



INSTALLATION INSTRUCTIONS

Open the AT-G-SENSE by undoing the two screws. Remove metal faceplate, turn over and check connection terminals (maximum wire size into terminal block – 2.5mm). See diagram below and then:

1. Connect the output to the remote AT-GSC-16 at CN6 (see diagram below) using two-wire cable (7/0.2mm alarm cable up to 500m). It does not matter which wire goes into which terminal. If installing a stand alone AT-G-SENSE please ignore.
2. Relay outputs – connect to NO or NC as required for one or both relays at position CN4 and CN5. Relays are rated at 24Vdc / 120Vac 1A max (connector block max wire size 2.5mm)
3. Set relay and sounder response delay using jumpers on header HD1 at position 1 & 2. **Factory default setting is 0 minutes.**
4. Set latch using jumper on header HD1 at position 3. **Factory default is Manual Reset.**
5. Set sounder condition using jumpers on header HD1 at position 4. **Factory default is Enabled.**
6. Set remote reset facility using jumper on HD1 at position 5. **Factory default is Enabled.**
7. Connect mains 230V LNE to terminal CN3 labeled LEN (connector block max wire size is 2.5mm)

2. Location Of Sensors

Sensors must be located within the appropriate wire lengths from the central control unit.

In all cases the sensor supplied is designed for maximum sensitivity to a particular gas.

However, in certain circumstances false alarms may be caused by the occasional presence of sufficiently high concentrations of other gaseous impurities. If such a situation is likely to arise installers should check with our Technical Department so that sensor(s) of suitable cross sensitivity can be supplied. Examples of situations where such abnormalities may arise include -

- Plant room maintenance activity involving solvent or paint fumes or refrigerant leaks.
- Plant rooms in fruit ripening/storage facilities because of accidental gas migration (bananas - ethylene, apples - carbon dioxide)
- Heavy localised exhaust fumes (carbon monoxide, dioxide) from engine driven forklifts in confined spaces or close to sensors.

A response delay is built in to the system to minimise the possibilities of false alarms.

Air Conditioning – Direct systems VRV/VRF

EN378 states that detectors to ensure safety have their sensors located in such positions that they monitor the concentration at heights of the occupants of a human occupied space taking into account the characteristics of the refrigerant used e.g. at less than bed height with heavier than air gases in a hotel room. It also states that ceiling voids are regarded as part of the human occupied space.

In a hotel room monitoring in ceiling voids would not strictly comply with EN378

Do's

- Mount the in-room sensor at less than the normal heights of the occupants e.g. in a hotel room this is less than bed height – between 200-500mm off the floor.
- Keep away from draughts and heat sources like radiators etc.
- Avoid sources of steam.

Don'ts

- Do not mount sensors under mirrors, at vanity units or in or near bathrooms.

Machinery Rooms

There is NO ABSOLUTE RULE in determining the number of sensors and their location. However a number of simple guidelines will help to make a decision. Sensors monitor a point as opposed to an area. If the gas leak does not reach the sensor then no alarm will be raised. Therefore, it is extremely important to carefully select the sensor location. Also consider ease of access for maintenance.

The size and nature of the site will help to decide which method is the most appropriate to use. Locations requiring the most protection in a machinery or plant room would be around compressors, pressurized storage vessels, refrigerant cylinders or storage rooms or pipelines. Most vulnerable are valves, gauges, flanges, joints (brazed or mechanical), filling or draining connections etc.

When mechanical or natural ventilation is present mount a sensor in the airflow. In machinery rooms where there is no discernable or strong airflow then options are:

- Point Detection, where sensors are located as near as possible to the most likely sources of leakage, such as the compressor, expansion valves, mechanical joints or cable duct trenches.
- Perimeter Detection, where sensors completely surround the area or equipment.
- With heavier than air gases such as halocarbon and hydrocarbon refrigerants such as R404A, propane and butane , sensors should be located near ground level.
- With lighter than air e.g. ammonia, the sensor needs to be located above the equipment to be monitored e.g. on a bracket or high on a wall within 300mm of, or on the ceiling provided there is no possibility of a thermal layer trapped under the ceiling preventing gas reaching the sensor. (NB. At very low temperatures, such as in a refrigerated cold store, ammonia gas becomes heavier than air).
- With similar density or miscible gases, such as CO or CO₂, sensors should be mounted about head height – 1.5m.
- Sensors should be positioned a little way back from any high-pressure parts to allow gas clouds to form. Otherwise any leakage of gas is likely to pass by in a high-speed jet and not be detected by the sensor.
- Make sure that pits, stairwells and trenches are monitored since they may fill with stagnant pockets of gas.
- If a pressure relief vent pipe is fitted to the system, it may be a requirement to mount a sensor to monitor this vent pipe. It should be positioned about 2m above the PRV to allow gas clouds to form.
- With racks or chillers pre-fitted with refrigerant sensors, these should be mounted so as to monitor the compressors or if extract ducts are fitted the airflow in the duct may be monitored.

