AquiTron | AT-ZAP
Zone Alarm Panel

LEAK DETECTION

AquiTron
AT-ZAP
12 Zone Alarm Panel

INSTALLATION & OPERATION INSTRUCTIONS

aquilar
leak detection solutions

AT-ZAP
Zone Alarm 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 AT-ZAP multi zone alarm panel has been designed specifically for use with TraceTek sensing cables (TT1000, TT1100, TT3000, TT5000, TT5001 and TT7000). The AT-ZAP can monitor per zone up to 100 m (328 ft) of sensing cable, or 10 water detection probes. Optical probes, float switches and level indicators can also be incorporated into the system . The AT-ZAP is designed for use in ordinary areas with temperatures of 0°C to 50°C (32°F to 122°F).

INSTALLATION ITEMS (NOT SUPPLIED)

• Wall fasteners for surface mounting (four screws)
• Rubber or elastomeric washers to seal at mounting points
• Semi-flush recess flange (optional)

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.

B. PRODUCT INFORMATION

AT-ZAP

80 - 275Vac @ 50/60 Hz 12Vdc ±20%

POWER CONSUMPTION

7 watt maximum

RELAYS

Number: One volt free relay per zone (max 12), Two common LEAK and one common FAULT.
Type: SPST configurable
Rating: 3 A at 250Vac/24 Vdc

TEMPERATURE

Storage: -18°C to 60°C (0°F to 140°F)
Operating: 0°C to 50°C (32°F to 122°F)

ENCLOSURE
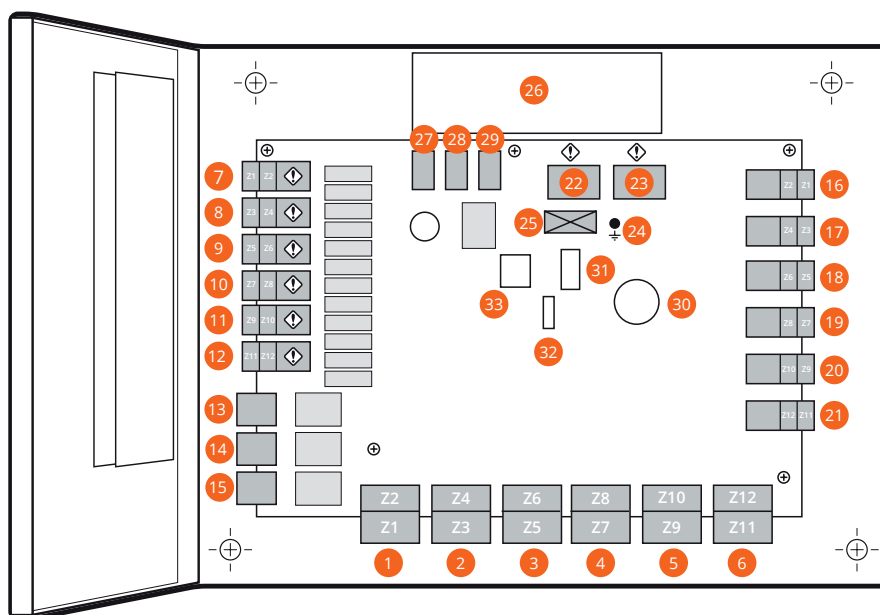
NEMA 12; IP54

APPROVALS

The AT-ZAP is approved for use in ordinary areas. The module must be located in an Ordinary Area, but may monitor intrinsically safe TraceTek sensing cables located in Hazardous Locations:
•   TraceTek sensing cable in Class I, Division 2, Groups A, B, C, D =Hazardous Locations.
•   If protected by agency-approved zener barrier TraceTek sensing cable in Class I, Division 1, Groups A, B, C, D Hazardous Locations (Zone 0 or Zone 1 in Europe). Contact your TraceTek distributor/agent to select proper zener barrier.
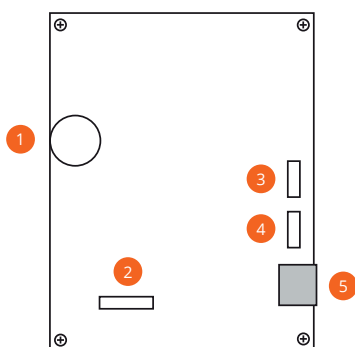
MAXIMUM CIRCUIT LENGTH

100m (328ft) TraceTek sensing cable or 10 water or optical liquid probes per zone. Leader and jumper cable lengths are not included in this limitation.

