

# LANCOM 4

PORTABLE FLUE GAS MONITORING



CO low • CO high • O<sub>2</sub> • NO • NO<sub>2</sub> • NO<sub>x</sub> • CO<sub>2</sub> • H<sub>2</sub>S • SO<sub>2</sub> • C<sub>x</sub>H<sub>y</sub>



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**LAND**  
**AMETEK**<sup>®</sup>  
PROCESS & ANALYTICAL INSTRUMENTS



QUALITY CUSTOMER SOLUTIONS

# LANCOM4

## AMETEK LAND HAS BEEN MANUFACTURING PRECISION MEASURING EQUIPMENT SINCE 1947.

WE ARE SPECIALISTS IN NON-CONTACT TEMPERATURE MEASUREMENT AND COMBUSTION MONITORING WITH APPLICATIONS ACROSS DIVERSE INDUSTRIES SUCH AS STEEL AND GLASS MAKING, POWER GENERATION AND CEMENT MANUFACTURE.

As part of AMETEK Process & Analytical Instruments Division since 2006, our customers benefit from the worldwide AMETEK sales and service team.

THE LANCOM 4 IS THE MOST ACCURATE, ROBUST AND FLEXIBLE PORTABLE FLUE GAS ANALYSER CURRENTLY AVAILABLE.

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

## THE WORLD'S MOST VERSATILE PORTABLE FLUE GAS ANALYSER



### FEATURES ▼

|   |
|---|
| Monitoring of up to 17 measurement parameters   |
| Up to 9 gas measurements in a single instrument |
| High quality color display                      |
| Multiple Language support                       |
| USB Communications Support                      |
| Weights only 6 kg (13 lbs)                      |
| Robust, industrial design                       |
| Wake and Sleep, semi-continuous operation mode  |
| Range of user selectable options                |
| Data acquisition & analysis software            |
| Simple field upgrade                            |
| Meets ASTM D-6522 with Dry Sampler probe        |
| Convenient Catchpot - Visible and Accessible    |
| Clip-In Filters - Quick to change               |

### BENEFITS ▼

|  |
|--|
| One instrument to meet all requirements                                |
| User selectable  |
| Visualise your data with new widescreen display                        |
| Navigate the menu in 6 major languages (others available upon request) |
| Simple interface to PC and data transfer - supports USB memory sticks  |
| Easily carried around plant with shoulder strap                        |
| For daily use in the harshest plant environments                       |
| For periodic unattended operation                                      |
| Ideally matched to application requirements                            |
| Capture, calculate, and report data on your PC                         |
| Add features and options as and when required                          |
| Report generation to recognised standards                              |
| Side mounted, highly visible for fast and easy removal and emptying    |
| Recessed into the side; replacement is straightforward                 |



SIMPLICITY IS BUILT IN

**SET-UP AND MEASURE IN MINUTES;**  
THE LONG LIFE BATTERY LASTS  
8 HOURS ON A SINGLE CHARGE;  
INTEGRAL SAMPLE CONDITIONING  
**- ALL IN ONE BOX.**

LANCOM4 IN ACTION ▼



## SAMPLE PROBES

A WIDE RANGE OF SAMPLE PROBES SUITABLE FOR SPECIFIC APPLICATION AND MEASUREMENT REQUIREMENTS ARE AVAILABLE.

### 1: DrySampler Probe

- The first truly portable sample dryer probe, incorporating a revolutionary design. (US Patent No. 6782767)
- No electrical power required
- No heated sample line required
- Removes moisture from sample gas at the probe, giving the most accurate, reliable analysis of soluble gases
- Low cost

### 2: Standard Probe

Suitable for most applications. High quality, stainless steel probe with a sintered, replaceable filter tip and an adjustable collar to control insertion length

### 3: Smoke Probe

Provides smoke measurements using the smoke spot number,

### 4: Flow Probe

Designed for making gas flow measurements using proven pitot design for high accuracy.

