

## NB-IoT

### Multi- Channel NB IoT – Cat-M1 Low Power Transmission Interface for Industrial Applications

- Compatible with most standard communication Protocols (UDP, LwM2M, MQTT, NIDD, etc.)
- Wide range of industrial applications
- Designed to meet outdoor applications
- Long-term durable performance in harsh environment
- Ultra-low power



## TECHNICAL SPECIFICATION

### Sensor Interface

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Interface options:<br/>(RM1-N has option of up to 5 channels for industrial sensor interface. Unique design of the interface gives ultimate flexibility of choosing up to 5 sensor interfaces with different choices for each channel)</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Ch 1:</b> I2C</li> <li>• <b>Ch 2:</b> Pulse (Reed Switch)</li> <li>• <b>Ch 3:</b> mV / 4-20mA / 0-5V / 0-10V</li> <li>• <b>Ch 4:</b> Pt temperature (Pt100 2wire, Pt100 3 wire, Pt1000)</li> <li>• <b>Ch 5:</b> RS232/ RS485/ Modbus/ HART/ SDI12/ TTL UART/ 0-5V / 0-10V/ 4-20mA<br/>(or other customised options on request)</li> </ul> |
| <ul style="list-style-type: none"> <li>• Electric Connection:</li> </ul>   | 1m cable, pin connection (or other options on request)  |
| <ul style="list-style-type: none"> <li>• Operating temperature range:</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 and 10,000+ transmission<br>(More than 10 years for most applications) |

### Physical Specification

- |  |                            |
|--|----------------------------|
| <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> | IP65 /IP67, UV Protected - |

### Communication

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• SIM Card Type</li> </ul>           | 4FF Nano-SIM, from any Network Provider  |
| <ul style="list-style-type: none"> <li>• Firmware Update:</li> </ul>        | Over The Air, Locally via Wireless Connectivity  |
| <ul style="list-style-type: none"> <li>• Sampling Period:</li> </ul>        | Configurable via downlink (default 4 hours)  |
| <ul style="list-style-type: none"> <li>• Power Consumption:</li> </ul>      | Power Saving: < 5uA, Transmission: < 220mA   |
| <ul style="list-style-type: none"> <li>• Communication Standards</li> </ul> | Dual mode (Cat-M1 and Cat-NB1)<br>Cat-NB1 (NB-IoT)<br>Cat-M1<br>(option of back support by GPRS) |
| <ul style="list-style-type: none"> <li>• Communication Bands</li> </ul>     | B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 and B39  |
| <ul style="list-style-type: none"> <li>• Data Rates:</li> </ul>             | Cat-M1: 375Kbps (DL)/375Kbps (UL)<br>NB-IoT: 32Kbps (DL)/70Kbps (UL)                             |
| <ul style="list-style-type: none"> <li>• TX Power:</li> </ul>               | 23dBm  |

• Min Receiver Sensitivity:	Cat-M1: -107dBm NB-IoT: -113dBm
• Antenna:	Internal (Default)/ External (customised options available)
• Optional Features:	<ul style="list-style-type: none"> <li>• Attach without PDN (Packet Data Network)</li> <li>• Support for IPV6</li> <li>• SMS communication</li> <li>• Mobility support (Cat-M1 only)</li> </ul>

## NETWORK CONNECTION AND VISUALISATION

### Network Integration

Pre-configured or configurable to all main narrow band networks (3, A1, AT&T, China Mobile, DU, Etisalat, KPN, M1 Singapore, Optus, Orange, Proximus, Spark, Sprint, Swisscom, Telefonica, Telstra, T-Mobile, Verizon, Vodafone, 1NCE, Emnify 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, TagoIO, AllThingsTalk Maker, 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



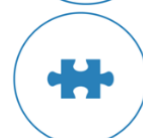
Dynamic alerting



Multi-tenant



Scalable





Composable & API first

# RM1-N Spec-sheet



## MODEL GUIDE

C Model:		E Model:	
	<p><b>C model</b> 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 12 wire cable connection and the 12pin connection.</p>		<p><b>E model</b> comes with rectangular shape housing suitable for battery or external power operated applications with IP65 rate, up to 5 channel interfaces and wall mounting. This model has 2 option of 20 wire cable connection and the 5x 4pin connection.</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-N									
<b>Communication Type</b>									
D (Dual mode NB-IoT and Cat-M1)			B (NB-IoT only)			C (Cat-M1 only)			
<b>Interface Options</b>									
Ch 1: I2C		A1: I2C							
Ch 2: Pulse		B1: Pulse (Reed Switch)							
Ch 3: Analogue		C1: 4-20mA		C2: 0-10V		C3: 0-5V		C4: mV or MV/V	
Ch 4: Pt temperature		D1: Pt1000 (2 wire)		D2: Pt1000 (3 wire)		D3: Pt100 (2 wire)		D4: Pt100 (3 wire)	
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 customised options on request									
<b>Electric Connection</b>									
P (pin connector)					3m (3m wire cable)				
DIN (DIN rail mounted)					Others as specified				
<b>Enclosure</b>									
C: Compact <small>(Material: POM) Available only with cable connection</small>			E: Rectangular <small>(Material: ASA)</small>			X: without housing <small>(only board)</small>			
<b>Others</b>									
<b>Device Activation</b>									
S: on/off switch					N: NFC <small>(by mobile phone)</small>				
X: No switch <small>(always on)</small>					D: Dual switch <small>(on/off + Trigger)</small>				
<b>Antenna</b>									
I: Internal					E: External				
<b>Options</b>									
G: GPS tracker									
Other Options on request									
RM1-N	D	B1D2E8	P	E	S	I			

### Sample Product Code:

- **RM1-N-D-B1D2E8-P-E-S-I**

Multi-channel NB-IoT and LTE Cat-M1 sensor interface with 3 x 4pin connection (1x pulse sensor, 1x 3wire Pt1000 temperature sensor and 1x 0-10V sensor), with rectangular housing, activated by on-off switch and internal antenna.