portable
flue gas
monitoring
LANCOM III
the world’s most versatile portable flue gas analyzer

The new Lancom III is now firmly established at the forefront of portable flue gas analyzer technology.

In excess of two thousand Lancom analyzers are in use today, in a wide range of applications - all subjected to very different measurement conditions.

Features & Benefits

- Monitoring of up 17 measurement parameters - one instrument to meet all requirements
- Up to 9 simultaneous gas measurements - user selectable
- Weighs only 6kg (13lbs) - easily carried around plant
- Robust, industrial design - for daily use in the harshest plant environments
- Integral printer - instant record of measurement readings
- Wake and Sleep, semi-continuous operation mode - for periodic unattended operation
- Range of user selectable options - ideally matched to application requirements
- Data acquisition & analysis software - capture, manipulate, and report data on your PC
- Simple field upgrade - add features and options as and when required
- Meets US EPA CTM 034 reference method - report generation to recognized standards
### Measurement Specifications

<table>
<thead>
<tr>
<th>Sensor Type</th>
<th>Standard Range</th>
<th>Max. Range</th>
<th>Accuracy</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen, O₂</td>
<td>0 to 25.0 % Vol.</td>
<td>0 to 30.0 % Vol.</td>
<td>±1 %</td>
<td>±0.1 % Vol.</td>
</tr>
<tr>
<td>Carbon Monoxide, CO (low)</td>
<td>0 to 2 000 ppm</td>
<td>0 to 10 000 ppm</td>
<td>±2 %*</td>
<td>±1 ppm</td>
</tr>
<tr>
<td>CO (H₂) compensated</td>
<td>0 to 2 000 ppm</td>
<td>0 to 4 000 ppm</td>
<td>±2 %*</td>
<td>±1 ppm</td>
</tr>
<tr>
<td>Carbon Monoxide, CO (high)</td>
<td>0 to 4 %</td>
<td>0 to 10 %</td>
<td>±2 %*</td>
<td>±1 ppm</td>
</tr>
<tr>
<td>Sulphur Dioxide, SO₂</td>
<td>0 to 2 000 ppm</td>
<td>0 to 5 000 ppm</td>
<td>±2 %*</td>
<td>±1 ppm</td>
</tr>
<tr>
<td>Nitric Oxide, NO</td>
<td>0 to 1 000 ppm</td>
<td>0 to 5 000 ppm</td>
<td>±2 %*</td>
<td>±1 ppm</td>
</tr>
<tr>
<td>Nitrogen Dioxide, NO₂</td>
<td>0 to 100 ppm</td>
<td>0 to 1000 ppm</td>
<td>±2 %*</td>
<td>±1 ppm</td>
</tr>
<tr>
<td>Hydrogen Sulphide, H₂S</td>
<td>0 to 200 ppm</td>
<td>0 to 1 000 ppm</td>
<td>±2 %*</td>
<td>±1 ppm</td>
</tr>
<tr>
<td>Carbon Dioxide, CO₂ **</td>
<td>0 to 25.0 % Vol.</td>
<td>-</td>
<td>±0.5 % Vol</td>
<td>±0.1 % Vol.</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>0 to 5.0 % Vol.</td>
<td>(Application dependent)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flue Gas/Ambient Temperature</td>
<td>Measured</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draft</td>
<td>± 51 cm / 20 &quot; Water Gauge ***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow (velocity)</td>
<td>1 to 50 m/s</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Special ranges are available

*Calibration per CTM034 or LAND factory procedure

**True measurement if sensor fitted (calculated if not)

***Reduced to ± 26 cm / 10 " Water Gauge when used with flow probe

# Operating at maximum possible range may affect sensor life and accuracy

### Combustion & Environmental calculations

- Combustion efficiency
- Loss
- Excess Air
- CO₂ (where no sensor fitted)
- Oxygen normalization
- Total NOx
- Wet or dry basis
- Automatic conversions - ppm, mg/m³, lb/mmBtu, ng/J

### Sensor Types

Lancom analyzers use the following sensors in order to measure gas concentration levels.

