KANE458s

Flue Gas Analyser with direct CO2 Measurement and CO sensor protection

KANE LINK

THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION 2022

KANE CARE 10 YEAR WARRANTY | RECERTIFY SAME DAY DESPATCH | 20 YEAR ALL INCLUSIVE

Stock No: MAN00232 Rev: 1.01022 **OCTOBER 2022**

CONTENTS

1 KANE458s OVERVIEW & KANE LINK

Your KANE458s flue gas analyser measures:

- Carbon Monoxide (CO)
- Carbon Dioxide (CO2)
- Differential Pressure
- Differential Temperature

Depending on configuration it also measures or calculates:

- Oxygen (O2)
- Nitric Oxide (NO) & Oxides of nitrogen (NOx)
- CO/CO2 ratio
- Combustion Efficiency, loses & excess air
- Ambient Carbon Dioxide (CO2)
- Tightness, Let by, Commission & Room Co Tests

Your analyser has:
Protective rubber cover with magnets for hands-free operation
Flue probe with integral temperature sensor
Battery charger & 3 NiMH batteries.

Low flow detection to power off pump if water enters analyser

Large 6 line display showing data & test results - Display bottom line also highlights analyser status.

Test reports to optional infrared printer or wirelessly to KANE LIVE App.

45 log memory for any combination of Combustion, AUX, Temperature & Pressure tests.

Memory for 25 Tightness Tests, 25 Commissioning tests & 14 ROOM CO tests - see page 19

2 lines of 24 characters to personalise with your details.

KANE LINK

Wirelessly connect optional KANE LINK devices to your analyser.

When powered on, they replace or add measurements your analyser makes.

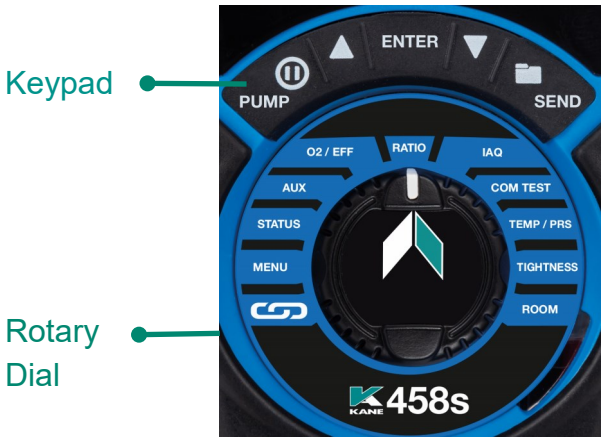
See page 36 to manage optional KANE LINK devices.

2 ANALYSER AT A GLANCE

2.1 ANALYSER LAYOUT

2.2 KEYPAD & ROTARY DIAL

SYMBOL	DESCRIPTION
PUMP	Press to turn pump on or off
	DATA HOLD - Short press to hold current data on screen - see status bar section on page 14
	NAVIGATE UP - Short press to scroll up
ENTER	ENTER KEY - Use to select current option - also selects torch in some dial positions
	NAVIGATE DOWN - Short press to scroll down
	STORED LOG - Long press to store data
SEND	PRINT LOG - Short press to transfer a log - Analyser offers a destination choice



SYMBOL	DESCRIPTION
	Add, Manage or Delete KANE LINK devices & App Settings
MENU	Manage Analyser Settings
STATUS	View Analyser Status
AUX	Personalise Analyser Display
O2 / EFF	Appliance Efficiency Test
RATIO	Appliance CO / CO2 Ratio Test
IAQ	Ambient CO & CO2 Test
COM TEST	Domestic Gas Boiler Commissioning Test
TEMP / PRS	Temperature & Pressure Test
TIGHTNESS	Let-by & Tightness Test
ROOM	CO Migration & Sweep Test

2.3 ANALYSER BACK & PROBE

3 GENERAL SAFETY

SAFETY WARNING

3.1 FLUE GASES

Your analyser extracts combustion gases that are toxic in relativity low concentrations.
These gases are exhausted from the bottom of the analyser.
This analyser must only be used in well-ventilated locations by trained and competent persons after considering all 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 output of all sensors present.

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

3.2 PROTECTION AGAINST ELECTRIC SHOCK (IN ACCORDANCE WITHN 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

4 BATTERIES

4.1 BATTERY TYPE

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

⚠ WARNING

You can use Alkaline batteries but do not charge analyser when fitted.

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

4.2 REPLACING BATTERIES

Turn over analyser & remove protective rubber cover to find battery compartment.
Fit 3 NiMH “AA” rechargeable batteries ensuring correct battery polarity.
Replace battery cover & protective rubber cover.

4.3 UPDATING TIME AND DATE

Reset analyser time & date after changing batteries.

4.4 CHARGING NiMH BATTERIES

Your analyser uses a standard Micro USB connector - For best results power off before connecting charger. Charging indicator illuminates then flashes off when charging is complete.

First charge for 8 hours - Thereafter NiMH batteries can be topped up any time, even for short periods

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

4.5 BATTERY DISPOSAL

Always dispose of depleted batteries using approved disposal methods that protect the environment.

5 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 setup for your requirements.

NOTE: Your analyser STATUS bar displays current time, date and battery status - Time & date can only be changed with no stored logs in memory to protect integrity of stored logs.

6 GENERAL OPERATING PRINCIPLE

Using your analyser 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.

6.1 QUICK START & POWER ON

Your analyser has two power on modes: Quick Start & Combustion analysis.

For quick start, rotate dial to any position not starting combustion analysis e.g: **MENU, STATUS, TEMP/PRS**.
Your analyser will give quick access to non gas measurement functions.

Rotating dial to a position to measure gas starts auto zero calibration.

Power on analyser with dial set to any position starting combustion analysis starts auto zero calibration.

Power on analyser by pressing ⏻ button for 2 seconds.

NOTE: Always power on analyser in fresh outdoor air.

6.2 USER INTERFACE

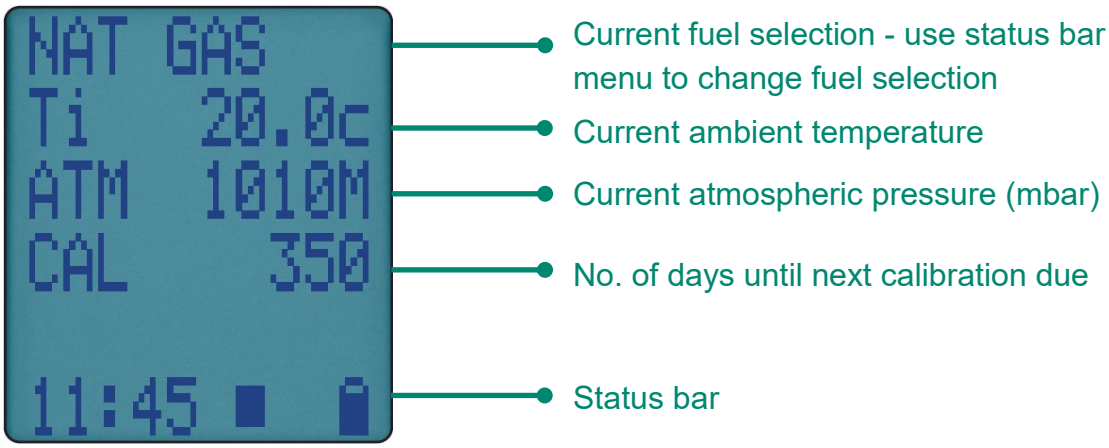
Your analyser displays 5 lines of tests & a status bar.

The display backlight power on with each button press then powers off after 10 seconds.

Navigate through options and menu choices via ▲ or ▼ & **ENTER**.

6.3 STATUS

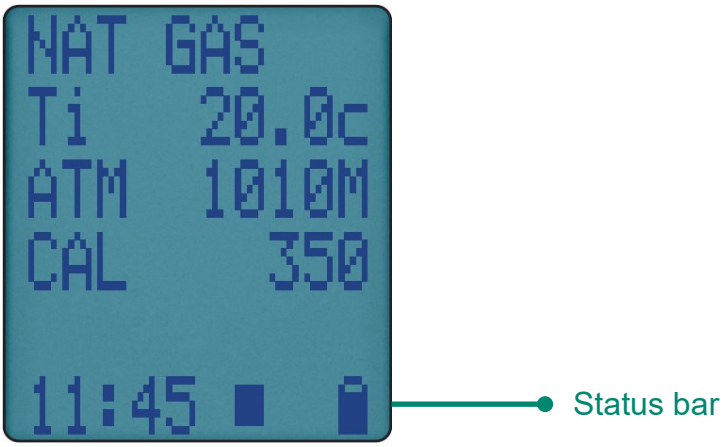
Rotate dial to **STATUS** to view:



6.4 STATUS BAR

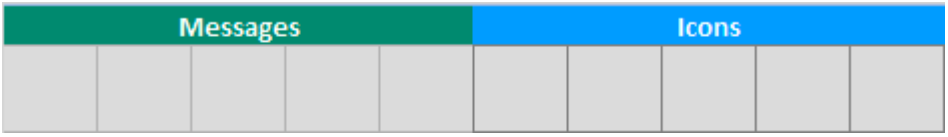
Status bar shows analyser status & offers options based on your settings

Navigate through status bar options via ▲ or ▼ when status bar on display.



6.5 STATUS BAR LAYOUT

Status bar has 2 zones: MESSAGE & ICONS

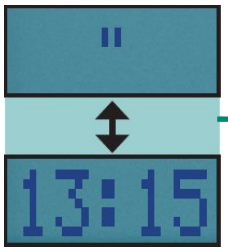


6.6 STATUS BAR MESSAGE ZONE

CLOCK FUCTION

Displays current time

DATA HOLD FUNCTION

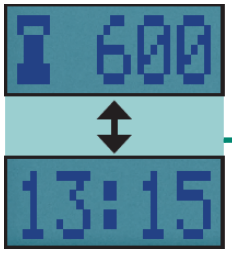


Display alternates between hold symbol & time stamp of held data

CALIBRATION DUE WARNING MESSAGE

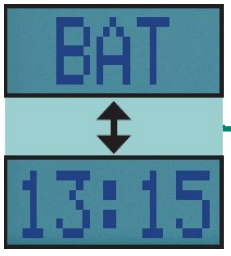
Display alternates between calibration due & current time

