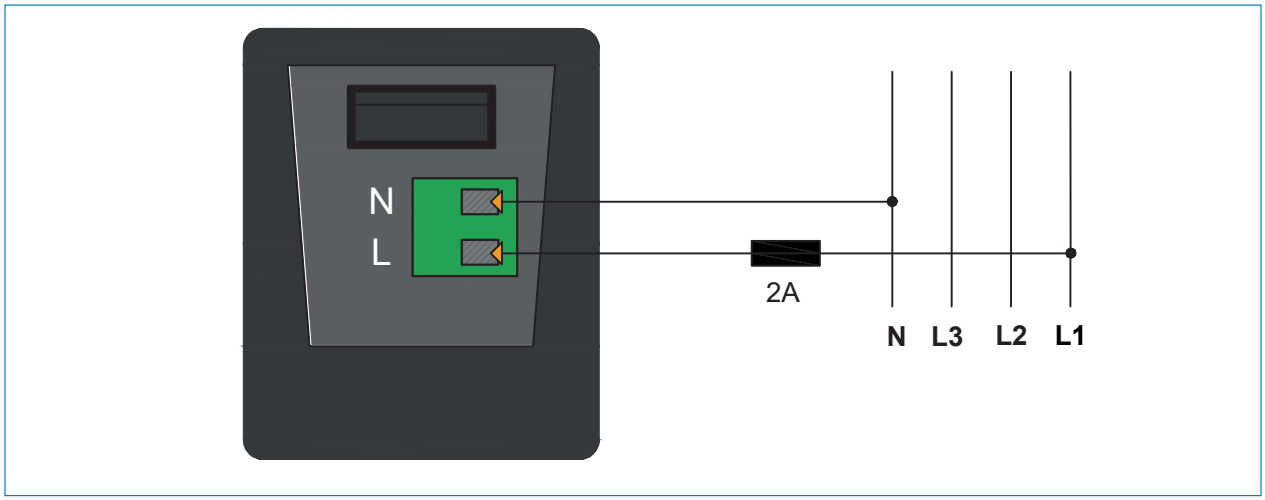



Figure 3.1

## 3.2. DC Supply Connection

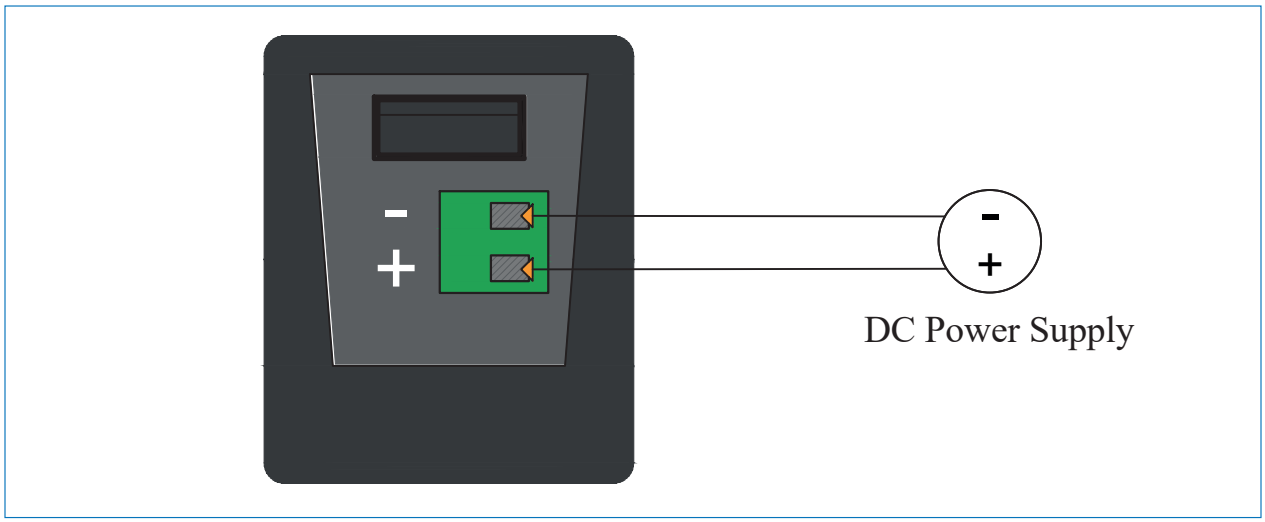



Figure 3.2

# 4. METER COMMUNICATION CONNECTIONS

## 4.1. Optical Port Connection

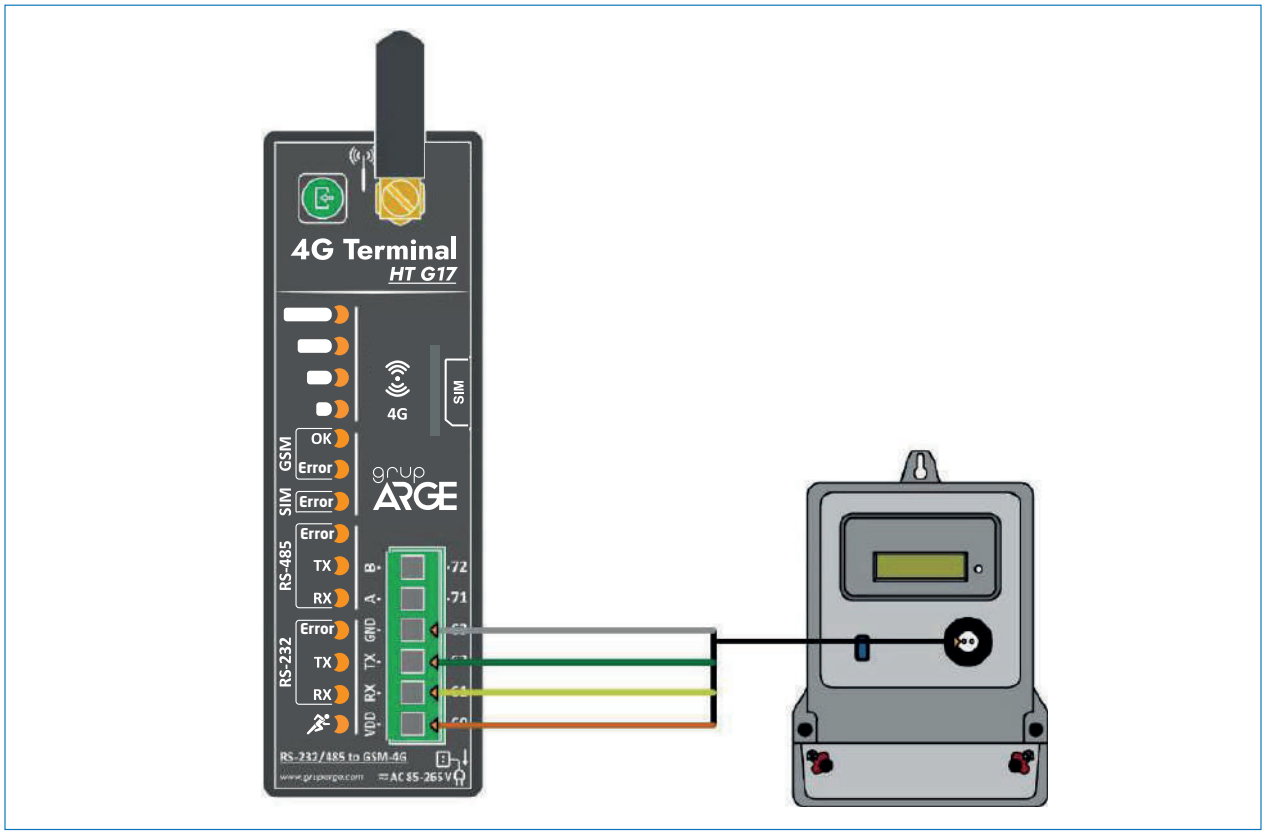
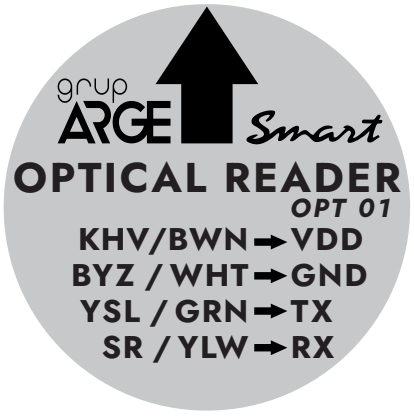



