

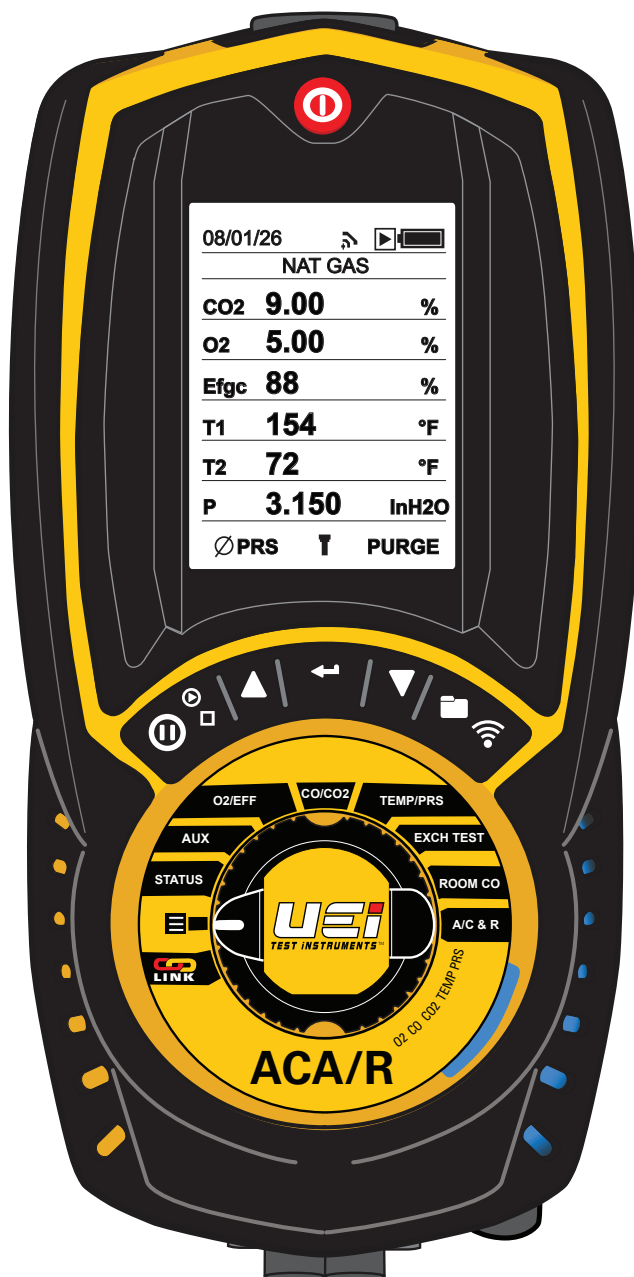
ACA/R

Advanced Combustion Analyzer w/ Refrigeration Analysis

INSTRUCTION MANUAL

ENGLISH

Release 07-09-2026



BACKED BY

UEi
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1260
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FUNCTIONS

- CO sensor, 10,000ppm H2 compensated & NOx filtered
- CO2 sensor (ambient/flue)
- O2 sensor
- Differential pressure and draft
- Flue and inlet temperature, differential temperature
- Combustion efficiency and excess air
- Heat Exchanger Test
- Room CO Test

FEATURES

- Backed by UEi Service+ Guaranteed FOR LIFE!
- UEi Concierge+ 15-min training call with a tech
- Connects to free app UEi HUB
- ACA/R Analyzers are *Calibrated Fresh* before shipping
- Refrigeration analysis screen
- High-contrast, easy-to-read graphic display
- KANE LINK™ to optional wireless probes
- Protective boot with built-in magnetic mount
- Low Flow Detection to protect reading accuracy
- Flue probe with integrated gas, temperature, and draft hose
- Protective water trap
- Calibration countdown reminders
- Optional thermal printer for on-site hard copy printouts
- Optional NO (Nitric Oxide) sensor upgradable

GENERAL SPECIFICATIONS

- Operating Temperature: 32° to 112°F (0° to 45°C)
- Storage Temperature: 0° to 120°F (-18° to 50°C)
- Operating Humidity: 10% to 90% R.H.
- Back light: Yes
- Dimensions: 7.87 x 1.77 x 3.5 inch
- Item Weight: 1.375 lbs
- Calibration: Recommended Annually
- Certification: CE Conformity, RoHS, REACH Compliant, AHRI 1260 standard, FCC
- Battery Size: Alkaline or NiMH AA 3

IMPORTANT SAFETY WARNINGS

 Read entire Safety Notes section regarding potential hazard and proper instructions before using this analyzer. In this manual the word **“WARNING”** is used to indicate conditions or actions that may pose physical hazards to the user. The word **“CAUTION”** is used to indicate conditions or actions that may damage this instrument.

WARNING

To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury or death.

WARNING

- Do not use this analyzer during electrical storms or in wet weather.
- To avoid false readings, charge batteries if a low battery indicator appears.
- Always adhere to national and local safety codes. Use proper personal protective equipment (PPE)

WARNING

This analyzer extracts combustion gases that may be toxic in relatively low concentrations. These gases are exhausted from the back 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.

Users of portable gas detectors are recommended to conduct a “bump” check before relying on the unit to verify an atmosphere is free from hazard. A ‘bump’ test is a means of verifying that an instrument is working within acceptable limits by briefly exposing to a known gas mixture formulated to change the output of all the sensors present.

NOTE: *This is different from a calibration where the instrument is also exposed to a known gas mixture but is allowed to settle to a steady figure and the reading adjusted to the stated gas concentration of the gas of the test gas.*

DISPLAY SYMBOLS

Combustion Screens

ATM	Atmospheric Pressure
BIO OIL	Pyrolysis Oil
BUTANE	Butane
CAL	Days until Calibration
CO	Carbon Monoxide
CO2	Carbon Dioxide
COa	CO Air Free
CO _n	Carbon Monoxide Normalized
CO _x	Max CO Recorded Reading
E _{fgc}	Efficiency (Gross condensing)
g	mmHg, millimeters of mercury
h	hPa, hectopascal
H OIL	Heavy Oil

H2	Hydrogen
l	InH2O, inches of water
k	kPa, kilopascal
L OIL	Light Oil
Loss	Stack Loss
LPG	Liquefied Petroleum Gas
m	mbar, millibar
NAT GAS	Natural Gas
O2	Oxygen
P	Pressure (TMP/PRS)
P	Pa, Pascal (PRS UNIT)
PELLETS	Fuel Pellets
PI	Poison Index

PROPANE	Propane
Ra	CO/CO2 Ratio
S	PSI, pound per sq inch
T1	Temperature Port 1
T2	Temperature Port 2
Ta	Ambient Temperature
Xair	Excess Air
ΔT	Delta Temperature T1-T2
ΔTc	T1-Ta
w	mmH2O
λ	Air-Fuel Ratio

AC & R Screens

HP	High Side Pressure
CO	Condensing Temperature
SC	Subcooling
LP	Low Side Pressure
EV	Evaporator Temperature
SH	Superheat
T SH	Target Superheat

ΔT	Air Temperature Differential
TARGET	Target Air Temperature Differential
DRY B	Dry Bulb
WET B	Wet Bulb
RH	Relative Humidity
DEW P	Dew Point
h	Enthalpy

TARGET	Target Evacuation or Rise
TIME	Test Duration
VAC	Vacuum
VAC M	Deepest Vacuum (Max)
ΔVAC	Vacuum Differential
T AMB	Ambient Temperature
H2O	H2O Saturation Point

DISPLAY SYMBOLS (CONT.)

Icons

	Wireless Connection Active
	LINK Connection Active
	Pump On
	Pump Off
	Pause Readings
	Battery Level

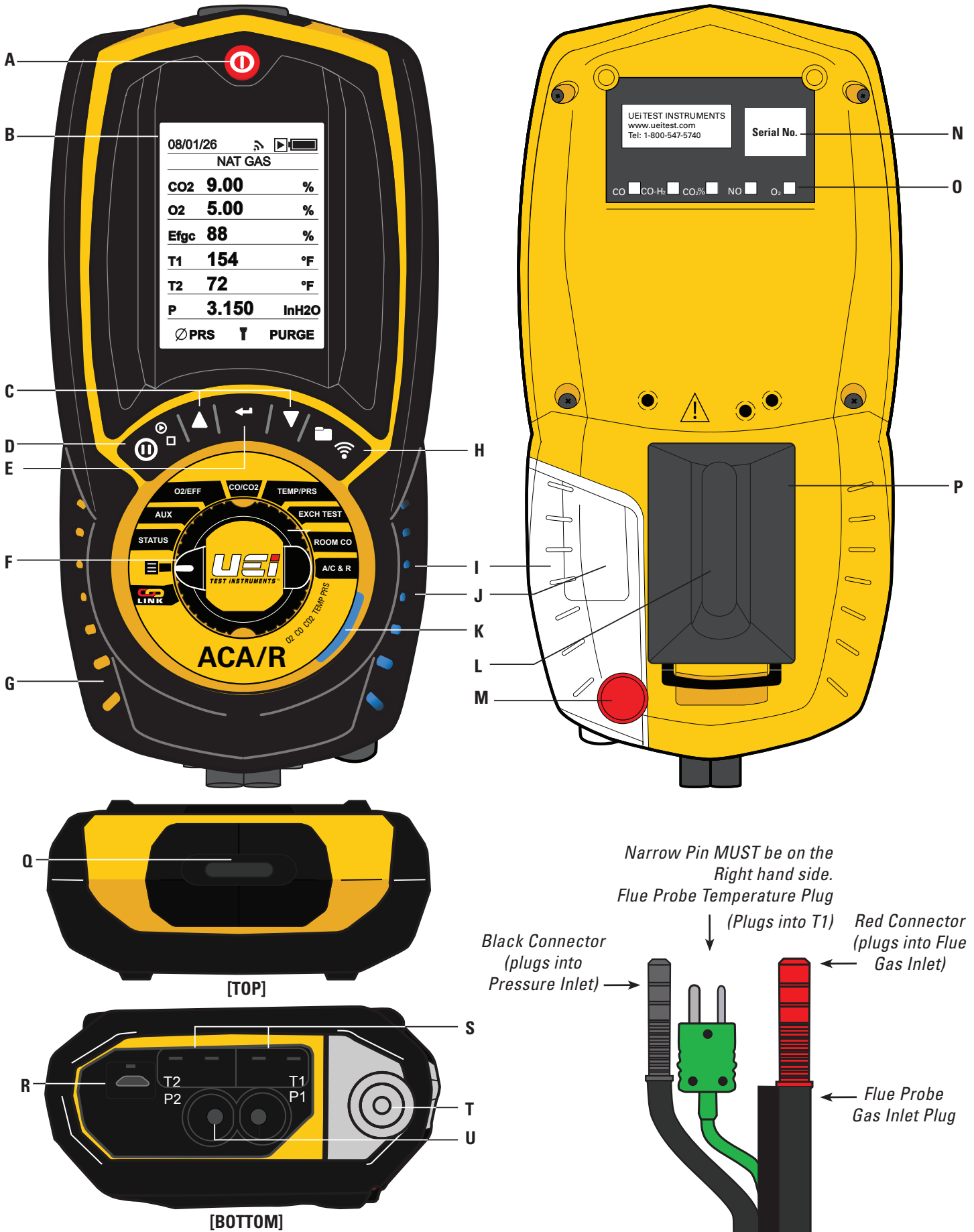
	Worklight
	Settings
	Fuel Type
PURGE	Purge Readings
ØPRS	Zero Pressure
	Refrigerant Type

	AC High Side
	AC Low Side
	Save Log
	MENU Screen
	LINK Connection Menu

ANALYZER OVERVIEW

- A. On/ Off (Power) Button**
- B. Graphic Backlit Display:** Press any button to turn Back light on.
- C. UP/DOWN Button:** Short press to navigate “UP” or “DOWN”
- D. Pump Toggle Button:** Long press to pump on/off, short press holds the readings and the screen flashes
- E. ENTER Button:** Short press select current option displayed
- F. Rotary Dial**
- G. Protective Rubber Boot With Magnets**
- H. Printing and log button**
- I. Water Trap (under Protective Boot)**
- J. Particle Filter** (inside water trap)
- K. LED Water Trap Indication:** LED is active while the pump is on bringing awareness to condensate build up in the water trap
- L. Grip Indentation:** Indentation for fingers to grip analyzer
- M. Water Trap Drain Plug:** (Red plug; take caution NOT to damage plug when removing protective boot)
- N. Serial Number QR Code**
- O. Sensors Fitted:** (label under Protective Boot) Indication of sensors installed when shipped
- P. Battery Compartment** (under Protective Boot)
- Q. Infrared Printer Port**
- R. Battery Charge USB Adapter Connection**
- S. Temperature Connections:** Flue Probe Temperature T1, Inlet Temperature: T2
- T. Flue Gas Inlet Connection**
- U. Pressure Connections:** Pressure P1, Differential Pressure: P2

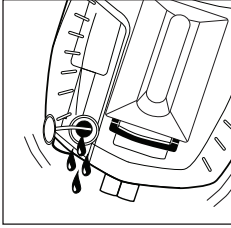
ANALYZER OVERVIEW (CONT.)



