

AG-801

Modbus RTU gateway with LTE and GSM



Table of content

1. Introduction	3
1.1. Features	3
1.2. Technical specification	3
2. Layout	4
2.1. Layout and connector functions	4
2.2. Dimensions	4
2.3. Packing list	5
2.4. Optional accessory	5
3. Connectors, indicators and functions	6
3.1. Multi-function reset button	6
3.2. LED indicators	6
3.3. LAN and PoE	6
3.4. RS485 – Modbus	7
3.5. SIM card	7
3.6. Antenna	8
3.7. Digital inputs	8
3.8. SMS alerts	8
3.9. Configuration of device	8
3.10. Power supply	9
3.11. Mounting place and condition	9
4. Wiring example	10
4.1. Example – Power meter connection	10
5. Legal	11
5.1. Copyright	11
5.2. Trademarks	11
5.3. Disclaimer	11

1. Introduction

The AG-801 is a Modbus RTU Gateway dedicated to work with remote monitoring systems. It supports two-way communication with server through LTE/GSM or Ethernet¹. Gateway has isolated Modbus RTU interface to communicate with energy meters, PLCs and other Modbus devices. It can be configured by: internal website, SMS, string from server and configuration file loaded in predefined URL.

Gateway can be used for data acquisition from any Modbus RTU device – parameter measurement, energy meters, consumption measurements, PLC, and remote control of any device like: PLC's, remote pumping system, irrigation equipment, agricultural controls etc.

The AG-801 has advance alert option with 10 mobile number list for SMS alerts. In superCap models there is power backup with power loss alert facility.

1.1. Features

- LTE and GSM connectivity
- Opto-isolated Modbus RTU
- 2 opto-isolated digital inputs
- SMS alert and with mobile number filtering
- Internal website for configuration
- LAN with PoE
- Modbus archive data in internal memory
- Aluminium compact size casing
- 35mm DIN rail mounting

1.2. Technical specification

Technical specification is mentioned on separate document. Please visit [product page](#)

¹ The current firmware version does not support SSL over Ethernet

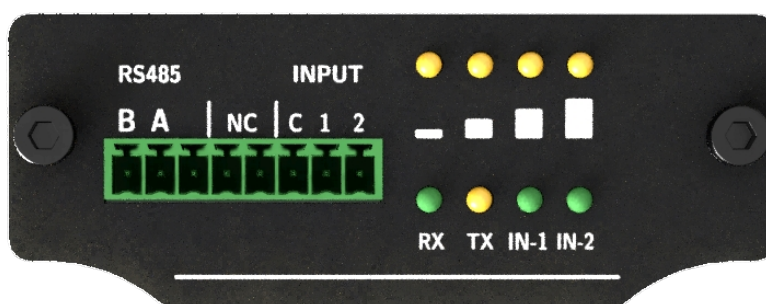
2. Layout

2.1. Layout and connector functions

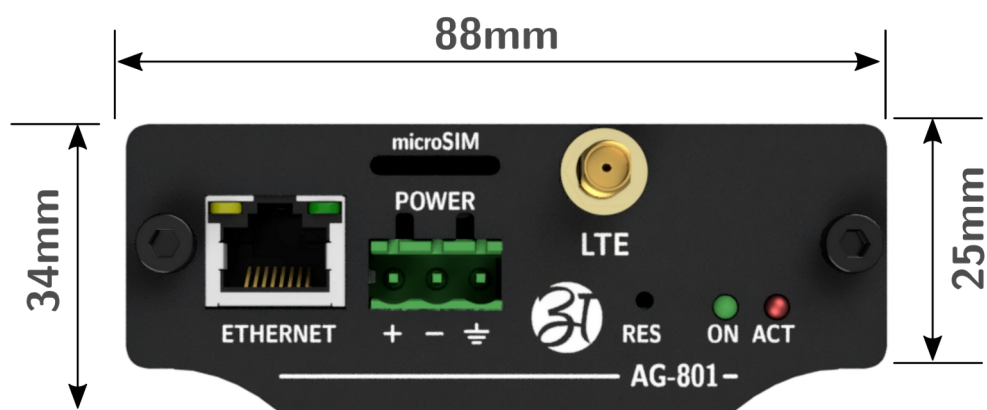
Top panel view



Connector panel view



2.2. Dimensions





2.3. Packaging list

- AG-801 gateway
- Antenna LTE
- All necessary pluggable connectors
- DIN rail clamp with screws

