

# Eclipse EGA4 Combustion Analyzer

*Providing the latest technologically advanced instrumentation for combustion service engineers, installers & technicians*

## Features

- Complete sample-conditioning probe assembly
- Four robust electrochemical sensor cells for accurate emission measurements
- Automatic CO auto-range and sensor protection
- Built-in impact printer
- Rechargeable battery
- Easy to use, common-language text and keyboard
- Stores up to 250 samples
- Protective carrying case to store instrument, probe, charger and other accessories



## One Instrument, Many Functions

1. Combustion gas analyzer
2. Draft & differential pressure meter
3. Two-channel thermometer
4. Ambient CO monitor
5. Gas velocity with Pitot tube
6. Gas pipe and valve system leak tester
7. Gas leak location detector
8. Ionization flame tester
9. Stores your smoke index measurement

The new handheld EGA4 is the most comprehensive analyzer available for:

- Combustion tuning and maintenance;
- Orifice Delta Pressure flow checks;
- Pressure switch testing;
- Water, air, surface temperature measurements;
- Draft, gauge and differential pressure measurements;
- Search for presence and location of gas leaks (optional);
- Operator safety with ambient CO and O<sub>2</sub> continuous monitoring (optional).

## Description of Features

### Gas Sensors

EGA4 uses long life, low maintenance sensors. The operator can set alarm levels with audible buzzer on gas measurements.

### CO Auto-ranging and protection

A dilution pump allows for automatic ranging for CO measurements from 0 to 100,000 ppm. This feature protects the CO sensor from exposure to high concentrations of CO.

### Rechargeable battery operations

Ni-MH rechargeable batteries provide longer field use. A charger is supplied as standard. Either batteries or the charger can power flue gas analyzer and internal printer.

### Keyboard & Display

Text, menus, and keyboard use common language (not icons), for simple and intuitive operations. Engineering units are selectable for US and European standards. The large backlight graphical LCD display is easy to read and can display 3, 6, or 12 values per page (zoom) or in bar graph format.

### Multi Fuel selection

EGA4 allows selection of up to 10 fuels for calculating combustion values. The most commonly used fuels are factory pre-loaded for quick selection. Other fuel parameters can be loaded using optional PC software.

### Built-in impact printer

A built-in rugged impact printer uses a common low cost roll of paper. The result is a more readable, longer life and heat resistant record than thermal printouts on chemical paper.

### Pressure/Draft input

Differential pressure input can be used to verify draft, gas pipe leak with pressure decay program, gas flow delta-pressure, pressure in combustion chamber, DP on filters and fan, and limit switch calibration.

### Smoke index

The results of using an optional external hand pump for smoke index measurement can be stored and printed on the report.

### Gas sampling probe

The sampling probe is connected to the instrument with a dual hose through a water trap and a suspended particle filter and includes a built-in temperature probe.

### Water trap

The new proprietary design trap prevents water from entering and damaging the instrument and measuring cells. It features a big water tank capacity for condensation, a small rubber plug for easy water removal, and a long life paper filter.

### Combustion air temperature sensor

An optional Pt100 probe can measure remote combustion air temperature.

### Ambient monitoring

An external optional probe is available for continuous surveillance of ambient safety conditions and alerts the operator with both acoustic and visual alarms.

### Gas pipe leak test

The internal pressure sensor and a pressure decay program can check gas valves and pipes for the presence of leaks.

### Gas leak sniffer

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.

### Ionization flame tester

An external optional probe checks the ionization current in flame control sensor (flame-rod).

### Gas velocity

An external Pitot tube connected to the differential pressure ports measures gas velocity and is automatically displayed based on the gas density parameter.

### Flash memory

The flash memory allows the instrument firmware to be updated for any future legislation requirement or upgrading product performance.

### Standard Report of Calibration

Each instrument is factory calibrated and certified against traceable standards and shipped with a Report of Calibration.

- **EGA4** includes the basic measuring instrument with O<sub>2</sub>, CO, NO and NO<sub>2</sub> cells, gas sample probe with temperature and draft measurement, printer, differential pressure sensor, USB port, rigid plastic carrying case, battery charger, instruction manual, and calibration certificate.
- **EGA4-1** is a 3-cell version, similar to the EGA4 except the NO<sub>2</sub> cell is not installed. The total NO<sub>x</sub> will be calculated instead of directly measured.
- **EGA4-2** similar to the EGA4 except the NO<sub>2</sub> cell is replaced with a SO<sub>2</sub> cell for measuring sulfur dioxide produced by fuel oil and coal combustion.