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1. Z1/2 Sensing cable plug and socket
2. Z3/4 Sensing cable plug and socket
3. Z5/6 Sensing cable plug and socket
4. Z7/8 Sensing cable plug and socket
5. Z9/10 Sensing cable plug and socket
6. Z11/12 Sensing cable plug and socket
7. Z1/2 Leak relay cable plug and socket
8. Z3/4 Leak relay cable plug and socket
9. Z5/6 Leak relay cable plug and socket
10. Z7/8 Leak relay cable plug and socket
11. Z9/10 Leak relay cable plug and socket
12. Z1/2 Leak relay cable plug and socket
13. Summary fault relay plug & socket
14. Common leak relay 1 plug & socket
15. Common leak relay 2 plug & socket
16. Z1/2 6Vdc latching solenoid output
17. Z3/4 6Vdc latching solenoid output

18. Z5/6 6Vdc latching solenoid output
19. Z7/8 6Vdc latching solenoid output
20. Z9/10 6Vdc latching solenoid output
21. Z11/12 6Vdc latching solenoid output
22. Power Cable Terminal Block (Mains In)
23. Power Cable Terminal Block (Mains Out)
24. Ground/earth stud
25. Fuse T1.6AL 250Vac
26. 230Vac/12Vdc Power Supply
27. 12/24Vdc Accessory Connection
28. Battery Backup Connection
29. 12Vdc Power Input
30. Buzzer
31. Serial Expansion Port (not currently used)
32. Interface board connection
33. Network Connection (not currently used)

DOOR BOARD

1. CR 2032 Battery
2. Display Connector
3. Main PCB Connector
4. Serial Expansion Port
5. USB Connector for History download.

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C. SELECT A MOUNTING POSITION

Choose a location indoors where the module will be protected from the elements and temperature extremes

WARNING: Ignition hazard. Do not mount the AT-ZAP unit in a hazardous location. Sensing cable connected to the AT-ZAP may (subject to approvals restrictions) be located in hazardous locations, but the module itself must not.

PREPARE THE MODULE FOR MOUNTING

Important: The AT-ZAP is an electronic unit. During installation, take the following precautions to avoid damage to its electronic components:

• Handle with care, avoid mechanical damage.
• Keep the electronics dry.
• If handling circuit boards, hold them by their edges to avoid physical contact with electronic components.
• Avoid exposure to static electricity.
• Avoid contamination with metal filings, liquids, or other foreign matter.
• Remove the module from its packaging.
• Open the enclosure door using a Phillips (cross-head) screwdriver.
• It is recommended to use the 25 provided 20/25mm knock-outs for cable entry either with conduit or stuffing glands. If drilling of the enclosure is necessary we would recommend removing the PCB to prevent damage.
• Anti static precautions should be taken before touching the boards inside.
• Carefully disconnect the ribbon cable and PSU connections from the motherboard.
• Unscrew the five Phillips (cross-head) screws holding the motherboard to the enclosure (see Fig 1). Remove the motherboard, and put it out of harm's way.
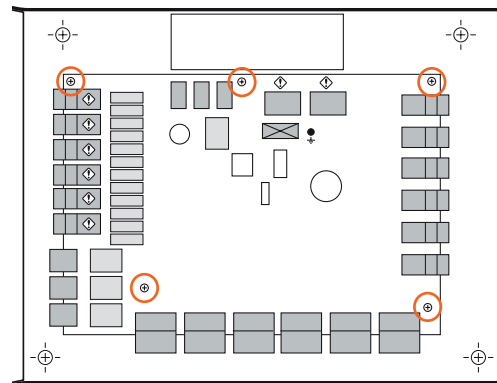

Figure 1
remove all five screws attaching the motherboard

• **Note:** The AquiTron™ / TraceTek sensing circuit is power limited, so the TraceTek leader or jumper cable and the power supply cable must not run in the same conduit.
• Fit conduit bushes/adapters.
• Remove all traces of metal filings and dust from inside the module enclosure.