PRE TEST CHECKLIST

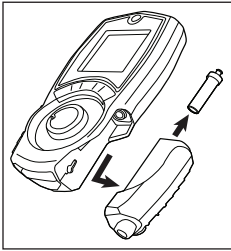
- Inspect particle filter and replace if dirty or damaged
- Verify water trap and probe line are free of condensate
- Ensure water trap and rubber plug are fitted correctly
- Power on and zero in fresh air without flue gas probe attached.
- All hose and thermocouple connections are properly secured

EMPTYING & CLEANING THE IN-LINE WATER TRAP



- Remove the rubber plug
- Allow the water to drain out
- Re-insert the rubber plug

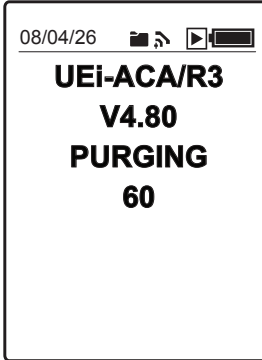
CHANGING THE PARTICLE FILTER



- Remove the protective rubber boot
- Slide the water trap unit from the analyzer
- Remove the particle filter from its spigot and replace
- Slide the water trap back into position and replace the protective rubber boot

QUICK START

Turn on the analyzer by pressing the On/Off Button for 2 seconds until the unit activates. The analyzer will perform a 60 second purge, leave flue probe disconnected until completed. Now you're ready to begin.



NOTE

Each time the analyzer is turned on it will perform a 60 second air purge, this is to clear the gas sampling path (including probe, if connected). For these reasons it is very important that the analyzer be in **outside fresh air** when powered on.

WARNING

Turning the pump off while the probe is in the flue will leave toxic gases inside the analyzer. Once data has been printed or copied, it is advisable to purge the unit with fresh air as soon as possible. To do this remove the probe from the flue and turn ON pump. Always allow the readings to return to zero (20.9% for O₂) prior to shutting the unit off. The meter will not switch off until the CO reading is below 20 ppm.

CAUTION

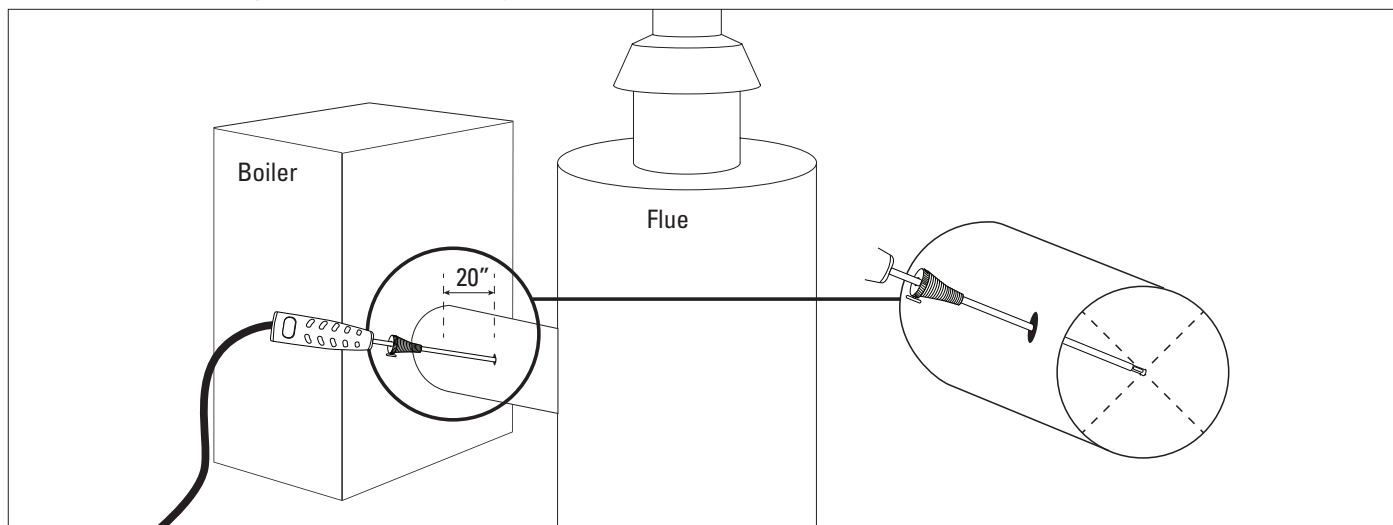
The probe will be hot from flue gases. Remove the probe from the flue and allow it to cool naturally. Do not immerse the probe in water, as this will be drawn into the analyzer and damage the flue probe and the pump and sensors.

MEASURING FLUE GASES

After the initial countdown is finished and the analyzer is properly setup, put the flue probe in the sampling point of the appliance. The tip of the probe should be at the center of the flue. Use the depth stop cone on the flue probe to set the position.

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

CAUTION!: Ensure the flue probe handle does not get hot!



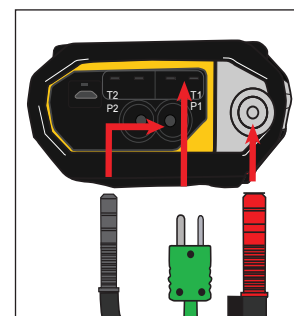
CO OVER-RANGE PROTECTION PUMP

The analyzer's intelligent protection system will automatically activate the protection pump once an over-gas condition is detected (See specification table for detection limits). When activated the main sampling pump will be shut down, allowing the sample system to be purged with fresh air. Once readings have returned to a safe level, the protection pump will shut down and the main pump will reactivate.

SETTING INLET TEMPERATURE

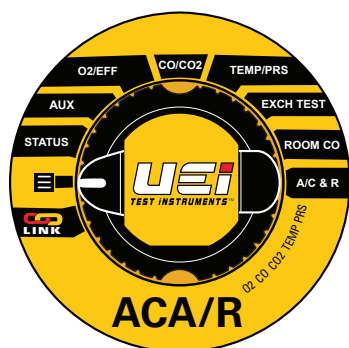
- Turn on and zero the analyzer without the flue probe connected to use ambient temperature
- Connect the flue probe thermocouple to T1, use for inlet ducted system
- Connect a thermocouple to T2 to measure second temp source

NOTE: Take care when inserting the temperature probes as the pins are polarized. Insert with the smaller pin (+) to the right.



MENU SCREEN

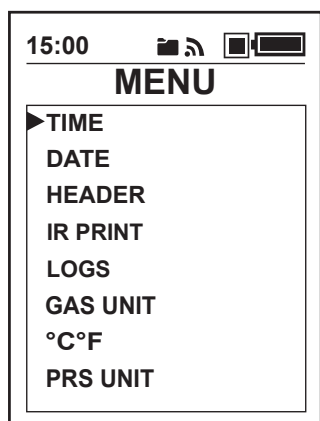
Turn rotary dial to  "MENU" and navigate using , , and  function buttons:



NOTE: To "EXIT" the "MENU" at any time simply turn the rotary dial to any other position. Any changes that have not been "entered" will be ignored.

MENU SCREEN	
TIME	HH:MM:SS
DATE	MM:DD:YY
HEADER	LINE 1, LINE 2, BACK
IR PRINT	KMIRP, IRP-2/3
LOGS	COMB., AUX, PRS/TMP, MEM., DELETE ALL, EXIT
GAS UNIT	ppm, mg/kWh, mgm3
°C°F	°C or °F
PRS UNIT	l, h, g, s, k, P, w, m
AIRFLOW	FTM, KPH, m/s, MPH
EFF	GROSS, NETT
O2 REF	Set O2 %
LANGUAGE	ENGLISH, FRANCAIS, ESPANOL
UTIL	Perform flue LEAK check and set backlight duration
CODE	PASSWORD PROTECTED FOR AUTHORIZED SERVICE PERSONNEL ONLY

As you navigate up or down through the Menu, the items will scroll accordingly and eventually loop back to the beginning.



Turn rotary dial to **MENU** to set up preferences.

Current parameter will be highlighted with arrow icon on left side.

Use  and  to scroll menu options.

Press  on highlighted parameter to select it. Press  to scroll fields to change.

Press  and  to change field contents.

Press  to enter content selected.

SET TIME & DATE

Turn rotary dial to  "MENU".

Press  and  buttons to navigate to **DATE**, Press .

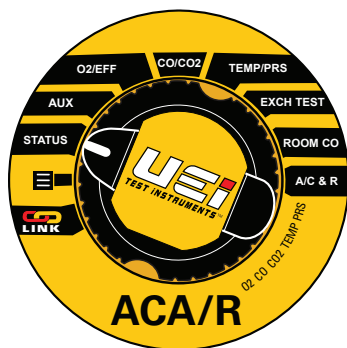
Press  and  buttons to set **MONTH**, Press  to advance.

Press  and  buttons to set **DAY**, Press  to advance.

Press  and  buttons to set **YEAR**, Press  to return to **MENU**.

STATUS SCREEN

Turn rotary dial to “**STATUS**” and navigate using ▲, ▼, and ← function buttons:



15:00



STATUS

► FUEL NAT GAS

Ta 71.31F

ATM 1020mbar

CAL 356

SERIAL No 0000000001

SW00666 V4.8

WLEM V2.00

STATUS parameters

FUEL = Selected Fuel

Ta = Ambient temperature

ATM = Atmospheric pressure

CAL = Days remaining to next calibration

Serial number

Software version

Firmware version

Fuel is the only parameter that can be edited in this screen.

Change Fuel Type in STATUS screen

Press ▲ and ▼ **ARROW BUTTONS** to change currently selected Fuel. Then rotate dial to test position.

NAT GAS

PELLETS

H OIL (Heavy Oil)

BIO OIL

L OIL (Light Oil)

BIO GAS

BUTANE

PROPANE

LPG

Changing fuel is also available in each testing screen.

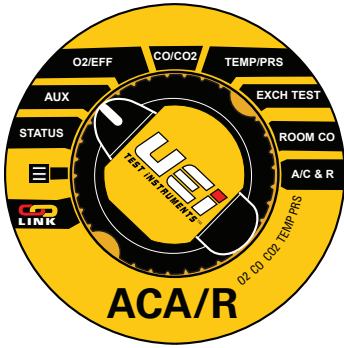
CALIBRATION DATE

Rotate dial to **STATUS**.

The Calibration date, identified as **CAL**, displays the number of days remaining until next calibration is due.

