

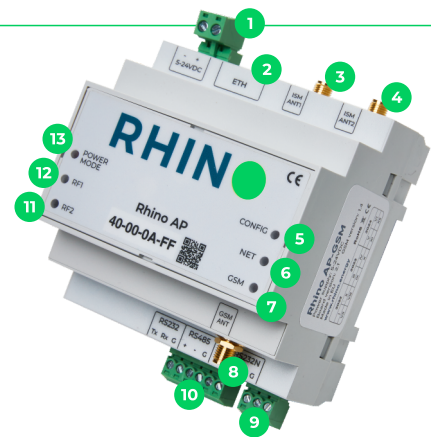
## Rhino AP GSM



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



### TECHNICAL PARAMETERS

<b>Communication type</b>	Ethernet (DHCP / Static IP) or LTE
<b>Rhino communication</b>	Frequency range: 915 MHz 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
<b>Input voltage</b>	5-24VDC ( > 10W)
<b>Internal battery</b>	2700 mAh (emergency power supply)
<b>Internal memory</b>	uSD card (min. 8 GB)
<b>Logging measurement data</b>	Yes
<b>Interface protocols</b>	<b>RS232</b> - DLMS, IEC62065 <b>RS485</b> - DLMS, IEC62065, Modbus RTU, GazModem I, GazModem II <b>Ethernet</b> - DLMS, IEC62025, BACnet, Modbus TCP/IP, Custom network protocols <b>Optional interfaces</b> - M-Bus, Wireless M-Bus OMS

Got questions?  
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<b>Configuration</b>	Over the Air (OTA)
<b>Firmware update</b>	Over the Air (OTA)
<b>Operating temperature</b>	0 °C - 85 °C (depending upon installed environment) 0 °C - 45 °C (during charging Li-Ion)
<b>IP Class</b>	IP40 (not suitable for outdoor use)
<b>Dimensions</b>	87.5 mm x 90.0 mm x 65.0 mm (5 DIN modules)
<b>Weight</b>	~0.2kg
<b>Additional equipment</b>	1 x ISM antenna with 3m cable and magnetic base 1 x GSM antenna with 3m cable and magnetic base (included)
<b>Certifications</b>	CE, FCC, ISED, RoHS

## 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

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

## REQUIRED CABLE TYPES

<b>Signals thickness</b>	0.129-1.31 MM <sup>2</sup> - 26-16AWG
<b>Power supply thickens</b>	0.205-3.31 MM <sup>2</sup> - 24-12AWG

## RS232

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

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

## RS485

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

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

## RS232N

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

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

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## GSM

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The device operates with 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

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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

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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:** RhIn0@mi

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

## FACTORY RESET

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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

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- 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

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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 PM10 concentrations, as well as air quality (VO<sub>2</sub> and CO<sub>2</sub>).

