CO_{Low} CO_{High} CO_{Low/H_2comp} NO NO_x • NO_2 SO_2 H_2S SO_2 C_xH_y

LAND

Portable Flue Gas Monitoring

LANCOM 4

www.lancom4.com

An AMETEK® Company

LANCOM 4

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.

Features	Benefits
Monitoring of up 17 measurement parameters	One instrument to meet all requirements
Up to 9 gas measurements in a single instrument	User selectable
High quality colour display	Visualise your data with new widescreen display
Multiple Language support	Navigate the menu in English, French, German, Italian, Spanish and Chinese (other languages available upon request)
USB Communications Support	Simple interface to PC and data transfer - supports USB memory sticks
Weighs only 6 kg (13 lbs)	Easily carried around plant
Robust, industrial design	For daily use in the harshest plant environments
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 ASTM D-6522 with Dry Sampler probe	Report generation to recognised standards

CO Low

CO Low H_2 Comp

NO_2

O_2

SO_2

C_xH_y

CO_2

The world's most versatile portable flue gas analyser

NO

CO High

NO_x

H_2S


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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.

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.

High Colour Display

New high resolution colour display supports a multi-lingual, simple user interface.

Straightforward servicing

Service is simple via the menu driven software.

Self diagnostic checks are run continuously on calibration status and battery life.

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.

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.

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.

Direct CO_2 Measurement capability

The infrared sensor used in the Lancom 4 enables direct measurement of CO_2 in flue gas.

The combination of this CO_2 sensor with the measurement capability offered by the flow probe, can give quantitative information on greenhouse gas emission.

Data Logging

Internal data logging makes it easy to record measured gas concentration. After a measurement run, simply download the data to a USB memory stick to transfer to PC. The 64MB of available memory means an almost unlimited number of log records can be stored.

Long life rechargeable battery

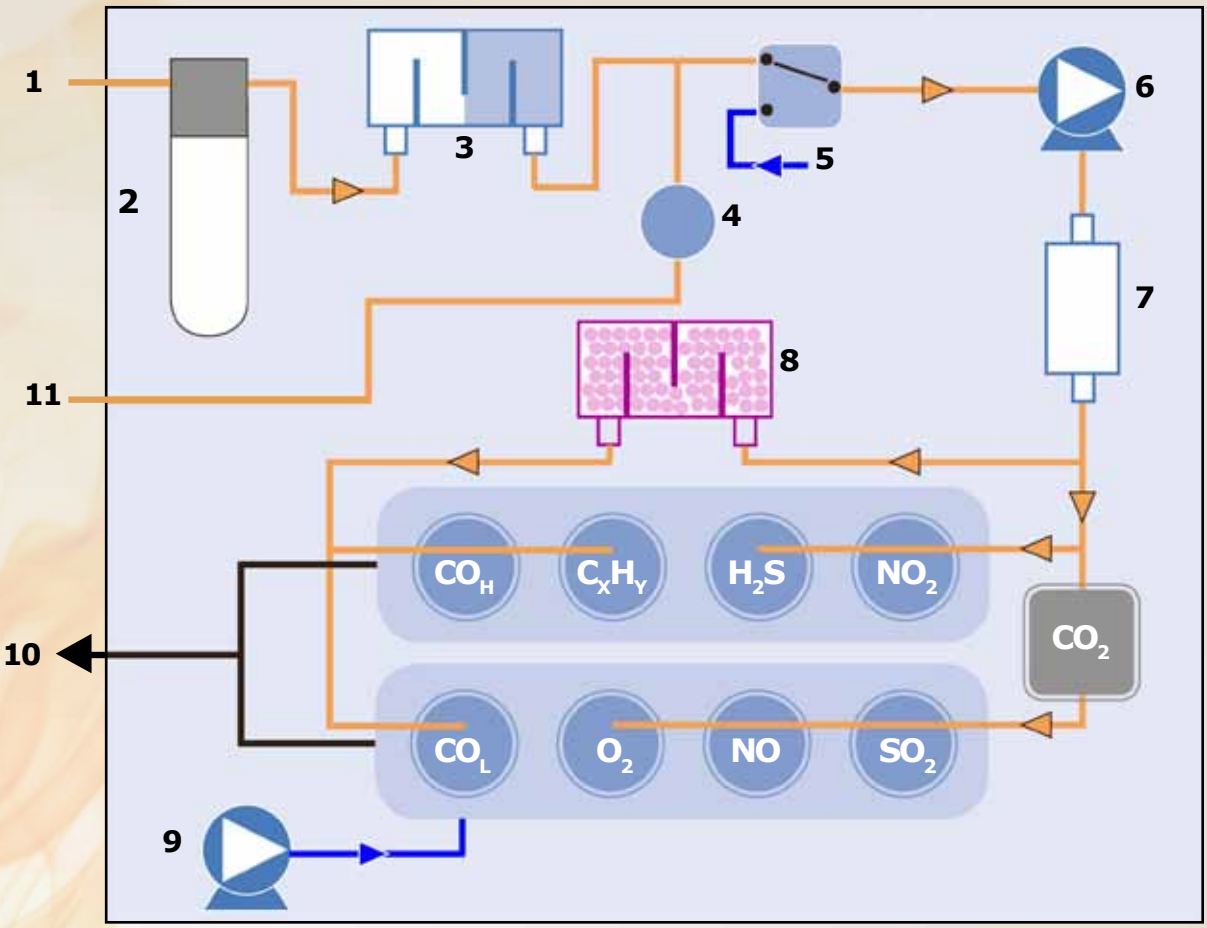
Rechargeable batteries give up to 8 hours continuous operation. A power supply cable is is supplied for battery recharging.

