# EAGLE 2X

XTENDED LIFE COMBUSTION & SYSTEM ANALYZER™ C155

## EAGLE 2X: C155

- C155 Analyzer
- Flue Probe
- Particle Filter
- Hard Case
- Batteries
- Quick Start Guide
- Owners Manual

## EAGLE 2X: C155KIT

- C155 Analyzer
- Flue Probe
- IR Printer
- (2) K-Type Temp Probes
- (2) Static Pressure Hoses
- (1) True Draft Probe
- Gas Tap and Hose
- AC Adapter/Charger
- Hard Case
- (2) Printer paper rolls
- (2) Particle filters
- Batteries
- Quick Start Guide, & Owners Manual

## EAGLE 2X: C155OILKIT

- C155 Analyzer
- Flue Probe
- Smoke Pump Tester
- Smoke Test Paper & Chart
- IR Printer
- (2) K-Type Temp Probes
- (2) Static Pressure Hoses
- (1) True Draft Probe
- Gas Tap and Hose
- AC Adapter/Charger
- Hard Case
- (2) Printer paper rolls
- (2) Particle filters
- Batteries,
- Quick Start Guide, & Owners Manual

# EAGLE 3X

XTENDED LIFE COMBUSTION & SYSTEM ANALYZER™ C157

## EAGLE 3X: C157

- C157 Analyzer
- Flue Probe
- Particle Filter
- Hard Case
- Batteries
- Quick Start Guide
- Owners Manual

## EAGLE 3X: C157KIT

- C157 Analyzer
- Flue Probe
- IR Printer
- (2) K-Type Temp Probes
- (2) Static Pressure Hoses
- (1) True Draft Probe
- Gas Tap and Hose
- AC Adapter/Charger
- Hard Case
- (2) Printer paper rolls
- (2) Particle filters
- Batteries
- Quick Start Guide, & Owners Manual

## EAGLE 3X: C157OILKIT

- C157 Analyzer
- Flue Probe
- Smoke Pump Tester
- Smoke Test Paper & Chart
- IR Printer
- (2) K-Type Temp Probes
- (2) Static Pressure Hoses
- (1) True Draft Probe
- Gas Tap and Hose
- AC Adapter/Charger
- Hard Case
- (2) Printer paper rolls
- (2) Particle filters
- Batteries
- Quick Start Guide, & Owners Manual

EAGLE X

XTENDED LIFE COMBUSTION & SYSTEM ANALYZERS™

## EAGLE X: *REPLACEMENT PARTS & UPGRADES*

### *Accessories*

| | |
|---|---|
| Bluetooth® Communication Module | EABT |
| Thermal Printer: IR Link | KMIRP2 |
| AC Adapter/Charger | AACA4 |
| Smoke Pump Test Kit | SPT1 |
| Hard Carrying Case | AC509 |
| Soft Carrying Case | AC75 |
| Inlet Temperature Probe | ATT100 |
| Eagle II/III Accessory Kit | EAKit |
| Field Sensor Calibration Kit[3] **(USA ONLY)** | CALKIT[3] |
| Eagle RS232 Cable | EARS232 |

### *UPGRADES*

| | |
|---|---|
| C155 Analyzer to C155KIT | EAGLEUPGRADE |
| C157 Analyzer to C157KIT | EAGLEUPGRADE |
| C155KIT or C157KIT to an Oil Service Kit | SPT1 |
| C155 to C157 ($NO_1$ sensor) | 17979[2] |

### *Replacement Parts/Supplies*

| | |
|---|---|
| Flue Probe | KMCP2 |
| Flue Probe Extension | FPTEXT |
| Pressure Tubing | 11000 |
| Thermal Paper for KMIRP2 | 16646 |
| Thermal Paper for KMIRP2 (10 pack) | 16646PACK |
| Smoke Paper and Chart | SP9 |
| Particle Filter | 17631 |
| Particle Filter (10 pack) | 17631PACK |
| Inlet Tube/Probe Connector | SM11103 |
| Water Trap | SM11827 |
| Water Trap Drain Plug | CM11667/2 |
| Water Trap Drain Plug (10 pack) | CM11667/2PACK |
| K-Type thermocouple | ATT29 |
| Gas Valve Pressure Adapter (1/4 MPT to Hose Barb) | BF100 |
| CO Sensor[1] | 16184[1] |
| NO Sensor[2] | 17979[2] |
| Static Pressure Probe | SPP |
| True Draft Probe | TDP |
| Quick Start Guide (Available online for download) | 17117 |
| Owner's Manual (Available online for download) | 18323 |

[1] **EAGLE X Series:** To maintain specified accuracy UEi recommends calibration in a controlled environment against a traceable calibration gas at the UEi Service Center or by an authorized UEi representative. Field replacement services are **only** eligible in the United States.