### **Accessories**

Item	Description
10002732	Printer paper roll, 18m (60').
10002734	Printer ribbon.
10002729	Kit, water trap with air filter and connector.
10002711	Kit, filter cartridge.
10002725	Kit, rubber plug for water trap.
10002730	O-ring, analyzer, pneumatic connector
10002740	Probe, analyzer, 300mm (12in.) pistol grip, gas and draft, dual hose, 800°C max
10002741	Probe, analyzer, 750mm (30in.) pistol grip, gas and draft, dual hose, 1000°C max
10002746	Probe, remote air sensor with 2 meter cable length.
10002748	Probe, remote air sensor with 5 meter cable length.
10002736	Probe, ambient CO.
10002744	Probe, external flame ionization current.
10002745	Probe, natural gas (sniffer).
13160	Kit, smoke measurement index with pump, chart, filter paper
13157	Kit, filter paper for smoke measurement, 40 strips
13155	Scale, smoke index comparison chart
10002687	Case, analyzer, ABS rigid plastic (instrument+probe+accessories)
10002688	Case, analyzer, aluminum (instrument+probe+accessories)
10002689	Case, analyzer, vinyl with shoulder strap (instrument+probe+accessories)
10002731	Holster, Rubber with Magnet
10002695	Cell, EGA analyzers, O <sub>2</sub> autocalibrated
10002672	Software, flue-gas analyzer, PC configuration and data storage.

### **Accessories Continued — Power Modules**

Item			Description
For Units Prior To S/N 90056	For Units S/N 90056 to 128469	For Units S/N 128470 And Later	
10002684	10002683	10030804	Module, power, 12Vdc automotive plug battery charger.
10002676	10002681	10030805	Module, power, 115V 50/60 Hz USA plug.
10002673	10002678	10030806	Module, power, 230V 50/60 Hz European plug.
10002674	10002679	10030807	Module, power, 230V 50/60 Hz Schuko plug.
10002675	10002680	10030808	Module, power, 230V 50/60 Hz UK plug.
10002677	10002682	10030809	Module, power, 100V 50/60 Hz USA/Japan plug.

## Specifications

<b>Type:</b> palm-top combustion gas analyzer for 4 gas sensors.	<b>Printer:</b> Internal impact type 24 columns with 58 mm paper roll (18 meters long).
<b>Calibration:</b> automatic calibration procedure at instrument switch-on.	<b>Printer power supply:</b> from the analyzer battery pack.
<b>Self-diagnosis:</b> Sensors efficiency test with display of diagnostic messages.	<b>Print capability:</b> up to 40 reports with full battery (typical).
<b>Fuel types:</b> Up to 10 selectable from keyboard.	<b>Service and user information:</b> 3 programmable lines.
<b>Flue gas probes:</b> stainless steel shaft with incorporated temperature sensor.	<b>Printed report header:</b> 4 programmable lines.
<b>Display:</b> 40x58 mm graphic LCD with backlight device.	<b>PC communication :</b> USB Cable
<b>Memory:</b> up to 250 full analysis data structured by locations (Tags).	<b>Operating temperature:</b> from -5°C to +45°C
<b>Power supply:</b> High capacity Ni-MH rechargeable battery pack / external battery charger.	<b>Storage temperature:</b> from -20 to +60°C (3 months maximum at temperatures exceeding the operational limits).
<b>Charging time:</b> 8h at 90% with instrument off.	<b>Dimensions:</b> 115x90x330 mm
<b>Battery life:</b> 6 hours (typical) continuous use (without printing and backlight).	<b>Weight:</b> 1.1 kg with battery and printer

## Accuracies

Parameter	Sensor	Range	Resolution	Accuracy
O2	Electrochemical	0 - 25%	0.1%	±0.1% vol
CO (H2 compensated)	Electrochemical	0 - 8000 ppm	1 ppm	±10 ppm <300 ppm ±4% rdg up to 2000 ppm ±10% rdg >2000 ppm
CO "Auto-Range"	Electrochemical (dilution)	8000 - 100,000 ppm	500ppm	±10% reading
CO2	Calculated	0 - 99.9%	0.1%	
NO, Low	Electrochemical	0 – 500 ppm	0.1ppm	± 2 ppm <40ppm ± 5% rdg up to 500 ppm
NO2	Electrochemical	0 - 1000ppm	1ppm	± 5ppm <125ppm ±4%rdg up to 1000ppm
NOx	Calculated	0 - 5000ppm		
SO2	Electrochemical	0 – 4000 ppm	1ppm	± 5 ppm <125ppm ± 4% rdg up to 4000 ppm
Tair	Pt100	-10 - 100°C	1°C	± (0.2% + 0.15°C)
Tgas	Tc K	0 - 1000°C	1°C	± (0.3% + 0.3°C)
Differential Temp.	Calculated	0 - 999°C	0.1°C	
Pressure/Draft	Piezo	±100 hPa ±40" w.c.	0.01 Pa 0.01" w.c.	± 3Pa <300 Pa ± 1% rdg. >300 Pa
Excess air	Calculated	1.00 - infinity	0.01	
Gas speed	Calculated	0 – 99.9 m/s	0.1 m/s	
Efficiency	Calculated	1 - 99.9%	0.1%	

*All emission measurements can be displayed with reference to a programmable O2 value.  
NOx concentration can be shown in terms of stack equivalent NO2.  
Accuracy limits are stated as % of reading. An additional ±1 digit error has to be considered.  
The stated pressure relative accuracy is valid only after the zero procedure.  
Measuring display readings can be directly converted from ppm to mg/Nm3.  
Measuring display readings can be directly converted from hPa to mmH2O, mbar, or inH2O.*



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