Figure 4.1




**NOTE:** When placing the optical reader on the meter, make sure that the arrow on the label points upwards.

| Cable Color | Brown | Green | Yellow | White |
|---|---|---|---|---|
| Terminal | VDD | TX | RX | GND |

Figure 4.2

## 4.2. Makel RS-232 Communication Connection

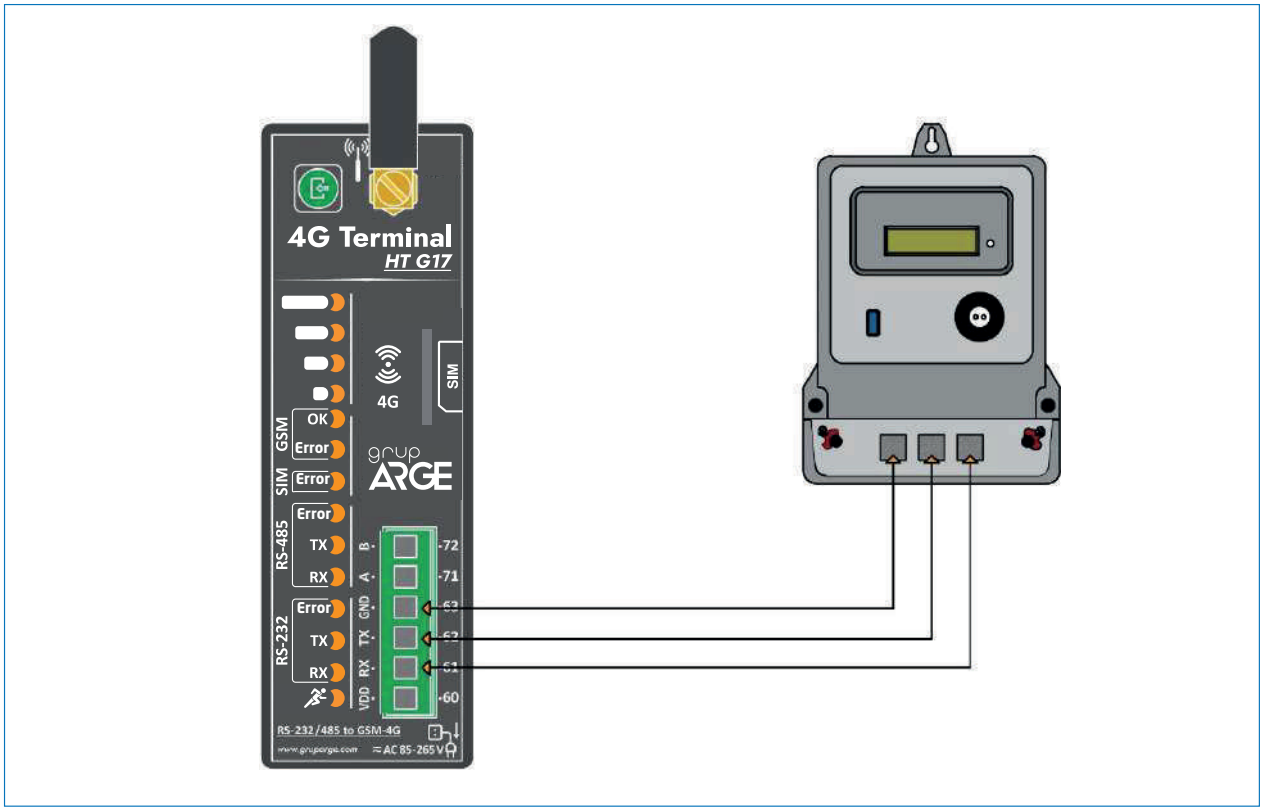



Figure 4.2

## 4.3. Makel RS-485 & Köhler RS-485 & Viko RS-485 Communication Connection

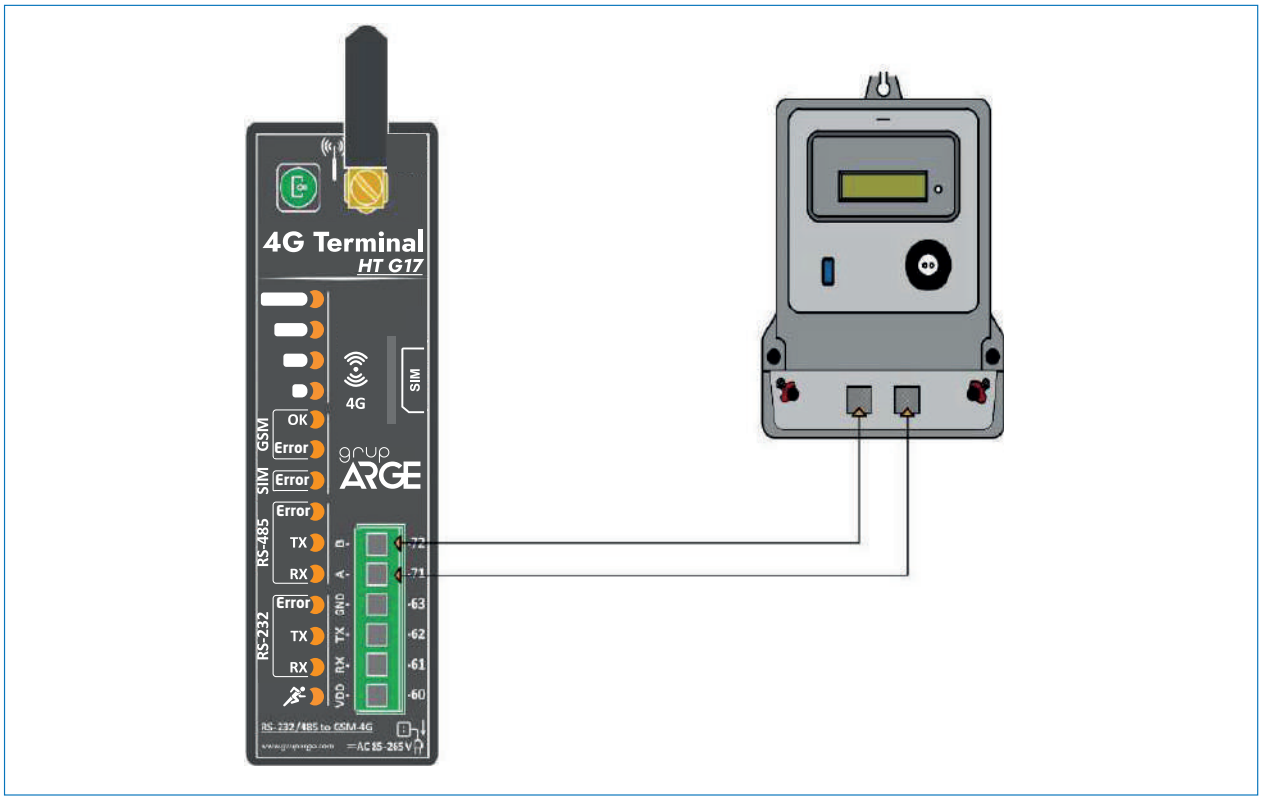



Figure 4.3

## 4.4. Elektromed RS-485 & Luna RS-485 Communication Connection

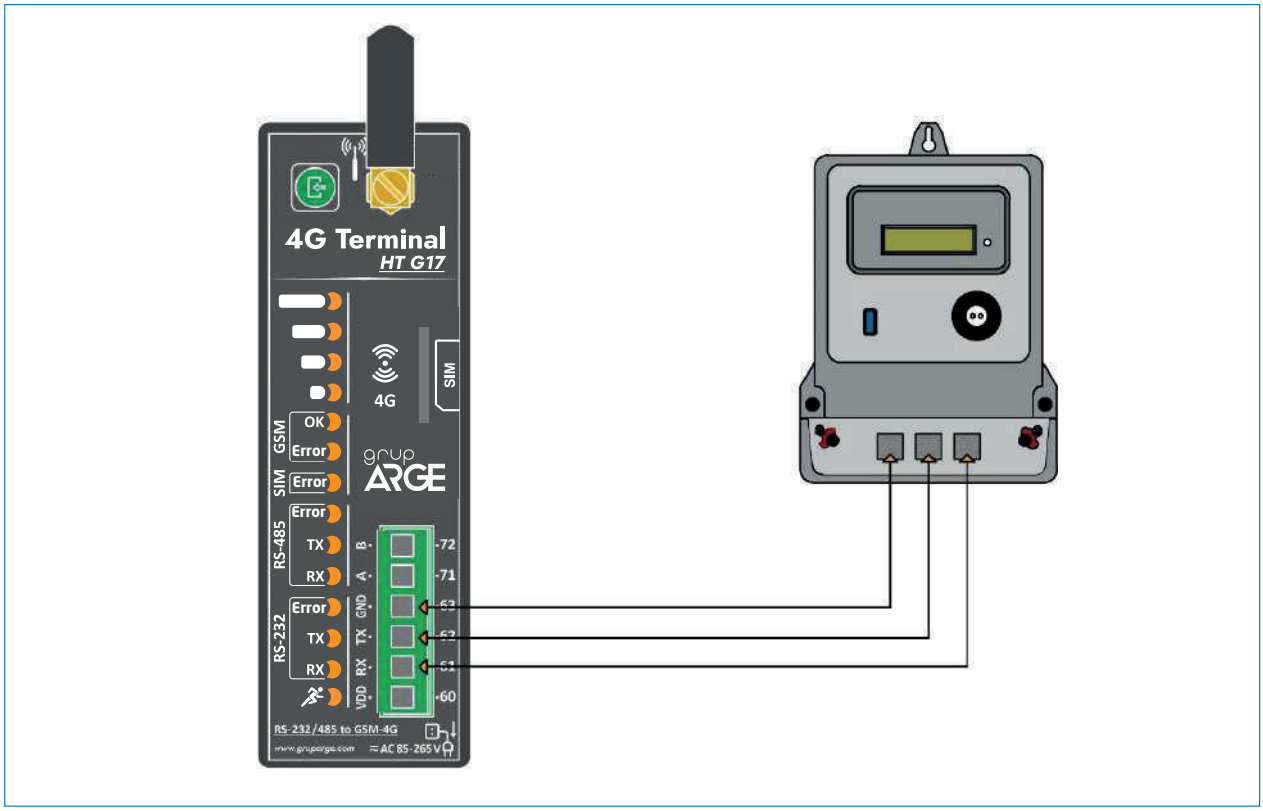



Figure 4.4

## 4.5. Elster RS-485 Communication Connection

Some models of Elster meters have two RS-485 outputs.