2.4. Optional accessory

- High gain LTE antenna / panel mount antenna
- APS-10W24 – 3 phase power supply
- 24V/1A adapter power supply

3. Connectors, indicators and functions

3.1. Multi-function reset button

The AG-801 has multifunction reset button. This button is used to:

- reset device
- restart device
- make default configuration

Press and hold the reset button	Behaviour	Remark
1 to 10 seconds	power off	If device is using battery backup
10 to 20 seconds	restart device	
20 to 30 seconds	make default	
30 and more than 30	exit	

3.2. LED indicators

The device has 2 LED indicators on the antenna side and 8 on the connector side. On antenna side are power (green) and activity (yellow) indicator. The behaviour of activity LED is according to the table.

LED	Function	Behaviour
POWER	Normal working condition	permanent ON
POWER	Low/high voltage supply	blinking 2 times per second
ACT	Normal working condition	blinking every 1 second
Signal	LTE signal level	0-25%, 25-50%, 50-75%, 75-100%
Serial	RX and TX data indication of RS485	blinking on data transfer
Inputs	Input 1 and 2 high level indication	ON if input high

3.3. LAN and PoE

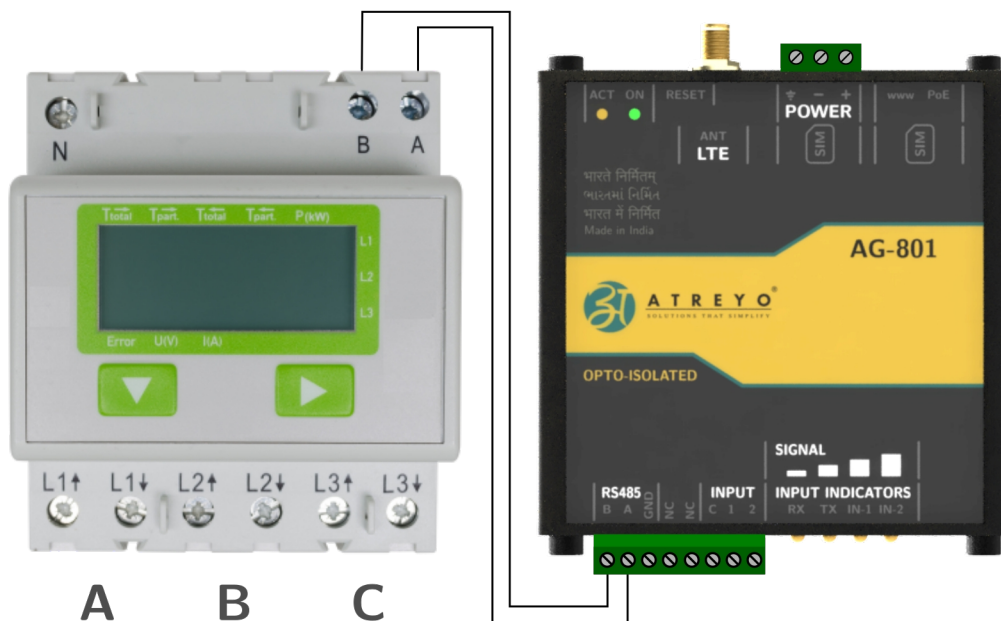
The LAN interface use standard RJ45 8 pin connector with LED indicators. The connector support PoE class A, with power supply range 10-36V DC. If we use screw terminal power connector to power the device the LAN line is protected against back voltage from device. The device is protected from reverse power polarity. If unknowingly it is reverse connected, the Gateway will not work, but will not be damaged. Follow the diagram of connection.

