# CTR2-N

**NB-IoT** **LTE-M**

## Industrial NB IoT – Cat-M1 Operated Low Power Turbidity Sensor

- Compatible with most standard communication Protocols (UDP, LwM2M, MQTT, NIDD, etc.)
- Wide range of industrial applications
- High accuracy
- Designed to meet outdoor applications
- Long-term durable performance in harsh environment
- Ultra-low power
- Pre-configured with no need of programming or hardware setting

## TECHNICAL SPECIFICATION

### Sensor

| | | | |
|---|---|---|---|
| ● | Measurement principle | 850 nm Diffusion IR nephelometry at 90° | |
| ● | Measure ranges | 5 to 4000 NTU in 5 ranges:<br>• 5 - 50 NTU<br>• 5 - 200 NTU<br>• 5 - 1000 NTU<br>• 5-4000 NTU<br>• AUTOMATIC | 0 to 4500 mg/L<br>Calibration:<br>• Range 0-500 mg/L according to NFEN872<br>• Range >500 mg/L according to NFT901052 |
| ● | Accuracy: | < 5% of the reading | |
| ● | Resolution: | 0,01to1NTU-mg/L | |
| ● | Temperature compensation | Via CTN | |
| ● | Storage Temperature: (℃) | -10°C to +60°C | |
| ● | Operation Temperature: (℃) | 0°C to +50°C | |

### Power

| | | |
|---|---|---|
| ● | Power Supply: | Built-in Replaceable Lithium Battery, External Power (option) |
| ● | Rated Voltage (V) | 3.6 |
| ● | Battery Lifetime: | 10,000+ Readings and 5,000+ Transmission<br>(With UDP protocol/ More than 5 years for most of applications) |

### Physical Specification

| | | |
|---|---|---|
| ● | Materials: | Sensor Head: PVC, DELRIN, Quartz, PMMA, Polyamide, cable: polyurethane, Enclosure: POM |
| ● | Max. Pressure on Sensor Head: | 5bar |
| ● | Weight: (g) | ~850 (for 3m cable) |
| ● | Protection Rate: | IP68 for sensor head and<br>IP66 or IP68 and UV protected enclosure |

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## Communication

| | | |
|---|---|---|
| • | Communication Standards | Cat-NB1 (NB-IoT)<br>Cat-M1 (option of back support by GPRS) |
| • | Communication Bands | B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 and B39 |
| • | Data Rates: | Cat-M1: 375Kbps (DL)/375Kbps (UL)<br>NB-IoT: 32Kbps (DL)/70Kbps (UL) |
| • | TX Power: | 23dBm |
| • | Min Receiver Sensitivity: | Cat-M1: -107dBm<br>NB-IoT: -113dBm |
| • | Antenna: | Internal (Default)/ External (customised options vailable) |
| • | Optional Features: | • Attach without PDN (Packet Data Network)<br>• Support for IPV6<br>• SMS communication<br>• Mobility support (Cat-M1 only) |

# NETWORK CONNECTION AND VISUALIZATION

## 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

10Sorex 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, HPE IoT and any other major IoT platform).

## 10Sorex 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

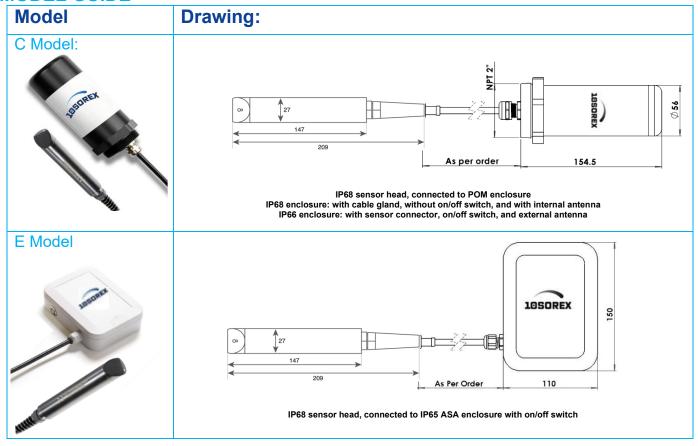| | | |
|---|---|---|
| Encrypted & ultra-low power | Integrable | Dynamic alerting |
| Multi-tenant | Scalable | Composable &API first |

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## MODEL GUIDE

| Model | Drawing: |
|---|---|
| **C Model:** |  NPT 2" · 27 · 147 · 209 · As per order · 154.5 · Ø 56<br><br>**IP68 sensor head, connected to POM enclosure**<br>**IP68 enclosure: with cable gland, without on/off switch, and with internal antenna**<br>**IP66 enclosure: with sensor connector, on/off switch, and external antenna** |
| **E Model** |  27 · 147 · 209 · As Per Order · 110 · 150<br><br>**IP68 sensor head, connected to IP65 ASA enclosure with on/off switch** |

## INDUSTRIES

- Water & Wastewater
- Agriculture & Farming
- Oil & Gas
- Marine & Oceanography
- Mining & Construction
- Environmental Monitoring

## APPLICATIONS

- Bore Hole Mineral Level
- Water Resources
- Surface Water, Rivers and Catchments
- Sea water

- Wastewater Tanks
- Industrial Wastewater
- Regulatory Automated Reporting
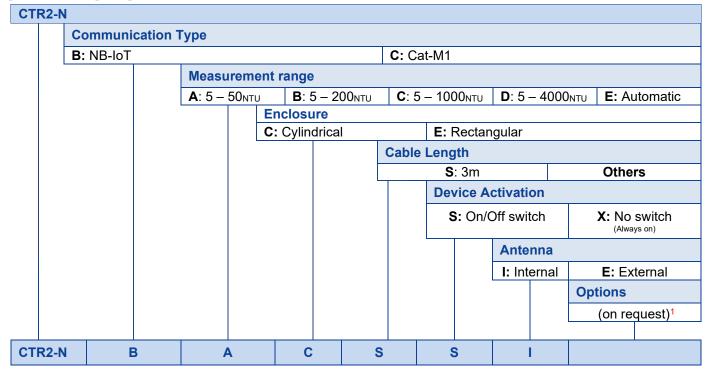- Drinking Water

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# CTR2-N

## ORDERING CODE

| CTR2-N | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Communication Type** | | | | | | |
| | **B:** NB-IoT | | | **C:** Cat-M1 | | | |
| | | **Measurement range** | | | | | |
| | | **A**: 5 – 50$_{NTU}$ | **B**: 5 – 200$_{NTU}$ | **C**: 5 – 1000$_{NTU}$ | **D**: 5 – 4000$_{NTU}$ | **E**: Automatic | |
| | | | **Enclosure** | | | | |
| | | | **C:** Cylindrical | | **E:** Rectangular | | |
| | | | | **Cable Length** | | | |
| | | | | **S**: 3m | | **Others** | |
| | | | | | **Device Activation** | | |
| | | | | | **S:** On/Off switch | **X:** No switch (Always on) | |
| | | | | | | **Antenna** | |
| | | | | | | **I:** Internal | **E:** External |
| | | | | | | | **Options** |
| | | | | | | | (on request)[1] |
| CTR2-N | B | A | C | S | S | I | |

### Sample Product Code:

- **CTR2-N-B-A-C-S-S-I**
  NB IoT turbidity sensor, measurement range of 5 – 50$_{NTU}$, In cylindrical enclosure, standard cable length, with on/off switch and internal 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)

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