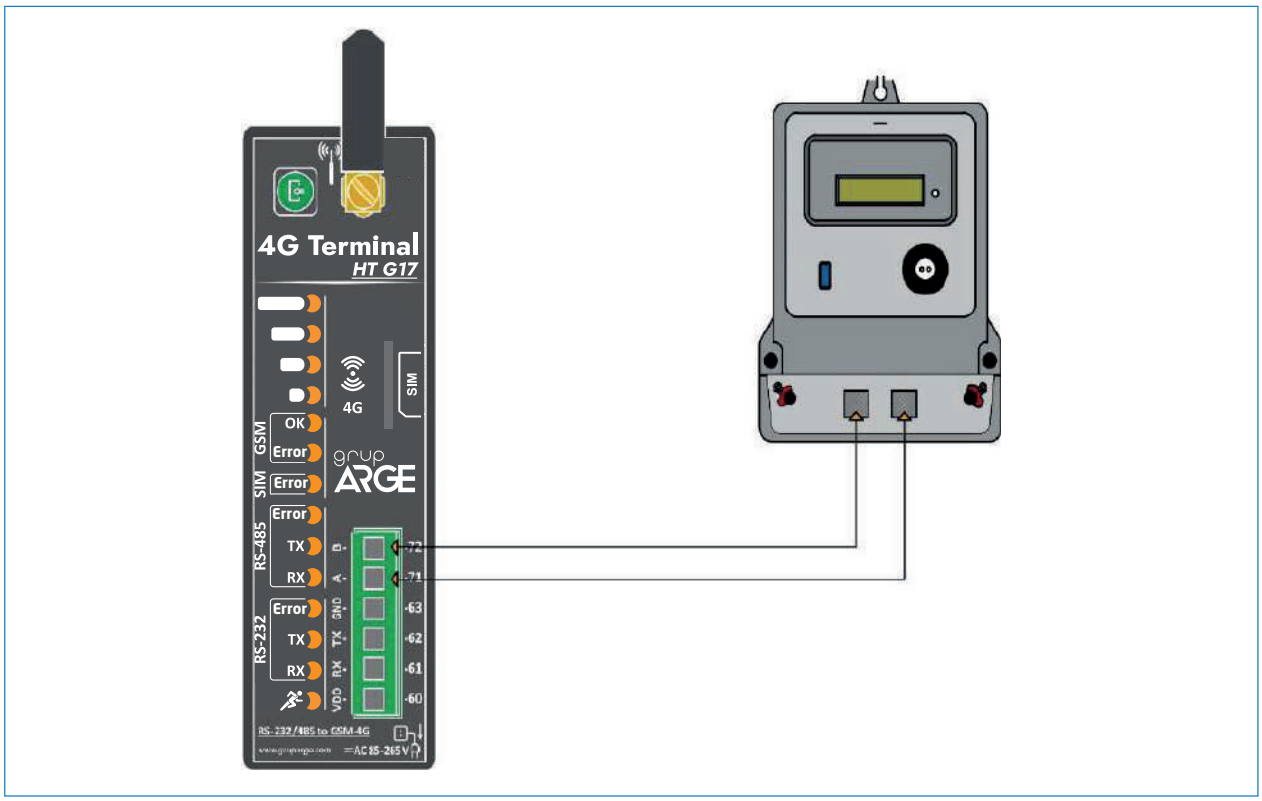



Figure 4.5

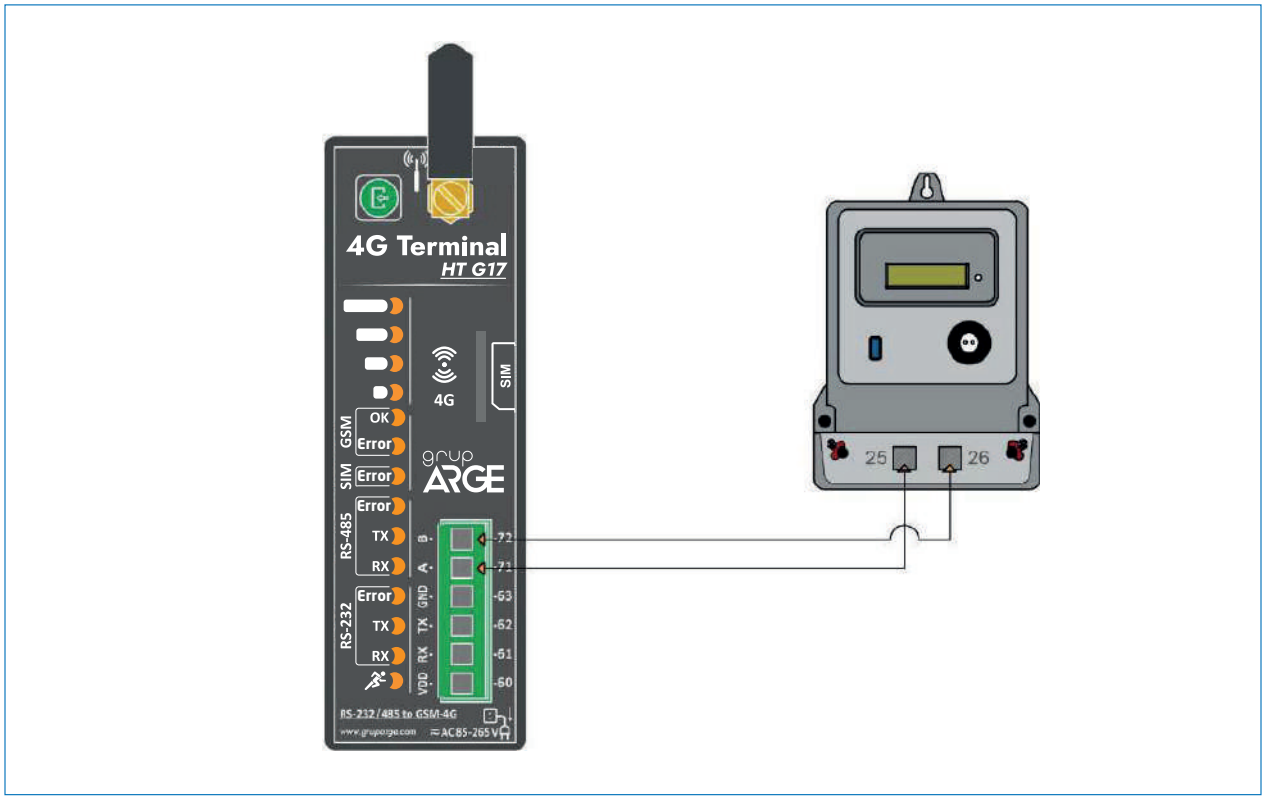



Figure 4.6

## 4.6. EMH RS-485 Haberleşme Bağlantısı

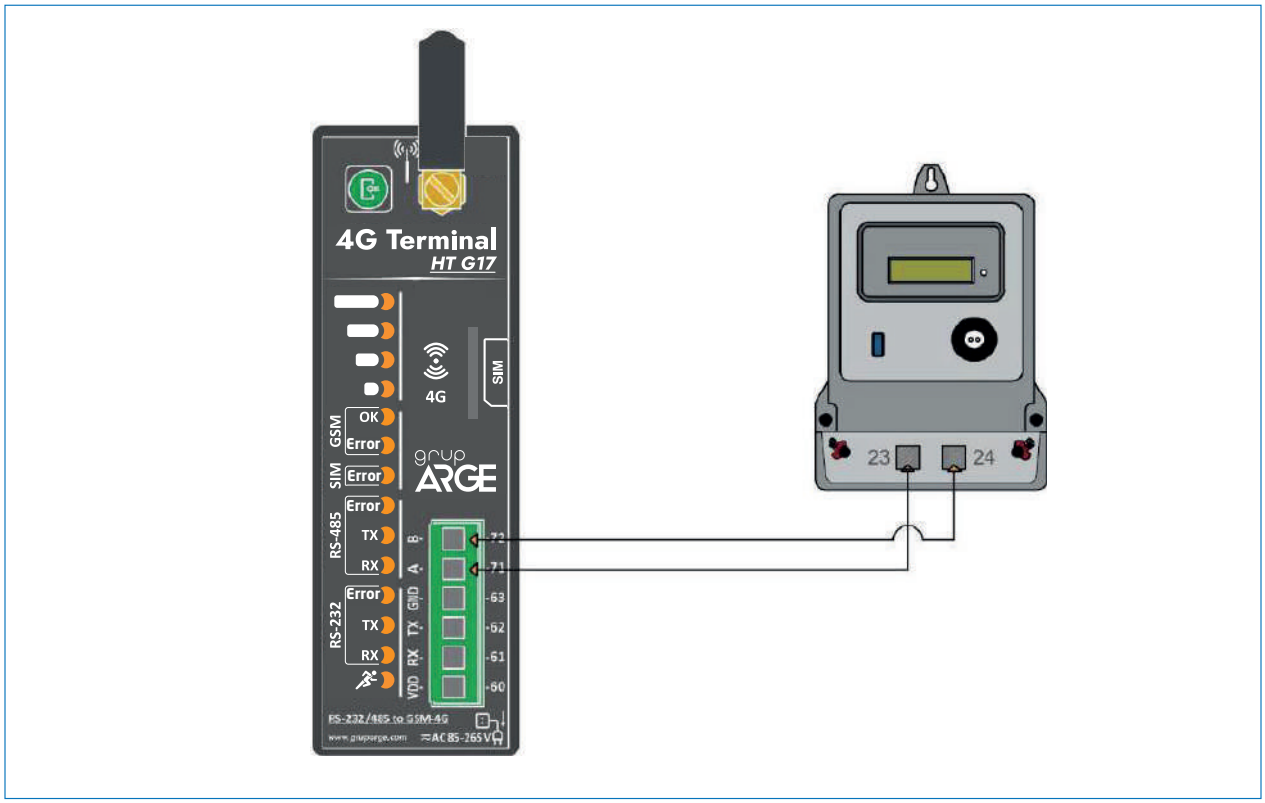



Figure 4.7

## 4.7. Landis RS-485 Communication Connection

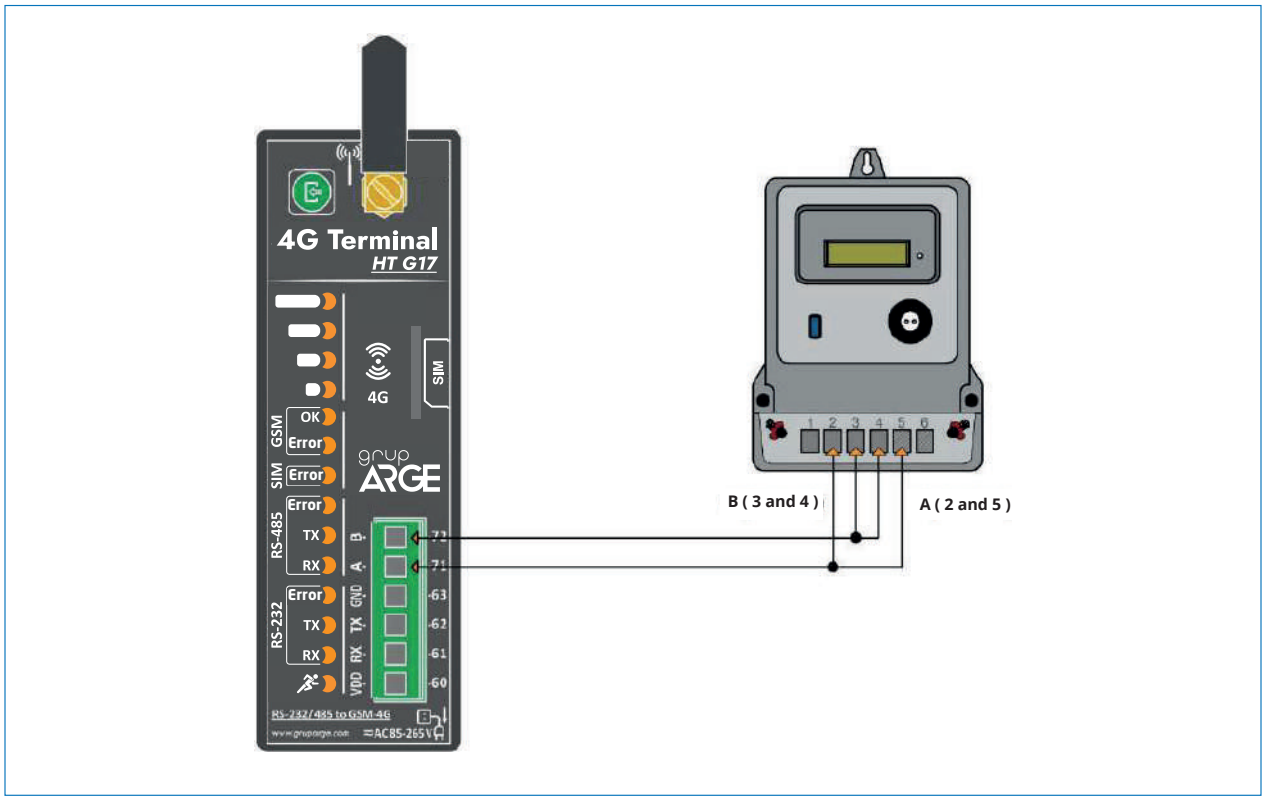



Figure 4.8

NOTE : To enable reading of Landis meters via RS-485, you must contact the technical support service to register the meter's serial number in the system.

## 5. POWER FACTOR CONTROLLER TERMINAL CONNECTIONS

For power factor controller or analyzers to be connected to the modem:
If the communication terminals are labeled A and B, connect terminal A to A, and B to B accordingly. The connections of the devices using different nomenclature are shown below.

NOTE

• Modbus addresses and types of the devices connected to the modem must be defined by entering the setting page of the relevant modem via the web interface.
• Modbus addresses of non-screen products manufactured by Grup Arge are found by adding 100 to the last 2 digits of the device serial number.

