

grup ARGE

HT G21 / G22 / G23 GSM Automation Terminal Instruction 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.



The device operates with current transformers. Do not strictly leave current transformer tips unattached. Dangerous high voltage can occur.

1.INTRODUCTION

1.1 General Features

HT G21 GSM Automation Terminal is developed to monitor the electronic electric meters remotely. It provides communication with the electric meters via optical, RS-232 (3 wired) or RS-485 (2 wired) communication ports.

HT G22/G23 GSM Automation Terminal is developed to monitor remotely devices such as compensation relays and energy analyzers. The communication with these devices is generally provided via RS-485.

HT G21/G22 models operate with 85-265 V AC supply and HT G23 model operates with 10-30 V DC supply.

In order for the communication terminals to establish an internet connection, a 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 the SIM card into a mobile phone.

HT G21/G22/G23 GSM Automation Terminal query the data of the connected devices and send it to Grup Arge servers via GSM network (mobile phone network). You can access the data of all your devices by visiting our website located at www.enerjitakibi.com with your provided user account.

The main reports on the web interface are as follows:

- Active consumption reports
- Reactive ratio reports
- Instant electrical parameters such as current and voltage
- Step values (only for compensation relays)

Moreover, in the case of specific alerts, the system notifies the situation to related persons via e-mail and SMS alerts.

1.2 Technical Features

- Microprocessor based.
- HT G21 and HT G22 models detect the power cut and report it to the center. (This feature is not available in HT G23 model.)
- It has RS-485, RS-232 and optical port communication channels.
- It must be able to communicate with all the meters that support TS EN 62056-21 protocol.
- It can read 32 meters or 247 Modbus devices via RS-485.
- It has LEDs that indicates RS-485/Optical/RS-232 (Communication), Output, Input, GSM connection and network status.
- The data transmission period can be set between 1-240 minutes.
- It has a system architecture that does not require Static IP.
- There are two dry contact inputs and two 5A relay outputs.
- It has a wired GSM antenna support for the places that have a weak GSM network signal.
- It is compatible with M2M SIM cards of all the GSM operators.
- The operating ambient temperature of the device is between -10 °C and +55 °C.
- The power consumption is less than 1 VA.
- It has IP40 protection class.
- The dimensions of the device are (width-length-depth) 90 x 57 x 160 mm.

1.3 Terminal Connection

SIM Card		SIM Card Slot
Antenna		GSM Antenna Connector (SMA)
USB		Type-B USB Input (for configuration)
AC 85/265 V		AC Power Supply Input
VDD		Optical Reader Supply (6.2 V DC)
RS-232	TX	Optical/RS-232 Data Transmit
	RX	Optical/RS-232 Data Receive
	GND	Optical/RS-232 Ground
IN 1		Dry Contact Input -1
IN 2		Dry Contact Input -2
RS-485	A	RS-485 Data +
	B	RS-485 Data -
COM		Relay Common
OUT/5A	C 1	Relay Output-1
	C 2	Relay Output-2

Table 1.1

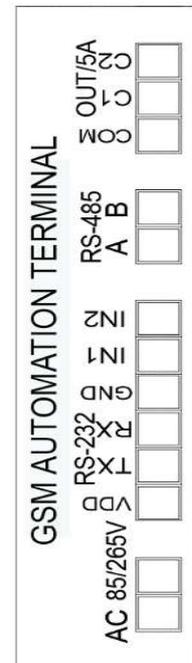


Figure 1.1

WARNING! VDD, TX, RX, GND, IN1, IN2, A, B terminals should not be connected to the mains.

2. INSTALLATION INFORMATION

2.1 Installation Information

1. Secure the device to a suitable place in the panel.
2. Unscrew the terminal cover.
3. Make a supply connection to “AC 85/265 V” named terminal. Make sure there is no energy in the cables meanwhile.
4. Connection between the device to be communicated:
 - a. Electric Meter / Optical Port: See. Figure 3.1
 - b. Electric Meter / RS-232: See. Figure 3.3
 - c. Electric Meter / RS-485: See. Figure 3.4; 3.5; 3.6; 3.7; 3.8; 3.9
 - d. Modbus Device (Relay, analyzer, etc.) / RS-485: See. Figure 4.1; 4.2
5. Cancel the PIN code of the SIM card and insert into the SIM card slot as shown on the device.
6. Operate the device by energizing after checking all the connections for the last time.
7. After a while, by entering SmartPower Energy Monitoring System, you can check whether your device is sending data or not. If you have no internet access in the field, you can get help from our technical support line.

