



Industrial LoRaWAN® Operated Low Power Conductivity and Salinity 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

• Measure ranges conductivity	0-200 0-2000 0-20 0-200	µS/cm µS/cm mS/cm mS/cm
• Accuracy	±1 (typ.) (For more than 100 mS/cm appropriate buffer solution is required)	%FS
• Resolution	0.01-1 according to range	mm
• Measurement range salinity	5-60	g/Kg
• Measurement range TDS-KCl	0-133,000	ppm
• Temperature compensation	NTC	
• 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	5,000+ Readings and 5,000+ Transmission (More than 5 years for most of applications)	

Physical

• Materials	Sensor Head: PVC, DELRIN, stainless steel Enclosure: POM	
• Max Pressure on Sensor Head	5bar	
• Weight	~900 (for 3m cable)	g
• Protection Rate	IP68 for sensor head and IP66 or IP68 and UV Protected enclosure	

Communication

• 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

- Integratable to all main networks (Actility, Alibaba, Cisco, Digita, Everynet, Helium, Kerlink, kpn, Lorient, machine-Q, Objenious, Orange, Orbiswise, Proximus, Senet, Sens, Swisscom, TATA, The Things Network (TTN), TTI 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, TagIO, ALSO AllThingsTalk, 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


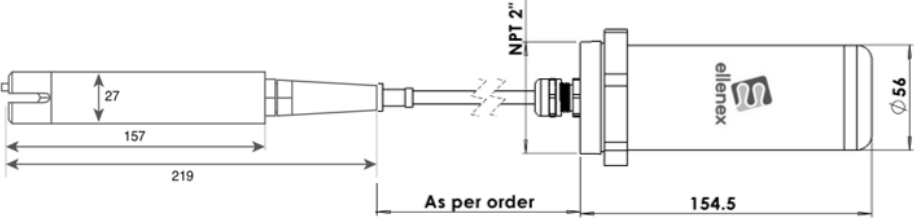

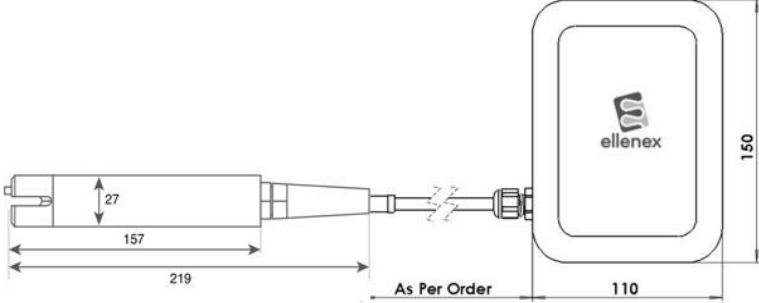


Scalable



Composable & API first

MODEL GUIDE

Model	Option / Schematic
<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

ORDERING CODE

CSD2-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: 0-200 μ S/cm			B: 0-2000 μ S/cm		C: 0-20mS/cm		S: 0-200mS/cm		
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									
CSD2-L	AS	A	A	C5	S	S	E		

Sample Product Code:

- CSD2-L-AS-A-A-C5-S-S-E**

LoRaWAN[®] conductivity sensor, frequency of AS923, Over The Air Activated, measurement range of 0-200 μ S/cm, In cylindrical enclosure, standard cable length, with on/off switch and external 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)