MOUNT THE MODULE

The module mounts with four screws with mounting centers as noted in Fig 2. To seal around the mounting screw (necessary to maintain the IP54 rating), use a rubber or elastomeric washer.

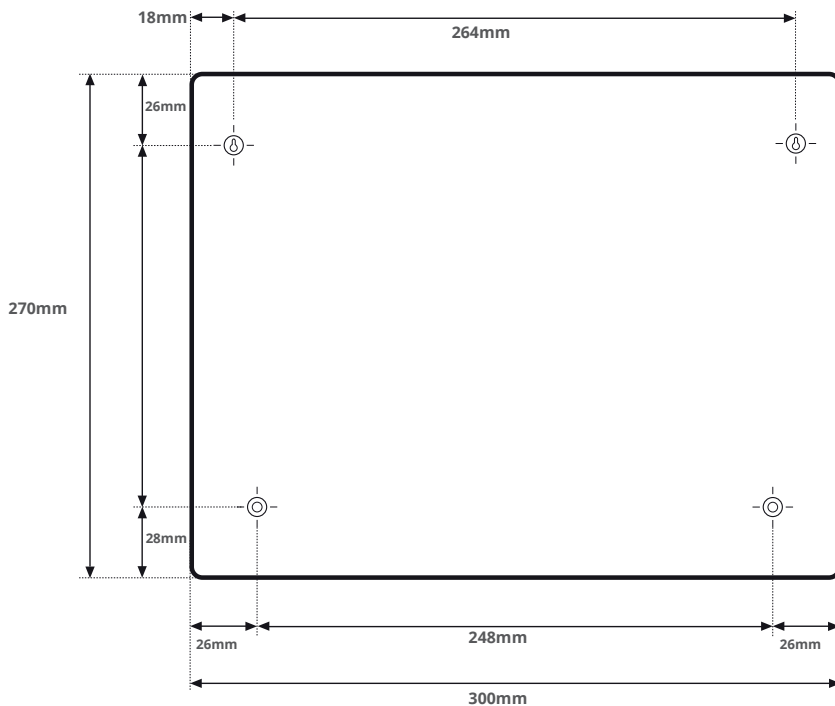**NOTE: It is not necessary to remove the PCB to mount the panel.**

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Cable entry knockouts are provided as follows:

Back plate 2 x 20mm and 3 x 25mm
Base 8 x 20mm and 4 x 25mm
Top 2 x 20mm and 2 x 25mm
Each side 1 x 20mm and 1 x 25mm

Figure 2

REASSEMBLE THE MODULE

Note: Before replacing the motherboard, ensure that the interior of the enclosure is clean.

• Replace the motherboard and secure it in place with the Phillips (cross-head) screws.
• Reconnect the ribbon cable (taking care not to bend any pins in the connection).
• Close and secure the door of the enclosure.

D. PREPARE SENSING CABLE / SENSING PROBE / DEVICE

Ensure that the sensing cable (sensing device) has been installed in accordance with the instructions provided.

MAKE CONNECTIONS

• Confirm that the power to the AT-ZAP unit has been turned off.
• Open the enclosure door.
• Feed the end of the TraceTek modular leader cable (or bulk jumper cable) through the knockout/adapter/bushing if fitted.
• Connect the four colour-coded wires to the Sensor Interface plug for the required zone 1-12 (see Fig 3).

Important: Observe the colour coding. If wires are not connected to the correct terminals, the leak detection system cannot operate properly.

