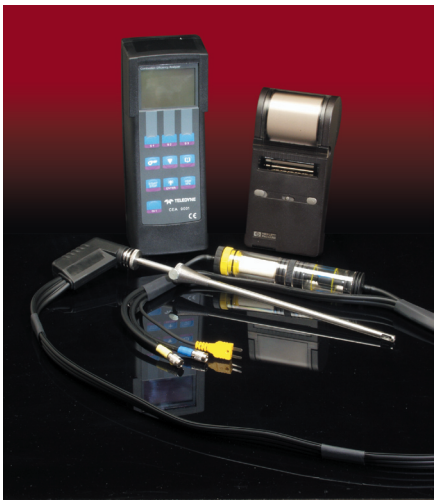
TELEDYNE ANALYTICAL INSTRUMENTS



CEA-9001

Hand-held Flue Gas Analyzer

The **CEA-9001** is a digital, hand-held flue gas analyzer ideally suited for fine-tuning boiler and furnace controls on small and medium sized heater installations.

Rugged, Simple Design

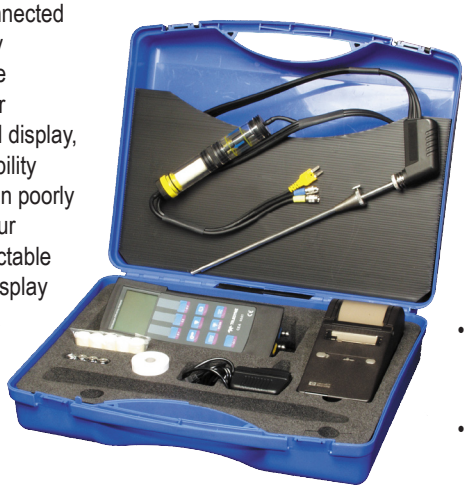
The durable, lightweight Combustion Efficiency Analyzer 9001 provides real-time analysis of O2, CO, NO, flue gas temperature, and stack draft as standard direct measurements. The advanced software utilized in the CEA-9001 facilitates burner optimization by also calculating combustion efficiency (Eta), waste gas losses (qA), CO2, Lambda, NOX, dewpoint and Eta combustion values. The CEA-9001 also allows the user to store up to 100 blocks of measurement data that can be printed directly via an optional IR printer or processed through an appropriate PC program. A simple, logically designed keyboard ensures convenient use of the instrument.

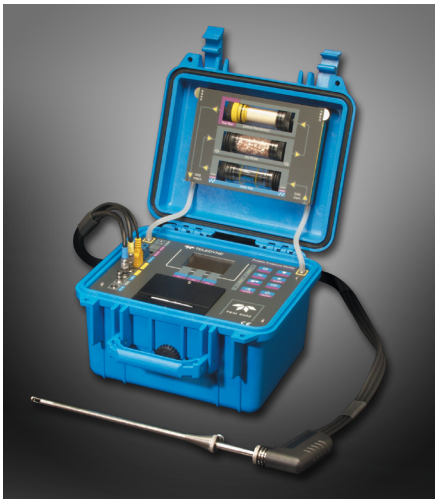
Advanced Sensor Capabilities

The long-life electrochemical sensors utilized in the CEA-9001 are easily calibrated in the field. Each time the unit is started, it undergoes a 1-minute calibration cycle in which the O2 sensor is conveniently spanned and the CO and NO sensors zeroed via ambient air. Selective filters are provided to prolong viability of the advanced sensors, and the CO sensor, which is H2 compensated, is also safe-guarded by an automatic flushing function utilizing a second internal pump.

Single Step Analysis

The CEA-9001 is a complete flue gas analysis system supplied in a compact, robust carrying case. The combined flue gas temperature probe and hose assembly, designed with a built-in particulate and condensate filter, can be connected to the CEA-9001 in one easy step allowing the user to take measurements seconds after powering up. The illuminated display, provided with a Zoom readability function, can be easily read in poorly lit positions and can show four measurement values in selectable display combinations. The display also provides the user with a continuous indication of the available life of the rechargeable battery pack.





PEM-9002

Portable Emissions Monitor

Teledyne's **Portable Emissions Monitor (PEM-9002)** is a full-featured monitor offering fast, cost-effective analysis of stack gas emissions. As many as four parameters can be displayed at once, allowing the operator to optimize combustion efficiency while minimizing pollution. The PEM-9002 incorporates advanced microprocessor technology and a keypad interface that is both intuitive and easy to navigate. The large, backlit LCD display has a Zoom readout function and user-selectable display combinations.

Self Contained / Easy to Operate

Light weight and compact with an internal rechargeable battery, the PEM-9002 is housed in a rugged dust and waterproof housing. Its small size and built-in sample pre-conditioning system make the unit ideal for spot checking any size boiler in even the most difficult environment. Connect the combined flue gas temperature probe / hose assembly in one-step, enter the fuel type to be measured, and take a sample.