NOTE:

1. *If the GSM signal power is insufficient, disassemble the whip antenna on the device and assemble a wired antenna instead.*
2. *If more than one meter is to be connected via RS-485, the technical support line must be called, and serial numbers of the meters must be defined to the system.*
3. *Modbus devices to be read via RS-485 must be defined to the system. The Modbus addresses of all the devices on the same line must be different. For this purpose, you may need to enter the menu of related device and change the Modbus address.*

2.2 How to Use Authorization Code?

1. Login to SmartPower Energy Monitoring System and go to “Modem” page.
2. Click “Add Modem Authorization” button and enter the information of “Authorization Code” paper which comes out of the product box.
3. If the information is entered correctly, the device will be automatically transferred to your account.
4. Dispose of the authorization code paper after the process is done.

Please log in to our web page "<http://www.enerjitakibi.com>" to add your modem to your account. After logging in, click on the "Modem" section from the menu on the left side. Enter the "Modem No" and "Authorization Code" information on the page that opens and click the "Add Authorization" button. After this process, your modem will be added to your account. If you want, you can watch this process in detail from the "Adding Modem Authorization" video in the "Help Videos" section in the "Support" menu on the left side.



Figure 2.1

2.3 Connection Diagrams

2.3.1 Input Connection Diagram

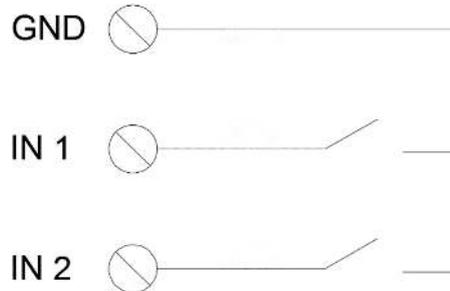


Figure 2.2

- GND is used for common tip of the input connections.
- IN 1 LED becomes on when the dry contact that is connected to the IN 1 becomes switched off.
- IN 2 LED becomes on when the dry contact that is connected to IN 2 becomes switched off.

NOTE: *If the input / output features of the modem will be used, “Enable I/O Support” option must be ticked by entering the setting page of the related modem on the web interface.*

NOTE: *The changes of input status can be monitored via web interface. It can also be sent to the defined e-mail address and SMS numbers as a notification.*

NOTE: *Moreover, the relay output of another modem can be controlled automatically according to the input status. This feature can be used for well-reservoir automation.*

2.3.2 Output Connection Diagram

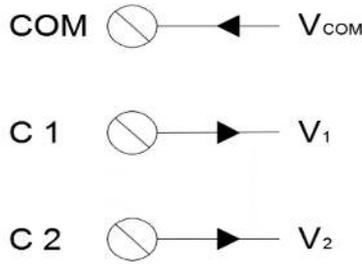


Figure 2.3

- When C1 relay is active, it becomes $V_1 = V_{COM}$.
- When C2 relay is active, it becomes $V_2 = V_{COM}$.
- V_{COM} must be less than 250 V.

NOTE:

- *Loads that draw current over 5A must not be connected to relay outputs directly, they must be driven via a contactor.*
- *The relay outputs can be controlled manually via web interface and can also be controlled according to a timeline that is defined by the user.*

