



Measures

O₂, CO, NO,
NO₂, SO₂
Combustibles,
Temperature, Draft

Calculates

Combustion Efficiency
Excess Air
Carbon Dioxide
NO_x

Logs

Test Data at Selected
Intervals



EPA/ETV Test Verified
Performance

Delivering Precise Analysis Easily and Completely

Bacharach's ECA 450 is an easy-to-use industrial-grade combustion efficiency and environmental analyzer that calculates the combustion efficiency of furnaces, boilers and other industrial combustion equipment. Its user-friendly interface makes it simple to operate – while it generates reliable measurements and calculations that help improve overall combustion efficiency, reduce fuel costs and determine emissions compliance.

The ECA 450 is an ideal instrument for plant maintenance engineers, industrial boiler/furnace service technicians, energy coordinators, compliance officers, and environmental auditors who must conduct combustion and emissions tests to ensure that equipment is burning efficiently while environmental regulations are being met. Emission rates are computed using conversion factors (F factors) listed in CFR 40, Part 60.

Information on the performance characteristics of this technology can be found at www.epa.gov/etv, or call Bacharach, Inc. at 1-800-736-4666 for a copy of the ETV verification report. The use of the ETV® Name or Logo does not imply approval or certification of this product nor does it make any explicit or implied as to product performance.



Features & Benefits

- Easy to operate. It's menu-driven, with front panel controls and easy access to any major display screen
- Large, easy-to-read data display can be viewed from any angle
- Measured and calculated data are presented on one screen, and updated on a continuous basis
- Setups can be customized so data can be provided in a format convenient for you
- Perform tests for any of 10 selectable fuels
- Calibration adjustments can be made easily in the field
- Sensors and sensor filters can be easily accessed and maintained
- Save over 1900 complete test records in memory which are time and date coded
- Data can be logged by interval and duration
- Print individual test records to an internal printer in real time or from memory
- Download test data to a PC for use in other software programs
- EPA/ETV Test Verified Performance

**For more information about BACHARACH's ECA 450
call us toll-free, at 1-800-736-4666 for the
Bacharach distributor or representative nearest you.
In Canada, call 1-800-328-5217.**

ORDERING INFORMATION

PART NO.	DESCRIPTION
24-7221	Base Unit (O ₂ , CO, T _s , T _a , DP)
24-3026	CO (high) Sensor
24-3027	NO Sensor
24-3028	Combustible Sensor
24-3029	NO ₂ Sensor
24-3030	SO ₂ Sensor (requires NO ₂ option)
24-1124	20 ft hose extension
24-3024	24" probe
24-3025	36" probe
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
24-7224	Compact sample conditioner/probe assembly. Includes Peltier chiller/probe assembly, built-in filter, condensate pump and 15' hose assembly
07-1644	Filters (pkg. of 3)
24-7059	Calibration Kit (does not include gas)
104-1800	Thermocouple Wand Extension
104-4027	Serial Cable DB.9M to DB.9F
24-0980	Printer Paper (5 rolls)

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% (oxygen dependent)
Stack Temperature	-4 to 2400 degrees F (-20 to 1215° C)
Primary/Ambient Temperature	-4 to 999 degrees F (-20 to 999° C)
Pressure/Draft	-27.7 to 27.7 inches of H ₂ O

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 _x (NO _x = NO + NO ₂)	0 to 4000 ppm
NO _x referenced to % O ₂	0 to 17000 ppm
CO referenced to % O ₂	0 to 99999 ppm
NO referenced to % O ₂	0 to 14900 ppm
NO ₂ referenced to % O ₂	0 to 2100 ppm
SO _x referenced to % O ₂	0 to 17000 ppm

Accuracy

Oxygen	± 0.3% O ₂ on practical concentration 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 256 and 480°F (± 3°C between 125 and 249°C) ± 8°F between 481 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 ₂	± 5% of reading or ± 5 ppm whichever is greater between 0-500 ppm NO ₂
SO ₂	± 5% of reading or ± 10 ppm whichever is greater between 0-2000 ppm SO ₂
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

See EPA/ETV Joint Verification Statement for test results.

* Optional

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