

KANE-EGA4/5



Exhaust Gas Analyzer





Distributed in the USA by



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MANE-EGA4/5 OVERVIEW

Your analyzer measures up to 5 engine exhaust gases Depending on your options it measures or calculates:

- Carbon Monoxide 0-10% (CO)
- Carbon Dioxide (CO2)
- Hydrocarbons 0-5000ppm (HC)
- Oxygen (O2)
- Nictric Oxide (NO)
- Nitrogen Oxide (NOx)
- Corrected Carbon Monoxide (COk)
- Temperature
- Differential Temperature
- Lamba
- Air Conditioning & Refrigeration systems

Your analyzer has an integral protective rubber cover and easy fit accessory clip on rear above the battery compartment.

Your analyzer flow detector system automatically detects a blockage in the sampling system.

Your analyzer prints test results using an optional infra-red KANE printer or wirelessly sends test results to the KANE LIVE App.

MEMORY

Your analyzer stores tests, known as logs:

- 178 engine exhaust analysis tests
- 178 temperature tests
- 89 KANE-DTHA2 airflow, temperature & humidity tests
- 2 tests of up to 1440 timed logs
- 163 air conditioning & refrigeration tests

You can personalize your test results, entering up to 2 lines of 24 characters.

KANE COLINK

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

When connected, they stay connected until you use KANE LINK to remove them.

When powered on, they automatically replace or add measurements to your analyzer.

See page 35 to add, manage or remove optional KANE LINK devices.

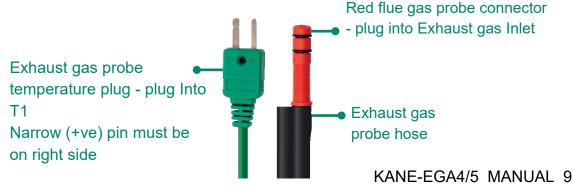
2 ANALYZER FEATURES AND KEYPAD



21 KEYPAD BUTTONS

ICON	DESCRIPTION
PLAY / PAUSE	Pump On / Off
PRINT F1	Short press to print a report - Analyzer offers destination choice when wireless & irda fitted
STORES / F2	Short press to Store / F2
HOME	Return to home screen
UP UP	Short press to scroll up
DOWN	Short press to scroll down
BACK / CANCEL	BACK / CANCEL
OK / ENTER	OK / ENTER





BACK OF ANALYZER & PROBE



BATTERIES

31 BATTERY TYPE

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



WARNING

Although you can use Alkaline batteries do not charge your analyzer 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 analyzer & remove battery compartment cover. Fit 6 x NiMH "AA" rechargeable batteries with correct battery polarity. Replace battery compartment cover.

33 TIME AND DATE

After changing batteries reset your analyzer time & date.

34 CHARGING NIMH BATTERIES

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

BATTERY DISPOSAL

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

4 GENERAL SAFETY

SAFETY WARNING

Your analyzer extracts gases that may be toxic in relativity low concentrations.

These gases are exhausted from the back & bottom of the analyzer.

This analyzer must only be used in well-ventilated locations by trained and competent persons after due consideration of all potential hazards.

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

A "bump" test checks an analyzer works within acceptable limits by briefly exposing it to known gas mixtures to change output of 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 test gas concentration.

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

This analyzer is designed as Class III equipment and should only be connected to SELV (Safety Extra Low Voltage) 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

5 FIRST TIME USE

Charge your analyzer 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 analyzer configuration may not support all features explained in this manual.

Use ▲ or ▼ & to select your choices - Press HOME to exit without change.

Set up your analyzer to your requirements - Press HOME then select from setting, reports, on screen trend, set up & tools.

DAILY USE

After powering on your analyzer, choose tasks to perform using MENU.

Most tests can be made with little user activity.

Your analyzer status bar on the bottom of the displays shows current time, date and battery status.

Check time & date are correct as they can only be changed if you have no stored logs in analyzer memory to protect stored data integrity.

Always check you analyzer before use and power on in fresh air - See section 9 on page 22.

Press HOME menu to start using your analyzer - See section 8 on page 15.

