

GreenLine 2000

Compact Industrial Combustion Analyser



FLUE GAS ANALYSERS

- ▶ **Combustion Gas Analyser up to 2 Gases**
- ▶ **NO/NO_x Emission Analyser**
- ▶ **Draft & Differential Pressure Meter**
- ▶ **Differential Thermometer**
- ▶ **Ambient CO Monitor**
- ▶ **Gas Leak Detector**
- ▶ **Ionization Flame Tester**

Built-in Impact Printer

Built-in Gas Sniffer

Rechargeable Battery

Easy to Use, Text and Keyboard in Any Language

Stores up to 250 Samples

Upgradable using Flash Memory



O₂

CO₂

CO

NO_x

Efficiency

Excess air

Differential pressure

Tair Tgas

Ambient CO monitor

Gas leak detector



Designed to meet BS7927, TUV, ISO, Gastec QA Criteria, GOST, Qualigaz, and UNI 10389

Introduction

The handheld **GreenLine 2000** is the most comprehensive gas analyser available for:

- **boiler, burner, engine and furnace tuning and maintenance;**
- **draft, gauge and differential pressure measurements;**
- **search for presence and location of gas leaks;**
- **operator safety with ambient CO and O₂ continuous monitoring.**

■ Easy replaceable gas sensors

GreenLine 2000 uses long life low maintenance sensors. Alarm levels with audible buzzer on gases measurement.

■ Standard Report of Calibration

Each instrument is factory calibrated and certified against Eurotron Standard to ensure traceability, and shipped with a Report of Calibration.

■ Rechargeable battery operations

Ni-MH rechargeable batteries provide longer field use. Flue gas analyser and internal printer are powered by the same internal batteries.

■ Keyboard & Display

Text, menu, and keyboard available in most common languages (not icons) for simple and intuitive operations. Engineering units are selectable by keyboard for US and European standard. The large multi-parameter LCD display is equipped with backlight.

■ Multi Fuel selection

GreenLine 2000 provides up to 10 fuels for calculating combustion values. Most used fuels are pre-loaded from factory. Other fuels can be added using GasConfig PC software.

■ Built-in impact printer

The instrument is available with an optional built-in rugged impact printer. It uses a low cost common roll of paper. Certainly more readable, long time and heat resistant than the thermal printout on chemical paper.

■ External cordless HP printer

You can also print using built-in infrared interface for HP 82240B.

■ Pressure/Draft input

Differential pressure input to measure draft, gas pipework leak with pressure decay programme, gas pressure, pressure in combustion chamber, and P on filters and fan.

■ Smoke index

Smoke index measurement is performed by using the optional external hand pump. The results can be stored in the internal memory and printed on the report.

■ Gas sampling probe

Flue gas sampling probes, with different lengths and shapes, are available to match each specific requirement. The sampling probe is connected to the instrument with a single or dual hose through a water trap and a suspended particle line filter.

■ Proprietary design trap

Patent pending to inhibit water into the instrument. External, to prevent risk of instrument damage. Large water tank capacity for condensation boiler. Small rubber cup for easy water purge. Long life paper filter.

■ Combustion air temperature sensor

A remote Pt100 probe is available for remote combustion air temperature measurement. This probe is strongly recommended mainly in forced air boiler to obtain an accurate efficiency measurement.

■ Ambient monitoring

The instrument can operate in two ways: A procedure can be selected to monitor the CO and the O₂ in ambient air using the internal EC sensors. An internal program allows CO max measurement in ambient for spheric boiler check.

An external optional probe is also available for continuous surveillance of the ambient and operator safety. Both acoustic and visual alarm are available.

■ Gas leak sniffer

The instrument can operate in two ways: An **external** optional probe is available to locate the position of a gas leak. This probe has a flexible stainless steel shaft to reach difficult locations.

An **internal** optional sensor can be installed inside the analyser to locate the position of a gas leak into the pipe network. The internal pump draws the air from ambient and makes the instrument more sensitive to microleaks.

■ Ionization flame tester

Checks the ionization current in flame control sensor.

