

KANE958

Flue Gas Analyser with direct O₂ Measurement and CO sensor protection

KANE LINK




Stock No: MAN00231 Rev: 1.00322

MARCH 2022

CONTENTS

	Page No.
KANE958 OVERVIEW	4
ANALYSER FEATURES AND KEYPAD	5-8
KEYPAD BUTTONS	6
ANALYSER LAYOUT	7
BACK OF ANALYSER - PROBE ETC	8
BATTERIES	9
BATTERY TYPE	9
REPLACING BATTERIES	9
TIME AND DATE	9
CHARGING NIMH BATTERIES	9
BATTERY DISPOSAL	9
GENERAL SAFETY	10
FIRST TIME USE	11
GENERAL OPERATING PRINCIPLE	11-15
QUICK START	11
USER INTERFACE	11
STATUS	12
STATUS BAR	12
STATUS BAR LAYOUT	13
STATUS BAR MESSAGE AREA	14
STATUS BAR ICONS	14
STATUS BAR ICONS LEVEL	14
STATUS BAR MENU OPTIONS	15
STANDARD OPTIONS	15
USING MENU	15
MENU ITEMS	16
MEASURING FLUE GASES	17

CO PROTECTION PUMP OPERATION	18
AUX SCREEN	18
EDITING AUX SCREEN	18
02/EFF SCREEN	18
CO/NO SCREEN	19
STORED MEMORY LOGS	19
MENU OPTIONS	19
VIEWING STORED LOGS	20
LOG VIEW MENU OPTIONS	20
FINDING STORED REPORTS	20
REPORT MENU OPTIONS	21
PRESSURE & TEMPERATURE TESTING	21
TEMPERATURE & PRESSURE DISPLAY	22
VIEWING, SENDING & PRINTING	22
PRESSURE MEASUREMENT GOOD PRACTICE	22
LARGE BORE TUBING ISSUES	23
PRINTING	24-25
KANE INFRARED PRINTER	25
PRINTOUTS	25
KANE  LINK	26
SPECIFICATIONS	27-28
EU DECLARATION	29
COLD WEATHER PRECAUTIONS	30
SERVICE - CALIBRATE - RECERIFY	31
KANE ASSET MANAGER (KAM)	32-34

KANE958 OVERVIEW

Your KANE958 combustion analyser measures:

- Carbon Monoxide (CO)
- Oxygen (O₂)
- Pressure
- Differential Temperature
- Temperature
- Differential Pressure

Depending on your options it measures or calculates:

- Carbon Dioxide (CO₂)
- Nitric Oxide (NO)
- Nitrogen Oxides (NO_x)
- CO/CO₂ ratio
- Combustion Efficiency
- Losses
- Excess Air
- Sulphur Dioxide (SO₂)
- Nitrogen Dioxide (NO₂)

Your KANE958 has a protective rubber cover with magnets for “hands-free” operation and is supplied with a flue probe with integral temperature sensor.

Your KANE958 has a low flow detector system to switch off the analyser pump if it detects water entering from an over filled water trap.

Your KANE958 has a large 6 line display showing data and test results based on your actions. The display bottom line also highlights analyser status at all times.

Your KANE958 prints test results using an optional infrared printer or wirelessly sends them to the KANE wireless APP.








Your KANE958 stores up to 45 logs of any combination of Combustion, AUX, Temperature & Pressure test results.

You can enter 2 lines of 24 characters on your test results printout.

ANALYSER FEATURES AND KEYPAD



KEYPAD BUTTONS

ICON	DESCRIPTION
 SAVE LOG	Long press to store data
 PRINT REPORT	Short press to print a report - Analyser offers a destination choice when wireless & irda fitted
 NAVIGATE UP	Short press to scroll up
 ENTER KEY	Use to select current option - also selects torch in some dial positions
 NAVIGATE DOWN	Short press to scroll down
 DATA HOLD	Short press to hold current data on screen - see status bar section on page 13
 PUMP ON/OFF	Press to turn pump on or off



Function Keys



Rotary dial

ANALYSER LAYOUT





BATTERIES

BATTERY TYPE

Your KANE958 uses rechargeable Nickel Material Hydride (NiMH) batteries - Using other battery types may void your analyser's warranty.



Although you can use Alkaline batteries you must not charge your analyser with Alkaline batteries fitted.

Do not mix NiMH cells with different capacities or from different manufacturers - All batteries must be identical.

REPLACING BATTERIES

Turn over your analyser, remove protective rubber cover, find battery compartment & fit 3 NiMH "AA" rechargeable batteries ensuring correct battery polarity. Replace battery cover & protective rubber cover.

TIME AND DATE

After changing batteries reset your analyser time & date.

CHARGING NiMH BATTERIES

Your KANE958 uses a standard Micro USB connector - For best results turn off then connect your charger. Charging indicator will illuminate then turn off when charging is complete.

Your first charge should be for 8 hours - Thereafter NiMH batteries can be topped up at any time, even for short periods

If your batteries discharge and your analyser enters a low power shutdown, 1 hour charge provides approx. 2 hours continuous use.

BATTERY DISPOSAL

Always dispose of depleted batteries using approved disposal methods to protect our environment.

GENERAL SAFETY



SAFETY WARNING

Your analyser extracts combustion gases that may be toxic in relatively low concentrations. These gases are exhausted from the back of the analyser. This analyser must only be used in well-ventilated locations by trained and competent persons after due consideration of all the potential hazards.

Portable gas detectors should conduct “bump” tests before relying on units to verify atmospheres are free from hazards.

A “bump” test is a way to check an instrument works within acceptable limits by briefly exposing it to known gas mixtures to change the output of all sensors present.

NOTE: This is different from a calibration where your analyser is exposed to known gas mixtures but allowed to settle to a steady figure with readings adjusted to the stated gas concentration of the test gas.

Protection Against Electric Shock (In accordance with EN 61010-1:2010):

This analyser is designed as Class III equipment and should only be connected to SELV circuits. The battery charger is designated as:

- Class II equipment
- Installation category II
- Pollution degree 2
- Indoor use only
- Altitude to 2000m
- Ambient temperature 0°C-40°C
- Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50%RH at 40°C
- Mains supply fluctuations not to exceed 10% of the nominal voltage

FIRST TIME USE

Charge your analyser batteries for 8 hours - an overnight charge should be sufficient for an average 8 hour day.

Take time to read this manual fully and be aware your analyser configuration may not support all features explained in this manual. Before using your analyser ensure it is set up for your requirements.