AIR PURGE "SNOOZE" TIMER



Display alternates between air purge delay symbol & current time

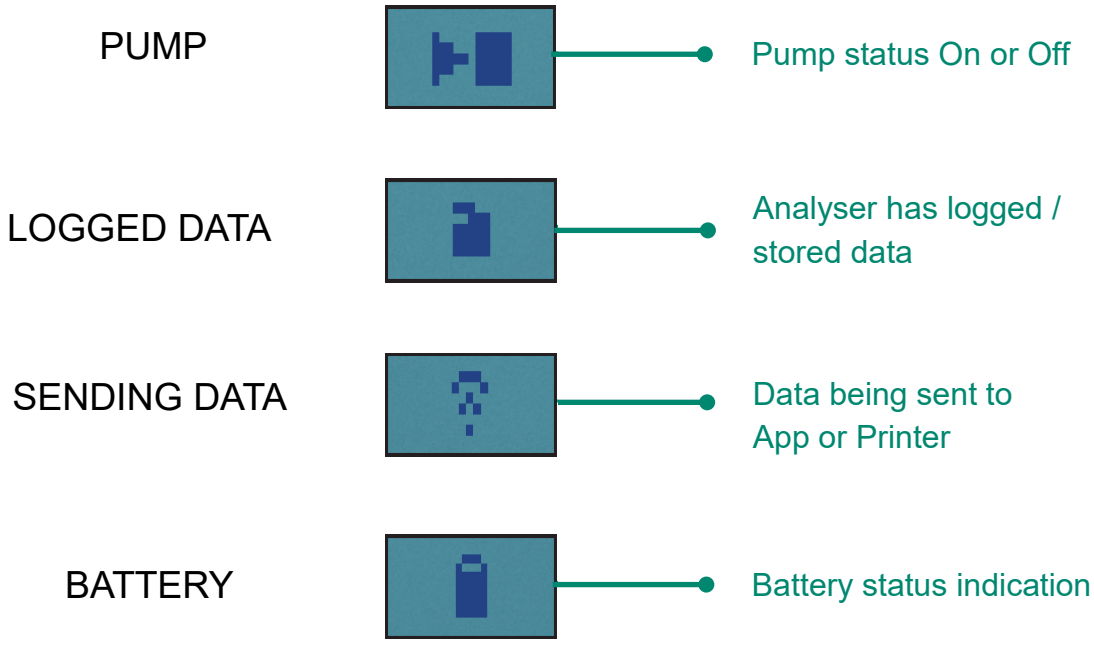
LOW BATTERY WARNING MESSAGE



Display alternates between BAT symbol & current time

6.7 STATUS BAR ICON ZONE

Icons give sample status information:



6.9 STATUS BAR MENU OPTIONS

Status Bar offers contextual menu options based on your screen.

6.10 STANDARD OPTIONS

Date - Displays current date

Displays selected fuel type - To change, long press **ENTER** to display selection Indicators ▶◀
Press ▲ or ▼ to select fuel then press **ENTER**

Rotate dial to AUX to change AUX screen then long press **ENTER** until cursor flashes

7 USING MENU

Rotate dial to **MENU** to change analyser settings to your requirements.

Navigate through **MENU** using ▲ or ▼ & **ENTER**

Menu option to edit

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

To exit **MENU** rotate dial to any position but note unsaved changes will be lost.

7.1 MENU CHOICES

MENU ITEM	MENU TEXT	OPTIONS / COMMENTS
TIME	TIME	Select TIME to set analyser time - Press **ENTER** then use ▲or ▼& **ENTER** to set correct HH:MM:SS
DATE	DATE	Select DATE to set analyser date - Press **ENTER** then use ▲or ▼ & **ENTER** to set To set correct DD:MM:YY
HEADER	HEADER	Select HEADER to personalise 2 lines of 24 characters - Press **ENTER**, select line to edit pressing ▲& ▼to select LINE 1 or LINE 2. Use ▲& ▼to select correct character then press **ENTER** To set HEADER via KANE LIVE app, select CONTROLS on app, select ANALYSER HEADERS, select LINE to edit Select SAVE to set header
PRINTER TYPE	PRINTER TYPE	Select IR PRINTER to set infrared printer - press **ENTER** then use ▲or ▼& **ENTER** to select KMIRP or IRP-2/3
GAS SCALE	GAS SCALE	Select GAS UNIT by pressing **ENTER** then select gas scale ppm, mg/m3 or mg/kWh using ▲or ▼& **ENTER**
O2 REF	O2 REF	Select O2 REF to set % reference O2 for each gas measured - Press **ENTER** then select gas using ▲& ▼ then **ENTER**. Change % reference O2 by pressing ▲or ▼ then press **ENTER** to confirm

CONTINUED MENU CHOICES

NOX CALC	NOX CALC	(If NO sensor fitted) Set REFERENCE NOx to percentage required or defined by local regulations. It is typically assumed boiler emissions of NOx = NO + 5% NO2 If required, you can calculate NOx from 3 options - SUM, NO or NO2. SUM adds NO & NO2 if both sensors are fitted. NO calculates NOx from NO, if fitted, where NOx = NO x 1.1 NO2 calculates NOx from NO2 only, if fitted, where NOx = NO2 x 2.05. Use ▲or ▼ to select then press **ENTER**
LOGS	LOGS	View current memory usage & stored logs
EFF	EFF	Select EFF to set efficiency scale by pressing **ENTER**. Select NETT or GROSS using ▲& ▼, then press **ENTER** to confirm Considering calculation automatically selected based on selected fuel
UTIL	UTIL	Select UTIL to access utility menu - Press **ENTER** then ▲or ▼ & **ENTER** to select from: INFO - Shows Analyser firmware, wireless firmware & date next calibration due LEAK - Performs system leak test following onscreen instructions B'LIGHT - Selects time backlight is on from 15 to 300 seconds using ▲or ▼ & **ENTER** to confirm NOTE: Extending backlight time reduces analyser battery life
CODE	CODE	Password protected for authorised service agents only - Default to 000000

7.2 SEND, PRINT OR STORE A TEST

Short press **SEND** to send a test to your optional KANE-IRP3 printer or KANE LIVE App.

Long press **SEND** for 2 seconds to store a test, called log.

7.3 ANALYSER MEMORY

Your analyser has a shared memory system to store up to 45 tests, called logs.

For example: combustion logs or any combination of combustion, Aux & Pressure / Temperature logs up to 45.

Your analyser also stores up to 25 tightness tests, 25 commission tests and 14 room tests called logs - view when you rotate dial to relevant test.

A logged data icon displays when your analyser has stored a test - see page 16.

To view memory rotate dial to **MENU** then select **LOGS** using ▲ or ▼ & **ENTER** to display.

- No. of stored Combustion logs
- No. of stored Auxiliary logs
- No. of stored Pressure / Temperature
- Total memory used
- Menu options

7.4 MEMORY OPTIONS

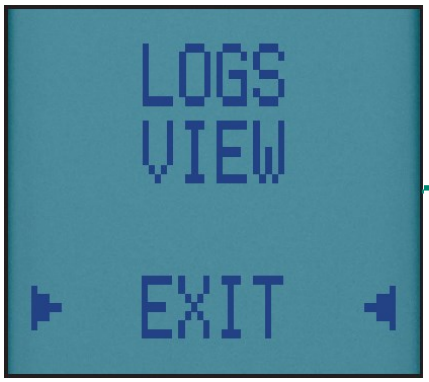
View stored logs if available

Delete all stored logs if available - to delete long press **ENTER**

Return to main menu

7.5 VIEWING STORED LOGS

To view your test, select **VIEW** from **LOGS** Menu:



List of available LOGS
Navigate and selection using ▲ or ▼
& **ENTER**

7.6 SELECT LOG TYPE

View Combustion Logs

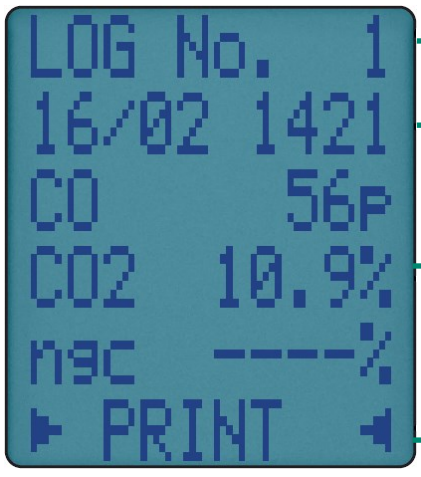
View Auxiliary Logs

View Pressure & Temperature Logs

Return to previous menu

7.7 SELECT LOG STORED

After you select report type first log is displayed:



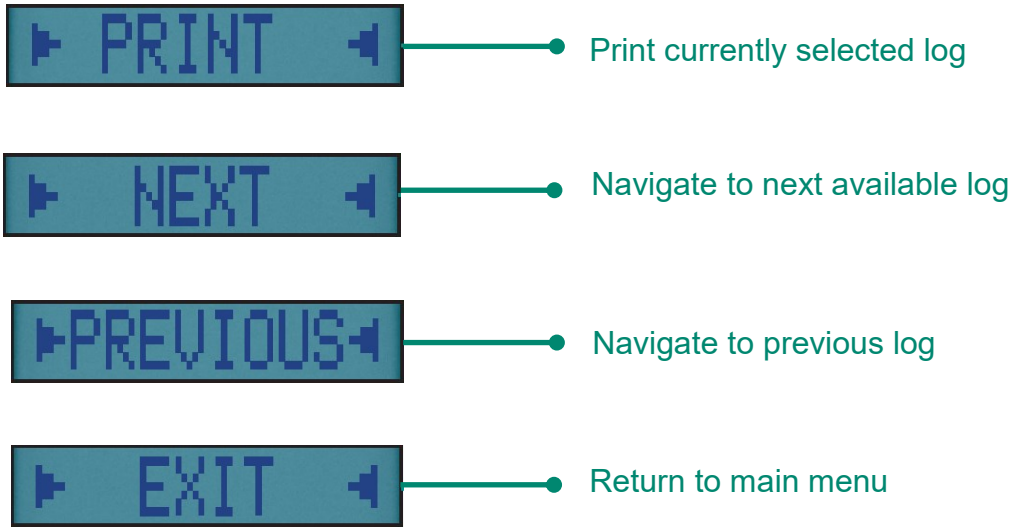
LOG Number of that type

Time & date of LOG

Report readings specific to log type

Navigation menu options

7.8 SELECT LOG OPTIONS



8 MEASURING FLUE GASES

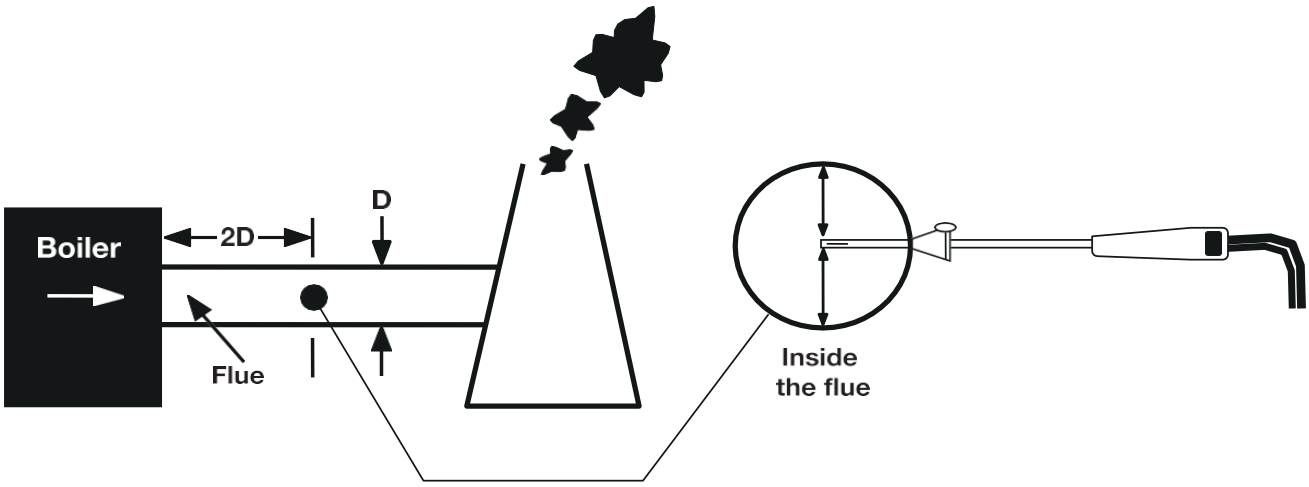
After countdown is finished and your analyser is correctly set up, put flue probe into appliance sampling point.