[2] **EAGLE 3X: C157:** $NO_1$ (Nitric Oxide) sensors are factory replacement and calibration only and are not eligible for user or in-field service.

[3] **CALKIT:** The Sensor Replacement & Calibration Kit (CALKIT) is for trade professionals familiar with gas analysis and detection, with experience in calibrating gas measurement systems. (USA ONLY)

## DISTRIBUTED BY:


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UEi

# EAGLE X

XTENDED LIFE COMBUSTION & SYSTEM ANALYZERS™


NO O2 SENSOR
NO REPLACEMENT

EOS
ELECTRO-OPTICAL SENSOR
TECHNOLOGY

XTENDED LIFE CO SENSOR

THIS CHANGES EVERYTHING

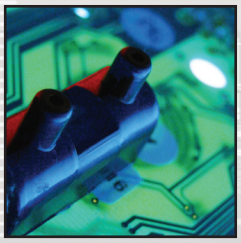
## LOWEST **COST** OF **OWNERSHIP**

***NO O2 SENSOR:***

The new Eagle X Combustion & System Analyzers eliminates the number one hassle experienced by HVAC contractors, the annual cost and down time of replacing the O2 sensor. This new technology for combustion analysis replaces the everyday electro-chemical O2 sensor with the EOS Technology™ CO2 sensor, lowering the cost of ownership.

***EOS TECHNOLOGY:***

The new EOS CO2 sensor takes direct CO2 measurements and calculates the O2 level. This CO2 sensor has no physical contact with the gas, so there is no deterioration of the sensor over time. This exclusive EOS sensor has a 5 year limited warranty and an unmatched industry-leading life expectancy of 10 years!

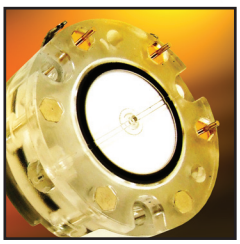


***NEW EOS VS Electro-Chemical Sensors:***

In an electro-chemical sensor, the gas measured passes into the sensor to an electrode where it produces a chemical reaction generating a current. The amount of current created is relative to the level of gas detected.

This process eventually wears down the sensor causing accuracy to drift and eventually losing all current output all together. Any mathematical calculations based on these measured levels will also drift accordingly. The typical industry standard life span of these sensors is between one to two years pending use.

In the Electro-Optical Sensor, or EOS Technology™, the gas flows between an Infrared transmitter and a receiver. The receiver detects the gas particles and communicates the level as a result. The advantage to this process is there are no parts to wear down and no physical cause for accuracy drifting. This benefits all calculations that are based on the measured value by maintaining a longer and higher level of accuracy.



***Xtended LIFE CO SENSOR:***

The Eagle X also offers a new Xtended Life CO Sensor, which has a life expectancy of 5 years and is backed by a 5 year limited warranty. Reducing the sensor's replacement frequency helps to minimize the analyzer's cost of ownership to just the CO sensor calibration. Most manufacturers recommend annual calibration to maintain sensor specifications.

# **ALL** YEAR **HVAC** SYSTEM **ANALYZER**

### *COMBUSTION:*

- Verify Ambient CO
- Verity CO Air Free
- Verify Proper Combustion
- Verify Combustion Gas, Make Up 02, CO, CO2, Excess Air
- Verify Stack Loss and Efficiency

Allows for live fire / real time analysis and trouble shooting, while verifying and documenting needed adjustments, repairs or replacements.

### *MODULATING & MULTI STAGE SYSTEM SET UP & TESTING:*

The UEi Eagle 2X allows the technician to simultaneously set gas pressure while doing a combustion test. Which allows for live fire viewing of combustion gases (over / under fire) while viewing and setting gas pressure to manufacture suggested specifications.

