



GreenLine 8000
EcoLine 6000

Specifications

Main Control Unit

Models:
EcoLine 6000 - up to 6 sensors flue gas analyser
GreenLine 8000 - up to 9 sensors flue gas analyser
Zero Calibration: automatic calibration procedure at instrument power-on. Fresh air inlet with electrovalve and separate pneumatic circuit
Self-Diagnosis: sensor efficiency test with diagnostic page
Gas Level Alarms: programmable from PC with GasConfig software
Sampling Pump: 2.2 l/min - -220mbar with electronic flow controller
Battery Life: 10 hours continuous operation (without heating probe)
Power Supply: 110/230 Vac 50/60Hz / 7.2Ah capacity rechargeable battery.
Internal Test Memory: up to 9000 (1000 on GreenLine 6000) complete analysis data points structured by Tags
Smoke Measurement: Using the heated probe or the optional external manual pump. Index memory store and printout capability as standard
Optional Probes: ambient CO, explosive gas leakage sniffer, T+RH% probe
Working Temperature: from -5°C to +45 °C (up to 50°C for short time)
Storage Temperature: from -20 to +60°C (3 months max. at temperatures exceeding the operational limits)
Carrying Case: Aluminium
Dimensions: 455 x 205 x 365 mm
Weight: 10 kg

Hand-Held Remote Control Unit

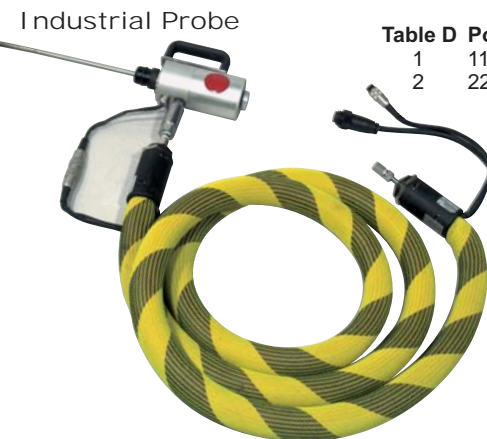
Standard MCU-RCU Connection Cable: standard 5 m. (custom on request)
Integrated Printer: impact type 24 columns with 58 mm large and 18 meters long paper roll
Printer Power Supply: using the controller battery pack
Print Autonomy: up to 40 reports.
Fuel Types: Up to 10 totally programmable.
Service and User Data: 3 programmable lines for each Tag using a PC and DBGas Software.
Report Header: 4 rows x 16 characters programmable from keyboard
Display: large (40 x 56 mm) graphic LCD display with automatic backlight device. Bar graph capability.
Serial Interface: bi-directional standard RS422.
Dimensions: 115 x 90 x 330 mm
Weight: 0.9 kg



Remote Control Unit



Probe Vinyl Case



Industrial Probe

Industrial Probe

The internal gas conditioning system with cooler (available on GreenLine 8000 as a standard) may not be enough if you need long term measurement of NO₂ and SO₂. The drop of temperature between the stack and the ambient could generate water condensation along the hose, diluting NO₂ & SO₂ gases, resulting in incorrect readings and measurements.
To prevent the water condensation, Eurotron provides an industrial heated probe and hose. The hose temperature is controlled from the GreenLine base unit in order to maintain the correct gas temperature above the Dew Point. Industrial probe & hose without heating can be used for long term analysis if the temperature flue gas is high.

Ordering Code 7852 - A - B - C - D

Table A Probe Handle

- 1 Basic probe handle with pneumatic connector
- 2 Heated probe handle with pneumatic connector

Table B Probe Tip

- 2 φ8 / 750 mm tip 800°C
- 3 φ8 / 1500 mm tip 800°C
- 6 φ8 / 1000 mm tip 1200°C
- F Sintered filter on top of the probe

Table C Hose

- 1 2 mt long NOT heated hose
- 4 2 mt long Heated hose
- 5 3 mt long Heated hose
- 9 Heated hose (special length)

Table D Power Supply

- 1 110 V 50/60 Hz
- 2 220 V 50/60 Hz

Specifications may change without notice.