NOTE: Your analyser STATUS bar displays current time, date and battery status - Check time & date are correct as they can only be changed if you have not stored logs in Memory to protect the integrity of your stored data.

GENERAL OPERATING PRINCIPLE

Using your KANE958 is simple with the rotary dial and user interface. Most tests can be made with little user activity.




Your analyser status bar offers options based on tasks you are performing and displays useful information and messages.

QUICK START

Turn on your analyser in fresh outdoor air pressing the  button for 2 seconds. Your analyser starts a 60 second zero calibration - once completed select your tests by turning the analyser rotary dial.

USER INTERFACE

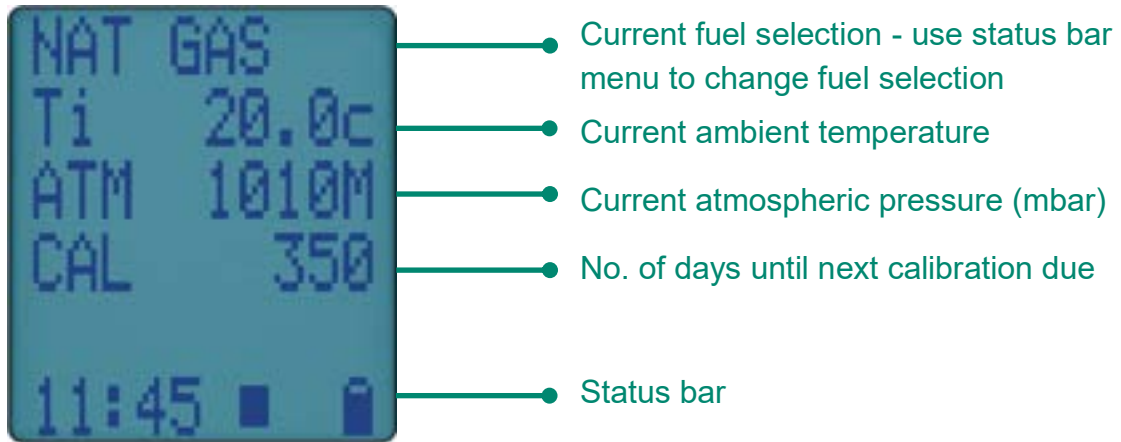
Your analyser display shows 5 lines of tests & a status bar. The backlight activates on each button press then turns off after 10 seconds.

Navigate through your options and menu choices via 3 dedicated  
&  buttons.

Button presses are either short or long.

STATUS

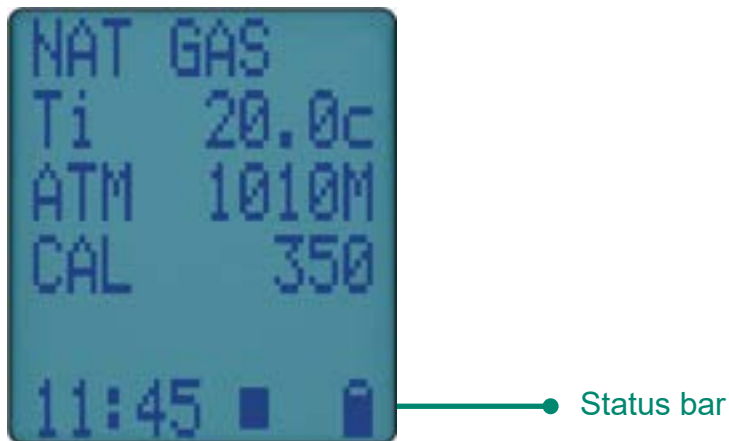
Rotate dial to "Status":



STATUS BAR

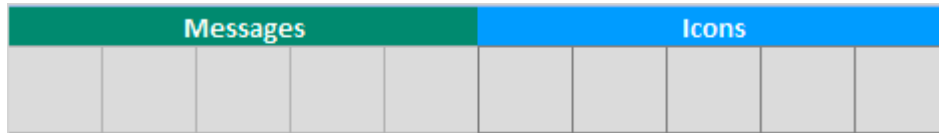
Status bar shows analyser status and offers options based on your settings.

Navigate through status bar options via ▲ & ▼ buttons when status bar is on display.

