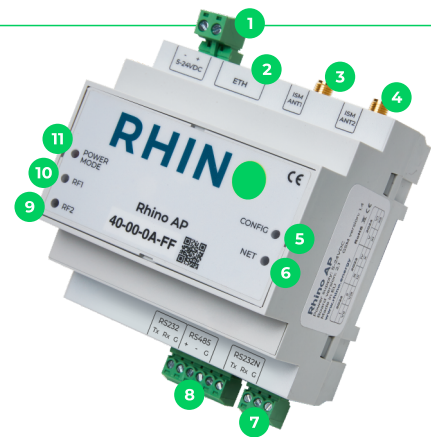


Rhino AP-ETH

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. Powered by external 5-24VDC power supply.

DEVICE OVERVIEW

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



TECHNICAL PARAMETERS

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

Got questions?
Contact us!

Rhino
Hogehilweg 19
1101CB Amsterdam, NL

+31 20 217 02 09
sales@rhino.energy
www.rhino.energy

| | |
|------------------------------|--|
| Configuration | Over the Air (OTA) |
| Firmware update | Over the Air (OTA) |
| Operating temperature | 0 °C - 85 °C (depending upon installed environment) 0 °C - 45 °C (during charging Li-Ion) |
| 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 |

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 |
| 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 MM ² - 26-16AWG |
| Power supply thickens | 0.205-3.31 MM ² - 24-12AWG |

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.

Got questions?
Contact us!

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 |

DEVICE CONFIGURATION

Use the mobile cloud application to configure read parameters and control the Rhino AP device remotely. To configure 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.

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 PM10 concentrations, as well as air quality (VO₂ and CO₂).

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

TROUBLESHOOTING

- If none of the LEDs are illuminated, ensure the power supply is connected properly.
- If the LED for internet connection (6) is OFF, 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.

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, 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.

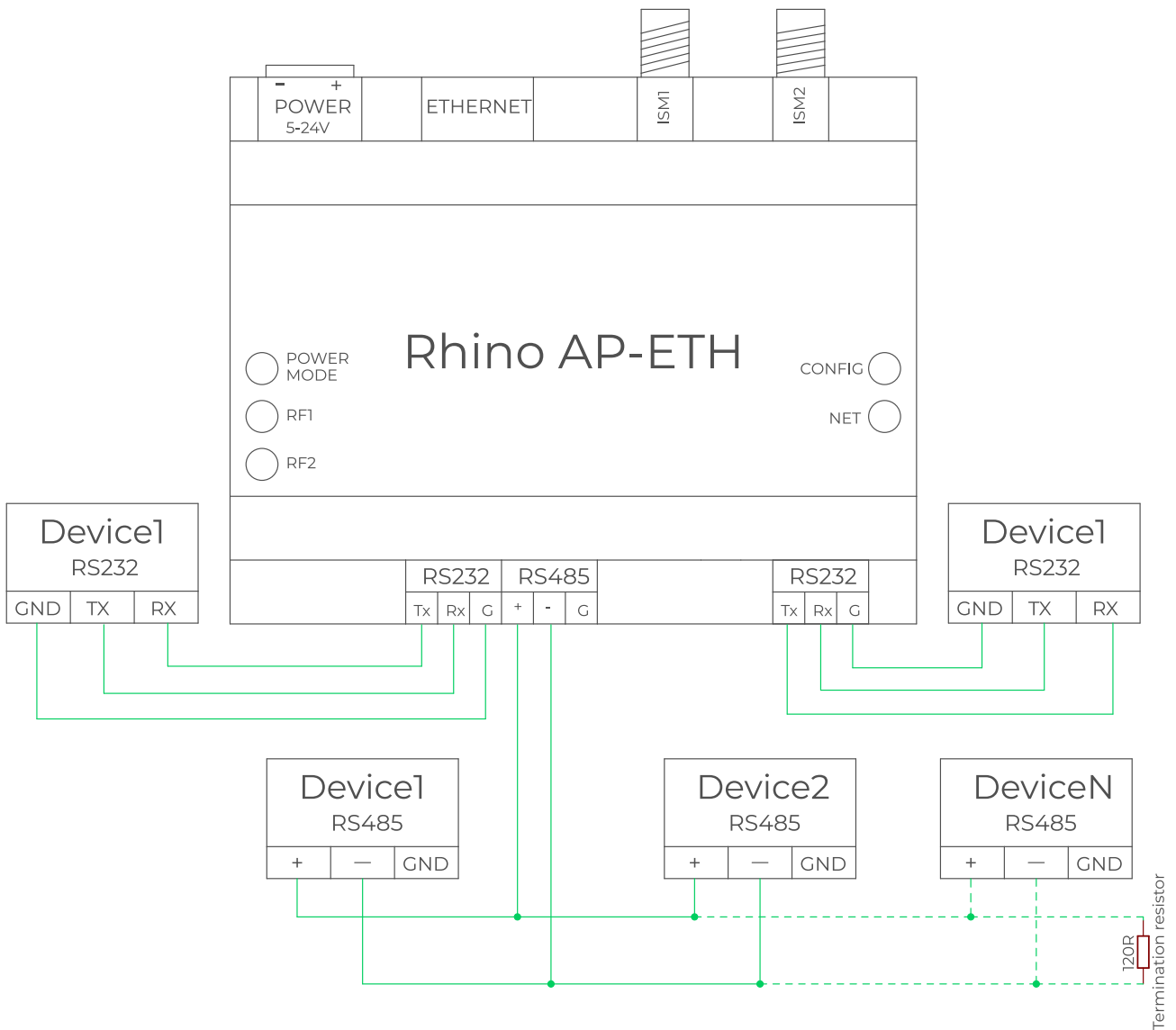
Got questions?
Contact us!