AUX (AUXILIARY - CUSTOM TEST SCREEN)

Turn rotary dial to “AUX” and navigate **STATUS** line using ▲, ▼, and ← function buttons:

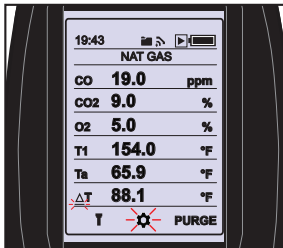


19:43	NAT GAS	
CO	19.0	ppm
CO2	9.0	%
O2	5.0	%
T1	154.0	°F
Ta	65.9	°F
P	0.03	InH2O
T [SETTINGS] PURGE		

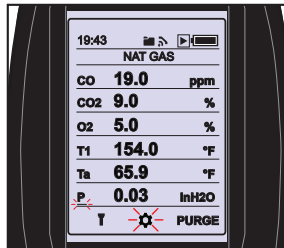
AUX Default Display Screen

The AUX (auxiliary) display allows technicians to save a customized list of parameters. All changes made to this screen will remain until changed again.

STATUS Line Options = Worklight, Settings, Purge, and Fuel Type



Press ▲ or ▼ until **SETTINGS** icon is centered on STATUS line.
Press ← to customize.
Icon will blink in edit mode.



Press ← to scroll to the line you want to edit.
Current line is indicated with a blinking line under parameter.
Press ← to save change and advance.
Repeat as needed.

Scroll ▲ or ▼ to change parameter. Available parameters scrolling down.
Press ← to make selection and advance.

CO	Carbon Monoxide	Ra	CO/CO2 Ratio
ΔO2	Delta Oxygen	ATM	Atmospheric pressure
COa	CO Air Free	Ta	Ambient Temperature
H2	Hydrogen	ΔT	Delta Temperature
PI	Poison Index	ΔTc	
λ	Air-Fuel Ratio	T2	Temperature port 2
Blank		T1	Temperature port 1
Fuel	Selected fuel	O2	Oxygen
Xair	Excess Air	CO2	Carbon Dioxide
Loss	Stack Loss	COx	Max CO Recorded Reading
Efgc	Efficiency (Gross condensing)	COa	CO Air Free
P	Pressure	CO _N	Carbon Monoxide Normalized

Press ← to scroll to next line to edit.

Repeat as needed.

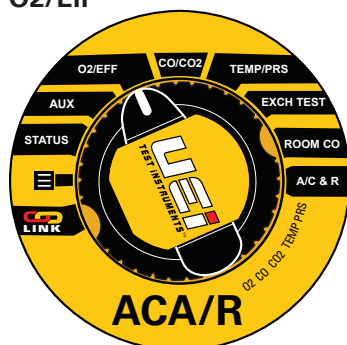
Press ← to advance to final line until **SETTING** icon stops blinking.

AUX settings are saved until values are changed.

COMBUSTION TESTS

Turn rotary dial to “O2/EFF” or “CO/CO2” and navigate **STATUS** line using ▲, ▼, and ← function buttons
Insert the tip of the flue probe into the center of the flue. Wait for readings to stabilize.

O2/Eff



08/04/26	📶	🔋
NAT GAS		
CO2	0.00	%
O2	0.00	%
Efgc	00	%
T1	000	°F
T2	000	°F
P	0.008	InH2O
🔍	Y	PURGE

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

Selected Fuel

CO2 = Carbon Dioxide

O2 = Oxygen

Efgc = Efficiency (gross)

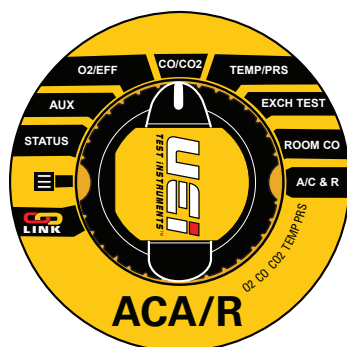
T1 = Temperature inlet 1

T2 = Temperature inlet 2

P = Pressure inlet 1

STATUS Line Options = Worklight, Purge, Zero PRS, and Fuel Type

CO/CO2



15:18	📶	🔋
NAT GAS		
CO	0.00	ppm
COa	0.00	ppm
CO2	00	%
O2	000	%
XAIR	O2++	%
LOSS	0.000	%
🔍	Y	PURGE

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

Selected Fuel

CO = Carbon Monoxide

COa = CO air free

CO2 = Carbon Dioxide

O2 = Oxygen

XAIR = Excess air

LOSS = Stack loss

STATUS Line Options = Worklight, Purge, and Fuel Type

O2	5.00%
Efnc	88%
T1	154F
Ta	62F
P	3.150i
▶NAT GAS 1	

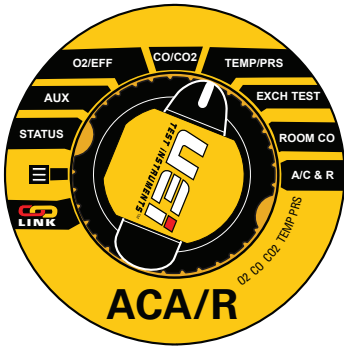
NO (Nitric Oxide) Sensor - If fitted

The NO readings are printed and stored in the same way as the other combustion gas readings. On the printouts the NO readings appear directly below the flue CO readings or in the AUX line selected.

The dial needs to be in O2/Eff, CO/CO2 or AUX position to print or store. When the dilution pump is operating to protect the CO sensor the NO readings are also affected. Screen shows: “----”

PRESSURE/TEMPERATURE TESTING

Turn rotary dial to “**TEMP/PRS**” and navigate **STATUS** line using ▲, ▼, and ← function buttons



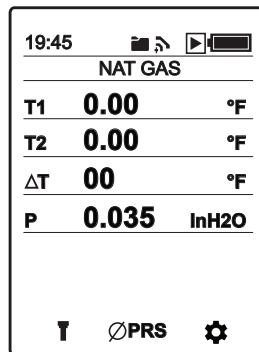
⚠ WARNING

NEVER ATTEMPT TO TAKE A PRESSURE READING WITHOUT KNOWING THE MAXIMUM PRESSURE THAT MIGHT BE PRESENT. THIS INSTRUMENT'S PRESSURE TRANSDUCER IS **RATED AT 30 inH2O WITH A MAXIMUM OVER RANGE OF 160 inH2O**.

⚠ WARNING

Before using the UEi ACA/R to measure the pressure of a gas/air ratio valve, read the manufacturer's manual thoroughly. If in doubt, contact the manufacturer. After adjusting a gas/air ratio valve, confirm CO, CO2 are within the manufacturer's specified limits.

When selecting “TEMP/PRS” the pump stops automatically. Pressure units can be selected via “**MENU**” or the **SETTINGS** icon.



Selected Fuel

T1 = Flue probe temperature input

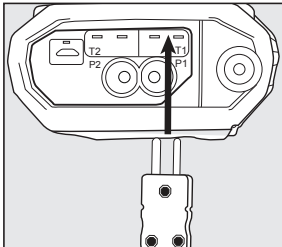
T2 = Second thermocouple input

ΔT = Delta temperature T1 - T2

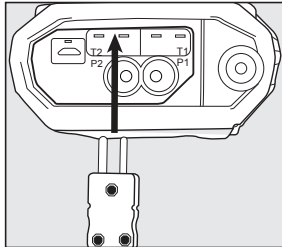
P = Pressure / Differential Pressure

STATUS Line Options = Worklight, Zero PRS, and Settings

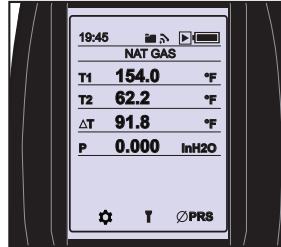
TEMPERATURE TEST



Connect flue thermocouple probe to T1.
Compatible with any K-Type thermocouple probe or clamp.

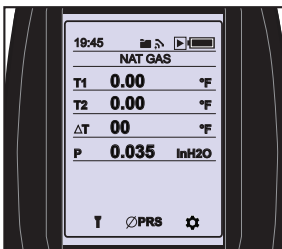


Connect second inlet thermocouple probe to T2.
Compatible with any K-Type thermocouple probe or clamp.

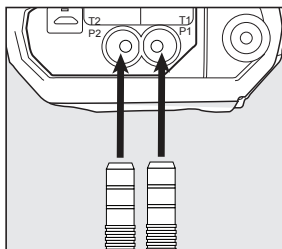


Measurements are displayed on lines T1, T2, and ΔT.
PRESS and Hold **FILE** icon to save LOG.

PRESSURE TEST

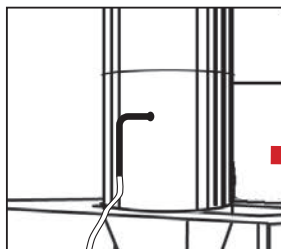


Start by ZEROing PRESSURE with **No Hoses Connected**. Press ▲ or ▼ until **ZERO PRESSURE** icon is centered on bottom line. Press and hold ← to Zero.

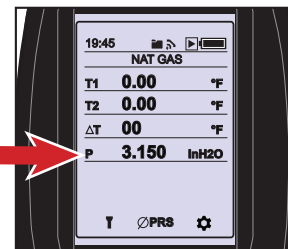


Connect true-draft hose to P1. Connect second probe to P2 for differential pressure.

PRESS and Hold **FILE** icon to save LOG.



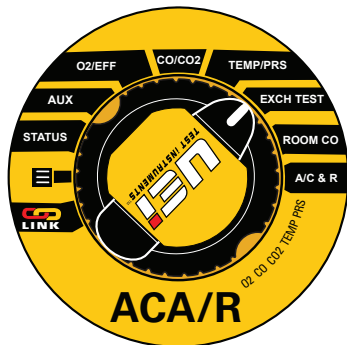
Place combustion probe or true-draft probe tip in the flue to measure draft.
Connect static pressure hose for differential pressure.



Pressure reading displayed on line as P1 or differential if P1 and P2 are connected. Units can be changed in **MENU** screen. PRESS and hold **FILE** icon to save LOG.

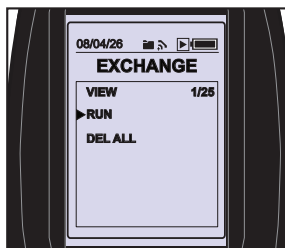
HEAT EXCHANGER INTEGRITY TEST

Turn rotary dial to “EXCH TEST”

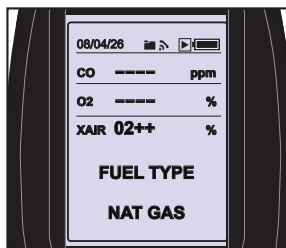


There are many methods to test heat exchanger integrity. One of these is to observe the Excess Air, O2 and CO readings both before and after the blower turns on. If the heat exchanger is sealed, your O2 and CO readings should remain fairly stable. A breach in the heat exchanger may allow fresh air to be forced into the flue after the blower turns on due to pressure increase in the plenum. The result may be a rise in the measured O2 in the stack gas and an increase in Excess Air. In some sealed systems the fresh air drawn in through the breach may reduce the combustion air available leading to an increase in the CO reading. If either of these situations are present it is probable there is a problem with the heat exchanger which may require additional testing and inspections.

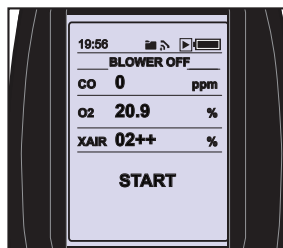
NOTE: Many cracks are invisible to borescopes or the naked eye, and only open or separate from pressure or temperature changes during operations.



Press **←** to **RUN** to start.
or
Press **▲** or **▼** to **VIEW**
or **DELETE ALL** logs.
Press **←** to Select.

