

# ECO SENSORS, INC.

## Ozone Sensor MODEL A-21ZX

### INSTRUCTIONS FOR USE

#### GENERAL DESCRIPTION

The model A-21ZX is designed for sensing ozone and for estimating ozone levels in the 0-10 ppm range. It is not an analyzer, and there is some sensitivity to other oxidizing gases. Except for special applications, its routine use is only recommended for the 0-1 ppm range. The instrument can be run up to 8 hours from its rechargeable batteries, and it can be run from AC power as a permanent monitor. Before operating the instrument read all instructions and the conditional warranty statement in this manual.

#### OPERATION

Turn the function switch to **On**. Digits should appear on the readout. If there are no readout digits, the batteries are discharged. (For charging, see **Battery Operation**.) The A-21ZX instrument can also be used as a permanent monitor in the **On** position of the function switch using the charger as a power source. In this case, the average levels of the ozone shouldn't exceed .1 ppm to maintain stable readings and to avoid corrosion of the electronics. Readings above 1 ppm should be brief.

For leak checking, bring the sensor as close as possible to the suspected leak. For monitoring, orient the instrument so that the sensor is perpendicular to or facing away from any air flow. If there is air flow into the gas inlet, the readings may be higher than they should be.

The A-21ZX responsivity slows at temperatures below 50 deg F (15 deg C). To minimize this, keep the instrument warm by keeping its power on or by storing it in a warm place until just before use.

Acid gases and certain other conditions cause the instrument's readings to creep up after establishing a stable point. Outdoors: operate at above freezing temperatures and during the day. Semicon fabs, sewage treatment plants, etc.: avoid acid gases and sulfur compounds. Water treatment plants: avoid strong chlorine concentrations. In general, after the instrument has reached a stable reading in about a minute, it is best to turn it off or to remove it to a protected area. A mechanical shock to the instrument can cause it to zero. It will recover in a few minutes.

#### CHARGING AND WARM-UP

The A-21ZX charges with the function switch in the **on** or **off** position and the AC adapter plugged in. 14 hours are required for fully discharged batteries. *When not using the instrument, it is strongly recommended to leave the charger plugged in and the function switch in the off position.* In this mode, the sensor will stay heated. Then if the instrument is turned **on** before unplugging the AC charger, the instrument is ready to use immediately.

Otherwise warm-ups are required with a major purpose being to "burn-off" trace chemicals that the sensor will absorb if it has been idle and not heated. Recommended A-21ZX warm-up times by either battery or AC adapter are:

<u>Time Since Last Powered</u>	<u>Warm-up Time</u>
1 minute - 3 days	10 minutes
3 - 7 days	1 hour
more than 1 week	24 hours

To minimize warm-up time, check the A-21ZX for full response with our OG-3 Ozone Source Calibrator.

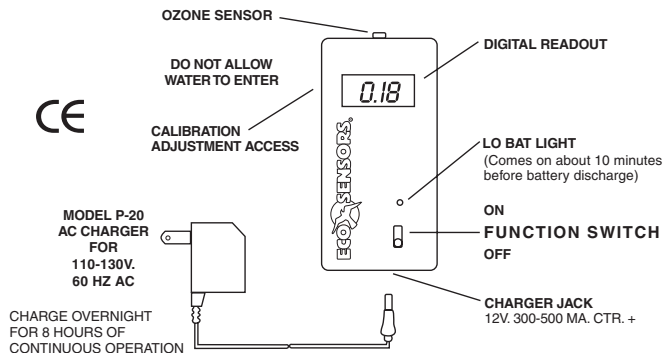
#### CALIBRATION

The A-21ZX will read from .01 ppm to over 10 ppm of ozone. Its primary calibration point is .1 ppm. Its greatest accuracy - 20% - is above .05 ppm. The calibration should be checked if the instrument's response gets slower, less reactive, or tends to creep up with no apparent ozone present. The instrument should be recalibrated annually and more often if it is in constant use. Sensor failure is indicated by a permanent very high reading. (The Eco Sensors OG-3 .1 ppm UV source can be used for recalibration.)