■ Flash memory

The flash memory allows the instrument to be configured by updating the GreenLine 2000 firmware for any future legislation requirement or product performance upgrading.

■ Industrial probe & Compact cooler unit

A special sampling probe is available for industrial high temperature applications. This probe can be used connected to an external gas conditioning unit (see related bulletins). This compact unit cools and dries the gas sample.

■ Report of Calibration

Each instrument is factory calibrated and certified against Eurotron GreenLine Standard, that is periodically certified by Internationally recognized Laboratory to ensure traceability, and shipped with a Report of Calibration stating the nominal and actual values, the acceptable error and the deviation error. Report of Calibration stating the nominal and actual values, the acceptable error and the deviation error.

■ Quality System

Research, development, production, inspection and certification activities are defined by methods and procedures of the Eurotron GreenLine Quality System inspected for compliance and certified ISO9001 by GASTEC.

Specifications

Type: palm-top combustion gas analyser with 1 or 2 gas sensors.

Calibration: automatic calibration procedure at instrument switch-On.

Self-diagnosis: Sensors efficiency test with display diagnostic messages.

Fuel types: Up to 10 selectable from keyboard.

Power supply: High capacity Ni-MH rechargeable battery pack / external battery charger.

Charging time: 8h at 90% with instrument Off.

Battery life: 6 hours (typical) continuous use (without printing and backlight).

Memory: up to 250 full analysis data structured by boilers (Tags).

Printer: Internal impact type 24 columns with 58 mm paper roll (8 meters long).

Printer power supply: from the analyser battery pack.

Print autonomy: up to 40 reports with full battery (typical).

Service and user information: 3 programmable lines.

Printed report header: 4 programmable lines.

Display: 40x58 mm alpha-numeric LCD with backlight device.

Gas Pump: 1.4 l/m @ 100 mbar

Flue gas probes: stainless steel shaft with incorporated temperature sensor.

Serial communication: RS232 serial interface.

Infrared port: compatible with HP82240B cordless printer.

Operating temperature: from -5°C to +45°C

Storage temperature: from -20°C to +60°C (3 months maximum at temperatures exceeding the operational limits).

Dimensions and Weight: 105x75x290 mm - 0.9 kg with battery and printer

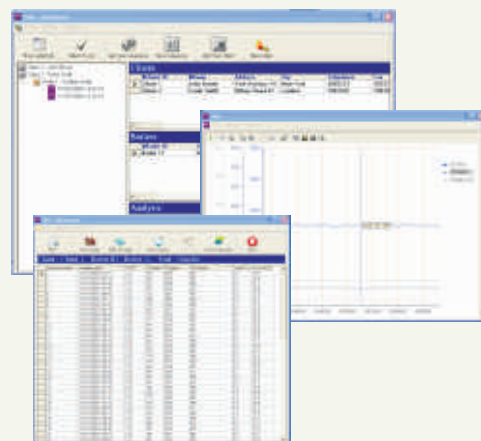
Parameter	Sensor type	Range	Resolution	Accuracy
O ₂	Electrochemical	0 - 25%	0.1%	±0.2% vol.
CO	Electrochemical	0 - 8000ppm	1ppm	±10ppm <300ppm ±4%rdg up to 2000ppm ±10%rdg >2000ppm
H ₂ <2000ppm comp.				
NO	Electrochemical	0 - 4000ppm	1ppm	±5ppm <125ppm ±4%rdg up to 4000ppm
NO _x	Calculated	0 - 5000ppm		
CO ₂	Calculated	0 - 99.9%	0.1%	
Tair	Pt100	-10.0 - 99.9°C	0.1°C	±0.5°C
Tgas	TC K	0 - 600.0°C	0.1°C	±1°C
T	Calculated	0 - 999.9°C	0.1°C	
Pressure/Draft	Piezo	±100.00 hPa	1Pa	±3Pa <300Pa ±1%rdg >300Pa
Excess air	Calculated	1.00 - infinity	0.01	
Efficiency	Calculated	1 - 99.9%	0.1%	
Smoke index	Paper filter method	0 - 9 Bacharach		