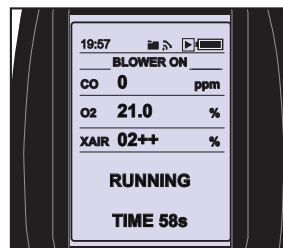


Scroll **▲** or **▼** to change
FUEL type.
Press **←** to start.

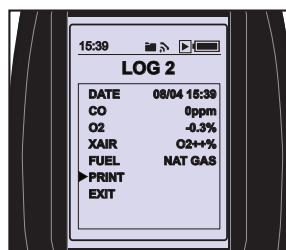


Call for heat on the system.
Observe and wait for O2 read-
ings to stabilize.

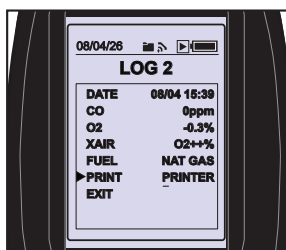
After the blower turns on,
press the **←** to start the
Post-Blower test



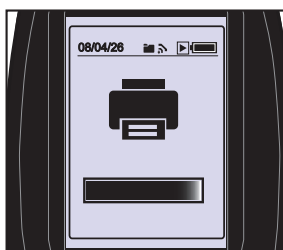
The analyzer will wait 60
seconds and then record the
Post-Blower values for CO,
O2 and Excess Air.



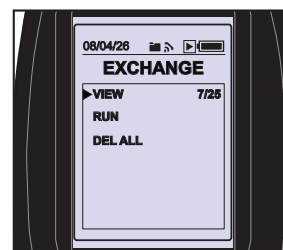
Test results and **LOG** number
will display on top line. PRESS
and Hold FILE icon to save
LOG.
If done, Press **▼** to **EXIT**
Press **←** to return to main
menu.



To **PRINT** test
Press **←** to select output.
Press **▲** or **▼** to switch
between **PRINTER** or
WIRELESS output.



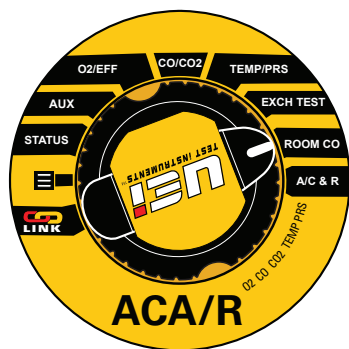
Press **←** to select.
Data is sent to selected device



To **VIEW** logs go to **EXCH TEST**
home screen.
Press **▲** to VIEW line.
Press **←** to select.
Scroll **▲** or **▼** to change
LOG numbers. Press **←** to view.

ROOM CO TEST

Turn rotary dial to "ROOM CO"



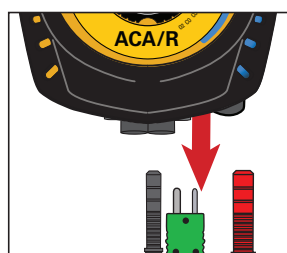
⚠ WARNING

CARBON MONOXIDE IS LIFE THREATENING EVEN AT RELATIVELY LOW CONCENTRATIONS. BE SURE YOU UNDERSTAND THE RISKS BEFORE INVESTIGATING POTENTIAL LEAKS.

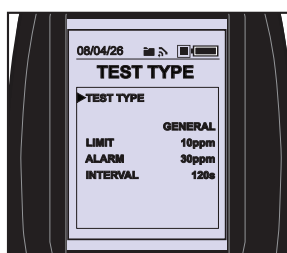
⚠ WARNING

IF CO LEVELS IN A ROOM OR SPACE EXCEED 9 PPM, IT IS STRONGLY RECOMMENDED THAT APPLIANCES ARE SWITCHED OFF AND THE SPACE IS EVACUATED AND VENTILATED BEFORE ANYBODY RETURNS TO THE AREA.

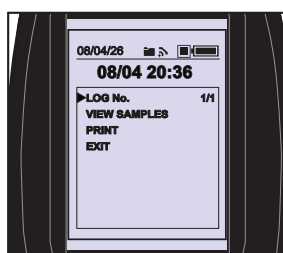
ROOM CO test performs a test for carbon monoxide for 30 minutes over 120 second intervals. This allows technicians to look for CO spikes in readings in a room as combustion equipment cycles through it's operation.



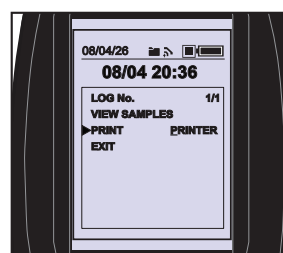
No probe or hose connections required for this test.
Press **←** to select **RUN**.
or
Press **▲** or **▼** to **VIEW** or **DELETE ALL** logs.
Press **←** to select.



Press **←** to select **GENERAL** test type.
Test will count down as CO readings record every 120 seconds for 30 minutes.



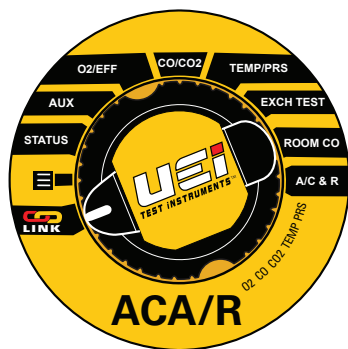
When completed, **LOG No.** displays on top line.
Press **▲** or **▼** to **VIEW SAMPLES**, **PRINT**, or **EXIT**.
Press **←** to select.
Select **PRINT** to print the current **LOG**.



Press **▲** or **▼** to switch between **PRINTER** or **WIRELESS** output.
Press **←** to **SEND**.

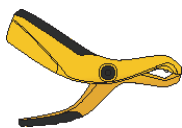
LINK - WIRELESS PROBE CONNECTIONS

Turn rotary dial to "LINK"



LINK allows you to connect the following optional wireless probes:

NOTE: When using **LINK**, the ACA/R analyzer disconnects from app **UEi HUB**.



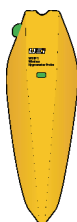
Wireless Pipe Clamp
(WPC2, WPCP, WPCA2)
Connect up to 2



Wireless Airflow Meter
(DTHA2)
Connect up to 1



Carbon Monoxide Logger
(COL, KANE79)
Connect up to 4



Wireless Hygrometer Probe
(WHP1, WHP)
Connect up to 2



Wireless Outside Temperature
(WOT2)
Connect up to 1

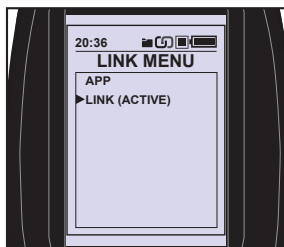


Wireless Vacuum Gauge
(WVG2)
Connect up to 1

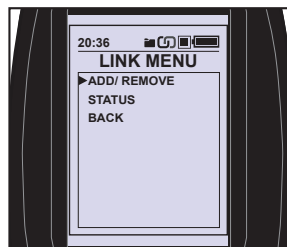


Wireless Pressure Probe
(WPP2, WPP1, WPP)
Connect up to 2

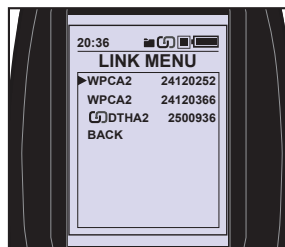
ADD/ REMOVE WIRELESS PROBES



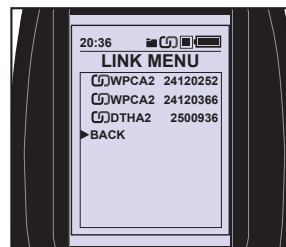
Press ▲ or ▼ to scroll to **LINK**.
Press ◀ to select **LINK** connection.



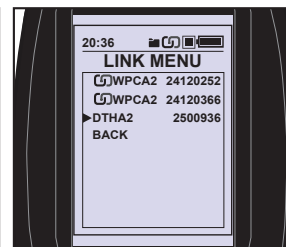
Press ◀ to select **ADD/ REMOVE** probes.
Turn on all probes to be connected.



Press ▲ or ▼ to scroll between probes.
Nearby and previously connected probes appear in list.

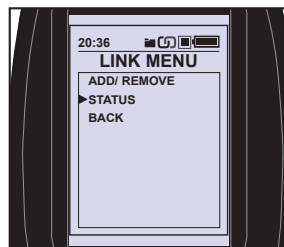


To ADD:
Press ◀ on a probe to enable **LINK** connection. The  icon indicates an active **LINK** connection. Active probes will be saved when **BACK** is selected.

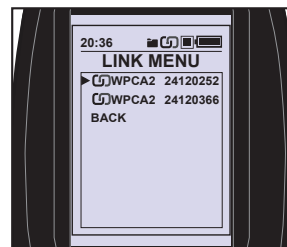


To REMOVE:
Press ◀ on a probe with the  icon to disable the **LINK** connection. Inactive probes will be removed when **BACK** is selected.

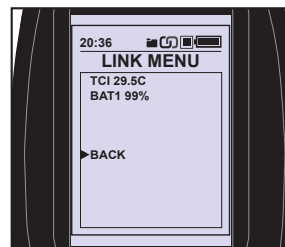
STATUS OF WIRELESS PROBES



Press ▼ to **STATUS**
Press ◀ to Select.



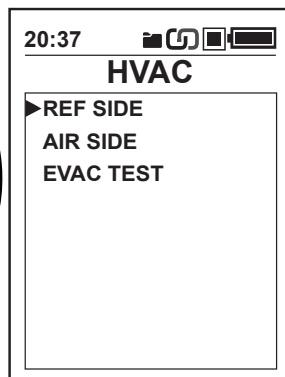
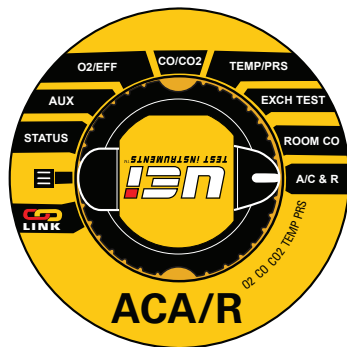
Press ▲ or ▼ to scroll between probes.
Press ◀ to select.



Display shows probe readings.
Press ◀ to go **BACK** through the menus.

AC & R - REFRIGERATION ANALYSIS

Turn rotary dial to “**AC & R**” to access the HVAC home screen. Up to 40 logs can be saved between the 3 screens.



NOTE ANALYZER MUST BE SET TO LINK MODE SEE PAGE 16 FOR LINK MODE INSTRUCTIONS AND FULL LIST OF COMPATIBLE PROBES:
When using **LINK**, the ACA/R analyzer disconnects from app **UEi HUB**.

Required probes for each test screen are listed below.

Refrigeration Side (REF SIDE)



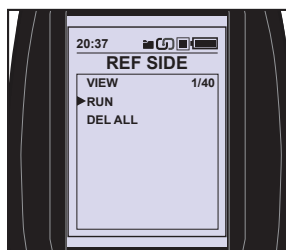
Airflow Side (AIR SIDE)



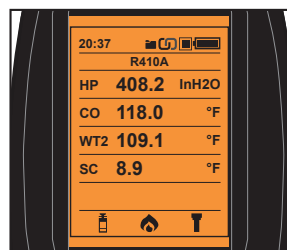
Evacuation Test (EVAC TEST)



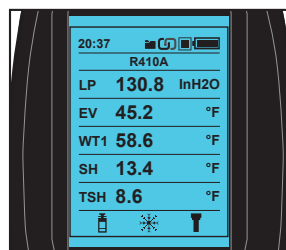
REF SIDE



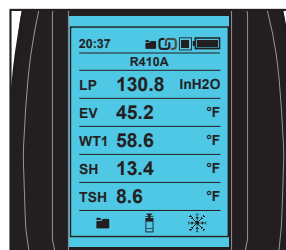
Press **←** to select **RUN**.
or
Press **▲** or **▼** to **VIEW**
or **DELETE ALL** logs.
Press **←** to select.