Rhino
Hogehilweg 19
1101CB Amsterdam, NL

+31 20 217 02 09
sales@rhino.energy
www.rhino.energy

Rhino AP-ETH

Connection Diagram



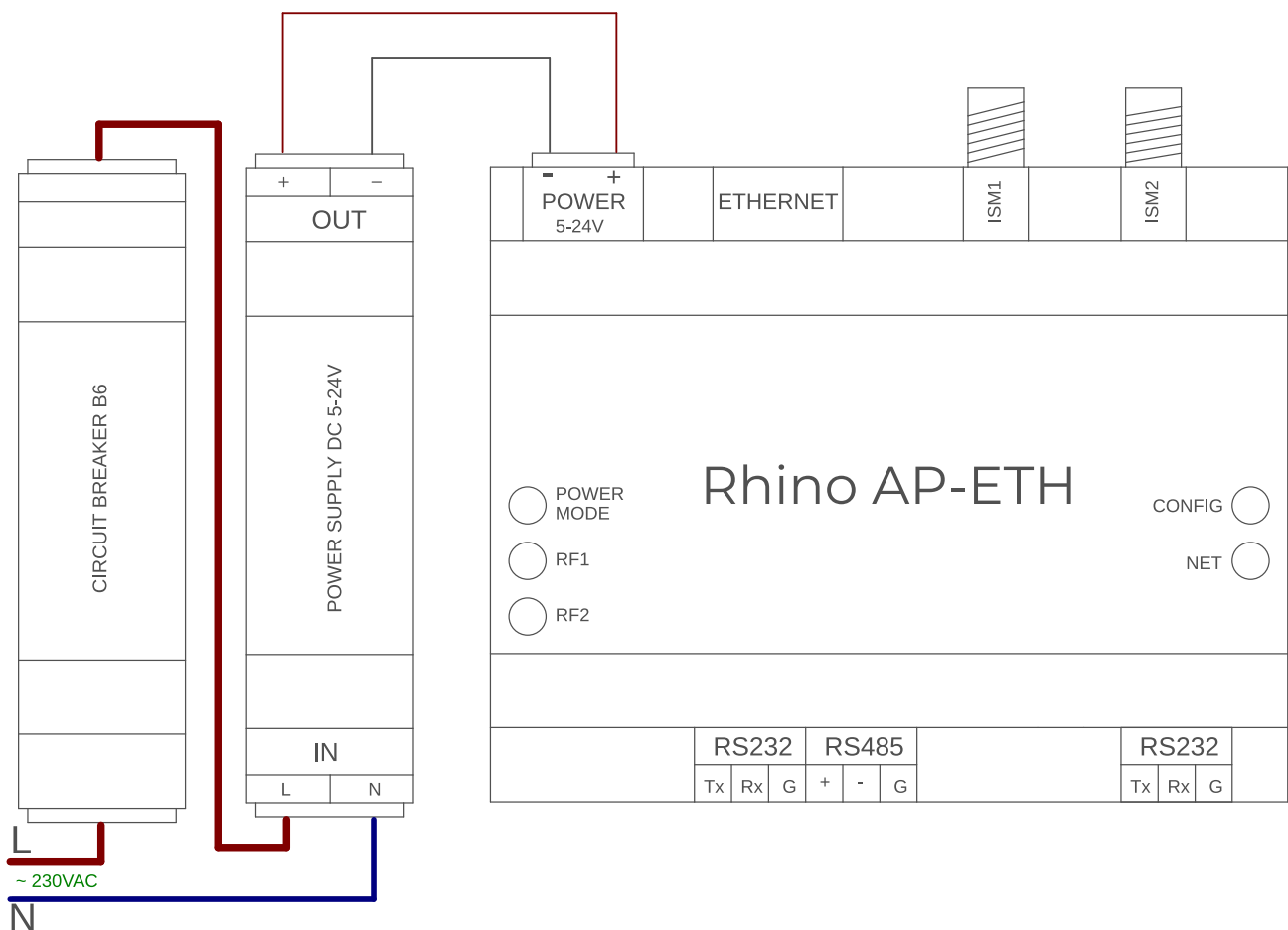
Got questions?
Contact us!

