# Wall-mount type of Air Quality Detector
Model: GTF3OO-AQ and GTF3OO-VOC

Installation and Wiring

1. Please read the Security Notifications in detail firstly.
2. The gas detector might install on wall or steel plate, please refer following drawing to make marking then drill the holes. Do not use the gas detector as a drilling template to avoid fault.
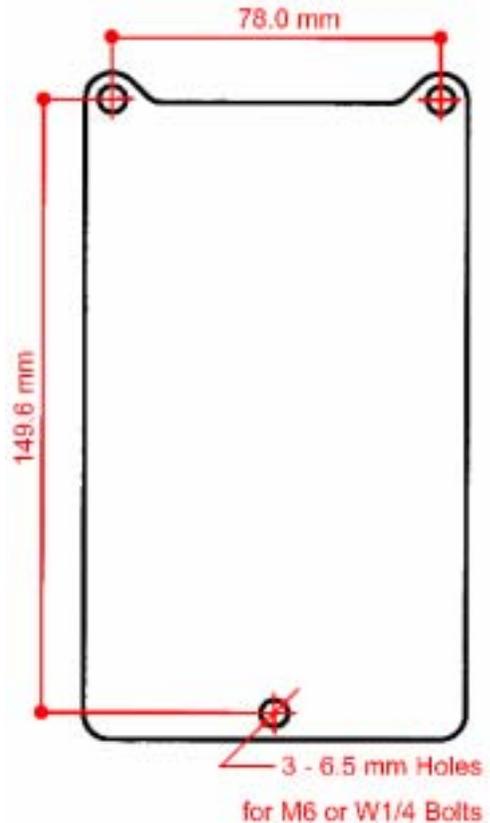

3. Due to the space is very small that is impossible to use wrench. Therefore, to use female expansion bolts on the wall or tap female screws on the steel plate and use external screw (male bolts) that can use the screw driver to install the gas detector and solve spacing problems. M6 sizes of bolts have a good tolerance than W1/4.

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4. Analog output

A TYPICAL WIRING OF ANALOG OUTPUT

B

DC POWER SUPPLY
24 ~ 30 VDC

F

R

REMOTE CONTROLLER
or INDICATOR

G

Legend and Description
B: Negative wiring of detector
R: Positive wiring of detector
G: Analog wiring of detector
F: Fuse
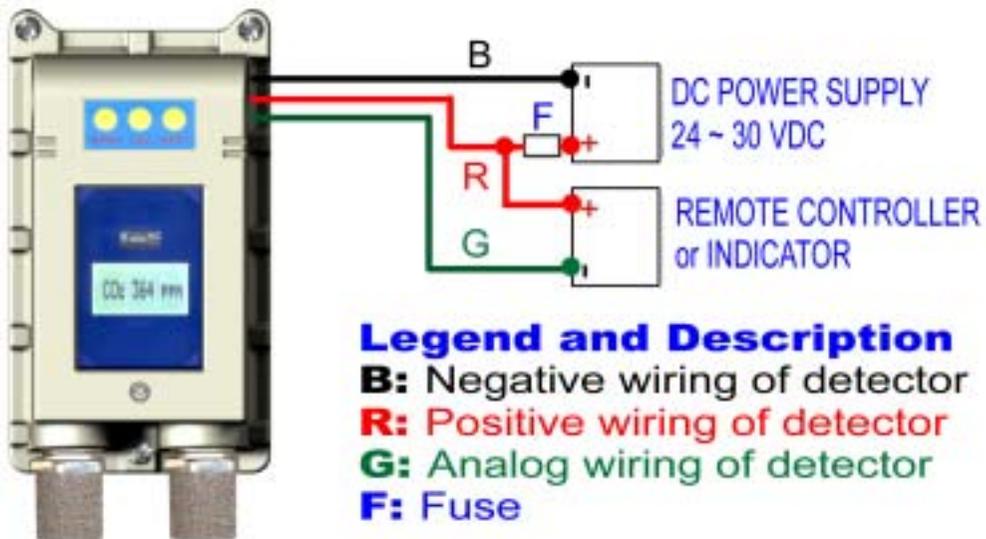
A recommend fuse is 0.2 A in the above.

