# LaserGas™ III Ultra SP CO Combustion



LaserGas™ III Ultra uses the innovative baseline-insensitive TDLAS technique specifically designed for combustion analysis. The Ultra simultaneously meets the requirements of combustion control and safety. That is, high measurement accuracy and high dynamic range with simultaneous real-time measurement capability.
Applications with very long path lengths and high gas concentrations are no problem for the Ultra.
Thanks to the baseline insensitivity and the use of the proprietary IROSS signal processing, high measurement accuracy is achieved even with complex gas mixtures.
LaserGas™ III Ultra CO in combination with LaserGas™ III O2 are a perfect combination for proper combustion control and safety.

## Features

- In-situ real time measurements
- TDLAS technology
- Baseline-insensitive
- High dynamic range
- Fast response time
- Low detection limit
- No interference from other gases
- Not affected by high dust load
- Lifetime calibration, no zero drift
- Integrated span check
- Compact design
- Low power consumption (< 10W)
- Ethernet connectivity

## Applications

- Combustion control
- Boilers
- Heaters

To:

- Refineries
- Powerplants
- Chemical industries
- Petrochemical industries
- Steel industries
- and more

## Customer benefits

- Process control & process safety in a single analyzer
- Reliable in-situ CO measurements in real time
- Designed for long OPLs & high ranges
- Reduce fuel consumption
- Minimize pollutants emission
- Simple installation, ease of use
- Low maintenance cost
- No consumables
- No sampling systems
- Compressed air purge (no need for Nitrogen)
- No regular calibrations needed
- Designed for applications with complex gas mixtures

# LaserGas™ III Ultra SP CO Combustion

## Technical Data

**Specifications**

| | |
|---|---|
| Detection limit (CO): | 0.5 ppm ** |
| Max process gas temperature: | 1300 ˚C |
| Max process gas pressure: | 1.5 barA |
| Optical path length: | Typically 0.5 - 20m |
| Repeatability: | +/- 0.5 ppm or +/-1% relative, whicever is greater (application dependent) |
| Linearity: | < 1 % of range |
| Response time: | ≤ 5 sec |

**Environmental conditions**

| | |
|---|---|
| Operating temperature: | -40 ˚C to +65 ˚C |
| Storage temperature: | -40 ˚C to +70 ˚C |
| Protection classification: | IP65 |

**Inputs / Outputs**

| | |
|---|---|
| Analog output (3): | 4 - 20 mA current loop (concentration CO, transmission, concentration $CH_4$) |
| Digital output: | 10/100 Base T Ethernet (Modbus TCP) |
| Relay output (2): | High gas, warning and fault (normally closed) |
| Analog input: | 4 - 20 mA process temperature and pressure reading |

**Ratings**

| | |
|---|---|
| Power supply: | 24VDC range 18-32 VDC |
| Power consumption : | Max. 20 W |
| 4 – 20 mA output: | 500 Ohm max. load impedance, not isolated |
| Relay output: | 1 A at 30 V DC |

**Safety**

| | |
|---|---|
| Laser class: | Class 1 M according to IEC 60825-1, eye safe |
| CE: | Certified |
| EMC: | Conformant with directive 2014/30/EU |

**Approvals**

| | |
|---|---|
| ATEX zone 1: | Ex db [op is Ga] IIC T4 Gb<br>Ex tb [op is Da] IIIC T100°C Db |
| CSA: | Class I Div. 2, Groups B, C and D, T4 |
| ATEX rating connection box: | II 2 GD Ex e IIC T5<br>II 2 D Ex e tb IIIC T85°C Db |
| Functional safety: | PENDING |

**Installation and Operation**

| | |
|---|---|
| Flange dimension: | DN50/PN10 or ANSI 2”/150 lbs (other dimensions on request) |
| Alignment tolerances: | Flanges parallel within 1.5˚ |
| Purging of windows: | Dry and oil-free pressurised air or gas, or by fan |
| Purge flow: | 10-50 l/min (application dependent) |

**Maintenance**

| | |
|---|---|
| Calibration: | Check recommended every 12 months |
| Validation: | In-situ span check with optional internal cell (application depenent) |

**Dimension and weight**

| | |
|---|---|
| Transmitter and receiver unit (TU/RU): | 215 mm (length, add 50 mm for purge unit) x 125 mm (diameter), 3,5 kg each |
| TU/RU connection box: | 260 mm x 160 mm x 90 mm, 2.5kg |

**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 $N_2$.

Special process conditions on request

** NEO Monitors reserve the right to change specifications without prior notice*

### Process temperature below 500°C

| | Min | Max | LDL/precision |
|---|---|---|---|
| CO | 0-50ppm | 0-100.000ppm*m | 0.5ppm** |
| $CH_4$ add-on | 0-1%*m | 0-60%*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 | 0-200.000ppm*m | 3ppm |
| $CH_4$ add-on | 0-5%*m | 0-100%*m | 0.05% |
| $H_2O$ 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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