PRODUCT DATA SHEET

Rhino AP-GSM

IoT gateway. Reads data from metering devices and sensors. Equipped with multiple communication interfaces supporting most popular protocols. Includes two RF channels for wireless communication with Rhino hardware. Data transfer to the Rhino Cloud Platform via Ethernet or GSM* (SIM card pre-installed). Powered by external 5-24VDC power supply.

DEVICE OVERVIEW

1. Power socket
2. Ethernet socket
3. SMA ISM 1 antenna connector
4. SMA ISM 2 antenna connector
5. Configuration status LED
6. Internet connection status LED
7. GSM status LED
8. SMA GSM antenna connection
9. RS232N connection
10. RS232 and RS485 connections
11. 12. Radio communication LEDs
13. Power status LED

TECHNICAL PARAMETERS

Communication type	Ethernet (DHCP / Static IP) or GSM (LTE / GPRS / WCDMA / HSPA)
Rhino communication	Frequency range: 433MHz ISM channel 1 - Rhino ED DI / ED DI-D / Sensors ISM channel 2 - Rhino ED RS485 / RS232 Maximum of 50 end devices on each radio channel
Input voltage	5-24VDC (> 10W)
Internal battery	2700 mAh (emergency power supply)
Internal memory	uSD card (min. 8 GB)
Logging measurement data	Yes
Interface protocols	**RS232** - DLMS, IEC62065 **RS485** - DLMS, IEC62065, Modbus RTU, GazModem I, GazModem II **Ethernet** - DLMS, IEC62025, BACnet, Modbus TCP/IP, Custom network protocols **Optional interfaces** - M-Bus, Wireless M-Bus OMS

Got questions?
Contact us!

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Configuration	Over the Air (OTA)
Firmware update	Over the Air (OTA)
Operating temperature	0 °C - 85 °C (depending upon installed environment)
IP Class	IP40 (not suitable for outdoor use)
Dimensions	87.5 mm x 90.0 mm x 65.0 mm (5 DIN modules)
Weight	~0.2kg
Additional equipment	1 x ISM antenna with 3m cable and magnetic base 1 x GSM antenna with 3m cable and magnetic base (included)

POWER SPECIFICATION

Required power supply - 5V-24V/DC output voltage with minimal 10W. The built-in 3.7V 2.9Ah lithium-ion battery, Allows it to continue working for several hours in case the external power supply fails.

LED INDICATION

Power mode	**Red Permanent** - Power OK **Flashing** - Battery power
RF1 / RF2	**Short Flash** - Data received
GSM	**Green Permanent** Good GSM connection **Flashing** Poor cellular GSM connection
NET	**Green Permanent** Good internet connection
CONFIG	**Green Permanent** Configuration is correctly loaded to the device.

REQUIRED CABLE TYPES

Signals thickness	0.129-1.31 MM² - 26-16AWG
Power supply thickens	0.205-3.31 MM² - 24-12AWG

RS232

The RS232 port can connect one device or by using one optical head. This interface is galvanically isolated.

Transmission speed	300 to 115200 bit/s
Transmission parameters	Customizable
Voltage range	-25V - +25VDC
Insulation voltage	3,75 kV
Max number of devices connected	1

RS485

Multiple meters or devices can be connected on a shared main. The interface is galvanically isolated.

Transmission speed	300 to 115200 bit/s
Transmission parameters	Customizable
Voltage range	-7V - +12VDC
Insulation voltage	3,75 kV
Max number of devices connected	256 / 1/8 UL (unit load)

RS232N

The RS232 port can connect one device or by using one optical head.

Transmission speed	300 to 115200 bit/s
Transmission parameters	Customizable
Voltage range	-25V - +25VDC
Max number of devices connected	1

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GSM

The device operates with 3C/4G/LTE technology. There is a SIM card slot located under the cover. SIM card must be used with a secure PIN code. The configuration of PIN code, APN and GSM and module configuration is done by logging in to the device from the web browser. (see "Device configuration")

INSTALLATION

Installation should be performed by a qualified electrician, automation specialist or an installer having the required level of specialism. For safety reasons, a DIN-rail enclosure must cover the terminals.

