



EKSELANS BY ITS

# SONDEk

NODO IoT

**PROFESSIONAL  
SENSOR SYSTEM  
FOR RESIDENTIAL,  
INDUSTRIAL, AND  
TOURISTIC  
ENVIRONMENTS**



**ENTER THE EK WORLD**

# PROFESSIONAL SENSOR SYSTEM FOR RESIDENTIAL, INDUSTRIAL, AND TOURISTIC ENVIRONMENTS

## General specifications

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Professional Sensor System for Residential, Industrial, and Tourist Environments.

SONDEk allows for the creation of a technological infrastructure within a building, regardless of its intended purpose, to monitor various environmental and consumption parameters with the aim of improving habitability, energy efficiency, and the well-being of the environment.

SONDEk system is composed of various detectors designed to capture and measure a wide range of environmental parameters: carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), oxygen (O<sub>2</sub>), temperature, humidity, and atmospheric pressure. Its main function is to collect precise information on these variables and transmit them in real-time using LoRa® technology to different modular nodes (MPDs), which in turn communicate with a central gateway (HDR - IoT Node). It is this IoT Node that securely stores all environmental factors for data analysis, allowing for the identification of patterns and the implementation of preventive or corrective measures, even automatically.

SONDEk sensors are designed for easy installation and offer advantages such as automatic linking with the modular node and a self-configuration procedure for measurement transmission cycles. The IoT Node (HDR) stores data locally in real-time, with the option of communication with a cloud system. Additionally, it provides access to city infrastructures (Smart Cities) that have implemented building metadata analysis.

## Application Environments

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RESIDENTIAL BUILDINGS



HOTELS AND RESORTS



HOSPITALS AND HEALTHCARE SECTOR



FACTORIES AND INDUSTRIAL WAREHOUSES,



SUPERMARKETS



AGRICULTURE



PUBLIC SPACES

## IoT: The New Revolution in the Telecommunications Sector

For years, we have witnessed the evolution and penetration of the Internet of Things (IoT), a concept that has matured over time, giving rise to practical commercial solutions applicable in various fields. From small-scale domestic solutions to large-scale implementations in areas such as logistics, industry, livestock, and agriculture, IoT is demonstrating its versatility and the fantastic present and future it holds. All IoT applications share the essential need to collect real-time data and make decisions, either through automated processes or human intervention.

In the realm of building and smart cities, at EK, we have been at the forefront for years, developing connectivity solutions designed specifically for infrastructure in smart cities. These solutions are the result of the work of ITS Partner Group teams, which include SensorLab, a specialized entity in professional sensor systems. In the context of IoT applied to building and smart cities, measurement becomes even more essential. Such measurement encompasses a wide range of aspects, including power supply, sectorized access control, environmental monitoring (which includes indoor and outdoor air quality, oxygen levels, carbon dioxide, volatile compounds, humidity, and temperature), integration with building systems—such as fire alarms and power generation—and even the ability to assess structural damage in buildings.

Therefore, EK has recently introduced SONDEk Nodo IoT, a professional sensor system for residential, industrial, and touristic environments. The sensors have high sensitivity to receive data, allowing for a high degree of adaptability in terms of the building locations where they are deployed. Additionally, they use robust modulations with low consumption.

In conclusion, the SONDEk Nodo IoT emerges in the market as an opportunity for telecommunications installers to enter the world of IoT by offering a highly crafted technical solution and preparing for a future of installations that are expected to gain more prominence over time.



### MPD

LoRa modular node  
with several sensors



### SCO

Modular carbon monoxide (CO)  
probe



### CPM

Doors / windows contact

## Advantages of SONDEk Sensors

- √ LoRa® Technology
- √ Low power consumption
- √ Long battery life (between 5 and 8 years)
- √ High tolerance to interference
- √ High reception sensitivity (-136dBm)
- √ Long range (up to 20 km maximum)



# LoRa SENSORS SOLUTION

REFERENCE		HRD
Code		420001
Measurements		Gateway IoT LoRa
Type of measurement		LoRa®
Connection		USB-C, RJ45
Measuring range	dBm	Min: -17 Max: -136
Type of material		Aluminium
Working voltage	V	5

## HRD

- ✓ Mini IOT node
- ✓ Data reception center
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)