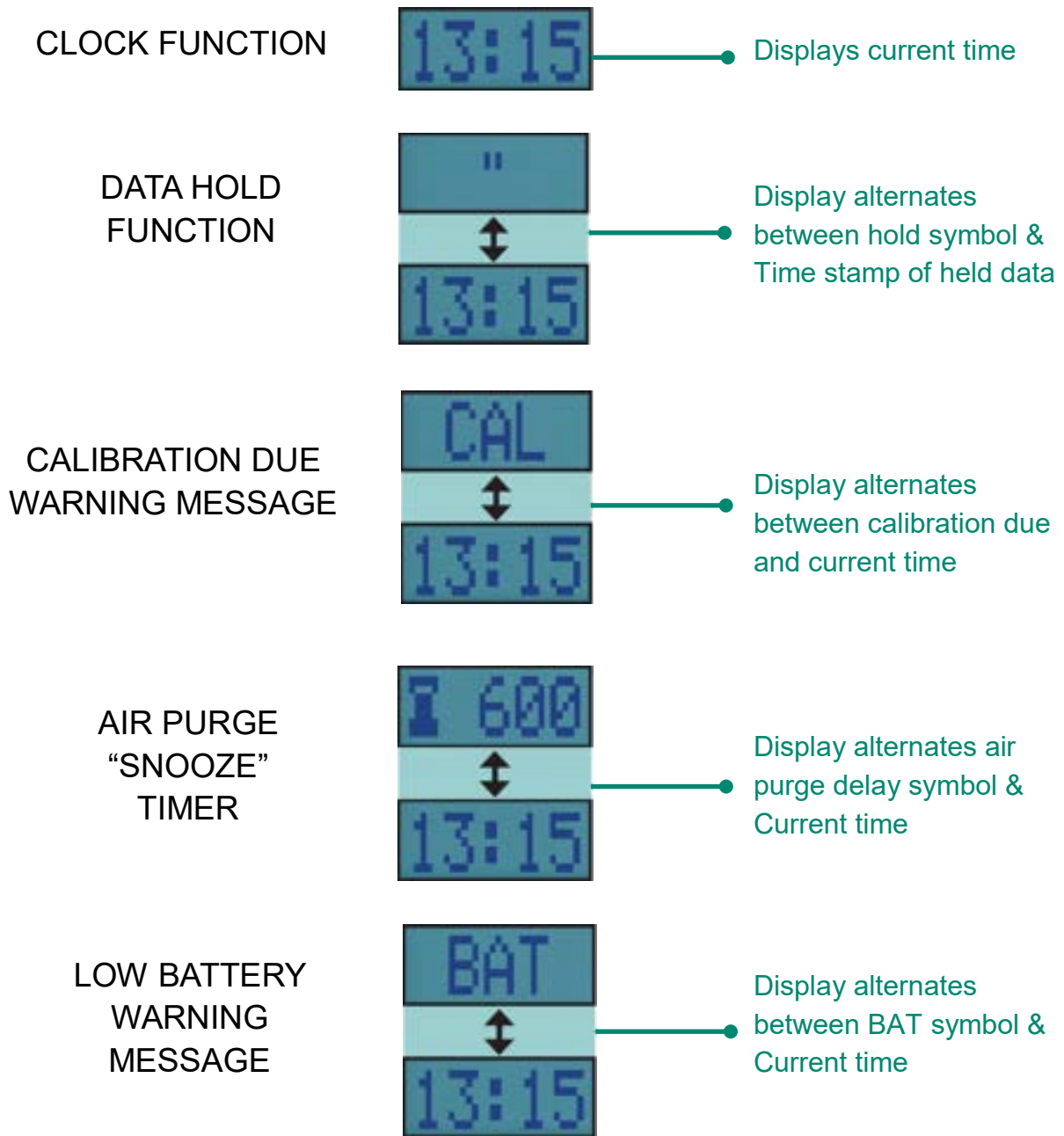


STATUS BAR LAYOUT

Status bar splits into 2 zones, Message & Icons shown below:



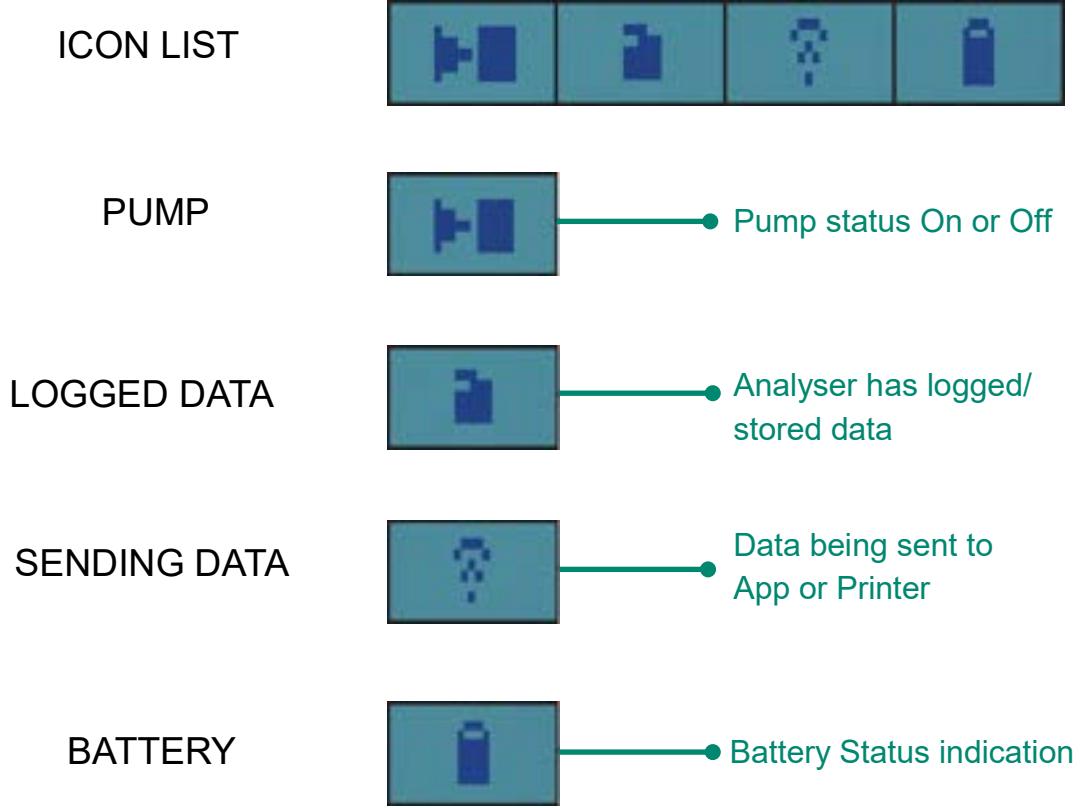
STATUS BAR MESSAGE ZONE



STATUS BAR ZONES

Icons give quick and simple status information:

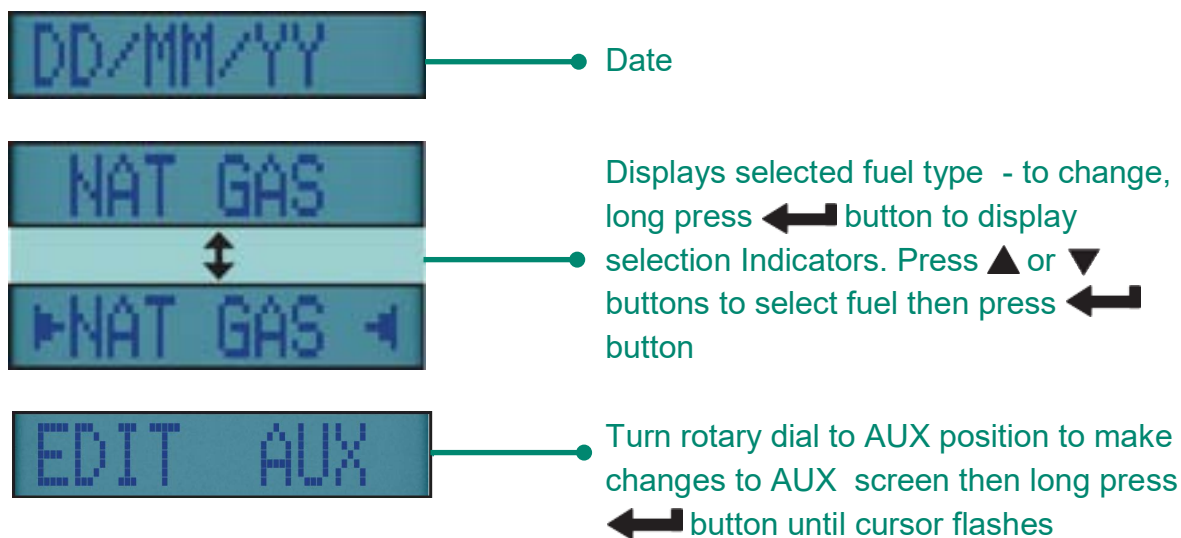
STATUS BAR ICON LEVEL



STATUS BAR MENU OPTIONS

Status Bar offers you contextual menu items based on your display screen.

