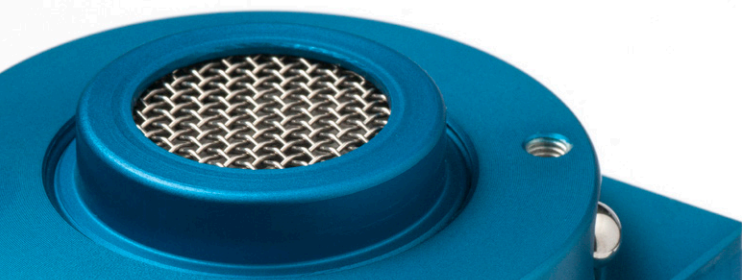


SENS-IT

THICK FILM SOLID STATE SENSORS FOR ENVIRONMENTAL AIR QUALITY MONITORING



FLUIDDESIGNLAB.COM



The UniTec SENS-IT sensors are innovative, compact and low cost devices for environmental air quality monitoring. Based on UniTec proprietary technology, each SENS-IT sensor is specific for a single pollutant gas (CO, NO₂, O₃, C₆H₆...) with extremely high sensitivity and selectivity (also at low ppb levels). Each sensor is engineered in an anodized aluminum case with new embedded electronic board for totally digital control of sensor performances. The RS485 interface permits to easily integrate the sensors in existing devices or monitoring networks, control digitally all the functioning parameters and calibrate them also from remote.

WORKING PRINCIPLE

The SENS-IT sensors exploits the advantages of the Thick Film Metal Oxide Semiconductor Technology (TF-MOS) for CO, NO₂, O₃, C₆H₆, and CH₄ monitoring. The active surface of the sensor is based on a specific nano-structured semiconductor metal oxide. The first reaction which happens on the surface of the sensor is the adsorption of atmospheric oxygen with consequent charge transfer from semiconductor to oxygen molecules. The second reaction is related to specific gas to monitor, which while reacts with adsorbed oxygen (through Red-Ox reactions) allows the electrons to be released in the conduction band of the semiconductor. Taking the current signals from the sensors during these reactions, the direct concentration of the specific gas can be measured. Selectivity and sensitivity are reached using special doped semiconductor metal oxides, in addition, the stability and no consumption of active surface guarantees long term high repeatability and low maintenance needs.

Monitoring of SO₂, H₂S, NH₃, VOC, CO₂ is also available using SENS-IT sensors based on traditional Electrochemical Technology (EC) or Infrared Technology (IR).

APPLICATION

- Urban and industrial area monitoring
- Fence-line monitoring
- Smart city sensors network
- Mobile monitoring application
- Indicative measurement (as defined by European Directive 2008/50/EC).



LEMO Connector



Sensor Board



UniTec
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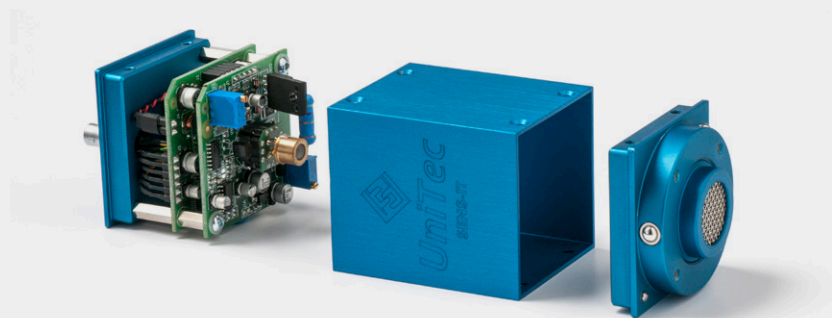
SENSOR SPECIFICATIONS

	PARAMETERS	RANGE	PRECISION	RESOLUTION
SENS-IT (TF-MOS - Thick Film Metal Oxide Semiconductor)	CO	0.1-80 ppm	0.2 ppm	0.1 ppm
	NO ₂	10-250 ppb	10 ppb	1 ppb
	O ₃	10-250 ppb	10 ppb	1 ppb
	C ₆ H ₆	0.1-30 ppb	0.2 ppb	0.1 ppb
	CH ₄	1-1,500 ppm	5 ppm	1 ppm
SENS-IT (EC - Electrochemical Technology)	NH ₃	7-100 ppm	0.3 ppm	0.1 ppm
	SO ₂	5-10,000 ppb	20 ppb	1 ppb
	H ₂ S	2 -3,000 ppb	15 ppb	1 ppb
	VOC	0.6-25 ppm	0.1 ppm	0.1 ppm
SENS-IT (IR - Infrared Technology)	CO ₂	10-5,000 ppm	50 ppm	1 ppm

TECHNICAL SPECIFICATIONS

DIMENSIONS AND WEIGHT	50 x 50 x 90 (h) mm ≈200 gr.
POWER SUPPLY	+12 V DC
OPERATING CONDITIONS	Temperature: -20 / +50°C Relative Humidity: 5-95% (non condensating)
POWER CONSUMPTION	3.0 – 4.0 W (depends upon sensor type)
EXECUTION	Aluminum anodized enclosure with fan and embedded CPU control board
SIGNAL OUTPUT	Linear 0-5 V / Digital RS485
DIGITAL SENSOR CONTROL	<ul style="list-style-type: none"> • Sensor surface temperature digital control • Fan speed digital control • Digital set-up of functioning parameters • Linearized output

DUE TO CONTINUOUS PRODUCT DEVELOPMENT, THE TECHNICAL SPECIFICATIONS CAN BE CHANGED WITHOUT PREVIOUS NOTIFICATION.



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