



Ozone Detector c/w Indicator for Temperature/Humidity O3TH

Dec.11



O3TH

Technical Data

Gas	Ozone O3
Detection principle	Semiconductor ozone gas senso
Warm up time	
First time	96 hours
Operational	1 hour
Mounting height	300mm above floor
O3 Measuring range	10 - 1000ppb
Relay output	One dry contact output
Current	2A switching (resistance load)
Ranges	Four to be selected to control the relay turn-on/ turn-off
Analogue output	0-10Vdc linearzed
Output resolution	10Bit
Temperature	
measurement	0-+50C
settings	5-+45C
Humidity	
measurement	0-99% RH
settings	5-+95%RH
Serial Interface RS485	
Rate	9600/14400/19200 (default) 28800, 38400bps programmable selection"
Base address	3 independent
Nodes	Max 31 in a network
Power supply	24Vac/dc
Display resolution	1 ppb
Accuracy	+/- 10 ppb + 20% of reading
Expected lifetime	More than 5 years normal operating environmental
Humidity range	5-95% rH non-condensing
Operating range	5 up to +45C
Protection Class	IP30 Fire proof ABS material

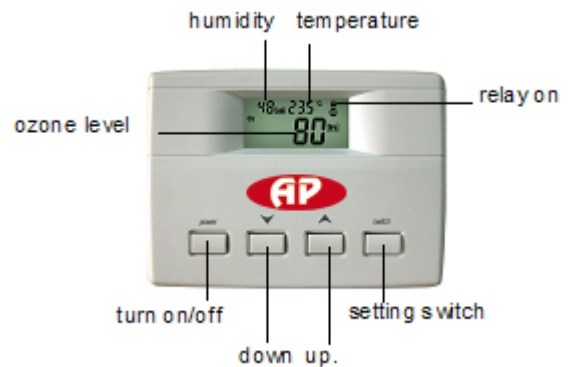
Features

- CE - Real time detection of ambient ozone gas level
- Full time indicate O3 level
- Wall mount with LCD display
- Temperature & humidity detection
- The on/off output for control a fan, O3 generator or an alarm
- Provide an analogue output with linearover full range output
- Addressing for RS485 mode. eg. Modbus

Description

O3 detector including digital measurement value processing and temperature compensation for the continuous monitoring of ozone concentration in the ambient air.

For the detection of ozone within a wide range of industrial and commercial applications.



Ordering Codes

O3TH 2	Ozone Detector 10 - 1000ppb (0,01 -- 1ppm) c/w one relay output
O3TH 2M	Ozone Detector 10 - 1000ppb (0,01 -- 1ppm) c/w one relay output and Modbus
O3TH 12	Ozone Detector 10 - 1000ppb (0,01 -- 1ppm) c/w one relay and analogue output
O3TH 12M	Ozone Detector 10 - 1000ppb (0,01 -- 1ppm) c/w one relay and analogue output, Modbus

Alarm Units

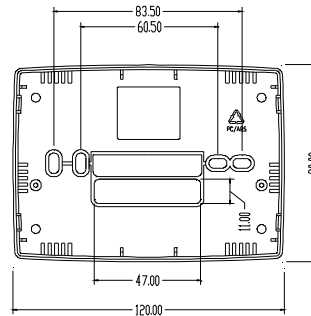
AAW 24	Warning Siren 24Vdc 98-108dB
AAW 230	Warning Siren 230Vac 98-108dB
OA 24	Flash Light 24Vdc red
OAW 24	Combined Warning Siren and Flash Light 24Vdc
OAW 230	Combined Warning Siren and Flash Light 230V

Warning Sign

Gasalarm Warning Sign "GASALARM" 24Vac/dc

Important information

1. Always cut off power before mounting, removing and cleaning the monitor.
2. Read all of the information in this datasheet before mounting the detector.
3. Notice the supply power voltage of the transmitter: 24Vac/dc.
Do not install the transmitter on voltages higher than marked on the transmitter



Mounting and Wire Connection

1. Cut off power first. Simultaneously depress the 2 clips on either of the sides of the detector gently with your nails or other unsharp tools, then move off the face part.
2. Mount the detector on the place where you want to detect O3 level 0,3m above floor.

Do not behind a door, in a corner, in direct sunlight and near any heat or steam sources.

Do not mount the detector in the direction of the outlet of the Ozone generator or in places where wind pass through.