### *USER PROGRAMMABLE AUXILIARY SCREEN:*

The auxiliary screen allows the tech to choose from an assortment of HVAC test parameters they want to view while performing various HVAC applications. This screen also allows a variety of test to be done simultaneously.

### *TEMPERATURE:*

- Temperature rise
- Temperature differential
- Temperature drops across Coil
- Inlet temperature
- Stack temperature
- Super heat temperature side
- All "K" thermocouple probes, clamps, wraps and contact applications.

### *MANOMETER PRESSURE:*

- Gas pressure
- Vent pressure / draft
- Static duct pressure
- Pressure drops across coil
- Limit switches
- Pressure switches
- Zone pressures
- Building pressures

### *PRESSURE & TEMPERATURE:*

These tests may be selected by setting up the auxiliary screen to read pressure and temperature. Allowing for simultaneous readings of Static pressure and temperature drops across coil or system.

### *HEAT EXCHANGER INTEGRITY:*

A live fire test to verify any pre-blower and post blower combustion gas variances. Providing analysis and documentation of any unordinary fluctuations in stack gas readings.

### *ROOM CO*

Test for ambient CO Health Hazards within Residential or Commercial Applications. Detect and log ambient CO caused by a combustion appliance lacking proper venting, unsafe operation or improper installation. Also detect back drafting associated with negative pressure.

### *TEST, VERIFY AND DOCUMENT*

Saving and recalling stored data readings to view or print is easy. The Eagle X can save results and print documentation for each test, providing customers with peace of mind with tangible results showing before and after readings as facts, not opinions, on the comfort system's operation and safety.

*Combustion*

```
C155 1.0
YOUR COMPANY NAME &
PHONE NUMBER HERE

DATE          08/18/09
TIME          20:10:00

FUEL          Nat  Gas

COMBUSTION
.....................
LOG                 01

O2  %              8.9
CO2 %              6.8
CO  PPM             16
FLUE      °F     101.6
INLET     °F      74.1
NETT      °F      27.5

EFF  (G)           95.0
LOSSES             10.7
XAIR %             74.1

CO/CO2           0.0002
CO AIR FREE          27

PRS     InH2O      0.14


.....................
Customer

.....................
Appliance

.....................
Ref.

.....................
```

*Heat Exchanger*

```
C155 1.0
YOUR COMPANY NAME &
PHONE NUMBER HERE

DATE          08/19/09
TIME          15:09:06

FUEL          Nat  Gas

EXCHANGE
--------------------
LOG                 04

Prior to Blower On
CO   PPM            23
O2   %             7.0
XAIR %            50.3
DATE          08/19/09
TIME          15:09:06

After Blower On
CO   PPM            14
O2   %             7.5
XAIR %            55.9
DATE          08/19/09
TIME          15:10:06

Variance
ΔCO  PPM            -9
ΔO2  %             0.5
ΔXAIR %            5.6
```

*Temperature*

```
C155 1.0
YOUR COMPANY NAME &
PHONE NUMBER HERE

DIFF TEMP
.....................
LOG                 01
TIME  17:17 08/25/09

T1      °F        93.3
T2      °F        72.7
ΔT      °F        20.6

.....................
Customer

.....................
Appliance

.....................
Ref.

.....................
```

*Draft/Pressure*

```
C155 1.0
YOUR COMPANY NAME &
PHONE NUMBER HERE

DATE          08/19/09
TIME          20:18:00

PRESSURE
.....................
LOG                 04

PRS     InH2O    0.220


.....................
Customer

.....................
Appliance

.....................
Ref.

.....................
```

*CO Room*

```
C155 1.0
YOUR COMPANY NAME &
PHONE NUMBER HERE

ROOM CO TEST
.....................
LOG                 01
TIME  16:27 08/03/06

TEST            CO PPM
 0                  00
 1                  00
 2                  00
 3                  00
 4                  04
 5                  00
 6                  04
 7                  00
 8                  00
 9                  00
10                  00
11                  00
12                  00
13                  00
14                  00
15                  00
.....................
MAXIMUM CO          04

.....................
Customer

.....................
Appliance

.....................
Ref.

.....................
```