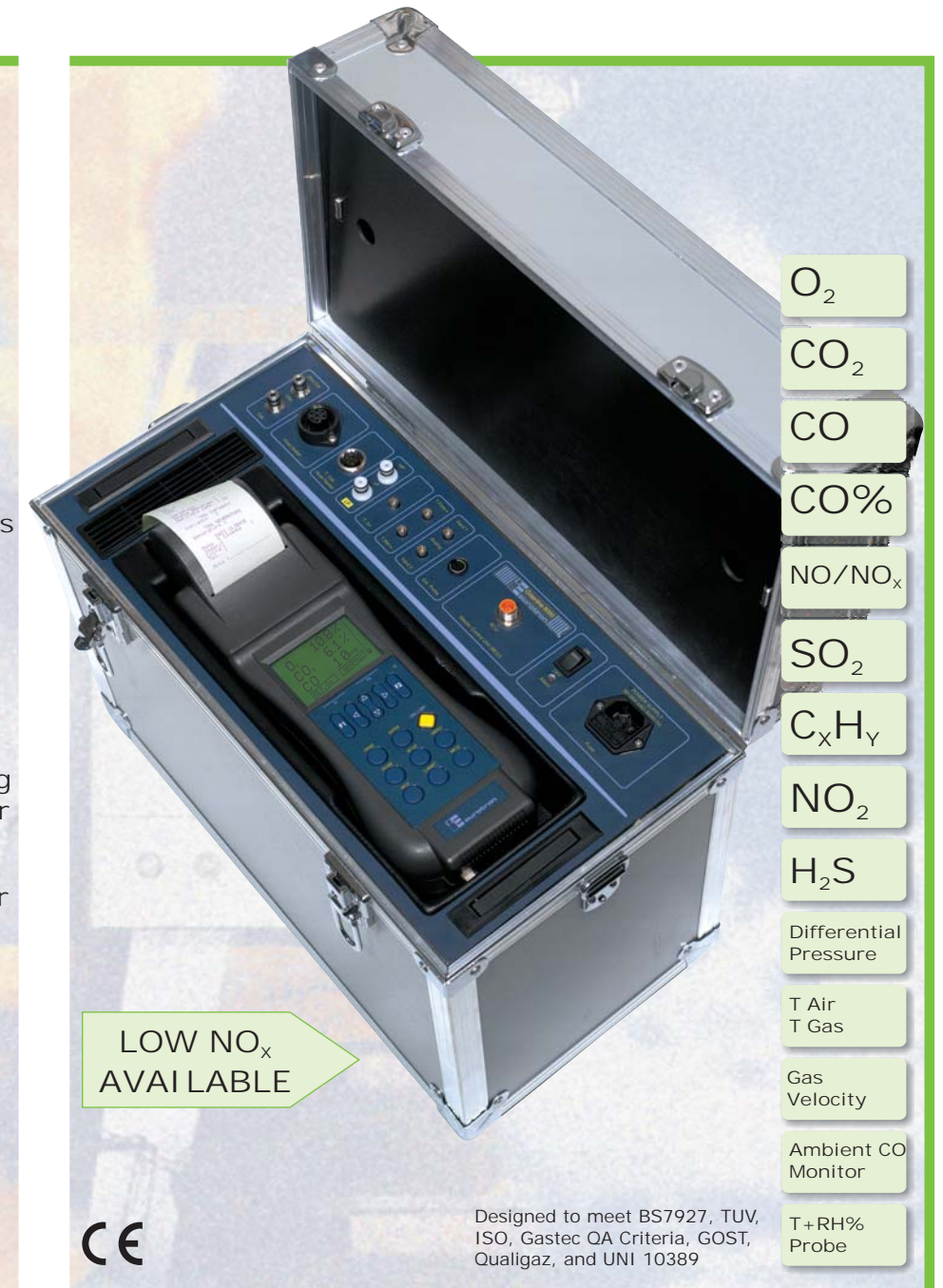
- ▶ Up to 9 Sensors (Temperature Compensated)
- ▶ Remote Control Unit with Built-In Printer
- ▶ Full Compliance to EPA Protocol
- ▶ CO, CO₂ and C_xH_y Built-In NDIR Sensors
- ▶ Built-In Peltier Gas Cooler
- ▶ CO Sensor Automatic Protection with Purge Pump
- ▶ Long Term Monitoring with Automatic Water Condensation Drain
- ▶ Electronic Flow-Meter
- ▶ Aux 4-20mA Inputs
- ▶ Graphic Display with Menu
- ▶ Easy Maintenance
- ▶ 9000 Full Analysis Memory, RS232, & Windows™ Software

