

(様式 EO-H0525-11)



# **PRODUCT SPECIFICATIONS**

## **OZONE GAS LEAK MONITOR**

### **MODEL ELM1**

**EBARA JITSUGYO CO., LTD.**  
**MEASURING INSTRUMENT**  
**AND MEDICAL DIVISION**

**EAST JAPAN SALES DEPARTMENT:**

2-3-12 Kurigi, Asao-ku, Kawasaki-shi,  
Kanagawa, 215-0033 JAPAN  
Tel: +81-44-981-0560 Fax: +81-44-981-0561  
E-mail [ej-ozone@ejk.co.jp](mailto:ej-ozone@ejk.co.jp)

**WEST JAPAN SALES DEPARTMENT:**

3-2-13, Hiranocho, Chuo-ku, Osaka-shi,  
Osaka, 541-0046 JAPAN  
Tel: +81-6-6231-3528 Fax: +81-6-6231-2929  
E-mail [ozon-osaka@ejk.co.jp](mailto:ozon-osaka@ejk.co.jp)



## 1. General description

The ozone gas leak monitor, Model ELM1 (hereafter referred as the monitor for short) which can measure Low Ozone concentration in environmental air condition. And it is a UV absorption product which has a small size and light weight. The analyzer keeps introducing zero gas to enable measurement of low concentration ozone, and performs zero calibration to provide stable ozone concentration measurement. For sampling, the analyzer takes in air from a place where the analyzer is installed and then performs measurement.

## 2. Measuring principle

This monitor is a UV absorption type ozone gas leak monitor which can detect and measure quantity of absorption of UV rays by ozone in the sample gas (ozone leakage) introduced into the detector. A low-pressure mercury lamp (emission wavelength 253.7 nm) is used for the light source. As the quantum of light absorbed by ozone existing within the optical path 'T' obeys the Lambert-Beer's Law, concentration of ozone can be measured as follows.

$$C = \frac{A}{\alpha T} \times \log \left( \frac{I_o}{I_x} \right)$$

where : C = Ozone concentration  
 $\alpha$  = Specific absorption coefficient  
 T = Path length of cell  
 I o = Light intensity through the sample free of Ozone  
 I x = Light intensity passed through sample Ozone  
 A = Constant

