

MULTIFUNCTION SENSOR FOR MEASURING GAS AND ENVIRONMENTAL CONDITIONS IN LABORATORIES

SINTESY S210.smartSensor is an innovative environmental sensor equipped with a 4.3" color LCD display, integrated into a compact and elegant plastic case.

Designed for professional environments such as laboratories, cryobanks, research centers, and universities, the device allows you to monitor dangerous gases (such as nitrogen, which can cause anoxia in operators), flammable gases such as methane and propane, which can generate explosion risks, and toxic gases.

In addition to gas detection, the S210.smartSensor also measures temperature, relative humidity, volatile organic compounds (VOCs), and differential pressure between environments, ensuring complete control of operating conditions.

The device requires minimal maintenance, thanks to its reduced need for periodic calibration. When maintenance or calibration is required, a dedicated warning message appears on the display.

The background color of the display varies according to the operating status:

- Green: normal conditions
- Yellow: pre-alarm (medium priority)
- Red: alarm (high priority)
- Blue: maintenance (calibration, replacement, override)

If the set thresholds are exceeded, an integrated acoustic signal alerts the user. The audible alarm can be temporarily or permanently silenced using a password, ensuring both safety and operational flexibility.

S210.smartSensor offers high flexibility in integration and communication. It has **two 4–20 mA outputs** and all measurements are available on the **RS485** bus for interfacing with the SINTESY.eagle, Modbus/RTU, Modbus/TCP supervision system. The MQTT WiFi interface is also available for IoT connections.



S210.smartSensor can be equipped with a single sensor or a combination of different sensors:

- Oxygen (O₂), lead-free electrochemical technology
- Carbon dioxide (CO₂), Propane (C₃H₈), Methane (CH₄), Nitrous oxide (N₂O). Based on NDIR (Non Dispersive Infrared Absorption) technology
- Flammable gases. Pellistor technology, designed to detect the environmental content of numerous gases including: Methane (CH₄), Acetone (C₃H₆O), Ethanol (C₂H₆O), Ethylene (C₂H₄), Hydrogen (H₂), Methanol (CH₄O), propane (C₃H₈), toluene (C₇H₈), ammonia (NH₃), and many others.

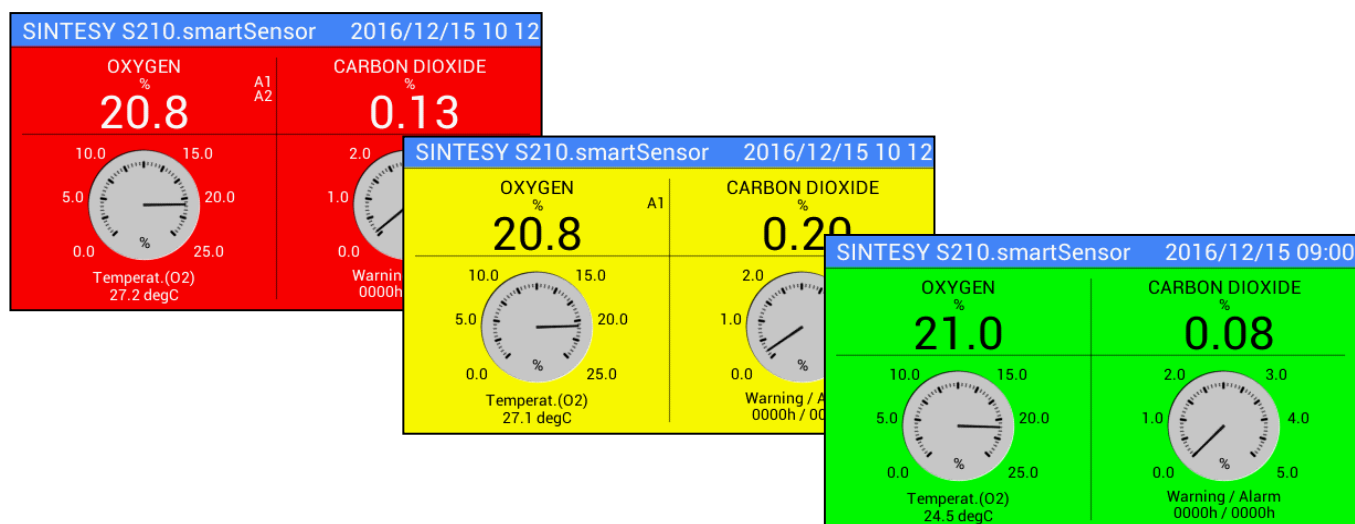
- Toxic gases. Dedicated sensors for detecting hazardous gases such as: Ammonia (NH₃), Carbon monoxide (CO), Sulfur dioxide (SO₂) and Nitrogen monoxide (NO).
- Temperature and relative humidity. A silicon-based transducer for reading environmental parameters
- Differential pressure. A silicon-based transducer for reading small pressure differences (Pa) between two environments