Bulletin 06-47.4.E

EcoLine 6000 GreenLine 8000

Portable Industrial Combustion & Emissions Analysers

**The Most Powerful and Advanced Instruments with
Built-In Gas Cooler and Heater for Sampling Hose & Probe**



- O₂
- CO₂
- CO
- CO%
- NO/NO_x
- SO₂
- C_xH_y
- NO₂
- H₂S
- Differential Pressure
- T Air
T Gas
- Gas Velocity
- Ambient CO Monitor
- T+RH% Probe

LOW NO_x
AVAILABLE



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

All descriptions are related to a fully optioned instrument. See last page for the different configurations.





Highlights

Gas Analysis Main Control Unit (MCU) and Remote Control Unit (RCU).

Hand-Held Remote Control Unit with Reporting Printout Capability, Test Memory and PC Communication.

Measurement Capability for O₂, CO, CO₂, NO, NO₂, SO₂, C_xH_y with Electrochemical Sensors.

Full Compliance to EPA (Environmental Protection Agency) Protocols CTM-030 and CTM-034.

The Most Advanced Portable Emissions Analysers with Stack Velocity Measurement.

GreenLine 8000 only:

Optional Industrial Sampling Probe Including Heated Probe Head and Heated Hose.

Built-In Peltier Gas Cooler and Automatic Water Condensation Drain.

Direct Measurements of CO, CO₂, C_xH_y with Internal NDIR Sensors.

Eurotron portable flue gas analysers EcoLine 6000 & GreenLine 8000 represent the most powerful and advanced instruments on the market. The two units are designed using the new concept of split architecture. The gas analyser consists of two sections: the gas analysis Main Control Unit (MCU) and the Remote Control Unit (RCU). The communication between the two sections use the industrial standard RS422.



The MCU is a true, portable, complete flue gas laboratory. The unit includes: aspiration pump, filters, condensation drain with peristaltic pump, gas sensors and the electronics. It can be positioned near the stack sampling point and it can set and work also as an independent instrument (black-box). The GreenLine 8000 model (only) additional includes: an internal Peltier gas cooler, NDIR sensors, and heated industrial gas probe connection capability. The operator can easily survey the overall operation at a distance from the unit using either the Remote Control Unit or Laptop or PC. The RCU is used to display the measured data, store the analysis in the unit's memory, printout any data, and to transfer data to your PC. DBGas 2004 software package allows the operator to easily manage all of the data & analysis information.

Portability and Operative Flexibility

The "Clean Air Act", originated in the USA in 1970. It was the first federal law that regulates air emissions from certain areas, either by stationary or mobile sources. The EPA (Environmental Protection Agency) and other Federal or State Agencies verify affordable and reasonable methods of achieving environmental compliance under the set emissions limits.

A number of "Protocols" have been created to verify industrial emissions using portable gas analysers to ensure air quality compliance. These "Protocols" are the set guidelines that prescribe the technical performances of the electrochemical sensor-based analysers to be used, as well as calibration and testing procedures which should be followed to completely assure correct emissions data.

The instrument shows technical specifications and performance in compliance with the necessary protocols and therefore can be used in periodic testing in many different countries, states and regions. The Eurotron's analysers are designed to meet the specific requirements, mainly related to gas sample conditioning, flow, and temperature control.

Other operative modes allow the user to test, view, store, and print draft measurement, differential pressure, data logging, various other performance tests, and PC interface.

