



Combustion Analyzers

Portable Combustion Analyzer PCA[®]3



PCA[®]3

Features & Benefits:

- Large full color graphic display with bright backlighting, zoom display and dimming mode
- Sturdy metal gas and draft connectors
- Uses up to 6 electrochemical sensors – field-upgradable
- Unique B-Smart[®] sensor technology saves downtime and calibration costs
- Ten different fuels – ability to load custom fuels
- Automatic CO over-range protection
- Measures and displays flue gas oxygen, carbon monoxide, stack temperature, combustion air temperature, draft and differential pressure
- Loss and efficiency are calculated from standard heat-loss calculations or using the Siegert formula for Europe
- Multilingual display

Bacharach's all new PCA[®]3 is the definitive combustion and emissions analyzer that enables fast and accurate measurement for on-demand or semi-continuous sampling of light industrial, institutional, commercial and residential furnaces, boilers and appliances.

Powerful and Easy to Use!

The Bacharach PCA[®]3 is the perfect tool for service technicians and boiler contractors who need to ensure safe operating conditions, determine combustion efficiency and perform emissions testing. This lightweight handheld combustion and emissions analyzer directly measures and displays Flue Gas Oxygen (O₂), Carbon Monoxide (CO), Stack Temperature, Draft, Differential Pressure, Combustion Air Temperature and optionally measures and displays Nitric Oxide (NO), Nitrogen Dioxide (NO₂) and Sulfur Dioxide (SO₂). The PCA[®]3 simultaneously calculates and displays Combustion Efficiency (EFF), Excess Air (EA), Carbon Dioxide (CO₂), NO_x and Oxygen reference values. Plus, the PCA[®]3 performs combustion calculations for ten different fuels and uses up to six field-upgradable electrochemical sensors. With its large, bright full-color graphic display reading combustion and emissions test results in any work environment has never been easier!





PCA 3 Specifications

| | North American Version | European Version |
|--|--|--|
| Measurement Ranges: | | |
| Primary/Ambient Air Temperature | -4° to 999° F | -20° to 537° C |
| Stack Temperature | -4° to 2192° F | -20° to 1200° C |
| Oxygen | 0.1 to 20.9% | 0.1 to 20.9% |
| Carbon Monoxide (H ₂ Compensated) | 0 to 4,000 ppm | 0 to 4,000 ppm |
| Carbon Monoxide (High Range) | 4,001 to 20,000 ppm | 4,001 to 20,000 ppm |
| Nitric Oxide | 0 to 3,000 ppm | 0 to 3,000 ppm |
| Nitrogen Dioxide | 0 to 500 ppm | 0 to 500 ppm |
| Sulfur Dioxide | 0 to 5,000 ppm | 0 to 5,000 ppm |
| Pressure | +/- 72 inwC | +/- 179 mB |
| Calculated Ranges: | | |
| Combustion Efficiency | 0.1 to 100.0 % | EFF 0.1 to 100.0% ETA 0.1 to 112.0% (Fuel Dependent) qA 0.1 to 100.0% |
| Stack Loss | --- | Lambda 1 to 9.55% |
| Excess Air | 1.0 to 250% | |
| Carbon Dioxide | 0 to Fuel Dependent Maximum | 0 to Fuel Dependent Maximum |
| NO _x (NO + NO ₂) | 0 to 3500 ppm | 0 to 3500 ppm |
| NO _x Referenced to % O ₂ | 0 to 9999 ppm | 0 to 9999 ppm |
| CO Referenced to % O ₂ | 0 to 9999 ppm | 0 to 9999 ppm |
| NO Referenced to % O ₂ | 0 to 9999 ppm | 0 to 9999 ppm |
| NO ₂ Referenced to % O ₂ | 0 to 9999 ppm | 0 to 9999 ppm |
| SO ₂ Referenced to % O ₂ | 0 to 9999 ppm | 0 to 9999 ppm |
| CO/CO ₂ | --- | 0.0001 to Fuel Dependent Maximum |
| Selectable Fuels: | Natural Gas Oil #2 Oil #4 Oil #6 Propane Coal Wood Kerosene Bagasse Digester Gas | Natural Gas KOKS LEG Propane Oil #2 Oil #6 Coal BioFuel LPG Butane |
| Accuracy: | | |
| Oxygen | +/- 0.3% O ₂ (Flue Gas) | +/- 2° C between 0° to 124° C |
| Stack Temperature | +/- 4° F between 32° to 255° F +/- 6° F between 256° to 480° F +/- 8° F between 481° to 752° F | +/- 3° C between 125° to 249° C +/- 4° C between 250° to 400° C +/- 1° C between 0 to 100° C |
| Primary/Ambient Air Temperature | +/- 2° F between 32° to 212° F | +/- 0.05 mB between -2.49 to 2.49 mB |
| Pressure/Draft | +/- 0.02 inwC between -1 to 1 inwC +/- 2% Reading between -10 to 10 inwC +/- 3% Reading between -40 to 40 inwC | +/- 2% Reading between -24.9 to 24.9 mB +/- 3% Reading between -100 to 100 mB |
| CO | +/- 5% of reading or 10 ppm in the range of 0 to 2000 ppm CO + 10% of reading in the range of 2001 to 4000 ppm | |
| NO | +/- 5% of reading or 5 ppm whichever is greater in the range of 0 to 2000 ppm NO | |
| NO ₂ | +/- 5% of reading or 5 ppm whichever is greater | |
| SO ₂ | +/- 5% of reading or 10 ppm whichever is greater in the range of 0 to 2000 ppm SO ₂ | |
| Dimensions: | 9" x 3" x 2 1/2" | 22.9 cm x 7.6 cm x 6.3 cm |
| Weight: | 1.4 lbs (w/batteries) | 0.6 kg (w/batteries) |
| Body Materials: | Durable ABS Housing/Rugged Rubberized Over-molding and Protective Boot w/Magnet | |
| User Interface: | Full Color Graphic Display (320 x 240 pixels), Optional Infrared Printer | |
| Operating Temperature Range: | 32° to 104° F | 0° to 40° C |
| Operating Humidity Range: | 15-90% RH Non-condensing | |
| Power: | 4 AA Alkaline Batteries Optional Universal AC Adapter (100 to 240 Volts at 47 to 63 Hz) | |
| Battery Life: | Minimum of 10 Hours of Operation | |
| Approvals: | CE Mark | EN 55011, EN 50270, CE Mark, EN 50379-2 |



