

CONTINUOUS GAS ANALYZER – PROCESS
OPTIMIZATION

State of the art NOX O2 boiler exhaust
flue gas analyzer and control

Under licence from BOSCH

\$\$\$ Fuel savings and Low emissions

Air fuel ratio and emission control for any size,
any fuel fired boilers

Contact for a free assessment

System components

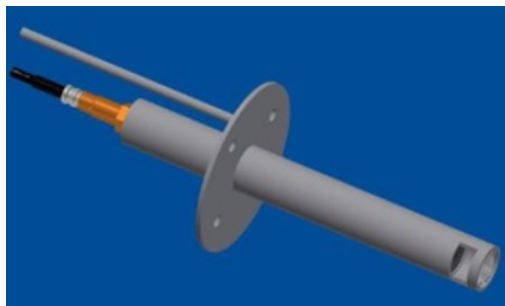
- NC2019 Controller
- NS2015 NOX O2 sensor
- Option to add CO and CO2 sensor
- GT104 Gas Guide Tube
- Interconnect cable



[NOX O2 ANALYZER NC2019]

NS2015 Smart sensor system with integrated electronic controller plays central role in reducing nitrogen oxide emissions from diesel, gasoline, gas boilers and burners.

The smart NOx O2 sensor is the first mass produced emissions sensor capable of directly measuring low-PPM concentrations of NOx emissions. Previously, emissions sensors had only been capable of measuring excess or deficient oxygen for a given air-fuel ratio. NS2015 combines NOx and O2 sensing in one module.



[GAS GUIDE TUBE GT104]



[NOX O2 SENSOR NS2015]

Smart sensor system with integrated electronic controller plays central role in reducing nitrogen oxide emissions from any solid fuel, diesel or gas boilers and burners.

The smart NOx sensor was the first volume-produced emissions sensor capable of directly measuring low-PPM concentrations of a specific regulated pollutant. Previously, emissions sensors had only been capable of measuring excess or deficient oxygen for a given air-fuel ratio.

NOx and O2 sensor can operate from distance up to 100m via RS485 communication with external booster power supply.



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Sensor Specifications

- Cable length - adaptable (up to 100m)
- Insertion length - 29 mm (+others)
- Thread - M20 x 1,5
- Exhaust gas pressure up to 1.5 bar
- Working temperature: max. 900 C
- Ambient temperature 0 - 60 C
- Calibration interval - auto

Gas Guide Tube Specifications

- Filter cleaning: The filter can be cleaned manually or automatically using pressured air, 6 Bar
- Installation side: Top side of the flue channel
- Installation method: Flange mounted directly on the surface of the flue channel wall
- Flange dimension: Outer diameter: Ø140 mm
- Fitting: 4 pcs M10 free holes Ø95 mm
- Cutout Insulation: A free hole minimum of Ø200 mm is cut in the insulation layer
- The edge is covered with a suitable material.
- Gasket: d=47 mm. D=88 mm. h = 3 mm Reinzit 34 or silicone rubber
- Guide tube: Ø 38 tube 250mm/450mm long
- Connections: M 18 x 1,5 thread for NS2015 sensor

Gas Guide Tube

Specifications contd.

- Temperatures: Flue gas temp. max . 400oC
- Ambient temp. max. 100oC
- Standard accessories: Supplied with 1 pc. Reinzit 34, gasket and 4 pcs. M10 x 20 self-tapping bolts
- Cleaning: 8 mm. tube fitting for filter cleaning with pressurized air (6 Bar 500 mS every 30 minutes)
- Materials: Stainless, acid proof steel ASIS 316

