ADVANGRID

Wireless 3-phase 4-wire LoRaWAN electricity monitoring sensor AdvanGrid GridMate

USER MANUAL



VER.: 19.05.2026

AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

1. Introduction

The AdvanGrid GridMate LoRaWAN is a wireless power monitoring sensor designed for use in 3-phase 4-wire electrical systems. The device enables real-time monitoring of electrical parameters and supports measurement of one 3-phase circuit or up to three separate single-phase circuits.

GridMate devices communicate through LoRaWAN networks and can be equipped with various current transformers (CTs) or Rogowski coils depending on installation requirements.

Supported measurement configurations include:

- 100A CT
- 250A CT
- 2000A Rogowski Coil
- 5000A Rogowski Coil



AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

2. Safety Requirements

Installation and servicing of the GridMate sensor must only be performed by qualified and certified electricians.

The installation process involves hazardous live electrical systems.

Personnel must comply with:

- Local electrical regulations
- Live-line working procedures
- Personal protective equipment (PPE) requirements
- National workplace safety regulati

The manufacturer is not responsible for damage or data loss caused by improper installation or unauthorized modifications.

3. Package Contents

A standard GridMate kit includes:

1 × GridMate device
3 × Current transformers or Rogowski coils
1 × Voltage connection cable
3 × Phase connection clips
1 × Neutral connection clip
1 × Neutral extension cable
1 × LoRaWAN antenna

Additional accessories may be supplied depending on project configuration.

AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

4. Device Overview

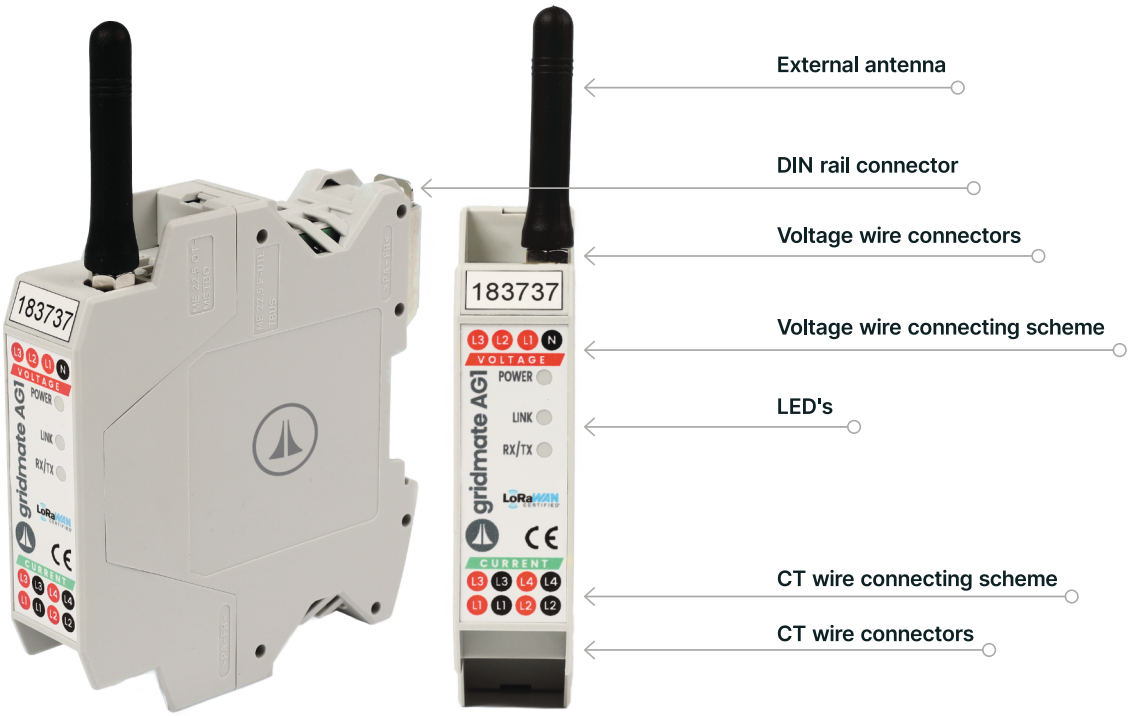
4.1 GRIDMATE SENSOR

The GridMate enclosure:

- Is made from UL94 V-0 fire-resistant plastic
- Has IP40 protection rating
- Includes a 35 mm DIN rail mount
- Features integrated LED status indicators
- Includes clearly marked voltage and CT connection terminals

The front panel contains:

- Power LED
- LINK LED
- RX/TX LED
- Voltage phase indicators (L1, L2, L3, N)



AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

4.2 CURRENT TRANSFORMERS & ROGOWSKI COILS

GridMate supports multiple current measurement options.