<table>
<thead>
<tr>
<th>Sensor Type</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrochemical</td>
<td>CO Low, CO High, CO Low H₂ compensated, O₂, NO, NO₂, SO₂ and H₂S</td>
</tr>
<tr>
<td>Infrared</td>
<td>CO₂</td>
</tr>
<tr>
<td>Pellistor/Catalytic</td>
<td>C₄H₇</td>
</tr>
</tbody>
</table>
**Easy access sensors**

Each sensor is installed in its own unique position. Replacing a sensor is a simple process and will take only a few minutes. Undip the side panel for access, swap the sensor and re-calibrate.

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**Convenient catchpot - visible and accessible**

The side-mounted catchpot is both fully protected and highly visible for rapid checking, removal and emptying.

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**Flue gas & ambient temperature**

The analyzer takes a direct thermocouple temperature measurement of the flue gas, and has an ambient temperature sensor fitted. These are required for making accurate combustion efficiency calculations.

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**Instant record of measurement data**

The built-in thermal printer provides an immediate record of the measurement data. All essential information including date and time are printed.

```
LONFIELD POWER STATION
BOILER NO 2
MAIN SITE
Type of fuel:
Light Fuel Oil
Dry analysis
O2 normalisation: off
Date: 05.08.02
Time: 10:23
T ambient : 25 °C
T gas : 266 °C
Tg - Ta : 241 °C
CO : 2055 ppm 55mg/Nm3
SO2 : 105 ppm
NO2 : 43 ppm
NO : 272 ppm
O2 : 1.71 %
CdxSix : 0.65 %
H2S : 742 ppm
CO2 : 14.3 %
NOx : 315 ppm
Velocity : 3.0 m/s
Flue Temp. : 266 °C
Flow : 36 cu.m/hr
efficiency : 90.2 %
loss : 8.8 %
water : 0.0 %
O2 norm : 0.0 %
```

SAMPLE POINT B34B
New micro-sensor technology used in the Lancom III, enables direct measurement of CO₂ in flue gas.

The combination of this revolutionary CO₂ sensor with the measurement capability offered by the flow probe, can give quantitative information on greenhouse gas emission.

**Direct CO₂ Measurement capability**

**Backlit LCD user interface**

The analyzer is fitted with a full function, sealed alpha-numeric backlit LCD and user interface.

**Automatic Sensor Protection**

- **Auto Purge of sensors on system shutdown**
  Clears system of corrosive flue gases.

- **CO overrange protection**
  Automatically purges low CO sensor and switches to high range measuring mode, if high levels of CO are encountered.

**Straightforward servicing**

Service is simple via the menu driven software. Self diagnostic checks are run continuously on sensor life and calibration status together with battery life.

**Clip-in filters - visible and quick to change**

The chemical and particulate filters are mounted on the side of the instrument. Visible inspection and replacement is straightforward. The rugged case design protects all components from damage.

**Long life rechargeable battery**

Rechargeable batteries give up to 8 hours continuous operation. A power supply cable is supplied for mains power operation and battery recharging.

**Setup and measure within minutes**

Simply switch on, an automatic zero calibration is performed by the analyzer. Plug in the sample probe and take real-time gas readings in a matter of minutes.

**in portable flue gas monitoring**
Selecting the analyzer

The following features are standard on all instruments:

- Standard Sample Probe
- Built-in Thermal Printer
- Data Logging
- RS 232 or RS 422 Serial Communications Interface
- Carrying Case

The user selects which gases (between 3 and 9) and options are required.