5. Relay output

A TYPICAL WIRING OF RELAY OUTPUT

B

DC POWER SUPPLY
24 ~ 30 VDC

R   F

Bu

W

F   D

EXTERNAL RELAY
or BUZZER

Legend and Description
B: Negative wiring of detector
R: Positive wiring of detector
F: Fuse   **D:** Diode
‖ : DC power of external relay or buzzer
‒o o‒ : Relay contact of detector
Bu: Blue wiring **W:** White wiring
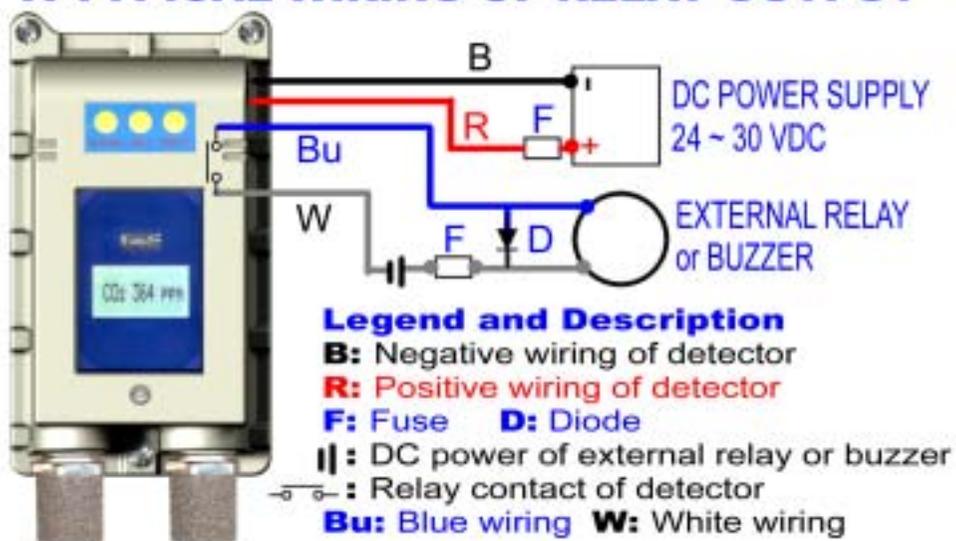
A recommend fuse is 0.2 A, the diode could be 1N4002 or 1N4004 in the above.

6. In order to meet waterproof, the wiring material and parts should be met the requirement also.

7. The wiring size is not less 0.5 mm^2 or 20 AWG. In the case of long-distance wiring, to apply bigger size or 30 VDC power is better.

8. The detector attached wiring connectors and shrink sleeves for the wiring. Due to spacing problems, do not use

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electrical tape. For the connecting the wires, to solder them is better than using connectors that do not cut wires while replace or reinstall to avoid shortage of wires length.

9. There are two 1/2" NPT female connectors which might use one normally. Please blind the other with tape seal.

Specifications

model	GTF300-AQ-A GTF300-VOC-A	GTF300-AQ-R GTF300-VOC-R
type	wall-mount	
sensor	Semiconductor	
target	GTF300-AQ hydrogen, ethanol, isobutene etc. GTF300-VOC toluene, xylene, alcohol, ammonia, etc.	
sampling method	diffusion	
measure range	1 ~ 200 CIAQ (Composite Index of Air Quality) Refer GASTECH calibration curves, or make them by user	
Resolution / accuracy / sampling time	1 CIAQ / continuity	
alarm level	high alarm resetable	
analog output	4 20 mA max. load resistance 500 ohm	N/A
relay output rating	N/A	single pole normal open relay with self-hold function 30VDC, 1A
buzzer / flash lamp	available	
backlight alphanumeric LCD	available	
construction	dustproof and waterproof (meet to IP65)	
size	193 mm x 91 mm x 40 mm	
net weight	about 700 g	
power supply	24 30 VDC	
power consumption	about 3W	
ambience temperature	0 45 degree in Celsius	
ambience humidity	less 85 RH and non-condenser	
packing size	about 208 mm x 156 mm x 68 mm	
gross weight	about 1,100 g	

(Specification maybe changed without notice)

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1. Power on display

After power on, the GTF300-AQ/VOC gas detector will display a series of messages, including welcome, model no and CIAQ (Composite Index of Air Quality).

```
G A S T E C H
W  E  L  C  O  M  E
```

WELCOME

```
M O D E L ... A 0 3
GTF300-AQ-A
```

Show the model no. (Show it at power on only.)
GTF300-AQ-A and GTF300-VOC-A are a standard type with 4 ~ 20 mA analog output.
GTF300-AQ-R and GTF300-VOC-R are an optional type with relay output.

```
WARMING-UP
WAIT….
```

It's warming up now, please wait. (Show it at power on only.)

```
CIAQ        1
[          ]
```

GTF300-AQ/VOC can detect hydrocarbon compounds in the air, especially high sensitive of hydrogen and transfer the CIAQ (Composite Index of Air Quality) shown on the display. CIAQ define fresh air and/or zero air is "1". According to concentration of hydrocarbon compounds and hydrogen in the air, the more pollution exists the higher CIAQ will show.

