



**Electro Optical Components, Inc.**

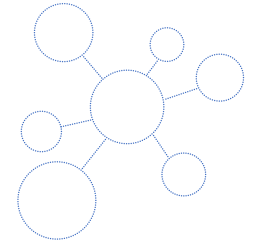
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# smartGAS Analytic Gas Sensor Applications



$\text{CO}_2$  TOC/COD Water Analytic  
CO<sub>2</sub> Capturing, Storing, Transport  
Emission, Process Control  
Waste Water Plants  
Air Quality

CO Emission, Process Control  
Human Breath Control  
Air Quality

$\text{CH}_4$  Emission, Steel Hardening, Biogas,  
Human Breath Control  
Ruminant Emission  
Waste Water Plants

$\text{SF}_6$  High voltage Switchgear

$\text{C}_2\text{H}_4$  Human Breath Control  
Food Storage and Ripening Control

$\text{SO}_2$  Emission, Soil Analytic, Solid Analytic

$\text{N}_2\text{O}$  Emission, N<sub>2</sub>O Storage  
Medical Quality Control

$\text{SO}_2\text{F}_2$  Fumigation, Pest Control

$\text{CH}_3\text{Br}$  Fumigation, Pest Control

HAVAC Cooling Systems, Heat Pumps, A/C  
Production, Service, Device Recycling,  
HAVAC Recycling,  
Cold Storage Warehouses



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## SILAREX NDIR Quad Gas Sensors

The SILAREX product line of smartGAS stands for precision and maximum performance. These are NDIR multi-gas sensors that can measure up to three gases or up to three ranges at the same time. The cross-sensitivity corrections can be calculated directly in the sensor.

The SILAREX gas sensors enable parallel concentration measurement of up to three sample gases or measuring ranges with one compact sensor. They are ideal for applications such as emission measurement of multiple gases such as CO<sub>2</sub>, CO and SO<sub>2</sub>, measurement of TOC (Total Organic Carbon), and also for measuring CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> in wastewater treatment plants.

The advantages of SILAREX compared to measuring with three individual sensors are obvious: only one sensor needs to be calibrated and maintained. Different sample preparations, differing of accuracy or life cycles of the sensors do not have to be taken into account.

	SILAREX	SILAREX TOC	SILAREX TOC PLUS	SILAREX WR PLUS
				
Gases	Up to Three	One/Three Ranges Merged	One/Three Ranges Merged	One/Three Ranges Merged
Applications	Multi Gas Measurement with cross compensation for Industry, Research and Environment Control	High Range Water Quality Analytic TOC/COD	High Range and high accurate Water Quality Analytic TOC/COD	Customized Wide Range SILAREX for High Range and high accurate Analytic Applications. Three calibrated Ranges Merged on one signal.
Reference Channel	Yes	Yes	Yes	Yes
Linearity Error	≤±1% (FS)	≤±1% (FS) Each Range	≤±1% (FS) Each Range	≤±1% (FS) Each Range
Ranges	0...50 ppm up to 0..100Vol.%	0..100/0..1000/0..10000ppm	0..100/0..1000/0..10000ppm	Upon Request
T90 Time vs Noise	≤14sec ≤±0.1%[FS] ≤3sec ≤±1.0%[FS]	≤14sec ≤±0.1%[FS] ≤3sec ≤±1.0%[FS] [FS] related to active range	≤3sec Noise : ≤±0.075%[FS] [FS] to active measured range e.g. 100/1000/10000 Value 56 Range = 100	
Detection Limit	≤±0.05%[FS] of smallest range			
Cycle Time (readout)	Max. 2.5Hz		Max. 10Hz	
Power Supply	24VDC+10%		10...26VDC	
Pressure Compensated	Optional Internal			
Digital Interface	TTL 1wire/RS485		RS232/RS485	