Use ☑ or ☑ & ☑ to select what happens next - Press HOME to exit what change.

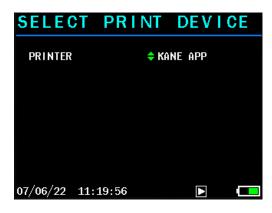
USER INTERFACE

Navigate via the 5 button control panel - press HOME to return to HOME MENU:



PRINT A TEST REPORT

Press PRINT key **to select print destination**.



Press ENTER key 2 - display changes to show print progress.

12 LOG A TEST REPORT

Press STORE key until display shows LOG STORED.

To print logged data:
Select LOG ON in REPORTS menu

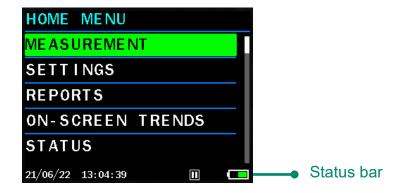
Press PRINT key or select desired test from MEASUREMENT MENU & use View Logs

Select LOG NO & press PRINT key



Press HOME to display MENU, use to enter each item.

Press HOME to exit without change



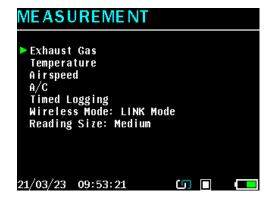
MENU ITEM	COMMENTS
MEASUREMENT	Select task to perform
SETTINGS	Change date, time, measurement parameters, alarms etc
REPORTS	Configure logging parameters & view stored data
ON-SCREEN TRENDS	Configure & display trend information
STATUS	Current instrument status, software vertion etc
SETUP	Change analyser settings & add, manage or delete KANE LINK device
TOOLS	Manual air & pressure zero, mid-stream finder tool
SERVICE	Reserved



MEASUREMENT

Start measurements & tests Press

HOME to exit without change

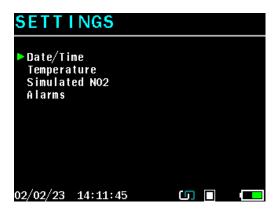


See page 28 for details

82 SETTINGS

Change default setting - Use ▲ 🗖 & 🔁 to edit each setting.

Press **HOME** to exit without change



MENU ITEM	OPTIONS / COMMENTS
DATE / TIME	Set date * time - NOTE: Can only change if all logs in memory are cleared
TEMPERATURE	Select desired option via UP / DOWN & OK to confirm
SIMULATED NO2	Set assumed % of NO2 present in sample for NOx Calculation - 5% default
ALARMS	Set Toxic Gas Alarm YES / NO Set Battery Low Alarm YES / NO Set Watertrap Check Warning YES / NO Set excess CO Warning YES / NO



Press HOME to exit without change





MENU ITEM	OPTIONS / COMMENTS
VIEW COMB. REPORTS	View reports
VIEW PRS & TEMP REPORTS	View reports
VIEW AIRFLOW REPORTS	View reports
VIEW KANE-DTHA2 REPORTS	View reports
DELETE REPORTS	Select by report type or all

84 ON-SCREEN TRENDS

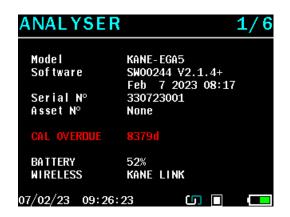
Press HOME to exit without changing



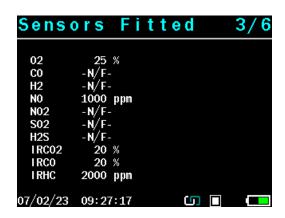
MENU ITEM	OPTIONS / COMMENTS
SETUP	Set: SAMPLING INTERVAL TREND A Parameter TREND B Parameter TREND C Parameter TREND D Parameter
START TREND A	Start
STATY TREND B	Start
START TREND C	Start
START TREND D	Start
START DUAL TREND AB	Start
START DUAL TREND CD	Start
START QUAD TREND	Start

