

Ndir gas analyzer for low ranges Model ENOX DPB



- High sensibility sensor with correlation cell
- No calibration needed due to automatic zero calibration
- Double measuring path length - about 1000 mm long.
- LCD Display with all measuring and service indications
- Automatic temperature compensation
- Automatic flow control
- Fault and service for each gas
- 2 measure alarms for each gas
- 7 digital output and 6 input
- 4 analog output
- Small dimensions
- QAL 1 (EN 14181 and EN 14956) certification test finished

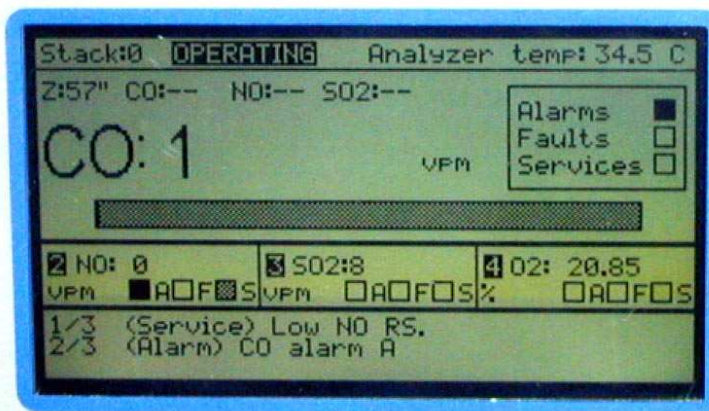
OVERVIEW

The analyzer is housed in a steel 19" rack 3 vertical unit high.

On the rear panel are located the connector for digital and analogical input and output, the filtered power connect with switch and fuses and the fittings for sample inlet and outlet.

Inside the housing is located a low flow detector and optionally a diaphragm pump and an AISI solenoid valve for automatic zero calibration and an electrochemical cell for the O₂ simultaneously measure in the sample.

In the front panel are present a 16 keys keyboard, a fast to be check and replace fine filter with the big back lighted LCD display.



TECHNICAL DESCRIPTION

The Enox multigas analyzer is an industrial photometer based on the non dispersive photometry in the infrared, for the contemporary measure of several gases.

The main feature of this enhanced analyzer model DPB (double path beam) is to have a long optical path to obtain to very high sensitivity to guarantee the declared performance even on the very low ranges requested from the lower and lower emissions limit imposed.

The mainly pulse to follow and reach this solution has been driven from the necessity to develop an NDIR NO (nitrogen oxide) analyzer with performance comparable with the expensive ones normally used where the emission limits are about some tens vpm.

The technology which has been used is based on correlation filters (GCF) and optical non dispersive absorption (DOAS). A high stability sensor, working at a very low temperature (-35 °C) and the GFC technology ensure a nearly fully immunity to cross sensitivity, high stability and sensitivity.

The measuring principle, the optical bench and the automatic and accurate compensation of the variations of room temperature enable to avoid the expensive and complicated automatic calibrations, which are always possible.

A large back lighted graphic display continuously supplies the value of the measured gases (including a large bar graph), the alarms, the service requirements, the faults, separated for each gas and the alarms from the sampling system. All alarms have the acknowledgement routine. All anomaly messages are reported on the display for the immediate knowledge of what has gone wrong. Relays contacts enable all the diagnostic to be retransmitted.

This instrument has been drawn to be user friendly and reduce as much as possible the costs of the analysis system in which it will be used. The analyzer can manage a multiplexing CEM up to four emission point and can be directly connected to a P.C. provided with a special software, named DAS-DAC, for data acquisition monitoring and reporting..

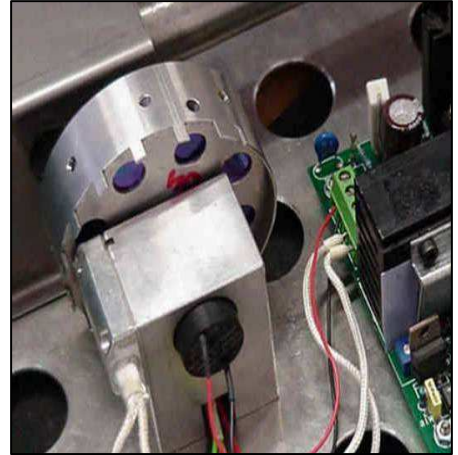
OPERATING PRINCIPLE

A wide band infrared radiation is emitted by a non metallic, high stability source.