DEVICE CONFIGURATION

Use the mobile cloud application to configure read parameters and control the Rhino AP device remotely. To configure GSM settings (PIN code, APN), Ethernet use the mobile cloud application to configure read parameters and control the Rhino AP device remotely. To configure GSM settings (PIN code, APN), Ethernet settings and service meter readings, connect an Ethernet cable to a computer and open the web browser and go to IP address 192.168.0.160:8080 to login using the credentials below:

Username: rhino
Password: Rh!n0@mi

After the first login, change the password and save the new password securely.

FACTORY RESET

Rhino AP can be restored to factory default settings by removing the top cover and pressing and holding the button on the left side for 20 seconds. After restoring to factory default settings, the GSM and Ethernet will change to DHCP and registration data will return to factory default settings. A short button press will turn the device off and on.

TROUBLESHOOTING

- If none of the LEDs are illuminated, ensure the power supply is connected properly.
- If the device does not connect to the server or the GSM, Status LED flashes at a high frequency, check that the GSM antenna is correctly connected to the SMA antenna connector (8). Check if the SIM card is correctly installed under the cover, Check if the SIM card is correctly configured and activated.
- If the LED for internet connection (6) is OFF, Check if the SIM card is active, Check if the PINcode and correct APN have been configured. If in case of Ethernet interface communication, Check the settings and operation of the LAN / WAN network.
- If the configuration status LED (5) is OFF, the device has not downloaded the configuration from the Rhino server. Check whether the device is configured in the mobile cloud application.

ARCHITECTURE

Rhino AP can be expanded with external devices (interfaces), Allowing reading of meters located in places without access to power or network.

wM-Bus wireless module connected to the RS232 port, for wireless M-Bus OMS meters and sensors

Rhino ED DI wireless battery device for pulse output S0) meters

Rhino ED RS232, RS485 wireless device for meters with serial communication interfaces

Rhino Sensors wireless device featuring temperature, humidity, PM2.5 and PMTO concentrations, as well as air quality (VOCt and CO_2).

Rhino ED DI-D wireless battery device with screen for gas, water, heating and kWh meters with pulse output (S0).

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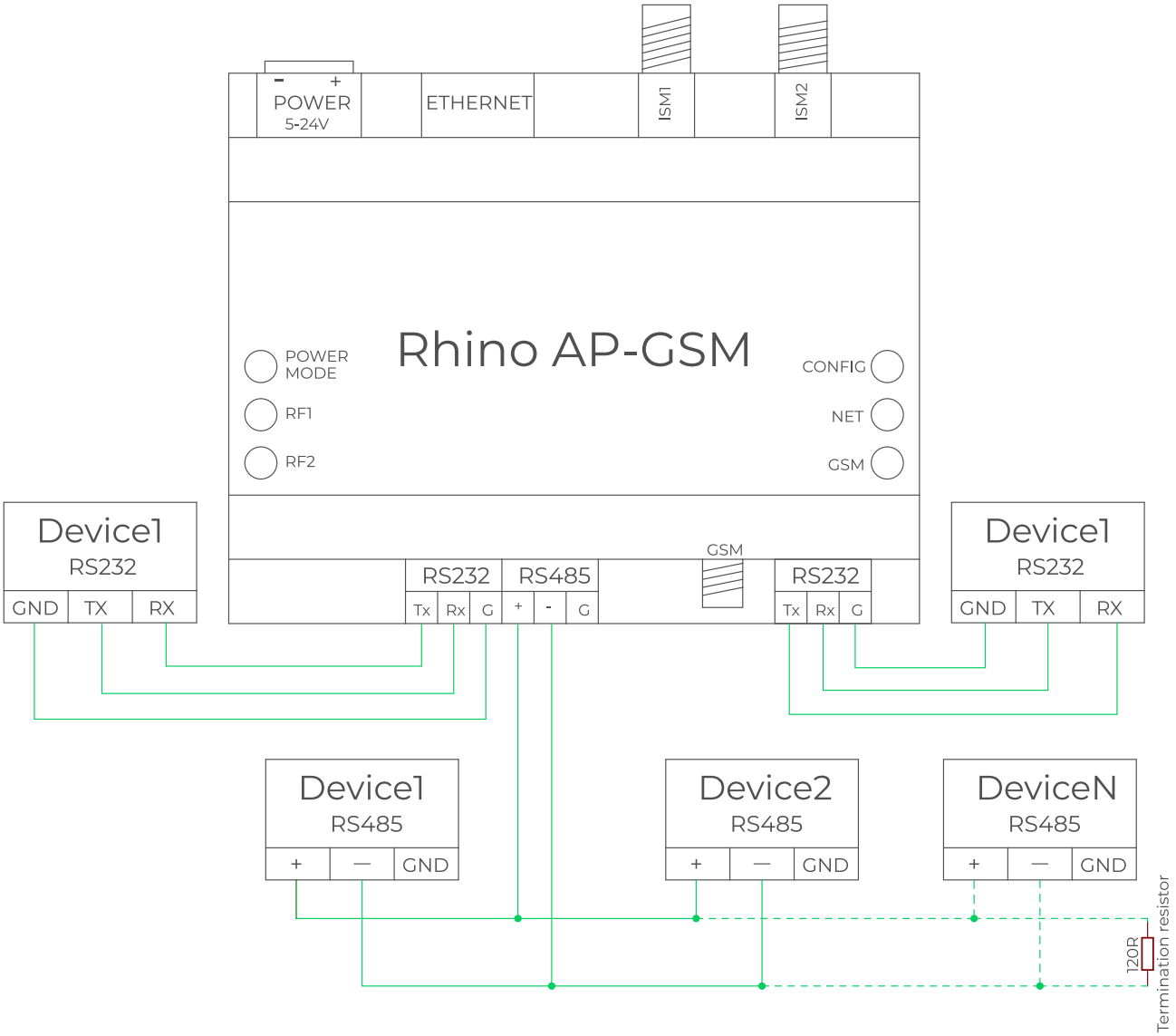
Rhino AP-GSM
Connection Diagram