The backlight will change to orange when displaying high side readings.
To switch to low side, press **←** when **🔥** is centered on the bottom line.



The backlight will change to blue when displaying low side readings.
Press **←** when **❄️** is centered to return to high side readings.

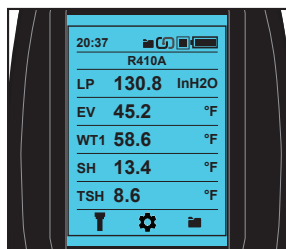


To change refrigerant, press **▲** or **▼** until **🔧** is centered on the bottom line.
Press **←** to open the refrigerant list.

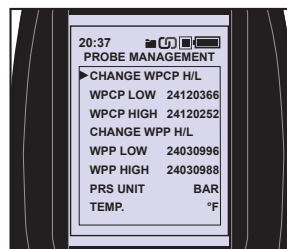


Press **▲** or **▼** to scroll between refrigerants.
Press **←** to confirm selection and return to the REF SIDE screen.

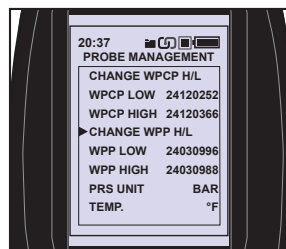
SWAP PROBE ASSIGNMENTS AND UNITS



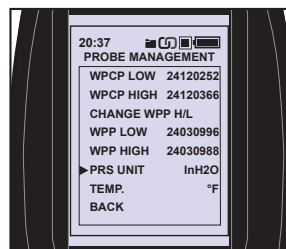
Press **▲** or **▼** until **⚙️** is centered on the bottom line.
Press **←** to open the **SETTINGS MENU**.



Press **▲** or **▼** to navigate.
CHANGE WPCP H/L swaps high/ low wireless pipe clamp assignments.
CHANGE WPP H/L swaps high/ low wireless pressure

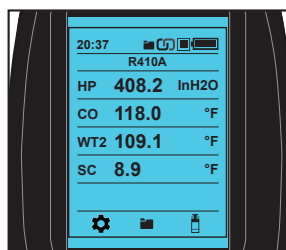


CHANGE WPP H/L swaps high/ low wireless pressure probe assignments.
Press **←** to select.



Change pressure or temperature units by navigating to **PRS UNIT** or **TEMP**.
Press **←** to cycle through units.
Select **BACK** to return to the REF SIDE screen.

LOG READINGS



Press **▲** or **▼** until **📁** is centered on the bottom line



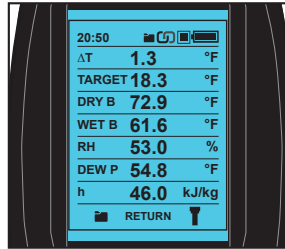
Press **←** to **SAVE LOG**.

AIR SIDE

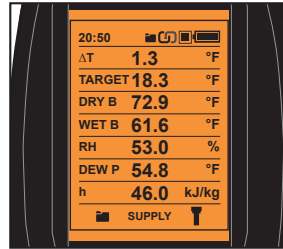
LOG READINGS



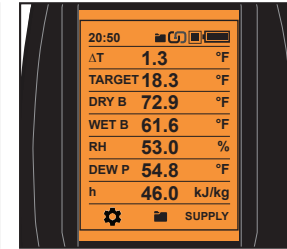
Press **←** to select **RUN**.
or
Press **▲** or **▼** to **VIEW**
or **DELETE ALL** logs.
Press **←** to select.



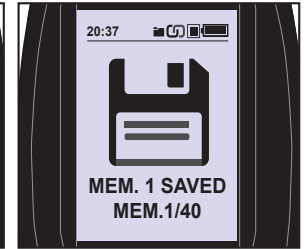
The backlight will change to blue when displaying **RETURN** readings.
To switch to **SUPPLY**, press **←** when **RETURN** is centered on the bottom line.



The backlight will change to orange when displaying **SUPPLY** readings.

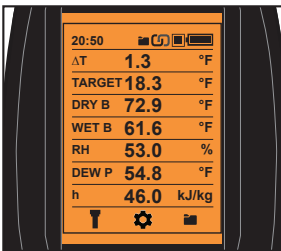


Press **▲** or **▼** until **LOG** is centered on the bottom line

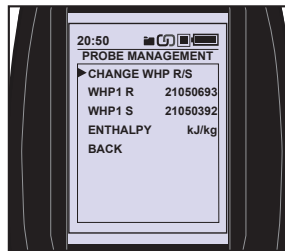


Press **←** to SAVE **LOG**.

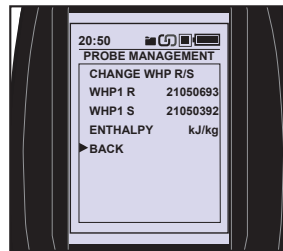
SWAP PROBE ASSIGNMENTS AND UNITS



Press **▲** or **▼** until **SETTINGS** is centered on the bottom line
Press **←** to open the **SETTINGS** MENU.



Press **▲** or **▼** to navigate.
CHANGE WHP R/S swaps return/ supply wireless hygrometer assignments.
Press **←** to select.

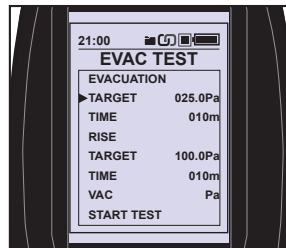


Navigate to **ENTHALPY** and press **←** to cycle through units.
Select **BACK** to return to the **AIR SIDE** screen.

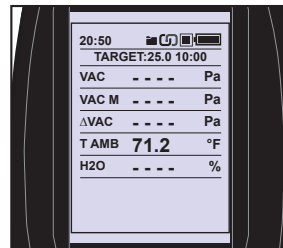
EVAC TEST



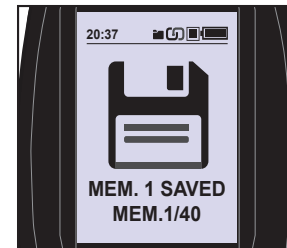
Press **←** to select **RUN**.
or
Press **▲** or **▼** to **VIEW**
or **DELETE ALL** logs.
Press **←** to select.



Press **▲** or **▼** to navigate.
Set **TARGET** and **TIME** for both the **EVACUATION** and **RISE**.
Press **←** on **VAC** to cycle through vacuum units.
Select **START TEST** to begin.



Test status is displayed on top line. Current readings are displayed below.



Press **←** to SAVE **LOG**.

PRINTING HARD COPY



[KMIRP]



[IRP2]

PRINTER SETUP

Turn rotary dial to **MENU** Position.

Use **▲** or **▼** Arrow Buttons to select **IR PRINT**.

Press **↵** to Select.

Use **▲** or **▼** Arrow Buttons to select your printer type (KMIRP, or IRP-2/3)

Press **↵** to Select.

POSITIONING TO PRINT

When printing, align your printer above analyzer with no obstructions at a zero degree angle between the emitter on the top of the analyzer and the receiver at the bottom of the printer.

See printer manual for detailed operation and care.



PRINT OR LOG TESTS

You can PRINT & save LOGS in the following test screens, **AUX**, **O2/EFF**, **CO/CO2**, and **TEMP/PRS**

NOTE: EXCH TEST and ROOM CO has PRINT and LOG options at the end of each testing procedure.

Press **☐** **📶** to print a full combustion test to a printer or wireless device using an App.

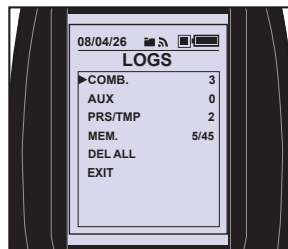
Press & Hold **☐** **📶** for 2+ seconds to save a log a full combustion report.

PRINTING AND LOGGING



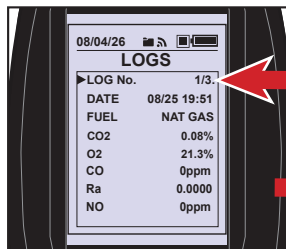
Rotate rotary dial to **Menu**.
Press **▲** or **▼** to select **LOGS**.

Press **↵** to select **LOGS**.



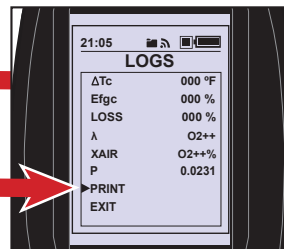
Scroll **▲** or **▼** to change type of **LOG**.

Press **↵** Button to select



Press **↵** to edit LOG number.
Scroll **▲** or **▼** to change **LOG** number.

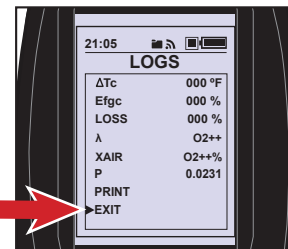
Press **↵** to select



Scroll **▲** or **▼** to **PRINT**.
Press **↵** to select.

Press **▲** or **▼** to switch between **PRINTER** or **WIRELESS**.

Press **↵** to select.



Scroll **▲** or **▼** to **EXIT**.
Press **↵** to select.

PRINTOUTS

02/Eff and CO/CO2

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 29 : 48

CAL DUE	10 / 3 / 26

COMBUSTION	
FUEL	NAT GAS
CO O2 REF	% 3.0
CO2	% 0.00
O2	% 20.9
CO	PPM 0
CO/CO2	0.0000
T1	°F 00.0
T2	°F 00.0
Ta	°F 72.7
NETT	°F 00.0
EFFgc	% ----
LOSS	% ----
LAMBDA	O2++
XAIR	% O2++
PRS	I 0.012

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-

AUX

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 29 : 48

CAL DUE	10 / 3 / 26

AUXILIARY	
FUEL	NAT GAS
CO	PPM 0
CO2	% 0.00
O2	% 20.9
T1	°F 00.0
Ta	°F 72.7

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-

PRS/TEMP

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 29 : 48

CAL DUE	10 / 3 / 26

PRS/TMP	
T1	°F 00.0
T2	°F 00.0
NETT	°F 00.0
PRS	I 0.012

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-

HEAT EXCHANGE

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 29 : 48

CAL DUE	10 / 3 / 26

EXCHANGE TEST	
FUEL	NAT GAS
BLOWER OFF	
O2	% 21.4
CO	PPM 0
XAIR	% O2++

BLOWER ON	
O2	% 21.2
CO	PPM 0
XAIR	% O2++

DURATION	SEC 60

DELTA	
O2	% 0.2
CO	PPM 0
XAIR	% O2++

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-

ROOM CO

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 29 : 48

CAL DUE	10 / 3 / 26

ROOM CO	
GENERAL	
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 0
14	CO PPM 0
15	CO PPM 0
16	CO PPM 0
17	CO PPM 0
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

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-

WPC2

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 29 : 48

CAL DUE	10 / 3 / 26

PRS/TMP	
WT1	°F 00.0
WT2	°F 00.0
NETT	°F 00.0
PRS	I 0.012

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-

DTHA2

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 29 : 48

CAL DUE	10 / 3 / 26

AUXILIARY	
DTHA2	
V	FTM 395.0
T	°F 71.2
RH	% 38.9

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-

COL

UEI UEI-ACA-1 SW00666 4.00	
COMPANY NAME PHONE NUMBER	
SERIAL NO.	000000001
DATE	10/ 12 / 25
TIME	02 : 37 : 22

CAL DUE	10 / 3 / 26

AUXILIARY	
COL	
LIMIT	PPM 10
ALARM	PPM 30
TESTS	30

1	WCO-1 PPM 0
2	WCO-1 PPM 2
3	WCO-1 PPM 1
4	WCO-1 PPM 0
5	WCO-1 PPM 0
6	WCO-1 PPM 0
7	WCO-1 PPM 1
8	WCO-1 PPM 0

CUSTOMER	
-	-
-	-

APPLIANCE	
-	-
-	-

REFERENCE	
-	-
-	-



Install the App

Free download from The App Store and Google Play

Search for "UEi HUB" and install

First time opening the App, it will ask you a series of questions:

Allow access to device location (GPS)

Allow access to contacts (for emailing)

Prepare Analyzer to Connect

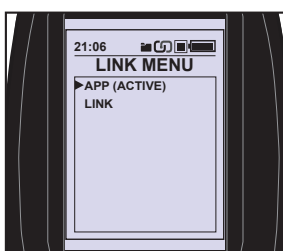
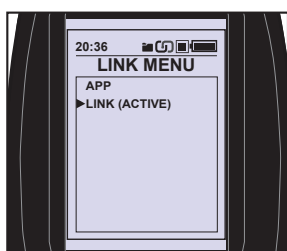
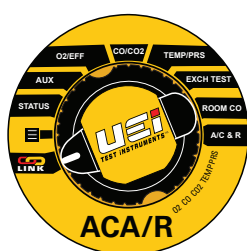
Analyzer communicates with either the LINK probes or Wireless to App, but not both. TO ensure it's active for wireless App, turn rotatory dial to LINK.

