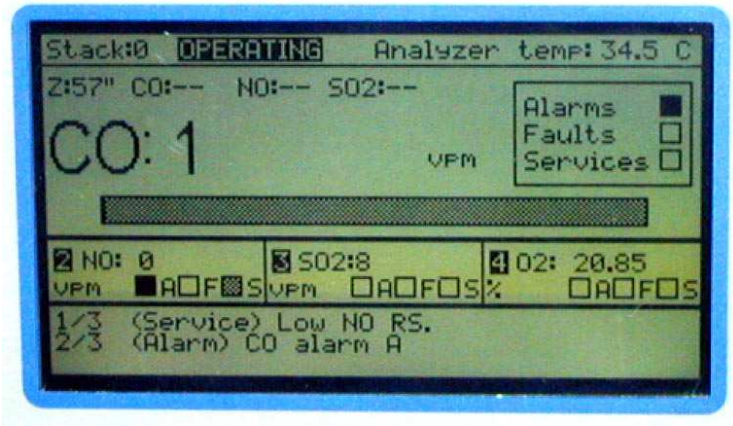
FER strumenti

MULTIGAS NDIR ANALYSER
MOD. ENOX II

- High sensibility sensor with correlation analysis
- No periodic calibration needed due to automatic zero calibration
- LCD display with all measuring and service indications
- Automatic room temperature compensation
- Automatic flow control
- Fault and service warnings for each gas
- 2 configurable measure alarms for each gas
- 7 digital outputs and 6 digital inputs
- 4 analog output
- Small dimensions
- Certification according to D.L. 152/2006 “Testo unico ambientale” released by TÜV Rheinland
- QAL 1 certification (according to EN 14181 and EN 14956) released by TÜV Rheinland

Overview



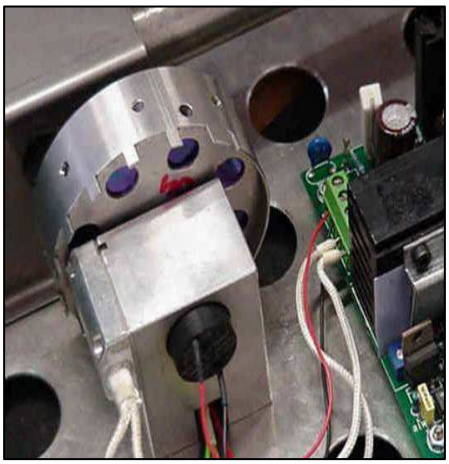
The analyzer is housed in a steel box suitable for 19" 3 vertical units high rack mounting.
On the rear panel the connector for digital and analogical input and output, the filtered power connect with switch and fuses and the fittings for sample inlet and outlet are located. Inside the housing a low 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 are located.
In the front panel a 16 keys keyboard, a fast to be check and replaced fine filter and the big back-lighted LCD display are present.

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 technology 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 anyway possible.
A large back-lighted graphic display supplies continuously 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 and are fully described on the lower part of the display. Relays contacts enable all the diagnostic to be retransmitted for remote diagnosis.
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 points and can be directly connected to a P.C. provided with a special FER Strumenti 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 the two signals alternatively: one is the measure, the other is the reference. The gas concentration to be measured is proportional to the difference of the two signals.
Gases which may have a cross sensitivity with the measured gas generate the same variation on both 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 plants, furnaces, etc.
- Process gas analysis
- Monitoring of emissions of engines and test bench
- Analysis of gases from landfills
- Air quality in green houses, tunnels, parking
- Analysis of protection atmospheres

Technical specifications

Measured components	Up to 3 gases with NDIR + O2 Lowest ranges: 1. CO 0…50 ppm 2. CO2 0…50 ppm 3. NO 0…200 ppm 4. SO2 0…400 ppm 5. CH4 0…500 ppm 6. H2O 0... 500 vpm 7. NH3 0…200 vpm 8. N2O 0…50 vpm Highest ranges: 100% or saturation.
Measure units	vpm, mg/m3, mg/Nm3, %
Scope View	Integrated oscilloscope for signals 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 contact settable alarms on each measured component, except oxygen N. 1 contact service for each measured component, except oxygen N. 1 contact fault for each measured component, except oxygen, and flow fault N. 1 contact for calibration in progress N. 2 contacts for solenoid valve, in case of external calibration (24 Vcc 50 mA)
Zero calibration	Automatic with ambient air or nitrogen. Frequency and duration are tunable
Response time (T90)	Depending on settable mobile averages
Mobile averages	Short average tunable between 11 and 20” Long average 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 operating +5…+35°C Temperature for storage, transport -10.. +60°C Moisture: <90% RH not condensing
Panel filter	Retention: 1 micron
Power supply	110-230 V AC +/-10%
Power consumption	About 70 VA

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

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