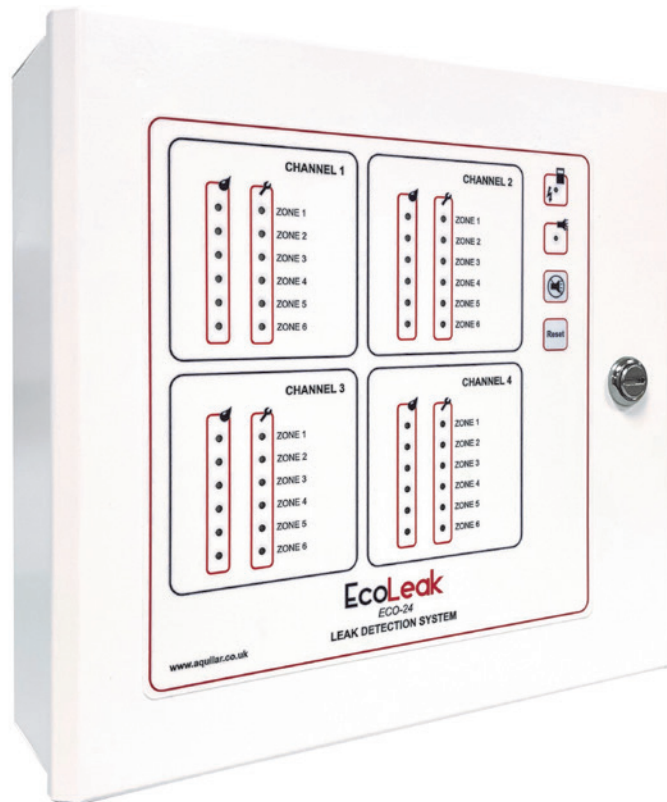


# AquiTron

Eco-24  
24 Zone Panel



**INSTALLATION  
& OPERATION  
INSTRUCTIONS**



**aquilar**  
leak detection solutions

# Eco-24

## 24 Zone Panel

Please read these instructions carefully and keep them in a safe place (preferably close to the module) for future reference. These instructions must be followed carefully to ensure proper operation.

### A. GENERAL INFORMATION

The Eco-24 alarm panel is designed for use with the AT-SRG for refrigerant gas leaks. It is also compatible with all EcoLeak sensing cables and sensors for detection of liquid.

Eco-24 features four channels each with six independent zones allows a total of twenty-four separately alarming zones. The Eco-24 is constantly monitored for leaks and faults giving real time alerts and monitoring for an increased number of sensors.

#### INSTALLATION ITEMS (NOT SUPPLIED)

- Wall fasteners for surface mounting (four screws)
- Rubber or elastomeric washers to seal at mounting points

#### TOOLS REQUIRED

- Drill or hole punch for electrical conduit entries
- Phillips (cross-head) screwdriver
- Small flat-head screwdriver

#### STORAGE

Keep the module in a dry place prior to installation to avoid possible damage to internal components.

#### ADDITIONAL ITEMS

3676 AT-PSU-12-3

Power Supply Unit - Excluding Batteries.

7802 AT-BAT-NP17-12

Replacement 12Vdc, 17Ah Battery

### B. PRODUCT INFORMATION

#### ECO-24 POWER

100 to 275Vac, 50-60 Hz , 12/24Vdc +/- 20% maximum

#### POWER CONSUMPTION

Standby Wattage : 6 Watts

#### RELAYS

**Number:** 12 Total

4 x Channel relays for Leak

4 x Channel relays for Fault

2 x common Leak

1 x Common Fault

1 x Common for remote Sounder (leak and Fault)

**Type:** SPDT

**Rating:** 3 A at 250Vac/24Vdc

#### SENSING CABLE COMPATIBILITY

All EcoLeak Sensing Cable

#### PROBE COMPATIBILITY

All EcoLeak and AquiTron Water Sensing Probes, AT-SRG sensor for Refrigerant Gas

#### DETECTION PROBES

1 x EL-MPS-R or 4 x AT-PROBE-TS\*\* per zone

#### MAXIMUM LENGTH OF SENSING CABLE

30 metres per zone

#### MAXIMUM LENGTH OF LEADER / JUMPER CABLE

300 metres per zone

#### NUMBER OF ZONES

\*\* Additional EOL resistor needed.

## Eco-24 24 Zone Panel

### SENSING CIRCUIT

2 Wire

### CABLE ENTRIES

20mm dia 26 total

25mm dia 8 total

### DIMENSIONS AND WEIGHT

315 x 270 x 100mm W x H x D

3.5 KG

### WORKING TEMPERATURE RANGE

5°C to 40°C non-condensing

### STATUS LED

Power Mains-Green, Leak-Red, Cable break-Yellow

### AUDIBLE ALARM

90dB at 10cm

### BATTERY BACK-UP

24 hours, when used with AT-PSU-12-3 and battery

(\*Actual time on battery dependant on the panels current output load).

