



Multi-Channel LoRaWAN® Low Power Transmission Interface for Industrial Applications

- Compatible with all LoRaWAN® frequencies
- Wide range of industrial applications
- Designed to meet outdoor applications
- Long-term durable performance in harsh environment
- Ultra-low power



TECHNICAL SPECIFICATION

Sensor

| | |
|---|---|
| <ul style="list-style-type: none"> • Interface Options (RM1-L covers a wide range of industrial sensors interfaces. Unique design of the interface gives ultimate flexibility of choosing up to 5 sensor interfaces with difference choices for each channel) | Ch1: I2C Ch2: Pulse (Reed Switch) Ch3: mV / 4-20mA / 0-10V Ch4: Pt temperature (Pt100 2wire, Pt100 3 wire, Pt1000) Ch5: RS232 / RS485 / Modbus / HART / SDI12 TTL UART / 0-5V / 0-10V / 4-20mA (or other customised options on request) |
| <ul style="list-style-type: none"> • Electric Connection | 1m cable, pin connection (or others on request) |
| <ul style="list-style-type: none"> • Operation Temperature | -10 ~ +70 °C |

Power

| | |
|---|--|
| <ul style="list-style-type: none"> • Power Supply | Built-in Replaceable Lithium Battery, External Power (option) |
| <ul style="list-style-type: none"> • Rated Voltage | 3.6 V |
| <ul style="list-style-type: none"> • Battery Lifetime | 100,000+ readings and 20,000+ transmission (More than 10 years for most applications) |

Physical

| | |
|--|---|
| <ul style="list-style-type: none"> • Materials | ASA or POM |
| <ul style="list-style-type: none"> • Weight | 350 g |
| <ul style="list-style-type: none"> • Protection Rate | IP66 or IP68 and UV Protected enclosure |

Communication

| | |
|---|--|
| <ul style="list-style-type: none"> • LoRaWAN® Version, Class | 1.0.2revB, Class A (Class C on request) |
| <ul style="list-style-type: none"> • LoRaWAN® Frequency Zone | AS923, EU868, US902-928, AU915-928 (other zones available on request) |
| <ul style="list-style-type: none"> • LoRaWAN® Activation Type | OTA (default), ABP |
| <ul style="list-style-type: none"> • Sampling Type | Periodic (default), Event triggered |
| <ul style="list-style-type: none"> • Sampling Period | Configurable via downlink (default 4 hours) |
| <ul style="list-style-type: none"> • Transmission Type | Per sample (default), Event triggered, Conditional |
| <ul style="list-style-type: none"> • Parameter Configuration | Over-the-air via LoRaWAN® downlinks Locally via wireless connectivity |
| <ul style="list-style-type: none"> • Firmware Update | Locally via Wireless Connectivity, Over The Air |

NETWORK CONNECTION AND VISUALISATION

Network Integration

- Integratable to all main networks (Actility, Alibaba, Cisco, Digita, Everynet, Helium, Kerlink, kpn, Lorient, machine-Q, Objenious, Orange, Orbiwise, Proximus, Senet, Sens, Swisscom, TATA, The Things Network(TTN), TTI and any other network)

Visualisation And Data Management

- Ellenex white label microservice platform, and Integratable to all main IIoT platforms directly or through the api (AWS, Azure, PTC ThingWorx, Bosch IoT, Cisco Jasper & Kinetic, Sierra Numerex, MathWorks, ThingSpeak, GE Digital Predix, LandisGyr, Siemens MindSphere, Cumulocity, myDevices, Ubidots, TagIO, AllThingsTalk, HPE IoT and any other major IoT platform).

