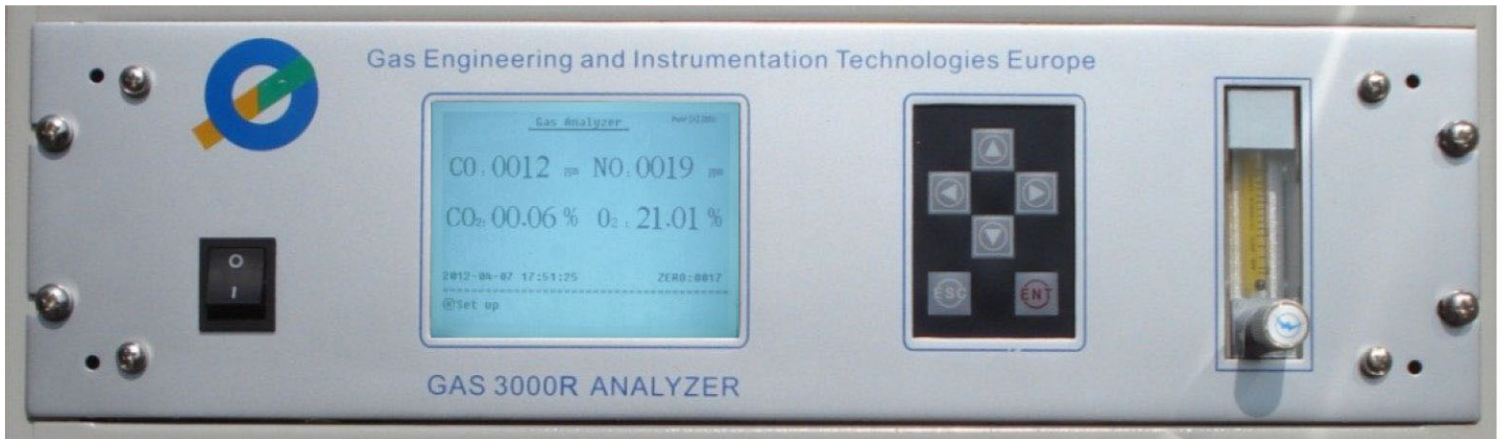


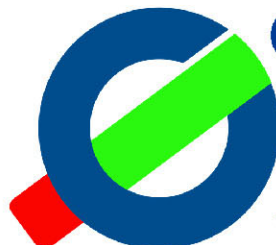
# GAS 3000R FLUE GAS NDIR analyser



<b>Gas measurement</b>	NO - SO <sub>2</sub> - CO - CO <sub>2</sub> - O <sub>2</sub> <b>(see possible configurations on page 2)</b>
<b>Gas analysis principle</b>	NO - SO <sub>2</sub> - CO - CO <sub>2</sub> Non-dispersive Infrared Absorption (NDIR micro-flow) No interference of gaseous water on NO and SO <sub>2</sub> detector O <sub>2</sub> Galvanic fuel cell (standard) Paramagnetic detector (optional with analyser model GAS 3070 R PMGO <sub>2</sub> )
<b>Gas Ranges<sup>1</sup></b>	NO From 0-200 ppm to 0-5000 ppm (NO <sub>x</sub> with optional external NO <sub>2</sub> converter) SO <sub>2</sub> From 0-200 ppm to 0-5000 ppm CO From 0-500 ppm to 0-5000 ppm <sup>2</sup> CO <sub>2</sub> From 0-5% to 0-25% O <sub>2</sub> From 0-5% to 0-25%
<b>Resolution</b>	<sup>1</sup> intermediary measuring ranges are available <sup>2</sup> CO range up to 9999 ppm or in % volume on request
<b>Repeatability</b>	1 ppm (CO, NO, SO <sub>2</sub> ) or 0.01% (CO <sub>2</sub> , O <sub>2</sub> )
<b>Linearity</b>	± 1% of Full Scale
<b>Drift</b>	< ± 2% of Full Scale for NDIR micro-flow detectors / < ± 0,3% for oxygen sensor
<b>Zero drift</b>	± 1% of Full Scale/day
<b>Response time (T<sub>D</sub> + T<sub>90</sub>)</b>	Auto-zeroing cycle after warm-up time (also programmable by software); internal air pump < 15 s
<b>Warm up time</b>	30 minutes up to full performances
<b>Display gas values</b>	4 digits, in ppm and %
<b>Calibration</b>	5 points factory calibration stored in the microprocessor of the gas analyzer 2 points (zero and span) user calibration
<b>Sample gas conditions at inlet port</b>	Flow rate Nominal 1 L/min (min. 0.7 to max. 1.2 L/min); external gas pump required Pressure 20 to 50 mbar Temperature Max. 50°C (NDIR detectors are integrated in a temperature controlled enclosure up to 55°C) Quality Free of dust, tar, water vapor and oil traces
<b>Operation conditions</b>	T <sub>AMB</sub> 0 to 50°C P <sub>AMB</sub> 86 to 108kPa R <sub>H</sub> ≤ 95%
<b>Communication interface</b>	RS232 with real time data transfer to external PC (software included)
<b>Output signals</b>	4-20 mA signal per measuring channel 2 gas alarm contacts per measuring channel
<b>Mechanical</b>	19"-3U rack, Weight : < 15kg Dimensions L487 x W457 x h 132 mm (with range from 0-1000 ppm to 0-5000 ppm) L487 x W525 x h 132 mm (with range 0-200 and 0-500 ppm)
<b>Power supply</b>	220 VAC - 50Hz
<b>Standard accessories</b>	power supply cable; Real time data transfer software
<b>Optional accessory</b>	RS232 cable with 1xDB9 connector