### APPROVALS

BS EN 61000-6-3 2021

BS EN 61000-6-1 2019

UKCA

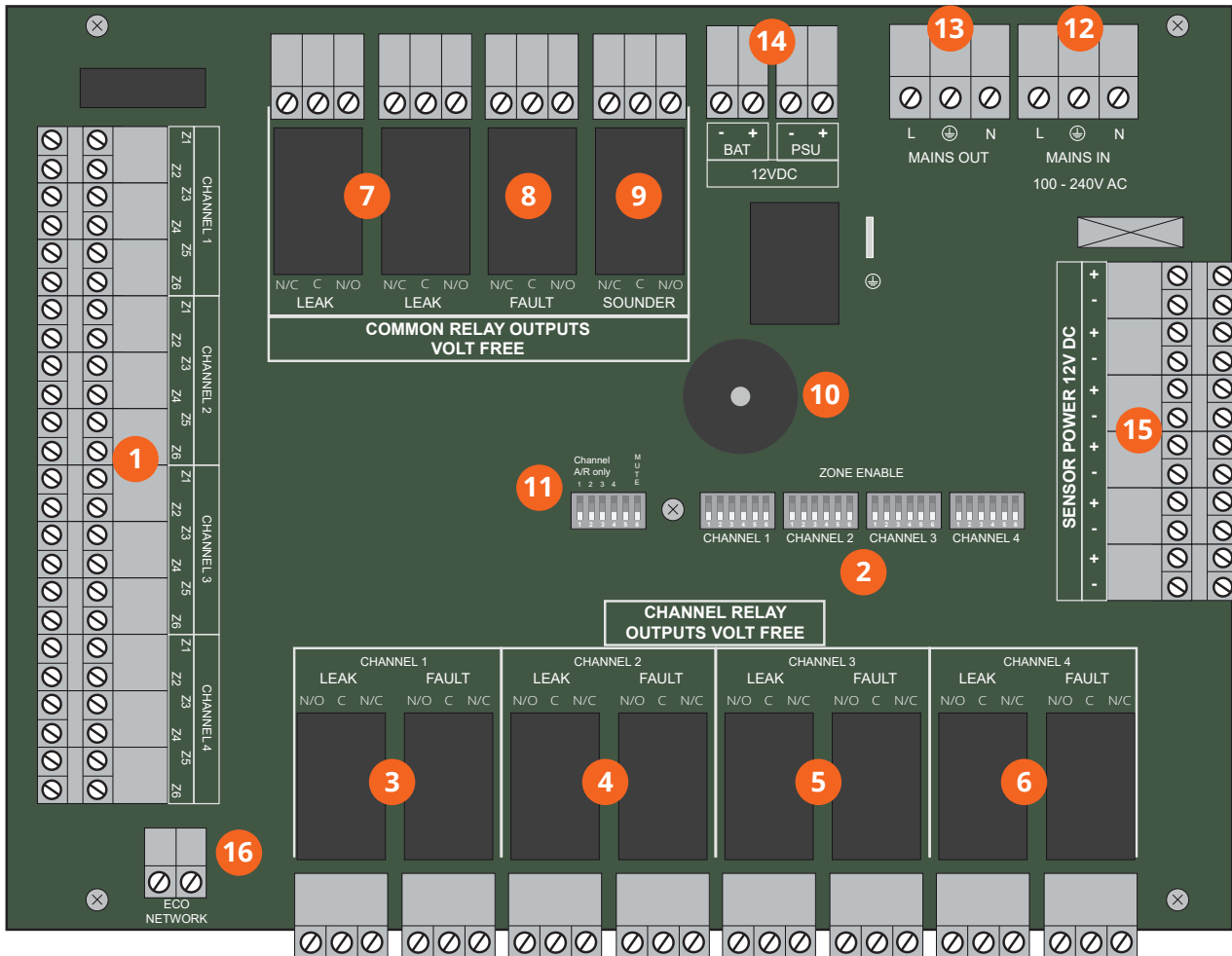
## C. ALARM PANEL MOUNTING

The Eco-24 leak alarm panel should be mounted on an internal flat surface away from direct contact with water. 4 x fixing holes are provided along with several 20/25mm diameter knockouts. To access the fixing holes it is recommended the circuit board is removed prior to mounting and any holes knocked out/drilled for conduit being fitted. To remove the circuit board the door board ribbon cable connector and earth bond lug should be carefully unplugged from the circuit board first.

Remove the five fixing screws retaining the board. Carefully remove the circuit board and keep safe. Once the enclosure has been fixed, refit circuit board taking care not to overtighten screws. The earth lug and door board ribbon cable must also be refitted for correct operation of this device.