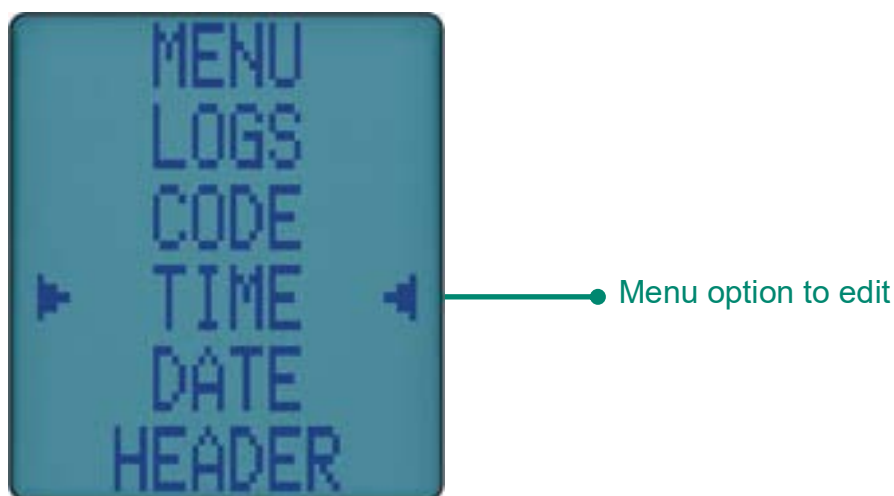
STANDARD OPTIONS



USING MENU

Rotate dial to MENU to customise your analyser default setting to your requirements.

Navigate through the MENU using these buttons ▲ & ▼ ◀



As you navigate up or down items will move up or down the screen returning to the beginning.

Note: To exit menu turn your analyser rotary dial to any position - note any unsaved changes will be lost.

MENU ITEMS

MENU ITEM	MENU TEXT	OPTIONS/COMMENTS
TIME	TIME	HH:MM:SS format E.G.. 7am = 07:00:00, 7pm = 19:00:00
DATE	DATE	DD/MM/YY format
HEADER	HEADER	Edit 2 Line Header on your printouts
PRINTER TYPE	IR PRINT	Select, KMIRP, IRP-3
GAS SCALE	GAS UNIT	Select, ppm, mg/m3, Mg/kWh
O2 REF	O2 REF	Used for "Normalised" readings. Default set to 3%, can be adjusted up or down
IF NO OPTION FITTED	NOX CALC	Enables selection of NOx equation types and assumed percentage of NO2. NOx equations are: NOx reference to NO NOx sum equation (NO + NO2) NOx reference to NO2
LOGS	LOGS	View current memory usage & stored logs
AIRFLOW	AIRFLOW	Change airflow scale and adjust pitot factor
EFF	EFF	Efficiency calculation analyser set to Gross or Net - Condensing automatically selected based on selected fuel type
LANGUAGE	LANGUAGE	Select required language from list
UTIL	UTIL	Consists of a sub menu to: INFO - View firmware information B'LIGHT - Set backlight timeout (S) LEAK - Perform system integrity test
CODE	CODE	Password protected for authorised service agents only - Default to 000000

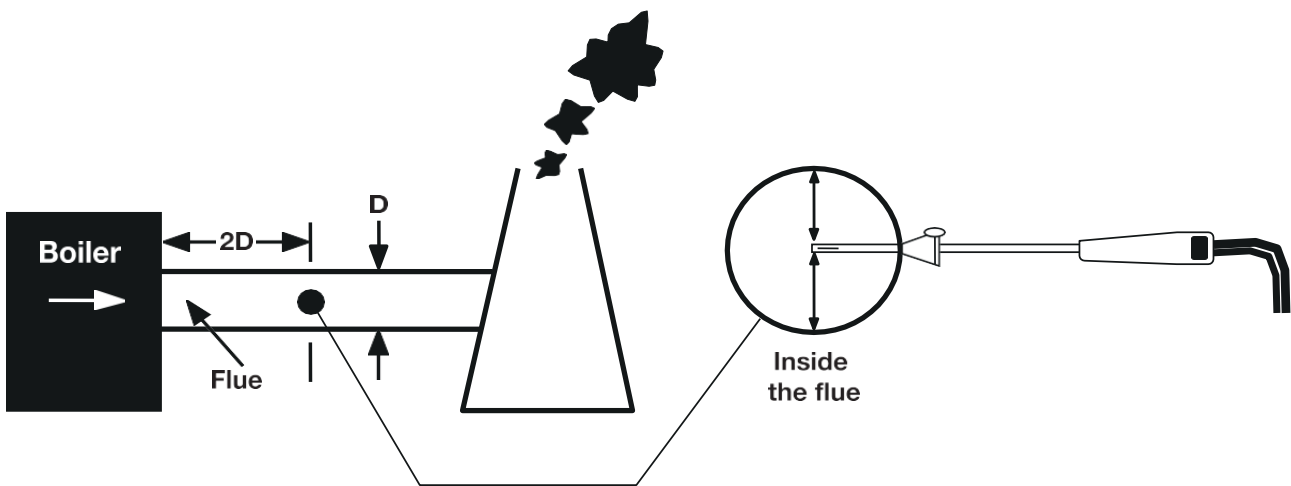
MEASURING FLUE GASES

After countdown is finished and your analyser is correctly set up, put your flue probe into the appliance sampling point. The probe tip should be in the flue centre - use flue probe depth stop cone to set position.

With balanced flues, make sure probe is positioned far enough into the flue so no air can “back flush” into the probe.

SAFETY WARNING

Ensure your flue probe handle does not get hot!