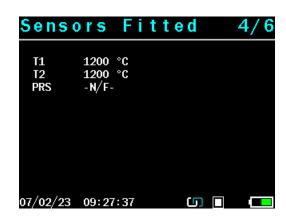


View current configuration & setup - Use □ □ to view each page Press HOME to exit change

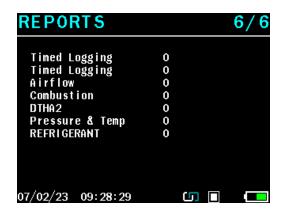






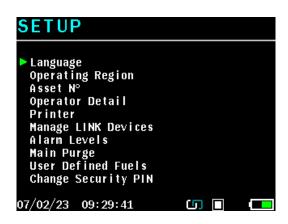








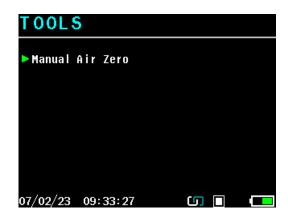
Make further changes - Use 🖸 🖬 & 🔁 to edit each setting. Press HOME to exit without change



MENU ITEM	OPTIONS / COMMENTS
LANGUAGE	Select analyzer operating language
OPERATING REGION	Select fuel table country or region
ASSET NO.	Enter equipment asset number
OPERATION DETAIL	Enter operator / owner information
PRINTER	Select IR printer type
MANAGE LINK DEVICES	Add or remove KANE LINK devices
ALARM LEVELS	Set alarm trigger levels for each gas sensor - Note alarms set in increments of 25ppm
MAIN PURGE	Set: MAIN PURGE DURATION Time in seconds MAIN PURGE INTERVAL Time in minutes AUTO ZERO YES/NO
USER DEFINED FUELS	Add custom fuel types
CHANGE SECURITY PIN	Set to stop changes without PIN code entry



For more accurate measurements



MENU ITEMS	OPTIONS / COMMENTS
MANUAL AIR ZERO	Manually trigger Air Zero purge.



Restricted area for authorized personnel only.

USING YOUR ANALYZER

CHECK BEFORE SWITCH-ON:

- 1. Particle & water stop filters are dry and clean
- 2. Water trap & probe line are empty of water
- 3. Water trap is correctly fitted & instrument upright
- 4. All hoses connections, etc, are properly made
- 5. Analyser & probe will sample fresh outdoor air

Power ON by pressing **()** to start automatic calibration count down.

AUTOMATIC CALIBRATION

During automatic calibration analyzer samples fresh air to zero toxic sensors & set oxygen sensor to 20.95%.

After power on your analyser displays identity, software version & serial number.

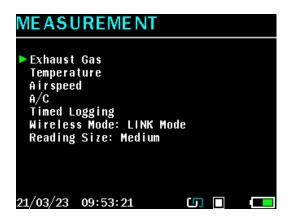
"ANALYZER PURGING 90 secs" countdown appears on display.

Calibration time counts down in seconds to zero & can be changed to 90, 120, 180 or 300 seconds.

NOTE:- 180 seconds is recommended to allow sensors to fully stabilize - anything less may result in toxic & oxygen sensor drift.



Start measurements & tests - Use 🔼 🗖 & 🔁 to edit each test

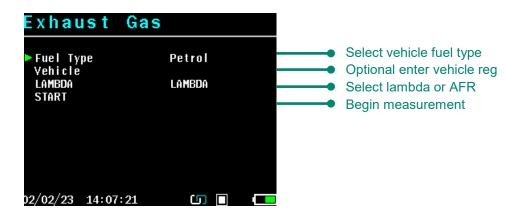


NOTE:- Ensure analyzer displays correct date & time before making measurement.

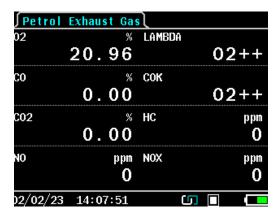


Begins measurement process.

