



Unlike any other industrial grade combustion efficiency and environmental analyzer on the market today, the ECA 450 conducts accurate combustion and emissions tests that will help you meet environmental regulations and ensure your equipment is burning efficiently.



Modular Sensor Compartment lets you add sensors as your needs grow

Simple, menu-driven setups that deliver the data you want in the format you want

Built-in printer

Downloads test results to PC

Stores over 1,000 test records

Large, easy to read data display that is visible from wide angles



EPA/ETV Test Verified Performance

## MODULAR SENSORS

- 1.) Carbon Monoxide (High)
- 2.) NO Sensor
- 3.) NO<sub>2</sub> Sensor
- 4.) SO<sub>2</sub> Sensor
- 5.) Combustible Sensor

### Flue-Gas Sample Conditioning System



Used in conjunction with the ECA 450, the Flue-Gas Sample Conditioning System functions to remove water vapor from the flue-gas sample, thus preventing the formation of water droplets inside the probe hose. If water droplet were to form, a portion of the gas sample could be absorbed by the water, thus resulting in lower-than-actual NO<sub>2</sub> and SO<sub>2</sub> readings.



The wireless, hand-held remote is recommended for use of up to 300 ft. indoors with normal obstructions and up to 1,000 ft. outdoors.

### Probes Available in Varying Lengths & Styles

ORDERING INFORMATION	
PART NO.	DESCRIPTION
24-3024	24" probe assembly
24-3025	36" probe assembly
24-7224	Compact sample conditioner/probe. Includes Peltier chiller/probe assembly, built-in filter, condensate pump and 15' hose assembly
24-3035	24" High temperature probe assembly
24-3036	36" High temperature probe assembly
24-3037	48" High temperature probe assembly
24-1124	20 ft. hose extension
24-1172	Water Trap/Filter Assembly (for probe hose assembly)



## TECHNICAL DATA

### Measurements & Ranges

Oxygen	0.1 to 20.9%
Carbon Monoxide (hydrogen compensated)	0 to 4000 ppm (hydrogen compensated)
Carbon Monoxide (high)*	4001 to 80000 ppm
Nitric Oxide*	0 to 3500 ppm
Nitrogen Dioxide*	0 to 500 ppm
Sulfur Dioxide*	0 to 4000 ppm
Combustibles*	0 to 5.00% (application dependent)
Stack Temperature	-4 to 2400 degrees F (-20 to 1315 °C)
Primary/Ambient Temperature	-4 to 999 degrees F (-20 to 999 °C)
Pressure/Draft	-27.7 to 27.7 inches of H2O

### Calculations & Ranges

Combustion Efficiency	0.1 to 100.0%
Excess Air	1.0 to 250%
Carbon Dioxide (dry basis)	0 to fuel dependent maximum
NO <sub>x</sub> (NO <sub>x</sub> = NO + NO <sub>2</sub> )	0 to 4000 ppm
NO <sub>x</sub> referenced to % O <sub>2</sub>	0 to 17000 ppm
CO referenced to % O <sub>2</sub>	0 to 99999 ppm
NO referenced to % O <sub>2</sub>	0 to 14900 ppm
NO <sub>2</sub> referenced to % O <sub>2</sub>	0 to 2100 ppm
SO <sub>x</sub> referenced to % O <sub>2</sub>	0 to 17000 ppm

### Accuracy

Oxygen	± 0.3% O <sub>2</sub> on practical concentrations of flue gas
Stack or Flue Gas Temp.	± 4°F between 32 and 255°F (± 2°C between 0 and 124°C)  ± 6°F between 257 and 480°F (± 3°C between 125 and 249°C)  ± 8°F between 482 and 752°F (± 4°C between 250 and 400°C)
Primary-air/ambient Temp.	± 2°F between 32 and 212°F (± 1°C between 0 and 100°C)
Pressure Draft	± 2% of reading or ± .02 in wc whichever is greater
CO	± 5% of reading or ± 10 ppm whichever is greater between 0-2000 ppm CO ± 10% of reading between 2001 to 40000 ppm CO
NO	± 5% of reading or ± 5 ppm whichever is greater between 0-2000 ppm NO
NO <sub>2</sub>	± 5% of reading or ± 5 ppm whichever is greater between 0-500 ppm NO <sub>2</sub>
SO <sub>2</sub>	± 5% of reading or ± 10 ppm whichever is greater between 0-2000 ppm SO <sub>2</sub>
HC	± 5% of full scale
Selectable Fuels	Natural Gas, Oil #2, Oil #4, Oil #5, Oil #6, Propane, Coal, Wood, Kerosene, Bagasse
Power	Universal AC adapter and an internal battery pack. Adapter will accept input voltages from 100 to 240V. Fully charged battery pack provides a minimum of 8 hrs of operation
Pumps & Probe	Two pumps are included. The first pump supplies gas sample to the sensors. The second pump supplies fresh air to purge the low range CO sensor when CO levels exceed 4000 ppm. Probe includes a standard probe and hose assembly equipped with a water trap, particulate filter, probe stop, 15 feet of hose, and 12-inch probe tube.
Size	13.5" H x 18.5" W x 9" D
Weight	25 lbs. (11.34 kg)
Warranty	1 year, extended warranty available

\* Optional

## Applications

The ECA 450 is ideal for professionals concerned about combustion efficiency, environmental compliance, or both. It enables plant maintenance engineers and managers, industrial boiler/furnace service technicians, energy coordinators, compliance officers, environmental auditors and safety managers to ensure that industrial equipment is burning efficiently while environmental regulations are being met.

## ORDERING INFORMATION

PART NO.	DESCRIPTION
24-7221	Base Unit (O <sub>2</sub> , CO, Ts, Ta, DP)
24-7289	Base Unit (O <sub>2</sub> , CO, Ts, Ta, DP) w/ wireless hand-held remote
24-7223	Heavy duty sample conditioning system (EPA/ETV Test Verified performance). Includes Peltier chiller unit with integral condensate pump, 15' heated hose assembly with probe and built-in temperature controller
24-8400	NO <sub>x</sub> Kit with NO / NO <sub>2</sub> sensors and compact sample conditioner
24-8401	NO <sub>x</sub> and SO <sub>x</sub> Kit with NO, NO <sub>x</sub> and SO <sub>2</sub> sensors and compact sample conditioner
PART NO.	REPLACEMENT SENSORS
24-0788	O <sub>2</sub> Sensor
24-0789	CO (low) Sensor
24-0997	CO (high) Sensor
24-0881	NO Sensor
24-1055	Combustible Sensor
24-1027	NO <sub>2</sub> Sensor
24-0998	SO <sub>2</sub> Sensor (requires NO <sub>2</sub> option)
PART NO.	MODULAR SENSORS (For Factory Installation in Base Unit)
24-3206	CO (high) Sensor
24-3207	NO Sensor
24-3209	NO <sub>2</sub> Sensor
24-3030	SO <sub>2</sub> Sensor
24-3028	Combustible Sensor
PART NO.	ACCESSORIES
07-1644	Filters (pkg. of 3)
24-7059	Calibration Kit (does not include gas)
104-4027	Serial Cable DB.9M to DB.9F
24-0980	Printer Paper (5 rolls)

The maximum operating temperature for probes included in 24-7221, 24-7224, 24-7223, 24-3024 and 24-3025 is 1472°F (800°C). The maximum operating temperature for high temperature probes 24-3035, 24-3036 and 24-3037 is 2000°F (1093°C).

## Distributed By:



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