If the indicator arrow is pointing to APP, the it is ready to connect.

If not, Press ▲ to until indicator arrow is pointing to APP.

Press ◀ Button to select.

Screen displays APP ACTIVE. Press ◀ Button to return.

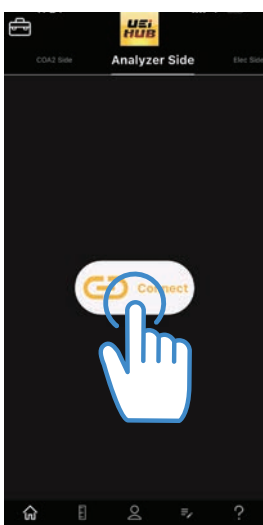
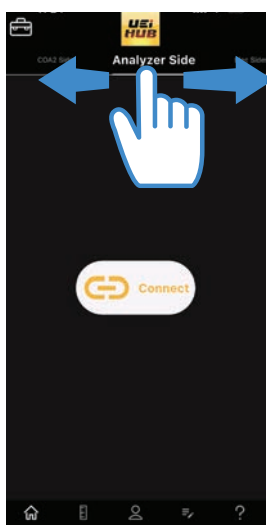


Navigate to Analyzer Screen

Swipe Home screen right to the ANALYZER screen or swipe the Header Screen text right

ANALYZER SIDE will be highlighted in white

Tap the CONNECT button

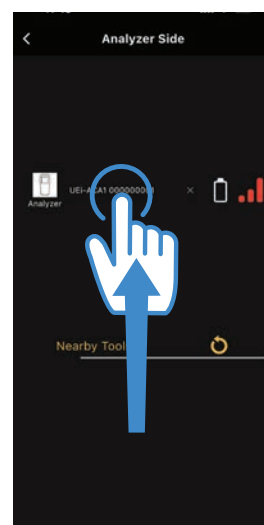
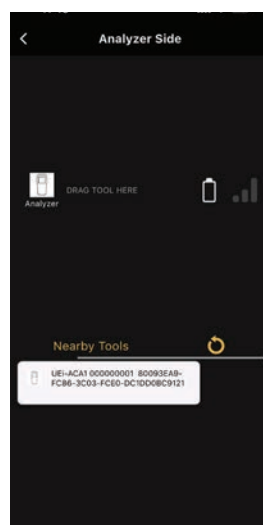
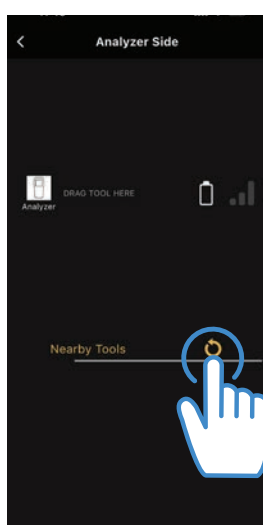


Tapping the CONNECT button takes you to the TOOLBOX.

The first time you'll need to tap NEARBY TOOLS.

When your analyzer is detected, hold and drag the analyzer info to the open connection field and release.

UEi HUB will remember this device and automatically connect when open on with APP Active. You can disconnect by pressing the X button to the right.



Tap the BACK ARROW at the top left to return to analyzer HOME screen.

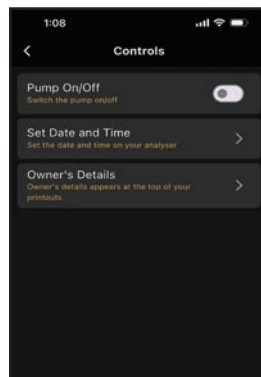


ANALYZER STATS

Scroll ANALYZER STATS menu to see measured and calculated parameters.

Tap the RECORDING button to toggle on and off

Tap STATISTICS to see or hide MIN, MAX, and AVG values for each parameter in the manual..

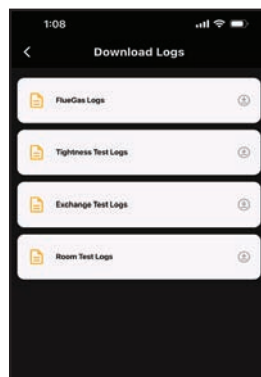
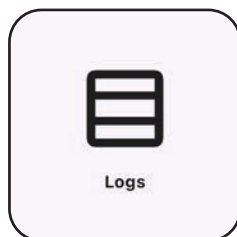


CONTROLS

PUMP ON/OFF allows remote access to turn analyzer pump on and off.

Tap Set DATE AND TIME to synchronize the analyzers date and time with your device.

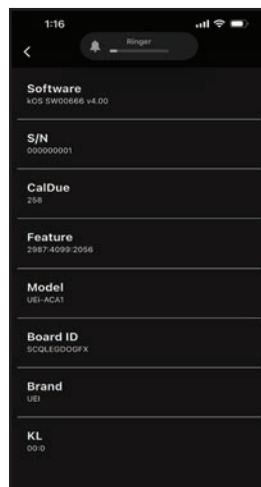
OWNER'S DETAILS allows you to customize the information at the top of your printouts.



DOWNLOAD LOGS

Tap the type of test logs to download.

This will prompt how to save or send the log files.



DEVICE INFO

This displays the analyzer's core information.

No active features in this menu.

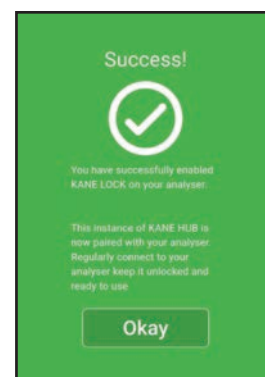
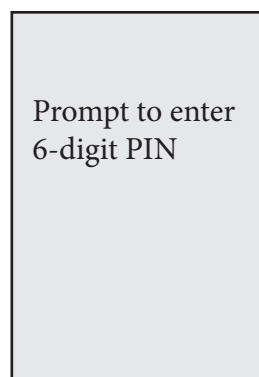
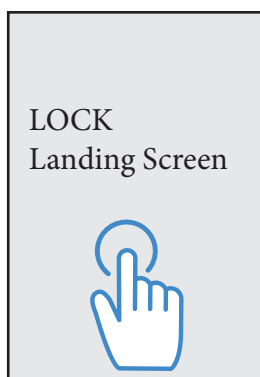
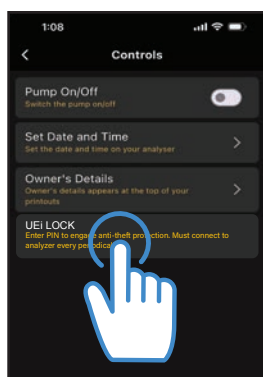
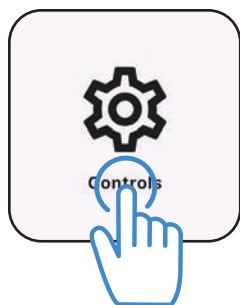


This is an optional anti-theft feature that can be turned on through the App UEi HUB specially design for anyone concerned about analyzer theft. When activated in the **CONTROLS** menu, you'll be asked to setup a 6 digit PIN number.

Once a week, the analyzer will be required to connect to the app where it will be prompted to enter the connect PIN. Anyone without the PIN number is locked out and unable to use the analyzer.

UEi LOCK can be turned off or the PIN number can be changed, but the PIN number is required.

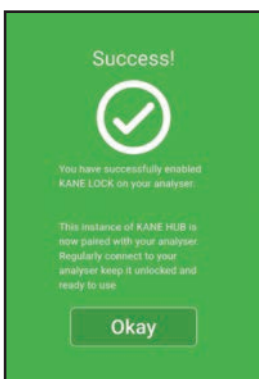
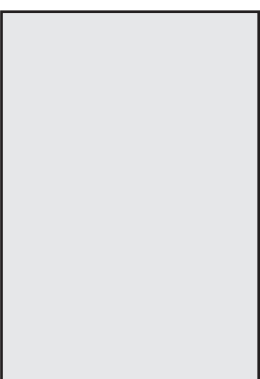
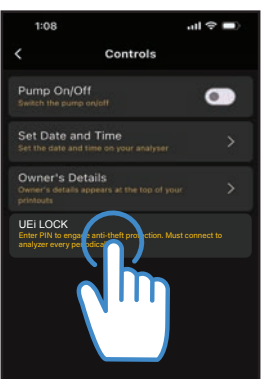
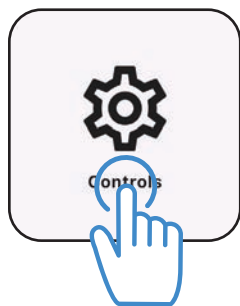
Enable UEi LOCK



Using UEi LOCK

When UEi LOCK is enabled, once a week your analyzer will require connection to the UEi HUB app.

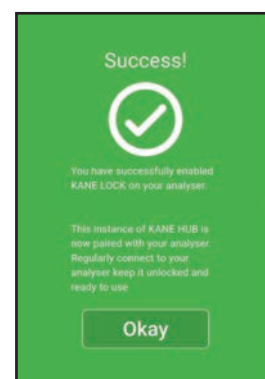
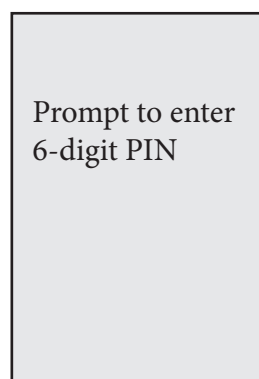
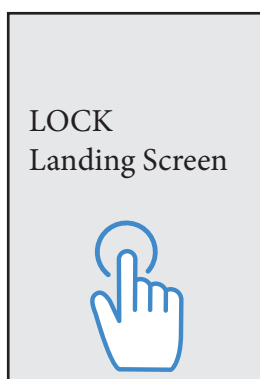
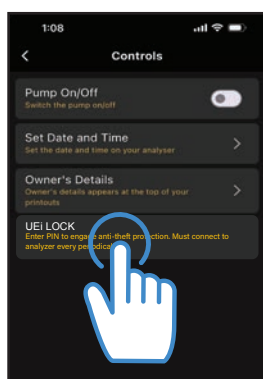
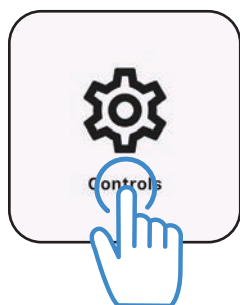
You will see this prompt after turning on your analyzer.



