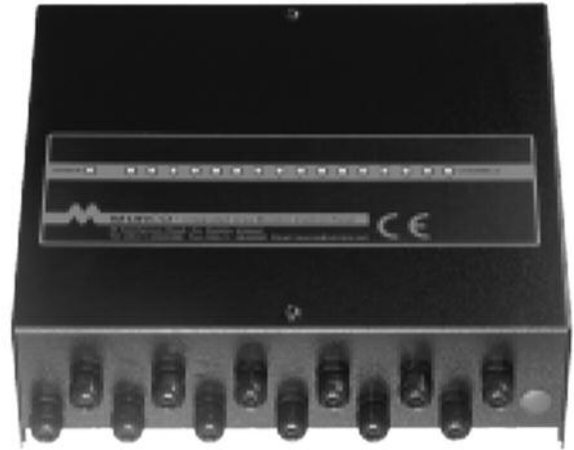


IAM – Integrated Area Monitor

IAM-C – Integrated Area Monitor Control Panel

Installation & Operation*

Content	Page
1- Installation Instructions	2
2- Location Instructions	2
3- Typical Settings	2
4- Installation and Wiring Diagram	2
5- Control panel -Installation and Wiring Diagram	3
6- Operating Instructions	3
7- Test/Function Instructions	3
8- Annual test	3
9- Remote sensor head installation	3
10- Agree Selectable functions with end-users	3
11- Troubleshooting	4
12- IAM-C Panel - Operating Instructions	4
13- Mounting Instructions	4



*Technician use only

This unit must be installed by a suitably qualified technician who will install this unit in accordance with these instructions and the standards set down in their particular industry/country. Suitably qualified operators of the unit should be aware of the regulations and standards set down by their industry/country for the operation of this unit. These notes are only intended as a guide and the manufacturer bears no responsibility for the installation or operation of this unit.

Failure to install and operate the unit in accordance with these instructions and with industry guidelines may cause serious injury including death and the manufacturer will not be held responsible in this regard.

09 ASH (1)



www.heattracing.co.uk
Thorne and Derrick UK
 Tel 0044 191 490 1547 Fax 0044 191 477 5371
 Tel 0044 117 977 4647 Fax 0044 117 9775582
 www.thorneandderrick.co.uk



1- IAM - Installation Instructions

Open the IAM by undoing the two screws. Remove metal faceplate, turn over, and check connection terminals (maximum wire size into terminal block 2.5mm). See diagram 1 and then:

1. Connect the output to the remote IAM-C Control Panel at CN6 (see diagram 2) 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 IAM please ignore.
2. Relay Outputs - connect to NO or NC as required for one or both relays at positions CN4 and CN5.
Relays are rated at 24 V d.c./120 V a.c 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 120/230V LNE to terminal CN3 labeled LEN (connector block max wire size is 2.5mm)

2- IAM Sensor - Location Instructions

Location of Sensors

Sensors must be located within the appropriate wire lengths from the central control unit (if used).

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, propane) from engine driven forklifts in confined spaces or close to sensors.

A response delay may be selected to minimise the possibilities of any problems, if any, that might arise.

Air Conditioning – Direct systems VRV/VRF

EN378 states that at least one detector shall be installed in each occupied space being considered and the location of detectors shall be chosen in relation to the refrigerant and they shall be located where the refrigerant from the leak will collect. In this case refrigerants are heavier than air and detectors should have their sensors mounted low .e.g. at less than bed height in the case of an hotel or other similar Category Class A spaces. Ceiling or other voids if not sealed are part of the 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.
- away from draughts and heat sources like radiators etc.
- avoid sources of steam

Don'ts

- Do not mount sensors
 - under mirrors
 - at vanity units
 - 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, pressurised 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 gas e.g. ammonia, the sensor needs to be located above the equipment to be monitored on a bracket or high on a wall within 300 mm 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 high – say 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.
- 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 high 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.

Weatherproof or splash proof versions of the IAM are not available.

For further detailed Installation tips covering most installations and equipment types.. chillers, air cooled chillers etc see our web site www.murco.ie.

Mains power to the unit should be switched and fused (3 amp rating is recommended)

3- IAM Sensor - Typical settings

Gas: Refrigerant R410A Alarm Set Point: 1% (10.000 ppm)