*Auxiliary*

```
C155 1.0
YOUR COMPANY NAME &
PHONE NUMBER HERE

DATE          08/25/09
TIME          00:16:34

FUEL             L  Oil

AUX
.....................

NO  PPM             N/F
COamb  PPM            0
O2  %              20.9
BAT  %               AC

.....................
Customer

.....................
Appliance

.....................
Ref.

.....................
```

# EAGLE X: *FEATURES & SPECIFICATIONS*

***Measures***

- NEW! • CO2 (EOS Technology)
- NEW! • CO (Long Life Sensor)
- • Inlet Temp/Flue Temp
- • Hi-Res Differential Manometer (select 0.01"/0.001"wc)
- • NO (EAGLE 3X: installed, EAGLE 2X: available as upgrade)

***Calculates***

- NEW! • O2
- • Net Temp
- • Efficiency
- • Excess Air
- • Differential Temp (T1-T2)
- • Differential Pressure (P1-P2)

***PreProgrammed Fuels***

- • Natural Gas
- • Propane
- • Heavy Oil
- • Light Oil
- NEW! • Bio Fuel
- NEW! • Wood

***Features***

- NEW! • Gas Zero[1]
- NEW! • High level CO alarm
- • CO data logger
- • Heat exchanger test
- • Worklight
- • 4 line backlit LCD display
- • 179 memory positions
- • User customizable auxiliary screen
- • User programmable headers
- • Individual report printouts
- • Time and date stamp
- • Rotary style selector
- • Protective boot w/integral magnet
- • Real time clock
- • CO readings as low as 1 ppm
- • Infrared printer port
- • Low battery indicator
- • Field replaceable sensors (USA ONLY)
- NEW! • 5 year limited warranty (including sensor)

| Temperature | EAGLE X: C155 & C157 |
|---|---|
| Flue Temp Range | 20~2400°F (-29~1315°C) |
| Inlet Temperature (probe - T2) | 20~2400°F (-29~1315°C) |
| Inlet Temperature (ambient) | 32~112°F (0~50°C) |
| Net Temperature (ΔT)** | 20~2400°F (-29~1315°C) |
| Resolution | 0.1°C/F |
| Flue (T1, Inlet T2 & ΔT) Accuracy | ±(0.3% rdg +3.6°F(2°C)) |
| Inlet Temperature Accuracy | ±(0.3% rdg +1.8°F(1°C)) |

| Gas | EAGLE X: C155 & C157 |
|---|---|
| Oxygen | 0~21%** |
| O2 resolution / accuracy | 0.1% / ±(0.3% absolute) |
| Carbon Monoxide (CO) | 0~2000 ppm (4000 max 15 min)* |
| CO resolution / accuracy | 1 ppm / ±10 ppm<100ppm, ±5% rdg>100ppm |
| Carbon Dioxide (CO2) | 0~20%* |
| CO2 resolution / accuracy | 0.1% / (0.3% absolute) |
| Efficiency** | 0~99.9%** |
| Efficiency resolution/accuracy | 0.1% / ±3% |
| Excess Air** | 0~250%** |
| Excess Air resolution/accuracy | 0.1% / ±3% |
| CO/CO2 ratio** | 0~0.999 |
| CO/CO2 resolution/accuracy | 0.001 / ± 5% rdg |
| Nitric Oxide (NO1)*** | 0~100 ppm |
| NO1 resolution/accuracy*** | ±2 ppm <30ppm<br>±5ppm <100ppm |

| Pressure | EAGLE X: C155 & C157 |
|---|---|
| Range | Accuracy |
| ±0.08" wc (±0.2mBar) | 2±0.002" wc (±0.005mBar) |
| ±0.4" wc (±1mBar) | ±0.01" wc (±0.03mBar) |
| ±32" wc (±80mBar) | ±3% rdg |
| | |
| Resolution | 0.001" wc < 9.999" wc |
| | 0.01" wc >10.00" wc |
| | 0.001mBar<24.999mBar |
| | 0.01mBar > 25 mBar |

* Measured at STP (standard temperature and pressure)
** Calculated value
*** NO1 sensor installed on C157. Available as an upgrade for C155.

[1] Gas Zero (Fresh Air Zero) - Is a reset procedure to maintain accurate readings from the EOS sensor. This procedure compensates for any change in ambient conditions that may impact the readings.