Eco-24  
24 Zone Panel

**D. COMPONENTS OVERVIEW**



- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. 4 Channels - 6 Zones sensor connections (each channel)</li> <li>2. Zone Enable dipswitch.</li> <li>3. Channel 1 leak and fault relays</li> <li>4. Channel 2 leak and fault relays</li> <li>5. Channel 3 leak and fault relays</li> <li>6. Channel 4 leak and fault relays</li> <li>7. Common leak relays</li> <li>8. Common fault relay</li> </ol> | <ol style="list-style-type: none"> <li>9. Sounder relay</li> <li>10. Buzzer</li> <li>11. Auto reset switch / Sounder mute switch</li> <li>12. Mains in 100-240Vac</li> <li>13. Mains out 100-240Vac</li> <li>14. Battery and PSU connection</li> <li>15. 12 x 12 Vdc output connectors</li> <li>16. Eco-Net Network Connector</li> </ol> |
|--|--|

Unit 30, Lawson Hunt Industrial Park,  
Broadbridge Heath, Horsham, West Sussex,  
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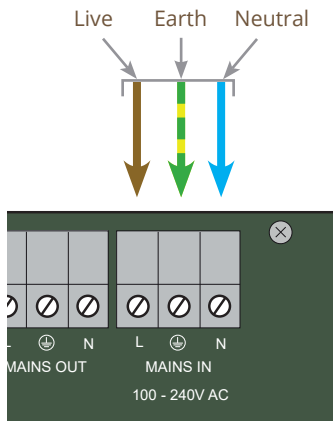
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www.aquilar.co.uk

Eco-24  
24 Zone Panel

**D. POWER CONNECTION**

- Important.** This unit must be earthed. If the protective earth conductor terminal is also used for other bonding purposes, the protective conductor shall be applied first and secured independently of other connections. The protective conductor shall be connected in such a way that it is unlikely to be removed during servicing that does not require disconnection of the protective conductor.
- Important.** All electrical connections must be made by a suitably qualified technician in accordance with current electrical regulations.
- Important.** All connections should be made before applying power.

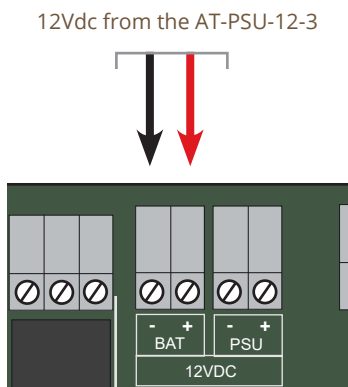


The ECO-24 has flexible power options.

It is recommended when this alarm panel is connected to 230Vac mains power it is via an un-switched 3A fused spur.

The panel has the capability to be connected to 100 – 270Vac, or 12Vdc on separate terminals.

**E. BATTERY BACKUP CONNECTION**



The Eco-24 can be used with the 3676 AT-PSU-12-3 and to provide continued operation in the event of a mains power failure for up to 24 hours when fitted with an appropriate battery.

The 12Vdc output from the AT-PSU-12-3 should be connected into the '12Vdc BAT' input on the Eco-24 alarm panel. For continuous protection in the event of a mains failure the AT-PSU-12-3 must be fitted with an AT-BAT-NP17-12

When operating on battery the fault relays will operate to indicate mains power has been lost. All other functions will be as normal.

**Important!: In battery backup configuration the additional mains power input is not required and the ECO-24 should only be powered via the 12V Battery input.**

- Important.** The Eco-24 Alarm panel should still be earthed.

## Eco-24 24 Zone Panel

### F. TWO WIRE SENSING: ECOLEAK SENSING CABLE, ECOLEAK PROBES

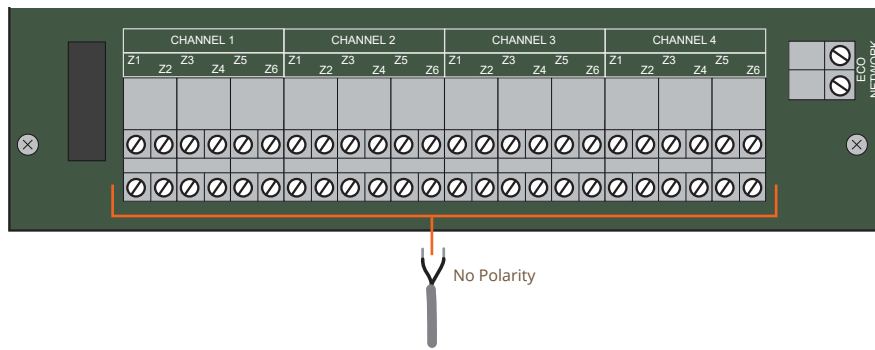
The Eco-24 alarm panel is compatible with the EcoLeak two wire sensor system. Use Aquilar EcoLeak sensing cable or probes for liquid leak sensing.

Up to four AT-PROBE-TS per zone can be used with this panel. An EcoLeak EOL must be used on each zone to prevent nuisance fault alarms.