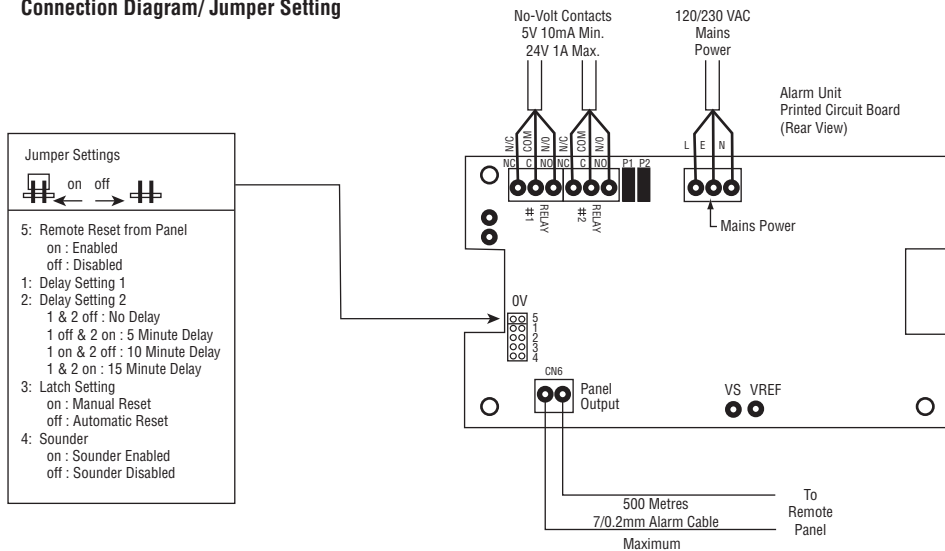
For a particular unit please refer to the gas settings shown on the rating label.

4- IAM Sensor - Installation and Wiring Diagram

See Diagram 1 on next page

Diagram 1

Connection Diagram/ Jumper Setting



5- IAM-C Panel - Installation and Wiring Diagram

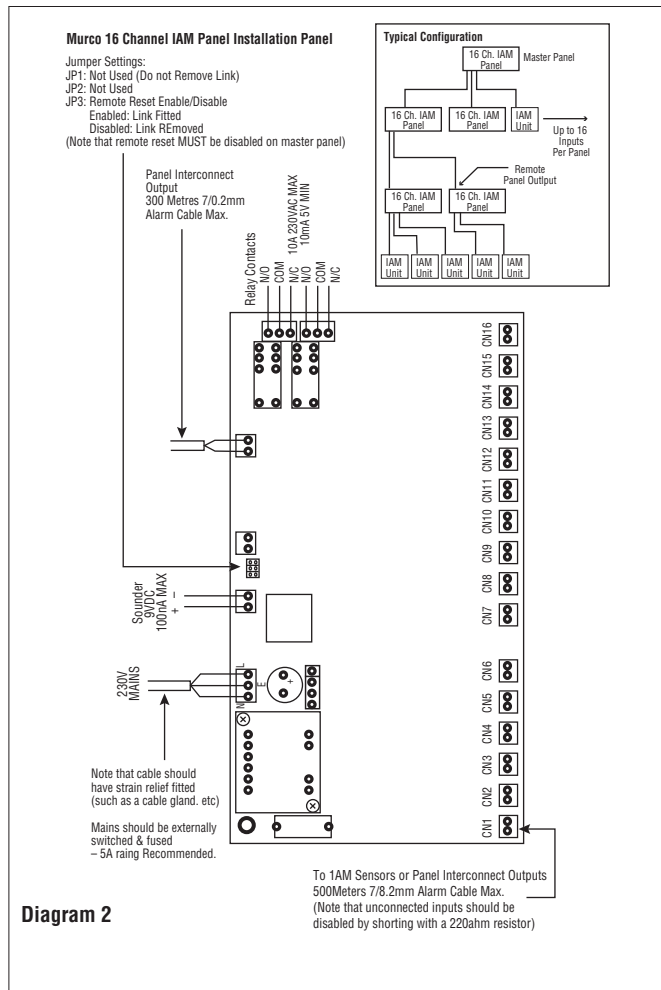
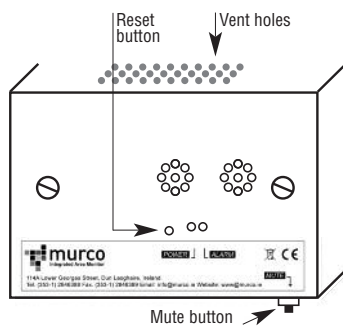


Diagram 2

6- IAM Sensor - Operating Instructions

- 1- On powering up it will sense for the presence of gas after an initial warm-up delay of 5 minutes, the green LED will flash at 1 second intervals during the warm-up.
- 2- In 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 Murco IAM-C 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 Murco IAM-C panel will activate and show the fault condition on that panel

7- IAM Sensor - Test/Function Instructions

The IAM is calibrated in the factory and does not require to be calibrated 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 IAM. The gas is heavier than air and should fall into the IAM. 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 IAM must have been powered up and allowed to stabilize for several hours, preferably overnight.

When testing the sensors ensure that the IAM -C functions correctly, see section below.

8- IAM Sensor - Annual Test

To comply with the requirements of EN378 and the F GAS regulation sensors must be tested annually. However local regulations may specify the nature and

frequency of this test. If not the Murco recommended procedure should be followed. Contact us for details.