Refrigerated Spaces

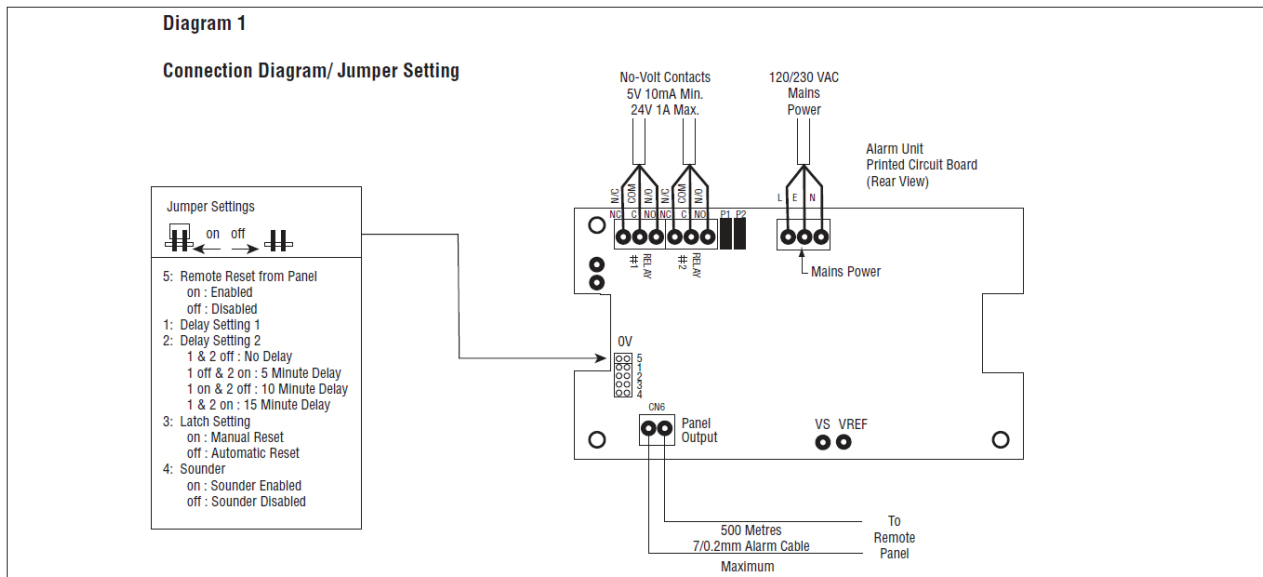
In refrigerated spaces sensors should be located in the return airflow to the evaporators on a sidewall, below head height preferred, or on the ceiling, not directly in front of an evaporator. In large rooms with multiple evaporators, sensors should be mounted on the central line between 2 adjacent evaporators, as turbulence will result in airflows mixing.

3. Typical Settings

Gas: Refrigerant R410A Alarm Set Point: 1% (10,000ppm)

For a particular unit please refer to the gas settings shown on the rating plate.