Ellenex Platform Main Features

- Encrypted ultra-low power communication protocol
- Advanced device inventory
- Integration APIs for enterprise systems
- Multi-tenant role-based access control
- Data export and import
- White-label platform for enterprise runs on private account
- Variable alarm setting for high and low thresholds and multi-channel alerting
- Sampling and transmission interval configuration
- Transmission condition configuration
- Other configurations and customisation available on request



Encrypted & ultra-low power



Integratable



Dynamic alerting



Multi-tenant





Scalable



Composable & API first

MODEL GUIDE

| Model | Option / Schematic |
|--|---|
| C Model  | <p>C model comes with cylindrical shape housing suitable for battery operated applications with IP68 rate, 2 or 3 channel interfaces and clamp mounting. This model has 2 option of wire cable connection and the 12pin connection.</p> |
| E Model  | <p>E model comes with rectangular shape housing suitable for battery or external power operated applications with IP66 rate, up to 5 channel interfaces and wall mounting. This model has 2 option of wire cable connection and up to 5connections.</p> |

INDUSTRIES



Water & Environment



Agriculture & Farming



Oil & Gas



Marine & Oceanography



Mining & Construction



Smart Building & HVAC



Transport & Logistics



Food & Beverage



Hydraulics and Compressed Air Systems

APPLICATIONS

- Pump Performance Monitoring
- Water Pipeline Pressure Monitoring
- Pressurised System Monitoring
- Chiller and Cooling System Monitoring
- Hydraulic and Pneumatic Systems Monitoring
- Liquid Storage Level Monitoring
- Spraying System Monitoring
- Air Compressor Monitoring

ORDERING CODE

| | | | | | | | | | |
|--|----|-------------------------------------|---|--------------------------------|--|--|-------------------------------------|---------------------|--|
| RM1-L | | | | | | | | | |
| LoRaWAN Frequency Zone | | | | | | | | | |
| AS (AS923) | | AUx (AU915-928) (Sub Band x) | | | EU (EU868) | | USx (US902-928) (Sub Band x) | | |
| LoRaWAN Activation | | | | | | | | | |
| A (Over The Air Activation - OTAA) | | | | | P (Activation By Personalization - ABP) | | | | |
| Interface Options | | | | | | | | | |
| Ch 1: I2C | | | | A1: I2C. | | | | | |
| Ch 2: Pulse | | | | B1: Pulse (Reed Switch) | | | | | |
| Ch 3: Analogue | | | | C1: mV or MV/V | | | | | |
| Ch 4: Pt Temperature | | D1: Pt100 (2 wire) | | D2: Pt1000 (2 wire) | | Others | | | |
| Ch 5: Digital or Analogue | | E1: RS232 | | E2: RS485 | | E3: SDI12 | | E4: TTL UART | |
| | | E5: Modbus | | E6: 4-20mA | | E7: 0-5V | | E8: 0-10V | |
| Other options available on request | | | | | | | | | |
| Electric Connection | | | | | | | | | |
| P: Pin Connector | | | | | 3m: 3m wire cable | | | | |
| Other options available on request | | | | | | | | | |
| Enclosure | | | | | | | | | |
| C: Cylindrical <small>(Material: POM) only with cable connection</small> | | | E: Rectangular <small>(Material: ASA)</small> | | | X: without housing <small>(only board)</small> | | | |
| Device Activation | | | | | | | | | |
| S: With On/Off Switch | | | | | | X: No Switch <small>(Always On)</small> | | | |
| Antenna Option | | | | | | | | | |
| E: External | | | | | | I: Internal | | | |
| Options (On request) ¹ | | | | | | | | | |
| RM1-L | AS | A | B1D2E6 | P | E | S | E | | |

Sample Product Code:

- **RM1-L-AS-A-B1D2E6-P-E-S-E**

Multi-channel LoRaWAN[®] sensor interface, frequency of AS923, Over The Air Activated, with 3 x 4pin connection (1 x pulse sensor, 1 x 2 wire Pt 100 temperature sensor and 1 x 4-20mA sensor) with rectangular housing, activated by on-off switch and equipped with external antenna.

1) Product Options:

- **EP:** sensor with external power supply connector for 12V supply (only for E type enclosure, adaptor is not included)
- **EPB:** connector for 12V supply with internal battery backup (only for E type enclosure)
- **HG:** high-gain external antenna
- **WF:** Active WiFi module on device for communication/ firmware update through Mobile phone NFC module (only for E type enclosure)
- **HCB:** high-capacity battery (only for E type enclosure)

All details are subject to change without prior notice
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