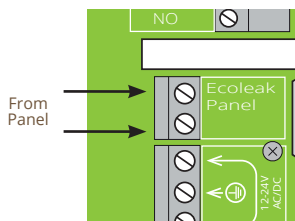
This system is also compatible with the AT-SRG sensor for refrigerant gas.

Use of other/third party sensing devices may cause the panel to malfunction.

**All zones that have sensors attached must be enabled for correct operation. This is done using the 'Zone Enable' dipswitches. There is one on/off dipswitch for each zone. [See section J](#)**



#### AT-SRG



The AT-SRG sensor can be directly connected to a zone input on an EcoLeak alarm panel for central/remote monitoring.

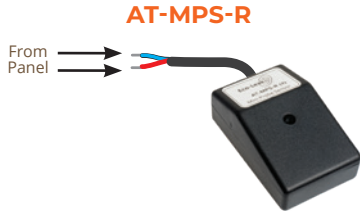
The AT-SRG-12/24 can be powered from the Sensor Power section. [See section H](#)

#### AT-ECO-SC



The AT-ECO-SC connects to the panel via an AT-ECO-LC ( 2 core grey cable ). There is no polarity how the sensing cable connects to the ECO-24. Maximum sensing cable length is 30M.

## Eco-24 24 Zone Panel



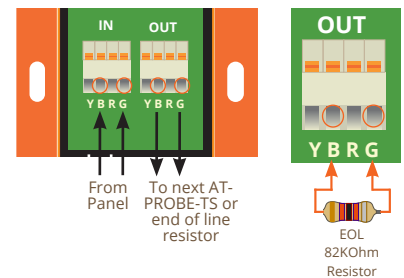
The AT-MPS-R connects to the panel a 2 core cable, this cable can be extended and when connecting the probe to the panel no polarity is to be observed.

Note: Only one AT-MPS-R sensor per zone for correct operation.

### AT-PROBE-TS



The ECO-24 can be connected to 4no AT-PROBE-TS per channel. The four probes can be daisy chained, a two core must be daisy chained from the B and G terminals ( Black and Green ). The last probe is required to have an 82K Ohm resistor as an end of line. This resistor must be connected to the out terminal strip across the B and G ( Black and Green).



Resistor supplied separately

### ECO-BCB



The ECO-BCB allows a user to install two separate leak sensors on one zone on an ECO panel. The two separate sensors are monitored individually for both leak and fault. When one of the sensors trigger a leak or a fault alarm the panel will report the alarm accordingly.

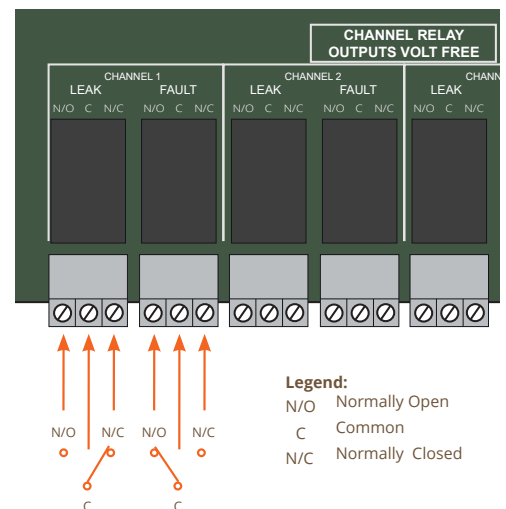
## G. RELAYS

A total of twelve relays are available for connection to external equipment. All of the Eco-24 relays have common, normally open and normally closed volt free contacts. No power is available from them. If using them to control equipment that requires power, an external power source must be supplied and the relay used as a switch. Please see relay connection section for further connection guidance. The relays are rated for a maximum load of 3A 250V. Exceeding this may cause irreparable damage to the alarm panel.

2 Relays shows are replicated throughout the panel with leak relay is normal operation and fault relay in a fail safe operation.

**Warning Shock Hazard! Caution 230V mains voltage could be present at these relays that may require isolation elsewhere.**