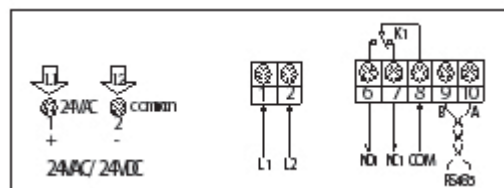
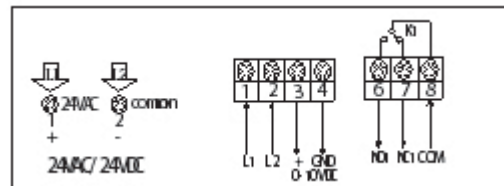
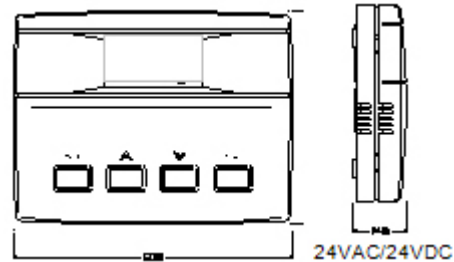
3. Mount the wall plate first.

Place the detector against the wall at desired location; make sure wires can be passed through the holes of the wall plate.

4. Connect wires to terminal strips, (see the label attached on the wall plate and fig.3).

Make sure wiring connection correct and scure.

5. Cover the face part to the wall plate

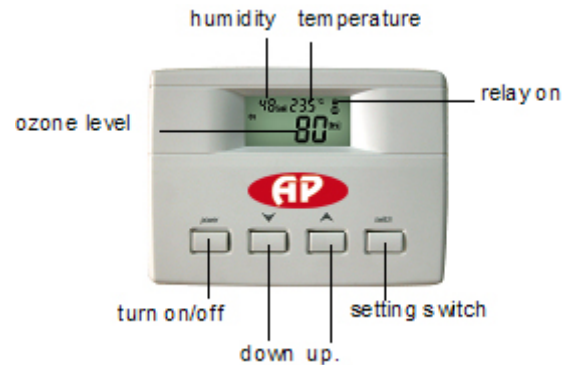
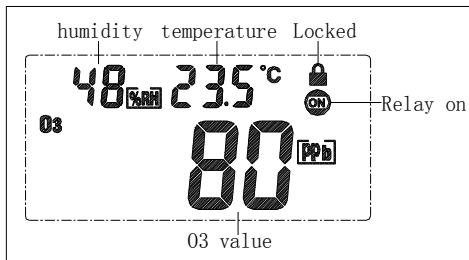




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LCD and Buttons



Operation

1. If you use the monitor for the first time or it hasn't been used for a long time, then it should be energized for more than 48 hours before it come into normal use.
If you have placed it in the direction of the outlet of the Ozone monitor or in places where wind pass through, then the measurement of the Ozone monitor will be incorrect.
In this situation, please place the Ozone monitor in normal environment and keep it energized for at least 24 hours, and then calibrate its zero point following step 10.
Then the monitor will return to normal use again.
When the ozone measurement range overstep the maximum measurement, the ozone sensor can be resumed after a long time rest, and then it will return to normal use again.
2. Temperature measurement range is 0~50!, accuracy 0.5!, temperature setting range is 5~45!.
Humidity measurement range is 5~99%RH, accuracy 1%RH, humidity setting range is 5~95%RH.
Ozone measurement range is 10~1000ppb, accuracy 1ppb and setting range is 40~1000ppb, its maximum measurement limited is 2000ppb.
3. Turn on: Turn on the monitor by press **power** for 2 seconds.
Temperature measurement displays on the right of upper line of LCD, the humidity measurement displays on the left of upper line of LCD.
The preheating time of ozone sensor displays on the below line and the time is set to 300 seconds(default).
The preheating time can be changed in parameter setup.
After it is counted down to 0, ozone level will be displayed.
4. Switch setting value: press **switch** key to exchange setting value from between ozone and temperature/humidity.
But for the model, temperature setting is un-effective.
5. Setting O3 value: Once switching to ozone setting, the ozone number is blinking, it indicates that the O3 value can be set by (tangent down) and (tangent up)key .
Increase or decrease 1ppb each time by pressing and rapid increase or decrease by pressing key for more than 2 seconds.
6. Lock setting value: Simultaneously depress the (tangent down and tangent up)key more than 5 seconds up to the symbol (lock) appearing on the LCD.
Then the setting value is locked to avoid wrong operation.
7. Unlock: Under the locked mode, simultaneously depress (tangent down) and (tangent up) up to (lock) disappear.