The built-in impact-type printer uses common, inexpensive, non-thermal, standard paper rolls. This allows the user to generate a full, comprehensive, & LONG LASTING data report.

The internal memory can store up to 9000 COMPLETE analysis data points (1000 data points on the EcoLine 6000).

The digital interface (RS232) allows for communication between the instrument and your Laptop or PC, for instrument configurations, data transferring, and data logging.

Ordering Code

EcoLine 6000

7846 -A-B-C-D-E-F-L-M-N-P

EcoLine 6000 basic configuration includes: O₂ and CO sensors, internal 1000 analysis data memory, Remote Control Unit, built-in impact printer, GasConfig PC software, RS232 adapter, Report of Calibration and instruction manual.

GreenLine 8000

7848 -A-B-C-D-E-F-G-H-L-M-N-P

GreenLine 8000 basic configuration includes: O₂ and CO sensors, internal gas cooler, internal 9000 analysis data memory, Remote Control Unit, built-in impact printer, DBGas 2004 and GasConfig PC software, RS232 adapter, Report of Calibration and instruction manual.

Table A Sensor NO.1
1 O₂ (0-25%)

Table B Sensor NO.2

2 CO (0-8000 ppm)
2X CO (0-20000 ppm)
2LO CO (0-500 ppm - 0.1ppm)

Table C Sensor NO.3

0 None
4 NO & NOx (0-4000 ppm)
4LO NO & NOx (0-500 ppm - 0.1ppm)

Table D Sensor NO.4

0 None
5 NO₂ (0-1000 ppm)
5LO NO₂ (0-500 ppm - 0.1ppm)
8 C_xH_y (0-5%)

Table E Sensor NO.5

0 None
6 SO₂ (0-4000 ppm)
8 C_xH_y (0-5%)

Table F Sensor NO.6

0 None
7 CO% (0-10%)
8 C_xH_y (0-5%)
9 H₂S (0-1000ppm)

Table G Sensor NO.7 (TABLE NOT AVAILABLE ON ECOLINE 6000)

0 None
A CO₂ (0-20%) NDIR

Table H Sensor NO.8 & NO.9 (TABLE NOT AVAILABLE ON ECOLINE 6000)

0 None
B C_xH_y (0-2000ppm) NDIR
E CO (0-15%) NDIR
F CO (0-2500ppm) NDIR

Table L Gas Sampling Probe

0 None (see industrial probe on next page)
1 φ8mm/300mm gas probe + draft (dual hose) BB610058
2 φ8mm/750mm gas probe or draft (single hose) BB610064 w/ removable shaft
3 φ8mm/1500mm gas probe or draft (single hose) Bb610065 w/ removable shaft
2P φ10mm/750mm gas probe +draft (dual hose) Bb610066 w/ removable shaft
3P φ10mm/1500mm gas probe +draft (dual hose) Bb610067 w/ removable shaft
2SP φ10mm/750mm heated* gas probe+draft (dual hose) Bb610068 w/ remov. shaft
3SP φ10mm/1500mm heated* gas probe+draft (dual hose) Bb610069 w/ remov. shaft
F Sintered filter mounted on top

Table M Line Charger Plug

1 115 Vac with USA plug
2 230 Vac with Schuko plug
3 230 Vac with UK plug
4 230 Vac with European plug
5 100 Vac with USA/Japan plug