Example Applications

AC Motor Driving

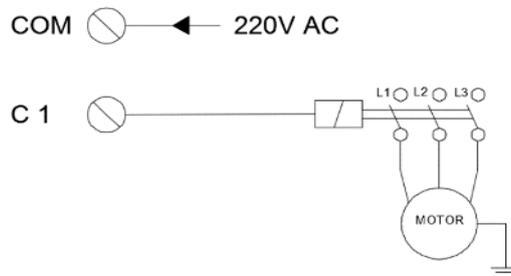


Figure 2.4

Buzzer Driving

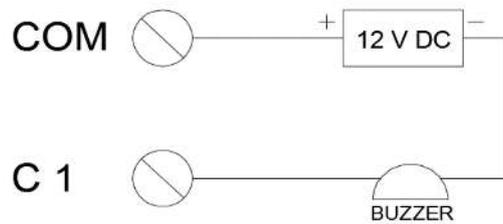


Figure 2.5

3.METER COMMUNICATION CONNECTIONS

3.1 Optical Port Connection

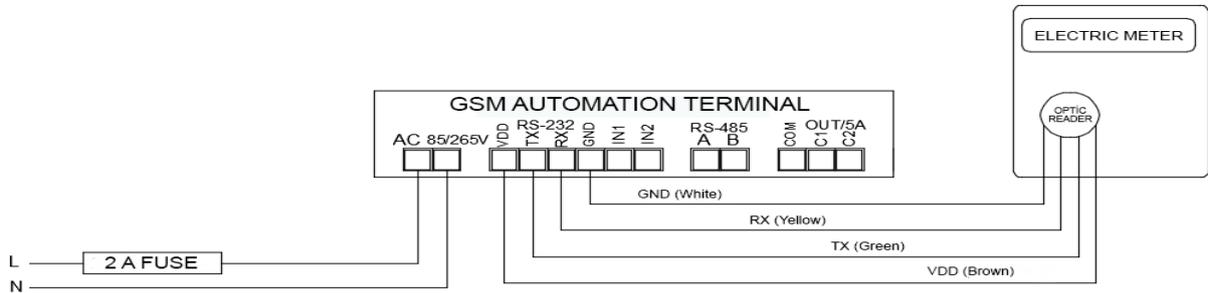


Figure 3.1

NOTE: When placing the optical reader on the meter, make sure the arrow mark on the label points to upward direction.