Probe tip should be in flue centre - use flue probe depth stop cone to set position.

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

SAFETY WARNING

Ensure 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 hot surfaces
- Do not exceed water trap levels
- Do not let analyser particle filter become dirty and blocked

Check readings are stable and within expected range.

9 HIGH CO LEVELS

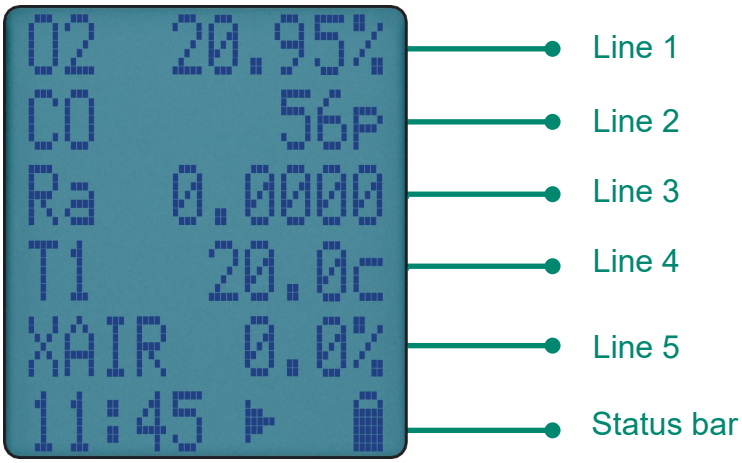
Your analyser is automatically protected from high levels of CO - When CO is above maximum range pump stops and CO purge pump starts.

Your analyser displays - - - - until CO levels fall below maximum.

10 VIEWING FLUE GASES USING ROTARY DIAL

10.1 AUX SCREEN

Rotate dial to **AUX** to view or edit:



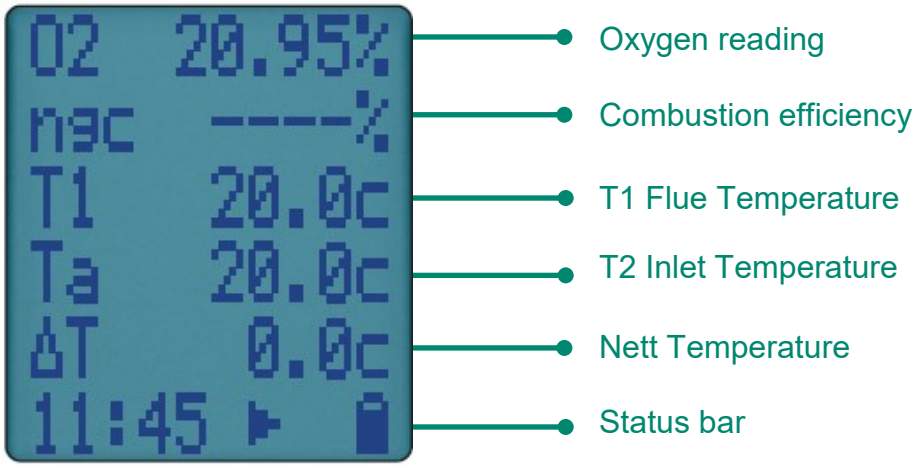
You can customise lines 1 to 5 of your analyser AUX screen.

To edit a line, press ▲or ▼until **EDIT** appears on status bar then long press and hold **ENTER** until cursor flashes and line number appears in status bar.

Use ▲or ▼to select option to appear on line then press **ENTER**.
Repeat for other lines as required.

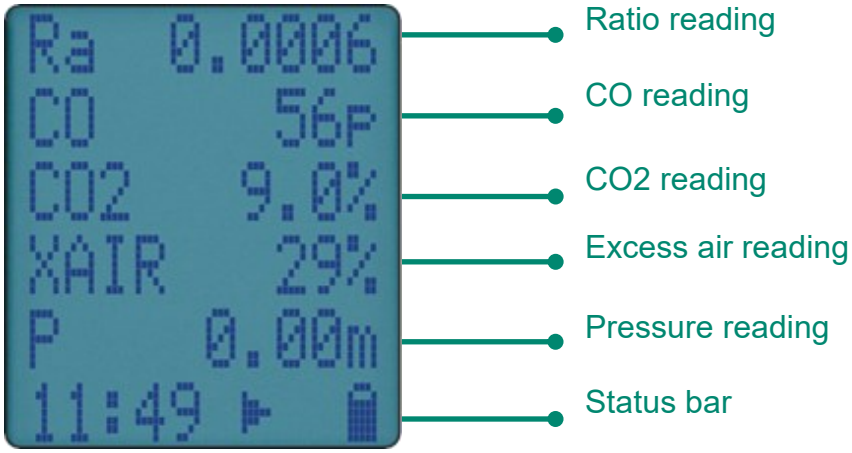
10.2 O2 / EFF SCREEN

Rotate dial to **O2 / EFF** to view:



10.3 CO / CO2 SCREEN

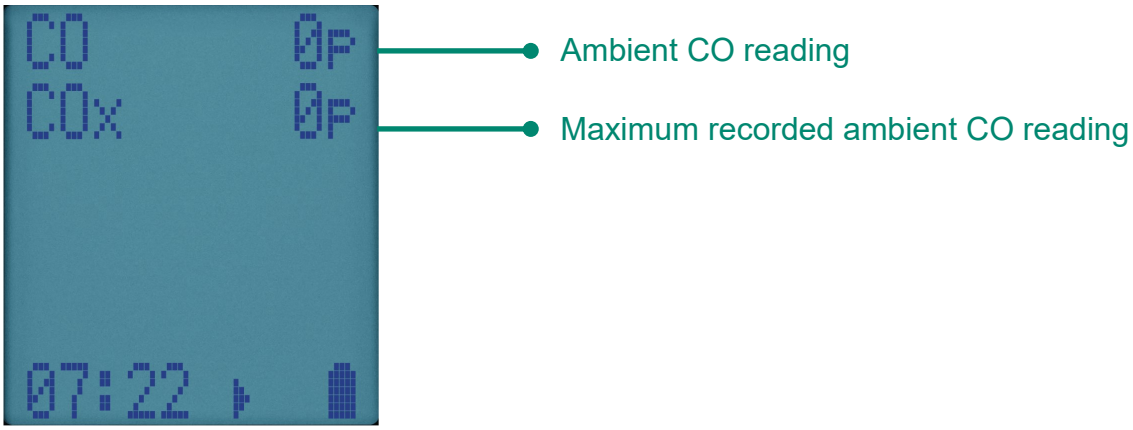
Rotate dial to **CO / CO2** to view:



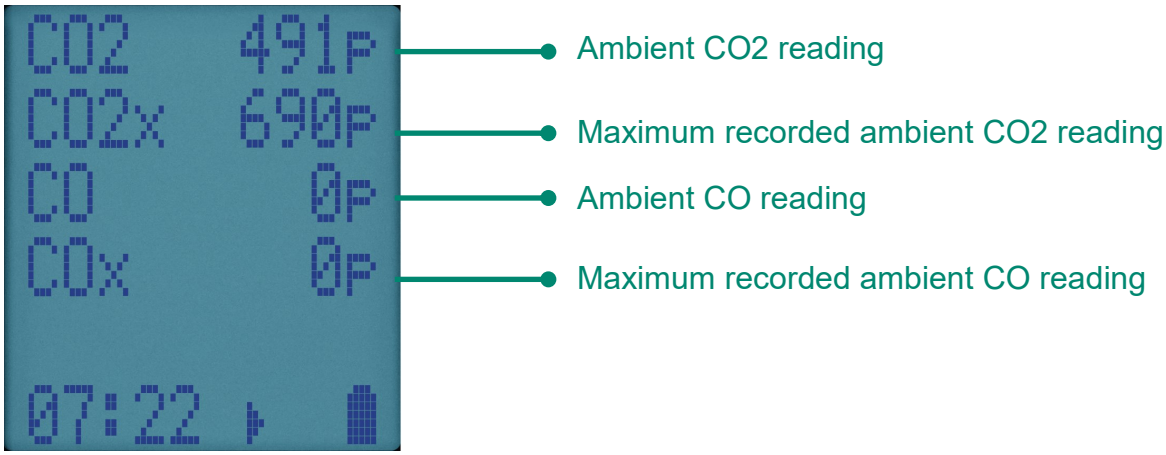
10.4 IAQ SCREEN

Rotate dial to **IAQ** to view Indoor air quality - CO only or CO & ambient CO2:

CO ONLY



CO & AMBIENT CO2



Maximum readings are reset during power on / off cycle or CO2 re-zero.

11 TEMPERATURE & PRESSURE TESTING

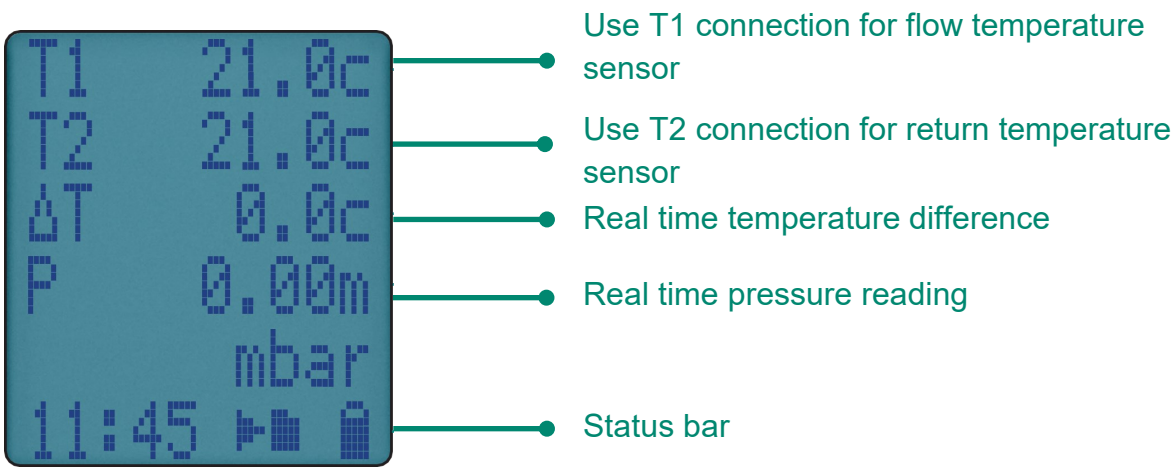
11.1 TEMPERATURE & PRESSURE DISPLAY

Rotate dial to **TEMP / PRS** and connect type k probe thermocouple plug to flue gas temperature socket T1.

