

# RM1-L Spec-sheet



## 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"><li>• <b>Interface Options</b> (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)</li></ul>	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 customized options on request)
<ul style="list-style-type: none"><li>• Electric Connection</li></ul>	1m cable, pin connection (or others on request)
<ul style="list-style-type: none"><li>• Operation Temperature</li></ul>	-10 ~ +70 °C

### Power

<ul style="list-style-type: none"><li>• Power Supply</li></ul>	Built-in Replaceable Lithium Battery, External Power (option)
<ul style="list-style-type: none"><li>• Rated Voltage</li></ul>	3.6 V
<ul style="list-style-type: none"><li>• Battery Lifetime</li></ul>	Typ. 50,000+ readings / 20,000+ transmission (connected to ellenex platform and standard network quality)

### Physical

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

### Communication

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

## NETWORK CONNECTION AND VISUALISATION

### Network Integration

- Pre-configured to ellenex LNS or configurable to all main network servers (AWS, Netmore, ChirpStack, Helium, Kerlink, Kona Tektelic, Lorient, machine-Q, Orange, Orbiwise, Proximus, Swisscom, TATA, The Things Network (TTN), TTI and any other network)

### Visualization 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, TagoIO, 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 customization available on request



Encrypted & ultra-low power



Integratable



Dynamic alerting



Multi-tenant





Scalable



Composable & API first

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## MODEL GUIDE

Model	Option / Schematic
<b>C Model</b> 	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.
<b>E Model</b> 	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.

## 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
- Pressurized System Monitoring
- Chiller and Cooling System Monitoring
- Hydraulic and Pneumatic Systems Monitoring
- Liquid Storage Level Monitoring
- Spraying System Monitoring
- Air Compressor Monitoring

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## ORDERING CODE

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

### Sample Product Code:

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

Multi-channel LoRaWAN<sup>®</sup> 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.

### <sup>1)</sup> Product Options:

- **EPB:** sensor with external power supply connector for 12V supply with internal battery backup (only for E type enclosure, adaptor is not included)
- **HG:** high-gain external antenna
- **HCB:** high-capacity battery (only for E type enclosure)