Options & Accessories

- Draft Measurement - internal stack pressure in hPa or inches water gauge
- Flow Measurement - flue gas velocity, flow rate and mass emissions rate
- Smoke Measurement - readings to Bacharach smoke scales
- Range of Sample Probes - Smoke, Flow, DrySampler* and High Temperature
- Insight Data Acquisition Software system - simple-to-use Windows™ reporting software
- Analogue outputs (12 current loops, independently user configurable)
- Wake and Sleep facility (Semi-continuous monitoring) - cyclical measurement
- Dual language display options - English, French, German, Italian, Spanish & Polish

*US Patent No. 6782767

Sample Probes

A wide range of sample probes suitable for specific application and measurement requirements are available.
Request Information ref. PDS 198

Wake and Sleep

Semi-continuous monitoring can be achieved by cyclically sampling and logging gas concentrations over a period of time. This is achieved by alternate ‘wake’ and ‘sleep’ phases. User settings include wakeup interval, number of samples between wakeup, sample interval and first wakeup.

Insight - Data Acquisition & Analysis Software

Insight is a Windows™ based data acquisition software program, used for logging measurement data directly from a Lancom portable analyzer.

Data can be analyzed either in real time or during review of stored data. A range of statistical and graphical tools, allow the user to perform measurements, manipulate data, present and print data.
Request Information ref. PDS 205
Integral sample conditioning

The gas sample is drawn into the analyser via a sample probe and hose connected to the input connection on the front panel of the analyser. The sample enters the water catchpot where residual water is removed. The sample gas is then passed through a 0.1 micron particulate filter.

Filtering out damaging chemicals - prolonging sensor life

After removing flow and pressure variations in the sample flow, the gas is routed to the sensor manifolds. To ensure that the CO and C\textsubscript{x}H\textsubscript{y} sensors are not poisoned by other gases in the sample, it is fed through a chemical filter prior to being routed to these sensors. This action ensures longer sensor life and higher accuracy.

Sensor protection

To protect the CO\textsubscript{low} sensor from high levels of CO (normally levels >2000ppm), a dedicated purge pump is automatically triggered which blows ambient air to protect the sensor ensuring optimum recovery time and maximum sensor life.

Sensor accuracy and longevity

To maintain sensor integrity, they are purged with fresh air each time the analyzer is switched on or off. For accuracy they are calibrated on ‘switch on’ with ambient air.
Specifications

**Display**
- Full function alphanumeric/graphic LCD with backlight
- 40 x 8 Matrix Liquid Crystal

**Keypad**
- Tactile membrane (integral with display) functions keys and cursors

**Indicators**
- LED type for ON (Power), Stand-by, Service, Charge, Low Batt., Fault

**Power Supply**
- 95-265 V a.c. ±10%, 50-60 Hz, 30 Watts
- Rechargeable battery 2 x 6 V 4 Amp. hours
- Typical 8 hr. operation, dependent on options fitted

**Ambient Temperature**
- -5 °C to 45 °C (+23 °F to 113 °F)

**Case**
- Medium density blended polyethylene

**Dimensions**
- 453 x 120 x 245 mm (17.8” x 4.7” x 9.6 inches)

**Weight**
- 6 kg (13 lb)

**Standard Accessories**
- Integral water catchpot and filters
- Rechargeable lead acid battery (internal)
- Mains power supply cable
- Probe handle, Hose and Probe pipe
- (Lengths listed below under options)
- Carrying case
- Thermal printer
- Data logging

**Options**
- Min of 3 to max 9 gases in total, from a selection of 9 gases
- Probe length options - 0.3, 1.0, 1.5, 2.0, 3.0m/1, 3.3, 5, 6.5, 10ft
- Alternative probes available - Refer to Data Sheet Reference PDS198 for details
- Hose length options - 3 m/10 ft or 10 m/33 ft
- Draft Measurement
- Flow Measurement, probe length options - 0.7, 1.2, 2.2, 3.0 m/2.3, 3.9, 7.2, 9.8 ft
- Smoke Measurement, probe length options - 0.3, 0.75, 1.0 m/1, 2.4, 3.2 ft
- Insight Data Acquisition Software system - Refer to Data Sheet Reference PDS205 for details
- Analogue outputs (12 current loops, independently configurable)
- Wake and Sleep facility (Semi-continuous monitoring)
- Language display options

*Continuous Product Development may make it necessary to change these details without notice*