Figure 3.2

Cable Color	Brown	Green	Yellow	White
Terminal	VDD	TX	RX	GND

Table 3.1

3.2 Makel RS-232 Communication Connection

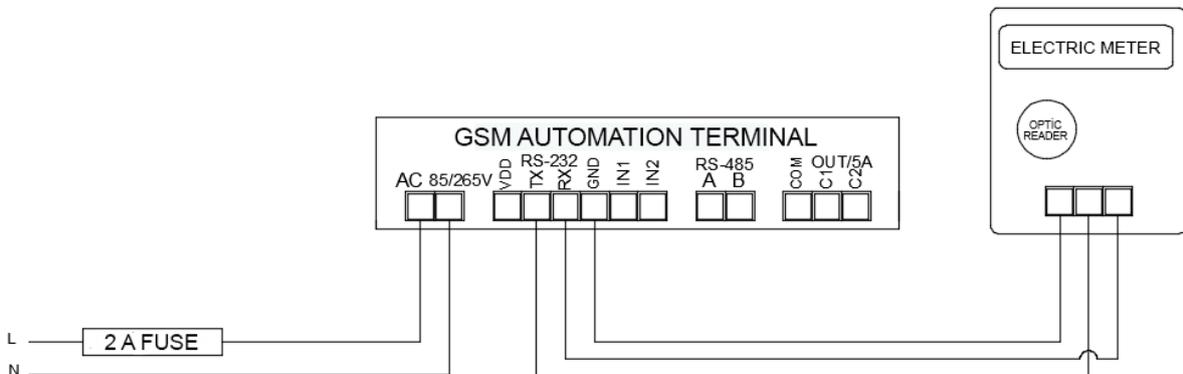


Figure 3.3

3.3 Makel & Köhler & Viko RS-485 Communication Connection

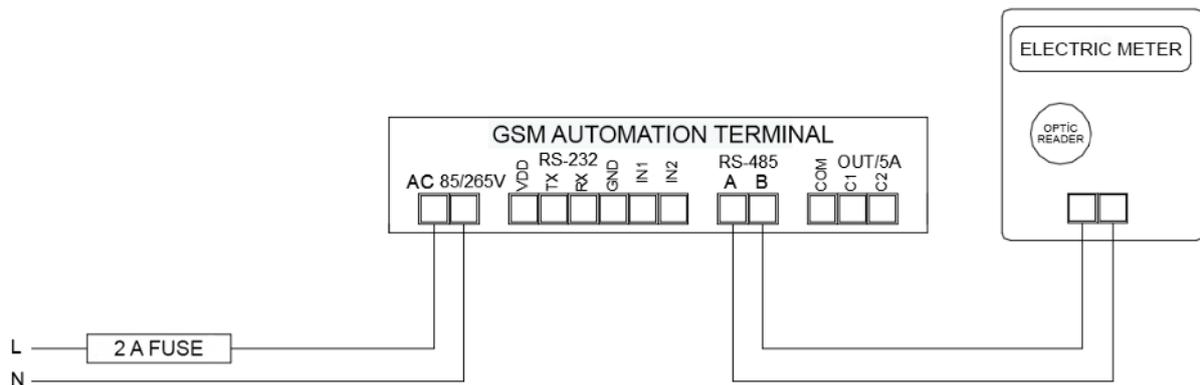


Figure 3.4

3.4 Elektromed & Luna RS-485 Communication Connection

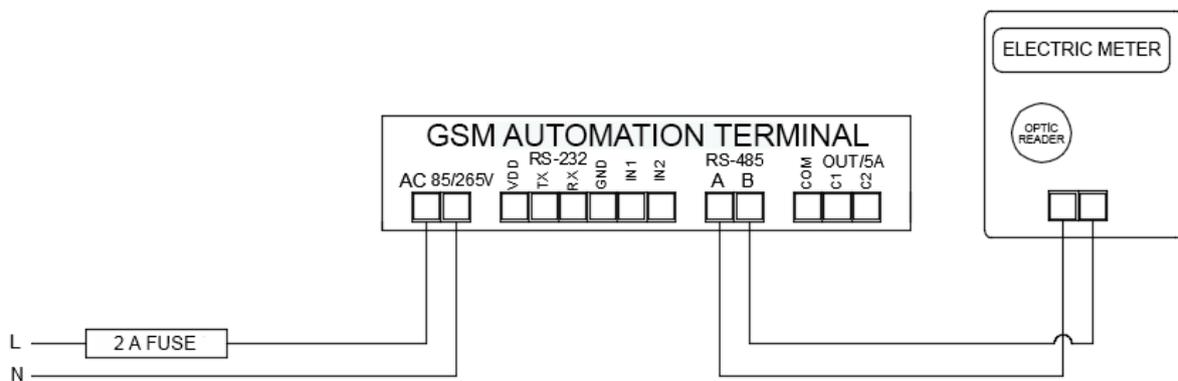


Figure 3.5

3.5 Elster RS-485 Communication Connection

There are two RS-485 terminals in some models of the Elster meters.