2. Settings

The following operating procedure describes the settings. In the operation, press NEXT key or idle 3 minutes, the display will back to the CIAQ.

```
CIAQ        1
[          ]
```

In the display, press NEXT key to enter next function.

```
TEST ALARM
```

In the display, press ADJ key, the buzzer and flash lamp will action. Press ADJ key again, they will stop. (The relay will make action in TEST ALARM also, if detector model has relay output.)
Press NEXT key to enter next function.

```
Buzzer Limit
CIAQ 70    UP
```

In the display, press ADJ key, to reset the buzzer high limit. The last words of last row might show UP, press ADJ key will increase the setting limit. Press UPDN key, the word will change to DN; press ADJ key will decrease the setting limit.
Press NEXT key to enter next function.

```
Flash Limit
CIAQ 50    UP
```

In the display, press ADJ key, to reset the flash high limit. The last words of last row might show UP, press ADJ key will increase the setting limit. Press UPDN key, the word will change to DN; press ADJ key will decrease the setting limit.
Press NEXT key to enter next function.

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Relay A. L.

CIAQ 40 UP

In the display, press ADJ key, to reset the relay action limit. The last words of last row might show UP, press ADJ key will increase the setting limit. Press UPDN key, the word will change to DN; press ADJ key will decrease the setting limit.
Note: this function is available in relay output model only.
Press NEXT key to enter next function.

Relay R. L.

CIAQ 20 UP

In the display, press ADJ key, to reset the relay release limit. The last words of last row might show UP, press ADJ key will increase the setting limit. Press UPDN key, the word will change to DN; press ADJ key will decrease the setting limit.
Note: this function is available in relay output model only.
Press NEXT key to enter next function.

R. Humidity

65 %   UP

In the display, press ADJ key, to reset the humidity. The last words of last row might show UP, press ADJ key will increase the setting limit. Press UPDN key, the word will change to DN; press ADJ key will decrease the setting limit.
In order to improve the accuracy of GTF300-AQ/VOC, please adjust humidity. The default relative humidity of gas detector is 65%RH with adjustable range from 40%RH to 80%RH. Press NEXT key to enter next function.

CIAQ
Calibration ?
<UPDN> + <ADJ>

In the display, press UPDN and ADJ keys at same time, to enter calibration function. Press NEXT key to jump calibration function and enter next function.
Warning! Except necessary, do not execute calibration. It is necessary to execute calibration after power on 7 days. An error operating should loss accuracy.

Calibration

CIAQ 1   UP

In the display, user has to finish calibration.
Press ADJ key, to meet ambience CIAQ. In the fresh air, 1 is a recommended value. But in some place, user might use a portable air quality detector to know the ambience CIAQ. During the calibration the ambience CIAQ must be below CIAQ 70. The last words of last row might show UP, press ADJ key will increase the calibrating value. Press UPDN key, the word will change to DN; press ADJ key will decrease the calibrating value.
Press NEXT key to finish calibration and enter next function.

Analog Output
Calibration ?
<UPDN> + <ADJ>

In the display, press UPDN and ADJ keys at same time, to enter calibration function. Before the calibration, user needs prepare an ampere meter and makes series into analog current loop.
Press NEXT key to jump calibration function and enter next function.
Warning! Except necessary, do not execute calibration. It is necessary to execute calibration after power on 24 hr. An error operating should loss accuracy.
Note: this function is available in analog output model only.

Calibration

4 mA   UP

In the display, user has to finish calibration.
The last words of last row might show UP, press ADJ key will increase the current output. Press UPDN key, the word will change to DN; press ADJ key will decrease the current output.
Press NEXT key to finish calibration of 4 mA and enter next function.

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> **Calibration**
>
> 20 mA   UP

In the display, user has to finish calibration.
The last words of last row might show UP, press ADJ key will increase the current output. Press UPDN key, the word will change to DN; press ADJ key will decrease the current output.
Press NEXT key to finish calibration of 20 mA and enter next function.

> **Life Time**
>
> 29 DAYS

In the display, user can read out the used life time of detector. Normally, the sensor of detector has 1,000 days life time. It is necessary to renew the sensor beyond that.
Note 1: due to QC procedure, the used life time might be more than 1 day, but it should be less than 30 days.
Note 2: Life time meter count up during power on only. If the detector is idle for a long time, or used in an environment with high pollution, frequentative power on and off, the lifetime will be shortened even the meter less than 1,000 days.
Press NEXT key; the display will back to the CIAQ display.

3. Alarm message

The concentration of gas is lower than buzzer low limits or higher than the buzzer high limit, the detector not only has audible alarm but also provide clear alphanumeric alarm message for users.