Insert the sensing cable plug into the ZI socket for the zone required (Z1-Z12)
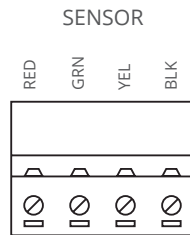
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SENSOR

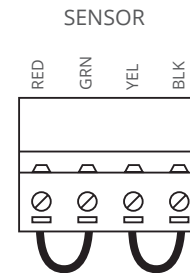RED GRN YEL BLK

Figure 3

SENSOR

RED GRN YEL BLK

Figure 4

- See AT-ZAP Setup section for how to enable zones.
- Linking out of zones is not required unless they have been enabled in software. (see fig.4 for linking out details)

E. CONNECTING THE POWER CABLE AND RELAYS

CONNECTING THE POWER WIRING

- Open door of AT-ZAP enclosure.
- Pass the power cable through the knock-out/adapter/bushing   if fitted.
- **Note:** Proper grounding/earthing is important to avoid the possibility of electromagnetic interference.
- Connect the power supply wires to the special three-pin terminal block marked LNE sown in Figure 5 (Live, Neutral, Earth), observing the polarity.
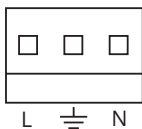
BATTERY

+ −

X1

L ⏚ N

Figure 5

Figure 6

- The electrical supply should be fused at no more than 3 amps via an un-switched fused spur adjacent to the unit.
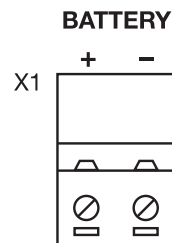- **Note:** Do not exceed maximum voltage.

- A separate battery unit is available - *(3485 AT-BU Battery Backup unit)*
- Batteries should be tested, maintained and replaced in accordance with the battery manufacturers instructions and recommendations.

BATTERY BACKUP

- Full function up to 24h battery backup is possible with the use of the 3675 AT-PSU12-3 and 7802 AT-BAT-17. The PSU 12Vdc output + and – should be connected to the corresponding +/- terminals on the AT-ZAP battery connector (leads not supplied).

CONNECT THE LEAK AND FAULT (CABLE BREAK) RELAYS

The AT-ZAP has:
One volt free relay per zone
One 6Vdc latching solenoid output per zone
Two common LEAK relays
One summary FAULT relay

RELAY IDENTIFICATION

LEAK relays:
Position on the left hand side of the motherboard as shown on the Layout Diagram number 7-12.

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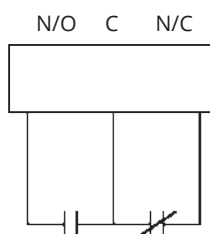
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COMMON LEAK RELAY

Shown in Layout Diagram number 14 and 15.

FAULT RELAY:

The AT-ZAP's FAULT relay will also indicate power failure as the relay contacts will de-energize to signal an alarm condition. Therefore, loss of power as well as a cable break would trip the relay and any equipment connected.
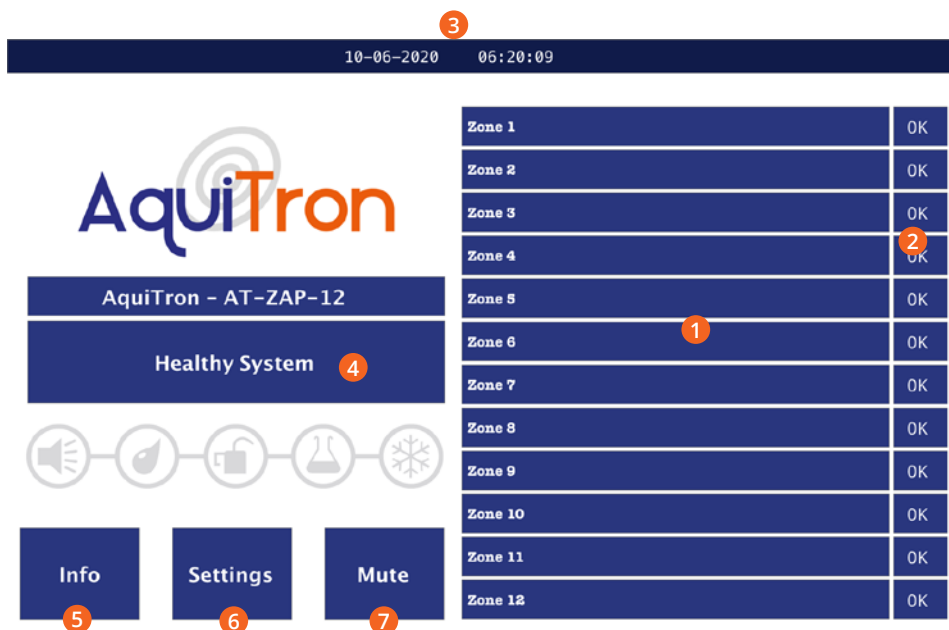
Common to all zones: Relays are SPDT and independent of the next.