When testing the sensors ensure the IAM-C Control Panel functions correctly:

- Red LED
- Siren (if connected) activates
- Relays (if connected) activate
- Reset Operates

After exposure to a substantial gas leak, sensor should be checked and replaced if necessary.



Check local regulations on calibration or testing requirements.

9- IAM Sensor - Remote sensor head installation

If you do not wish to surface mount the IAM or need to match room decor, 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 IAM 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 SS vented plate when decoration is completed.
4. **Cleaning: the decorative face plate should be lightly dusted – it should not be sprayed with cleaning/polishing aerosols.**

10- Agree Selectable functions with end-users:

You should agree these important functions with the customer so that the system will operate as required:

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 (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"** in compliance with EN378. 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 manual 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 IAM to reset it after an alarm. If the unit is connected to an IAM-C panel, you can also remotely reset the IAM on alarm if HD1 jumper is enabled.

11- IAM Sensor – Troubleshooting

All IAM 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.

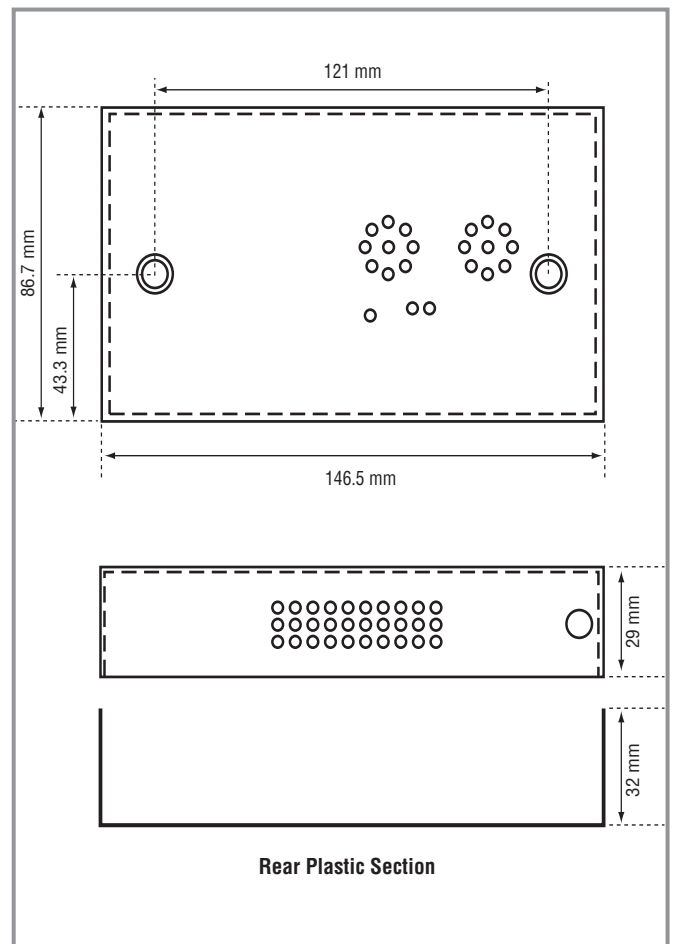
- 3- If you experience spurious alarms in the absence of a leak, contact us for instructions and support.

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

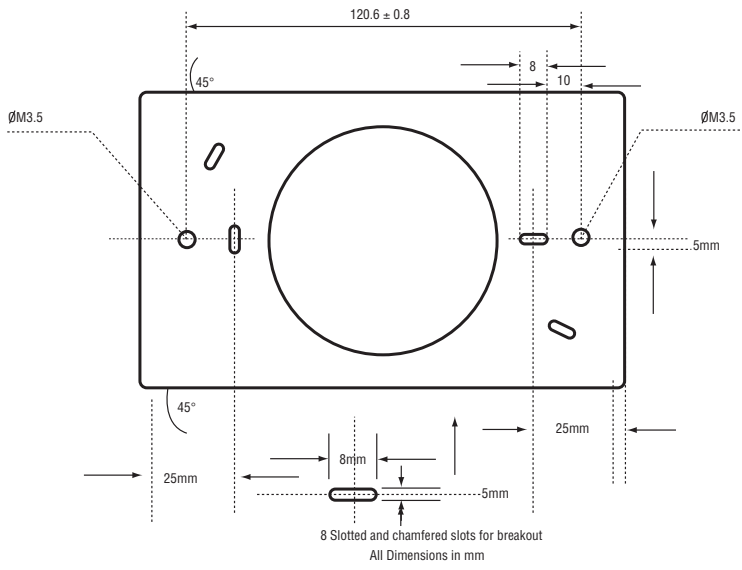
12- IAM -C panel - Operating Instructions

- 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 LEDs 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 Instructions



Rear Plastic Section



IAM-C Panel