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.

How the analyser works



Key

1. Sample Gas Inlet
2. Catchpot for condensate
3. Particulate Filter
4. Pressure Sensor
5. Air Input
6. Sample Pump
7. Expansion Chamber
8. Chemical Filter
9. Purge Pump
10. Exhaust
11. Flow Probe Inlet

View showing measurement sensors

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_XH_Y sensors are not poisoned by other gases the sample gas is fed through a chemical filter prior to being routed to these sensors. This action ensures prolongs sensor life and improves measurement accuracy.

Automatic Sensor protection

To protect the CO Low sensor from excessive levels of CO (normally levels >2000ppm), the system automatically switches to the high range CO sensor (up to 4000ppm). 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 and 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.

Selecting the analyser

The following features are standard on all instruments:

- **Standard Sample Probe**
- **USB Interface**
- **Data Logging**
- **RS 232 or RS 422 Serial Communications Interface**

The user selects which gases (between 3 and 9) and then the options that are required for their application. (See list below)

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 (Bacharach Smoke scale)
Range of Sample Probes	Smoke, Flow, DrySampler* and High Temperature
Insight Data Acquisition Software system	Simple-to-use Windows™ reporting software
Analogue outputs	(16 current loops, independently user configurable)
Wake and Sleep facility (Semi-continuous monitoring)	Takes gas measurement at user defined intervals (see below)
Language display options	English, French, German, Italian, Spanish & Chinese

*US Patent No. 6782767 **Bacharach scale

Sample Probes

A wide range of sample probes suitable for specific application and measurement requirements are available.

Request Information ref. PDS 198

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

Measurement Specifications

Sensor	Minimum Range	Maximum Range#	Accuracy % of range	Resolution
O_2	0 to 25% v/v	0 to 30% v/v	±1%	0.1% v/v
CO (low)	0 to 100 ppm	0 to 4000 ppm	±2%*	0.1 ppm
CO (H_2 compensated)	0 to 100 ppm	0 to 4000 ppm	±2%*	0.1 ppm
CO (high)	0 to 4000 ppm	0 to 10 %	±2%*	0.1 ppm
SO_2	0 to 100 ppm	0 to 5000 ppm	±2%*	0.1 ppm
NO	0 to 100 ppm	0 to 5000 ppm	±2%*	0.1 ppm
NO_2	0 to 100 ppm	0 to 1000 ppm	±2%*	0.1 ppm
H_2S	0 to 200 ppm	0 to 1000 ppm	±2%*	0.1 ppm
CO_2 **	0 - 25% v/v		±2%*	0.1% v/v
Hydrocarbons (C_xH_y)	0 to 5% v/v (Application dependent)			0.1% v/v
Flue Gas/Ambient Temperature	Measured			
Draft	± 50 hPa / 20 " Water Gauge ***			
Flow (velocity)	1 to 50 m/s			

Note: Special ranges are available

**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

Combustion & Environmental calculations

- **Combustion efficiency**
- **Loss**
- **Excess Air**
- **CO_2 (where no sensor fitted)**
- **Oxygen normalisation**
- **Total NO_x**
- **Wet or dry basis**
- **Automatic conversions - ppm, mg/m³, lb/mmBtu, ng/J**

Sensor Types

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

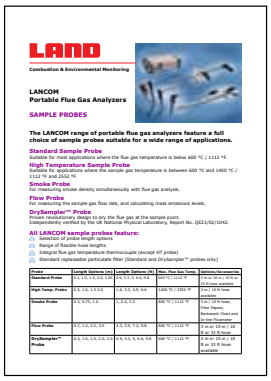
Sensor Type	Gas
Electrochemical,	CO Low, CO High, CO Low H_2 compensated, O_2, NO, NO_2, SO_2 and H_2S
Infrared	CO_2
Pellistor/Catalytic	C_xH_y

capable of monitoring up to 9 different gases

Specifications - LANCOM 4

Display:	Full function colour LCD with backlight, wide QVGA display
Keypad:	Tactile membrane (integral with display) function keys and cursors
Indicators:	LED type for ON (Power), Stand-by, Charge, Low Battery, Fault
Power Supply	95-265 V a.c. ±10%, 50-60 Hz, 30 Watts. Battery, rechargeable lead-acid (internal). 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,Battery Charger supply, Probe handle, Hose and Probe pipe (Lengths listed below under options), 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, 3.3 ft Insight Data Acquisition Software system - Refer to Data Sheet Reference PDS205 for details Analogue outputs (16 current loops, independently configurable) Wake and Sleep facility (Semi-continuous monitoring) Language display options - English, French, German, Italian, Spanish & Chinese, others available

Other related data sheets



Lancom Sample Probes - further information

Insight Data Acquisition System - further information

Combustion & Environmental Monitoring

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Applies in the USA

Continuous product development may make it necessary to change details without notice.