

BTU 3000+

Professional Combustion Analyzer Multifunction Unit for the Complete Maintenance of your Boiler

9 INSTRUMENTS IN 1:

- 1 **Combustion Gas Analyzer**
- 2 **NO/NO_x & SO₂ Emissions Analyser**
- 3 **Draft & Differential Pressure Meter**
- 4 **2 Channel Thermometer**
- 5 **Ambient CO Monitor**
- 6 **Gas Pipework Leak Tester**
- 7 **Gas Leak Detector**
- 8 **Ionization Flame Tester**
- 9 **Temperature & Humidity Meter**

Built-In Impact Printer

Rechargeable Battery

Easy to Use, Text and Keyboard in any Language

Stores up to 250 Samples

Graphic Display

Upgradable using Flash Memory



O₂

CO₂

CO

NO_x

SO₂

Efficiency

Excess Air

Differential Pressure

Tair
Tgas

CO/CO₂
Ratio

Ambient CO
Monitor

Gas Leak
Detector

T+RH%
Probe

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.

BTU 3000+

Multifunction Unit for Complete Maintenance of your Boiler

One Instrument with Many Functions

The **NEW** handheld **BTU 3000+** provides the latest technology in flue gas analysis. One instrument with many features:

- **up to 4 gas sensors;**
- **CO sensor with manual or automatic protection;**
- **built-in impact printer;**
- **water, air, surface temperature measurements;**
- **draft, gauge and differential pressure measurements;**
- **searching for presence and location of gas leaks;**
- **operator safety with ambient CO continuous monitoring;**
- **ambient temperature and relative humidity measurements.**

Easy Replaceable Gas Sensors

BTU 3000+ uses long life, low maintenance sensors. Alarm levels with audible buzzer on gas measurements.

CO Sensor Protection

An automatic device can exclude the CO sensor in presence of high CO level.

Standard Report of Calibration

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

Rechargeable Battery Operations

Ni-MH rechargeable batteries provide longer field use. Flue gas analyzer and internal printer is powered by a battery pack. Charger is supplied as standard.

Keyboard & Display

Text, menu, and keyboard available in most common languages (not icons) for simple and intuitive operations. Engineering units are selectable by keyboard. The large backlight graphic LCD can display 3, 6 or 12 values per page (ZOOM function) or with bargraph format.

Multi Fuel Selection

BTU 3000+ 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 GasConfig PC software.

Built-In Impact Printer

The instrument has an optional internal and rugged printer. It uses a low cost common roll of paper. Certainly more readable, long lasting and heat resistant than the thermal printout on chemical paper.

Pressure/Draft input

Differential pressure input to verify: low pressure, draft, gas pipework leak with pressure decay programme, pressure in gas pipework, pressure in combustion chamber, ΔP on filters and fan, pressure switches calibration.

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 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 Probe

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.

CO Ambient Monitoring

An external optional probe is available for continuous surveillance of the ambient and

To check gas pipework for the presence of leaks using a pressure decay program and the internal pressure sensor.

Gas Leak Sniffer

An **external** probe is available to locate the position of a gas leak. This probe has a flexible stainless steel shaft to reach difficult locations.

T+RH Ambient Monitoring

An external probe is available for temperature and relative humidity (T+RH%) of the ambient for comfort index computation.

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 UniGas firmware for any future legislation requirement or product performance upgrading.



BTU 3000+

Providing the Professional Tool for Heating Engineers



Specifications

- **Type:** hand-held combustion gas analyzer with 2, 3 or 4 gas sensors.
- **Calibration:** automatic calibration procedure at instrument switch-On.
- **Self-diagnosis:** Sensors efficiency test with 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).
- **Printer:** Internal impact type 24 columns with 2.3" paper roll.
- **Printer power supply:** from the analyzer battery pack.
- **Print capacity:** up to 40 reports with full battery (typical).
- **Service and user information:** 3 programmable lines.
- **Printed report header:** 4 programmable lines
- **Display:** 1.6"x2.3" graphic LCD with backlight device.
- **Flue gas probes:** stainless steel shaft with incorporated temperature sensor.
- **Memory:** up to 250 full analysis data structured by boilers (Tags).
- **Serial communication:** IR serial port. Optional IR/RS232 serial interface adapter.
- **Operating temperature:** from 23°F to 113°F
- **Storage temperature:** from -4°F to +140°F (3 months maximum at temperatures exceeding the operational limits).
- **Dimensions and Weight:** 45"x3.5"x13" - 2.2 lb with battery and printer