Analog Interfaces	None		Option Internal	
Heat Stabalization	Internal Heat Controller ±1.0K or Optional high performance external Heat Controller ±0.5K			
Cuvette Material	AL(Standard) Stainless / Peek (Depends on gas type and application)			
Cuvette Length	Up to 300mm	Up to 300mm	Up to 300mm	Up to 300mm
Gas In/Outlet	3/5mm Rubber Tube Fitting (Standard) Optional : 4/6mm Rubber Tube/Quick Connector/PTFE/Stainless Steel			
Custom Software	No	No	Possible	
External Casing	AL Casing with thermal Insolation(Customized on Request)			
Standard Gasses	CO2 CO CH4 SO2 N2O NO Other gases request		CO2	Gas Type on request
Additional Options	Interface Converter / Power Supplies / Cabling / Gas Pumps / Filter / Tubing / Integration / Customized Gases and Ranges / Calibration Service			



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## FLOW<sup>EVO</sup> NDIR Dual Channel Gas Sensors

The FLOW<sup>EVO</sup> is a high-performance NDIR gas sensor product line specifically designed for the analysis of gases in process analysis. The sensors are "ready to use", low-maintenance and have low detection limits. They are highly selective against interfering gases and have flexible interfaces. In addition, they are temperature and drift compensated and have a compact design. The FLOW<sup>EVO</sup> product line from smartGAS is characterized by measuring accuracy, compact design and easy handling. The sensors can detect a wide range of measurable gases and are particularly useful where extreme precision and reliability are required. They are ideal for various applications, including process metrology, high voltage technology with SF<sub>6</sub>, emission measurement, pest control, biogas analysis, and fruit storage & ripening gas control, CO<sub>2</sub> capturing ... and much much more

	FLOW <sup>EVO</sup>	FLOW <sup>EVO</sup> PLUS	FLOW <sup>EVO</sup> PRO
			
<b>Gases</b>	One	One	One/Selectable
<b>Applications</b>	Standard Gas measurement in Industry, Research and Environment Control	Applications. Very low Noise and LDL Low T90 time and high output frequency	Universal usage for control Applications
<b>Reference Channel</b>	Yes	Yes	Yes
<b>Linearity Error</b>	≤±1% (FS)	≤±1% (FS)	≤±3% (FS)
<b>Ranges</b>	0...50 ppm up to 0..100Vol.%	0...50 ppm up to 0..100Vol.%	0...50 ppm up to 0..100Vol.%
<b>T90 Time vs Noise</b>	≤14sec ≤±0.1%[FS] ≤3sec ≤±1.0%[FS]	≤3sec ≤±0.075%FS	≤14sec ≤±0.1%[FS] ≤3sec ≤±1.0%[FS]
<b>Detection Limit</b>	≤±0.6%[FS]	≤±0.05%[FS]	≤±0.05%[FS] of smallest range
<b>Cycle Time (readout)</b>	Max. 2.5Hz	Max. 10Hz	Max. 2.5Hz
<b>Power Supply</b>	3.3..6VDC	10...26VDC	3.3..6VDC
<b>Pressure Compensated</b>	Optional w External Coontroler	Optional Internal	Optional w External Coontroler
<b>Digital Interface</b>	TTL 1 wire	RS232/RS485	TTL 1 wire
<b>Analog Interfaces</b>	Optional w External Coontroler	Optional Internal	Optional w External Coontroler

<b>Heat Stabilization</b>	Optional w External Coontroler ±1.0K	Internal w High Performance Controller ±0.5K	Optional w External Coontroler ±1.0K
<b>Cuvette Material</b>	AL(Standard) Stainless / Peek (Depends on gas type and application)		
<b>Cuvette Length</b>	Up to 300mm	Up to 300mm	Up to 300mm
<b>Gas In/Outlet</b>	3/5mm Rubber Tube Fitting (Standard) Optional : 4/6mm Rubber Tube/Quick Connector/PTFE/Stainless Steel		
<b>Custom Software</b>	No	Possible	No
<b>External Casing</b>	AL Casing with thermal Insolation(Customized on Request)		
<b>Options</b>	External Interface Pressure Compensation RS232/RS485 Analog Interface		External Interface Pressure Compensation RS232/RS485 Analog Interface
<b>Standard Gasses</b>	CO2 CO CH4 C2H4 SO2 N2O CH3Br SO2F2 SF6 NH3 CnHm; Other gases request		Up to 20 Freon; Up to 20 CnHm
<b>Additional Options</b>	Interface Converter / Power Supplies / Cabling / Gas Pumps / Filter / Tubing / Integration / Customized Gases and Ranges / Calibration Service		