- Flow Rate
- Flue Gas Velocity
- Mass Emissions Rate

### 5: High Temperature Probe

- Specifically designed for use in high temperature gas streams
- Suitable for flue gas temperatures up to 1400 °C / 2552 °F (higher temperatures available upon request)
- Unique handle designed to dissipate heat from sample
- Ceramic probe tube easily replaced
- Special heat-deflecting shield to protect user from hot gases escaping from the flue
- Does not measure flue temperature



## PROBE SPECIFICATIONS ▼

| PROBE                            | LENGTH  | MAX TEMPERATURE    | OPTIONS/ACCESSORIES   |
|----------------------------------|---|--------------------|---|
| 1. DrySampler and<br>2. Standard | 0.3, 1.0, 1.5, 2.0, 3.0 m /<br>0.9, 3.3, 5.0, 6.6, 9.8 ft | 600 °C<br>1112 °F  | 3 m or 10 m / 10 ft or 33 ft<br>hose available                          |
| 3. Smoke                         | 0.3, 0.75, 1.0 m<br>0.9, 2.4, 3.3 ft                      | 600 °C<br>1112 °F  | 3 m / 10 ft hose available  |
| 4. Flow                          | 0.7, 1.0, 2.2, 3.0 m<br>2.3, 3.9, 7.2, 9.8 ft             | 600 °C<br>1112 °F  | 3 m / 10 ft hose, filter papers,<br>smoke spot chart, In-line flowmeter |
| 5. High Temp                     | 0.5, 1.0, 1.5, 2.0 m<br>1.6, 3.5, 5.0, 6.6 ft             | 1400 °C<br>2552 °F | 3 m or 10 m / 10 ft or 33 ft<br>hose available                          |

**Note:** Flue temperature measurement is not possible when using the high-temperature probe

# MEASUREMENT SPECIFICATIONS

| Sensor                          | Detection Limit                | Full Scale Range | Upscale Repeatability | Resolution |
|---------------------------------|--------------------------------|------------------|-----------------------|------------|
| O <sub>2</sub>                  | 0.2 %                          | 0 to 30 % v/v    | ±1 %                  | 0.1 % v/v  |
| CO (low)                        | 2 ppm                          | 0 to 6000 ppm    | ±2 %*                 | 0.1 ppm    |
| CO (H <sub>2</sub> compensated) | 2 ppm                          | 0 to 4000 ppm    | ±2 %*                 | 0.1 ppm    |
| CO (high)                       | 20 ppm                         | 0 to 10 %        | ±2 %*                 | 0.1 ppm    |
| SO <sub>2</sub>                 | 2 ppm                          | 0 to 4000 ppm    | ±2 %*                 | 0.1 ppm    |
| NO                              | 2 ppm                          | 0 to 5000 ppm    | ±2 %*                 | 0.1 ppm    |
| NO <sub>2</sub>                 | 2 ppm                          | 0 to 1000 ppm    | ±2 %*                 | 0.1 ppm    |
| H <sub>2</sub> S                | 4 ppm                          | 0 to 1000 ppm    | ±2 %*                 | 0.1 ppm    |
| CO <sub>2</sub> **              | 0.2 %                          | 0 to 20 % v/v    | ±2 %*                 | 0.1 % v/v  |
| Hydrocarbons (CxHy)             | (Application dependent)        | 0 to 5 % v/v     | ±4 %*                 | 0.1 % v/v  |
| Flue Gas/Ambient Temperature    | Measured                       |                  |                       |            |
| Draft                           | ± 50 hPa / 20" Water Gauge *** |                  |                       |            |
| Flow (velocity)                 | 1 to 50 m/s                    |                  |                       |            |

\*Calibration per ASTM D-6522 or LAND factory procedure

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

\*\*\*Reduced to ± 25 hPa / 10" Water Gauge when used with flow probe.

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

## SENSOR TYPES

|                     |   |
|---------------------|---|
| Electrochemical     | CO Low, CO High, CO Low H <sub>2</sub> compensated, O <sub>2</sub> , NO, NO <sub>2</sub> , SO <sub>2</sub> and H <sub>2</sub> S |
| Infrared            | CO <sub>2</sub>   |
| Pellistor/Catalytic | CxHy  |

## SEMI-CONTINUOUS MONITORING

Wake and Sleep monitoring takes gas measurements at user defined intervals. This is achieved by cyclically sampling and logging gas concentrations over a period of time (alternate 'wake' and 'sleep' phases). User settings include wakeup interval, number of samples between wakeup, sample interval and first wakeup.

