CSD2-L

LoRaWAN®

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 (µS/cm) 0-2000 (µS/cm) 0-20 (mS/cm) 0-200 (mS/cm)
•	Accuracy (%FS)	±1 (typ.) (For more than 100 mS/cm appropriate buffer solution is required)
•	Resolution (mm)	0.01-1 according to range
•	Measurement range salinity (g/Kg)	5-60
•	Measurement range TDS-KCl (ppm)	0-133,000
•	Temperature compensation	NTC
•	Storage Temperature (°C)	-10 to +60
•	Operation Temperature (°C)	0 to +50

Power

•	Power Supply	Built-in Replaceable Lithium Battery, External Power (option)
•	Rated Voltage (V)	3.6
•	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 (g)	~900 (for 3m cable)
•	Protection Rate	IP68 for sensor head and IP66 or IP68 and UV Protected enclosure

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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 VISUALIZATION

Network Integration

- Integratable to all main networks (Actility, Alibaba, Cisco, Digita, Everynet, Helium, Kerlink, kpn, Loriot, machine-Q, Objenious, Orange, Orbiwise, Proximus, Senet, Sens, Swisscom, TATA, The Things Network (TTN), TTI 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, ALSO 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	Integratable	Dynamic alerting
Multi-tenant	Scalable	Composable & API first

www.10sorex.com

Sales@10sorex.com
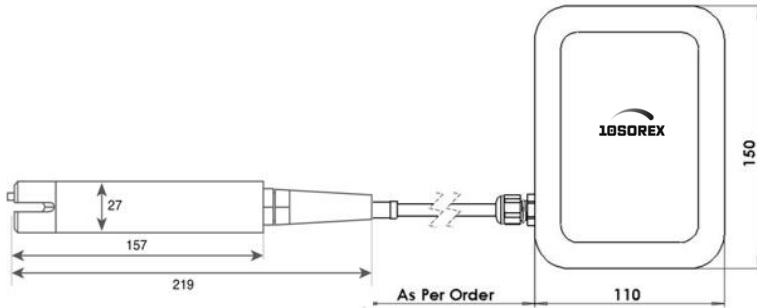
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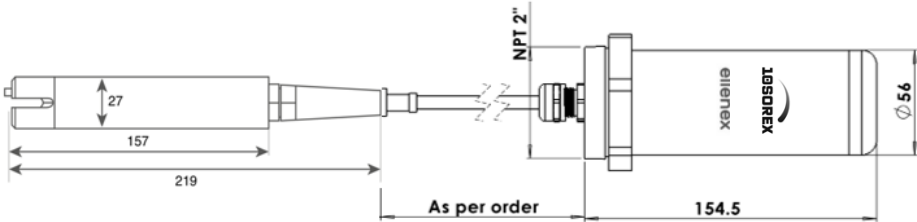
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MODEL GUIDE

Model	Option / Schematic
C Model	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
E Model	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 Tank
- Industrial Wastewater
- Regulatory Automated Reporting
- Drinking Water

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ORDERING CODE

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	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: 0-200µS/cm	**B:** 0-2000µS/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 0-200µS/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)

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