Use ⚠ 🛣 & 🔁 to manage options and start tests

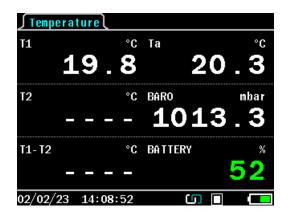


Typical exhaust gas analysis screen





Start pressure & temperature measurements





AIRFLOW, RH & TEMPERATURE

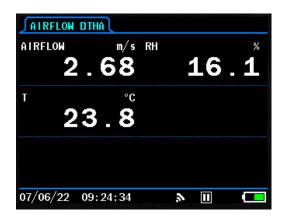
Your analyzer tests airflow, RH & temperature with an optional KANE-DTHA2 wireless anemometer.

Requires KANE-DTHA2 connected via KANE LINK - See page 35



DTHA2 SCREEN

Typical KANE-DTHA2 screen when connected





Your analyzer tests A/C & Refrigeration systems with optional KANE LINK devices.

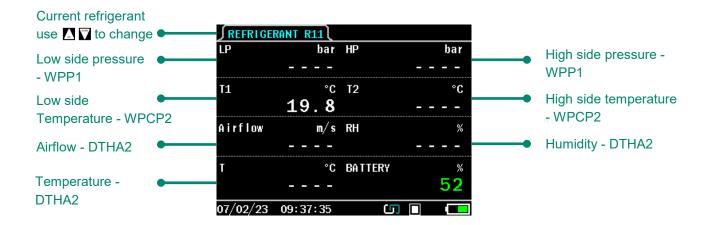
When using for example:

- 2 KANE-WPCP temperature pipe clamp probes
- 2 KANE-WPP1 pressure probes
- 1 KANE-DTHA2 anemometer

Your analyzer simultaneously displays high side / low side pressure & temperature & in vehicle temperature, humidity & airflow on one screen. See page 20 & page 30 to add devices

Manage Link devices - Use ♣ 🗖 & 🔁 to edit each device Press HOME to exit without change



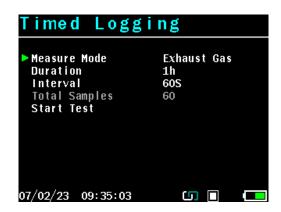




Configure & perform timed logs

Use ▲ 🕽 & 🔁 to select

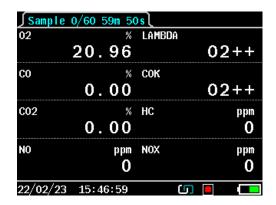
Press HOME to exit without change



MENU ITEMS	OPTIONS / COMMENTS
MEASURE MODE	Select required measurement parameters: EXHAUST GAS AIRFLOW
DURATION	Choose test duration from 1 to 24 hours
INTERVAL	Choose sampling interval from 3 to 60 seconds
TOTAL SAMPLES	Indicates number of samples collected based on DURATION & INTERVAL settings
START TEST	Begin test



Typical test running screen





Select KANE LINK or KANE APP modes



Select text size for task screens

MEASURING EXHAUST GASES

After countdown is finished & your analyzer is ready to use, put your exhaust probe into the engine exhaust.

For normal emission testing, ensure engine is at normal operating temperature.

Engine conditions must be constant to give stable measurements.

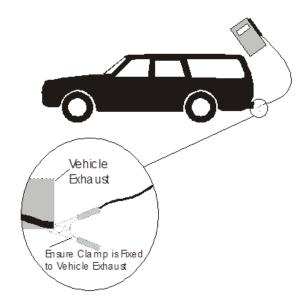
Ensure probe is fully inserted in exhaust pipe to avoid exhaust dilution with back-flushing ambient air.

Position hose assembly away from hot surfaces.



SAFETY WARNING

Use suitable protection when disconnecting probe which may be hot!



Do not exceed analyzer operating specifications - In particular:

- Do not exceed analyzer internal temperature operating range
- Do not put analyzer on hot surfaces
- Do not exceed analyzer water trap max levels
- Do not let analyzer particle filter become dirty and blocked

Check readings are stable & within expected range.