## LEADING THE WAY IN PORTABLE FLUE GAS MONITORING

## COMBUSTION & ENVIRONMENTAL CALCULATIONS

- Combustion efficiency
- Loss
- Excess Air
- CO<sub>2</sub> (where no sensor fitted)
- Oxygen normalisation
- Total NO<sub>x</sub>
- Wet or dry basis
- Automatic conversions  
- ppm, mg / m<sup>3</sup>, lb / mmBtu, ng / J

# LANCOM4

## SPECIFICATION & DESIGN

### HIGH COLOR DISPLAY

New high resolution color display supports a multilingual, simple user interface.

### FLUE GAS & AMBIENT TEMPERATURE

The analyser 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.

### EASY ACCESS SENSORS

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

### STRAIGHTFORWARD SERVICING

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

### SETUP AND MEASURE WITHIN MINUTES

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

### STANDARD FEATURES

- Data log up to 250,000 records
- Wake and Sleep Function
- Insight PC software (free download)
- Carry Case



**CAPABLE OF MONITORING UP TO 9 DIFFERENT GASES**

### SELECTING THE ANALYZER ▼

## THE USER SELECTS WHICH GASES (BETWEEN 3 AND 9), THEN THE OPTIONS THAT ARE REQUIRED FOR THEIR APPLICATION

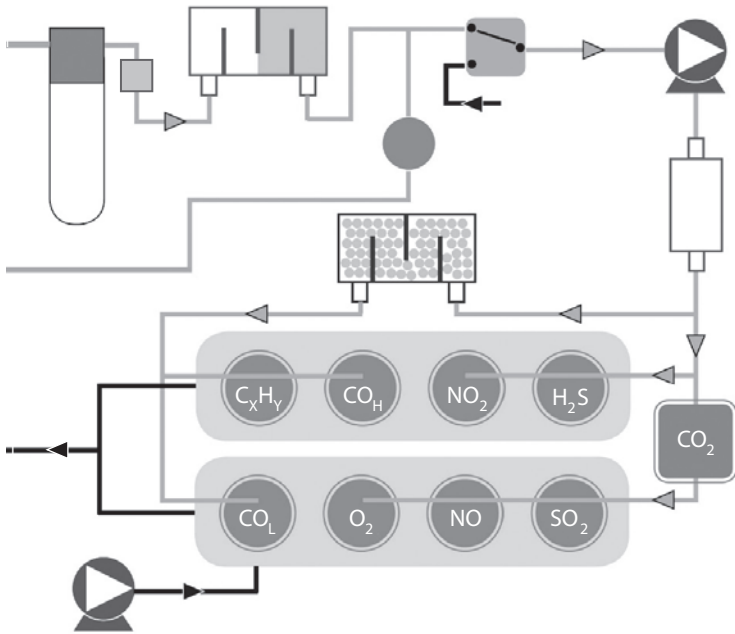
| OPTIONS           | DESCRIPTION  |
|-------------------|--|
| Draft Measurement | Internal stack pressure in hPa or inches water gauge |
| Flow Measurement  | Flue gas velocity, flow rate and mass emissions rate |
| Smoke Measurement | Readings of Smoke spot number                        |

| OPTIONS                  | DESCRIPTION  |
|--------------------------|--|
| Range of Sample Probes   | Smoke, Flow, DrySampler* and High Temperature          |
| Analog outputs           | Eight 4-20 mA signals, independently user configurable |
| Language display options | English, French, German, Italian, Spanish & Chinese    |

\*US Patent No. 6782767. European patent no. EP 1236 988B1



# HOW THE ANALYSER WORKS



- KEY**
- |                            |                      |
|----------------------------|----------------------|
| 1. Sample Gas Inlet        | 6. Air Input         |
| 2. Catchpot for condensate | 7. Sample Pump       |
| 3. Overflow Protector      | 8. Expansion Chamber |
| 4. Particulate Filter      | 9. Chemical Filter   |
| 5. Pressure Sensor         | 10. Purge Pump       |
|                            | 11. Exhaust          |

## INTEGRAL SAMPLE CONDITIONING

The gas sample is drawn into the analyser via a sample probe and hose connected to the input connection on the side 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

The sample gas is routed to the sensor manifolds, after removing flow and pressure variations. To ensure that the CO and C<sub>x</sub>H<sub>y</sub> sensors are not contaminated by other gases the sample gas is fed through a chemical filter prior to being routed to these sensors. This action prolongs sensor life and improves measurement accuracy.