To measure differential temperature, connect another type k probe thermocouple plug to ambient temperature T2.

To measure flow & return temperature, use T1 for flow & T2 for temperature.

If T2 is not connected, analyser internal temperature is used to calculate net temperature.



11.2 PRESSURE MEASUREMENT

WARNING

Never take pressure readings without knowing maximum pressure present. Analyser pressure transducer is rated at 110 mbar with maximum over range 400 mbar.

Rotate dial to **TEMP / PRS** and connect black connectors & manometer hose to pressure port P1 for single pressure or P1 & P2 for differential pressure.

WARNING

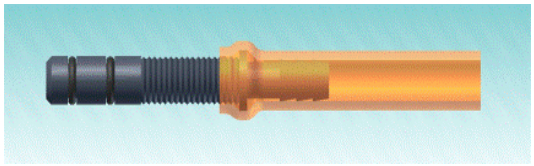
Before measuring appliance gas/air ratio valve, read appliance manufacturer instructions thoroughly - If in doubt, contact appliance manufacturer.

After adjusting a gas/air ratio valve ensure CO_2 & CO/CO_2 ratio readings are within appliance manufacturer specified limits.

11.3 LARGE BORE TUBING ISSUES

If using large bore tubing when performing pressure tests:

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



Failure may not produce gas tight seal

12 TESTS

12.1 APPLIANCE COMMISSIONING TEST

Appliance commissioning test follows UK Technical Bulletin 143 (TB143) tests - It is not a substitute for appliance manufacturer instructions.

Rotate dial to **COM TEST** then press ▼ & **ENTER** to follow on screen instructions:

TEST 1 - CHECK APPLIANCE AT MAX GAS RATE

Switch on appliance to max rate & zero analyser in fresh outdoor air.

Once stable at appliance maximum gas flow rate, insert flue probe into flue air inlet to measure:
For devices that measure CO2 levels - readings must be stable & less than or equal to 0.20%.
For devices that measure O2 levels - readings must be stable & more than or equal to 20.6%

TEST 2

Insert flue probe into appliance exhaust outlet to measure CO, CO2 & RATIO levels - these must be within manufacturer instructions.
If manufacturer instructions are not available CO must be under 350ppm & RATIO under 0.0040.

TEST 3 - CHECK APPLIANCE AT MINIMUM GAS FLOW RATE WHERE POSSIBLE

Once appliance is stable at minimum gas rate, measure CO, CO_2 & RATIO levels - these must be within manufacturer instructions.

If manufacturer instructions are not available, CO must be under 350ppm & RATIO under 0.0040.

To finish press **ENTER** to continue, then press ▼ & **ENTER**

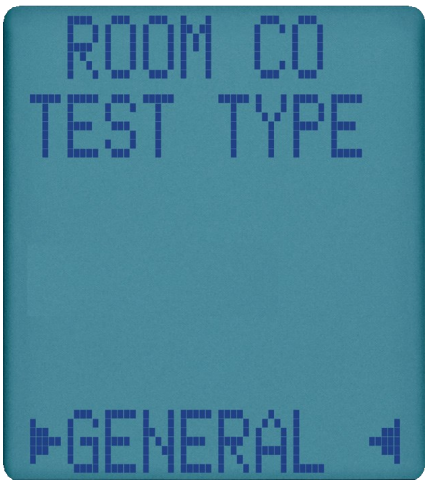
TEST 4 - MEASURE FLOW & RETURN TEMPERATURES FROM APPLIANCE

COMMISIONING tests are automatically stored in memory with a log number.

Send COMMISIONING test log to your optional KANE-IRP3 printer by pressing **ENTER** or wirelessly to your KANE LIVE App using ▲ & **ENTER**

12.2 ROOM CO & CO2 TESTS

Rotate dial to **ROOM**.
Select **ROOM CO** using ▲ or ▼ & **ENTER** to record room CO & CO2 levels for up to 30 minutes.
If fitted, ambient CO2 levels are also recorded.



Use ▲ or ▼ & **ENTER** to select test types from these options:

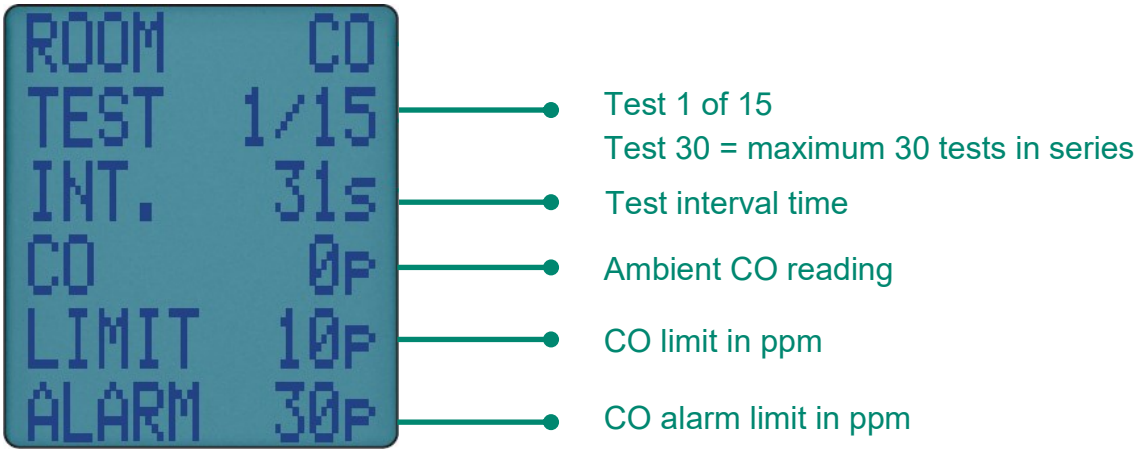
ROOM CO & CO2 TEST TYPES

TEST TYPE	DURATION	LIMITS / ALARM LEVELS
GENERAL	15 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm
SWEEP TEST	2 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm
MIQRATION TEST	15 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm
TYPE C SEALED APPLIANCE	15 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm
TYPE B BOILER OPEN FLUE	15 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm
TYPE A COOKER	30 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm
TYPE A WATER HEATER	5 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm
TYPE A SPACE HEATER	30 minute test with results stored every minute	LIMIT = 10ppm ALARM - 30ppm

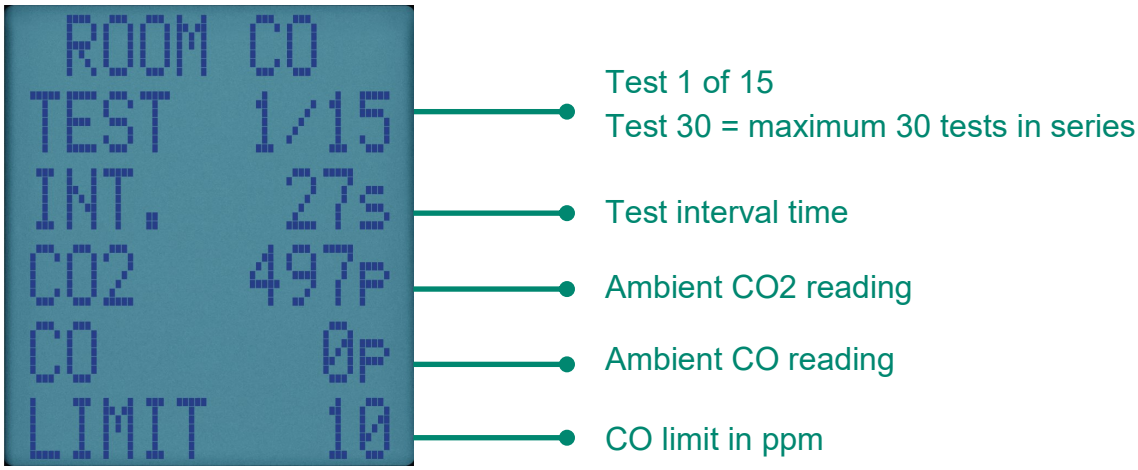
ROOM CO & CO2 DISPLAY

Your analyser automatically measures ambient CO.
It also measures ambient CO2 if fitted.

CO ONLY



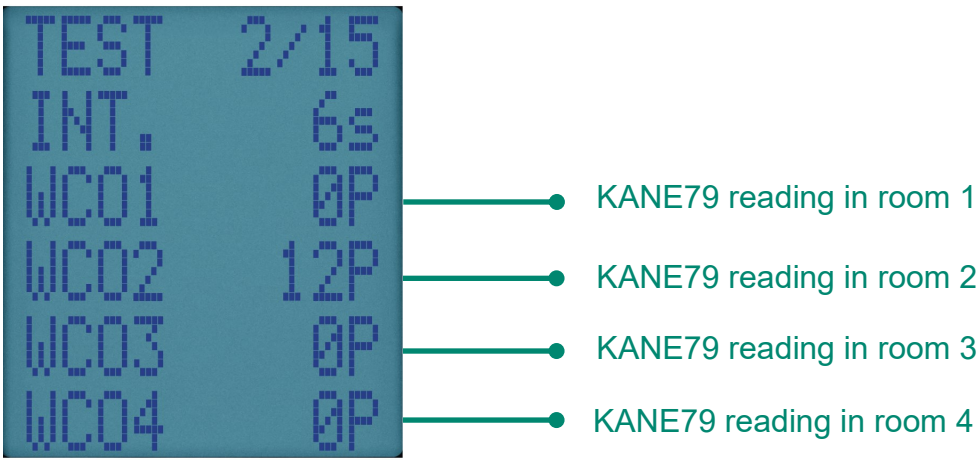
CO & AMBIENT CO2



KANE LINK MULTI ROOM CO TEST

Your analyser performs up to 4 simultaneous **ROOM CO** tests when linked to up to 4 optional KANE79 CO monitors.

See page 36 to manage optional KANE LINK devices.



You can stop **ROOM** test any time by pressing **ENTER**.

Otherwise it automatically stops after the pre-set time.

ROOM tests are automatically stored in memory with a log number.