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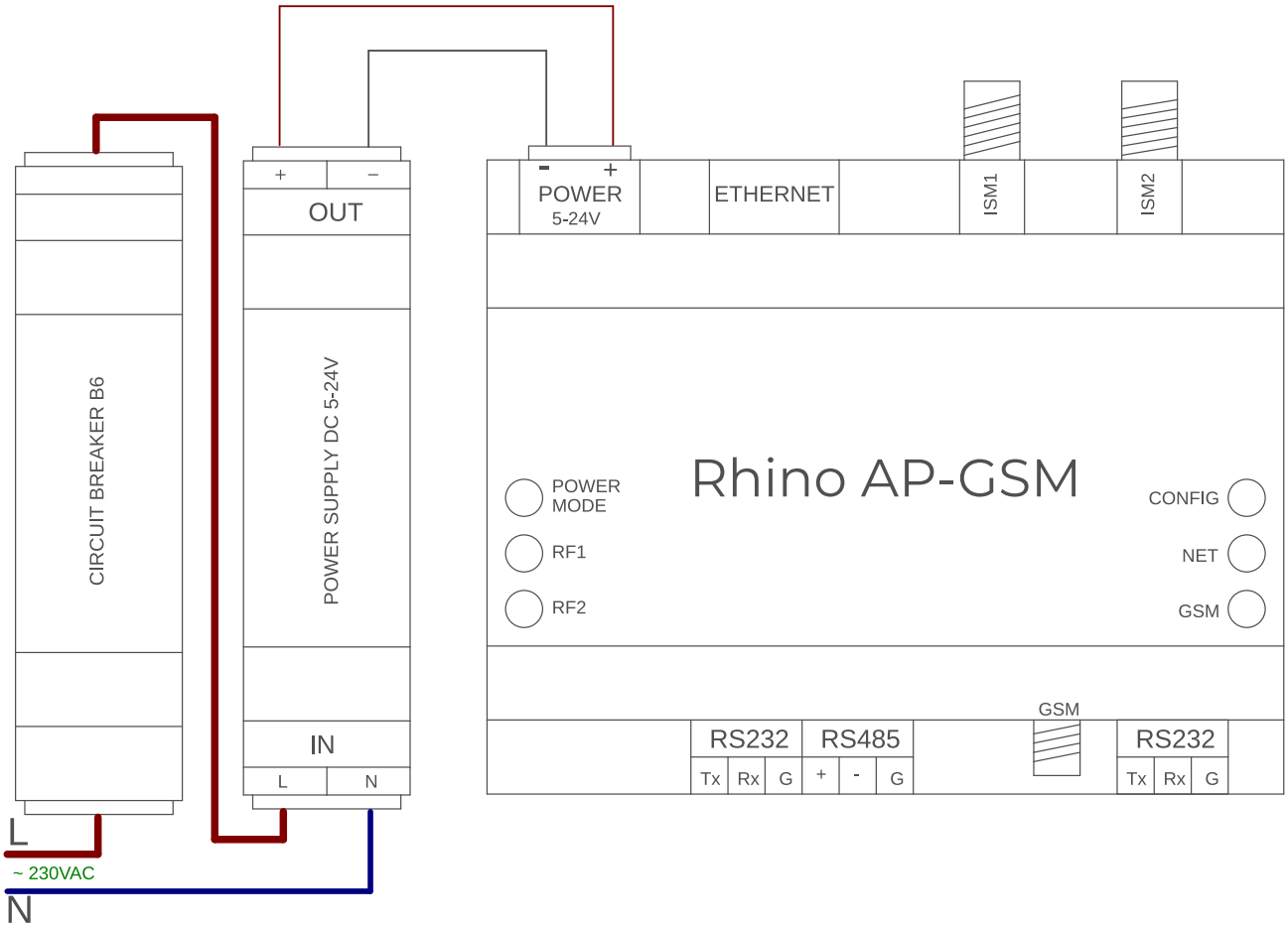
Rhino AP-GSM