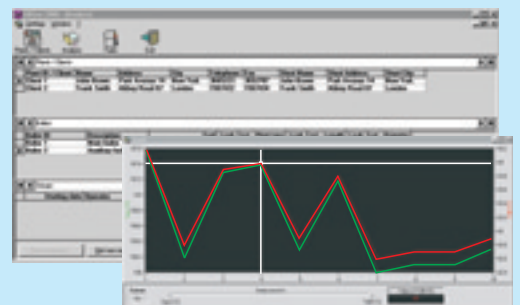
Parameter	Sensor type	Range	Resolution	Accuracy
O ₂	Electrochemical	0 - 25%	0.1%	±0.1% vol.
CO <i>H₂<2000ppm comp.</i>	Electrochemical	0 - 8000ppm	1ppm	±10ppm <300ppm ±4%rdg up to 2000ppm ±10%rdg >2000ppm
CO	Electrochemical	0 - 20,000ppm	1ppm	±10ppm <300ppm ±4%rdg up to 2000ppm ±10%rdg >2000ppm
NO	Electrochemical	0 - 4000ppm	1ppm	±5ppm <125ppm ±4%rdg up to 4000ppm
NO ₂	Electrochemical	0 - 1000ppm	1ppm	±5ppm <125ppm ±4%rdg up to 1000ppm
NO _x	Calculated	0 - 5000ppm		
SO ₂	Electrochemical	0 - 4000ppm	1ppm	±5ppm <125ppm ±4%rdg up to 4000ppm
CO ₂	Calculated	0 - 99.9%	0.1%	
T _{air}	Pt100	-10 - 99.9°C 14.0 - 212.0°F	1°C 0.2°F	±(0.2% rdg + 0.15°C) ±(0.2% rdg + 0.3°F)
T _{gas}	TC K	0 - 999.9°C 32.0 - 1830°F	1°C 0.2°F	±(0.3% rdg + 0.3°C) ±(0.3% rdg + 0.6°F)
ΔT	Calculated	0 - 999°C 32.0 - 1830°F	0.1°C 0.2°F	
T _{flow}	TC K	-10 - 99.9°C 14.0 - 212.0°F	0.1°C 0.2°F	±(0.3% rdg + 0.3°C) ±(0.3% rdg + 0.6°F)
T _{return}	TC K	-10 - 100°C 14.0 - 212.0°F	0.1°C 0.2°F	±(0.3% + 0.3°C) ±(0.3% rdg + 0.6°F)
Pressure/Draft	Piezo	-10 - ±100hPa	0.01Pa	±3Pa <300Pa ±1%rdg >300Pa
Excess air	Calculated	1.00 - infinity	0.01	
Gas speed	Calculated	0 - 99.9m/s	0.1m/s	
Efficiency	Calculated	1 - 99.9%	0.1%	
Smoke index	Paper filter method 0-9			

- 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 and from hPa to mbar, mmH₂O, inH₂O.

DBGas 2004 - Boiler test & Customer database manager

BTU 3000+ can store 250 readings structured by boilers and customers. Using the optional **DBGas2004** Windows™ software package, you can organize and manage your inspection and maintenance activity.

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




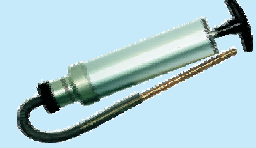






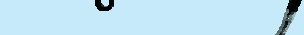



BTU 3000+

Modular Design Giving Total Flexibility

Accessories

Ordering Code

	<p>BB880028 ABS rigid carrying case</p> <p>BB880033 Aluminium carrying case</p> <p>BB880043 Compact rigid carrying case with shoulder strap. BTU 3000+, probes, and accessories need 1/3 of the classic carrying case space.</p>
	<p>BB610051 7" (TGD - Temperature, Gas, Draft) sampling probe</p> <p>BB610046 12" (TGD - Temperature, Gas, Draft) sampling probe</p>
	<p>EE300088 Pressure probe and burner hose kit (single hose)</p>
	<p>F7828000 Manual pump for smoke index measurements</p>
	<p>BB830006 Pt100 remote air sensor with cone</p>
	<p>BB290040 DC Auto Adapter</p>
	<p>F2139000 Pipe Velcro Tc type K</p>
	<p>F2132100 5" air Tc type K</p>
	<p>F2137100 5" Contact type K Tc</p>
	<p>BB830009 Ambient CO probe</p>
	<p>BB830008 Ambient T+RH% probe</p>
	<p>BB830010 Gas sniffer probe</p>
	<p>BB830019 Ionization current probe</p>

cat. 7823 - A - B - C C - D - E - F - G - H

Table A	Sensor n.1	
1	O ₂ (0-25%)	
Table B	Sensor n.2	
2	CO (0-8000 ppm)	
2X	CO (0-20000 ppm)	
Table C	Sensor n.3	Sensor n.4
0	none	
4	NO (0-4000 ppm) / NO _x	
5	NO ₂ (0-1000 ppm)	NO ₂ (0-1000 ppm)
6	SO ₂ (0-4000 ppm)	SO ₂ (0-4000 ppm)
Table D	Sample probes (including water trap and line filter)	
0	none	
1D	7" flue gas probe + draft (dual hose) BB610051	
3	12" flue gas probe + draft (dual hose) BB610046	
5D	29.5" flue gas probe + draft (dual hose) BB610080	
6	3.5" 90° flue gas or draft (single hose) probe BB610043	
7	6.3" multipoint flue gas (single hose) probe for atmospheric boilers BB610070	
Table E	Options	
0	none	
1	Built-in impact printer	
3	Gas network leak test procedure with pressure decay programme	
4	Graphic display capability (bargraph)	
6	Electrovalve for automatic/manual CO exclusion	
Table F	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 G	Accessories	
0	None	
1	Software GasConfig + DBGas2000 + IR/RS232 adapter	
2	Magnetic plate	
3V	Vinyl case with shoulder strap	
3	ABS carrying case	
4	Aluminum carrying case	
5	Remote combustion air temperature sensor with 2m cable and positioning cone	
7	Differential pressure connection kit (dual hose)	
8	External probe for CO operator safety	
9	External probe for gas leak detector	
B	Manual pump for smoke index measurement with filters and comparison table	
C	External probe for ambient temperature and relative humidity	
D	External probe for boiler ionization current	
E	DC Auto battery charger	
Table H	Report of calibration	
1	E-Instruments	