GENERAL
The EE-2 environmental Enclosure is for dust and water protection in industrial and agricultural environments and in public places. A key principle of the EE-2’s operation is separating the solids and liquids from the gas stream before the gas reaches the sensor. This is accomplished by forcing the particles and droplets to flow directly to the exhaust fan while the gas to be measured, such as ozone or a VOC, diffuses laterally to the sensor which is not in the inlet-outlet flow path.

The EE-2 housing is a polycarbonate plastic enclosure 125 mm wide, 175 mm high and 77 mm deep (5”X7”X3”) with a clear polycarbonate gasketed front cover. There are screened air inlets on the sides and an exhaust fan on the bottom. Everything in the enclosure is powered by 12-18 volts DC or, as an option, 14-30 volts AC or DC power. Other options are a 4-20 mA signal loop output, and an interior enclosure heater. Wiring to external equipment is via a semi-sealing side gland with knockouts for extra access if required. The same AC adapter that powers most Eco Sensors instruments powers the EE-2 and the instrument in it. The EE-2 can for an alarm panel, such as the Eco Sensors RAP-2, signals in the form of 0-2 V, 4-20 mA, and set-point controlled relay contact closure.

POWER INPUTS
12.5-18 VDC to the power jack or, if this option was ordered, 18-24 VAC or VDC to TB1. The EE-2 supplies power to the Eco Sensors gas instrument mounted in it, so only one power supply is necessary.

AC Adapter AC adapters with nominal 12 VDC output are suitable power sources for the EE-2 if their voltage under load to the EE-2 is 12.5 volts. Most so-called 12 VDC adapters have an output connected to the EE-2 of about 14 VDC. The adapter output plug should be for a 2.5 mm jack, center +. The power jack is on the bottom of the enclosure. Eco Sensors Tech Note P101 has detailed information about suitable AC adapters.

AC or DC supply voltage to TB1 (ordered as an option) (18-30 volts AC or DC) on the middle left side of the board (see board layout on the other side of this sheet). If AC bring the wiring to the terminals labeled AC+/ & AC–. If DC, wire to the AC+/ and GND–.

Earth ground Use an unused GND terminal on TB4 on the lower right side of the board.

In general, it is preferable to power the RAP-2 or other alarm panel independently. If the RAP-2 uses the same power supply as the EE-2, at least 1 amp of DC should be available.

OUTPUTS
Relay The relay has contacts rated at 5 A 250 V. TB2, the terminal block for the relay’s contacts, is on the lower left side of the board. Terminal 2 is the arm (common). The relay will be normally open or normally closed depending on whether the instrument relay actuating the EE-2 relay is normally open or normally closed. When LED D1 just to the lower right of TB2 is illuminated terminals 1 and 2 of TB2 are connected, and when it is not illuminated terminals 2 and 3 of TB2 are connected.

0-2 VDC out Connect to TB3 terminals 0-2V or TB4 0-2V and GND. 0-1 V corresponds to 0-1 ppm for our ozone instruments (unless otherwise indicated) and 0-1 V for our C-21 VOC instrument. 0-2 V is for simple signal transmission less than about 20 meters (60 feet).

4-20 mA out (provided with the EE-2 as an option) Connect to terminals 4-20 and GND of TB3 at located on the upper left side of the board. 4-12 mA corresponds to 0-1 ppm for our ozone instruments (unless otherwise indicated) and to 0-1 V for our C-21 VOC instrument. 4-20 mA signal transmission is recommended for distances more than about 20 meters (60 feet).

SPECIFICATIONS
Size and weight: 125 mm wide, 175 mm high, and 77 mm deep (5” X 7” X 3”). The weight including shipping materials is 570 grams (1 1/4 lbs.).

PRECAUTIONS
• Read all instructions in this manual.
• Review safety procedures in testing and operating this system.
• Call a qualified electrician if you have any doubts about voltages, wiring, electrical codes and practices, etc.
• Keep the boards and sensor dry. Never let water or other liquids into the system.
• Do not drop the boards. Damage may not be immediately obvious.
• Operate this system in areas of normal room temperature. Operation at extreme temperatures, such as warehouses or refrigerated areas, should only be attempted after testing in the proposed environment for correct and reliable operation.
• Do not attempt to service the instrument yourself.

When in doubt, operate the system at least 24 hours in your worst case environment as a test.

LIMITED WARRANTY
This product is warranted against defects in materials and workmanship for one year following the date of purchase by the first user. This warranty does not include damage to the product as a result of misuse, damage, modifications or alterations, and it does not apply if the instructions in this manual are not followed.

If a defect develops during the warranty period, Eco Sensors at its election will repair the product or replace it with new or reconditioned product of equivalent quality. In the event of replacement with a new or reconditioned product, the replacement will continue the warranty of the original model.

To return this system or any module of it, call your distributor or OEM, OEMs and distributors call Eco Sensors at (800) 472-6626 or e-mail at: sales@ecosensors.com to receive return instructions and a Return Goods Authorization (RGA) number.

Except as provided herein, Eco Sensors makes no warranties, express or implied, including warranties of merchantability and fitness for a particular purpose. Eco Sensors shall not be liable for loss of use of this instrument or other incidental or consequential damages, expenses or economic loss, or claims for such damage or economic loss.

KEEP THIS MANUAL AND WARRANTY FOR YOUR RECORDS.

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Relay
Terminal Block

In most configurations normally open
In most configurations normally closed

LED illuminates when circuit is closed between terminals 1 and 2 of TB2

For O-2 V Sensor Output. Other connections are determined by custom board wiring at the factory. Usually used for custom wiring to the remote alarm panel.

Components 18-30 VAC or VDC power input (optional)

Signal Out
4–20 MA
0–2 V

18–30 VDC Power Supply In
(only used if optional power supply is installed)

18–30 VAC Power Supply In

Relay
Terminal Block

In most configurations normally open
In most configurations normally closed

Eco Sensors, Inc. Model EE-2 Rev 1.0

CONNECTIONS TO THE CIRCUIT BOARD
AC/+
GND

Components

Remote Panel
N.O.
GND
0-2V
GND
+14V

0–2 V Signal

CR4
R4
C7
C6
C5
C3
C4
U3
R5
CR1
C8
F1
U1
CR2
R2
R1
L1
CR3
TB4
U2
R2
R5
C1
C2
R1
R2
R3

CONNECTIONS TO THE CIRCUIT BOARD
ACCESSIBLE BY OPENING THE FRONT PANEL