Do not exceed analyser operating specifications - In particular:

- Do not exceed flue probe maximum temperature (600°C)
- Do not exceed analyser internal temperature operating range
- Do not put analyser on a hot surface
- Do not exceed analyser water trap levels
- Do not let analyser particle filter become dirty and blocked

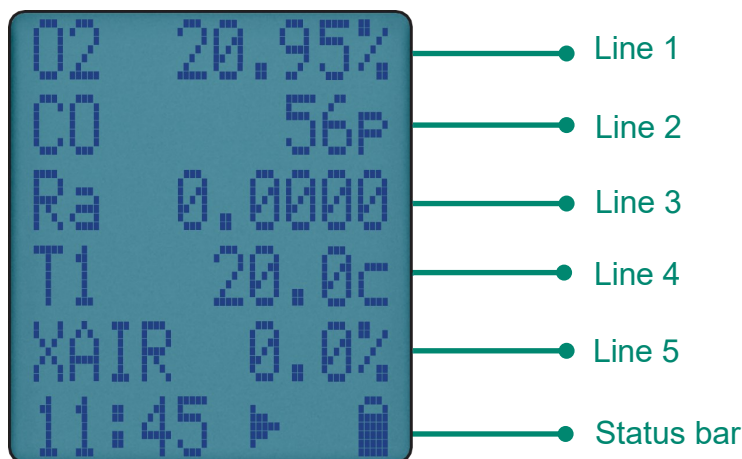
Check readings are stable and within expected range.

CO SENSOR PROTECTION PUMP OPERATION

Your analyser CO sensor is automatically protected from high levels of CO. When CO is above the maximum range of your analyser the main pump stops and CO Purge pump starts.

Your analyser displays - - - - until CO levels fall below the maximum measurement range.

AUX SCREEN



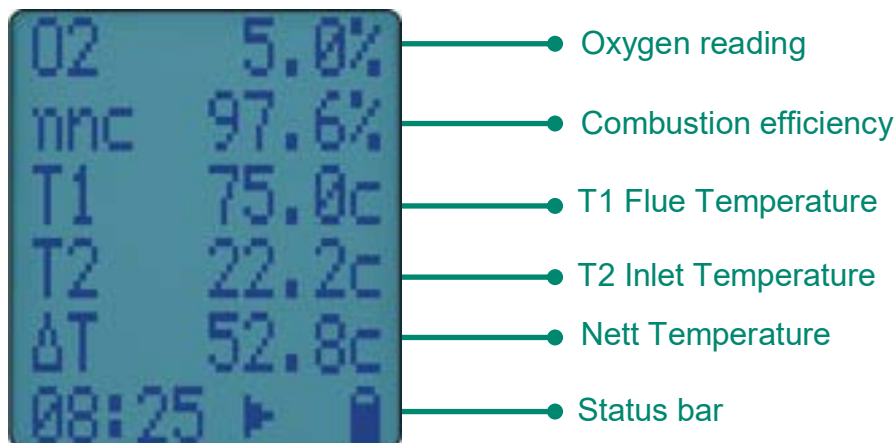
EDITING THE AUX SCREEN

You can customise lines 1 to 5 of your analyser AUX screen.

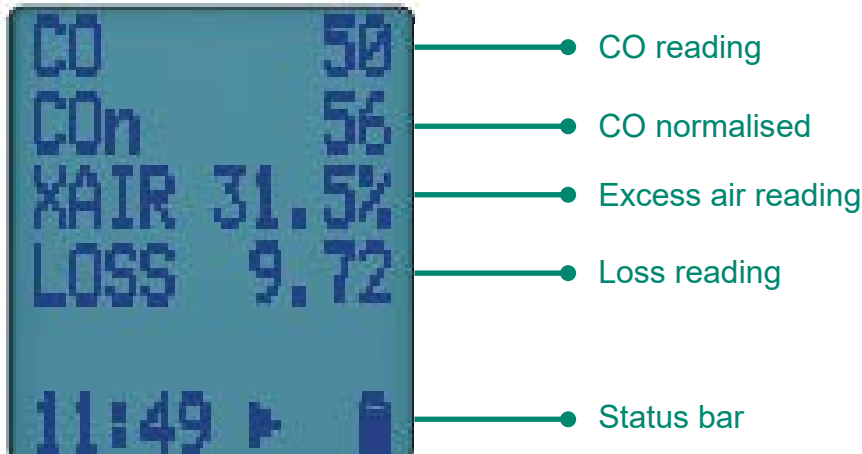
To edit a line, press ▲▼ until EDIT appears on the status bar. Press and hold ← to select EDIT.

Cursor flashes and line number appears in status bar. Use ▲▼ to select option to appear on line then press ← to enter option.

O2/EFF SCREEN



CO/NO SCREEN

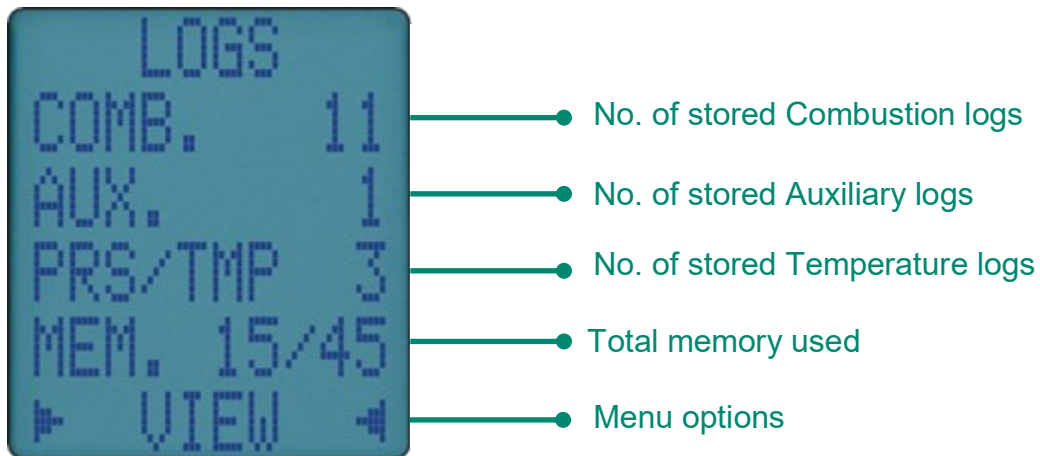


STORED MEMEORY REPORTS

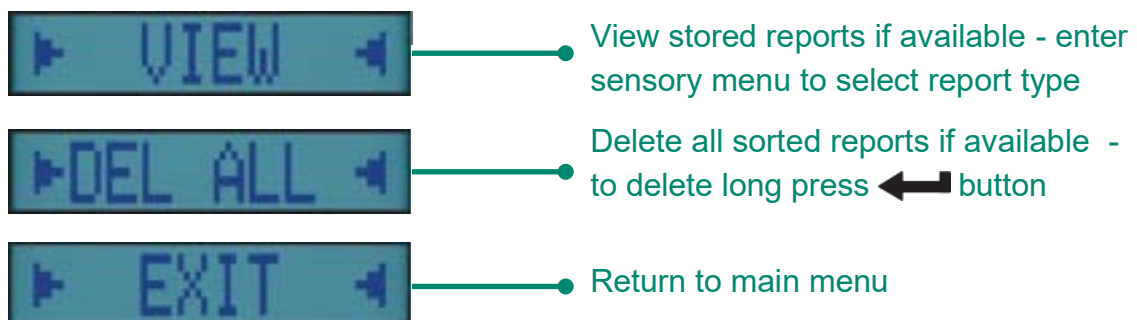
Your KANE958 utilises a shared memory system which means stored logs are not limited by type.