### Circuits shown with panel powered On



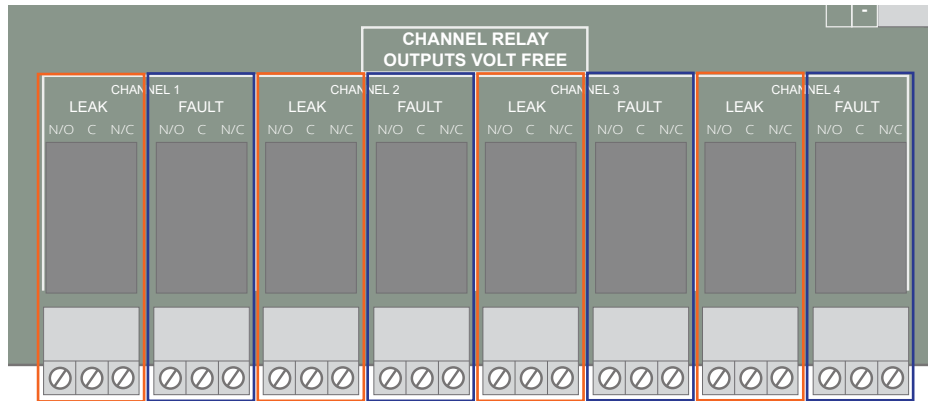
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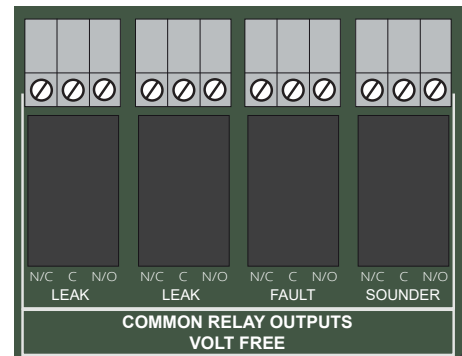
## Eco-24 24 Zone Panel



- Channel 1/2/3/4 Leak relays. These relays only operate when a leak is detected on any of the six zones within the relevant channel. (Zones must be enabled, [see section J](#))
- Channel 1/2/3/4 Fault relays. These relays only operate when a fault is detected on any of the six zones within the relevant channel. (Zones must be enabled, [see section J](#))

### COMMON RELAYS

- Common Leak relays will operate when a leak is detected on any zone/channel.
- Common fault relay will operate when a fault is detected on any zone/channel.
- Sounder relay will operate when a leak or fault is detected on any zone/channel.
- The fault relays will also 'operate' when power is lost to the panel.



**IMPORTANT!** Relay output terminals refer to the panel in its 'off' state. The Break/Fault relays are energized when the panel is mains powered. Once power is applied to the panel the normally open and closed terminals are reversed.

All relays will only reset when the leak/fault has been rectified and the reset button is operated. Pressing the mute button has no effect on channel or common relay outputs\*.

(\*Mute button will reset the dedicated sounder relay).

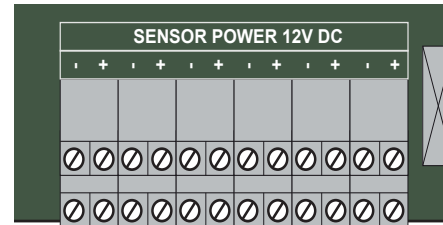


## Eco-24 24 Zone Panel

### H. POWER OUTPUT CONNECTIONS

The Eco-24 has 12 x 12Vdc output connectors for connection of accessories such as the AT-SRG refrigerant gas sensor.

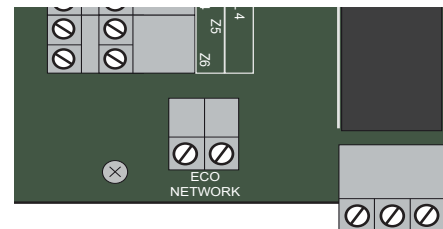
**IMPORTANT! Do not exceed 2A total load. Overloading this output will cause irreparable damage to the panel.**