4. Installation and Wiring Diagram



5. AT-GSC-16 - Installation and Wiring Diagram

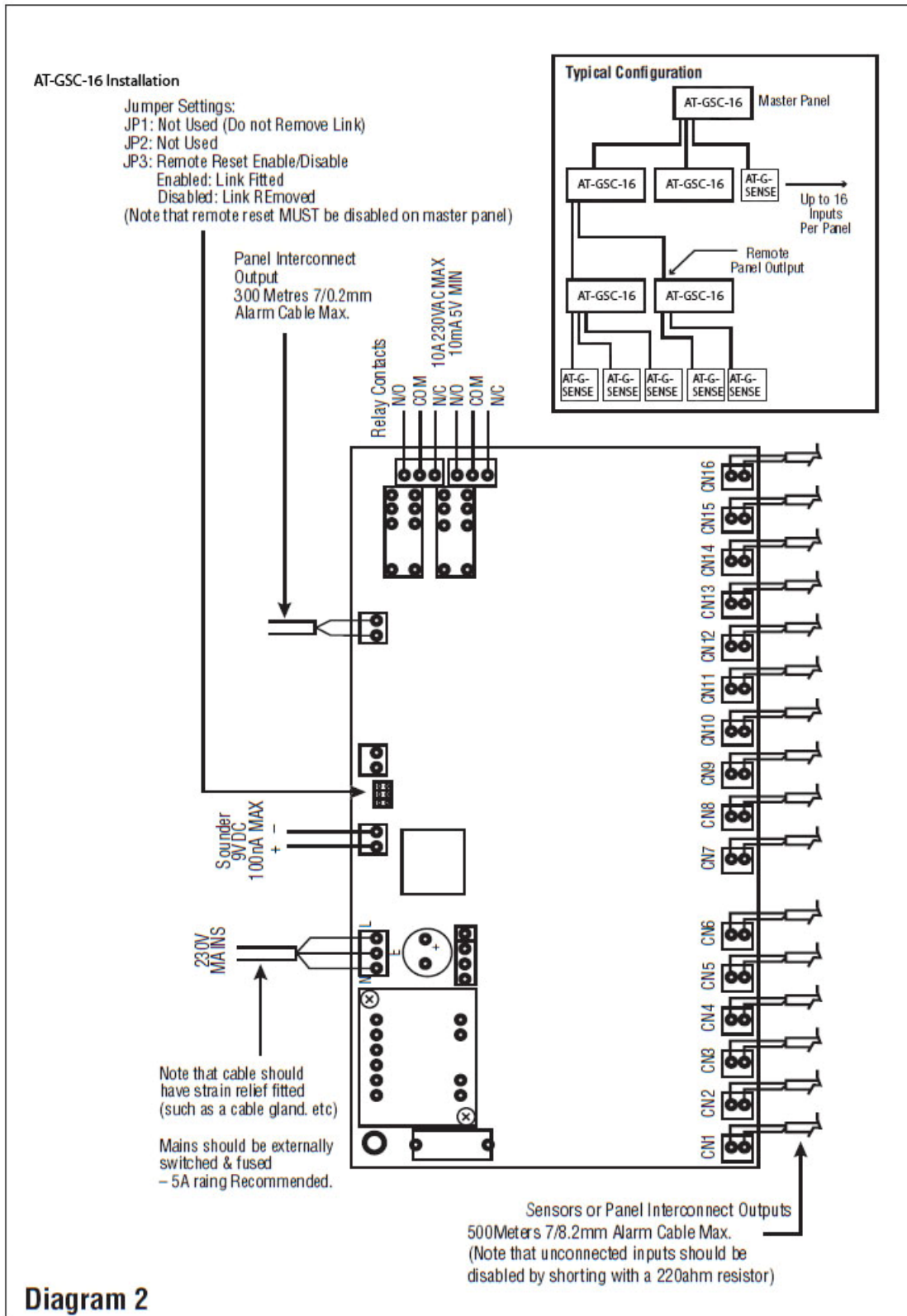


Diagram 2

6. AT-G-SENSE - Operating Instructions

1. On powering up it will sense the presence of gas after an initial warm-up delay of 5 minutes, the green LED will flash at one second intervals during the warm-up.

2. In an alarm condition:

- The green LED stays on
- The red LED will be on
- The siren operates (if it has not been disabled and after a delay if this option has been selected).
- The relay output activates (after a delay if this option has been selected)
- External interface to the AT-GSC-16 panel will be turned on.

The mute button on the exterior of the case may be pressed. (This will switch the sounder off if the sounder disable option is not selected)

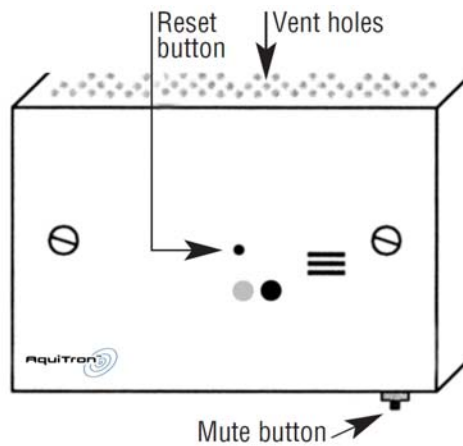
The reset button is accessible via a hole in the front panel, above the green LED, this may be pressed to reset the alarm if the manual reset option is enabled (reset is only effective when the gas has cleared from around the alarm unit, indicated by the red LED turning off).

A non-metallic object such as a match or toothpick should be used to operate the reset button.

If automatic reset is enabled, the alarm will reset by itself without user intervention.

