



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"> • Interface options:
(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) | <ul style="list-style-type: none"> • Ch 1: I2C • Ch 2: Pulse (Reed Switch) • Ch 3: mV / 4-20mA / 0-10V • Ch 4: Pt temperature (Pt100 2wire, Pt100 3 wire, Pt1000) • Ch 5: 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 other options on request) |
| <ul style="list-style-type: none"> • Operating temperature range: | -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: | Typ. 20,000+ readings / 5,000+ transmission
(connected to ellenex platform and standard network quality) |

Physical Specification

- | | |
|---|----------------------------|
| <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 /IP68, UV Protected - |

Communication

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

RM1-N Spec-sheet

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

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)

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

RM1-N Spec-sheet

MODEL GUIDE

C Model:		E 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>		<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 5connection.</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

RM1-N Spec-sheet



ORDERING CODE

RM1-N									
Communication Type									
B: NB-IoT					C: Cat-M1				
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 customised options on request									
Electric Connection									
P (pin connector)					3m (3m wire cable)				
Others as specified									
Enclosure									
C: Cylindrical (Material: POM)			E: Rectangular (Material: ASA)			X: without housing (only board)			
Others									
Device Activation									
S: on/off switch					X: No switch (always on)				
Antenna									
I: Internal					E: External				
Options									
(On request) ¹									
RM1-N	B	B1D2E6	P	E	S	I			

Sample Product Code:

- **RM1-N-B-B1D1E6-P-E-S-I**

Multi-channel NB-IoT sensor interface with 3 x 4pin connection (1x pulse sensor, 1x 2-wire Pt100 temperature sensor and 1x 4-20mA sensor), with rectangular housing, activated by on-off switch and internal antenna.

1) Product Options:

- **G**: GPS tracker (only for E type enclosure)
- **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)