Table N Accessories

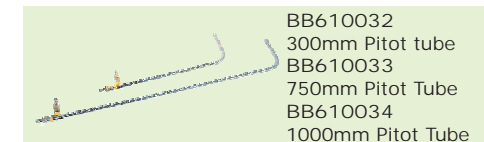
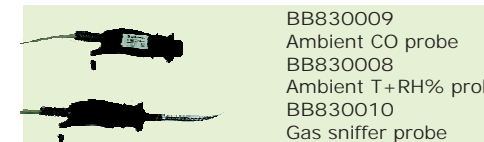
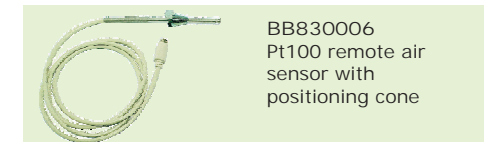
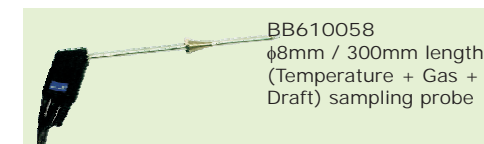
0 None
2 300mm Pitot tube (BB610032)
3 750mm Pitot tube (BB610033)
4 Remote combustion air temperature probe (L=2m)
7 External probe for ambient temperature and relative humidity
8 External probe for CO operator safety
9 External probe for gas leak detector

Table P Report of Calibration

1 Eurotron report

CONSUMABLE PARTS

EE340005	Paper Roll
EE490002	Printer Ribbon
EE650072	Autozero \ Line Filter
EE650073	Interferential Filter
EE650091	Coalescing Filter
EE650011	40 pcs. Filters for Smoke Index Measurements



* Heated gas probe used for smoke index measurement.



GreenLine 8000
EcoLine 6000



Split Architecture
A New Concept in Measurement
and Analysis Systems

Specifications

Ambient CO Probe

An optional probe to monitor ambient CO concentration to keep the operator in a safe environment. The instrument gives acoustic and visual alarms if the set limits (according to the OSHA recommendation) are exceeded.

Gas Sniffer Probe

To detect and locate the precise position of a gas leak in a pipe network.

Smoke Index

Smoke index measurement can be obtained using a special heated probe, supplied on request, and through a dedicated internal procedure that computes the required volume of gas sample flowing into the specific filter. The results can be obtained by comparison with the Smoke Index Table and memory stored to be printed in the report.

Gas Velocity

An internal procedure allows gas velocity measurements using the differential pressure inlet combined with a pitot tube.

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.

Parameter	Sensor	Range	Res.	Accuracy
O ₂	Electrochemical	0 - 25%	0.1%	±0.1% vol
CO	Electrochemical	0 - 8000 ppm	1 ppm	<300 ppm=±10 ppm up to 2000 ppm=±4% >2000 ppm=±10%
CO	Electrochemical	0 - 20000 ppm	1 ppm	<300 ppm=±10 ppm up to 2000 ppm=±4% >2000 ppm=±10%
CO	NDIR	0-2500ppm	1ppm	±50ppm. or ±2% F.S.
CO	NDIR	0-15.000%	0.001%	<0.66% = ±0.02% Up to 15% = ±3%
LOW CO	Electrochemical	0 - 500 ppm	0.1 ppm	<40 ppm=±2 ppm up to 500 ppm=±5%
CO%	Electrochemical	10%	0,01%	±100 ppm <0,02% ±5% rdg or 10%
NO	Electrochemical	0 - 4000 ppm	1 ppm	<100 ppm=±5 ppm up to 3000 ppm=±4%
LOW NO	Electrochemical	0 - 500 ppm	0.1 ppm	<40 ppm=±2 ppm up to 500 ppm=±5%
NO ₂	Electrochemical	0 - 1000 ppm	1 ppm	<100 ppm=±5 ppm up to 800 ppm=±4%
LOW NO ₂	Electrochemical	0 - 100 ppm	0.1 ppm	<40 ppm=±2 ppm up to 500 ppm=±5%
NO _x	Calculated *	0 - 4000 ppm	1 ppm	
SO ₂	Electrochemical	0 - 4000 ppm	1 ppm	<100 ppm=±5 ppm up to 2000 ppm=±4%
CO ₂	Calculated	0 - 99.9%	0.1%	
CO ₂	NDIR	0 - 40.00%	0.01%	<10% = ±0.3% up to 40% = ±3%
C _x H _y	Pellistor	0 - 5%	0.01%	±5% F.S.
C _x H _y	NDIR	0 - 50000ppm	1 ppm	<2500ppm = ±100ppm Up to 50000 = ±4%
H ₂ S	Electrochemical	0 - 1000 ppm	1 ppm	±5 ppm <100 ppm ±4% rdg or 1000 ppm
T Air	Pt100	-10 - 99.9°C	0.1°C	±(0.2% rdg + 0.15°C)
T Gas	Tc K	0 - 1200°C	0.1°C	±(0.3% rdg + 0.3°C)
ΔT	Calculated	0 - 1200°C	0.1°C	
T _{flow} / T _{return}	Pt100	-10 - 99.9°C	0.1°C	±(0.2% rdg + 0.15°C)
Pressure/Draft	Bridge	±100.00hPa	0.01 hPa	±3Pa < 300Pa ±1% rdg. >300Pa
Excess Air	Calculated	1.00 - infinity	0.01	
Gas Velocity	Calculated	0 - 99.9 m/s	0.1 m/s	
Efficiency	Calculated	1 - 99.9%	0.1%	
Smoke Index		0 - 9		
Auxiliary Inputs	2 channels	4-20 mA	0.01 mA	±1% F.S.