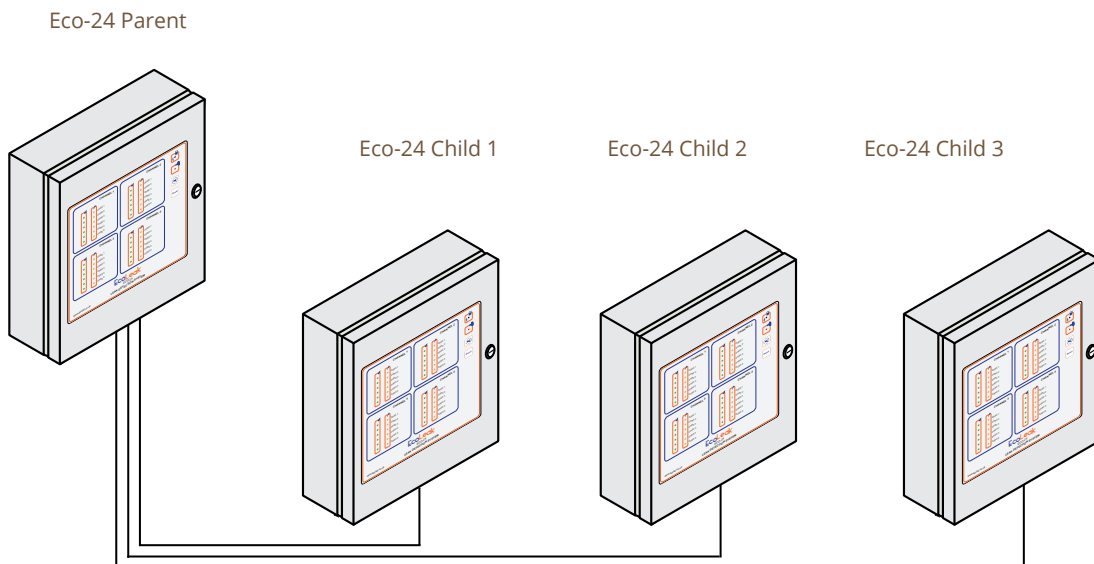
### I. ECO-NET NETWORK CONNECTION

The Eco-24 has a dedicated output connector for parent / child configuration of panels. This can be used in any 'child Eco-24' to provide live 'Leak', 'Fault' or 'Normal' panel status to a parent or child EcoLeak Panel.

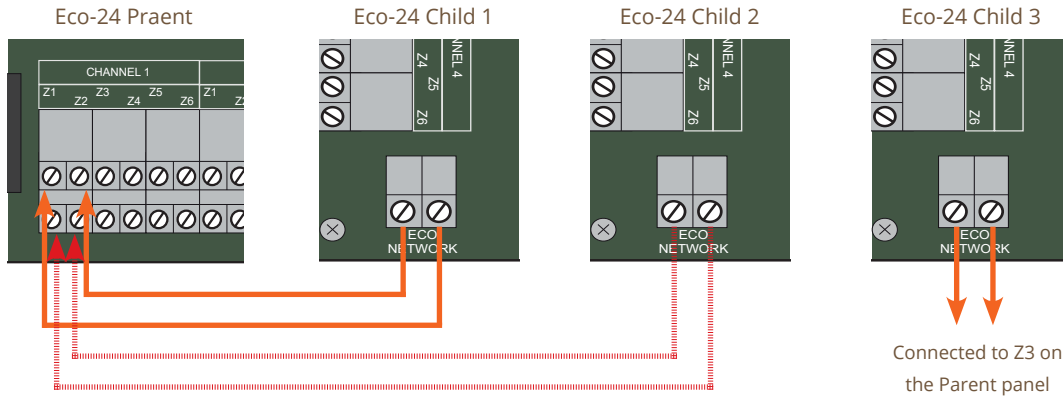
This allows a single Eco-24 parent or child panel to monitor up to twenty four Eco-24 child panels using a simple 2c wire link.



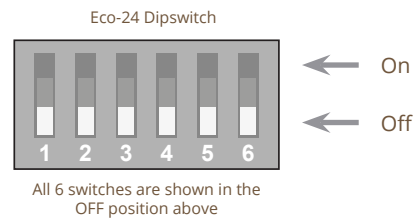
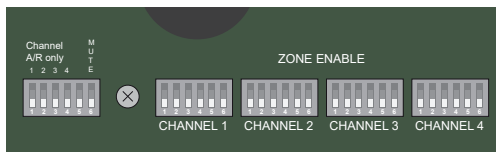
### TYPICAL SETUP



## Eco-24 24 Zone Panel



### J. DIPSWITCHES



The Eco-24 uses dipswitches to enable/disable several operations.

#### CHANNEL A/R

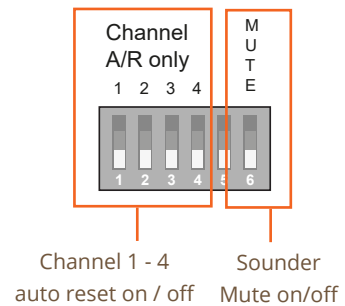
Off: (default) Alarms must be reset by manually pressing the panel reset button after they have been cleared.

On: Alarms will automatically reset as soon as the leak or fault is cleared.

#### SOUNDER MUTE

Off: (default) Internal buzzer will sound when the panel goes into alarm.

On: Internal buzzer is muted (alarm LED will still show on the panel).



#### ZONE 1-6 ENABLE

Off: (default) Zone is disabled. **Alarms will not be indicated on the panel for this zone even if a sensor is connected.**

On: Zone is enabled. This zone will operate as normal monitoring any attached sensor for leaks and faults.



**Note:** Only enable zones that have a sensor connected. Enabled zones without sensors connected will show a fault alarm.

## Eco-24 24 Zone Panel

### K. OPERATION

After all connections are complete, supply power to the unit. If the sensing circuit is complete and free of leaks or other problems, the panel will run a function test and then the green mains power LED only will remain illuminated.

### L. TESTING/COMMISSIONING AND ROUTINE MAINTENANCE

#### LIQUID LEAK DETECTION SENSORS PROCEDURE.

Place water or a mapping tool on the probe or sensing cable and the Eco-24 panel will report an alarm condition. Verify that the RED alarm LED is illuminated and the leak alarm is shown on the correct channel/zone.