12 REGULAR CHECKS DURING SAMPLING

Do not exceed analyzer operating specifications:

- Do not exceed probe maximum temperature
- Do not exceed analyzer internal temperature
- Do not place analyser on a hot surface
- Keep analyzer water trap vertical water vapour condenses in probe line
 & can quickly fill analyser water trap
- Keep analyzer in-line particle filter clean & dry

13 NORMAL SHUTDOWN SEQUENCE

DO THIS EVERY TIME YOU USE THE ANALYZER



Remove probe from exhaust - **TAKE CARE! HOT PROBE** - & allow to cool naturally.

Allow analyzer to purge in fresh air for at least three minutes or until all toxic sensor readings are below 10ppm.

Do not immerse probe in water as this will damage pump & sensors.

NOTE: It is good practice to hang probe hose vertically after sampling so condensate drains away.

14 PRINTOUTS

Air Conditioning Test

Your Name Your Company Name Address line 1 Address line 2 City/Town Postcode Company Telephone Company Mobile Company Website KANE-EGA5 Serial N° 151922092 S/W SW00244, V2.1.4+ AC LOG LOG 1 Date 07/02/23 Time 12:00:50 REFRIGERANT R11 LP bar 0.0 HP bar 0.0 WT1 °C 59.6 WT2 °C 16.0 Airflow m/s ---RH % ---T °C ----Ta °C 22.1 BARO mbar 1029.0 CUSTOMER REFERENCE

Exhaust Gas Test

Humidity - KANE-DTHA2

Temperature

Yo Ao Ci Po Co Co	our Name bur Compa ddress 1: ddress 1: ity/Town ostcode ompany To ompany Mo	ine 1 ine 2 elephor obile		
Se	ANE-EGA5 erial N° /W SN		51922092 V2.1.4+	
Te	emperatu	^e		
	ate ime		08/02/23 10:31:02	
T2 T1	I 2 I - T2	°C °C	94.8 74.5 20.3	
Ta BA	a ARO	°C mbar %	21.1 1025.7 100	
Cl	JSTOMER			
•			:	
RE	FERENCE			

WATER TRAP, PARTICLE FILTER AND WATER STOP FILTER

Your analyzer has a water trap & particle filter to stop gas water vapour & dust entering your analyzer.

However, some boilers & engines produce much higher volumes of water vapour which can affect your analyzer.

Your analyzer also has a hydrophobic water stop filter located inside the water trap in a filter carrier located above the particle filter.

You must replace water stop & particle filters when wet, dirty or your analyzer displays LOW FLOW.

To replace:



Carefully remove
 water trap from housing



2)
Pull reservoir vertically
from filter holder





3) Rotate top part of filter housing 30° anti-clockwise



Pull particulate filter
 receiver vertically from
 water stop filter receiver





Replacement part numbers:

Water Stop filter: WSF2

Particle filter: PF2

Water trap: SM50675

KANE LINK WIRELESS MEASUREMENT & DATA TRANSFER

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

Navigate to MANAGE LINK DEVICES in SETUP MENU - see page 20.

To ADD, REMOVE & check STATUS of optional KANE LINK device select LINK using **AV** & **INK** using **INK** u

To wirelessly transfer data to a connected smart device running our KANE LIVE App, select App using



16.1 KANE-DTHA2 ANEMOMETER

To add your KANE-DTHA2 anemometer select DTHA2 using ▲▼ & ←

Enter serial number using ▲▼ & ➡ buttons - Each serial number must be 10 digits long.

If shorter enter 0's to make up to 10, eg enter serial number below as 0002001228.



16.2

KANE-WPCP TEMPERATURE PIPE CLAMP PROBE

To add a temperature probe clamp probe, select WPCP then enter serial number using **A** & **—**

Enter serial number using $\blacktriangle \nabla \& \longleftarrow$ - Each serial number must be 10 digits long.

If longer use last 10 digits, e.g. enter serial number below using last 10 digits: 2105094301



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

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653 KANE-WPP1 Pressure Probe

To add a pressure probe select KANE-WPP1 using ▲▼ & ← buttons.

Enter serial number using **AV** & **b**uttons - Each serial number must be 10 digits long.

If longer use last 10 digits, e.g, enter serial number below using last 10 digits: 2208000602



MANE79 CO MONITOR

To add a KANE79 select KANE79 using ▲▼ & ← buttons.