Non contractual pictures and specifications - subject to change without prior notification - Issue -EN15v0

**Gas Detection and Analysis**  
**Industrial Processes Gas Monitoring**  
**Landfill & Environmental Gas Monitoring**



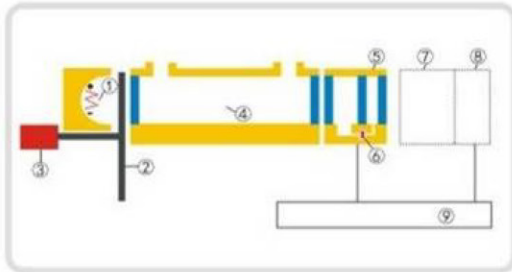
**GEIT**

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## Standard configurations of GAS 3000 R flue gas NDIR analyser

<b>GAS 3010 R</b>	1-gas analyser with <b>1 micro-flow NDIR</b> detector for CO or NO or SO <sub>2</sub> ppm range
<b>GAS 3020 R</b>	2-gas analyser with <b>1 micro-flow NDIR</b> detector for CO or NO or SO <sub>2</sub> ppm range + <b>1 ECD</b> sensor for O <sub>2</sub> % vol
<b>GAS 3021 R</b>	2-gas analyser with <b>2 micro-flow NDIR</b> detectors for [CO+NO] or [CO+SO <sub>2</sub> ] or [NO+SO <sub>2</sub> ] ppm range
<b>GAS 3030 R</b>	3-gas analyser with <b>2 micro-flow NDIR</b> detectors for [COppm + CO <sub>2</sub> % vol] + <b>1 ECD</b> sensor for O <sub>2</sub> % vol
<b>GAS 3031 R</b>	3-gas analyser with <b>2 micro-flow NDIR</b> detectors for [CO+NO] or [CO+SO <sub>2</sub> ] or [NO+SO <sub>2</sub> ] ppm range + <b>1 ECD</b> sensor for O <sub>2</sub> % vol
<b>GAS 3040 R</b>	4-gas analyser with <b>2 micro-flow NDIR</b> detectors for [CO+NO] or [CO+SO <sub>2</sub> ] or [NO+SO <sub>2</sub> ] ppm range + <b>1 micro-flow NDIR</b> detector for CO <sub>2</sub> % vol + <b>1 ECD</b> sensor for O <sub>2</sub> % vol

### NDIR micro flow detectors



- ① Infrared light source
- ② Chopper
- ③ Chopper motor
- ④ Measurement cell
- ⑤ Detector
- ⑥ Micro-flow sensor
- ⑦⑧ The 2nd measurement cell and detector
- ⑨ Signal processing and output system

The **Micro-flow bench** is a significant improvement over either the single-beam or the dual-beam/single-path NDIR analysers. A single beam is passed through a sample cell where absorption by the sample of interest occurs, and that beam is then passed through a two-chamber micro-flow detector. The detector contains the gas of interest, and some energy of the IR beam is absorbed, causing pressure increases in both chambers. That pressure differential causes gas flow between the chambers. This flow is detected by a mass-flow sensor and converted to the AC signal.