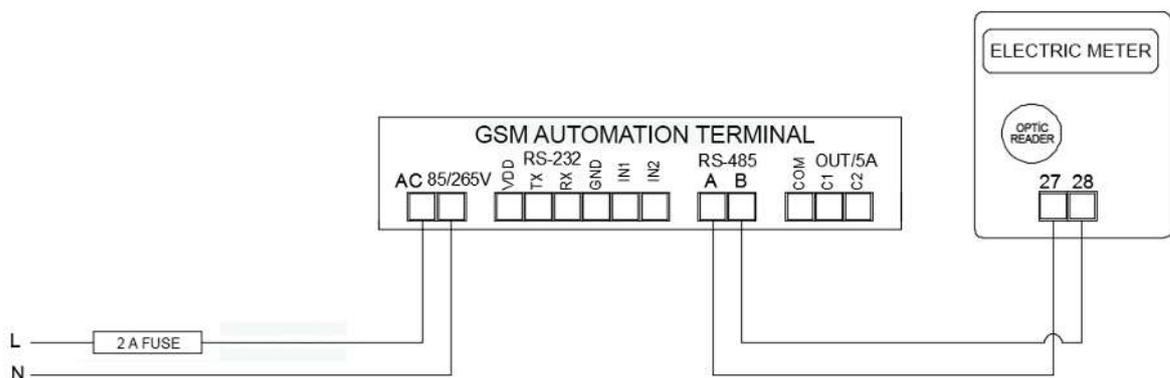


Figure 3.6

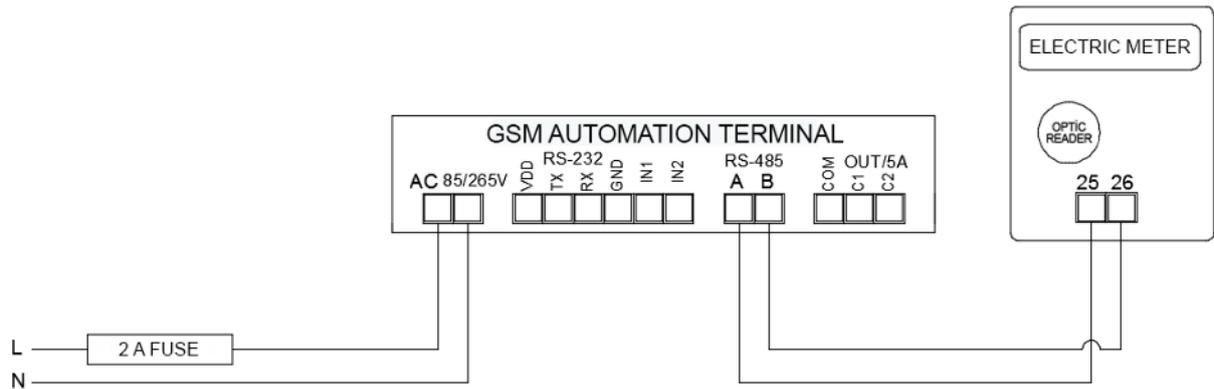


Figure 3.7

3.6 EMH RS-485 Communication Connection

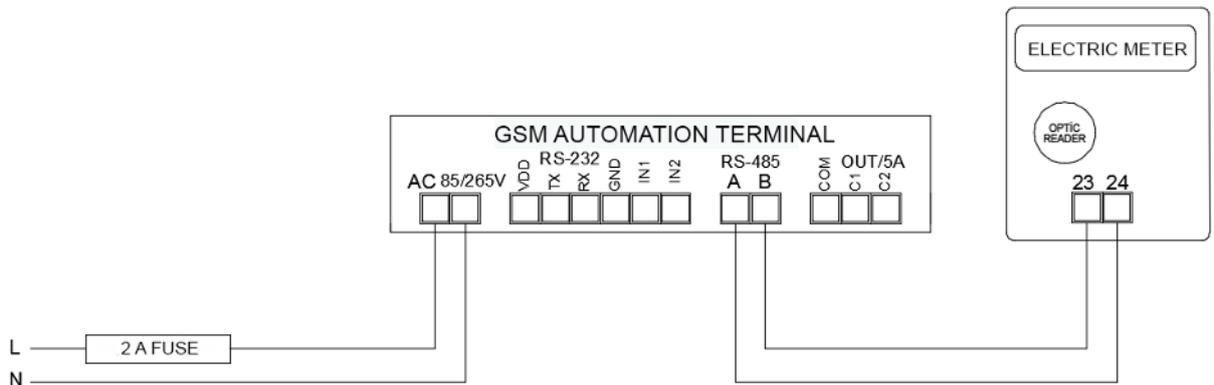


Figure 3.8

3.7 Landis RS-485 Communication Connection

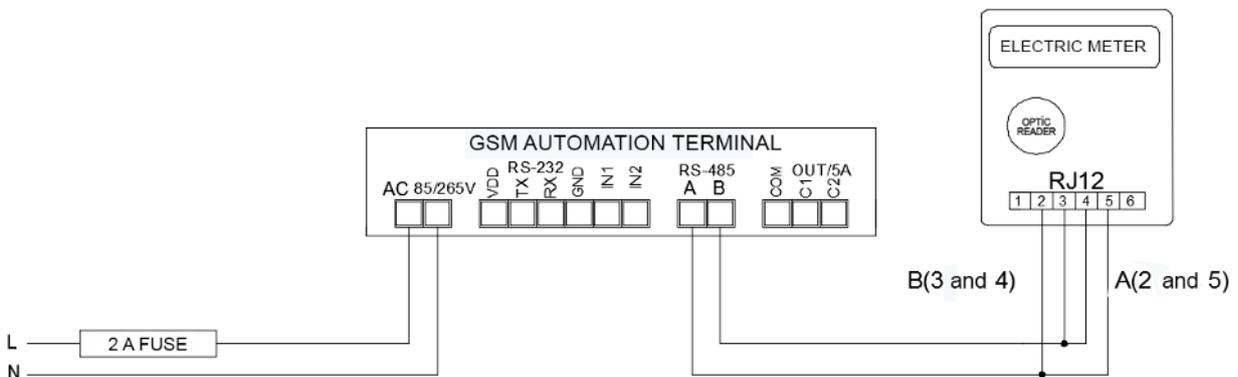


Figure 3.9

NOTE: In order to read Landis Meters via RS-485, the technical support line must be called, and the serial number of the meter must be introduced on the system.