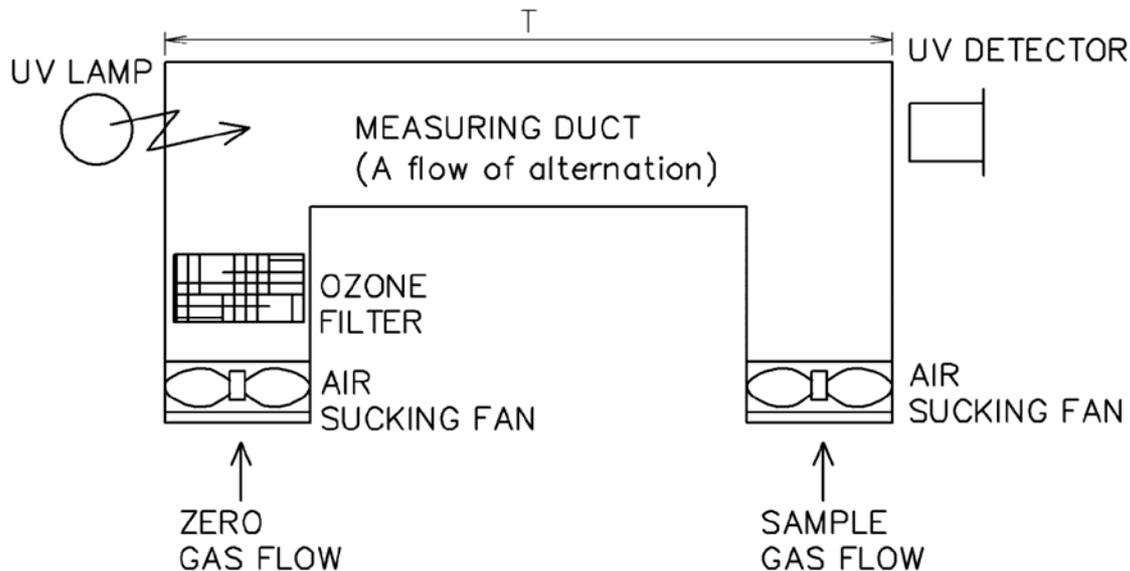


Figure- 1 Measuring principle

### 3. Specifications

<b>Model &amp; Product name</b>	: ELM1 Ozone gas leak monitor	
<b>Measuring principle</b>	: UV absorption method	
<b>Service</b>	: Ozone gas leaked in atmosphere	
<b>Measuring ranges</b>	: 0 ~ 1 ppm	(*note 1)
	Regarding indication, it will be shown from 0.00 to 0.99.	
<b>note</b>	<p>This monitor is UV absorption type ozone monitor for the ozone leak detection. It was developed and designed, for the purpose of informing a worker about danger by a warning (contact output) and concentration indication when ozone gas leaks out. Parts close against internal gas do not usually use the high materials of ozone characteristics-resistant that much to inhale gas without the ozone (including the atmosphere).</p> <p>Therefore, cannot measure always ozone gas. (Always recommend 0.05 ppm or less.) When it is always exposed to the ozone gas which is higher than a recommend level, the consumption of the zero gas generation filter in the measure becomes intense and shortens than appointed life.</p>	
<b>Measuring method</b>	: interval measurement (20 seconds cycle)	
<b>Sampling method</b>	: by sucking with air fan	
<b>Normal Operating Pressure (outlet/inlet)</b>	: Atmospheric pressure	
<b>Span drift</b>	: within $\pm 5\%$ FS/month	(*note 2)
<b>Zero drift</b>	: within $\pm 5\%$ FS/month	(*note 2)
<b>Linearity</b>	: within $\pm 5\%$ FS	(*note 2)
<b>Repeatability</b>	: less than 5% FS	(*note 2)
<b>note</b>	<p>Note that any failure of the analyzer or measurement error resulting from a sample gas containing a substance other than ozone will not be covered by the warranty even in the warranty period.</p>	
<b>Display</b>	: In 3 digits such as 0.00 ~ 0.99	
<b>Span adjustment</b>	: By digital 3digits (0.000 ~ 1.999) supporting LED use	
<b>Self-diagnostic function</b>	: Detecting and displaying abnormality of light intensity, computation in the circuit and flow-rate etc.	
<b>Environment</b>	: 5 ~ 40°C, 80% RH below (No condensation, no wind blow)	
<b>Power supply</b>	: 90 ~ 242 V AC(50 ~ 60 Hz), approx. 0.3 A (dedicated adapter used)	
<b>Monitor output</b>	: Concentration alarm signal of one system synchronized with AL2.	
	<ul style="list-style-type: none"> <li>• PhotoMOS relay contact : 24 V AC/DC, 0.1 A (without polarity)</li> <li>• Relay contact (1a or 1b point of contact) :</li> </ul>	
	100 V AC 1A / 30 V DC 1 A (without polarity)	(*note 3)

Analog output	: Voltage output ···· 0 ~ 1 V DC, resolution of 8 bits (non-isolated)	(*note 4)
Communication interface	: RS232C, without flow control (asynchronous system) 9600 bps	
Outside dimension	: 200 W×125 H ×54 D mm (See Figure-2)	(*note 5)
Weight	: 1.5 kg (typical)	
Installation pitch	: See Figure-2	(*note 5)
Accessories	: AC adapter for private use ············	1 pc
	HQ air filter ············	2 pc
	Mounting plate (attached to the body) ············	1 set
	Clip for Protecting to pull out the DC cable and mounting screw of M3x8 with washer ············	1 set

### Supplementary information

- \*note 1 : Please use the monitor in the place where the ozone concentrations is less than 0.05 ppm under environmental condition.  
If used at environmental condition, this will make the consumable parts to short the life time or could result in trouble.  
This value is based on the condition when ambient temperature.
- \* note 2 : Variation is less than  $\pm 3^{\circ}\text{C}$  and when one of sample gas temperature is also less than  $\pm 3^{\circ}\text{C}$ .  
Please avoid to install the monitor in the place near of the air conditioner or under direct sunshine.  
\* When operate this monitor in the small box sealed up of the capacity (almost less than  $0.125\text{m}^3$ ), dismantle internal ozone by the purification action of the zero gas filter with time and may not measure correct concentration.
- \* note 3 : In the case of the 1b point of contact, set it at the time of shipment. Please appoint it at the time of order.
- \* note 4 : Allowable load resistance is over than  $10\text{k}\Omega$ .  
According limitation based on the resolution, this accuracy may have error of max 10 mV.
- \* note 5 : But projection and mounting bracket are not included.