## 5.1. Terminal Connections for All PFC

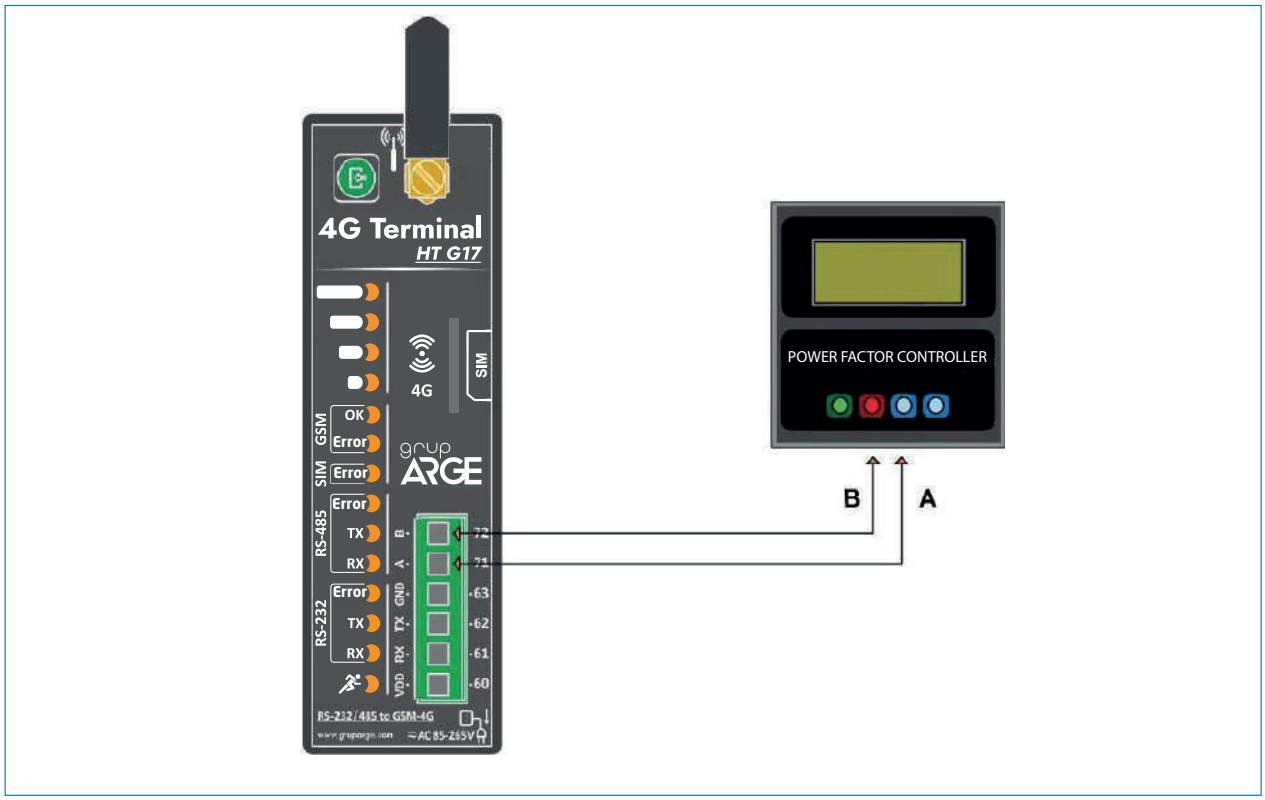



Figure 5.1

## 5.2. Klemsan PFC REMO-Q and RAPIDUS – Terminal Connections

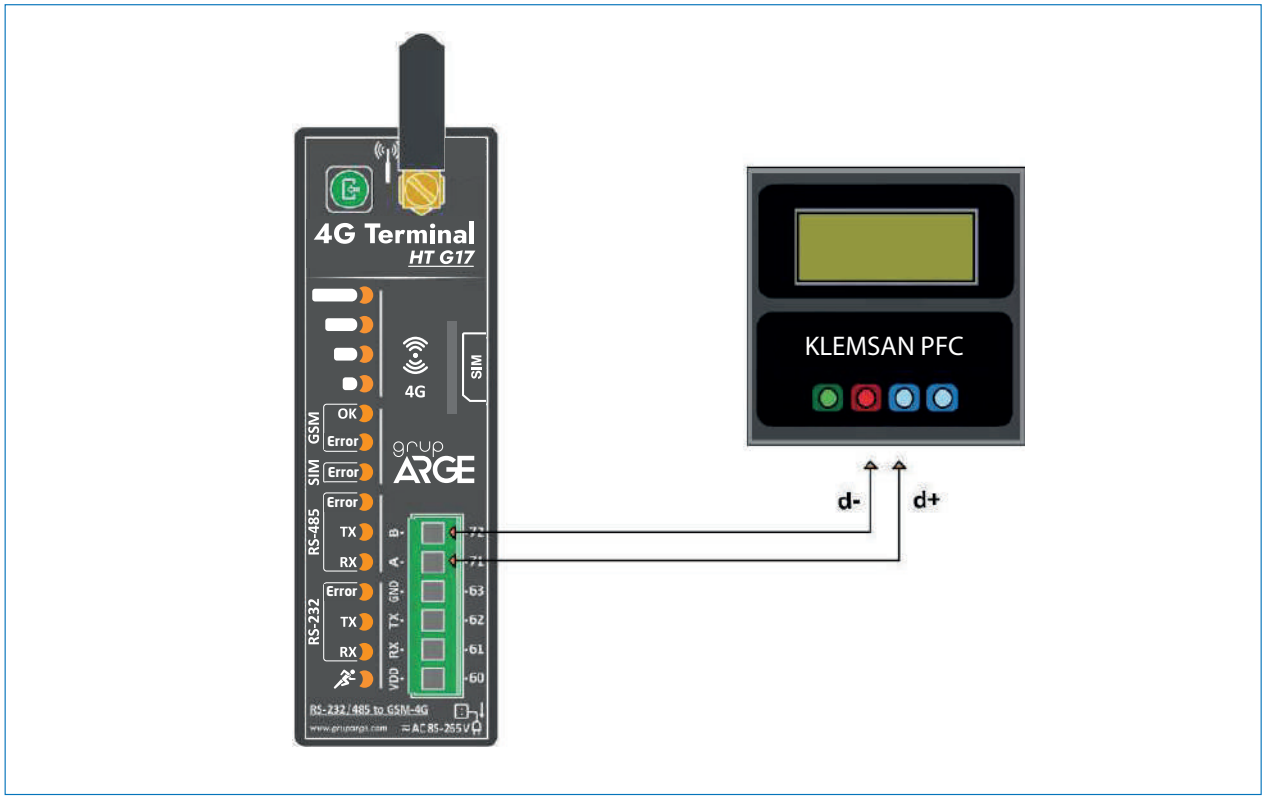



Figure 5.2

We recommend selecting the cable to be used for RS-485 communication according to the table below

| Cable Distance | Recommended Cable | Alternative Recommendation |
|---|---|---|
| Up to 30 m | 3*0,22 Shielded and Twisted Signal Cable | CAT-5 Ethernet Cable |
| Over 30 m | 3*0,50 Shielded and Twisted Signal Cable | CAT-6 Ethernet Cable |

# 6. SMARTPOWER ENERGY MONITORING SYSTEM

## 6.1. Device Monitoring and Configuration via Web Interface

After completing the installation of your device, you can log in to the system and start viewing the data. If you are logging into the system for the first time, you need to create a user account by calling our technical support service. After your user account is created, you should log in to the system and get authorization for the modem. (See Section 2.2)

Basic information about the use of the system is explained step by step below:

1. Visit **www.enerjitakibi.com.** You will see the login screen as shown in Figure 6.1.

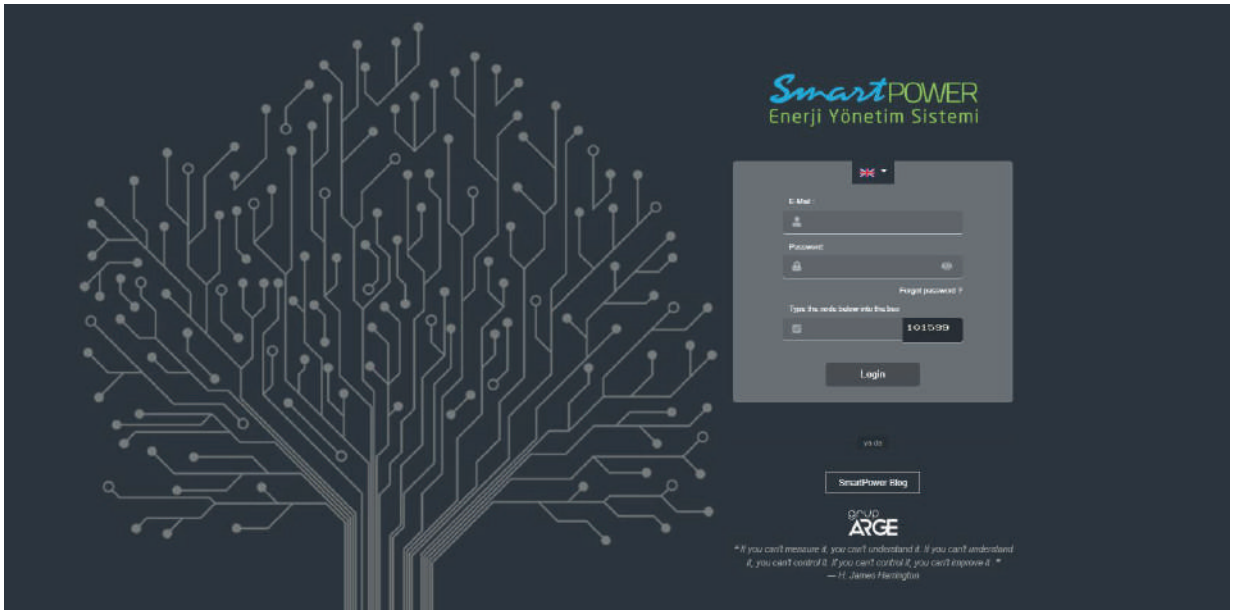



Figure 6.1

2. Contact our technical support team to obtain your username and password.
3. After receiving your login credentials, you can access the system.
4. Upon logging in, the homepage will appear (see Figure 6.2).

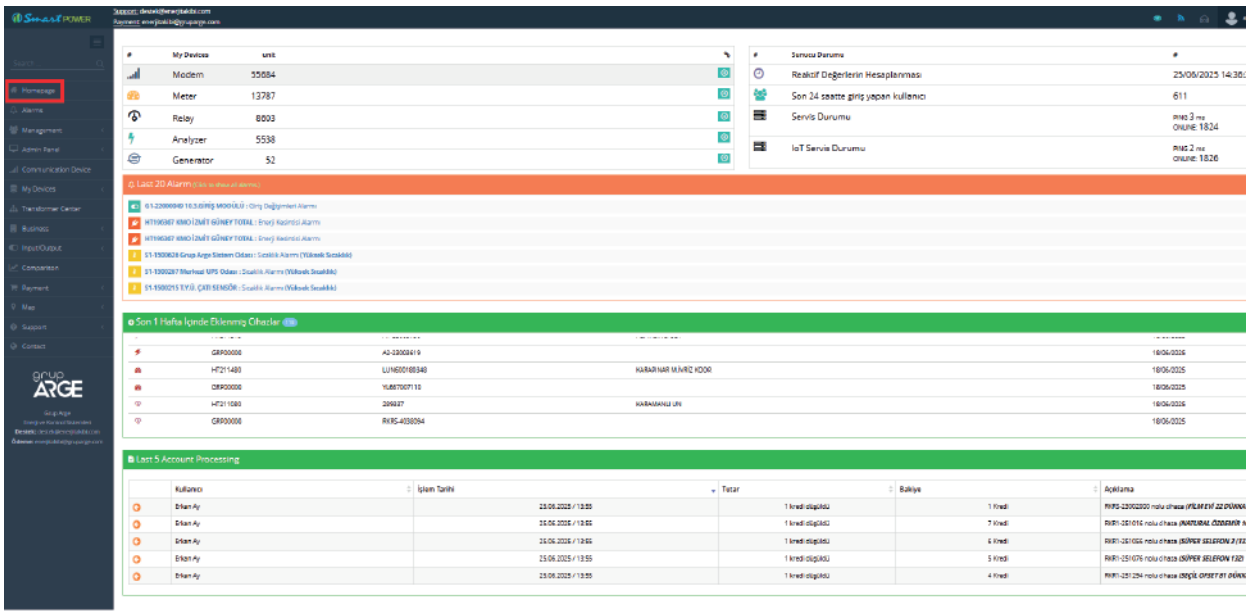


Figure 6.2

5. To add a modem to the system, click on the “Modem” menu on the left side of the page. (See Figure 6.3)

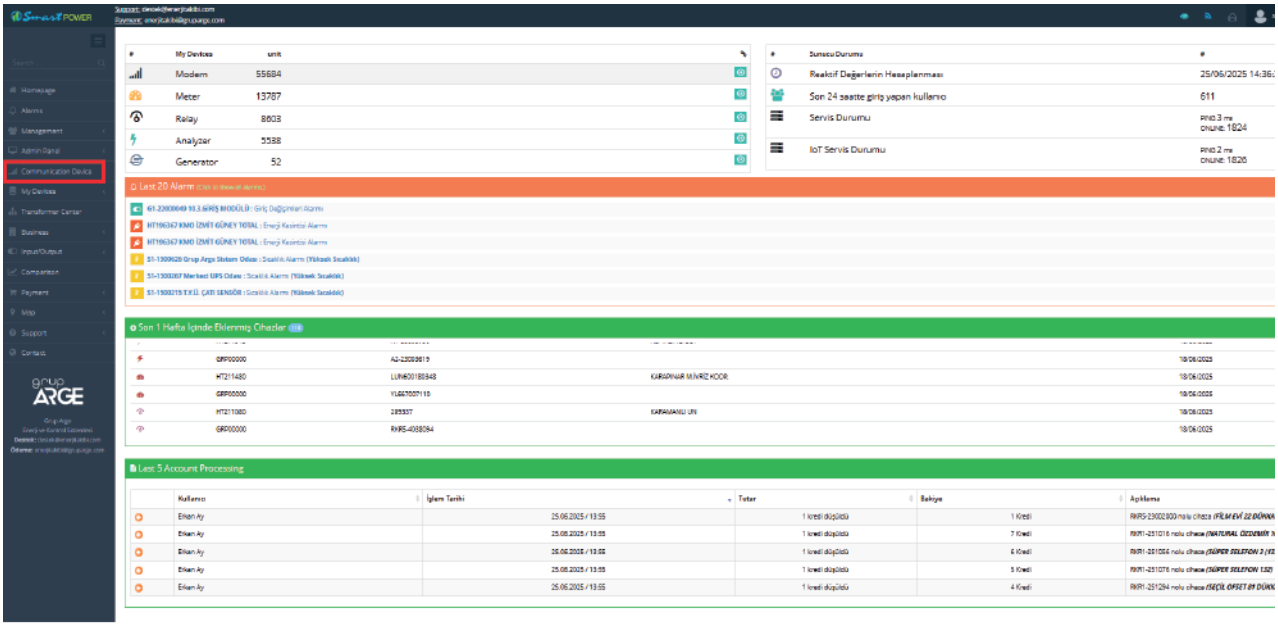


Figure 6.3

6. On the page that opens, click the "Add Modem Authorization" button. (Figure 6.4)

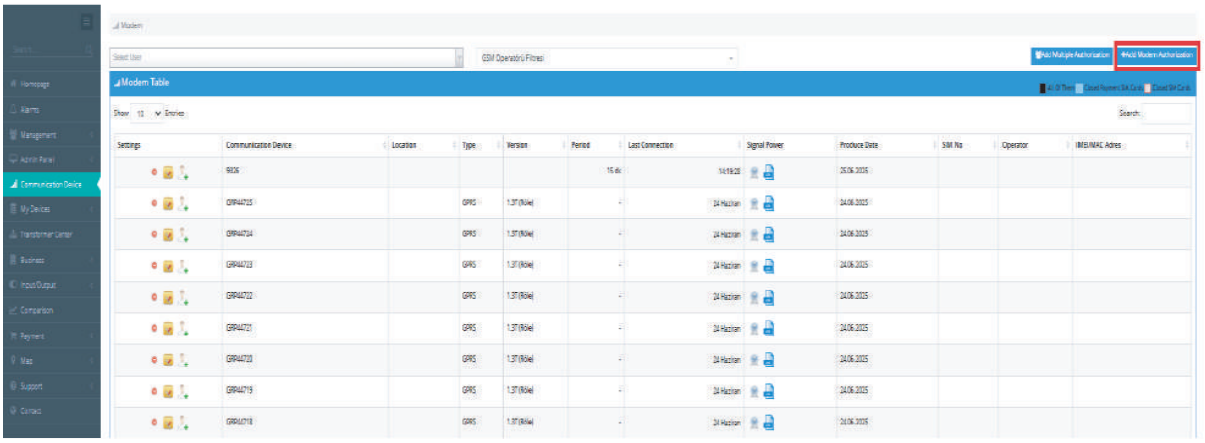


Figure 6.4

7. Enter the "Modem No" and "Authorization Code" information from the authorization card provided in the modem box. This completes the modem registration process in the system. (Figure 6.5)