*Relative Accuracy limits are stated as absolute or % of reading with reference to the ambient temperature range from -5°C to 40°C. Additional ± 1 digit error has to be considered.
Measuring reading can be directly converted from ppm to mg/Nm³ mg/kWh, from hPa to mmHg, mbar, inHg and from °C to °F.
The pressure relative accuracy shown is valid only after the autozero procedure.*

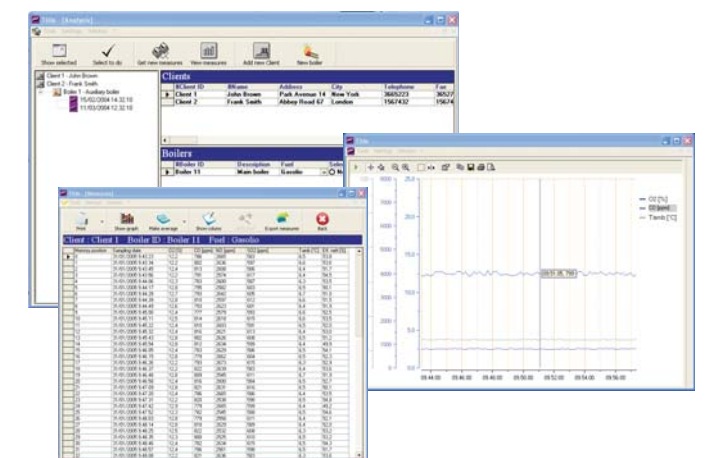
	EcoLine 6000	GreenLine 8000
Cooler unit	—	Standard
Industrial probe	—	Optional
NDIR sensors	—	Optional
Internal Memory	1000	9000
Sensors	Up to 6	Up to 9
Built-in Impact Printer	Standard	Standard



DBGas 2004 Gas Analysis Data Manager

- Easy Programming & Data Transferring
- Plant, Customer, Boiler, Generator Registration & Management
- Compatible with Windows 98/2000/XP
- Easy to use
- The Ideal Tool to Manage Data Quickly & Efficiently
- Graph & Report ANY Stored data
- Logman Module for On-Line Data Logging for Long-Term Data Records Driven by a PC with a Large Display & Bar Graph

The DBGas 2004 software is designed to allow complete & efficient data management of all measurements, activities, inspections, and analysis completed by Eurotron' gas analyzers. It allows the user to maintain an UNLIMITED customer base filed on their PC or Laptop, which contain ALL customer, plant & boiler information. After any completed analysis, the user can transfer the stored data from their analyzer to their PC, which are automatically assigned and stored for quick & easy data recall. The DBGas 2004 software package includes the GasConfig Windows program, which allows you to easily modify the configuration, reports, fuels, and more, on the instrument itself.





**GreenLine 8000
EcoLine 6000**



**A Powerful Test Engine with
Full Compliance to EPA's
and Other "Protocols"**

Sensor Technology
Eurotron flue gas analyzers use long life temperature compensated EC (electrochemical) sensors. CO sensor is protected against saturation by an electrovalve and clean air purge pump.