Rhino
Hogehilweg 19
1101CB Amsterdam, NL

+31 20 217 02 09
sales@rhino.energy
www.rhino.energy

Rhino AP-ETH

Power Supply Diagram



Got questions?
Contact us!

Rhino
Hogehilweg 19
1101CB Amsterdam, NL

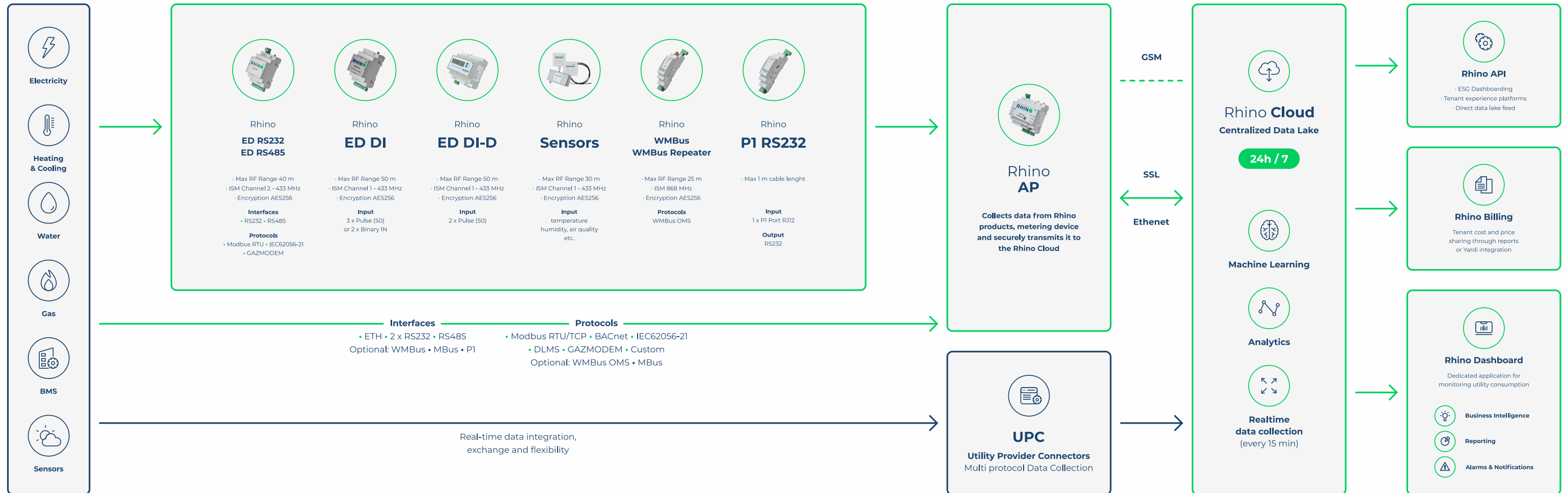
+31 20 217 02 09
sales@rhino.energy
www.rhino.energy