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8. When DIP4 is set to OFF(details see below Parameter Setup):
The relay will turn on when O3 measurement < O3 setting with ON symbol appearing on the right of LCD.
When O3 measurement <O3 setting , the relay will turn off with ON disappearing.
When DIP4 is set to ON(details see below Parameter Setup):
The relay will turn on when O3 measurement > O3 setting with ON symbol appearing on the right of LCD. When O3 measurement < O3 setting , the relay will turn off with ON disappearing.
The differential of ozone setting, please refer to Parameter Setup.
9. The scale bars on the right of LCD indicates the analog output. It is un-effective to this model.
10. Calibration of the zero of ozone sensor: after using the ozone sensor for more than one year, the sensor need to be calibrated again.
Put the monitor into the space of zero ozone and preheating it, press switch key for about 20 seconds until **X10** symbol appearing on the right of ozone number, then loosen switch key, the monitor starts auto zero calibration.
After 210 seconds until **X10** symbol disappearing, it indicates the zero calibration finished.
Cancel the zero calibration: press switch key for about 20 seconds until **X10** symbol appearing and then keep on press switch key for about 20 seconds until **X10** symbol disappearing.
It indicates the zero has no any calibration, it's still 0.
Note: Auto zero calibration can be done only when ozone measurement is above 5ppb.
And keep the controller in the zero ozone environment before **X10** symbol disappears.

Parameter Setup (Service Manual V.O3_210)

Cut off power and simultaneously depress the 2 clips on either of the sides of the monitor gently with your nails or other unship tools.

Move the face cover, there is a set of 4 Dipswitches on the right of the circuit board.

DIP1	ON - set parameter	OFF- normal use	Leaving factory: OFF
DIP2	ON - Fahrenheit	OFF- Celsius	Leaving factory: OFF
DIP3	Un-effective for the model	Leaving factory: OFF	
DIP4	ON- For decrease ozone (to control ventilation system)		
	OFF- For increase ozone (to control an ozone generator)		Leaving factory: OFF

Please put DIP1 to ON, press power key to turn it on, and set the following parameters.

Press switch for switching parameters, (tangent down,tangent up) for adjusting values.

LCD Display	Parameter	Setting Range	Default
-00	Temperature modification	+/-3.0C	0.0C
-01	Humidity modification	+/-9%RH	0
-02	Ozone value correction	+/-30ppb	0.0
-03	Warm up time of the ozone detector (no output use, neither 0-10vdc nor on/off, is recommended before ozone measurement becomes stable or warm up is finished)	1 - 900sec	300
-04	Un-effective for the model		0.0



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LCD Display	Parameter	Setting Range	Default
-05	Un-effective for the model		0
-06	Minus differential of ozone of control the delay e.g. the setting value is 10 and O3 is 50ppb, if measured O3<50-10ppb, the relay will be on (DIP4=OFF) or will be off (DIP4=ON).	5 -30	20
-07	Positive differential of ozone of control the delay e.g. the setting value is 20 and O3 setting is 50ppb, if measured O3>50+20ppb, the relay will be off (DIP4=OFF) or will be on (DIP4=ON).	5 - 100	50
-08	The state of the detector electrify after power broken	0: turn off after electrify 1: turn on after electrify 2: keep on the last state	2
-09	Setting RS485 address	0-250	0
-10	RS485 communication rate selection	1: 9600bps 2: 14400bps 3: 19200bps 4: 28800bps 5: 38400bps	3

RESET: Put the DIP1 to ON and press switch key for about 25 seconds until the detector is off, then all the setting return to the default.

Annex: Ozone Measurement Emendation

Put the four DIPs to the upper position to be ON and then start ozone emendation.

- 1) The digit displayed on the upper left of the LCD indicates the demarcation point that is right now being emended.

Display range: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10

- 2) The digit displayed on the upper right of the LCD indicates the ozone measurement at the current demarcation point.

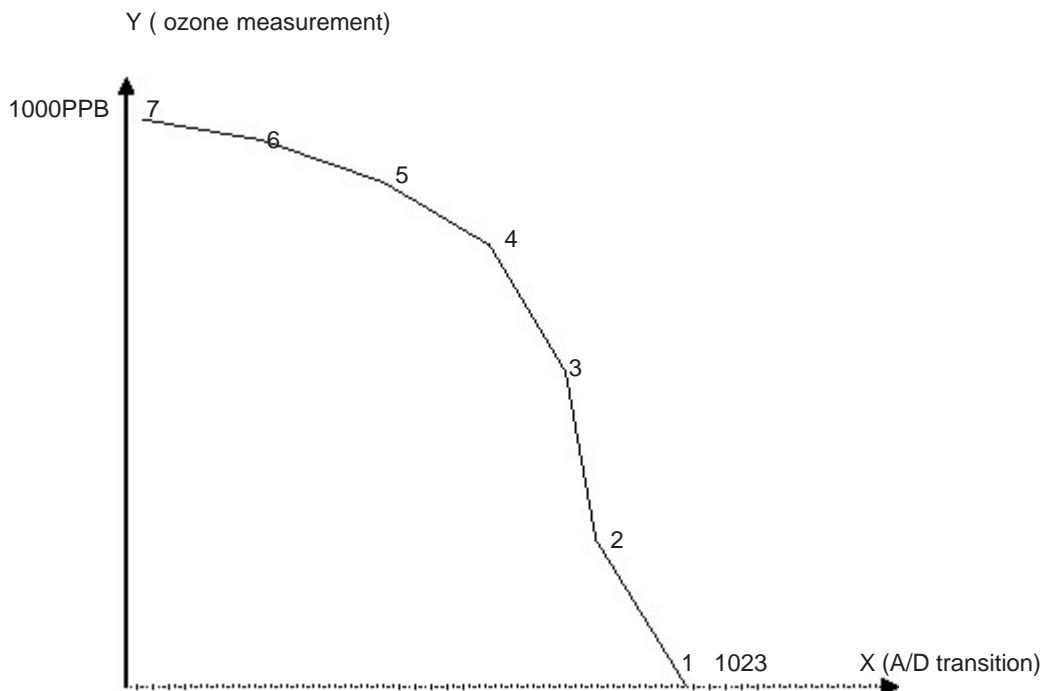
Display range: Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y8, Y9, Y10