Key features

The S210.smartSensor can also be connected to S200.smart modules, thus expanding the configuration and control options. The electronics have two relays with NC/NO contacts, which can be connected to ventilation systems, shut-off valves, or other alarm devices. In addition, four 24 VDC outputs allow direct connection to the S185 module, for remote acoustic and visual signals outside the monitored areas.

This compact and innovative sensor is the first on the market capable of displaying both real-time data and events stored in its **internal data logger** on the display, presenting them in graphical and tabular format. The data can be exported in **CSV format** and saved directly to **the internal microSD** for simple and comprehensive management of environmental information.

- 24V= power supply; 80 to 160 mA depending on the options installed
- Two programmable relays with NC/NO contacts 48V/5A
- Four 24V= digital outputs; regular, pre-alarm, alarm, buzzer
- Two 24V= digital inputs; temporary or permanent silencing via remote control
- Device status indication via LCD display with colored background
- Clear and immediate LCD display: digital values, analog indicators, parameter display
- Programmable audio: EN60601-1-8, dual tone, single tone, siren
- Alarm sound pressure >70dB @ 1 m
- Temporary silencing (max 15 min); permanent silencing via password
- 2/4-wire RS485 interface via internal dip switches
- 10/100 Mb LAN/Ethernet interface
- MODBUS-RTU and MODBUS-TCP/IP LAN/Ethernet protocol, MQTT with WiFi
- Two analog outputs 4/20 or 0/20 mA
- Easy data export in Excel format (.csv → .xls)
- Internal data logger with 60,000 data points, 10,000 events, sampling time from 1 to 65,000 seconds, and 2GB microSD card
- Simple sensor replacement operations
- Automatic indication on the LCD display for calibration/replacement activities
- EN 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use
- EN 50270 Electromagnetic compatibility. Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen
- EN 50271 Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen. Requirements and tests for apparatus using software and/or digital technologies
- Dimensions: W=90mm x L=160mm x H=50mm
- Weight: 0.4 kg
- Cable connection via RJ45 connector or classic cable gland; both optional
- Operating temperature 0°C/40 °C; storage temperature -20°C/+50 °C
- Calibration kit available with certified gas mixtures (O₂, CO₂, N₂, C₃H₈, CH₄, and other gases)



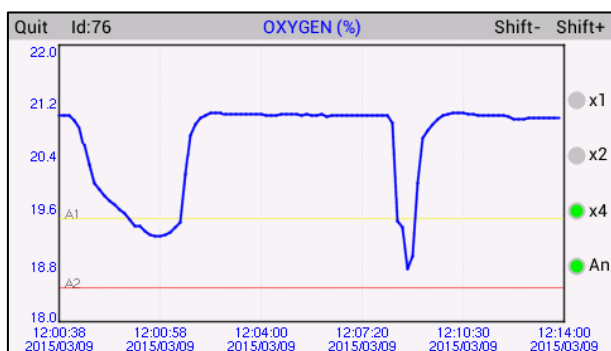
Quit						+100	-100
Id	Data	Time	PAR1	PAR2	EVENT		
1	2015/03/09	11:59:24	00000000	00000000	EVENT_CLEAR		
2	2015/03/09	12:00:52	00000000	00000001	ALARM_SET		
3	2015/03/09	12:01:02	00000000	00000001	EXIT AND ABORT		
4	2015/03/09	12:01:02	00000000	00000000	ALARM_RESET		
5	2015/03/09	12:01:50	00000000	00000000	ENTER PARAM		
6	2015/03/09	12:01:54	00000000	00000000	EXIT AND SAVE		
7	2015/03/09	12:02:08	00000000	00000000	ENTER PARAM		
8							
9							
10							

Each record in the **EVENTS memory** contains the activities performed by the operator and generated internally by the module, such as: POWER_ON, POWER_LOST, PAR_DEFAULT, DATA_CLEAR, EVENT_CLEAR, ALARM_RESET, ALARM_SET, ALARM_UPDATE, TCHSCREEN CAL, TEMPORARY MUTE, PERMANENT MUTE, TEST AUDIO ON, TEST AUDIO OFF, ENTER PARAM, ACCESS DENIED, EXIT AND SAVE, EXIT AND ABORT