*Note!: Standard TraceTek sensing cable (TT1000, TT3000, TT5000) will not work on this system unless fitted with the correct adaptors and end terminations (available to special order).*

For the TraceTek TT5000 systems, simulate a leak condition by tightly bending and holding the sensor cable. Please refer to relevant TraceTek datasheet.

Confirm the correct channel Leak relay operates.

Confirm the common leak relay operates.

The buzzer will sound and will only be silenced when the mute button is pressed or system is reset.

*Note! A muted alarm can be identified by the red alarm LED flashing*

Reset is only possible once the probe or sensing cables are dried.

If 'auto reset' is enabled for the channel being tested the system will reset as soon as the leak is cleared, without requiring any input from the user.

#### REFRIGERANT GAS LEAK DETECTION SENSORS.

Introduce Sample bump testing gas to the AT-SRG sensor to make the sensor go into alarm.

On the Eco-24 verify that the RED alarm LED is illuminated and the red leak alarm LED is shown on the correct channel/zone.

Confirm the correct channel Leak relay operates.

Confirm the common leak relay operates.

The buzzer will sound and will only be silenced when the mute button is pressed or system is reset.

*Note! Panel reset is only possible once the AT-SRG has reset.*

## Eco-24 24 Zone Panel

If 'auto reset' is enabled for the channel being tested the system will reset as soon as the AT-SRG resets, without requiring any input from the user.

*Note! 100% refrigerant gas should not be used for testing purposes.*

### TESTING FAULT OPERATION

To test the fault alarm operation; disconnect the probe, sensing cable or gas sensor from the leader/jumper cable. The Eco-24 panel will report a fault alarm.

Verify that the RED alarm LED is illuminated and the YELLOW leak alarm LED is shown on the correct channel/zone.

Confirm the correct channel fault relay operates.

Confirm the common fault relay operates.

The buzzer will sound and will only be silenced when the mute button is pressed or system is reset.

Reset is only possible once the fault condition has been repaired.

If 'auto reset' is enabled for the channel being tested the system will reset as soon as the fault is repaired, without requiring any input from the user.

Turn off mains power to panel. Green power light will go out\*. All fault relays should 'operate'.

\*Power LED will turn amber if battery back up is fitted.

While on battery power ensure leak and fault functions operate correctly.

If the Eco-24 unit still does not appear to operate properly contact your supplier for assistance.

### RESET

When the probe or sensing cables are dried or repaired press the reset button. The unit is designed so an alarm can be muted, but the panel cannot be reset until the leak or fault has been rectified. If auto reset is enabled the system will still not reset until the leak/fault has been rectified.

If the auto reset is enabled then once the alarm condition has been cleared the panel will reset with no further input required from the user.

Auto reset is available per channel only. i.e. ch1 zones 1-6 will all have the same functionality. If you require different reset functionality for different areas then these areas must be on separate channels.

### ECO-NET NETWORK

If panels have been setup in master/slave configuration then the above operation will be checked for correct operation on both panels.

Leak and fault alarms on all slave panels will show up correctly on submaster/master panel.

## Eco-24 24 Zone Panel

### M. FAULT FINDING

#### Problem:

No Power/ power LED not illuminated Green

- Possible Cause:**  
No power into panel  
**Action:**  
Check supply is good. Fuse in spur, MCB etc.
- Possible Cause:**  
Local fuse in panel has blown  
**Action:**  
Check and if necessary, replace fuse with correct 5mm ?
- Possible Cause:**  
PSU is faulty  
**Action:**  
Replace PSU, part number
- Possible Cause:**  
Local fuse in PSU has blown  
**Action:**  
Check and if necessary, replace fuse with correct 5mm ?

#### Problem:

Alarm Led illuminates but no audible buzzer

- Possible Cause:**  
Buzzer is on mute  
**Action:**  
Disable mute dipswitch

#### Problem:

Zone does not go into alarm

- Possible Cause:**  
Zone not enabled  
**Action:**  
Enable zone using correct dipswitch
- Possible Cause:**  
Sensor not connected to correct zone  
**Action:**  
Check sensor is connected to the correct zone and zone is enabled

#### Problem:

Leak alarm in zone

- Possible Cause:**  
Sensor has detected a leak  
**Action:**  
Repair leak and ensure sensor is dry
- Possible Cause:**  
Sensor or leader cable is damaged  
**Action:**  
Check sensor and leader cable for damage. This can take the form of a physical inspection and testing continuity with a multi-meter
- Possible Cause:**  
Sensor is faulty  
**Action:**  
Ensure sensor is installed in a clean environment and in a way that it cannot be shorted out on conductive surfaces.