N/O   C   N/C

Note: The relay terminals can accept wires 12 to 24 AWG. Cable should have a temperature rating of 65°C.

Note: Maximum load for relays is 3 amps, 250Vac/24Vdc.

F. SETUP

1. Zone Enabled/Zone Names
2. Zone Status
3. Date and Time
4. System Status
5. Info Button
6. Settings Button
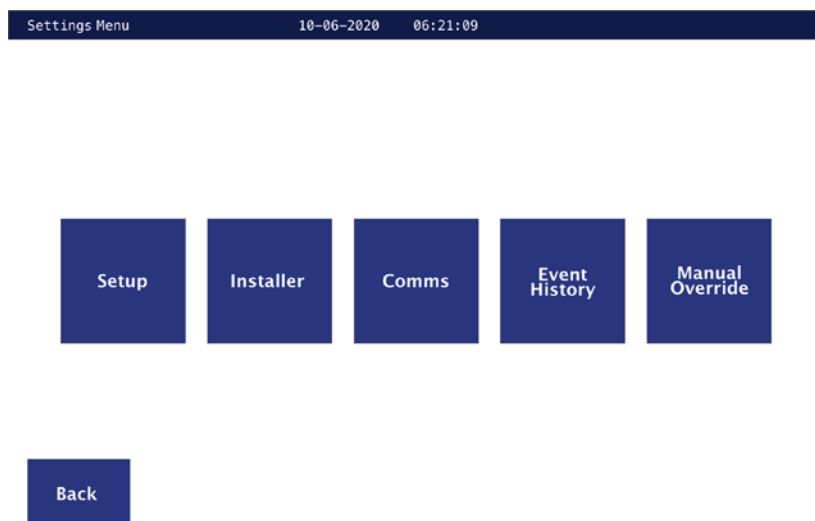7. Mute / Reset Button

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For maximum flexibility the AquiTron Zonal Alarm Panel (AT-ZAP) has many configurable options to suit individual site conditions.

Configurable parameters are:

- Device Name - See Section F 1.1 Device Name
- Time/Date - See Section F1.2 Time & Date
- Zones – See Section F 1.3 Zones
- Relays – See Section F 1.4 Relays
- Solenoid outputs – See Section F 1.5 Solenoid Valve Outputs
- Accessory Voltage – See Section F 1.6 Accessory Voltage
- Re-Alarm Settings – See Section F 1.7 Re-Alarm Settings
- Manual Override – See Section F 2.1 Manual Override
- History options – See Section F 2.2 History Options

- Company Details – See Section F 3.1 Company Details
- Commissioning/Service Engineer Details – See Section F 3.2 Engineer Details
- Service Indicator – See Section F 3.3 Service Indicator
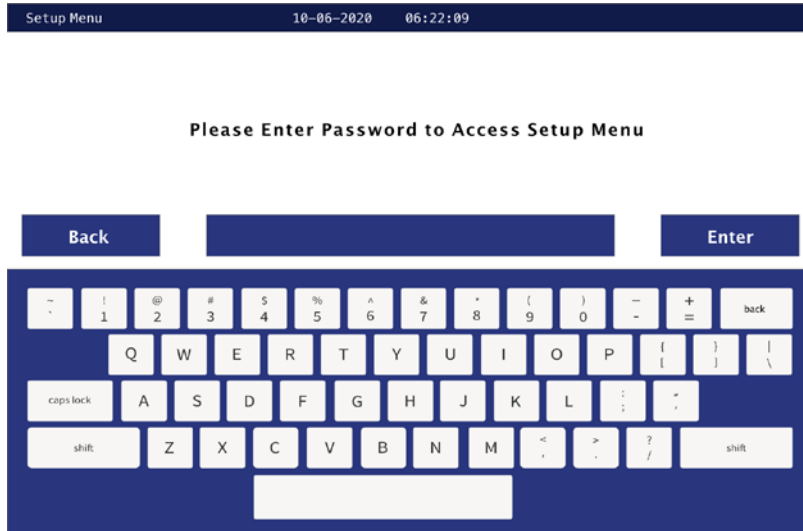- Factory Reset – See Section F 3.4 Factory Reset

