

# LaserGas™ III SP CO Combustion



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NEO Monitors LaserGas™ III SP CO analyzer (3<sup>rd</sup> generation) is specially designed for operation in hazardous areas and it provides real time in-situ CO measurements for virtually any type of combustion control. The configuration is transmitter/receiver units for cross-stack installation. An external junction box simplifies installation and maintenance. The operation principal is based on the well proven Tunable Diode Laser Absorption Spectroscopy (TDLAS) implemented using a fast scanning absorption technique with fully digital signal processing. Years of experience allowed us to carefully design this highly compact CO analyzer which offers exceptional performance in harsh environments, is truly robust and provides immediate benefits in terms of operational ease and low cost of ownership.

Features	Applications	Customer benefits
<ul style="list-style-type: none"> <li>• In-situ real time measurements</li> <li>• Fast response time</li> <li>• Compact design</li> <li>• Low power consumption (&lt; 10W)</li> <li>• Suitable for SIL2 applications</li> <li>• TDLAS technology</li> <li>• Low detection limit</li> <li>• No interference from other gases</li> <li>• Not affected by high dust load</li> <li>• Lifetime calibration, no zero drift</li> <li>• Integrated span check</li> <li>• Optional components: CH<sub>4</sub>, H<sub>2</sub>O, Temperature</li> <li>• Ethernet connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Combustion control</li> <li>• Boilers</li>   <li>To:</li> <li>• Refineries</li> <li>• Powerplants</li> <li>• Chemical industries</li> <li>• Petrochemical industries</li> <li>• Steel industries</li> <li>• and more</li> </ul>	<ul style="list-style-type: none"> <li>• Reliable in-situ CO measurements in real time</li> <li>• Process optimization</li> <li>• Reduce fuel consumption</li> <li>• Minimize emission</li> <li>• Simple installation, ease of use</li> <li>• Low maintenance cost</li> <li>• No consumables</li> <li>• No sampling systems</li> <li>• Compressed air purge (no need for Nitrogen)</li> <li>• No regular calibrations needed</li> <li>• Automatic span check available</li> </ul>

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## Technical Data

<p><b>Specifications</b></p> <p>Detection limit (CO): 0.5 ppm **</p> <p>Max process gas temperature: 1300 °C</p> <p>Max process gas pressure: 1.5 barA</p> <p>Optical path length: Typically 0.5 - 20m</p> <p>Repeatability: +/- 0.5 ppm or +/-1% relative, whichever is greater (application dependent)</p> <p>Linearity: &lt; 1 % of range</p> <p>Response time: ≤ 5 sec</p> <p><b>Environmental conditions</b></p> <p>Operating temperature: -40 °C to +65 °C</p> <p>Storage temperature: -40 °C to +70 °C</p> <p>Protection classification: IP65</p> <p><b>Inputs / Outputs</b></p> <p>Analog output (3): 4 - 20 mA current loop (concentration CO, transmission, concentration CH4)</p> <p>Digital output: 10/100 Base T Ethernet (Modbus TCP)</p> <p>Relay output (2): High gas, warning and fault (normally closed)</p> <p>Analog input: 4 - 20 mA process temperature and pressure reading</p>	<p><b>Ratings</b></p> <p>Power supply: 24VDC range 18-32 VDC</p> <p>Power consumption : Max. 10 W</p> <p>4 - 20 mA output: 500 Ohm max. load impedance, not isolated</p> <p>Relay output: 1 A at 30 V DC/AC</p> <p><b>Safety</b></p> <p>Laser class: Class 1 M according to IEC 60825-1, eye safe</p> <p>CE: Certified</p> <p>EMC: Conformant with directive 2004/108/EC</p> <p><b>Approvals</b></p> <p>ATEX zone 1: II 2 G Ex d [op is] IIC T4 Gb (TU/RU) II 2 D Ex tb IIIC T78°C Db II 2 D Ex tb IIIC T88°C Db (Lasergas III Ext)</p> <p>CSA: Class I Div. 2, Groups B, C and D</p> <p>ATEX rating connection box: II 2 GD Ex e IIC T5 Gb -40°C ≤TA≤65°C</p> <p>Functional safety: Designed according to SIL 2; IEC 61508</p>	<p><b>Installation and Operation</b></p> <p>Flange dimension: DN50/PN10 or ANSI 2"/150 lbs (other dimensions on request)</p> <p>Alignment tolerances: Flanges parallel within 1.5°</p> <p>Purging of windows: Dry and oil-free pressurised air or gas, or by fan</p> <p>Purge flow: 10-50 l/min (application dependent)</p> <p><b>Maintenance</b></p> <p>Calibration: Check recommended every 12 months</p> <p>Validation: In-situ span check with optional internal cell (application dependent)</p> <p><b>Dimension and weight</b></p> <p>Transmitter and receiver unit (TU/RU): 215 mm (length, add 50 mm for purge unit) x 125 mm (diameter), 3,5 kg each</p> <p>TU/RU connection box: 260 mm x 160 mm x 90 mm, 2.5kg</p> <p>**NOTE: Detection limits are specified as the 95% confidence interval for 1 m optical path and gas temperature / pressure = 25°C / 1 barA. Measured in N<sub>2</sub>.</p> <p>Special process conditions on request</p>
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\* NEO Monitors reserve the right to change specifications without prior notice

### Process temperature below 500°C

	Min	Max	LDL/precision
CO	0-50 ppm	0-10000ppm*m	0.5 ppm**
CH4 add-on	0-1% * m	0-10% * m	0.01%
Process path length	0.5	30m	
Process temperature	-40 °C	500 °C	
Process pressure	0.7 BarA	1.5 BarA	

### Process temperature above 500°C

	Min	Max	LDL/precision
CO	0-200ppm	0-20000ppm*m	3 ppm
CH4 add-on	0-5% * m	0-10% * m	0.05%
H2O add-on	-	0-40%	2%
Temperature add-on	500 °C	1300 °C	30 °C
Process path length	0.5m	30m	
Process temperature	500 °C	1300 °C	
Process pressure	0.7 BarA	1.5 BarA	



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