## 4. List of consumable parts

The consumable parts are as follows.

Product name	*1 Goods code	Quantity/ unit	Replacement term	Remarks	Working level
sensor board	BZ500C	1 pc	2 ~ 4 years	Sensitivity degradation occurs in the usage situation.	possible to replace by user
Consumable supplies set	BZ079 <sub>□</sub>	1 set	---	For details, refer to the followings individual column.	---

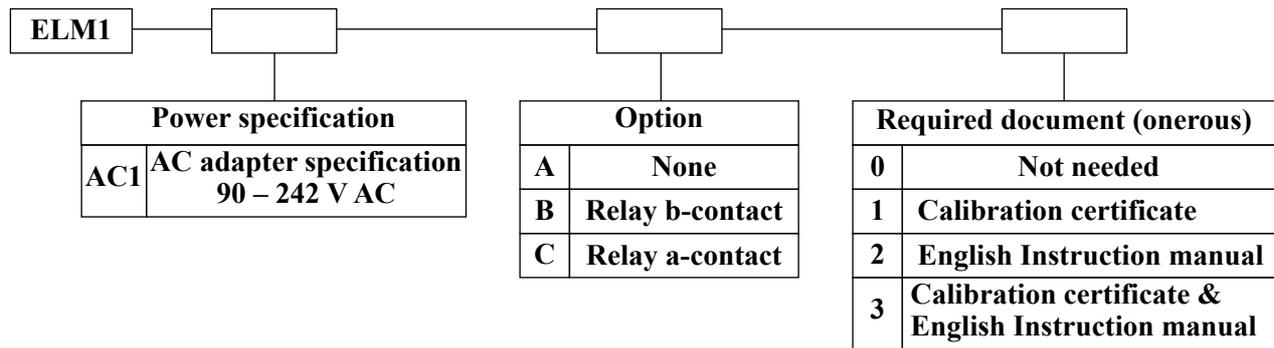
### Consumable supplies set list

Name	*1 Goods code	Quantity/ unit	Replacement term	Remarks	
UV lamp	E0021 <sub>□</sub>	1 pc	every 1 year	The UV lamp has an operating life and also the case that light quantity decreases or that it stops the light.	possible to replace by user
absorption fan	EM106 <sub>□</sub>	1 set (Two fans)	every 1 year	Bearings of the fan is increases the deterioration together with its used time and this does not become to get a flow rate. When error Er6, it is necessary to replace it.	
*2 HQ Air filter	NF029 <sub>□</sub>	10 pc (For 5 times exchange)	as needed	According to environment where the monitor is used, if a contamination is choked in the filter, this does not come to obtain the flow rate.	
zero gas filter	NC024 <sub>□</sub>	1 pc	every 1 year	As this is deteriorating with together with its used time. It becomes so as not to measure ozone.	

\*1 Our company identification number (e.g. A, B, C ...) is described in “□” at the end of the product code. When purchasing consumables, please inform us of the 5-digit product code (e.g. BZ123) starting with the alphabet.

\*2 Change by use environment at the exchange time, but when use it in general atmosphere environment, filter it in the ratio once in 2-3 months, and please change it.

## 5. Model code



**note:** As standard, one book of Japanese Instruction manual and one sheet of Test report are attached on the goods. Still more, other required documents are one book of English instruction manual and one sheet of Calibration certificate.

\* When you order, specify the monitor which is needed according the above list of Model code.

## 6. Warranty

Our products are warranted for 12 months from the date of delivery.

However, note that the following cases are not covered by this warranty.