For each measured gas this radiation is brought alternatively through an interferential filter and a filter with a glass cell (GFC) filled with high partial pressure of the gas to be analyzed.

A suitable optical system drives the IR radiation inside the analysis chamber and then to the detector which receives and amplifies alternatively the two signals: one is the measure, the other is the reference. The gas concentration is proportional to the difference of the two signals.

Gases which may have a cross sensitivity with the measured gas, generate the same variation of the measure and reference signals. Therefore the measure is not affected.



APPLICATIONS



The analyzer can be used for gas measuring in a wide range of industrial applications:

- Combustion control
- Measuring of emissions of boilers, furnaces, domestic and industrial incinerators, cement, furnaces, etc.
- Process gas
- Monitoring of emissions from engines and turbine with NOx lowering systems (SCR – DENOX – LENOX etc...)
- Analysis of gases from
- Air quality in green houses, tunnels, parking
- Analysis of protection atmosphere

TECHNICAL SPECIFICATIONS

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|------------------------|--|
| Measured components | Up to 3 gases with NDIR + oxygen Lowest ranges: 1. CO 0...10 ppm 2. CO ₂ 0...10 ppm 3. NO 0...50 ppm 4. SO ₂ 0...100 ppm 5. CH ₄ 0...50 ppm 6. O ₂ 0...25% in volume Highest ranges: 100% or saturation. |
| Measure units | vpm, mg/m ³ , mg/Nm ³ , % |
| Scope View | Integrated oscilloscope for the signal's waveforms displaying and for choosing the measures to be used for the analysis. |
| Flow control on sample | Continuous on flow lower than 0.5 l/min |
| Digital Output | N. 2 contacts settable alarms on each measure, except oxygen N. 1 contact service for each measure, except oxygen N. 1 contact fault for each measure, except oxygen, and flow fault N. 1 contact for calibration N. 2 contacts for solenoid valve, in case of external calibration (24 Vcc 50 mA) |
| Zero calibration. | Automatic with ambient air or nitrogen. Tunable frequency and duration |
| Response time (T90) | Depending on mobile averages settable |
| Mobile averages | Short tunable between 11 and 20" Long tunable between 15 and 300". Automatic switching between one and the other following the switching settable criteria. |
| Performance | 1% of full scale accuracy 1% of full scale linearity 1% of full scale repeatability |
| Ambient conditions | Temperature for measure +5...+35°C Temperature for storage, transport -10...+55°C Moisture: <90% RH not condensing |
| Panel filter | Retention: 1 micron |
| Power supply | 110-230 V AC +/-10% |
| Power consumption | About 70 VA |

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| Display | 240X128 pixel, graphic, back lighted LCD, tunable contrast via software. It shows: - Measured values with units - Bar graph for one gas - Alarms state and managing - Times to next zero and span automatic calibration if activated - Stack measured if in scanning. |
| Analogical Output | N. 4 4-20 mA linear isolated. Max load 500 ohm. |
| Serial Output | RS 232, RS 485, Modbus |
| Span Calibration | Automatic available but not necessary. Tunable frequency and duration |
| Digital Input (12 Vcc 100 mA) | N. 1 Distant calibration N. 1 sampling system fault N. 4 stack currently on measure (for scansions) N. 4 low cylinder pressure |
| Warm up time | 30' , best performance @temperature stability depending on the ambient situation |
| Protection | IP20 |
| Drift | Negligible with automatic zero calibration: <ul style="list-style-type: none"> < 2% of lowest range without automatic zero calibration Ambient temperature: negligible continuously compensated Atmospheric pressure: ambient pressure settable zero: none span about 1% of measured value for 1% of atmospheric pressure change |
| Keyboard | 16 keys membrane |
| Sample gas status | <ul style="list-style-type: none"> pressure 20...80 mbar flow 30...180 NI/h temperature +5...+50°C dew point at least 5°C under ambient temperature |
| Dimensions | 450x132x380 |
| Weight | kg. 12 |

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