> **High Alarm**
>
> CIAQ   40

It is the CIAQ high alarm display.
Press NEXT key, the buzzer will mute and the display will back to the normal display. If the CIAQ is still higher than buzzer high limit, this message and audible alarm will come again, that will disappear until the CIAQ is lower than the buzzer high limit.

4. Warning message

The GTF300-AQ/VOC gas detector may auto-off under low or high specified voltage. If the gas detector is auto-off, it cannot work for detection. At some of case, the detector cannot work but will provide warning message which reminds user to check the detector or its system.

> **Power Low**

Due to input voltage lower than specified, the detector cannot work.

> **Temp. High**

Due to ambience temperature higher than specified, the detector cannot work.

5. Introduce CIAQ

GTF300-AQ/VOC can detect hydrocarbon compounds in the air, especially high sensitive of hydrogen and transfer the CIAQ (Composite Index of Air Quality) shown on the display. CIAQ define that fresh air and/or zero air is "1". According to concentration of hydrocarbon compounds and hydrogen in the air, the CIAQ is unlimited in theory. Applicant in the living, when concentration of hydrocarbon compounds over some limit in the air, the sense of smell will not have multiple effects, therefore CIAQ is designed in reasonable range in living. Please refer table as below:

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Environment and Application	CIAQ of GTF300-AQ/VOC
Fresh air and/or Zero air	1
Living room	1 - 8
Super market, Convenient store	10 - 20
Office	5 - 20
Road side or Bus stop of downtown	10 - 30
Public lavatory	10 - 40
Packing lot or Tunnel of automobile	10 - 40
Hospital or Sickroom	15 - 25
Smoking room of airport	30 - 90
Temple	30 - 50
Fart (close detecting)	50 - 100
Smelling breath (Around blow 5 sec continuously)	20 - 35
Opening sewage	20 - 40

In above table except zero air CIAQ is absolutely "1", the other index may be different with user actual detecting, but the higher CIAQ means the more pollutant or hydrocarbon compounds exist.

*Remark: This is a preliminary table, please tour GASTECH website www.portadetector.com to get the newest update information.

5.1 Odor detecting

The smell and sense of human is difficult to define, some of scent sense good but some persons might not accept the smell. Although everybody has various different sense of smell that cannot define. Anyway, the smell depends on the concentration of hydrocarbon compounds in the air.

5.2 Smoke detecting

GTF300-AQ/VOC is very sensitive of hydrogen, which generated from smoking or incomplete combustion. Therefore, GTF300-AQ/VOC is suitable for air-conditioner management and non-smoking surveillance. Besides, GTF300-AQ/VOC fire detective performance is superior to normal smoking detector. LPG and LNG gases leakage detection GTF300-AQ/VOC is very sensitive and suitable to detect leakage of Natural Gas (Methane / City Gas) and LPG (Propone).

5.3 Environmental index

CIAQ is objective index of environmental either living in most application. Due to smell and sense of human is difficult to define but GTF300-AQ/VOC is non-subjective instrument that makes comparison and evaluation of environmental.

5.4 Air-conditioner management and air cleaner

There are various factors such as smoking, odor of rotten food, using volatile solvent, using liquid eraser, bad ventilating and so on, cause polluted air and high CIAQ. In order to improve air quality, we may use air cleaner. But nobody knows what the air cleaner performance is? GTF300-AQ/VOC will help user to know the air quality and air cleaner is effect or not.

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5.5 Particular gases detecting

It is not easy to buy suitable gas detector for some of particular gases. In the case, GTF300-AQ/VOC might be a substitute and solution. There are some notices that the concentration of target gas should be 10~1000 ppm, balance gas should be air without interfered gases or exist few stables interfered gases. For example GTF300-AQ/VOC is more sensitive and practical than other professional detector to detect exist less than 100 ppm of hydrogen. If the gas cannot measure by diffusion or high concentration that out of CIAQ range, dilute detection is possible, put GTF300-AQ/VOC in the bottle and takes the sample gases then inject bottle and read the CIAQ. Neither diffusion or dilute, Silicon compounds gases is not suitable to use GTF300-AQ/VOC, e.g. SiH4.

5.6 The best partner of canary

People knew apply canary to detect unknown gas or toxic gas since long ago. Canary will die while exposed toxic gas that warns people. Especially faced with unknown toxic gas, canary has the un-substitute status. The function of GT(F)300 series gas detector is similar canary and sensitive most of hydrocarbon compounds in the air. Therefore, GT(F)300 series gas detector is the best complement with canary while dispatch canary face unknown gas or toxic gas.

6. More application

GTF300-AQ/VOC detector has various applications; besides, above introduction others application may be develop by user.

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