Your analyzer will now unlock showing the screen selected.

Launch the **UEi HUB** app. Navigate to Analyzer or Combustion.

Disable UEi LOCK or change PIN



ANALYZER SPECIFICATIONS

TEMPERATURE MEASUREMENT

Parameter	Range	Resolution	Accuracy
Flue temperature	32° to 1112°F	0.1°F	±(0.3% rdg +3.6°F (2°C))
Inlet temperature (internal sensor)	32° to 112°F	0.1°F	+1.8°C +0.3% rdg
Inlet temperature (external sensor)	32° to 1112°F	0.1°F	+3.6°F +0.3% rdg

FLUE GAS

Parameter	Range	Resolution	Accuracy
Oxygen*	0 to 21%	0.1%	+0.3% Volume
Carbon Monoxide*	0 to 2000ppm	1ppm	±3ppm or ±5% of rdg
	2000 to 9999ppm		±10% of rdg
	Above 9999ppm		Unspecified
Carbon Dioxide*	0 to 20%	0.1%	0.3% rdg
Efficiency (Net or Gross)	0 to 99.9%	0.1%	+1.0% rdg
Efficiency High (C)	0 to 119.9%	0.1%	+1.0% rdg
Excess Air	0 to 250%	0.1%	+0.2% rdg
CO/CO2 ratio	0 to 0.999%	0.0001	+5% rdg

* Using dry gases at STP

PRESSURE (DIFFERENTIAL)

Parameter	Range	Resolution	Accuracy
Pressure (Differential)	±32 inWC (inH2O)	0.001 inWC (inH2O)	±0.5% FSD
PRE-PROGRAMMED FUELS	NAT GAS, H OIL, PELLETS, OIL, LPG, BUTANE, PROPANE		
STORAGE CAPACITY	45 Total Tests		

Carbon Dioxide resolution is 0.01% below 1% measured value.

Ambient Operating Range	32° to 113°F (0° to 45°C) 10% to 90% RH
Storage Temperature Range	0° to 120°F (-18° to 50°C)
Battery Type / Life	3 AA cells >8 hours using Alkaline AA cells
Backlight	Custom duration from 15 to 300 seconds.
Chargers (optional)	100-240v charger, for NiMH batteries only
Dimensions Probe:	7.87 x 1.77 x 3.5 in (200 x 45 x 90mm) 11.8 in (300mm) long including handle. 2.3 dia. x 9.4 in (6mm dia. x 240mm) long stainless-steel shaft with 6.5ft (2m) long neoprene hose. Type K thermocouple
CO Protection Pump:	Operates at 20,000ppm measured CO.

The ACA/R is in conformity with the relevant Union harmonization legislation listed below:

Directive	Title
201430EU	Electromagnetic Capability
201165EU	Restriction of use of certain hazardous substances in electrical and electronic equipment (RoHS)

CERTIFICATION

The UEi ACA/R is TUV-tested and certified to EN 50379, Parts 1, 2 & 3 in accordance to 1st German Federal Emission Control Ordinance (BImSchV). Manufactured to meet AHRI 1260 standard.

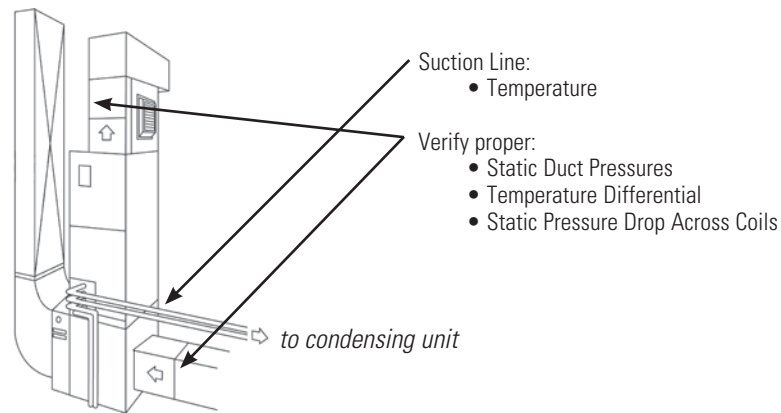
EMC EN507270:2015

Safety EN61010-1:2010

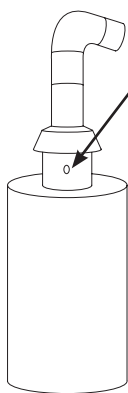
RoHS IEC62321-2:2013, IEC62321-1:2013; IEC62321-3-1:2013, IEC63321-5:2013, IEC623321-4:2013, IEC62321-7-2:2017, IEC62321-7-1:2015, IEC62321-6:2015

UK CA

Air Conditioning / Heat Pump



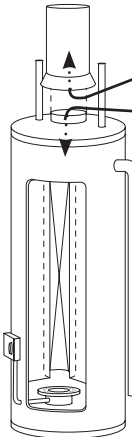
Boiler & Water Heaters & High Efficiency Modulating Hot Water Systems



Boiler

Verify proper combustion:

- O₂
- CO₂
- CO Air Free
- Stack Temp
- Stack Draft



Water Heater

Draft

Verify proper combustion:

- O₂
- CO₂
- CO
- Stack Temp
- Efficiency

HE Boiler Instant Water Heaters

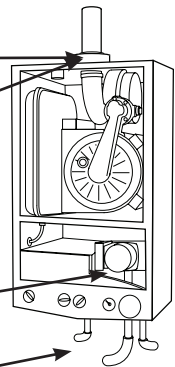
Draft

Verify proper combustion:

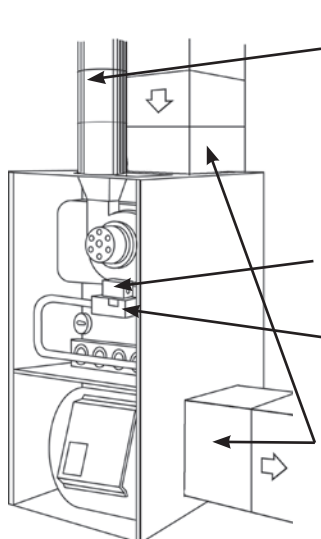
- O₂
- CO₂
- CO
- Stack Temp
- Efficiency

Hi / Low fire
Gas Pressure

Supply and Return Water temp



Furnaces: 80%



80% Furnace

Verify proper combustion:

- O₂
- CO₂
- CO
- Stack Temp
- Vent Pressure
- Efficiency

Verify/Set Up

- Gas Pressure

Test

- Limit Switch
- Pressure Switch

Verify proper operation:

- Static Duct Pressure
- Temperature Rise
- AC side Static Pressure Drop across coils

Furnaces: 90%

90%+ Furnace

Verify proper combustion:

- O₂
- CO₂
- CO
- Stack Temp
- Vent Pressure
- Efficiency

Verify/Set Up

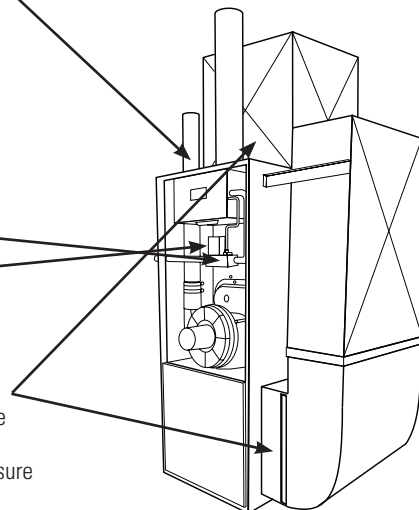
- Gas Pressure

Test

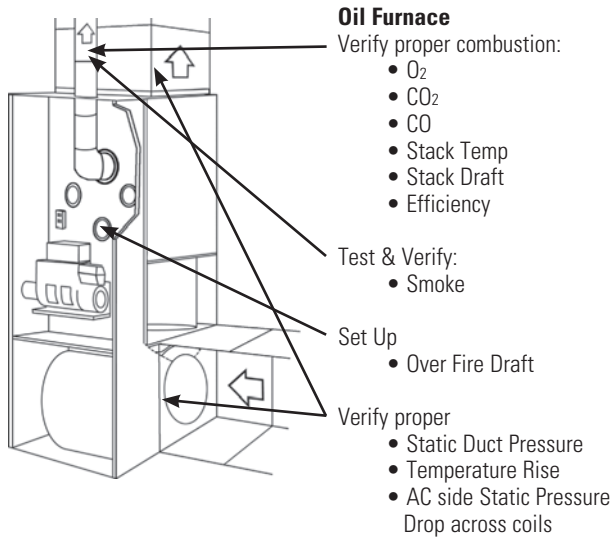
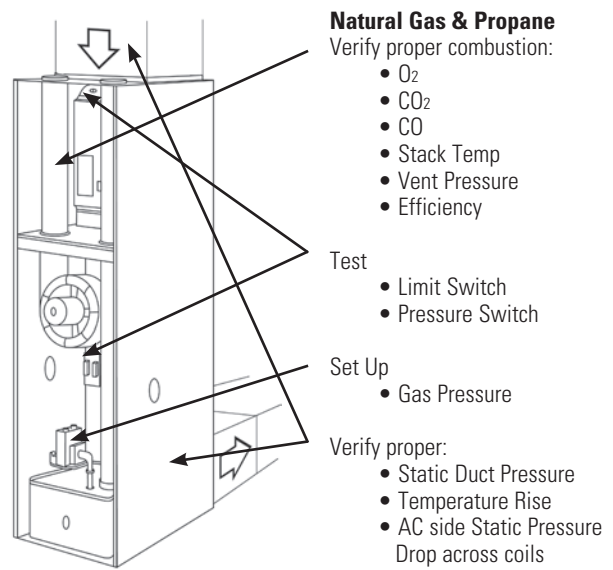
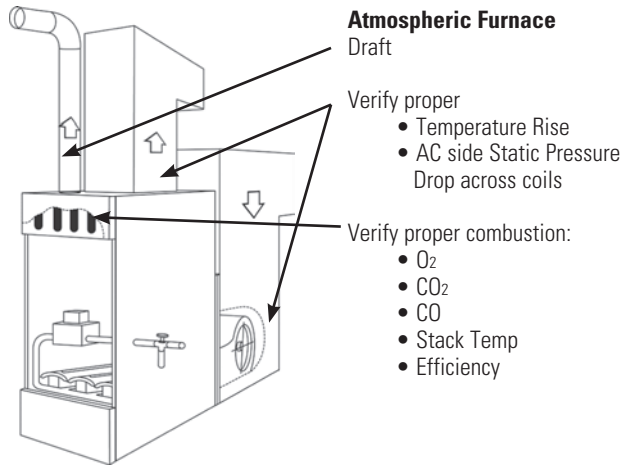
- Limit Switch
- Pressure Switch

Verify proper operation:

- Static Duct Pressure
- Temperature Rise
- AC side Static Pressure Drop across coils



Furnaces (continued): Atmospheric, Gas & Oil



WHAT RESULTS ARE GENERALLY ACCEPTABLE

What Results Are Generally Acceptable

	Atmospheric Draft Gas Fired Burners	Gas Fired Burners	Oil Fired Burners (#2 Oil Fuel)	Positive Overfire Gas & Oil	High Efficiency 90-plus AFUE
Oxygen	7 to 9%	3 to 6%	5 to 9% (cast iron cone) 3 to 6% (flame retention)	3 to 9%	5 to 7%
Stack temperature	325°F to 500°F	320° to 570°	325°F to 600°F	325° to 400°	<125°F
Draft (Inches of Water Column)	-.02 to -.04 InWC	0 to 0.4 InWC	-.02 to -.04 InWC	-.02 to -.04 InWC	.02 to 0.8 InWC
Carbon Monoxide (parts per million)	<100 ppm	<100 ppm	<50 ppm	<100 ppm	<100 ppm
Overfire Draft (Inches of Water Column)		-0.02 to -0.04 InWC	-0.2 InWC	0.4 to 0.6 InWC	
Carbon Dioxide	6.5 to 8%	8.5 to 11%	10.25 to 12%		7 to 8.5%
Efficiency	75 to 80%			80 to 82%	88 to 92%
Smoke			#0 to #1	#0	

NOTE: Follow manufacture guidelines for the specific equipment being serviced

Typical Excess Air Level

	O2% (measured)	Excess Air %
Natural Gas	3%	16.7%
LIGHT Oil	5%	31%

POWERING OFF

When you power off the ACA/R, there is a 45 second purge when in O₂/Eff, CO, CO₂, AUX screens.