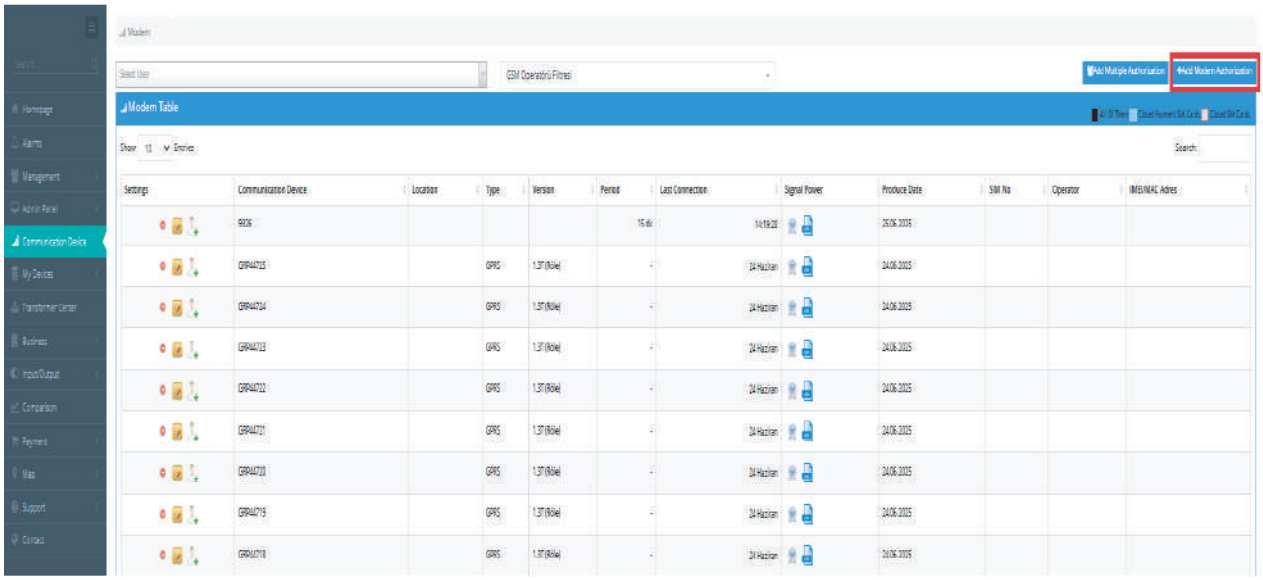


Figure 6.5

8. To view modem settings, click the "Modem" menu on the left panel. From the modem list that appears, click the "Modem Settings" button for the relevant modem to access its configuration. (Figure 6.6)

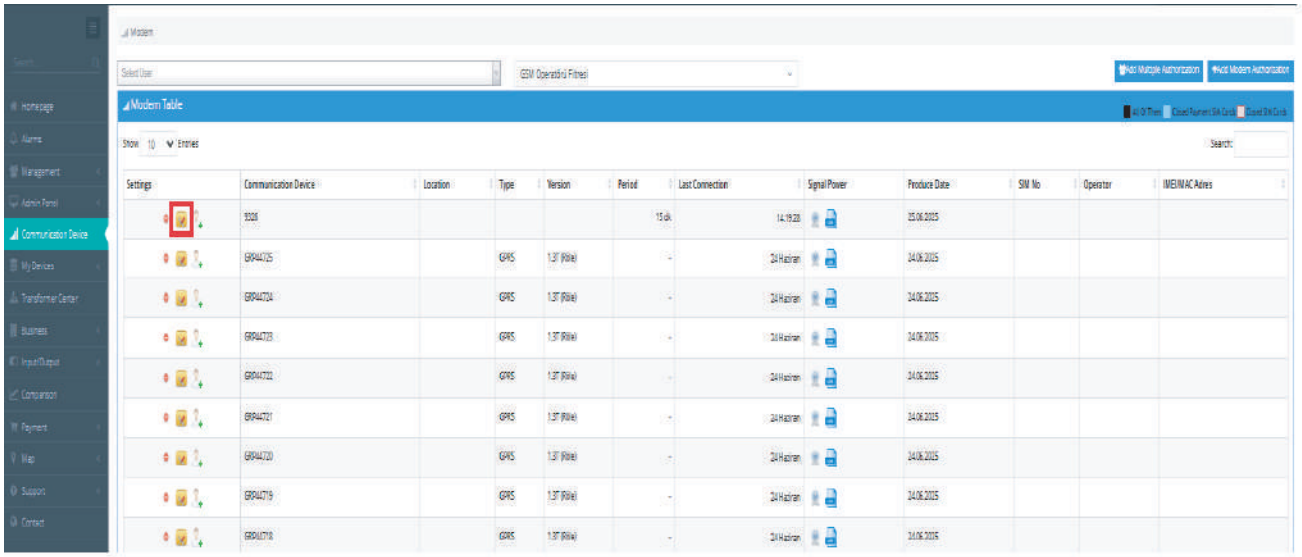



Figure 6.6

9. Click the "Authorization Settings" button to open a screen where you can assign permissions to sub-users you have created. (Figure 6.7)

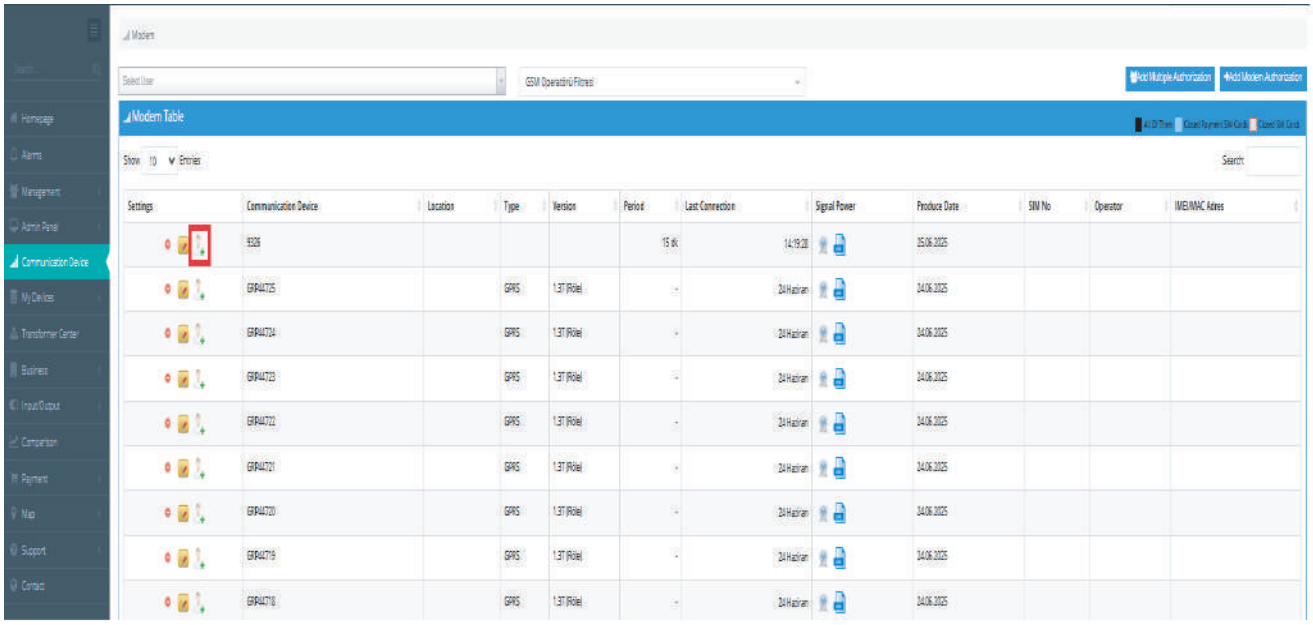



Figure 6.7

10. To create a new user, go to “Administration” → “User” → “Create New User”, fill in the required user information, and create a sub-user account. (Figure 6.8)