Send **ROOM** tests to your optional KANE-IRP3 printer by pressing **ENTER** or wirelessly to your KANE LIVE App using ▲& **ENTER**

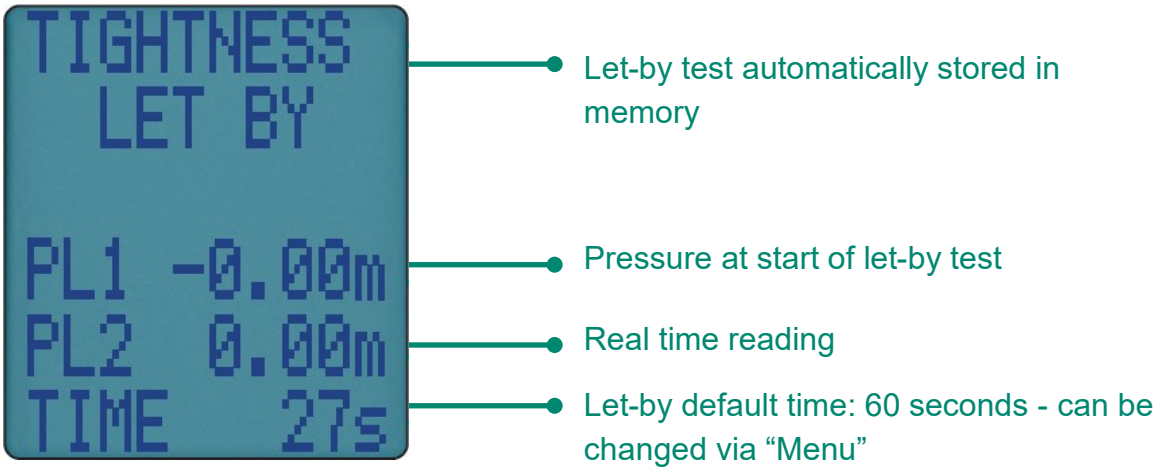
12.3 LET-BY / TIGHTNESS TESTING & EDITING TIMES

Rotate dial to **TIGHTNESS** then press **ENTER** to zero pressure sensor.

Using black connectors, connect your manometer hose from appliance test point to analyser P1 input.

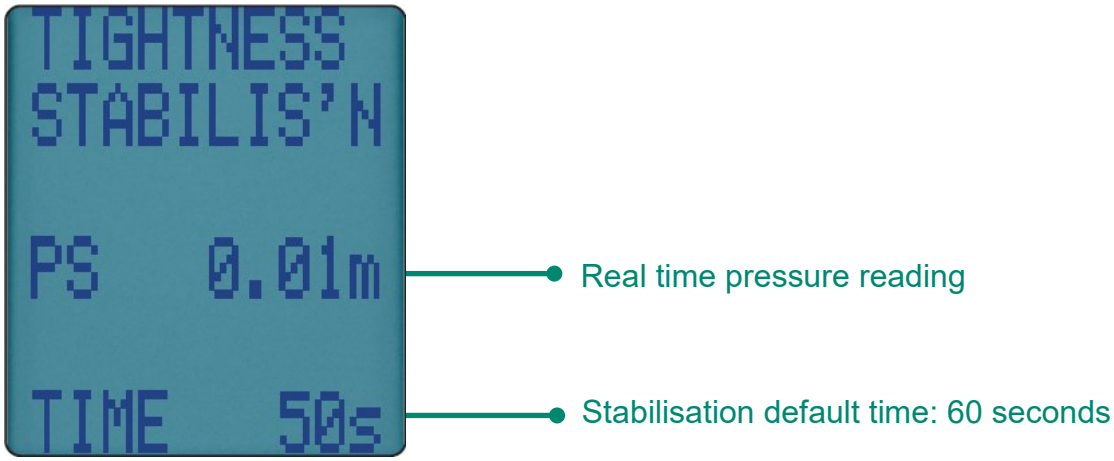
Display shows “LET BY?” - use ▲ or ▼ & **ENTER** to select YES or NO.

If YES selected, set let-by pressure then press **ENTER** to start let-by test:



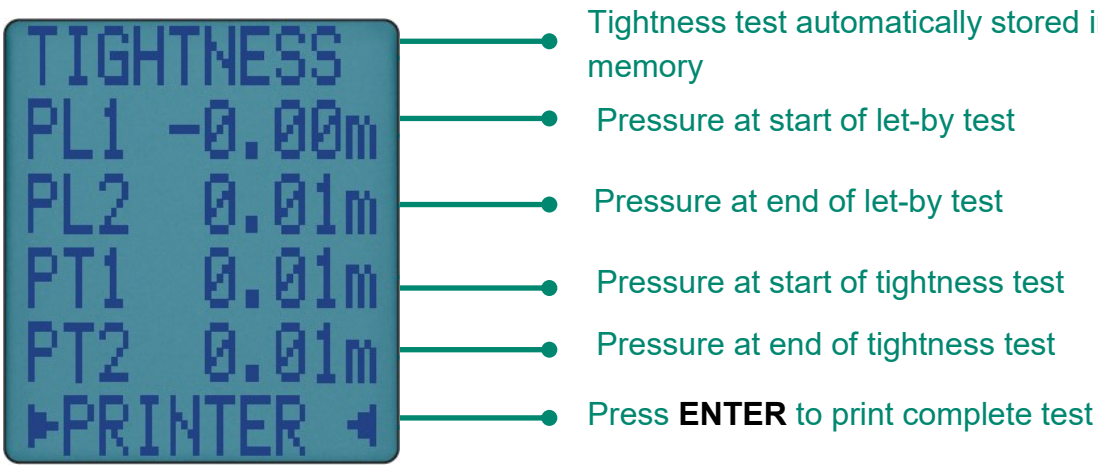
If let-by test fails rotate dial to another position to stop test.

If let-by test passes, adjust gas pressure for tightness test & press **ENTER** to start stabilisation test - display shows:



When complete press **ENTER** to start tightness test:

When complete display shows:



EDITING TEST TIMES

You can change:

- Let by time interval
- Stabilisation interval
- Tightness test interval

Select **SETTINGS** from tightness test start screen using ▲& ▼

Press **ENTER** to select which test time to change.

Use ▲to ▼increase or decrease time then press **ENTER** to confirm.

Press ▲or ▼until **RUN** appears on status bar then press **ENTER** to start.

TIGHTNESS tests are automatically stored in memory with a log number.

Send TIGHTNESS test log to your optional KANE-IRP3 printer by pressing **ENTER** or wirelessly to your KANE LIVE App using ▲& **ENTER**

12.4 NAVIGATING STORED TESTS

To view a stored test, rotate dial to desired test:

Select view from test option using ▲ or ▼ & **ENTER.**
Most recent test displayed
Long press ▲ & ▼ to navigate to previous tests.

13 PRINTING TO INFRARED PRINTER

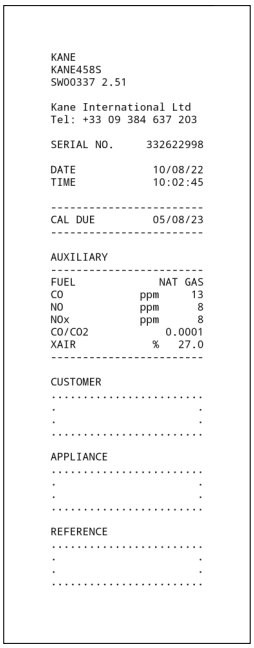
To print test result or logs use optional KANE infrared printer.

Power on printer and place printer infrared receiver in line with analyser emitter see page 8.

Allow 15cm gap between analyser & printer.

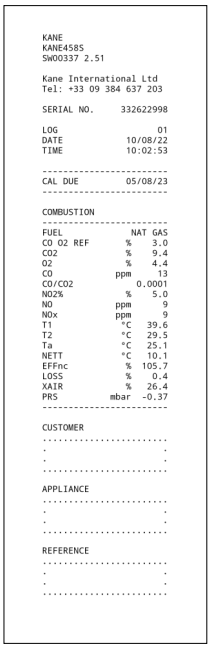
14 SAMPLE PRINTOUTS

Auxiliary (AUX)



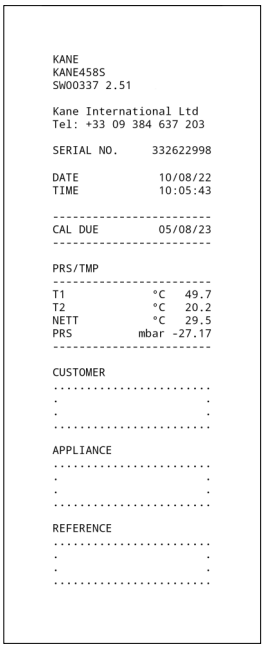
```
KANE
KANE458S
SW00337 2.51

Kane International Ltd
Tel: +33 09 384 637 203

SERIAL NO.      332622998

DATE             10/08/22
TIME             10:02:45

------------------------
CAL DUE          05/08/23
------------------------

AUXILIARY
------------------------
FUEL               NAT GAS
CO             ppm      13
NO             ppm       8
NOx            ppm       8
CO/CO2               0.0001
XAIR             %    27.0
------------------------

CUSTOMER
.........................
.                       .
.                       .
.........................

APPLIANCE
.........................
.                       .
.                       .
.........................

REFERENCE
.........................
.                       .
.                       .
.........................
```

Combustion



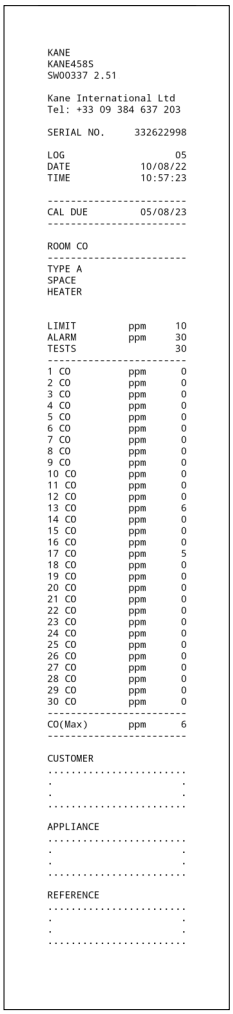
```
KANE
KANE458S
SW00337 2.51

Kane International Ltd
Tel: +33 09 384 637 203

SERIAL NO.      332622998

LOG                    01
DATE            10/08/22
TIME            10:02:53

------------------------
CAL DUE          05/08/23
------------------------

COMBUSTION
------------------------
FUEL               NAT GAS
CO O2 REF        %    3.0
CO2              %    9.4
O2               %    4.4
CO             ppm     13
CO/CO2               0.0001
NO2%             %    5.0
NO             ppm       9
NOx            ppm       9
T1               °C   39.6
T2               °C   29.5
Ta               °C   25.1
NETT             °C   10.1
EFFnc            %   105.7
LOSS             %    0.4
XAIR             %   26.4
PRS            mbar  -0.37
------------------------

CUSTOMER
.........................
.                       .
.                       .
.........................

APPLIANCE
.........................
.                       .
.                       .
.........................

REFERENCE
.........................
.                       .
.                       .
.........................
```