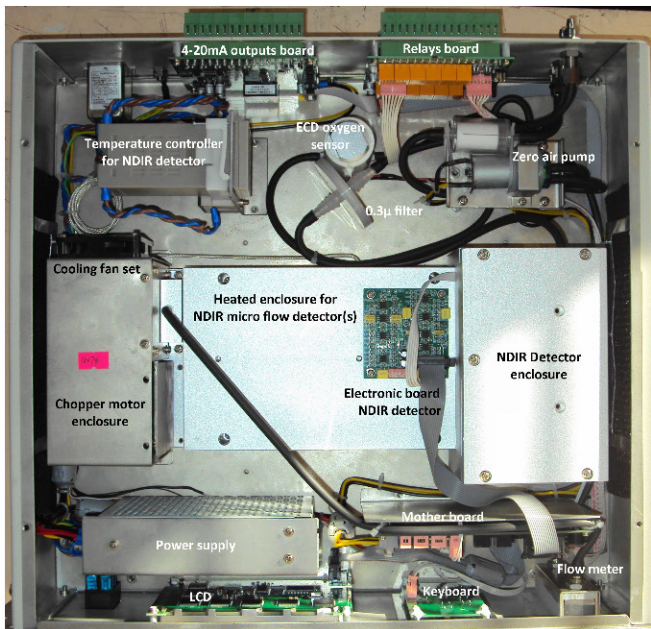
### Advantages of the infrared micro-flow technology

- Dual-chamber design with sharp filtering at the target wavelength to provide very good resolution between CO and CO<sub>2</sub>.
- Sensitivity to moisture is highly reduced for NO and SO<sub>2</sub> measures.
- Accurate ppm measurement of gases as CO, CO<sub>2</sub>, NO and SO<sub>2</sub>
- Less drift than other NDIR benches
- Improved temperature and pressure compensation
- Specifically designed to minimize the effect of interference gases: when these gases are present, pressures rising in the front and rear chamber of the detector cancel each other minimizing any response to the interference gases.

### Successfully tested for conformity to EN15267-3 (Europe) and EPA (US) Standards

Gas	Used technology	Measuring ranges	Resolution	Max. linearity error according to EN/EPA standards	Measured linearity error on 7 points	EN/EPA Standards	Reference technology
NO	NDIR micro-flow	0-2000 ppm	1 ppm	< ± 2% FS	-0,37% FS (@ 1500 ppm)	EN 14791 / EPA 7E	CLD
SO <sub>2</sub>	NDIR micro-flow	0-5000 ppm	1 ppm	< ± 2% FS	-0,92% FS (@ zero point)	EPA 6C	NDIR, UV or CLD
CO	NDIR micro-flow	0-9999 ppm	1 ppm	< ± 2% FS	-0,34% FS (@ 4000 ppm)	EN 15058 / EPA 10	NDIR
CO <sub>2</sub>	NDIR micro-flow	0-25% vol	0.01%	< ± 2% FS	-0,57% FS (@ 10% vol)	EPA 3A	NDIR
O <sub>2</sub>	Galvanic fuel cell <sup>(1)</sup>	0-25% vol	0.01%	< ± 0.3% (EN) < ± 2% FS (EPA)	0,21% vol (@ 17,50% vol)	EN 14789	PMG

<sup>(1)</sup> The standard configuration for oxygen measurement implements a galvanic fuel cell offering the following advantages: compact, short T90 (< 6 sec), low cost compared to paramagnetic detector, high precision and resolution, no maintenance, long life expectancy (> 3 years), immunity to vibrations and virtually no interferences in presence of other gas compounds possibly present in flue gases (CO, CO<sub>2</sub>, SO<sub>2</sub>, NOx, C<sub>3</sub>H<sub>8</sub>, CH<sub>4</sub>, H<sub>2</sub>S, H<sub>2</sub>, ...) A Paramagnetic detector (PMG) for oxygen measure is available in option as a single analyser model GAS 3070 R PMG<sub>2</sub>



Internal view analyser

**G.E.I.T. EUROPE** is also specialized in the delivery of customized flue gas analysis systems with gas sampling probe and heated line, 1800 mm height industrial cabinet including dedicated gas sampling conditioning equipment, PLC for system operation control and communication with an external server or PC with our SCADA CEM supervision software.