Features

- Analyzes O2, CO, NO, SO2, flue gas temperature and stack draft; Calculates CO2, combustion efficiency (Eta), waste gas losses (qA), NOX, dewpoint, Lambda, pressure and temperature difference
- Truly portable weighing less than 10 lbs.
- Rugged, high-density, injection molded casing
- Easily accessible, optimized triple-filter pre-conditioning system integrated in the housing cover – includes water trap, particulate filter and desiccant cartridge
- Logical, menu-driven LCD display with Zoom function plus an intuitively labeled keypad
  - Long-life rechargeable battery with approximately 30 hours of operation with activated display
  - Selective filters ensure longer sensor life
  - The 1-minute calibration cycle (auto-zero for CO, NO and SO2 sensors plus auto-span for O2 sensor) via ambient air, upon sample pump activation, ensures reliable reporting results each time
- Capability to store up to 100 blocks of measurement data; download via built-in printer or RS-232C
- Typical applications include boilers, furnaces, fireboxes, compressor engines, heat exchangers, process heaters, residential heaters, and other combustion related devices
- Also capable of spot-checking ambient CO safety levels in boiler rooms

PORTABLE EMISSIONS ANALYZERS

CEA-9001 Specifications

Measured values:

O2 range:	0 - 20.9%
Resolution:	0.1 Vol.%
CO range* (std):	0 - 4000 ppm
Resolution:	1 ppm
Option CO High:	0 - 1%
NO range*:	0 - 2000 ppm
Resolution:	1 ppm
Flue-gas temp:	0 to 1000° C (32 to 1850° F)
Resolution:	0.1° C (Type K T/C)
Ambient air temp:	-20 to 100° C (5 to 212° F)
Resolution:	0.1° C (Type K T/C)
Draft pressure difference:	± 60 inches of H2O
Resolution:	0.01 in H2O

Type:	Piezo-resistive with internal temperature compensation
Calculated values:	Boiler efficiency % (Eta), % Vol CO2, ppm NOX, Waste gas losses % (qA), dew point, Lambda
Fuel type selection:	(7) selectable fuel types and programmable capabilities for fuels not listed
Power supply:	NiCad battery (6V / 1200 mAH) with battery recharger
Interfaces:	Download stored data via RS-232C or optional remote infrared printer
Sample probe:	SS probe with retainer cone; 12" insertion length + 10 ft. of sample hose incorporating a water separator and particulate filter assembly for sample pre-conditioning
Display:	Backlit alphanumeric and graphic display; 4 lines of 16 characters each + menu line
Carrying case dimensions:	5" H x 19" W x 13" D (127 x 482 x 330 mm)
Weight:	8.5 lbs. (3.9 Kg) -includes analyzer, probe, charger, manual, spares kit, and optional printer

TUV approved; CE-Marked

** Display can also show value as mg/m3*

PEM-9002 Specifications

Measured values:

O2 range:	0 - 20.9%
Resolution:	0.1 Vol.%
CO range* (std):	0 - 4000 ppm
Resolution:	1 ppm
Option CO High:	0 - 1%
NO range*:	0 - 2000 ppm
Resolution:	1 ppm
SO2 range*:	0 – 2000 ppm
Resolution:	1 ppm
Flue-gas temp:	0 to 1000° C (32 to 1850° F)
Resolution:	0.1° C (Type K T/C)
Ambient air temp:	-20 to 100° C (5 to 212° F)
Resolution:	0.1° C (Type K T/C)
Draft pressure difference:	± 60 inches of H2O
Resolution:	0.01 in H2O

Type:	Piezo-resistive w/ internal temperature compensation
Calculated values:	Boiler efficiency % (Eta), % Vol CO2, ppm NOX, Waste gas losses % (qA), dew point, Lambda
Fuel type selection:	(7) selectable fuel types and programmable capabilities for fuels not listed
Power supply:	NiCad battery, 6V / 4AH
Interfaces:	Download stored data via RS-232C or built-in printer
Sample probe:	SS probe with retainer cone; 12" insertion length + 10 ft sample hose
Sample system:	Triple filtration system integrated in housing cover (water separator, particulate filter and dessicant)
Display:	Backlit alphanumeric and graphic display; 4 lines of 16 characters each + menu line
Housing:	Dust and waterproof resistant, 11" L x 10" W x 7" H (279 x 254 x 177 mm)
Note:	Sample probe, charger, and spares kit can be carried in separate case (dimensions same as CEA-9001)
Weight:	8.5 lbs. (3.9 Kg) - excluding probe

TUV approved; CE-Marked

TELEDYNE ANALYTICAL INSTRUMENTS

A Teledyne Technologies Company

16830 Chestnut Street
City of Industry, California 91748, USA

TEL: 626-934-1500 or 888-789-8168
FAX: 626-934-1651 EMAIL: ask_tai@teledyne.com
www.teledyne-ai.com

Warranty

Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

09/06LD