Controller Specifications

- Power supply – 110 / 230 V AC 50/60 Hz
- Power consumption - 30 VA
- Dimensions - H x W x D 244 x 159 x 65 mm
- Measuring range - 1.0 - 20.9% O2 and NOx (ppm)
- Display - Touch Screen
- Accuracy - ± 0.15%
- Ambient temperature - 60 °C
- Output signals - 2 x 0(4)-20 mA,
- Inputs - 2 x 0-10 V and standard 5 pin for NS2015 input
- Galvanic isolation - 300 V DC
- Alarms - 3 individually set levels
- Heat up time - Approx. 10 seconds
- Calibration - Atmospheric air and 1% (2%) O2 in N2 every 6 months
- Cable connections - 3+1 pcs. M16 and 1 pc. M20 cable glands
- Extra - memory card slot, RS485, CAN bus



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GT104 Flue gas Guide Tube

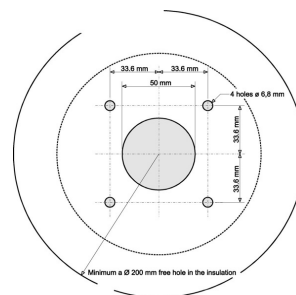
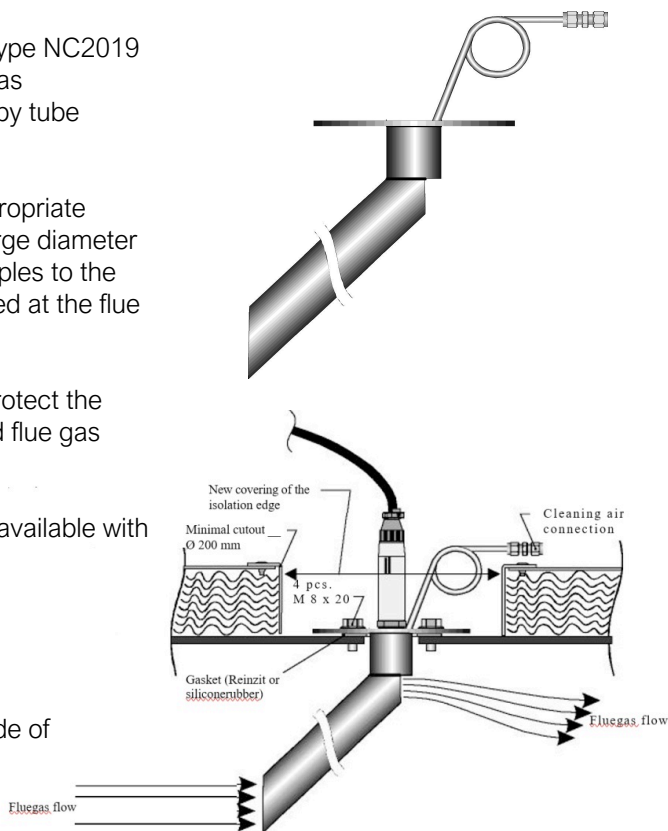
- Flue gas-guide tube is an accessory to the type NC2019 NOX and O2 analyzer to measure the flue gas concentrations Insitu (diffused flow created by tube construction dynamics).
- The flue gas-guide tube is supplied with appropriate insertion lengths for small to medium and large diameter ducts and stacks, to get representative samples to the Insitu sensor flow through cell flange mounted at the flue wall.
- Flue gas-guide tube is fitted with a filter to protect the sensor from dust ingress and corrosive acid flue gas influence.
- Auto probe, stinger purge and back flush is available with the flue gas guide tube.

Installation:

The installation is best performed on the top side of the flue gas channel. This prevents any dust deposits around the sensor.

Procedure:

- Cut a minimum 200 mm diameter hole in the insulation of the flue gas channel.
- Clean the metal surface carefully.
- Cut and drill 5 holes as illustrated.
- Mount the gasket with hardened Silicone Rubber
- Mount the flue gas-guide tube in the flange hole with the nose upstream in the gas flow.
- Mount the four self-tapping screws and tighten them carefully.
- Mount the NS2015 sensor in the center threaded flange hole.



