

# **MURCO – Integrated Area Monitor (IAM)**

## **Sensor & Control Panel**

### **Technical Guide**

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## Murco Integrated Area Monitor (IAM) Technical Data

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## **Introduction**

The Murco IAM and its dedicated IAM control Panel allows for full compliance with both EN378 and ASHRAE 15

The Murco IAM consists of an enclosure incorporating a sensor and monitor to detect gas leaks in an area, room, zone, airspace or airflow. It has an internal siren to sound a local alarm. The Murco IAM has two relays to operate area isolation valves or control external equipment i.e. an air conditioning unit, and / or report to external systems.

The Murco IAM is designed to fit into an existing double gang wall socket-mounting box, either recessed (UK standard) or surface mounted. Dimensions: 87 x 147 x 61mm - (Surface Mounted Version), 87 x 147 x 29mm (Recessed Version)

It also has a dedicated output to report to a Murco Control Panel. This panel provides a remote supervised alarm, shows the sensors in alarm, and has mains rated relays for control purposes. The Murco IAM control panel enables you to construct and monitor the large monitoring systems effectively and competitively. It facilitates quick identification of the location of a leak so that it can be rectified promptly.

It has 16 channels allowing the connection of up to 16 Murco IAM sensors or IAM control panels. Each IAM control panel may have further remote IAM sensors or panels connected. In this way the system can be expanded indefinitely by multiples of 16.

## **Features**

### **IAM Sensor**

- One level of alarm
- Two relays to switch 24V (24V 1A Max) at preset alarm level, auto or manual reset selected by jumper. Reset button for manual reset. Remote reset option from remote IAM control panel.
- Adjustable delay (0, 5, 10 or 15 minutes) to avoid false alarms, using jumpers.
- Local alarm indication, siren and red LED
- Siren on/off, selectable
- Mute button for siren
- Two-wire signal to an optional remote Murco control panel which indicates the sensor in alarm – 16 channels max. 16 control panels can be connected to a master control panel allowing expansion up to 256 sensors. You can expand further by multiples of 16.

### **IAM Control Panel**

- Enables construction and monitoring of large systems effectively and competitively.
- Facilitates quick identification of the location of a leak so that it can be rectified promptly.

- Has up to 16-channel capability, which can be connected up to 16 remote IAM sensors or panels.
- Red LED display shows the channel in alarm and siren sounds so that it can be located quickly.
- Local siren with siren deactivate key to provide a local or remote alarm.
- Constant power monitoring (Green LED)
- Constant fault monitoring Green LED off, Red LED displays the fault, no siren operates.
- Remote reset, which will reset any sensor or IAM control panel connected to its 16 channels once the particular alarm condition has cleared.
- Power Supply 230V

## **Murco IAM Sensor - 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).

1. Connect the output to the remote IAM Control Panel at CN6 using two-wire cable (7/0.2mm Alarm Cable up to 500m).  
It does not matter which wire goes into which terminal.
2. Relay Outputs – connect NO or NC as required to one or both relays at positions CN4 and CN5. Relays are rated at 24V 1A max (connector block max wire size 2.5mm)
3. Set relay delays at jumper position HD1 position 1 & 2, factory default setting is **10 minutes**.
4. Set Latch setting at jumper HD1 position 3. Factory default is **Latched**.
5. Set Sounder condition at jumper HD1 position 4. Factory default is **Enabled**
6. Set remote reset facility at jumper HD1 position 5. Factory default is **Enabled**.
7. Connect mains 230V LNE to terminal CN3 labeled LEN (connector block max wire size is 2.5mm)

## **IAM Sensor - Location Instructions**

Refrigerants are generally heavier than air, so the area monitor needs to be mounted generally within about one metre of floor level.

Choose a location away from draughts and heat sources like radiators etc.

The unit should not be installed in areas where moisture may build up (i.e. in a kitchen or bathroom)

Mains power to the unit should be switched and fused (3 or 5 amp rating is recommended)

## **IAM Sensor - Operating Instructions**

When the IAM is powered-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.

When the alarm is activated, the sounder, relay, and external interface to the Murco Control Panel will be turned on, and the red LED will be on.

The mute button on the exterior of the case may be pressed. (This will switch the sounder off)

The reset button is accessible via a hole in the front panel (near the green LED) this may be pressed to reset the alarm (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.

## **IAM Sensor - Maintenance Instructions**

Test the sensors annually by resetting the delay to zero and exposing the sensor to calibration gas (10,000 PPM R407C in air). If the IAM does not go into alarm contact us for re-calibration instructions.

Before testing the sensors on site the IAM must have been operating for a minimum of 2 hours.

## **IAM Sensor - Test Function Instructions**

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 very high concentration will force the system into alarm. The red LED will light showing the system is in alarm. The delay will prevent the siren sounding for the preset delay.