Pressure/Temp



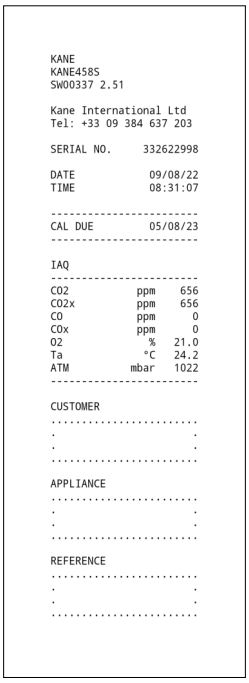
```
KANE
KANE458S
SW00337 2.51

Kane International Ltd
Tel: +33 09 384 637 203

SERIAL NO.      332622998

DATE             10/08/22
TIME             10:05:43

------------------------
CAL DUE          05/08/23
------------------------

PRS/TMP
------------------------
T1               °C   49.7
T2               °C   20.2
NETT             °C   29.5
PRS            mbar -27.17
------------------------

CUSTOMER
.........................
.                       .
.                       .
.........................

APPLIANCE
.........................
.                       .
.                       .
.........................

REFERENCE
.........................
.                       .
.                       .
.........................
```

Type A



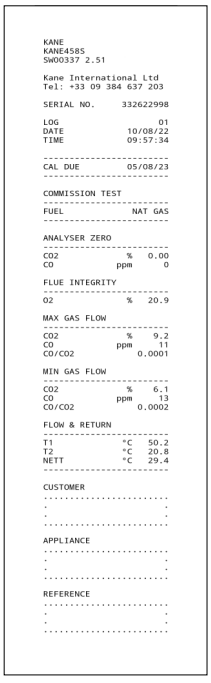
```
KANE
KANE458S
SW00337 2.51

Kane International Ltd
Tel: +33 09 384 637 203

SERIAL NO.      332622998

LOG                    05
DATE            10/08/22
TIME            10:57:23

------------------------
CAL DUE          05/08/23
------------------------

ROOM CO
------------------------
TYPE A
SPACE
HEATER


LIMIT          ppm     10
ALARM          ppm     30
TESTS                  30
------------------------
1 CO           ppm      0
2 CO           ppm      0
3 CO           ppm      0
4 CO           ppm      0
5 CO           ppm      0
6 CO           ppm      0
7 CO           ppm      0
8 CO           ppm      0
9 CO           ppm      0
10 CO          ppm      0
11 CO          ppm      0
12 CO          ppm      0
13 CO          ppm      6
14 CO          ppm      0
15 CO          ppm      0
16 CO          ppm      0
17 CO          ppm      5
18 CO          ppm      0
19 CO          ppm      0
20 CO          ppm      0
21 CO          ppm      0
22 CO          ppm      0
23 CO          ppm      0
24 CO          ppm      0
25 CO          ppm      0
26 CO          ppm      0
27 CO          ppm      0
28 CO          ppm      0
29 CO          ppm      0
30 CO          ppm      0
------------------------
CO(Max)        ppm      6
------------------------

CUSTOMER
.........................
.                       .
.                       .
.........................

APPLIANCE
.........................
.                       .
.                       .
.........................

REFERENCE
.........................
.                       .
.                       .
.........................
```

IAQ



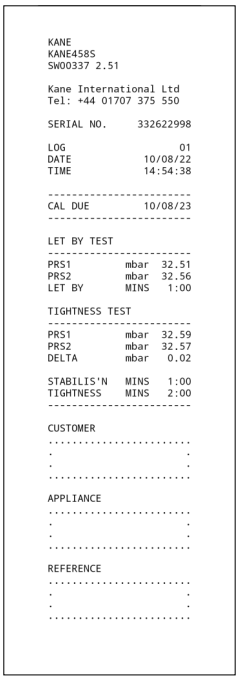
```
KANE
KANE458S
SW00337 2.51

Kane International Ltd
Tel: +33 09 384 637 203

SERIAL NO.      332622998

DATE             09/08/22
TIME             08:31:07

------------------------
CAL DUE          05/08/23
------------------------

IAQ
------------------------
CO2            ppm    656
CO2x           ppm    656
CO             ppm      0
COx            ppm      0
O2               %   21.0
Ta               °C  24.2
ATM            mbar  1022
------------------------

CUSTOMER
.........................
.                       .
.                       .
.........................

APPLIANCE
.........................
.                       .
.                       .
.........................

REFERENCE
.........................
.                       .
.                       .
.........................
```

Commission



```
KANE
KANE458S
SW00337 2.51

Kane International Ltd
Tel: +33 09 384 637 203

SERIAL NO.      332622998

LOG                    01
DATE            10/08/22
TIME            09:57:34

------------------------
CAL DUE          05/08/23
------------------------

COMMISSION TEST
------------------------
FUEL               NAT GAS
------------------------

ANALYSER ZERO
------------------------
CO2              %   0.00
CO             ppm      0

FLUE INTEGRITY
------------------------
O2               %   20.9

MAX GAS FLOW
------------------------
CO2              %    9.2
CO             ppm     11
CO/CO2               0.0001

MIN GAS FLOW
------------------------
CO2              %    6.1
CO             ppm     13
CO/CO2               0.0002

FLOW & RETURN
------------------------
T1               °C   50.2
T2               °C   20.8
NETT             °C   29.4
------------------------

CUSTOMER
.........................
.                       .
.                       .
.........................

APPLIANCE
.........................
.                       .
.                       .
.........................

REFERENCE
.........................
.                       .
.                       .
.........................
```

Let by/Tightness

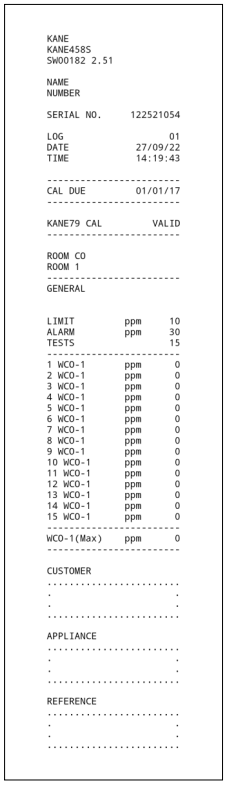


```
KANE
KANE458S
SW00337 2.51

Kane International Ltd
Tel: +44 01707 375 550

SERIAL NO.      332622998

LOG                    01
DATE            10/08/22
TIME            14:54:38

------------------------
CAL DUE          10/08/23
------------------------

LET BY TEST
------------------------
PRS1           mbar  32.51
PRS2           mbar  32.56
LET BY         MINS   1:00

TIGHTNESS TEST
------------------------
PRS1           mbar  32.59
PRS2           mbar  32.57
DELTA          mbar   0.02

STABILIS'N     MINS   1:00
TIGHTNESS      MINS   2:00
------------------------

CUSTOMER
.........................
.                       .
.                       .
.........................

APPLIANCE
.........................
.                       .
.                       .
.........................

REFERENCE
.........................
.                       .
.                       .
.........................
```

14.1 SAMPLE SIMULTANEOUS ROOM CO TESTS WITH KANE LINK CO MONITORS

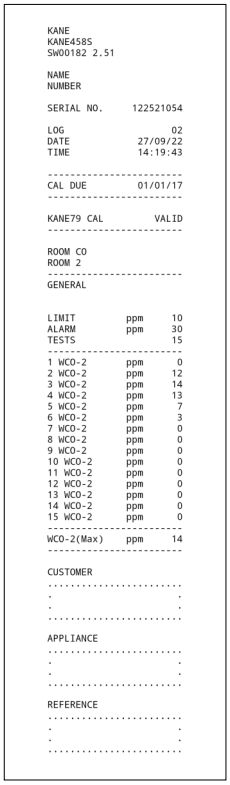
Multi room printouts are of individual reports for each room:

Room 1



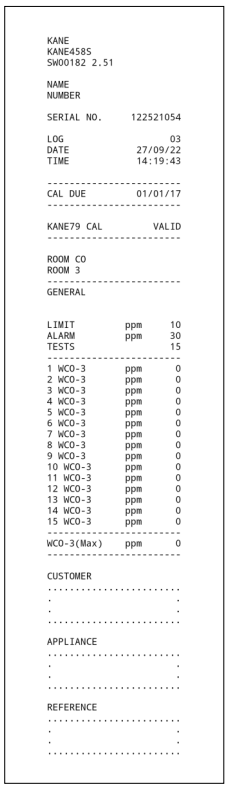
```
KANE
KANE458S
SW00182 2.51

NAME
NUMBER

SERIAL NO.      122521054

LOG                    01
DATE            27/09/22
TIME            14:19:43

-----------------------
CAL DUE         01/01/17
-----------------------

KANE79 CAL          VALID
-----------------------

ROOM CO
ROOM 1
-----------------------
GENERAL


LIMIT          ppm     10
ALARM          ppm     30
TESTS                  15
-----------------------
1 WCO-1        ppm      0
2 WCO-1        ppm      0
3 WCO-1        ppm      0
4 WCO-1        ppm      0
5 WCO-1        ppm      0
6 WCO-1        ppm      0
7 WCO-1        ppm      0
8 WCO-1        ppm      0
9 WCO-1        ppm      0
10 WCO-1       ppm      0
11 WCO-1       ppm      0
12 WCO-1       ppm      0
13 WCO-1       ppm      0
14 WCO-1       ppm      0
15 WCO-1       ppm      0
-----------------------
WCO-1(Max)     ppm      0
-----------------------

CUSTOMER
.......................
.                     .
.                     .
.......................

APPLIANCE
.......................
.                     .
.                     .
.......................

REFERENCE
.......................
.                     .
.                     .
.......................
```

Room 2



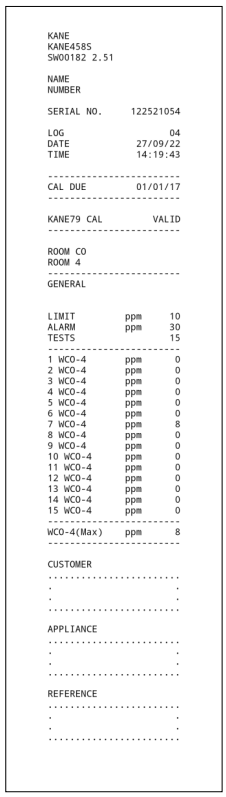
```
KANE
KANE458S
SW00182 2.51

NAME
NUMBER

SERIAL NO.      122521054

LOG                    02
DATE            27/09/22
TIME            14:19:43

-----------------------
CAL DUE         01/01/17
-----------------------

KANE79 CAL          VALID
-----------------------

ROOM CO
ROOM 2
-----------------------
GENERAL


LIMIT          ppm     10
ALARM          ppm     30
TESTS                  15
-----------------------
1 WCO-2        ppm      0
2 WCO-2        ppm     12
3 WCO-2        ppm     14
4 WCO-2        ppm     13
5 WCO-2        ppm      7
6 WCO-2        ppm      3
7 WCO-2        ppm      0
8 WCO-2        ppm      0
9 WCO-2        ppm      0
10 WCO-2       ppm      0
11 WCO-2       ppm      0
12 WCO-2       ppm      0
13 WCO-2       ppm      0
14 WCO-2       ppm      0
15 WCO-2       ppm      0
-----------------------
WCO-2(Max)     ppm     14
-----------------------

CUSTOMER
.......................
.                     .
.                     .
.......................

APPLIANCE
.......................
.                     .
.                     .
.......................

REFERENCE
.......................
.                     .
.                     .
.......................
```