Quit								+100	-100
Id	Data	Time	PAR1	PAR2	AI01	AI02	AI03		
86	2015/03/09	12:00:48	00000000	00000000	00019.758	00023.100	01009.000		
87	2015/03/09	12:00:50	00000000	00000000	00019.696	00023.100	01009.000		
88	2015/03/09	12:00:52	00000000	00000000	00019.634	00023.200	01009.000		
89	2015/03/09	12:00:54	00000000	00000000	00019.572	00023.200	01009.000		
90	2015/03/09	12:00:56	00000000	00000000	00019.489	00023.200	01009.000		
91	2015/03/09	12:00:58	00000000	00000001	00019.395	00023.300	01009.000		
92	2015/03/09	12:01:00	00000000	00000001	00019.395	00023.300	01009.000		
93	2015/03/09	12:01:02	00000000	00000001	00019.312	00023.400	01009.000		
94	2015/03/09	12:01:04	00000000	00000001	00019.260	00023.400	01009.000		
95	2015/03/09	12:01:06	00000000	00000001	00019.250	00023.400	01009.000		

Data Memory - The DATA memory contains the sampled values of the measurements detected by the sensors. Each piece of data is recorded together with the date and time information and any alarm status. In the event of an alarm, the values are highlighted in red for quick identification.

You can scroll through the data in chronological order to identify the condition that triggered the alarm and check the maximum value recorded by the sensor.

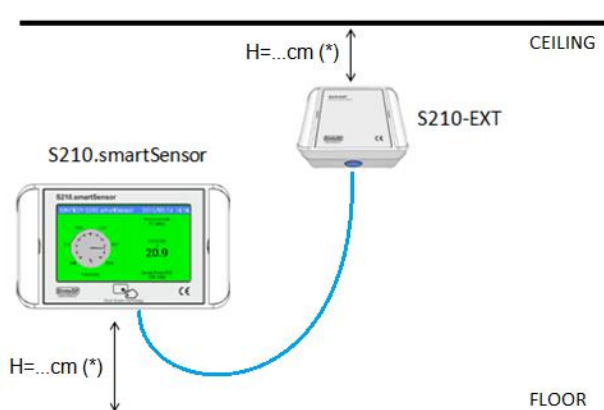
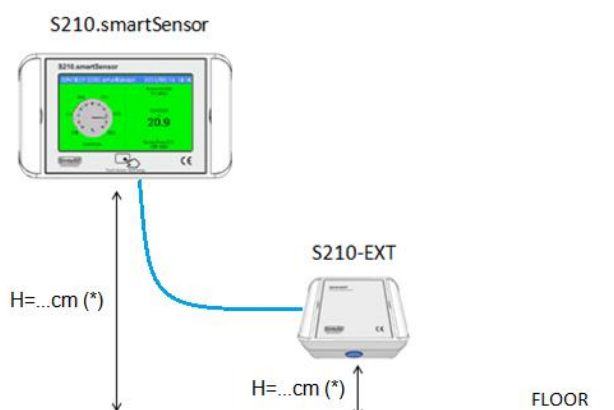


The S210.smartSensor is the only gas sensor on the market that allows you to **graphically display the trend of readings**, clearly and immediately highlighting any abnormal situations, the duration of the hazardous condition, and the date and time of return to normal.

Data export - You can export the recorded data to an Excel file. The file can be easily viewed on any PC using common analysis and visualization tools.

For installations where it is preferable to use mains power (90 to 240 V~) instead of 24V= power, the **V1xx** version is available, as shown in the table below

For most versions of the **S210.smartSensor**, the **S210-EXT** extension module is available, which allows the sensor element to be positioned away from the main enclosure. This allows the sensor to be installed at the most appropriate height for the gas to be monitored, while the module with LCD display can be mounted on the wall at a height of approximately 140–160 cm, as shown below. For example, for CO₂, which is heavier than air, the S210-EXT module should be installed near the floor; for H₂, which is lighter than air, the module should be positioned near the ceiling.