To test the siren and or relay function, set the delay at zero using the jumper at HD1 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 gone off you can reset the alarm condition including the relay and siren by using the reset button.

## **IAM Sensor - Annual Calibration Test**

Proceed as above but using calibration test gas (R407C @ 10,000 PPM in air)

When testing the sensors ensure the IAM control panel functions correctly:

- Red LED

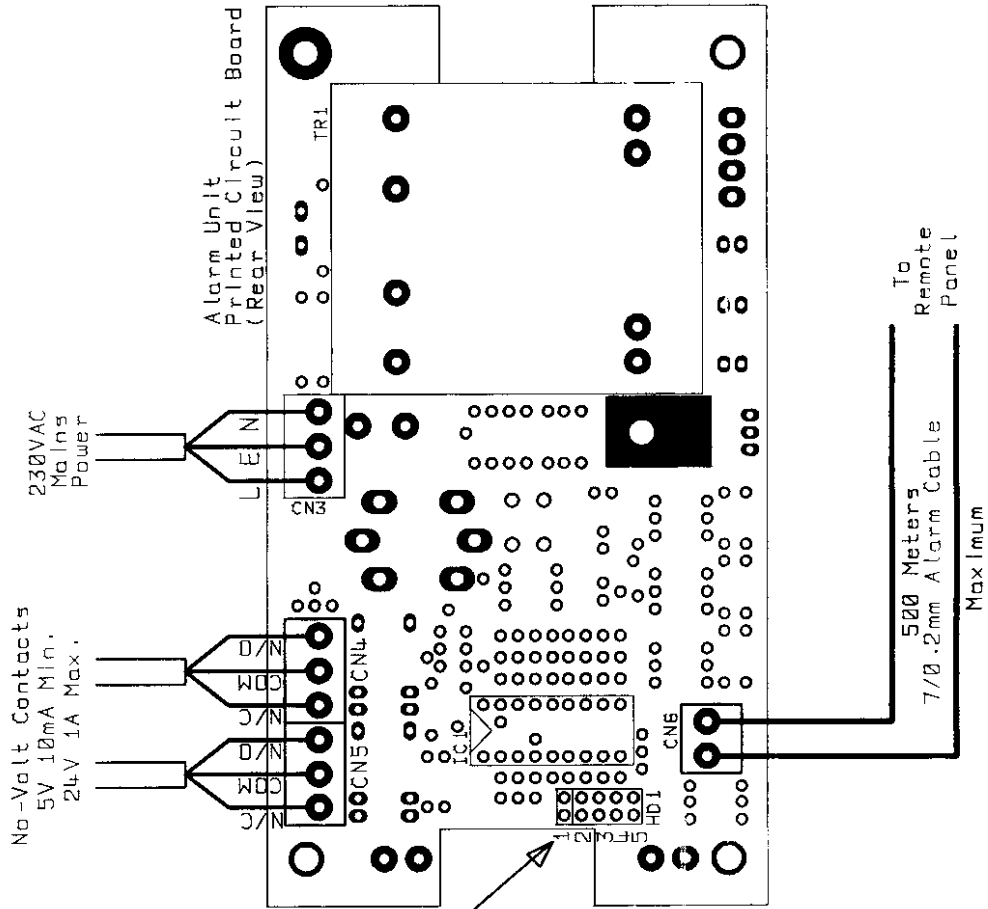
- Siren (if connected) activates

- Relays (if connected) activate

- Reset Operates

# IAM Sensor Installation Diagram

## Connection Diagram / Jumper Settings:



Jumper Settings	
	ON
	OFF
1: Delay Setting 1	
2: Delay Setting 2	
1 & 2 off: No Delay	
1 off & 2 on: 5 Minute Delay	
1 on & 2 off: 10 Minute delay	
1 & 2 on: 15 Minute delay	
3: Latch Setting	
on: Manual Reset	
off: Automatic Reset	
4: Sounder	
on: Sounder Enabled	
off: Sounder Disabled	
5: Remote Reset from panel	
on: Enabled	
off: Disabled	



## IAM – Integrated Area Monitor Sensor



The Murco IAM complies in full with EC regulation 2037/2000 and European standard EN378.

The Murco IAM consists of an enclosure incorporating a sensor and monitor to detect gas leaks in an area, room, zone, airspace or airflow.

The Murco IAM has two relays to control external equipment i.e. an air conditioning unit, and / or

report to external systems. It also has a dedicated output to report to a Murco IAM Control Panel. The IAM control panel shows the sensors in alarm and has a mains rated relay for control purposes and has an output to connect to other panels allowing very large systems to be constructed.

The Murco IAM is designed to fit into an existing double gang wall socket mounting box, either recessed (UK standard) or surface mounted.

The Murco IAM is 230V or 120V AC powered, with constant fault and power on monitoring.

