



# DATASHEET

## Wirgrid RF Module 868 MHz



**PRELIMINARY**

LoRa endpoint for IoT chain

- **868 MHz ISM band LongRange™ bidirectional communications capabilities**
  - **Autonomy up to 15 years**
- **Low power communication based on LoRa™ modulation**
  - **Low power standard pulse meter interface**

### 1. Hardware Key Features

#### 1.1 System

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|--|---|--|
| <p><b>CPU:</b></p> <ul style="list-style-type: none"> <li>• Based on cortex M3 low power processor</li> <li>• Hardware watchdog</li> <li>• Optimised power consumption management</li> </ul> | <p><b>Volatile memory:</b></p> <ul style="list-style-type: none"> <li>• 32 KB processor internal RAM</li> </ul> | <p><b>Non-volatile memory:</b></p> <ul style="list-style-type: none"> <li>• 256 KB processor internal flash used for firmware</li> <li>• 512 KB external flash used for backup firmware, parameters and meter index storage</li> </ul> |
|--|---|--|

#### 1.2 Communication

- LongRange:**
- Incorporate a single channel LoRa™ demodulator (868MHz ISM band)
  - Frequency range : 863MHz to 876MHz
  - Bidirectional communications support
  - Reception sensitivity : up to -136 dBm
  - Transmit power : up to 14dBm (25mW)
  - Omnidirectional internal antenna
  - More than 15km range in sub-urban situation (depends on environmental configuration)
  - More than 2km range in urban situation (depends on environmental configuration)

#### 1.3 User interfaces

- NFC :**
- Used for installation sequence
  - Contactless standard interface : ISO 15693 (Frequency: 13.56 MHz)
  - R/W distance : up to 30 mm

#### 1.4 Meter interface

- Meter pulse interface has the following characteristics :
- 4 wires : ground, pulse, flow direction and tamper
  - Meters types supported : open drain transistor switch, reed switch or any open/close switch type
  - Maximum pulse frequency : 8Hz nominal (configurable to 250Hz)
  - Minimum pulse width : 35ms nominal (configurable to 10ms)
  - Cable length : 1m nominal

#### 1.5 Power

- Internal battery self-powered device
- Battery life duration can reach 15 years with the following use case :
  - Mode: LORA 125KHz BW SF 12
  - 4 meter index frames transmissions per day
  - 1 supervision transmission frame per week

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## 1.6 Mechanical

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- Dimensions : 103 x 60 x 70 mm - Weight : about 200g
  - Acrylonitrile Butadiene Styrene black enclosure
  - Semi-rigid polyurethane resin used for humidity resistance
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## 1.7 Mounting

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The device has three different mounting options:

- Wall mounting by screwing
  - Vertical tube mounting by strapping
  - Horizontal tube mounting by strapping
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## 1.8 Environmental

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- Full operating range: -20°C to +55°C
  - MTBF: more than 20 years (according to MIL-HDBK-217F) - *non contractual*
  - Ingress protection: IP68
  - Impact resistance: IK06
  - UV resistance
  - Chemical resistance
  - Flammability rating: UL94-V0
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## 1.9 Certifications

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- R&TTE 1999/5/EC Directive
- Spectrum allocation compliant to ERC Recommendation 70-3
- Electromagnetic compatibility (article 3.1-b of the R&TTE directive)

EN 301 489-1  
EN 301 489-3

- Efficient use of the radio frequency spectrum (article 3.2 of the R&TTE directive)

EN 300 220-1  
EN 300 220-2

- Safety (article 3.1-a of the R&TTE directive)

EN 60 950-1

- Magnetic field exposure

EN 62311

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## 2. Software key features

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### 2.1 Operating system

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- Operating system is contiki OS
  - Auto-restore mode to protect against software corruption
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### 2.2 Software layers

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#### Networking:

- OpenAMR application protocol stack based on AFNOR E17Z EN13757 application guide
- LoRaWan (TM) protocol stack compliant with deployed LoRaMac networks
- WMbus protocol stack (in option)

#### Application layer

- Configurable meter index management (daily index, subdaily index)
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## 3. Optional accessories

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- **waterproof connector** : when connexion with meter can not be performed at production stage, waterproof connector can be used.
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## 5. Contacts : For more information please contact:

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**1 Rue Jacqueline Auriol  
35235 THORIGNÉ-FOUILLARD**

**Tel : +33 2 99 12 29 00**

**Email : [contact@kerlink.com](mailto:contact@kerlink.com)**

**Web : [www.kerlink.com](http://www.kerlink.com)**