PIN number	Function	Remark
1	RX+	Data
2	RX-	Data
3	TX+	Data

PIN number	Function	Remark
4	DC +	Power supply positive
5	DC +	Power supply positive
6	TX-	Data
7	DC -	Power supply negative
8	DC -	Power supply negative

3.4. RS485 - Modbus

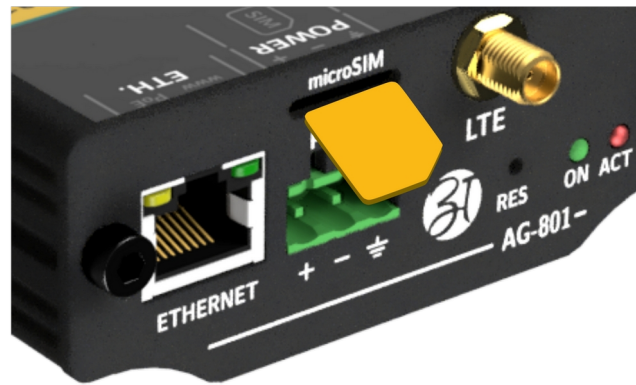
The device has opto-isolated RS485 interface with support of Modbus RTU. It is dedicated to energy meter, voltage meter and any Modbus device like PLC which support Modbus RTU protocol. The device supports multiple Modbus devices with separate address range. It is possible to directly send and receive any value of register from server. Please follow proper connection of A and B signals from device to A and B signals in power meter. If the polarity is reversed there will be no data transmission. All modbus configuration like baud-rate, parity, address available in internal website.



The device provide on-board 120Ω termination resistor for RS-485 port.

3.5. SIM card

The device support microSIM with voltage 1.8 and 3V. The card holder is push-in/push-out type. Ensure inserting SIM card in proper direction according to the illustration.

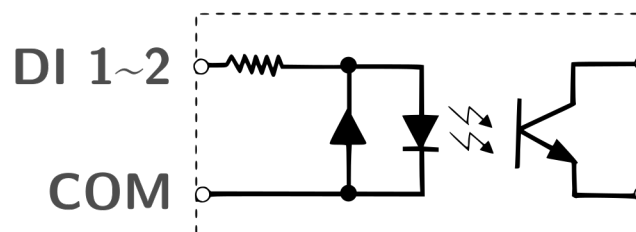


3.6. Antenna

The device has one female SMA connector for LTE/GSM antenna. For proper working it is necessary to connect LTE + GSM band antenna. Antenna line is 50Ω type. Do not switch on device without antenna connected. For better connectivity in remote area it is necessary to use high gain antenna and place it outside of electrical panel box.

3.7. Digital inputs

The device has 2 opto-isolated up to 2500Vrms digital inputs with common minus signal. The signal maximum voltage is 30V DC. Inputs support only DC signal with proper polarisation. The input digital high is from 3.5V to V_{max} , and digital low from 0 to 2V. Inputs can be controlled also by open collector circuit with common positive. The input resistance is approx 2.7k. The input terminal diagram is as per below.



1+/2+ = digital input positive

COM = common digital input negative

If by mistake reverse polarity signal is connected to input the input will not work, but will not be damaged.

3.8. SMS alerts

There is option to send SMS alert to the dedicated mobile number when any one of digital inputs is activated. For details see AG-801 Configuration Guide.

3.9. Configuration of device

Configuration of AG-801 can be done by:

Internal website

For configuration by internal website connect the laptop by LAN cable to the device and in browser type IP address of device 192.168.10.50. It is necessary to make proper configuration of LAN network in laptop.

SMS commands

Device allow to make configuration by SMS command. There is option to filter allowed mobile number to make configuration.

String from TCP/IP server

By the command from server it is possible to make all configuration. But initially it is necessary to set server configuration in device by SMS or internal website.

File remotely loaded from server URL

The device can upload configuration file from remote URL. The configuration of URL initially can be done by SMS or by internal website.

Configuration details are specified in separate document – AG-801 Configuration Guide.

3.10. Power supply

The device is powered by external DC power supply. Minimum supply voltage is 8V and maximum 36V. Preferred 24V. Select the power supply requirement according to the below table. The device had protection against high voltage and reverse polarity. High voltage will blow inbuilt fuse. Reverse voltage will not damage device – the device will simply not work on reverse voltage.