- All emissions measurements are available also with a programmable O₂ reference value.
- NO_x concentration can be shown in terms of stack equivalent NO_x.
- Accuracy limits are stated as % of reading. Additional ±1 digit error has to be considered.
- The pressure accuracy shown is valid only after zero procedure.
- Measuring readings can be directly converted from ppm to mg/Nm³, from hPa to mbar, mmH₂O, inH₂O and from °C to °F

DBGas 2004 - Gas Analysis Database Manager

GreenLine 2000 can store 250 readings structured by boilers. Using the optional **DBGas2004 Windows™** software package, you can organize and manage your inspection and maintenance activity. Select your boiler details from PC and download to your GreenLine.










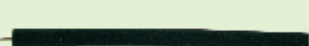


DBGas 2004 software package includes **GasConfig Windows™** software. With this software you can modify the configuration of the instrument.





Accessories

Ordering Code

	<p>BB880028 ABS rigid carrying case</p> <p>BB880033 Aluminum carrying case</p> <p>BB880043 Compact rigid carrying case with shoulder strap. GreenLine 2000, probes, and accessories need 1/3 of the classic carrying case space.</p>
	<p>BB610046 Ø8 mm - 300mm (TGD - Temperature, Gas, Draft) sampling probe with 500°C maximum operating temperature.</p>
	<p>EE300088 Single hose burner pressure probe</p>
	<p>F7828000 Manual pump for smoke index measurements</p>
	<p>BB830018 Pt100 remote air sensor with cone</p>
	<p>BB290031 DC Auto Adapter</p>
	<p>BB830009 Ambient CO probe</p>
	<p>BB830010 Gas sniffer probe</p>
	<p>BB830019 Ionization current probe</p>
	<p>F2139000 Pipe Velcro TC K-Type</p>
	<p>F2132100 130mm air TC K-Type</p>
	<p>F2137100 130mm Contact TC K-Type</p>

cat. 7816 - A - B - C - D - E - F - G

The standard package includes:
GreenLine 2000 base unit with one sensor, battery charger, infrared printer port, instruction manual, Eurotron calibration certificate.

Table A	Sensor n.1
0	none
1	O ₂ (0-25%)
Table B	Sensor n.2
0	none
2H	CO (0-8000 ppm)
4	NO (0-4000 ppm) / NO _x
Table C	Sample probes (including water trap and line filter)
0	none
2	300mm flue gas probe + draft (dual hose) BB610046
5D	750mm flue gas probe + draft (dual hose) BB610080
5X	750mm flue gas probe (single hose) BB610081 (max. 1000°C)
8	750mm flue gas probe (single hose) BB610082 (max. 1200°C)
F	Sintered filter mounted on top (max. 800°C)
Table D	Options
0	none
1H	Draft/differential pressure input with n.2 EE300088 hoses
2	Internal sensor for gas leak detector
3	External probe for gas leak detector
4	External probe for CO operator safety
6	Software GasConfig + DBGas2004 + RS232 cable
7	External probe for boiler ionization current
8	Remote combustion air temperature sensor with 2m cable and positioning cone
P	Built-in impact printer
Table E	Mains adapter / charger
1	115V ± 10% 50/60Hz - USA plug
2	230V ± 10% 50/60Hz - Schuko plug
3	230V ± 10% 50/60Hz - UK plug
4	230V ± 10% 50/60Hz - European plug
5	100V ± 10% 50/60Hz - USA/Japan plug
Table F	Accessories
0	None
1	Magnetic plate
2	Rubber protective holster with magnetic support
3	Vinyl case with shoulder strap
4	ABS carrying case
5	Aluminum carrying case
6	Manual pump for smoke index measurement with filters and comparison table
7	DC Auto battery charger
Table G	Calibration Certificate
1	Eurotron report

Consumable parts

EE650011	Filter paper set for smoke index measurements (40 pcs)
EE340006	Paper roll
EE490002	Printer ribbon cartridge
EE650074	Spare line filter cartridge