Enter serial number using **AV** & **I** buttons - Each serial number must be 10 digits long.



Use numeric part of serial number to pair your KANE LINK analyzer. KANE LINK requires a 10-digit serial number - If shorter, use 0's to make up to 10 infant of serial number.

For example: Enter serial number J12345678 above as 0012345678.

TOTAL SPECIFICATIONS

PARAMETER	RESOLUTION	ACCURACY	RANGE
Temperature Measurement	t		
Temperature	0.1°C	±0.1°C ±0.3% reading	-50 - 1200°C With suitable probe
Exhaust Gas Measurement	: *1		
Oxygen	0.1%	±0.3% Volume	0 - 25%
Carbon Monoxide High Range NDIR	0.1%	±5% or reading from 0.1% to 10%	0 -10%
Nitric Oxide (optional)	1ppm	±5ppm<100ppm ±5%>100ppm	0 - 5000ppm
Nitrogen Dioxide (optional)	1ppm	±5ppm<100ppm ±10ppm<500ppm	0 - 1000ppm
Carbon Dioxide NDIR	0.1%	±0.3% reading	0 - 20%
Hydrocarbon NDIR	1ppm	+/- 5% of reading or +/- 12ppm volume	0 - 5000ppm Over-range: 10,000ppm
Calculations			
Efficiency High (C)	0.1%	±1% of reading	0 -119.9%
Excess Air	0.1%	±0.2% of reading	0 -119.9%
_ambda AFR (Petrol) (LPG)		0.001 0.01	0.8-1.2 11.76-17.64 12.48-18.72
Carbon Monoxide Corrected COK		0.01%	0-15%
Pre-programmed Fuels			

Petrol, LPG, CNG, Diesel

Pre-programmed Refringents

R11, R12, R22, R123, R134a, R290, R401a, R401b, R402a, R402b, R404a, R406a, R407a, R407c, R408a, R409a, R410a, R414b, R416a, R417a, R420a, R421a, R421b, R422a, R422b, R422d, R424a, R427a, R434a, R437a, R500, R502, R503, R507a, R508b, R600, R718, R744, R1234YF, R1234ZE, R32, R434a, R437a

SPECIFICATIONS CONTINUED

Battery Life	>6 hours from full charge			
Operating Conditions				
Temperatures	0 - 45°C			
Humidity	15 to 90% RH, (non-condensing)			
Ambient Operating Range	-5°C to +50°C/10% to 90% RH non condensing			
Power Supply (battery charger)	Input: 110Vac/220 Vac nominal Output: 12 VDC off load			
Physical Characteristics				
Weight	Approx. 1.2kg			
Dimensions	240mm x 165mm x 65mm			

18 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 KANE-EGA4/5 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:

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. July 2022

Kane International Ltd.

UK (E

Paul Morrison Engineering Manager

COLD WEATHER PRECAUTIONS

Do not leave your analyzer in a cold place overnight.

Cold electronic devices suffer when taken into a warm place. Condensation may form affecting analyzer performance.

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

If your analyzer is affected by condensation or water ingress, leave running in a warm place with pump 'ON' sampling fresh air for up to 3 hours -Connect charger to avoid draining batteries.

If you still experience problems please contact ANSED Customer Service.

ANSED Diagnostic Solutions LLC 1528 Walnut Street Suite 1600 Philadelphia. PA 19102 1-888-685-7287



Welcome to KANE CARE



KANE CARE Service & Recertification

KANE CARE is our promise to never let you down & includes...

★ 10 Year warranty with annual Service & Recertification

KANE CARE applies to any KANE analyser Service & Recertification registered & booked in via

www.anseddiagnostics.com/pages/product-registration or use QR code below

ANSED Diagnostic Solutions LLC 1528 Walnut Street Suite 1600 Philadelphia, PA 19102 1–888–685–7287



21

RECYCLING

THIS PRODUCT CONFIRMS WITH THE FOLLOWING











PLEASE RECYCLE - PACKAGING MADE IN THE UK



Stock No: MAN00426 Rev: 1.00323