Room 3



```
KANE
KANE458S
SW00182 2.51

NAME
NUMBER

SERIAL NO.      122521054

LOG                    03
DATE            27/09/22
TIME            14:19:43

-----------------------
CAL DUE         01/01/17
-----------------------

KANE79 CAL          VALID
-----------------------

ROOM CO
ROOM 3
-----------------------
GENERAL


LIMIT          ppm     10
ALARM          ppm     30
TESTS                  15
-----------------------
1 WCO-3        ppm      0
2 WCO-3        ppm      0
3 WCO-3        ppm      0
4 WCO-3        ppm      0
5 WCO-3        ppm      0
6 WCO-3        ppm      0
7 WCO-3        ppm      0
8 WCO-3        ppm      0
9 WCO-3        ppm      0
10 WCO-3       ppm      0
11 WCO-3       ppm      0
12 WCO-3       ppm      0
13 WCO-3       ppm      0
14 WCO-3       ppm      0
15 WCO-3       ppm      0
-----------------------
WCO-3(Max)     ppm      0
-----------------------

CUSTOMER
.......................
.                     .
.                     .
.......................

APPLIANCE
.......................
.                     .
.                     .
.......................

REFERENCE
.......................
.                     .
.                     .
.......................
```

Room 4



```
KANE
KANE458S
SW00182 2.51

NAME
NUMBER

SERIAL NO.      122521054

LOG                    04
DATE            27/09/22
TIME            14:19:43

-----------------------
CAL DUE         01/01/17
-----------------------

KANE79 CAL          VALID
-----------------------

ROOM CO
ROOM 4
-----------------------
GENERAL


LIMIT          ppm     10
ALARM          ppm     30
TESTS                  15
-----------------------
1 WCO-4        ppm      0
2 WCO-4        ppm      0
3 WCO-4        ppm      0
4 WCO-4        ppm      0
5 WCO-4        ppm      0
6 WCO-4        ppm      0
7 WCO-4        ppm      8
8 WCO-4        ppm      0
9 WCO-4        ppm      0
10 WCO-4       ppm      0
11 WCO-4       ppm      0
12 WCO-4       ppm      0
13 WCO-4       ppm      0
14 WCO-4       ppm      0
15 WCO-4       ppm      0
-----------------------
WCO-4(Max)     ppm      8
-----------------------

CUSTOMER
.......................
.                     .
.                     .
.......................

APPLIANCE
.......................
.                     .
.                     .
.......................

REFERENCE
.......................
.                     .
.                     .
.......................
```

15 KANE LINK WIRELESS MEASUREMENT AND DATA TRANSFER

Wirelessly connect optional KANE LINK devices to your KANE LINK Analyser or wirelessly transfer test results to your smartphone or tablet.

Rotate dial to KANE LINK to manage how your analyser communicates with wireless devices or your smartphone or tablet.

To ADD, REMOVE and check STATUS of any KANE LINK device select using ▲ or ▼ & **ENTER**

15.1 WPCP2 PIPE CLAMP TEMPERATURE PROBES

To add select **WPCP2** using ▲ & **ENTER**.

Enter serial number using ▲ & **ENTER** - Each serial number must be 10 digits long.

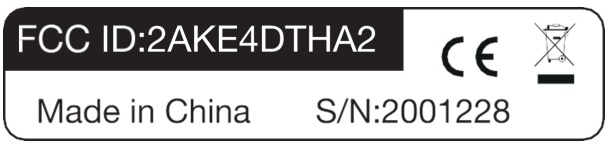
If longer use last 10 digits - e.g: in this example enter last 10 digits: 2105094301

15.2 DTHA2 ANEMOMETER

To add select **DTHA2** using ▲ & **ENTER**.

Enter serial number using ▲ & **ENTER** - 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.



15.3 KANE79 PERSONAL & ROOM CO MONITOR

To add select **KANE79** using ▲ & **ENTER**

Enter serial number using ▲ & **ENTER** - Each serial number must be 10 digits long.

If shorter, enter 0's to make up to 10 - e.g: in this example enter J12345678 as 0012345678.

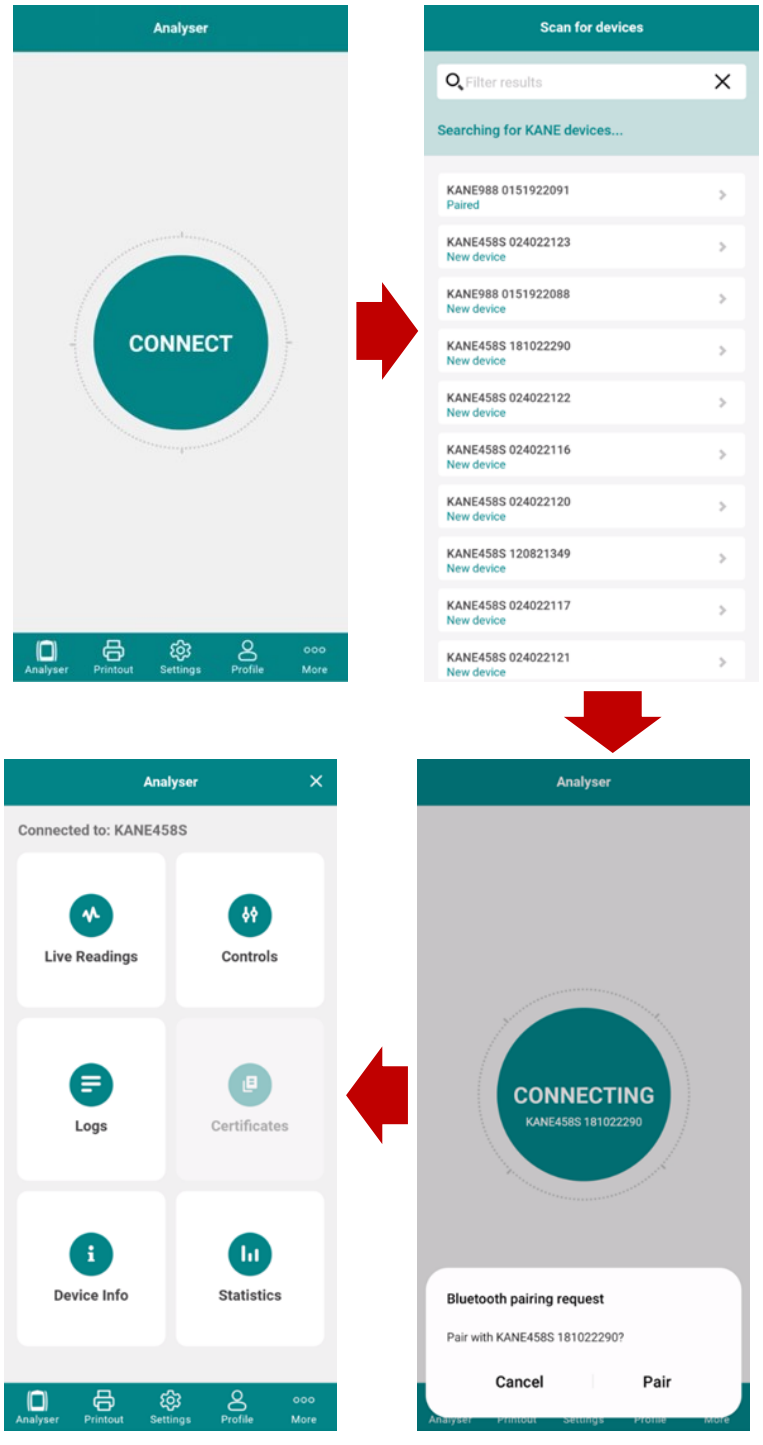
Other KANE LINK devices can be paired - Contact KANE for more details

15.4 TRANSFER DATA TO SMARTPHONE OR TABLET

CONNECTING TO KANE LIVE

Rotate dial of your KANE LIVE analyser to KANE LINK then select and enter APP mode using ▲or ▼& **ENTER**.

Open KANE LIVE then tap CONNECT to find your analyser - Select from device list then, if asked, tap PAIR to connect.



16 MAINTENANCE

16.1 WATER TRAP, PARTICLE & WATER STOP FILTER

Some boilers produce high water vapour volume which can affect your analyser.

Your analyser has a water trap & particle filter to stop water vapour & dust. Your analyser also has a water stop filter with hydrophobic technology located inside the particle filter connected to a red filter carrier.

Drain water trap when you see ater collecting in the water trap - Remove red plug, empty water then replace red plug.

Replace water stop & particle filters when they are wet or dirty or your analyser displays LOW FLOW.

To replace:

1. Disconnect water trap from your analyser
2. Remove red filter carrier with particle & water stop filter from water trap
3. Ensure water trap is completely dry
4. Attach new water stop & particle filter to red carrier

Insert red carrier in water trap and reconnect water trap to your analyser.

Replacement parts:

Water trap: SM50515
Particle filter: PF400/5 (pack of 5 particle filters)
Water Stop filter: SM50933 (Needs a pack of 5)
Red filter carrier: CM50302

16.2 FLUE GAS & TEMPERATURE PROBE

Check your flue gas & temperature probe for tubing leaky crack.
Check analyser connectors are not bent or cracked.
Check flue gas temperature probe is not bent or out of shape,

WARNING

Never cool your probe in water or use probe shaft as a lever.

16.3 BATTERY CHARGER & BATTERIES

See section 4, page 12

16.4 SYSTEM LEAK TEST

Your analyser can perform a system integrity test ensuring no sampling system leaks when you connect a combustion probe & cover probe tip to ensure air tight seal.

To perform, rotate dial to **MENU**

Select UTIL pressing ▲or ▼& **ENTER**

Select LEAK pressing ▲or ▼& **ENTER**

Follow analyser instructions to connect and block probe

Select NEXT pressing **ENTER**

Your analyser now performs test then indicate pass or fail

17 COLD WEATHER PRECAUTIONS

Do not leave your analyser in a cold place overnight.

Electronic devices that become cold suffer when taken into a warm place. Condensation may form affecting analyser performance.

Analyser sensors are affected by condensation or water. When this happens, readings may display as “-” & sensors may be permanently damaged.

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

If you still experience problems please contact KANE Customer Service.