Rhino System Topology

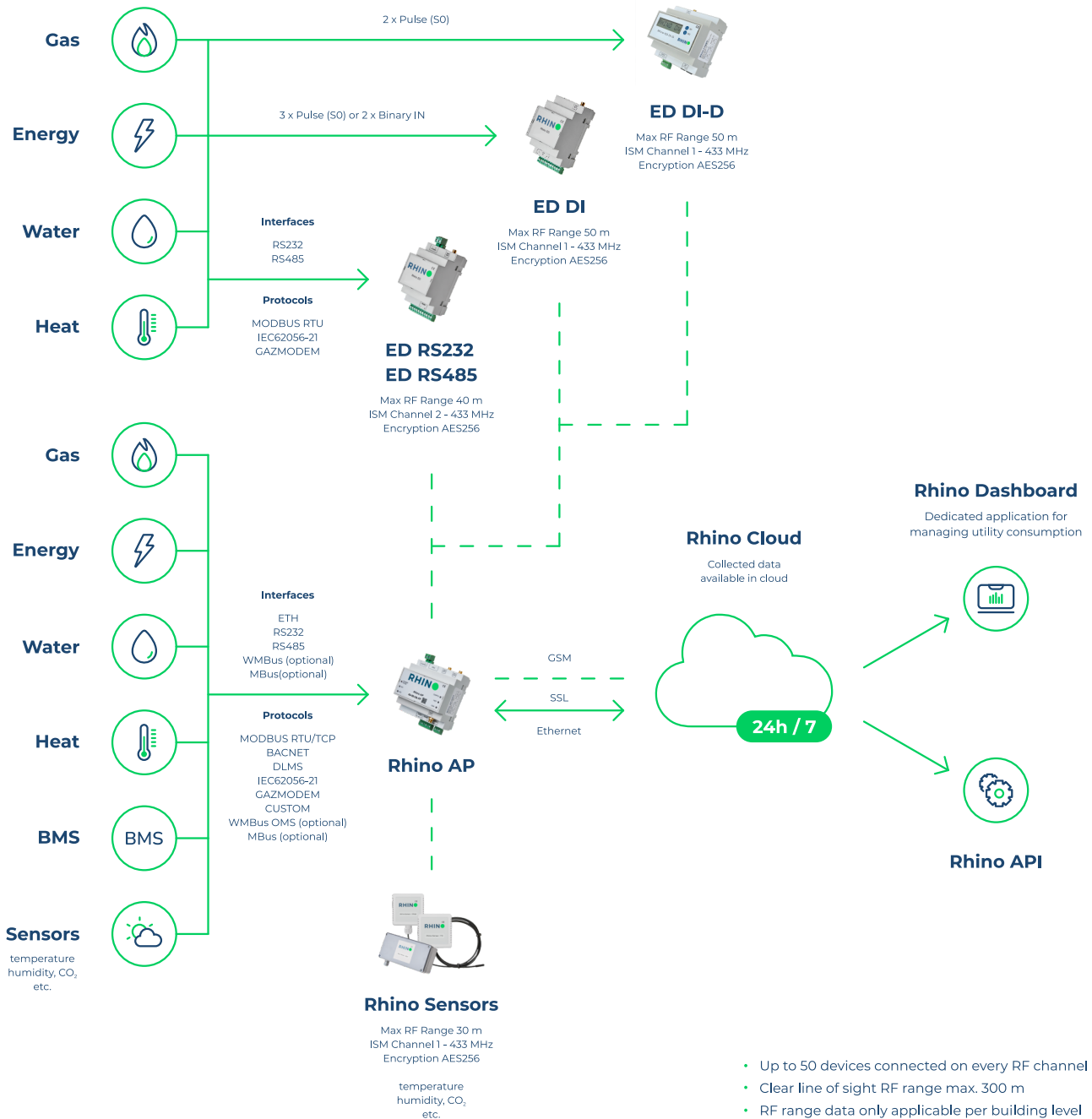
- Up to 50 devices connected on every RF channel
- Clear line of sight RF range max. 300 m
- RF range data only applicable per building level

RHINO

- External inputs
- Rhino Ecosystem



Rhino System Topology



Got questions?
Contact us!

Rhino
Hogehilweg 19
1101CB Amsterdam, NL

+31 20 217 02 09
sales@rhino.energy
www.rhino.energy