An icon displays when your analyser has stored data.

To view current memory rotate dial to MENU then select LOGS to display.



MENU OTIONS



VIEWING STORED REPORTS

To view your reports, select VIEW option from LOGS Menu:

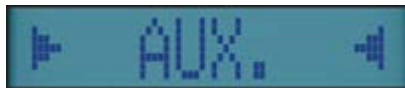


List of available LOGS
To navigate and select use
▼▲ & ←

LOG VIEW MENU OPTIONS



View stored Combustion Reports



View stored Auxiliary Reports



View stored Pressure & Temperature Reports



Returns to previous menu

FINDING STORED REPORTS

Once you select your report type the first stored log is displayed:



LOG Number of that type

Time and date of LOG

Report readings specific to report type

Navigation menu options

REPORT MENU OPTIONS



Print currently selected report



Use to find next available report if available



Use to find previously selected report once navigation begins



Return to main menu

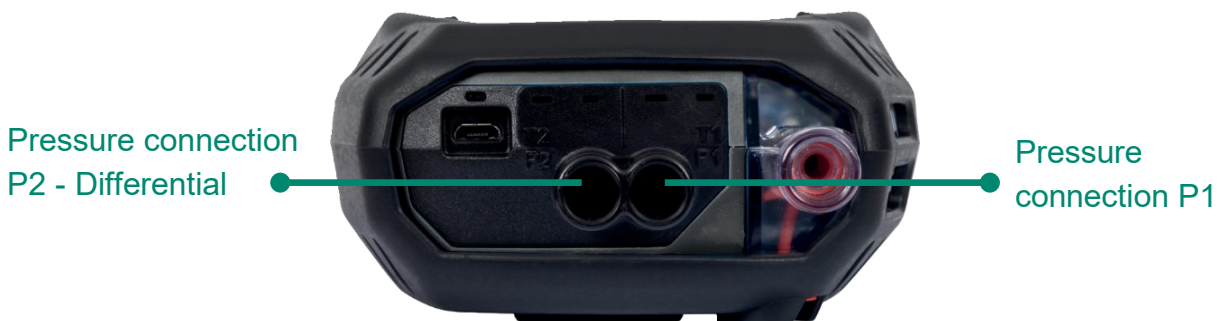
Note: ROOM CO and tightness are accessed via TEST position. Rotate dial to TEST to find ROOM CO and TIGHTNESS Tests.

PRESSURE & TEMPERATURE TESTING

WARNING

Never take a pressure reading without knowing the maximum pressure present. Your analyser pressure transducer is rated at 160 mbar with a maximum over range of 400 mbar.

Rotate dial to Prs/Temp and use the black connectors & manometer hose to connect to P1 for single pressure or P1 & P2 for different pressure.





TEMPERATURE & PRESSURE DISPLAY



- Use T1 connection for flow temperature sensor
- Use T2 connection for return temperature sensor
- Real time temperature difference
- Real time pressure reading
- Status bar

VIEWING & PRINTING

Press  button to send full Pressure & Temperature reports to your optional KANE-IRP3 printer or wirelessly to a KANE APP.

Press and hold  button for 2 seconds to log a pressure and temperature report - See PRINTING to print stored reports.

PRESSURE MEASUREMENT GOOD PRACTICE

WARNING

Before using your KANE958 to measure an appliance gas/air ratio valve, read appliance manufacturer instructions thoroughly. If in doubt, contact appliance manufacturer.

After adjusting a gas/air ratio valve CO, CO₂ & CO/CO₂ ratio readings must be within appliance manufacturer specified limits.

LARGE BORE TUBING ISSUES

If using large bore tubing when performing pressure tests:





Push orange tube over rim of spigot to ensure a gas tight seal.



Failure to do so may not produce a gas tight seal.

PRINTING

Press and release  to send test results to your optional KANE IRP-3 printer or wirelessly to KANE APP. You can stop printing by pressing  button again.

KANE INFRARED PRINTER

To use your printer, switch on and place the printer infrared receiver in line with the emitter on top of your analyser - allow a 15cm gap between analyser and printer.

PRINTOUTS

Auxiliary

```

KANE
KANE958
SM00182 2.01.RC3

NAME
NUMBER

SERIAL NO. 123456789

DATE 08/07/21
TIME 14:51:11

-----
CAL DUE 29/06/22

-----
AUXILIARY
-----
FUEL NAT GAS
CO(N) ppm 02++
NO(N) ppm 02++
NOx ppm 0
O2 % 20.9
LOSS % ----

-----
CUSTOMER
-----
-----
APPLIANCE
-----
-----
REFERENCE
-----
-----

```

Combustion

```

KANE
KANE958
SM00182 2.01.RC3

NAME
NUMBER

SERIAL NO. 123456789

DATE 08/07/21
TIME 14:51:19

-----
CAL DUE 29/06/22

-----
COMBUSTION
-----
FUEL NAT GAS
O2 REF % 3.8
NOx REF % 3.8
CO/CO2 % 0.0000
EFFIC % ----
AIR % 02++
PRS mbar 0.01
T1 °C ----
T2 °C ----
T3 °C 24.8
NETT °C ----
LAMBDA ----
LOSS % ----
FL % 0.00
CO2 % 0.00
CO ppm 0
NO ppm 0
NOx ppm 0
O2 % 20.9
SO2 ppm 0

-----
CUSTOMER
-----
-----
APPLIANCE
-----
-----
REFERENCE
-----
-----

```

Pressure/Temp

```

KANE
KANE958
SM00182 2.01.RC3

NAME
NUMBER

SERIAL NO. 123456789

DATE 08/07/21
TIME 14:51:28

-----
CAL DUE 29/06/22

-----
PRS/TMP
-----
T1 °C ----
T2 °C ----
NETT °C ----
PRS mbar 0.01


-----
CUSTOMER
-----
-----
APPLIANCE
-----
-----
REFERENCE
-----
-----



```

KANE LINK WIRELESS MEASUREMENT AND DATA TRANSFER

You can wirelessly connect optional KANE LINK devices to your analyser.