100A Current Transformer
Maximum current ≤ 100A
Conductor diameter ≤ 14 mm

250A Current Transformer
Maximum current ≤ 250A
Conductor diameter ≤ 20 mm



Rogowski Coil – 70 mm / 2000A
Conductor diameter ≤ 70 mm
Maximum current ≤ 2000A

Rogowski Coil – 170 mm / 2000A
Conductor diameter ≤ 170 mm
Maximum current ≤ 2000A

Rogowski Coil – 170 mm / 5000A
Conductor diameter ≤ 170 mm
Maximum current ≤ 5000A

Rogowski Coil – 270 mm / 2000A
Conductor diameter ≤ 270 mm
Maximum current ≤ 2000A

AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

4.3 VOLTAGE CONNECTION ACCESSORIES



Neutral Connection Clip
Black crocodile clip used for neutral connection.



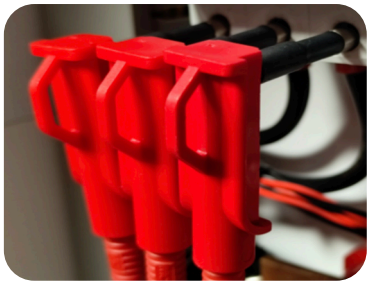
Neutral Extension Cable

Used when the neutral connection point is too far from the device.



Phase Connection Clips

Red crocodile clips used for phase voltage measurement.



Magnetic Connectors

Optional connectors used for magnetic phase attachment.



Screw-On Connectors

Can be used for both phase and neutral connections.

AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

4.4 ANTENNA SELECTION



Standard Antenna

- Gateway distance is less than 10 meters
- Device is not installed inside a metal enclosure



Antenna with 3 m Extension Cable

- Gateway distance exceeds 10 meters
- Device is installed inside a metal enclosure

5. Preparation Before Installation

Before installation:

1. Verify the electrical system type
2. Confirm the GridMate device is suitable for the installation
3. Ensure the system is 0.1-0.4 kV network with neutral
4. Verify current does not exceed selected CT or Rogowski coil limits
5. Confirm selected transducers physically fit around conductors or busbars
6. Choose suitable voltage connection accessories
7. Inspect all equipment before installation. Do not use damaged cables or connectors.

AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

6. Device Installation

Step 1 – Install Current Transformers or Rogowski Coils

Place the CTs or Rogowski coils around the live conductors or busbars.

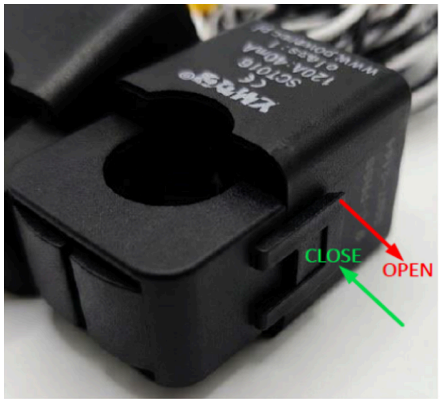
Important:

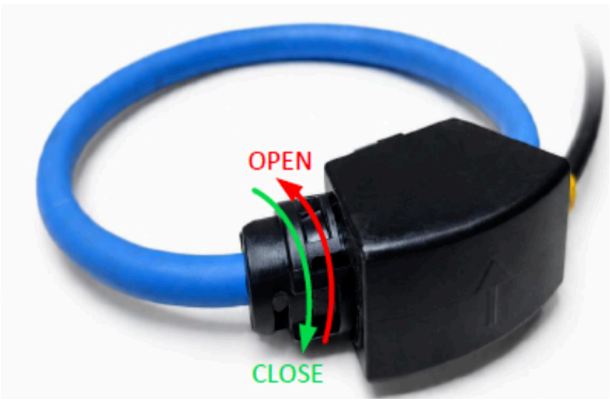
- One CT/coil must only measure one phase
- For split-core CTs - Ensure the locking mechanism clicks fully closed;
- For Rogowski coils - Avoid excessive bending or mechanical strain; Excess cable should be rolled into loops larger than 15 cm diameter
- Phase labels L1, L2, and L3 must match voltage connections later
- Observe the directional arrow on the transformer or coil - the arrow must point from the power source toward the load

Incorrect orientation will produce negative/incorrect readings.









AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

Step 2 – Mount the GridMate Device

Install the device on a 35 mm DIN rail or in another stable mounting location.

The device must:

- Not hang by its cables
- Be protected from vibration and strain
- Be kept away from excessive heat
- Not be exposed to direct sunlight

Recommended ambient temperature < 50°C

Step 3 – Install the Antenna

Securely screw the antenna onto the GridMate device.

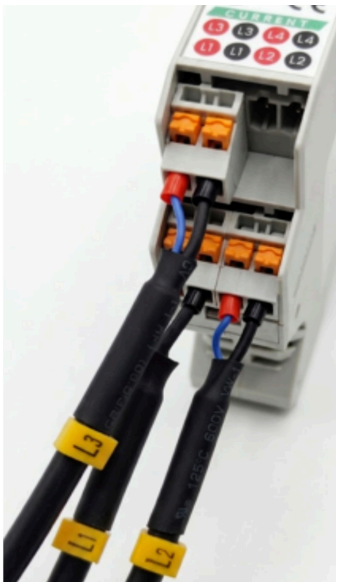
Ensure:

- The antenna is fully tightened
- Cable is not sharply bent
- The antenna is positioned for optimal signal strength

Step 4 – Connect Current Transformers

Connect CT or Rogowski coil connectors to the corresponding GridMate inputs - L1 → L1, L2 → L2, L3 → L3. Verify all connectors are securely attached.





AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

Step 5 – Connect Neutral

Upon **installation** the neutral connection must always be connected **first.**

Locate a reliable neutral point that:

1. Will remain connected during the entire measurement period
2. Has a clean contact surface
3. Is mechanically stable

Connect the neutral using crocodile clip, or screw-on connector.

When **removing** the device, disconnect the neutral **last.**

Step 6 – Connect Phase Voltage Wires

Connect phase voltage wires after the neutral connection is completed. The first phase connection powers the device. A small spark during connection is normal due to device energization.

Important - voltage phases must match CT phases.

Correct matching:

- Voltage L1 ↔ CT L1
- Voltage L2 ↔ CT L2
- Voltage L3 ↔ CT L3

To minimize stress on components:

- Make firm and fast connections
- Avoid repeated sparking caused by poor contact
- Ensure cables are not under tension after installation.

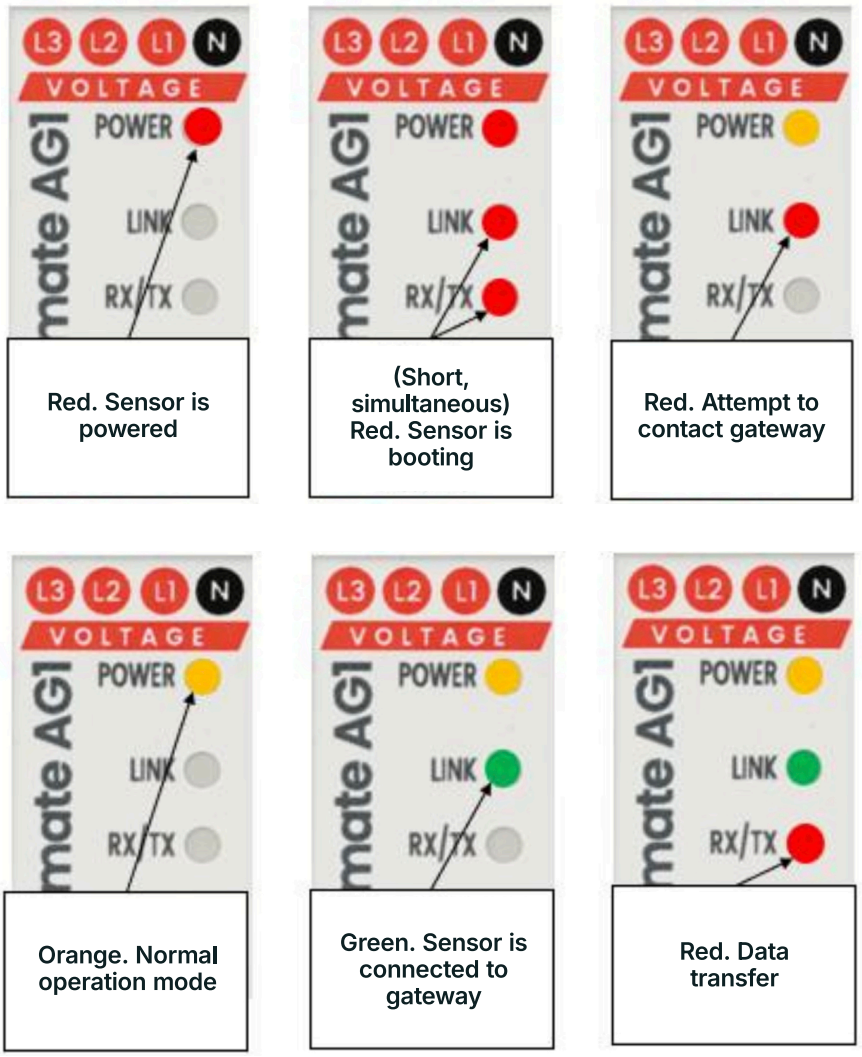
AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

7. Device Operation

After installation the sensor automatically powers on and begins searching for a LoRaWAN network.

Electricity measurements start immediately - the first data packet is transmitted as soon as the device successfully connects to the grid, subsequent data transmissions occur every 5 minutes.

Device has 3 LED indicators to signal status:



AdvanGrid, SIA
Katlakalna 11, Riga, Latvia
+371 2645 1114
info@advangrid.com

8. Maintenance

GridMate devices should be handled carefully and maintained in clean operating conditions.

Recommendations:

- Keep the device dry
- Avoid dust and dirt accumulation
- Avoid excessive heat or freezing conditions
- Prevent impacts or vibration
- Do not clean using aggressive chemicals
- Do not paint the device

Improper handling may damage internal electronics and void warranty coverage.

If the device operates incorrectly, contact AdvanGrid technical support.

9. Technical Support

AdvanGrid, SIA

Address : Katlakalna iela 11, Riga, LV-1073, Latvia

Phone : +371 26 451 114

Email : info@advangrid.com

Website : www.advangrid.com