18 WHERE TO SEND YOUR ANALYSER - See Section 21

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

Outside UK Call +44 1707 375550

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

19 SPECIFICATION

PARAMETER	RANGE	RESOLUTION	ACCURACY
Temperature & Pressure Measurement			
Flue Temperature	0 - 600°C	0.1°C	±0.5°C
Inlet temperature (Internal Sensor)	0 - 50°C	0.1°C	±1°C
Inlet temperature (External Sensor)	0 - 600°C	0.1°C	±0.5°C
Pressure (Differential)	±100mbar	0.1mbar	±0.5% FSD
Flue Gas Measurement			
Carbon Monoxide	0 - 2000ppm	1ppm	±3ppm or ±5% of reading (whichever is greater)
Carbon Monoxide H2 Compensated	0 - 10,000ppm	1ppm	±5ppm < 100ppm ±20ppm < 400ppm ±5% > 400ppm - 2000ppm ±10% > 2000ppm - 10,000ppm
Carbon Dioxide	0 - 20%	0.1%	±0.3% Volume
Carbon Dioxide	0 - 9999ppm	1ppm	±10% of reading or 5% FSD (whichever is greater)
Oxygen (If fitted)	0 - 21%	0.1%	±0.3% Volume
Nitric Oxide (if fitted)	0 - 600ppm	1ppm	±5ppm or ±5% of reading (whichever is greater)
Calculations			
Oxygen	0 - 21%	0.1%	±0.3% Volume
CO/CO2 Ratio	0 - 0.9999	0.0001	±5% of reading
Efficiency (Net or Gross)	0 - 99.9%	0.1%	±1% of reding
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	Natural Gas, Propane, Butane, LPG, Light Oil, Wood Pellets		
Battery Life	>8 hours (continuous with pump on)		
Certification	The KANE458s is independently test and certified to EN50379, Parts 1-3		

SPECIFICATION CONTINUED

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

20 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 KANE458s 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**
201430EU	Electromagnetic Compatibility (EMC)
201165EU	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 KANE458s is independently tested and certified to EN 50379, Parts 1 & 3

EMC
EN50270:2015

SAFETY
EN61010-1:2010

RoHS (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. July 2022

Kane International Ltd.

Paul Morrison
Engineering Manager

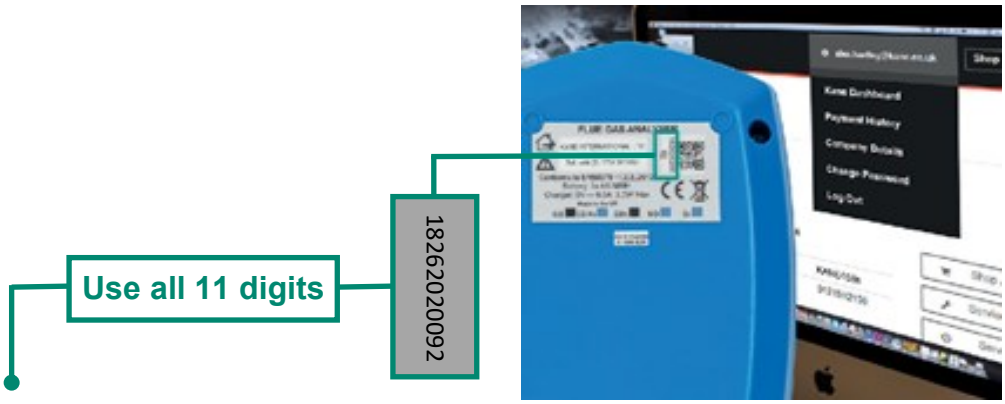
Welcome to KANE CARE

21 **KANE CARE is our award winning promise to never let you down or your money back**

All gas analysers must be serviced and recertified every year - In some markets this is a legal requirement

KANE CARE is all inclusive and applies to any KANE analyser booked online via www.kane.co.uk & www.kanetest.ie - some exclusions apply

For Customers outside UK & Ireland who need KANE CARE
email: sales@kane.co.uk



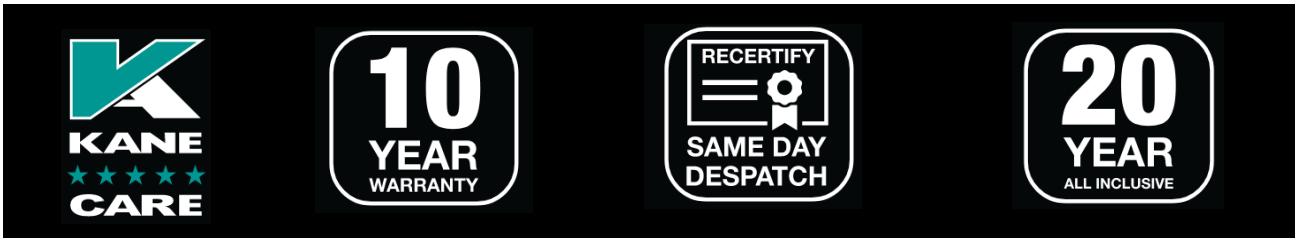
- ★ Please **register** your analyser on our website to download your instruction manual
- ★ **PLEASE READ ALL SAFETY WARNINGS IN THE MANUAL**
- ★ **Use our website to manage your Analyser, buy spares & other KANE products**
- ★ **Find FAQs on our website or on our YouTube Channel**
- ★ **Got a question? Call our Customer Service Team 7am - 5pm any normal weekday 0800 059 0800**

More info at: www.kane.co.uk/service-and-re-calibration

www.kane.co.uk www.kanetest.ie
www.kane.eu www.kane-care.com

THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION 2022

KANE CARE 10 YEAR WARRANTY RECERTIFY SAME DAY DESPATCH 20 YEAR ALL INCLUSIVE



KANE CARE UK & Ireland Service & Recertification

KANE CARE is our promise to never let you down or your money back

- ★ **10 Year warranty with annual Service & Recertification**
- ★ **Same Day Service & Recertification guaranteed**
- ★ **Free next day tracked delivery to KANE**
- ★ **Free pre 9am next day return & Saturday am**
- ★ **Theft protection - 50% off when replacing your stolen KANE analyser**

KANE CARE applies to any KANE FGA Service & Recertification booked online via www.kane.co.uk & wwwkanetest.ie - some exclusions apply

More info at: www.kane.co.uk/service-and-re-certification

KANE CARE International Service & Recertification

KANE CARE is our promise to never let you down or your money **back**

- ★ **10 Year warranty with annual Service & Recertification**
- ★ **20 Year all inclusive pricing**
- ★ **Includes accessory repair or replacement as required including probe, charger, carry bag & printer**
- ★ **Free tracked return**
- ★ **Full test certification & repair report**

KANE CARE International applies to any KANE Analyser Service & Recertification booked & quote confirmed via sales@kane.co.uk - some exclusions apply

More info at: www.kane.co.uk/service-and-re-certification

Customer Service
0800 059 0800
+44 1707 375550

www.kane.co.uk www.kanetest.ie
www.kane.eu www.kane-care.com

Follow us on...

Email: sales@kane.co.uk

★★★★★ ★Trustpilot

KANE CARE

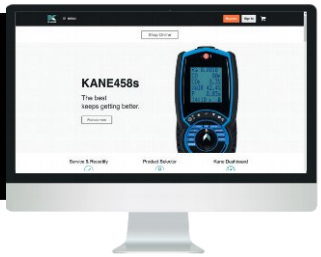
10 YEAR WARRANTY

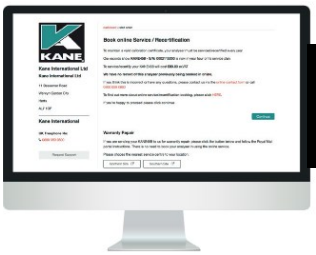
RECERTIFY SAME DAY DESPATCH

20 YEAR ALL INCLUSIVE

UK & Ireland
Same Day Despatch
KANE CARE Service & Recertification

Register your analyser on
www.kane.co.uk or
www.kanetest.ie





Book & pay to Service & Recertify
via your dashboard

Select FREEPOST for tracked
carriage - UK & Ireland mainland only

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

*Excludes KANE-EGA, AUTO600, '9 series' analyser & UKAS certificates - Ireland 2 day turnaround

KANE CARE

10 YEAR WARRANTY

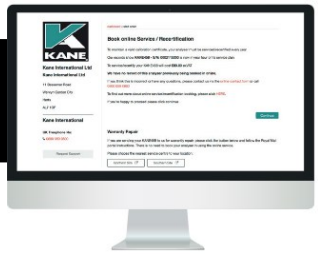
RECERTIFY SAME DAY DESPATCH

20 YEAR ALL INCLUSIVE

International
All Inclusive Price
KANE CARE Service & Recertification

email: sales@kane.co.uk with
analyser name & serial number

Pay our all inclusive
KANE CARE quote



Send your analyser & accessories

We will return free of charge* after
KANE CARE Service & Recertification
with 1 year warranty if under 10 years old

10 YEAR WARRANTY

*Excludes local tax & duty

22 KANE CARE 5 YEAR SERVICE PLAN

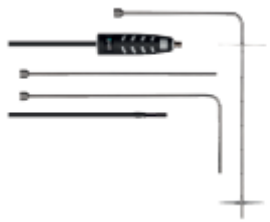
Purchase our 5 Year Service Plan with your KANE258, 358 or 458s standard configuration, covering years 1-4 service & recertification, saving money & giving 5 years of cover, with all the benefits of KANE

- ★ **All inclusive no quibble repairs**
- ★ **Theft protection cover - if stolen we'll replace your KANE analyser for free, and industry first**
- ★ **10% Saving on your KANE258, 358, 458s service cost**
- ★ **Peace of mind - no unexpected additional charges**
- ★ **Only available from KANE authorized distributors**
- ★ **Secure activation via KAM dashboard**

More info at: www.kane.co.uk/service plan

KANE5SP

23 COMBUSTION PROBE OPTIONS

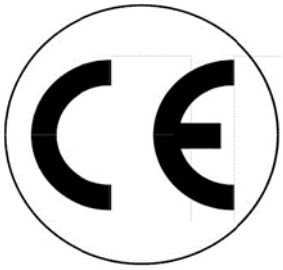
	**ASP3 KIT**	• Appliance sampling probe kit - grills, gas fires & general purpose • 5mm diameter • 2.2m flexible tube • Separate handle & hose assembly
	**CP2**	• 240mm probe • 6mm diameter • 2m neoprene hose
	**CP30**	• 240mm combined flue gas & pressure probe • 6mm diameter • 2m neoprene hose

24 ACCESSORIES & CONSUMABLES

	**KANE-IRP3** KANE Infra-Red Printer
	**USB1** USB charger for KANE258, 358, 458s, 958, KANE-EGA1,2, & 3
	**B15** 4 X 2000 mAh rechargeable batteries **NOTE:** battery make may differ
	**PF400/5 (pack of five)** Filters for KANECO91, 100, 101, 250, 251, 255, 258, 358, 425, 450, 451plus, 452NO, 455, 456, 457, 458, 458s, 504, 958, EGA1, 2 & 3
	**WSF1/5 (pack of five)** Water Stop Filters for KANE458s & KANE958
	**TP5 (pack of five)** Thermal printer rolls for Infra-Red Printer KANE-IRP, KANE-IRP2 & KANE-IRP3
	**SM11103** Replacement probe connector for KANE100, 101, 250, 251, 255, 451plus, 452NO, 455, 456, 457 & 458
	**SM14980** Replacement probe connector for KANE28, 358, 458s, 958, 975, 988, EGA1, 2 & 3
	**SM50515** Replacement water trap for KANE258, 358, 458s, 958, EGA1, 2 & 3

25 ANALYSER RECYCLING

THIS PRODUCT CONFIRMS WITH THE FOLLOWING



PLEASE RECYCLE - CONTACT US

PACKAGING MADE IN THE UK

26 THANK YOU

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