PCA[®]3 Kit

PCA[®]3 Combustion Analyzer, 12" Probe Assembly, Protective Boot w/Magnet, Fyrite[®] User Software, USB Cable, Replacement Filter Element (pkg. of 3), 8 'AA' Alkaline Batteries, Hard Carrying Case and Printer

PCA[®]3 Basic

PCA[®]3 Combustion Analyzer, 12" Probe Assembly, Protective Boot w/Magnet, Fyrite[®] User Software, USB Cable, Replacement Filter Element (pkg. of 3), 4 'AA' Alkaline Batteries and Hard Carrying Case

PCA[®]3 Ordering Information

| N. AM | EU | |
|-----------|-----------|---|
| 0024-8440 | 0024-8460 | PCA [®] 3 225 (O ₂ , CO) |
| 0024-8441 | 0024-8461 | PCA [®] 3 235 (O ₂ , CO, NO) |
| 0024-8442 | 0024-8462 | PCA [®] 3 245 (O ₂ , CO, CO high) |
| 0024-8443 | 0024-8463 | PCA [®] 3 255 (O ₂ , CO, SO ₂) |
| 0024-8444 | 0024-8464 | PCA [®] 3 265 (O ₂ , CO, NO, NO ₂) |
| 0024-8445 | 0024-8465 | PCA [®] 3 275 (O ₂ , CO, NO, SO ₂) |
| 0024-8446 | 0024-8466 | PCA [®] 3 285 (O ₂ , CO, NO, CO high) |
| 0024-8447 | 0024-8467 | PCA [®] 3 225 Kit (O ₂ , CO, printer) |
| 0024-8448 | 0024-8468 | PCA [®] 3 235 Kit (O ₂ , CO, NO, printer) |
| 0024-8449 | 0024-8469 | PCA [®] 3 245 Kit (O ₂ , CO, CO high, printer) |
| 0024-8450 | 0024-8470 | PCA [®] 3 255 Kit (O ₂ , CO, SO ₂ , printer) |
| 0024-8451 | 0024-8471 | PCA [®] 3 265 Kit (O ₂ , CO, NO, NO ₂ , printer) |
| 0024-8452 | 0024-8472 | PCA [®] 3 275 Kit (O ₂ , CO, NO, SO ₂ , printer) |
| 0024-8453 | 0024-8473 | PCA [®] 3 285 Kit (O ₂ , CO, NO, CO high, printer) |

PCA[®]3 Replacement Parts & Accessories

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|-----------|---|
| 0024-1541 | B-Smart [®] CO (H ₂ Compensated) Sensor |
| 0024-1542 | B-Smart [®] CO (high range) Sensor |
| 0024-1545 | B-Smart [®] NO Sensor |
| 0024-1544 | B-Smart [®] NO ₂ Sensor |
| 0024-1543 | B-Smart [®] SO ₂ Sensor |
| 0024-0788 | Replacement O ₂ Sensor |
| 0024-0789 | Replacement CO Sensor |
| 0024-0881 | Replacement NO Sensor |
| 0024-0997 | Replacement CO (high range) |
| 0024-0998 | Replacement SO ₂ Sensor |
| 0024-1027 | Replacement NO ₂ Sensor |
| 0024-1400 | IrDA Printer w/Disposable Batteries (comes with Reporting Pkg. Kit) |
| 0024-1310 | Printer Paper (5 rolls) |
| 0006-8733 | Printer Paper (1 roll) |
| 0024-1254 | Universal AC Power Adapter (110-240V) |
| 0007-1644 | Replacement Filter Element (pkg. of 3) |
| 0024-7224 | Compact Sample Conditioner* |
| 0024-3004 | Replacement Probe Assembly (North American) |
| 0024-3053 | Replacement Probe Assembly (European) |
| 0024-1124 | 20 ft. Hose Extension with Sample, Draft and Thermocouple Lines |
| 0024-1470 | Fyrite [®] User Software |
| 0021-7006 | Tru Spot Smoke Tester |

All instruments can be upgraded to include combinations of CO (high), NO, NO₂ and SO₂.