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Specifications of Flue Gas Guide Tube:

- Installation site: Top side of a rectangular flue channel
- Installation method: Flange mounted directly on the surface of the flue-channel wall on a counter-flange welded into the plate of the flue-channel wall.
- Flange dimensions: Outer diameter: Ø 140 mm
- Fitting: 4 pcs M8 free holes in a 67,2 mm square
- Cutout: Insulation: A free hole minimum Ø 200 mm is cut in the insulation layer. The edge is covered with a suitable material.
- Holes: one Ø 50 mm center hole and 4 pcs 6,8 mm holes in a 67,2 mm square
- Gasket: d = 47 mm, D = 88 mm and h = 3 mm Reinzit 34 or silicone-rubber
- Guide tube: Ø 38 mm tube 450 mm long (tube up to 2000 mm long supplied on order).
- Dive length: 335 mm (1400 mm with a 2000 mm long tube)
- Connections: M 18 x 1,5 hole for the OS 2000 sensor. 6 mm tube fitting for automatic cleaning with pressurized air (6 Bar 500 mS every 60 minutes)
- Materials: Stainless acid proof steel AISI 316 (or Hastelloy C276 / Inconel as required)
- Temperatures: Flue-gas temperature: max. 400 °C
- Ambient temperature: max. 100 °C
- Standard accessories: Supplied with 1 pc. Reinzit 34 gasket and 4 pcs. M 8 x 20 self-tapping bolts

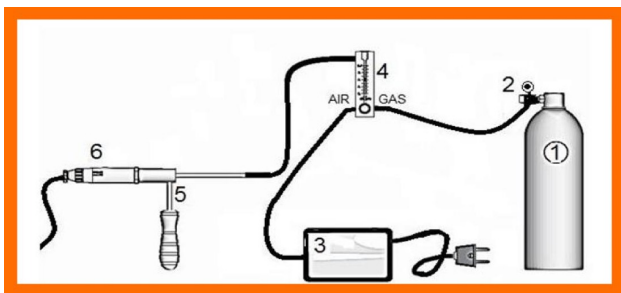
Optional configurations:

- Guide tube can be supplied with a length of up to 2000 mm (for longer versions contact Factory)
- Adapter flow through pipe available for cylindrical ducts or stacks



CONTINUOUS GAS ANALYZER – PROCESS OPTIMIZATION

- A very compact, handy and robust portable kit housed in blue thermoplastic polyethylene
- Houses NO, NO2 and O2 reference gas cylinders with all fittings and regulators for ready to use
- Typically used to verify calibrations once in three months



[Cal2 Calibration Kit]

Calibration procedure for NC2019 NOX O2 Analyzer

1. To carry out the calibration the Analyzer's top-cover must be removed
2. The sensor (p. 6) is taken out of the flue gas duct and inserted in the calibrating adaptor (p.5).
3. Add calibration gas of 1 % O2 in Nitrogen (p. 1, p. 2) and set the flow meter (p.4) to 0.6 l/min.
4. Set DISPLAY to show 1.0 % with the help of the ▲ and ▼ arrows and let the analyzer for 5 minutes. Re-adjust if necessary.
5. Add atmospheric air with an air-pump (p. 3) and adjust the flow meter (p.4) to show 0.6 liter/minute and let it run for 5 minutes.
6. Press the MENU button in the analyzer several times, until the LED shows 20.9%.
7. Set DISPLAY to show 20.9 % with the help of the ▲ and ▼ arrows and let the analyzer run for 5 minutes. Re-adjust if necessary.
8. Repeat above steps for NO and NO2 reference cylinders with N2 reference cylinder for zero calibration.
9. Place the probe back in the flue gas duct.
10. Re-install the analyzer's top cover
11. If the sensor cannot be calibrated any longer, it must be replaced. Contact Indusmation.
12. It is recommended that the calibrations are to be done every 3 months.

Technical Specifications

Power supply : 110 / 230V AC 50/60 Hz

Power consumption: approx. 5 VA

Dimensions: H x W x D =580 x 200 x 100 mm

Pressure bottle: Volume: 1 L at 250 psi (g) (standard)

Contents: 1 % O2 in Nitrogen N2

Other optional Ref Cylinders: NO, NO2 and zero grade N2

Cylinder replacement cycle (typical): 1 year