Rotate dial to KANE LINK on your analyser to manage how your analyser communicates with wireless devices.

To wirelessly transfer data to a connected smart device running our KANE APPS, select APP using 

To ADD, REMOVE and check STATUS of optional KANE LINE device select LINK using  &  buttons.

WPCP2 WIRELESS PIPE CLAMP

To add select it then enter its serial number using  &  buttons.

Enter its serial number using  &  buttons. Each clamp serial number must be 10 digits long.

If longer use the last 10 digits, e.g, in this example only enter last 10 digits: 2105094301



DTHA2 ANEMOMETER

To add a DTHA2 anemometer select DTHA2 using  &  buttons.

Enter its serial number using  &  buttons. Each serial number must be 10 digits long.

If shorter enter 0's to make up to 10 e.g in this example enter 2001228 as 0002001228.



Other KANE LINK devices can be paired - Contact KANE for more details

SPECIFICATIONS

PARAMETER	RANGE	RESOLUTION	ACCURACY
Temperature Measurement			
Flue Temperature Inlet temperature External sensor	0 - 600°C	0.1°C	±0.5°C
Inlet Temperature Internal sensor	0 - 600°C	0.1°C	±0.5°C
(Internal Sensor) Inlet temperature	0.50°C	0.1°C	±1°C
Flue Gas Measurement			
Oxygen	0 - 25%	0.1%	±0.3% Volume
Carbon Monoxide H2 Compensated	0 - 10,000ppm	1ppm	±5ppm < 100ppm ±20ppm < 400ppm ±5% > 400ppm - 2000ppm ±10% > 2000ppm -10,000ppm
Nitric Oxide (optional)	0 - 5000ppm	1ppm	±5ppm < 100ppm 5% > 100ppm
Nitrogen Dioxide (optional)	0 - 1000ppm	1ppm	±5ppm < 100ppm 5% > 100ppm
Sulphur Dioxide (optional)	0 - 5000ppm	1ppm	±5ppm < 100ppm ±5% > 100ppm
Pressure Measurement			
Pressure (Differential)	±160mbar	0.1mbar	±0.5% FSD
Calculations			
CO/CO2 Ratio	0 - 0.9999	0.0001	±5% of reading
Efficiency (Net or Gross)	0 - 99.9%	0.1%	±1% of reading
Efficiency High (C)	0 -119.9%	0.1%	±1% of reading
Excess Air	0 -119.9%	0.1%	±0.2% of reading
Pre-programmed Fuels			
UK, USA & France European	Natural Gas, LPG, Light Oil, Digester Gas, Coke, Wood, Heavy Oil, Coal		
Battery Life	>8 hours (continuous with pump on)		
Certification	KANE958 is independently tested and certified to EN50379, Parts 1-2 in accordance to 1st German Federal Emission Control Ordinance (BimschV)		

SPECIFICATIONS CONTINUED

Operating Conditions	
Temperatures	0 - 45°C
Humidity	15 t 90% RH, (non-condensing)
Power Supply	Rechargeable batteries, USB Charging
Physical Characteristics	
Weight	Approx. 0.625g
Dimensions	216mm x 105mm x 45mm

EU DECLARATON OF CONFORMITY

This declaration of conformity is issued under the sole responsibility of the manufacturer:-

Kane International Ltd.

Kane House, 11 Bessemer Road, Welwyn Garden City, Hertfordshire, AL10 1GF, UK.

Tel: + 1707 375550

Web: www.kane.co.uk

The KANE958 is in conformity with the relevant Union harmonization legislation below:

UK Directive	
The Electromagnetic Compatibility Regulations 2016 (EMC)	
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (RoHS)	
Electrical Equipment (Safety) Regulations 2016	
EU Directive	Title
2014/30/EU	Electromagnetic Compatibility (EMC)
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment (EMC)
2014/35	Low Voltage Directive (LVD)

The following harmonised standards and technical specifications have been applied:

Certification

The KANE958 is independently tested and certified to EN 50379, Parts 1 & 3

EMC

EN50270:2015

SAFETY

EN61010-1:2010

ROSH (UK & EU)

IEC62321-2:2013, IEC62321-1:2013, IEC62321-3-1:2013, IEC62321-5:2013, IEC62321-4:2013, IEC62321-7-2:2017, IEC62321-7-1:2015, IEC62321-6:2015

Signed for on behalf of:-
01. February 2022

Kane International Ltd.



A handwritten signature in black ink, appearing to read 'P. Morrison'.

Paul Morrison
Engineering Manager

WHERE TO SEND YOUR ANALYSER

Northern Customer Service
Kane International Ltd
Gibfield Park Avenue
Atherton,
Manchester
M46 0SY, UK
e: nservice@kane.co.uk
t: 0800 059 0800

Southern & International Customer
Service
Kane International Ltd
Kane House, 11 Bessemer Road
Welwyn Garden City
Hertfordshire
AL7 1GF, UK
e: service@kane.co.uk
t: 0800 059 0800

Outside UK Call +44 1707 375550

COLD WEATHER PRECAUTIONS

It is important you keep your analyser in a warm place overnight.

Electronic devices that become really cold, by being left in a vehicle overnight, suffer when taken into a warm room the next morning. Condensation may form affecting analyser performance.

Analyser electrochemical sensors are affected by condensation or water being sucked into the analyser, stopping sensors seeing flue gas. When this happens, oxygen or carbon dioxide reading will display as “-” & sensors may be permanently damaged.

If you think your analyser is affected by condensation or water ingress, leave the analyser running in a warm place with pump ‘ON’ sampling fresh air for a few hours. Connect your mains adapter or battery charger to avoid draining batteries

If you still experience problems please contact Kane Customer Services.

SERVICE - CALIBRATE - RECERTIFY



All analysers & pressure meters should be recertified annually.

Extend your KANE analyser & pressure meter's 'no quibble' warranty up to 10 years by returning your analyser & pressure meter via your KAM dashboard annually.

KANE ASSET MANAGER (KAM)



The fastest way to manage your analyser's recertification with FREE postage using www.kane.co.uk
Use your KAM dashboard to: Please [register](#) your analyser at

Register your KANE analyser to create your KAM dashboard:

- ★ Simple online booking on www.kane.co.uk
- ★ Relevant product specific promotions, special offers & discounts
- ★ Automatic reminder when due for recertification
- ★ **FREE POSTAGE** returning your KANE analyser
- ★ **SAME DAY** annual FGA recertification **OR YOUR MONEY BACK***

Use all 11 digits

182620092

www.kane.co.uk & download the full instruction manual from your KAM dashboard.