Supply Voltage	Minimum A requirement	Suggested power supply rating
12V	1A	1.5A
15V	1A	1.5A
24V	0.5A	0.7A
32V	0.5A	0.5A

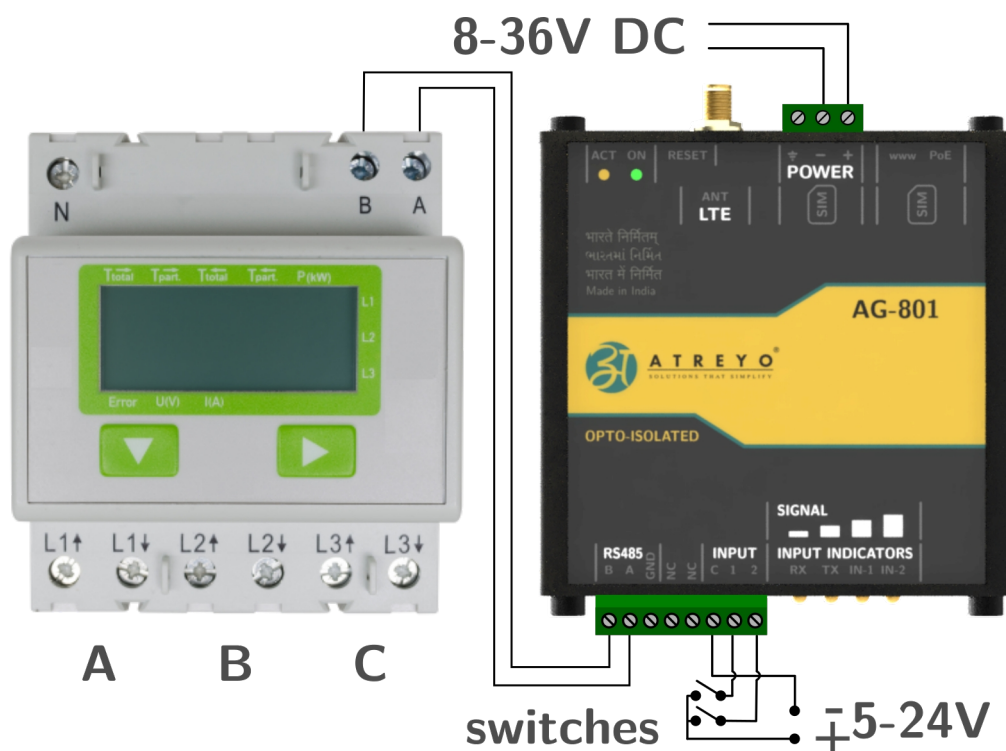
3.11. Mounting place and condition

The device is dedicated to use in environment that is clean and protected from water and dust. It can be used inside electrical panel boxes outdoor and without box in indoor application. Mounting on standard 35mm DIN rail. Device can be placed in any direction. Protect device from direct sunlight and any other heat source.

4. Wiring example

4.1. Example - Power meter connection

This is simplified wiring diagram for getting data from energy meter with 2 switches for panel open alerts.



5. Legal

5.1. Copyright

Copyright © 2022 Atreyo Research and Development LLP. This technical specification is protected under national and international copyright laws. No part of this user manual may be reproduced, distributed, translated, or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or storing in any information storage and retrieval system, without the prior written permission of Atreyo Research and Development LLP. Copy or use any part of this specifications is prohibited without the prior written permission from the Atreyo Research and Development LLP. Atreyo Research and Development LLP shall not unreasonably withhold or deny such consent but shall be entitled to receive additional equitable remuneration in connection with its grant of consent.

5.2. Trademarks

Atreyo and the Atreyo logo are registered trademarks of Atreyo Research and Development LLP.

All other trademarks and copyrights are the property of their respective owners.

5.3. Disclaimer

- All dimensions mentioned in the drawings are not to scale and may vary/differ due to construction contingencies and site conditions which are subject to change as may be decided by the company.
- The specifications and amenities mentioned in this document and promotional documents are only representational and informative. The descriptions in this specification are based on the default configuration of your device.
- Images used in this specification may differ in appearance from the actual product.
- The Atreyo Research and Development LLP reserves rights to make additions, deletions, alterations or amendments as and when it deems fit and proper, without any prior notice.

**Atreyo Research & Development
LLP**

**+91 9727741417
info@atreyo.in**

414, Sunrise Mall, Mansi Circle,
Vastrapur
Ahmedabad 380015, India