Make sure you do not exceed the analyzer's operating specifications. In particular:

- Do not exceed the flue probes maximum temperature (1112°F)
- Do not exceed the analyzer's internal temperature range
- Do not put the analyzer on a hot surface
- Do not exceed the water trap's level
- Do not let the particle filter become dirty and blocked

View the displayed data to ensure that the stable operating conditions have been achieved and the readings are within the expected range.

POST TEST



Remove the probe from the flue and allow analyzer to purge with fresh air until readings return to zero. O₂ to 20.9%, CO to Zero

CAUTION: the probe tip will be HOT).

GENERAL MAINTENANCE

- Re-certify your instrument annually to ensure it meets original performance specification
- Keep your instrument dry, if it gets wet, wipe dry immediately. Liquids can degrade electronic circuits
- Whenever practical, keep the instrument away dust and dirt that cause premature wear
- Although your instrument is built to withstand the rigors of daily use, it can be damaged by severe impacts.
- Use reasonable caution when using and storing this meter

PERIODIC SERVICE



WARNING

Repair and service of this instrument is to be performed by qualified personnel only. Improper repair or service could result in physical degradation of the instrument. This could alter the protection from personal injury this meter provides to the operator. Perform only those maintenance tasks that you are qualified to do.

COLD WEATHER PRECAUTIONS

It is important you keep your flue gas analyzer in a warm and dry 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 which can affect the analyzer's performance & cause permanent damage. See operating and storage temperature specifications.

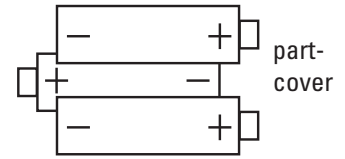
Electrochemical sensors used in flue gas analyzers can be affected by condensation or water being sucked into the analyzer, as the small apertures on top of sensors can become blocked with water, stopping sensors seeing flue gas. When this happens, oxygen or carbon dioxide reading will display as "—" & sensors may be permanently damaged

If you think that your analyzer is affected by condensation or water ingress, it may be possible to rectify the problem yourself. Simply leave the analyzer running in a warm place, with the pump 'ON' sampling fresh air for a few hours (use mains adapter/battery charger if needed). If, after doing this, you still experience problems please contact our Service Center.

REPLACING THE BATTERIES

This meter has been designed for use with both Alkaline or rechargeable Nickel Metal Hydride (NiMH) batteries. No other types are recommended and will void warranty. The analyzer is supplied with 3 (AA) size NiMH rechargeable batteries. These should be installed into the instrument.

Turn over the analyzer, remove the protective rubber boot and fit 3 “AA” batteries in the battery compartment. **Take great care to ensure they are fitted with the correct battery polarity.** Replace the battery and the protective rubber boot.



Time and Date

When changing the batteries, DATE and TIME will need to be reset. See **SET DATE & TIME** page 8.

Battery Disposal

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



CAUTION

Always check the meter for operation immediately after installing new batteries.



WARNING

Using Rechargeable Batteries

The battery charger must only be used when NiMH rechargeable batteries are fitted.

Alkaline batteries are not rechargeable. Attempting to recharge alkaline batteries may result in damage to the product and create a fire risk. Do not mix NiMH cells of different capacities from different manufacturers, all cells must be identical.

Battery Charging

Ensure that you use the correct charger. This unit uses a 5V regulated charger. Ensure the batteries are fitted in the correct manner, and first charged for at least 16 hours. Subsequent charges should be overnight. NiMH batteries may be charged at any time, even for short periods to conduct testing.



WARNING

Under NO circumstances should you expose batteries to extreme heat or fire as they may explode and cause injury. Always dispose of old batteries promptly in a manner consistent with local disposal regulations.

USA ANNUAL RECERTIFICATION SERVICES



Our Award-Winning Promise To Never Let You Down

BACKED BY



Contractors who book recertification of an ACA/R analyzer at www.ueitest.com/service within 12 months from either the date of purchase or the date of the last recertification will receive a warranty extended for 1 year plus::



Same Day Recertification return ships on the same business day received, **Guaranteed**.*



Reduced Pricing over standard rates, transparent and up front, no surprises.



Free Shipping offers free UPS Ground shipping both to and from our service center.

FREE SHIPPING
ON ANNUAL SERVICE

Available to US customers only. ¹Reduced pricing over standard services pricing. Pricing subject to change without notice. All pricing is made available at time of requesting service.
²Analyzers with an additional NO (Nitric Oxide) sensor requires 48-hour turnaround.

WARRANTED FOR LIFE



The ACA/R one year warranty is extended 1 additional year with each recertification, for the working life of the analyzer, until we reasonably believe we cannot restore an analyzer to our original factory specification. Each warranty is conditional to terms outlined in the WARRANTY section.

PRODUCT REGISTRATION

Register Online

Registering you analyzer online is quick and easy. Just log in or setup an account, it only takes a couple of minutes. Once logged in you can register you analyzer by providing some product information and uploading a proof-of-purchase.

When it's time to request recertification, just log into your account, select the analyzer, select the service and place your order.

UEi CONCIERGE+

UEi Concierge+ offers customers one-on-one training with a certified technician. Register your analyzer at ueitest.com to receive an email with instructions on booking a 15-minute call with a certified technician. A link takes you to an online calendar with available dates and times, you choose the time that works best for you, then we send a calendar reminder.

CANADIAN ANNUAL RECERTIFICATION SERVICES

KANE CANADA MEASUREMENT SOLUTIONS

For recertification service in Canada, please visit <https://www.kanetest.ca/>.

Tel: 1-877-475-0648

Service Request Email: SR@kanetest.ca

OTHER IMPORTANT FACTORS RELATING TO COMBUSTION

The three T's of combustion

- **Time:** Amount of time that the fuel and oxygen are together in the combustion chamber
- **Temperature:** How high the temperature is determines the rate of oxidation, or spread of combustion
- **Turbulence:** How well the fuel and air are mixed

These three factors are all interrelated and will move your results along the combustion curves.

COMBUSTION MEASUREMENT TERMS

Other parameters measured include Net temperature, draft and efficiency.

Net Temperature

Net temperature is the difference between the combustion air entering the combustion chamber and the flue gas temperature past the heat exchange. This is used to determine how efficient the system is extracting heat from the combustion process in addition to the performance of the combustion process. On sealed systems that have ducted inlet air for combustion air, the Net temperature must compare this air stream temperature with the flue gases. If the appliance simply uses room air for the combustion air, our analyzers have an internal temperature sensor, so it will use this temperature when calculating Net temperature. The most accurate results for efficiency are obtained when measuring flue gases at the point where flue temperature (not flame temperature) is the highest.

Draft

Draft is the difference between the ambient pressure level and the pressure level in the flue.

This is created either by the natural buoyancy of the hot gases created in combustion lifting, or by an inducer fan that assists the flow of flue gases up the stack. Most combustion equipment will specify the amount of draft that is required for proper operation. Draft helps draw combustion air into the combustion chamber, and also helps in mixing the fuel and oxygen. Without proper draft, the combustion process can spill poisonous by-products into the space where the appliance is located. This can be a risk to those in the area, or create a danger to residents or employees working near the combustion equipment.

Efficiency

Efficiency is a measure of how well the fuel is burned to create heat, and how well the generated heat is captured for the intended use. The information used to create this value are based on the fuels heating value, the heat lost up the flue and the gas components in the flue gas. The original method to determine efficiency included many manual methods and lookup charts. As an example you would measure the CO₂ level and the stack temperature and then reference a slide scale that would give you the relative efficiency number. UEI's electronic combustion analyzers perform the measurements on a continuous basis, and can calculate the efficiency as adjustments are being made. Combine this with a printout and you are able to provide a before and after comparison of the combustion equipment in relatively little time as part of normal servicing. **Combustion efficiency is not the same as AFUE (annual fuel usage efficiency). AFUE is not measurable with any portable flue gas analyzer.**

Combustion Efficiency Calculations

This identifies three sources of loss associated with fuel burning:

- Losses due to flue gases:
Dry Flue gas loss, moisture and hydrogen,
Sensible heat of water vapor, Unburned gas
- Losses due to refuse:
Combustible in ash, riddling and dust
- Other losses:
Radiation, convection, conduction other unmeasured losses

Net efficiency calculations assume that the energy contained in the water vapor (formed as a product of combustion and from wet fuel) is recovered and the wet loss term is zero. Gross efficiency calculations assume that the energy contained in the water vapor is not recovered. Since the fuel air mixture is never consistent there is the possibility of unburned/partially unburned fuel passing through the flue. This is represented by the unburned carbon loss. Losses due to combustible matter in ashes, riddling, dust and grit, radiation, convection and conduction are not included.

CO Air Free

Certain standards (ANSI Z21.1) for Carbon Monoxide are stated in terms of air-free. Air-free refers to the concentration of CO in combustion gases undiluted with flue, or other gases containing little CO. This value is computed using an equation that takes into account the O₂ concentration of the flue gas.

- If 5% O₂ is measured (O_{2m}) in the flue then the CO gas value will be recalculated as if 0% were measured. The equation for air-free is as follows: $CO_{af} = CO \text{ PPM} \times [(20.9) / (20.9 - O_{2m})]$
- In our example if a reading of 325 PPM were measured then the air-free value would be calculated as follows:
 $CO_{af} = 325 \text{ PPM} \times [(20.9) / (20.9 - 5)]$ $CO_{af} = 325 \text{ PPM} \times [(20.9) / (15.9)]$ $CO_{af} = 427$

We may be given a limit on our gas range by the local authority, which stated that we must not emit more than 400-PPM Carbon Monoxide air-free. In the example we would be breaking the limit and corrective action should be taken to reduce the level of CO. Air-free values prevent false readings being submitted, e.g. allowing more air into the boiler will increase the oxygen level in the flue and dilute any toxic gas reading. Air-free referencing gives readings as if they were undiluted.

DISPOSAL

CAUTION: This symbol indicates that equipment and accessories shall be subject to separate collection and correct disposal. **Note:** Batteries used in this instrument should be disposed of in accordance with current legislation and local guidelines.

STORAGE



Remove the batteries when instrument is not in use for a prolonged period of time. Do not expose to high temperatures or humidity. After a period of storage in extreme conditions exceeding the limits mentioned in the General Specifications section, allow the instrument to return to normal operating conditions before using it.

WARRANTY

The ACA/R are warranted to be free from defects in materials and workmanship for a period of 1 year from the date of purchase. If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at UEi's option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Batteries and consequential damage resulting from failed batteries are not covered by warranty.

Any implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the express warranty. UEi shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expenses or economic loss. A purchase receipt or other proof of original purchase date will be required before warranty repairs will be rendered. Instruments out of warranty will be repaired (when repairable) for a service charge

For more information on warranty and service, contact:

www.ueitest.com Email: info@ueitest.com
1-800-547-5740

This warranty gives you specific legal rights. You may also have other rights, which vary from state to state.