PLEASE READ ALL SAFETY WARNINGS IN THE MANUAL

Use your KAM dashboard to:

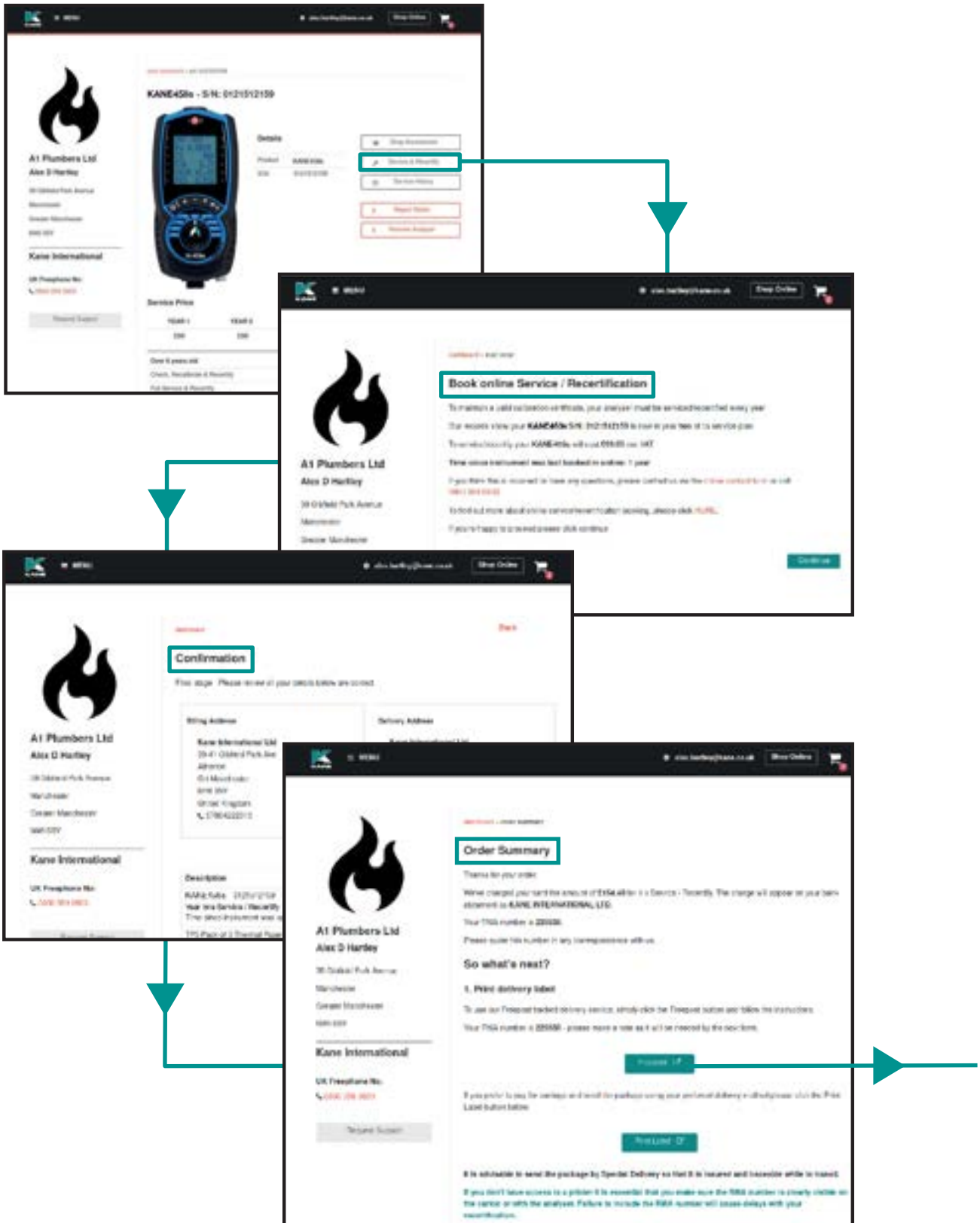
- View - your Payment History / Company Details / Analyser Details / Service Pricing
- Buy KANE products, accessories, spares & consumables with FREE delivery
- Manage your KANE analyser's recertification online to receive same day turnaround
- Service History: Access, view & email electronic Calibration Certificates when required for compliance
- Report Stolen: Reporting your analyser stolen ensures our Stolen Analyser Register is up-dated & helps prevent industry colleagues unknowingly buying stolen goods
- Remove your KANE Analyser once sold so it's new owner can also benefit

There are different KAM options & we'd be delighted to discuss your Individual requirement

More than 4 FGA's? Contact: support@kane.co.uk

Excludes KANE '9 series' analysers & UKAS certificates

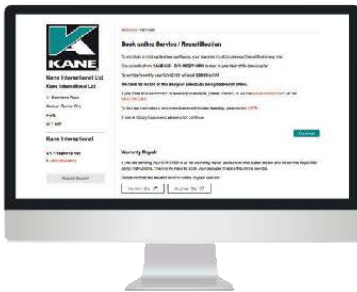
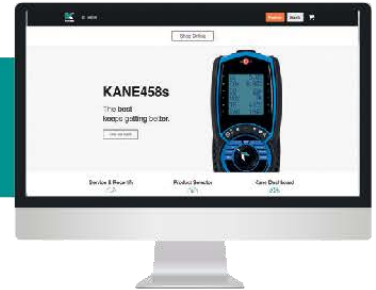
Your support - our way



GUARANTEED SAME DAY DEPSATCH Analyser Service & Recertification



Register your analyser on
www.kane.co.uk



Book & pay to Service & Recertify
via your KAM dashboard

Select FREEPOST for tracked
Carriage - UK mainland only



Your analyser will be despatched
on the same day we receive it...
OR YOUR MONEY BACK*

THIS PRODUCT CONFIRMS WITH THE FOLLOWING



RoHS



PLEASE RECYCLE

PACKAGING MADE IN THE UK

Thank you for buying this analyser.

Before use, please register on our website

www.kane.co.uk



Scan the QR code to go directly to
Register your product online.

Kane International Ltd
Kane House, 11 Bessemer Road
Welwyn Garden City
Hertfordshire
AL7 1GF, UK
email: sales@kane.co.uk
telephone: 0800 059 0800