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

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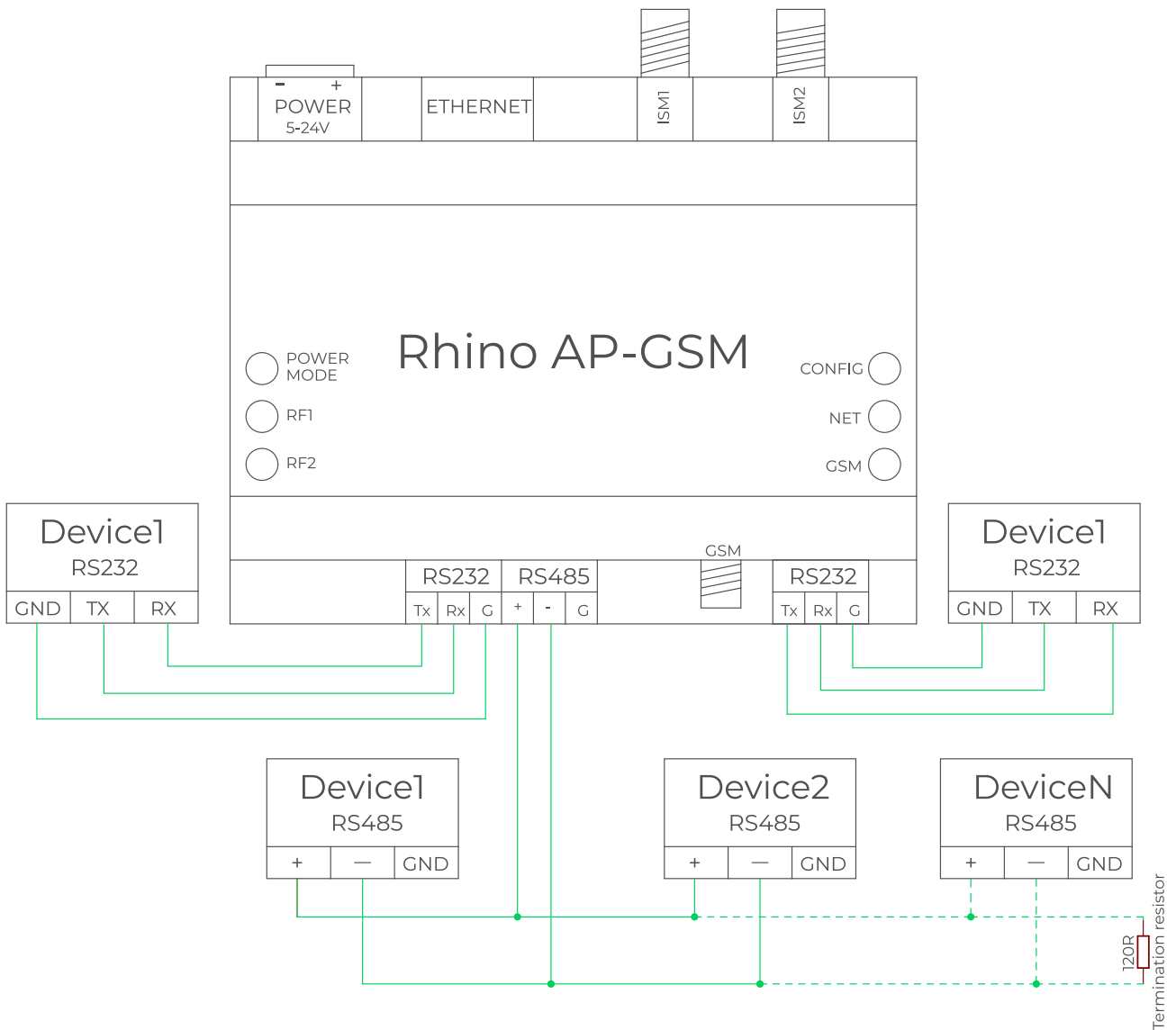
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# Rhino AP-GSM