# LoRa SENSORS SOLUTION

REFERENCE		MPD
Code		422000
Measurements		Temperature
		Humidity
		Atmospheric pressure
Type of measurement		Semiconductor
		Capacitive
		MEMS
Connection		M12-6PIN
Signal sensitivity (RSSI)	dBm	-17 ~ -136
Measuring range	°C	-40 ~ 60
	%	0% ~ 100%
	hPa	500 ~ 1200
Type of material		ABS
Voltage		Lithium-ion Battery 3.6V 8500mAh
Working voltage		Maximum current: 120mA Average current: 150uA (Sending cycle configuration 5m)

## MPD

- ✓ Modular node
- ✓ With temperature, humidity and atmospheric pressure sensor
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)



\* The battery life will vary depending on the added modular sensors.

# LoRa SENSORS SOLUTION

REFERENCE		STH
Code		421000
Measurements		Temperature
		Humidity
Type of measurement		Semiconductor
		Capacitive
Connections		M12-6PIN
Measuring range	°C	-40 ~ 80
	%	0% ~ 100%
Type of material		ABS

## STH

- ✓ Modular temperature and humidity probe
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)



# LoRa SENSORS SOLUTION

REFERENCE		SCO2
Code		421003
Measurements		CO2
		Temperature
Type of measurement		Humidity
		Atmospheric pressure
Connections		Photoacoustic detection and PASens® and CMOSens® technology
Measuring range		Semiconductor
		Capacitive type
Type of material		MEMS
Connections		M12-6PIN
Measuring range	ppm	400 ~ 2000
	°C	-40 ~ 80
	%	0% ~ 100%
	hPa	500 ~ 1200
Type of material		Inox

## SCO2

- ✓ Modular carbon dioxide (CO2) probe. CO2+Temp+Humid+Pressure
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)





# LoRa SENSORS SOLUTION

REFERENCE		SCO
Code		421004
Measurements		Carbon Monoxide
Type of measurement		Electrochemical
Connections		M12-6PIN
Measuring range	ppm	0 ~ 1000
Type of material		Acero inoxidable

## SCO

- ✓ Modular carbon monoxide (CO) probe
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)





# LoRa SENSORS SOLUTION

REFERENCE		SO2
Code		421005
Measurements		O2 ( Oxygen)
		Temperature
		Atmospheric pressure
Type of measurement		Fluorescence Quenching Principle
Connections		M12-6PIN
Measuring range	%	0% ~ 100%
	°C	-40 ~ 80
	hPa	500 ~ 1200
Type of material		Acero inoxidable

## SO2

- ✓ Modular oxygen (O2) probe.  
O2+Temp+Pressure
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)



# LoRa SENSORS SOLUTION

REFERENCE		STC
Code		421006
Measurements		Temperature
		Semiconductor
Connections		M12-6PIN
Measuring range	°C	-55 ~ 125
Type of material		Inox

## STC

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- ✓ Modular contact temperature probe
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)



# LoRa SENSORS SOLUTION

REFERENCE		CPS
Code		421007
Measurements		Outer protective cover
		-
Connections		-
Measuring range	dBm	-
Type of material		ABS, Cast Iron (Bracket)
Working voltage	V	-
Consumption	W	-

## CPS

- ✓ Outer protective cover for MPD
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)





# LoRa SENSORS SOLUTION

REFERENCE		CPM
Code		422001
Measurements		Door-window magnetic sensor
Tipo de medida		Magnetic Reed Switch
Signal sensitivity (RSSI)	dBm	-17 ~ -115
Type of material		ABS
Working voltage	V	Battery: AAA 1.5

## CPM

- ✓ Doors/windows contact
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)





# LoRa SENSORS SOLUTION

REFERENCE		MRL
Code		420002
Measurements		Lora repeater module
Tipo de medida		-
Connections		Micro-usb
Rango de medición	dBm	-
Measuring range		Aluminio
Alimentación	V	5
Consumption	W	2,5

## MRL

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- ✓ Repeater module to amplify the signal with the possibility of data storage (3000 records) if the connection with the IoT Node is lost
- ✓ LoRa® Technology
- ✓ Low power consumption
- ✓ High tolerance to interference
- ✓ High reception sensitivity (-136dBm)
- ✓ Long range (up to 20 km maximum)



**EKSELANS BY ITS**

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