- 3) The digit displayed on the bottom line corresponds to the A/D transition level of X axial.

- 4) The non-twinkling figure indicates the real-time ozone measurement detected by the sensor.

- 5) The twinkling figure indicates the demarcation point that needs to be set

Display range: X1, X2, X3, X4, X5, X6, X7, X8, X9, X10



Steps:

- 1) Energize the controller
- 2) Put the four DIPs to the upper position to be ON and wait until the digits displayed on the LCD to be stable
- 3) Demarcate demarcation point 1 (0), write down the un-twinkling point of X1
- 4) Press switch to the first demarcation point (N=1)
- 5) Press (tangent down) or (tangent up) to adjust the twinkling figure until it equals to X1.
Then the demarcation of X1 is finished
- 6) Now go to demarcation point 2, put the controller in sample gas
- 7) Write down the un-twinkling point of X2 and Y2
- 8) Press switch to the second demarcation point (N=2)
- 9) Press (tangent down) or to (tangent up) adjust the twinkling figure until it equals to Y2
- 10) Press switch, then the following figure starts twinkling
- 11) Press (tangent down) or (tangent up) to adjust the twinkling figure until it equals to X2.
Then the demarcation of X2 is finished
- 12) Repeat steps 6-11 to finish the emendation of demarcation point 3 to 10
- 13) After the emendation to all demarcation points, put the four DIPs to OFF.



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Table:

Ozone measurement in normal air Y1=0	Sensor output in normal air X1 (zero point)
Ozone measurement in sample gas1 Y2	Sensor output in gas1 X2
Ozone measurement in sample gas2 Y3	Sensor output in gas2 X3
Ozone measurement in sample gas3 Y4	Sensor output in gas3 X4
Ozone measurement in sample gas4 Y5	Sensor output in gas4 X5

Press switch key for about 25 seconds until the monitor is off, then all the settings return to the default.

If warm-up time is less than 3 months before leaving factory, then do emendation as the second row of the following table.

If warm-up time is more than 3 months before leaving factory, then put four DIPs to ON and press switch key for about 25 seconds until the detector is off, then do emendation as the third row of the following table.

Warm-up time	0ppb	40ppb	80ppb	200ppb	300ppb	500ppb	600ppb	700ppb	900ppb	999ppb
Less than 3 months	1000	847	717	500	420	338	315	291	264	254
More than 3 months	870	720	580	500	420	338	315	291	264	254



Guidelines on How to Measure Ozone

The following information is presented to help users operate their Ozone Detector in the most effective and efficient manner.

General

- Ozone is heavier than air and tends to sink.

Thus detection of leaks from ozone generating equipment should be performed at the most appropriate position.

- Ozone will react and decompose on surfaces such as walls, furniture etc.
- Smell is not a reliable test for the presence or concentration of ozone as the odour threshold varies widely between people and is affected by local ambient conditions.

Permanent Controller Placement

- The Ozone Detector has been designed to measure the ambient concentration of ozone.

The controller must not be placed directly in an ozone stream.

- For indoor local area monitoring attach the controller to an inert surface with the inlet unobstructed.
- For leak detection mount the unit near the ozone equipment.
- Ensure that the controller is protected from excessive water splashing, dust, vibration, excessive heat or cold, high concentrations of ozone and excessive swings in humidity.

False Readings

- The Ozone Detector has been designed to respond selectively to ozone, however other oxidizing gases such as chlorine and nitrogen dioxide can generate false readings if they are at high concentrations.

High concentrations of hydrocarbon gases such as vapours of alcohol, oils and solvents can reduce and mask the concentration of ozone.