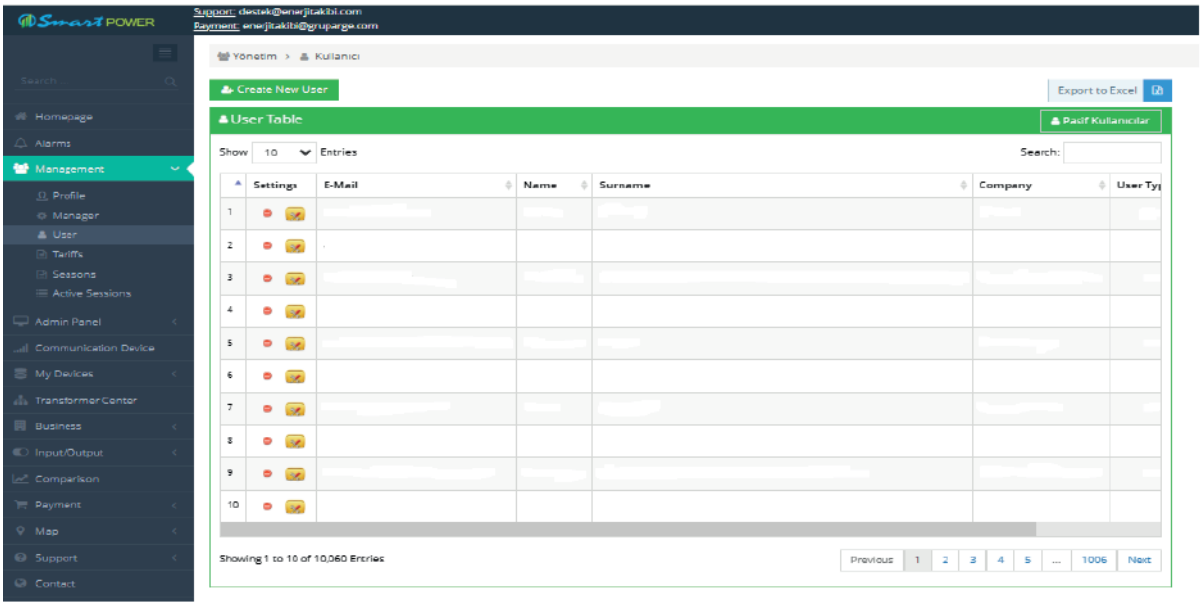



Figure 6.8

11. In the "Modem Settings" section, to quickly identify the company where the device is installed, enter the location information and click the "Save" button. (Figure 6.9)
For devices such as power factor controller , analyzers, energy meters, temperature/light sensors, and input/output modules, modbus address assignments must be configured.

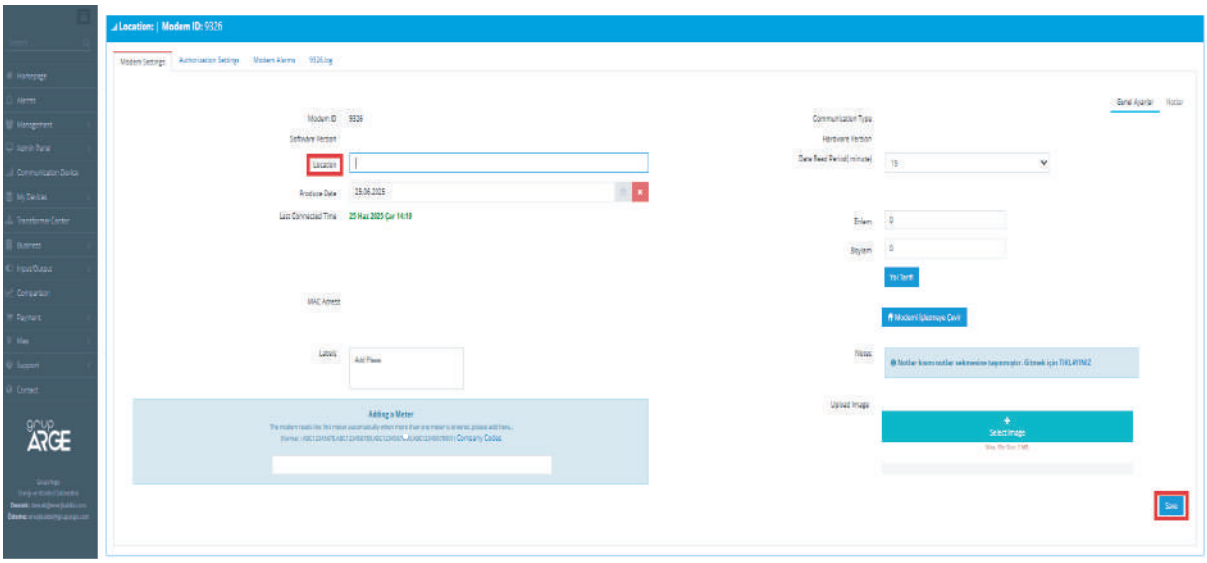


Figure 6.9

NOTE: For more detailed information about the SmartPower Energy Monitoring System, please visit www.enerjitakibi.com and navigate to “Support” → “Help Videos”.

## 7. TECHNICAL DRAWING

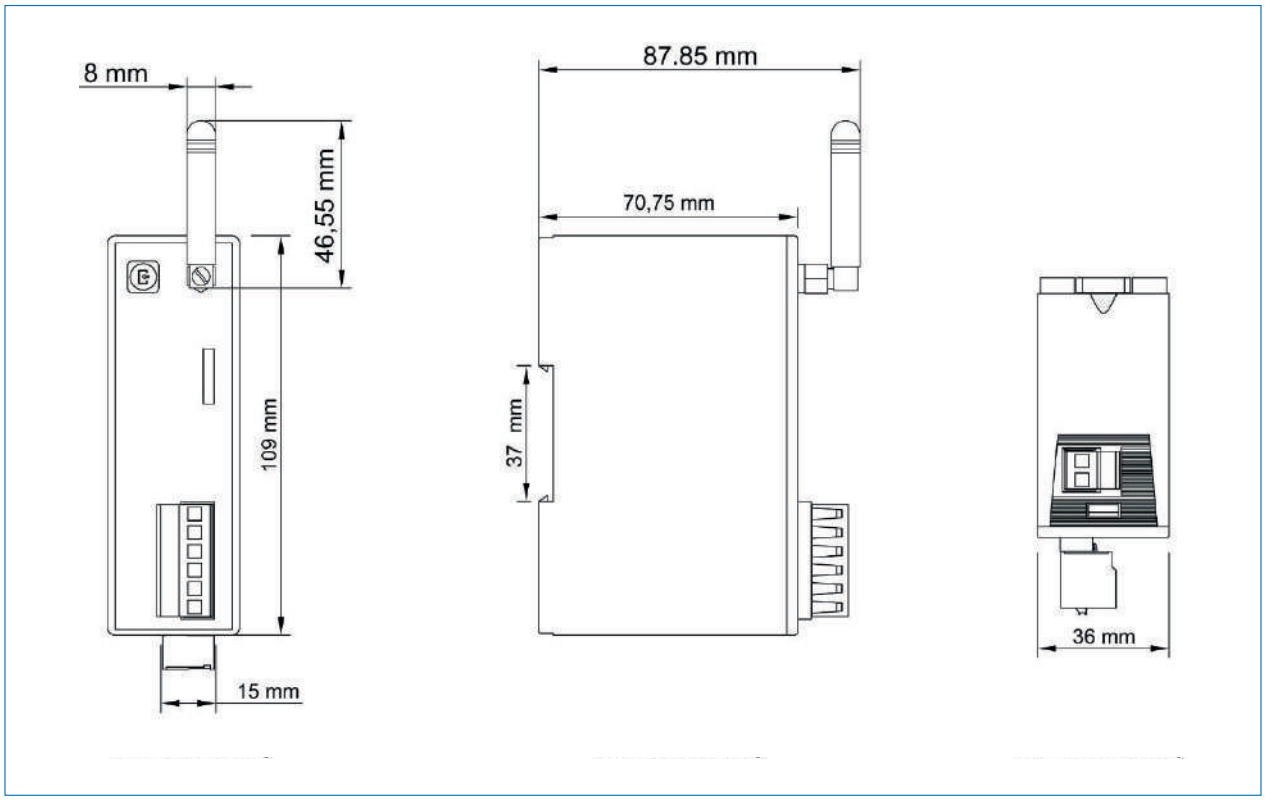



Figure 7.1