3. Fault Condition:

- The green LED will be off
- The red LED will be on
- External interface to the AT-GSC-16 panel will activate and show the fault condition on that panel



7. AT-G-SENSE – Test / Function Instructions

The AT-G-SENSE is calibrated in the factory and does not require calibrations on installation. After installation, the units should be bump tested. Expose the sensors to test gas (appropriate to the installation) or crack open the valve of a cigarette lighter without igniting it and hold it over the vent holes on the upper side of the AT-G-SENSE. The gas is heavier than air and should fall into the AT-G-SENSE. This will put the system into alarm. The red LED will light showing the system is in alarm. The delay will prevent the siren sounding and relay switching for the preset delay, if delay is set.

To test the siren and or relay function, check the delay is set at zero using the header at HD1 positions 1+2 off as shown on the installation diagram and expose to gas as above. You can mute the siren using the mute button.

After the gas has cleared and the red LED has switched off you can reset the alarm condition including the relay and siren by using the reset button (this is if manual reset has been selected).

Before testing the sensors on site the AT-G-SENSE must be powered up and allowed to stabilize for several hours, preferably overnight.

When testing the sensors ensure that the AT-G-SENSE functions correctly, see section below.

8. AT-G-SENSE – Annual Test

To comply with the requirements of EN378 and the F Gas regulations, sensors must be tested annually. However local regulations may specify the nature and frequency of this test. If not the recommended procedure should be followed. Contact us for details.

When testing the sensors ensure the AT-GSC-16 functions correctly:

Red LED
Siren (if connected) activates
Relays (if connected) activate
Reset operates

9. AT-G-SENSE – Remote sensor head installation

If you do not wish to surface mount the AT-G-SENSE or need to match room décor, we can supply a remote sensor with a decorative faceplate (standard: brushed stainless steel). The remote sensor is mounted in a single gang UK electrical back box 44mm deep to which the vented face plate is fitted.

1. Remove the connector from the sensor PCB to feed the cable through the trunking
2. Immediately refit the connector to the sensor board in the backbox. The AT-G-SENSE and remote sensor must be kept together as they are calibrated together and are a matched pair.

Do not remove the sensor boards from a number of units at the same time in case they get mixed up. If doing so, label them or ensure you check the serial number on the main PCB and the remote sensor PCB are the same when re-installing.

3. If construction / decoration is still going on, fit a standard plastic blanking plate immediately you install the sensor in the back box to avoid dust or damage to the in-room sensor. You can fit the stainless steel fascia when decoration is completed.

10. Agree selectable functions with end-users

You should agree these important functions with the customer so that the system will operate as he/she requires:

1. **Time Delay Response:** Available on the sounder and relays to avoid false alarms, which is set with jumpers. **The default delay is 0 minutes.** You may wish to set to 15 minutes during start up and construction as you may have VOC's (volatile organic compounds) fumes, paint etc in the rooms. They should be reset as required.
2. **Siren:** The units have an internal siren. You can disable this by jumper, **but the default setting is "enabled"**. The customer may not want local alarms especially if you are connecting to a remote monitoring system. Check the customer's preference.
3. **Reset:** In the event of an alarm, you can have the units auto resetting or latched-out requiring manual resetting. **The default is auto reset.** If you are connected to a remote monitoring system you may prefer auto reset as being more convenient. However, if you prefer manual reset you will need to enter a room or wherever you have mounted the AT-G-SENSE to reset it after an alarm. If the unit is connected to an AT-GSC-16, you can also remotely reset the AT-G-SENSE on alarm if HD1 jumper is enabled on the AT-GSC-16 panel.

11 – AT-G-SENSE - Troubleshooting

All AT-G-SENSE units are checked and calibrated before shipping.

1. If on first powering up the unit you have a fault condition, contact us for instructions and support.
2. If subsequently you develop a fault condition, contact us for instructions and support.
3. If you experience spurious alarms in the absence of a leak, contact us for instructions and support.

During operation record any alarms. Establish the cause or likely cause if no obvious leak has occurred. Report these occurrences to your supplier or Aquilar Ltd and we will advise on corrective measures.

12. AT-GSC-16 – Operating Instructions

1. On powering up the green LED will flash and will stay on if there are no faults.
2. If there are faults in any sensor on the system the green LED will go off and the red LED will light indicating the sensor in fault. The output to a master or upstream panel will activate and show the fault condition also on that panel.
3. Should an alarm occur:
 - The green LED stays on
 - The red LED on the relevant channel comes on
 - The relays operate
 - The siren operates (can be muted by key switch)
 - The output to a master or upstream operates to be indicated there as a fault downstream.
4. If all the red LED's are blinking approximately every 5 seconds on a master panel then remove the link on jumper position JP3 as this should be in the disabled position on a master panel. (Factory default setting is disabled.)

13. Mounting Instruction