#### BATTERY OPERATION

The lo bat light will come on when there are about 10 minutes of use left. The batteries are a special NiMH design and are not user replaceable. They should last for several years of daily operation and much longer for occasional operation. To charge, plug in the charger and turn the function switch to the **Off** position.

The batteries will require 14 hours (overnight) to recharge and should provide up to 8 hours of use from a full charge. A rough guideline is that there are 30 minutes of use available per hour of charging. The A-21ZX can be recharged in vehicles using 12 volt output cigarette lighter adapters available from electronic stores (5.5/2.5 mm jack, center +).



#### AC ADAPTER/CHARGER

For North American customers, the instrument is supplied with an adapter design to convert 110- 120 volts 60 Hz: to 12 volts DC at 500 MA. Elsewhere, the adapter must be purchased locally. Converters from wall voltage to 12 volts DC unregulated with our size DC power jack (5.5/2.5 mm center +) are the most commonly available size worldwide. The actual output voltage under load of the '12 volt' adapters varies widely. The A-21ZX will accept 10-18 volts but not 24 volts. See our Tech Note P-101.

#### SPECIFICATIONS

Sensor: Heated metal oxide semiconductor.  
Sensitivity: As low as .02 ppm.  
Response time:  $\leq$  60 seconds  
Temperature and humidity range: 32-104 deg F (0-40 deg C) 0-80% relative humidity.  
Supply voltage required: 12 volts DC, 300 mA., ctr. + (ground -)  
Battery life: Over 8 hours per full charge.  
Size of instrument: 2" x 4" x 1" (50 x 100 x 25 mm.).  
Weight of instrument: Appx. 6 oz. (170 grams).  
Shipping weight, instrument and AC adapter: appx. 1 3/4 lbs. (about 3/4 kg.)

#### SAFETY FEATURES

Enclosure: Self-extinguishing ABS plastic.  
Electrical: (a) Circuits operate at 18 volts 200 mA or less. (b) Automatically resetting fuse to protect against excess current flow

#### PRECAUTIONS

- Allow sufficient warm up time.
- Read all instructions in this manual.
- Keep instrument dry. Never let water or other liquids into the sensor.
- Do not drop the instrument or subject it to continuous vibration.
- Do not store in high levels of dust.
- Do not clean the instrument with cleaning chemicals or solvents. Clean it with a damp cloth or with "Armor All" (R).
- Do not operate near heavy aerosols (spray) usage, where oxygen is being administered, or in the presence of explosive fumes or gases.
- Avoid prolonged exposure to gases and vapors of halogen and sulfur compounds.
- Do not take readings where the sensor is subject to drafts or breezes.
- Avoid use in below freezing temperatures.
- Avoid excessive pressure on or shock to the glass window of the digital readout.

Call a qualified electrician if you have any doubts about voltages, currents, electrical practice, etc.

#### LIMITED WARRANTY

This product is warranted against defects in materials and workmanship for one year following the date of purchase by the original owner. This warranty does not include damage to the product as a result of misuse, accident, 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 instrument or replace it with a new or reconditioned model of equivalent quality. In the event of replacement with a new or reconditioned model, the replacement unit will continue the warranty of the original model.

To return the instrument contact your distributor, or 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.

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

RECORD YOUR SERIAL NUMBER HERE \_\_\_\_\_

KEEP THIS MANUAL AND WARRANTY FOR YOUR RECORDS.

Eco Sensors is a registered trademark of Eco Sensors, Inc.

(c) Eco Sensors, Inc. 2004

Rev. 1/01

(OVER)

# RECOMMENDED ACCESSORY FOR THE A-21ZX

## OZONE SOURCE CALIBRATOR MODEL OG-3

The OG-3 Ozone Source Calibrator has been developed to fulfill the need for field calibration of our ozone instruments. It uses a precision UV micro-lamp that emits .1 ppm of ozone for an easily-followed set of calibration conditions. (1 ppm output calibrators are also available). The OG-3 does not substitute for a complete laboratory set-up generally required for primary calibration. The OG-3 is very useful for checking instruments in the field to verify that they are basically still within calibration, and it can be used to recalibrate them at .1 ppm if usable but not standards-traceable calibration is all that is required. Otherwise, the OG-3 is still useful to indicate when an ozone sensing instrument should be returned to the laboratory for recalibration.