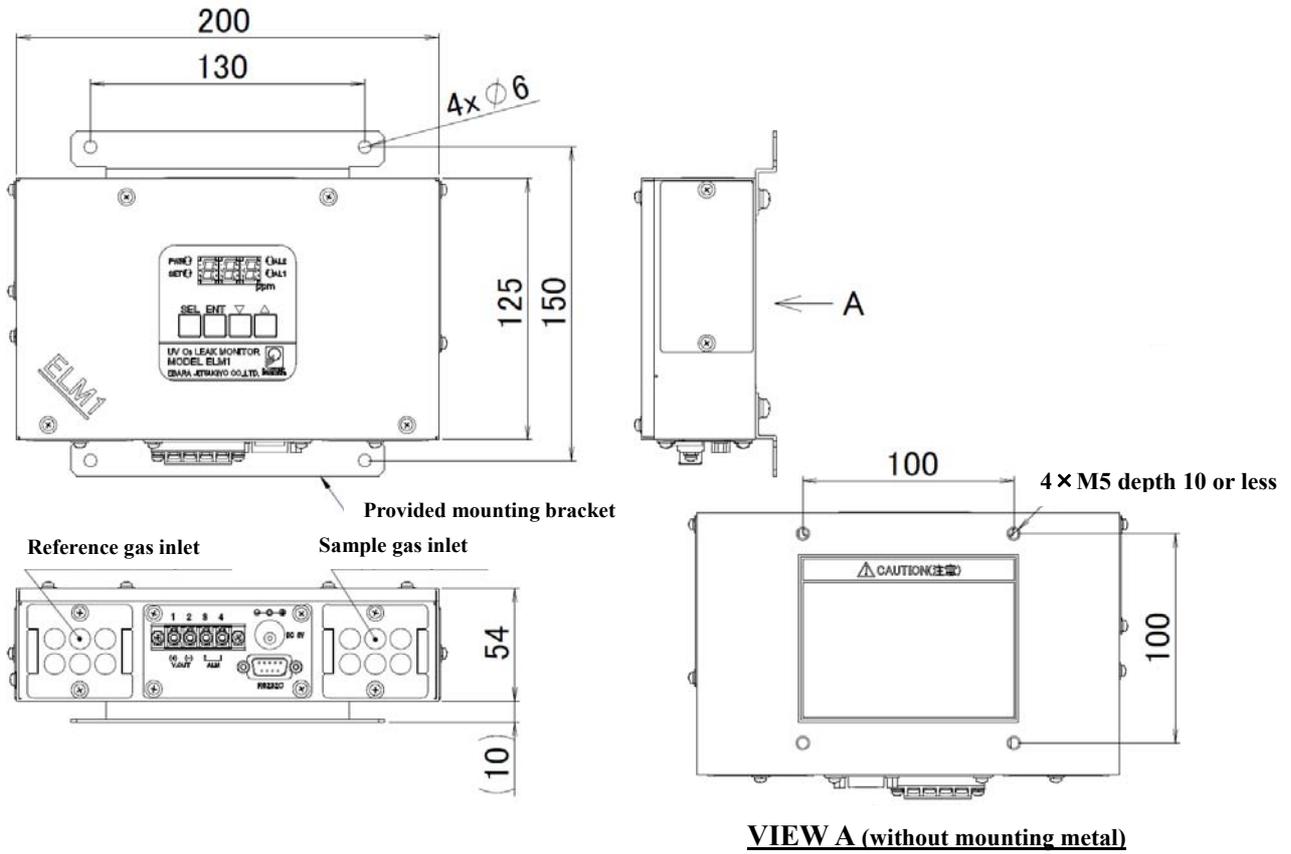
- ◇ Following failures or damages occurred within the warranty period.
  - ① Failure caused by misuse.
  - ② Failure caused by inappropriate repair or modification using non-genuine parts.
  - ③ Failure or damage occurred during transportation or by drop after delivery.
  - ④ Failure or damage resulting from fire, brine, gas, earthquake, wind, flood, lightning, abnormal voltage or other natural disasters.
  - ⑤ Failure caused by degradation of consumable parts (packings or seals).

Well, we cannot warrant you for defects of the related devices, injury of human body and your any loosed profits even if when their in and out of guarantee terms.

### ◇ Others

- (1) Contact the dealer when repair is needed.
- (2) This instrument is repaired at our side after it is sent from the user.
- (3) The minimum storage period of repair parts and necessary parts for this instrument is seven years after discontinuation of the instrument's production.
  - \* The “repair parts and necessary parts” stated here means the parts required to keep the product performance.
- (4) The coverage of warranty for any event that has not occurred in the past is discussed as it arises.

The specification may have to change without its announcement for improving and remodeling the equipment.



Dimensions are in mm.

Figure-2 Outline dimensions



**荏原実業株式会社**  
**計測器・医療本部**

東日本営業部 : 〒215-0033  
神奈川県川崎市麻生区栗木2-3-12  
TEL 044-981-0560 FAX 044-981-0561  
E-mail ej-ozone@ejk.co.jp

西日本営業部 : 〒541-0046  
大阪府中央区平野町3-2-13  
平野町中央ビル5階  
TEL 06-6231-3528 FAX 06-6231-2929  
E-mail ozon-osaka@ejk.co.jp