4. RELAY TERMINAL CONNECTION

If a compensation relay or a power analyzer to be connected has terminals named as A and B, A must be connected to A; and B must be connected to B. The connection of the devices which use different naming is showed below.

NOTE:

- The Modbus addresses and types of the devices that are connected to modem must be defined by entering the setup page of the relevant modem via web interface.
- Modbus addresses of Grup Arge products without screen are found by adding 100 to the last 2 digits of serial number of the device.

4.1 All Relays Using A-B Naming Terminal Connection

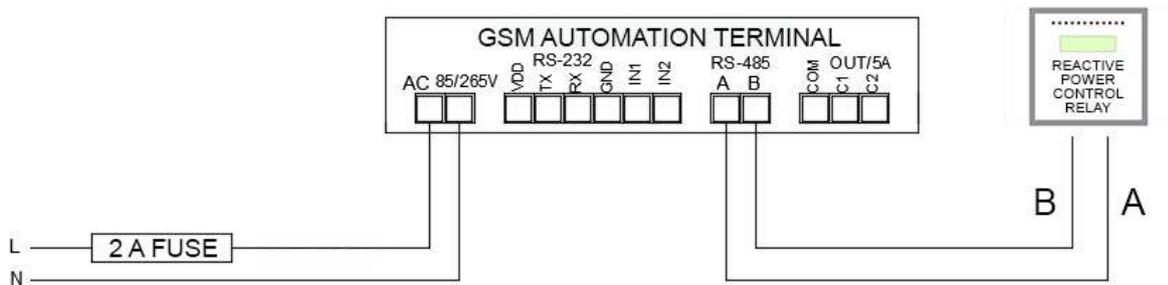


Figure 4.1

4.2 Klemsan Relay REMO-Q and RAPIDUS – Terminal Connection

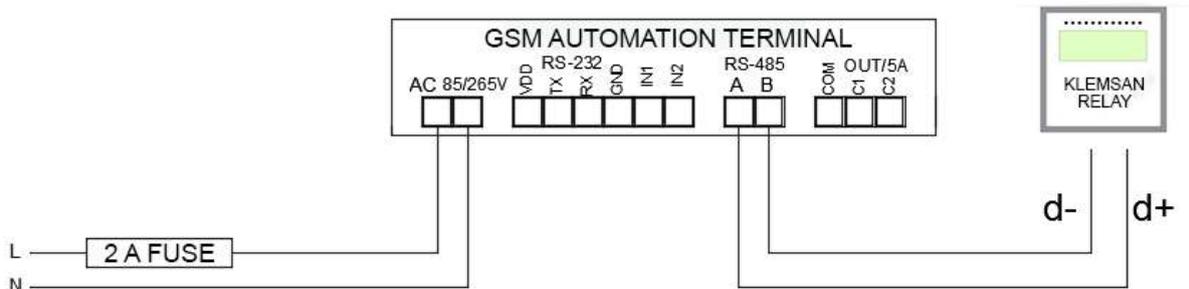


Figure 4.2

5. SELECTION TABLE

<i>Product Code</i>	<i>Product Name</i>	<i>Product Description</i>	<i>Power Source</i>	<i>Protocol</i>	<i>Input/Output</i>	<i>Size (mm) (Width - Size - Length)</i>
GA3121	<i>HT G21</i>	<i>GSM AUTOMATION TERMINAL (METER)</i>	<i>85-265 V AC</i>	<i>Meter</i>	<i>2/2</i>	<i>90 x 60 x 160</i>
GA3122	<i>HT G22</i>	<i>GSM AUTOMATION TERMINAL (MODBUS)</i>	<i>85-265 V AC</i>	<i>Modbus</i>	<i>2/2</i>	<i>90 x 60 x 160</i>
GA3123	<i>HT G23</i>	<i>GSM AUTOMATION TERMINAL (MODBUS)-DC</i>	<i>10-30 V DC</i>	<i>Modbus</i>	<i>2/2</i>	<i>90 x 60 x 160</i>

Table 5.1