Power Supply Diagram



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Rhino System Topology

- Up to 50 devices connected on every RF channel
- Clear line of sight RF range max. 300 m
- RF range data only applicable per building level

RHINO

- External inputs
- Rhino Ecosystem

Electricity

Heating & Cooling

Water

Gas

BMS

Sensors

Rhino
ED RS232
ED RS485

- Max RF Range 40 m
- ISM Channel 2 - 433 MHz
- Encryption AES256

Interfaces
• RS232 • RS485

Protocols
• Modbus RTU • IEC62056-21
• GAZMODEM

Rhino
ED DI

- Max RF Range 50 m
- ISM Channel 1 - 433 MHz
- Encryption AES256

Input
3 x Pulse (S0)
or 2 x Binary IN

Rhino
ED DI-D

- Max RF Range 50 m
- ISM Channel 1 - 433 MHz
- Encryption AES256

Input
2 x Pulse (S0)

Rhino
Sensors

- Max RF Range 30 m
- ISM Channel 1 - 433 MHz
- Encryption AES256

Input
temperature
humidity, air quality
etc.

Rhino
WMBus
WMBus Repeater

- Max RF Range 25 m
- ISM 868 MHz
- Encryption AES256

Protocols
WMBus OMS

Rhino
P1 RS232

- Max 1 m cable lenght

Input
1 x P1 Port RJ12

Output
RS232

Interfaces
• ETH • 2 x RS232 • RS485
Optional: WMBus • MBus • P1

Protocols
• Modbus RTU/TCP • BACnet • IEC62056-21
• DLMS • GAZMODEM • Custom
Optional: WMBus OMS • MBus

Real-time data integration,
exchange and flexibility

Rhino
AP

Collects data from Rhino products, metering device and securely transmits it to the Rhino Cloud

UPC
Utility Provider Connectors
Multi protocol Data Collection

GSM

SSL

Ethenet

Rhino **Cloud**
Centralized Data Lake

24h / 7

Machine Learning

Analytics

Realtime data collection
(every 15 min)

Rhino API

- ESG Dashboarding
- Tenant experience platforms
- Direct data lake feed

Rhino Billing

Tenant cost and price
sharing through reports
or Yardi integration

Rhino Dashboard

Dedicated application for
monitoring utility consumption

- **Business Intelligence**
- **Reporting**
- **Alarms & Notifications**