NDIR Sensor
The GreenLine 8000 only uses a non-dispersive Infrared (NDIR) dual wavelength ratioing to get long term stable response sensitivity. Compensation of ambient temperature and pressure is automatic.

**Easy Access
Sensors and Filters**
These analysers are easy to maintain. A quick access compartment allows the operator to easily view and change ALL of the sensors, filters, and pneumatic parts. This allows the user the ability to effortlessly change the unit's sensors or filters in the field if necessary.

Calibration
A built-in procedure allows easy and automatic span sensor calibration using standard gas cylinder. Periodic zero calibration doesn't require to remove probe from stack; an internal electrovalve switch to an auxiliary pneumatic circuit for fresh air. A pneumatic connector for remote zero air is also available.

Electronic Flow Meter
An automatic built-in system measures a flow of sampling gas and adjusts the pump to obtain a constant sampling volume. A visual and acoustic alarm indicate a low rate.

Multi Fuel Selection
The flue gas analyser provides up to 10 fuels for calculating combustion values. Most used fuels for your country are pre-

loaded from factory. Others fuels can be added using the GasConfig PC software.

Gas Probe & Sampling System
Flue gas sampling probes with different lengths, shapes and max. operating temperatures (1500°F and 1800°F) are available to match the various requirements of different applications. A sintered pre-filter is suggested for severe and heavy applications. The built-in water trap drains condensation moisture periodically from the system with a peristaltic pump. A dual filtering system (quartz + line) will clean the gas sample before the analysis.

Industrial Probe & Heated Hose
Only for GreenLine 8000, a heated sampling probe is available for industrial high temperature applications. A heated hose allows flue gas sampling without condensation. The internal cooler dries the flue gas and avoid dilution of NO₂ and SO₂ into the condensate.

Semi-Continuous Monitoring
The industrial design and the advanced technology applied to the unit, allows it to perform long term gas analysis. The procedure acquires and logs the data after a programmable period of time. A "smart" procedure allows the unit to maximize the sensor life by switching the pump off, during the sleep phase.

Keyboard & Display
The RCU Keypad allows the operator to enter all operative modes following easy menu driven instructions. A high contrast graphic LCD (44 x 62 mm) is equipped with a

automatic backlight device. It displays the measured and the calculated parameters in your preferred format (Zoom function 3, 6 or 12 lines). Parameters can be also displayed in a bar graph mode.

Built-In Impact Printer
The RCU is equipped with a built-in, rugged impact printer. It uses a low cost common roll of paper (58 mm large, 18 meters long). Certainly more readable, long time and heat resistant than the thermal

- Gas Inlet**
- Probe Heater Connector**
- T Gas Input**
- Impact Printer**
- T. Flow and T. Return Inputs**

Graphic Display

Remote Control Unit

printout on chemical paper.

Pressure & Draft
The instrument is equipped with an internal differential sensor to measure pressure and stack draft. Differential pressure could be used, e.g., for stack gas velocity measurement by using an optional Pitot tube.

Auxiliary Inputs
Two scalable 4-20mA are available to measure and store process parameters.

T+RH% Probe
Optional probe for simultaneous measurement of ambient temperature and relative humidity (%RH) for comfort measurements.

Condensating Drain



Fast Maintenance

Draft and Differential Pressure

**Tair probe
4-20 mA
Auxiliary Inputs**

External Probe

Serial Communication

Power Supply

APPLICATIONS

- Boilers
 - Utility & Power Plants
 - Industrial Boilers
- Heaters & Dryers
 - Paint, Textile, Food, Paper, Rubber
 - Process Heaters
- Kilns / Furnaces
 - Cement, Lime, Glass, Ceramic
- Stationary Internal Combustion Engines
 - UPS Power Cogeneration
 - Gas Compression
 - Oil Fired Pumping Station
- Turbines
 - Chemical Analysis Laboratory
 - Fuel Additive
- CEM Backup & Maintenance
 - ISO 14000
 - Auditing, Compliance