



Industrial LoRaWAN® Operated Low Power Turbidity Sensor

- Compatible with all LoRaWAN® frequencies
- 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: • 5 - 50 NTU • 5 - 200 NTU • 5 - 1000 NTU • 5-4000 NTU • AUTOMATIC	0 to 4500 mg/L Calibration: • Range 0-500 mg/L according to NFEN872 • Range >500 mg/L according to NFT901052
• Accuracy	<5% of the reading	
• Resolution	0.01 to 1NTU-mg/L	
• Temperature compensation	Via CTN	
• Storage Temperature	-10 to +60	°C
• Operation Temperature	0 to +50	°C

Power

• Power Supply	Built-in Replaceable Lithium Battery, External Power (option)	
• Rated Voltage	3.6	V
• Battery Lifetime	Typ. 20,000+ readings / 10,000+ transmission (connected to ellenex platform and standard network quality)	

Physical

• Materials	Sensor Head: PVC, DELRIN, Quartz, PMMA, Polyamide, cable: polyurethane, Enclosure: POM	
• Max Pressure on Sensor Head	5bar	
• Weight	~850 (for 3m cable)	g
• Protection Rate	IP68 for sensor head and IP66 or IP68 and UV Protected enclosure	

Communication

CTR2-L Spec-sheet



• LoRaWAN® Version, Class	1.0.2revB, Class A (Class C on request)
• LoRaWAN® Frequency Zone	AS923, EU868, US902-928, AU915-928 (other zones available on request)
• LoRaWAN® Activation Type	OTA (default), ABP
• Sampling Type	Periodic (default), Event triggered
• Sampling Period	Configurable via downlink (default 4 hours)
• Transmission Type	Per sample (default), Event triggered, Conditional
• Parameter Configuration	Over-the-air via LoRaWAN® downlinks Locally via wireless connectivity
• Firmware Update	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, Loriot, 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, TagIO, 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

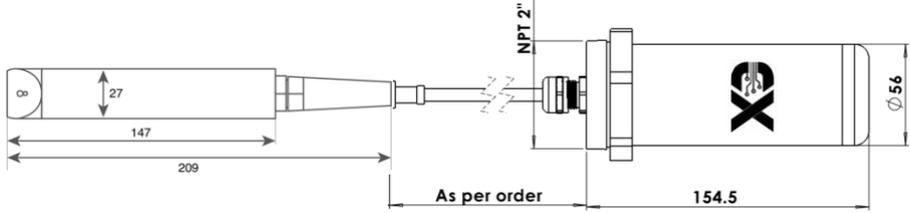
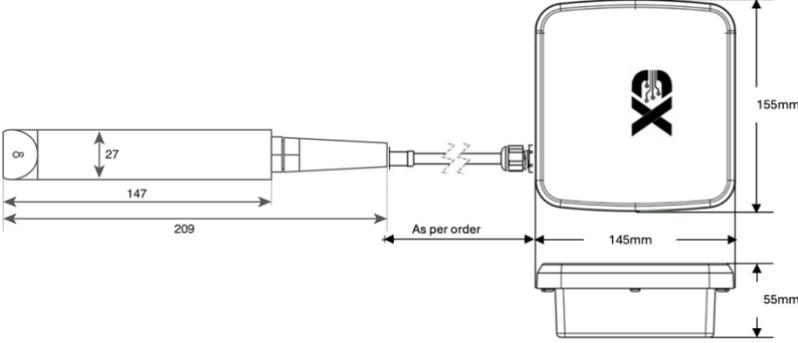


Composable &
API first

CTR2-L Spec-sheet



MODEL GUIDE

Model	Drawing:
<p>C Model:</p> 	 <p>IP68 sensor head, connected to POM enclosure IP68 enclosure: with cable gland, without on/off switch, and with internal antenna IP66 enclosure: with sensor connector, on/off switch, and external antenna</p>
<p>E Model</p> 	 <p>IP68 sensor head, connected to IP65 ASA enclosure with on/off switch</p>

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 Tank
- Industrial Wastewater
- Regulatory Automated Reporting
- Drinking Water

CTR2-L Spec-sheet



ORDERING CODE

CTR2-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)				
Measurement Range									
A: 5 – 50NTU		B: 5 – 200NTU		C: 5 – 1000NTU		D: 5 – 4000NTU		E: Automatic	
Enclosure									
C5: Cylindrical					E5: Rectangular				
Cable Length									
S: 3m					Other options available on request				
Device Activation									
S: With On/Off Switch					X: No Switch (Always On)				
Antenna Option									
E: External					I: Internal				
Options									
(On request) ¹									
CTR2-L	AS	A	A	C5	S	S	E		

Sample Product Code:

- **CTR2-L-AS-A-A-C5-S-S-E**

LoRaWAN® turbidity sensor, frequency of AS923, Over The Air Activated, measurement range of 5 – 50NTU, In cylindrical enclosure, standard cable length, with on/off switch and external antenna.

¹) 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)