(*) the height of the devices relative to the floor and ceiling depends on the gas used and the specific application

Available versions

Version	Sensor 1 (left)	Sensor 2 (right)	EXT1/EXT2 **	Sensor 3 Temperature, Humidity, VOC	Sensor 4 Differential pressure	RS485 + Beeper + RTC + 2 outputs 4/20mA	24 V output + 2 relays + SD card	LAN Ethernet
V00	O ₂ 25%	-	EXT1	-	-	X	X	X
V01	O ₂ 25%	-	EXT1	-	-	X	X	-
V04	O ₂ 25%	O ₂ 25%	EXT2	-	-	X	X	X
V05	O ₂ 25%	O ₂ 25%	EXT2	-	-	X	X	-
V10	-	CO ₂ 5%	EXT2	-	-	X	X	X
V11	-	CO ₂ 5%	EXT2	-	-	X	X	-
V14	-	CO ₂ 100%	EXT2	-	-	X	X	X
V15	-	CO ₂ 100%	EXT2	-	-	X	X	-
V20	-	-	-	TRH	-	X	X	X
V21	-	-	-	TRH	-	X	X	-
V22	-	-	-	TRH, VOC, eqCO ₂	-	X	X	X
V23	-	-	-	TRH, VOC, eqCO ₂	-	X	X	-
V30	O ₂ 25%	CO ₂ 5%	EXT2	TRH	-	X	X	-
V31	O ₂ 25%	CO ₂ 5%	EXT2	-	-	X	X	-
V32	O ₂ 25%	-	EXT1	TRH	-	X	X	-
V33	O ₂ 25%	-	EXT1	TRH	-	X	X	X
V34	-	CO ₂ 5%	EXT2	TRH	-	X	X	-
V35	-	CO ₂ 5%	EXT2	TRH	-	X	X	X
V36	-	CO ₂ 100%	EXT2	TRH	-	X	X	-
V37	-	CO ₂ 100%	EXT2	TRH	-	X	X	X
V38	O ₂ 25%	CO ₂ 100%	EXT2	TRH	-	X	X	-
V39	O ₂ 25%	CO ₂ 100%	EXT2	-	-	X	X	-
V40	-	-	-	-	± 125 Pa	X	X	X
V41	-	-	-	-	± 125 Pa	X	X	-
V42	-	-	-	-	± 500 Pa	X	X	X
V43	-	-	-	-	± 500 Pa	X	X	-
V70	-	C ₃ H ₈ 100% LEL(1.7 %VOL)	EXT2	-	-	X	X	X
V71	-	C ₃ H ₈ 100% LEL(1.7 %VOL)	EXT2	-	-	X	X	-
V80	-	CH ₄ 100% LEL (4.4 %VOL)	EXT2	-	-	X	X	X
V81	-	CH ₄ 100% LEL (4.4 %VOL)	EXT2	-	-	X	X	-
V89	-	NH ₃ 100 ppm	EXT2	-	-	X	X	-
V90	-	Flammable gases	EXT2	-	-	X	X	X
V91	-	Flammable gases	EXT2	-	-	X	X	-
V92	-	N ₂ O 1%	EXT2	-	-	X	X	X
V93	-	N ₂ O 1%	EXT2	-	-	X	X	-
V94	-	CO 100 ppm	EXT2	-	-	X	X	X
V95	-	CO 100 ppm	EXT2	-	-	X	X	-
V97	-	SO ₂ 10 ppm	EXT2	-	-	X	X	-
V99	-	NO 20 ppm	EXT2	-	-	X	X	-

Note: C₃ H₈ and CH₄ according to IEC 60079-20-1 | eqCO₂ = equivalent CO₂ concentration detected by the silicon sensor

Option	Description	Image
/RJ45	RJ45 connection option that allows for very fast, safe, and effective installation using standard CAT5/FTP network cables. Connection fully compatible with S212.crossMatrix. Specify this option in the order code, for example: S210.smartSensor V01 /RJ45	
/PCG	Option for PG9 cable gland: allows reliable and secure installation of the supply voltage and input/output signals. Specify this option in the order code, for example: S210.smartSensor V05 /PCG	
V1xx	Many devices in the S210.smartSensor family (except V4x, V5x, V6x) are available with a 230V~ 5VA power supply instead of 24V=. This feature allows immediate connection to the main power line and faster system setup. Ordering the product is simple: just add 100 to the version number of the equivalent 24V= product. For example, if you want to order a V01 oxygen sensor, but powered by 230V~, the order code will be V101. The enclosure has larger dimensions: L = 160 mm, W = 130 mm, H = 60 mm (instead of L=160mm, W=90mm, H=50mm)	



SINTESY S.r.l. Certified company:
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