## Connection Diagram



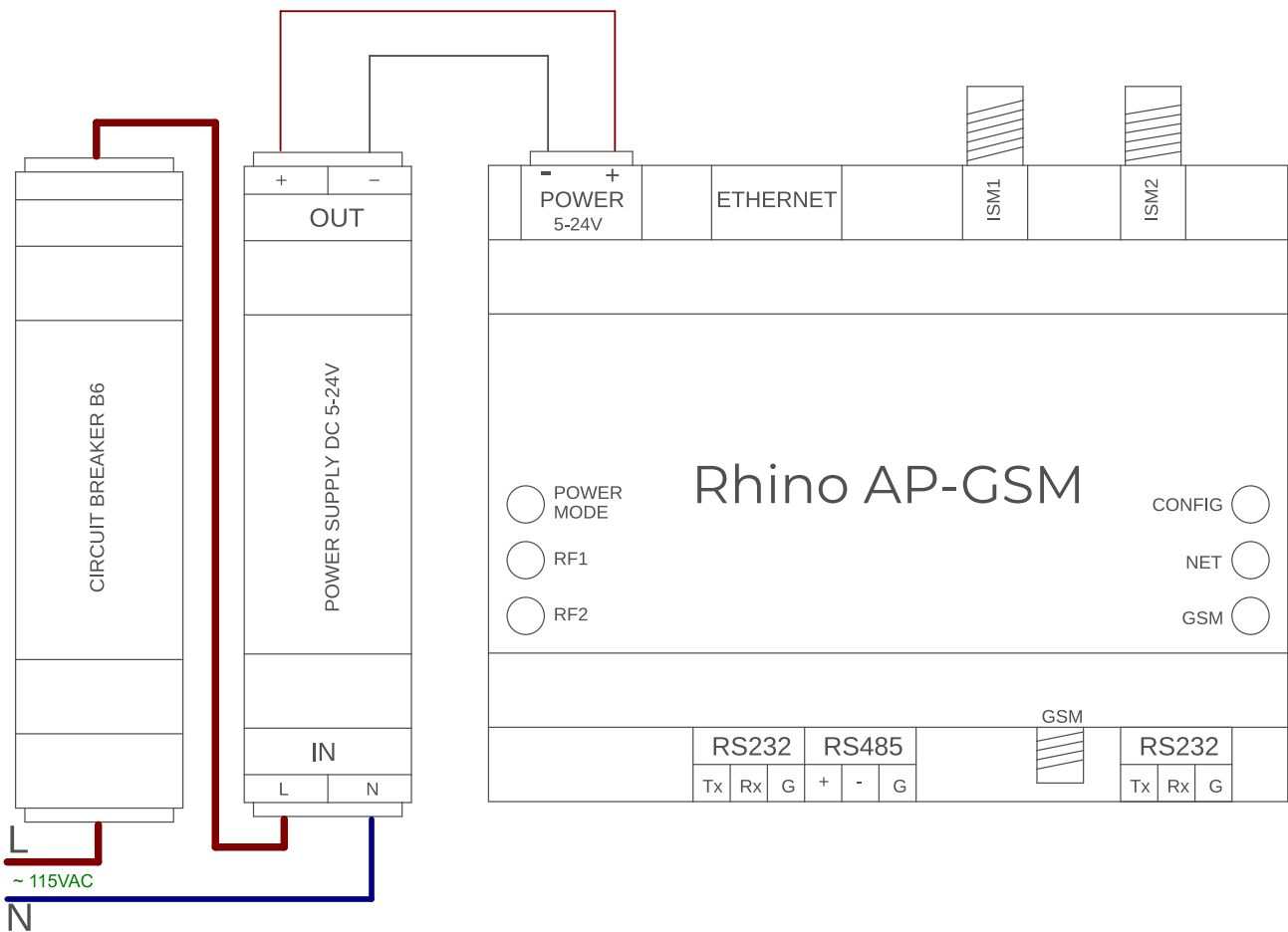
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# Rhino AP-GSM

## Power Supply Diagram



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# Rhino AP-GSM

## US Compliance



### FCC STATEMENT

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### WARNING

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification or Declaration of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. This equipment has more than one interface connector, do not leave cables connected to unused interfaces. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

**FCC ID:** 2BE63APGSM915V21

**Contains FCC ID:** XMR201906EG21G

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# Rhino AP-GSM

## Canada Compliance



### INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA STATEMENT

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This device complies with RSS-210 of the Innovation, Science and Economic Development Canada Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

#### Radiation exposure statement

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the antenna of this device and all nearby persons. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

**IC ID:** 32201-APGSM915V21

**Contains IC ID:** 10224A-2022EG21GL

### INNOVATION, SCIENCE ET DÉVELOPPEMENT ÉCONOMIQUE DÉCLARATION DU CANADA

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Cet appareil est conforme à la norme ISED CNR-210 pour les appareils radio agréés. Son fonctionnement est soumis aux deux conditions suivantes:

- le dispositif ne doit pas produire de brouillage préjudiciable, et
- ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

#### Déclaration d'exposition aux radiations

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps. Cet émetteur ne doit pas être co-implantés ou exploités conjointement avec une autre antenne ou émetteur.

**IC ID:** 32201-APGSM915V21

**Contient IC ID:** 10224A-2022EG21GL

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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