## Eco-24 24 Zone Panel

### Problem:

Fault alarm in zone

- 1 Possible Cause:**  
Sensor or leader cable is disconnected  
**Action:**  
Check all plugs and connections are properly terminated
- 2 Possible Cause:**  
Sensor or leader cable is damaged  
**Action:**  
Check sensor and leader cable for damage. This can take the form of a physical inspection and testing continuity with a multi-meter
- 3 Possible Cause:**  
Sensor is in fault (AT-SRG only)  
**Action:**  
Reset or replace AT-SRG
- 4 Possible Cause:**  
Zone is enabled with no sensor attached  
**Action:**  
Disabled any unused zones using dipswitches
- 5 Possible Cause:**  
Incorrect sensor used  
**Action:**  
Use only EcoLeak sensors, or AquiTron/TraceTek sensors with correct adaptors

### Problem:

Leak/Fault alarm does not auto reset, or resets itself unexpectedly

- 1 Possible Cause:**  
Auto reset is enabled/disabled  
**Action:**  
Use dipswitches to ensure required function is selected

### Problem:

AT-SRG shows both leak and fault alarms as leak alarm on Eco-24 panel

- 1 Possible Cause:**  
Incorrect AT-SRG connection  
**Action:**  
Use dedicated EcoLeak connection on AT-SRG

### Problem:

Power LED red, Alarm LED flashing

- 1 Possible Cause:**  
Mains power has been lost. Panel operating on battery backup  
**Action:**  
Return mains power to the panel as soon as possible.

## Eco-24 24 Zone Panel

### Problem:

Fault signal to the BMS but no zone alarms present. (Common fault relay has operated).

- Possible Cause:**  
Mains power has been lost. Panel operating on battery backup  
**Action:**  
Return mains power to the panel as soon as possible.

- Possible Cause:**  
Panel has developed a fault  
**Action:**  
Cycle power. If fault remains contact supplier for repair/replacement.

### Problem:

System reboots when switching to battery backup

- Possible Cause:**  
Panel is being powered by mains input and battery backup PSU  
**Action:**  
Remove mains input from Eco-24 to ensure power is from backup PSU exclusively.

### Problem:

12Vdc accessory output power has been lost.

- Possible Cause:**  
Input power to the panel is below minimum level.  
**Action:**  
Check input power to panel is 12Vdc +/- 10%

- Possible Cause:**  
System has been on battery backup for an extended period  
**Action:**  
Return mains power to the panel as soon as possible.

- Possible Cause:**  
2A maximum load has been exceeded  
**Action:**  
Cycle power. If fault remains contact supplier for repair/replacement.

### Problem:

Attached AT-SRG's reset unexpectedly.

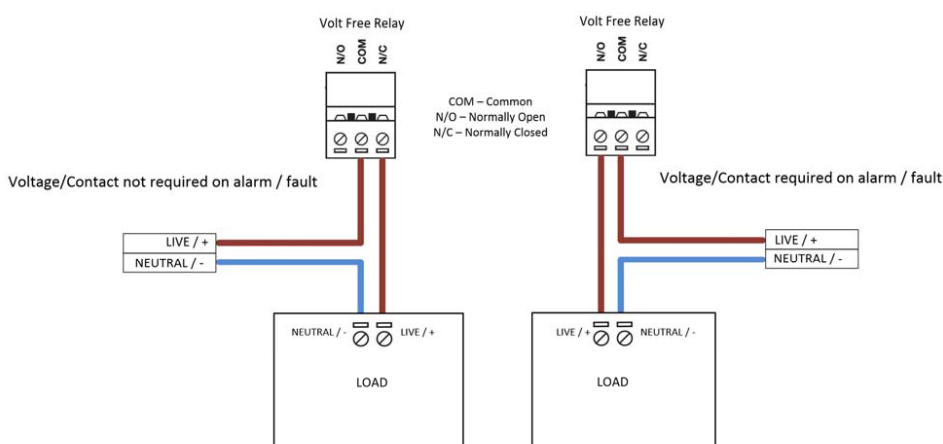
- Possible Cause:**  
Mains power has been lost. Panel operating on battery backup  
**Action:**
  - Investigate why mains power to unit is cycling.
  - Remove mains input from Eco-24 to ensure power is from backup PSU exclusively.

## Eco-24 24 Zone Panel

### VOLT FREE RELAY OPERATION

All leak detection alarm panels supplied by Aquilar are provided with, at least one, volt free relay. These are also known as volt free contacts or dry contacts. They are used to operate auxiliary equipment such as – valves, sounders, pumps, beacons etc. sending closed or open contact signals to Building Management Systems (BMS) or other logic level controls.

As the name suggests, there is no voltage present at the terminals. So, to operate a valve, for example, you need to have a dedicated power supply which is then fed through the relay (typically the live feed) to switch it on or off accordingly. Typical wiring is as follows:



Please ensure that the load does not exceed the ratings of the volt free relay. This is stated in the relevant product's data sheet / installation instructions.

Wiring of volt free relays should be undertaken by a suitably qualified technician and in accordance with the regulations and standards in their industry/country. These notes are only intended as a guide and Aquilar Ltd bears no responsibility for the installation or operation of the unit.

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