### Features:

- One level of alarm
- Two relays to switch 24V at the preset alarm level, auto or manual reset selectable by jumper.
- Adjustable delay to avoid false alarms, selectable by jumpers, 0, 5, 10, or 15 minutes
- Local alarm indication, siren and red LED
- Siren activated or de-activated, selectable by jumper.
- Mute button for siren
- Two wire signal to an optional remote Murco panel which can indicate which sensor is in alarm – 16 channels max. Up to 16 panels can be connected to another 16-channel panel allowing expansion up to 256 sensors. You can expand further by multiples of 16.

### Approximate Dimensions :

87 x 147 x 61mm (Surface Mounted Version)

87 x 147 x 29mm (Recessed Version)

## **IAM Control Panel Installation Instructions**

1. Undo 2 screws holding front plate
2. Fix panel to a flat surface
3. Connect 16 remote IAM sensors to IAM control panels at positions CN1 through CN16 using 2 wire cable (7/0.2mm alarm cable up to 300m length, it does not matter which wire goes to which side of the terminal block position)
4. Mount sounder supplied if required and connect to CN9 as marked (connector block maximum wire size 2.5mm).
5. Mains LEN connect to CN17 and should be externally switched and fixed at 5A.
6. Connect to relay if required at positions CN1 and CN20 N/O or N/C as preferred. Relays are rated at 10A 230V AC max. Both operate at the same preset alarm level.
7. Connect panel interconnect if being used at position CN22. 2 wire cable (7/0.2mm alarm cable up to 500m length, it does not matter which wire goes which terminal)
8. Set remote reset Enable/Disable at HD1 using Jumper JD3. Factory default is Enabled.

## **IAM Control Panel Operation Instructions**

When powered up the green Led will flash. Red LED's will also light if not connected to a remote panel or sensor. If a remote sensor is connected and in its 5 minute warm up phase the control panel red LED will blink until the warm up has completed. Any unconnected terminals need to be disabled by fitting a resistor as specified.

Should any IAM sensor go into alarm the corresponding Red LED lights on the IAM control panel. The Siren (if fitted) sounds, and the relays and external interface will activate. The siren can be deactivated using the key switch. When the leak has been fixed and the gas has cleared, pressing the reset button will reset the panel and the in room IAM unit.

On alarm the red LED will light to show the channel in alarm. The siren (if connected) will sound and the relays will switch.

The siren if fitted may be muted using the key supplied.

**When the alarm condition clears the system and the sensors in alarm may be reset using the reset button.**

The reset button will reset any panel or sensor connected. It will not reset any master panel to which it is connected i.e. it resets downstream.



## Murco Integrated Area Monitor Control Panel



The Murco IAM control panel enables you to effectively and competitively construct and monitor major integrated leak detection systems. It facilitates rapid identification of the location of a leak so that it can be rectified promptly.

### Features

- Has up to 16 channels, which can be connected to 16 remote IAM sensors or optionally the system can be expanded by connecting up to sixteen IAM control panels if desired, thus allowing up to 256 sensors or even up to 4096 sensors on one system.
- On Alarm the Red LED shows the channel in alarm and the siren sounds.
- A siren deactivate key is provided giving a local or remote alarm.
- Constant power monitoring (Green LED)
- Constant fault monitoring, a fault is indicated by the Green LED off, and the Red LED displays the channel in fault, no siren operates.
- Remote reset, will reset any sensor or IAM control panel connected to its 16 channels once the particular alarm condition has cleared.
- Two relays (10A 230VAC) which both switch on alarm and enable control of external equipment i.e. external air conditioning unit.
- 230 or 120 VAC power supply.
- Two wire (7/ 0.2mm, 300 M) output signal to another IAM control panel allowing construction of large systems.

Dimensions: 262 x 255 x 82mm

Weight – 2.6KG

## EN378 Compliance

European Community regulation no 2037/2000 on ozone depleting substances and the new European standard EN378 - refrigerating systems & heat pumps-safety & environmental requirements which replaced all national European standards by December 2000 requires the use of fixed gas detectors in all Refrigerant and Air-Conditioning machinery rooms (as does ASHRAE 15- 1994 in the USA) and in air-conditioned spaces under certain circumstances.

Use of the Murco IAM alone or with its dedicated control panel allows for full compliance with both EN378 and ASHRAE 15 –1994 in the simplest way, at the lowest cost possible, both in machinery rooms and in air conditioned spaces where special care is required.

***In relevant air-conditioning applications, in order to comply with EN378, it is necessary in our view to:***

- Provide a local alarm in the space being monitored to warn occupants to leave the area (this is the simplest solution) or,
- Sound a remote supervised alarm i.e. where it is permanently monitored, so that the area may be cleared under supervision, or,
- Activate supply and return valves such that an area is isolated from the system, or,
- Possibly switch off and isolate an external unit using supply and return valves.

The Murco IAM meets all of these requirements