## AUTOMATIC SENSOR PROTECTION

To protect the CO Low sensor from excessive levels of CO (normally levels >2000 ppm), the system automatically switches to the high range CO sensor (up to 40,000 ppm if fitted). The CO low sensor is then automatically purged using a dedicated pump which blows ambient air to protect the sensor, ensuring rapid recovery time and maximum sensor life.

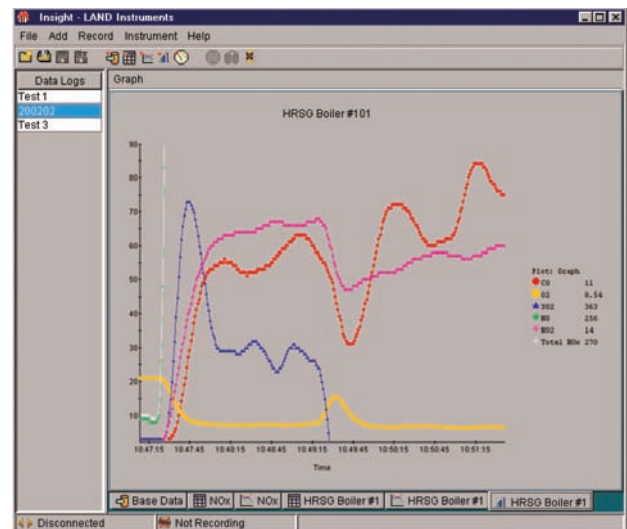
## SENSOR ACCURACY & LONGEVITY

The Lancom 4 performs a zero calibration every time it is switched on, and purges the sensors with ambient air before switching off. This ensures maximum accuracy and sensor longevity.

## INSIGHT DATA ACQUISITION & ANALYSIS SOFTWARE

### A SIMPLE TOOL FOR ON-SITE RECORD KEEPING, ANALYSIS AND REPORTING

- Available as a free download from [www.landinst.com](http://www.landinst.com)
- Real-time data display, capture and storage
- Range of display formats
- Integrated statistical analysis functions
- Range of calculations
- User definable alarms with event monitoring
- User-programmable averaging algorithms
- Export data to Microsoft Excel or text file
- Simple to use Windows-based software
- Ideal for ASTM D6522 reporting

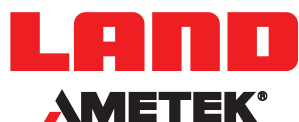


## SPECIFICATIONS

|                       |   |
|-----------------------|---|
| Display:              | Full function color LCD with backlight, wide QVGA display   |
| Keypad:               | Tactile membrane (integral with display) function keys and cursors  |
| Indicators:           | LED for ON (Power), Stand-by, Charge, Low Battery, Fault  |
| Power Supply:         | 95-265 V AC, 50-60 Hz, 30 Watts. Battery, rechargeable lead-acid (internal).<br>Typical 8 hour 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<br>Battery Charger Supply<br>Data Logging<br>Insight Data Acquisition Software (free download)<br>Wake and Sleep facility (Semi-continuous monitoring)<br>Carry Case  |
| Options:              | Min of 3 to max 9 gases in total, from a selection of 9 gases<br>Probe length options - 0.3, 1.0, 1.5, 2.0, 3.0 m/1, 3.3, 5, 6.5, 10 ft<br>Hose length options - 3 m/10 ft or 10 m/33 ft<br>Draft Measurement<br>Flow Measurement<br>Smoke Measurement<br>Analogue outputs (eight 4-20 mA outputs)<br>Languages - English, French, German, Italian, Spanish & Chinese; others available<br>External Printer |

DISCOVER HOW OUR BROAD RANGE  
**OF NON-CONTACT TEMPERATURE**  
MEASUREMENT AND COMBUSTION &  
EMISSIONS PRODUCTS OFFER A  
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