The settings button is used to access the settings menus. From here you have access to the various submenus shown below.

To enter the Setup and installer menus passwords are required for access.

Use the on screen keyboard to enter the relevant password and press the 'Enter' button.
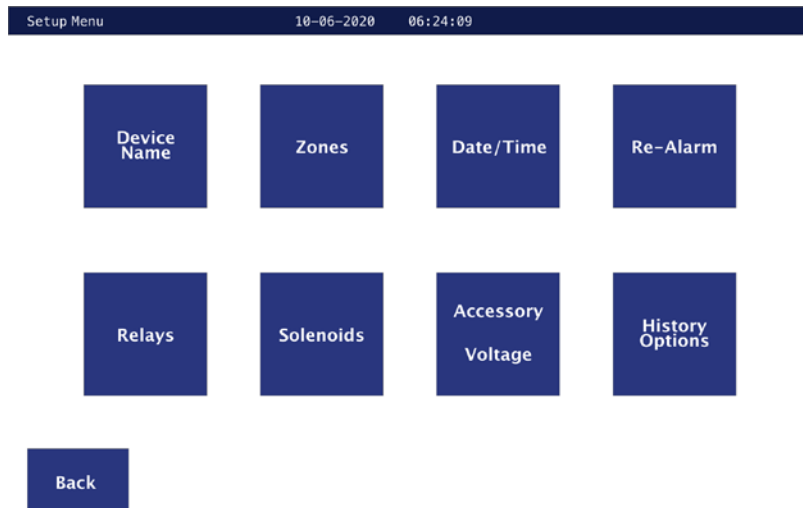
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PASSWORD

Set up Menu: aquitron30
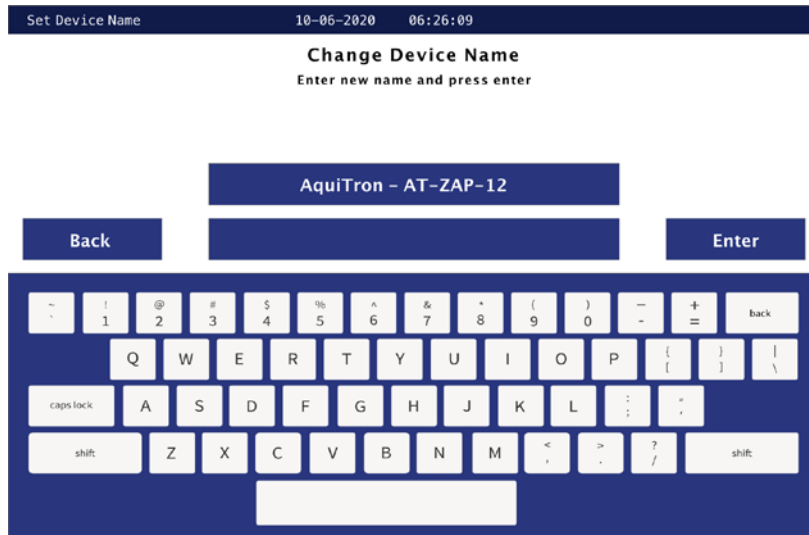**Installer Menu:**   aquitron12

F 1. SETUP MENU

AT-ZAP
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F 1.1 DEVICE NAME

Settings>>Setup>>Password>>Device Name

The default name 'AquiTron - AT-ZAP-12' can be changed if required. For instance you may have several systems on a site and wish to identify them separately.
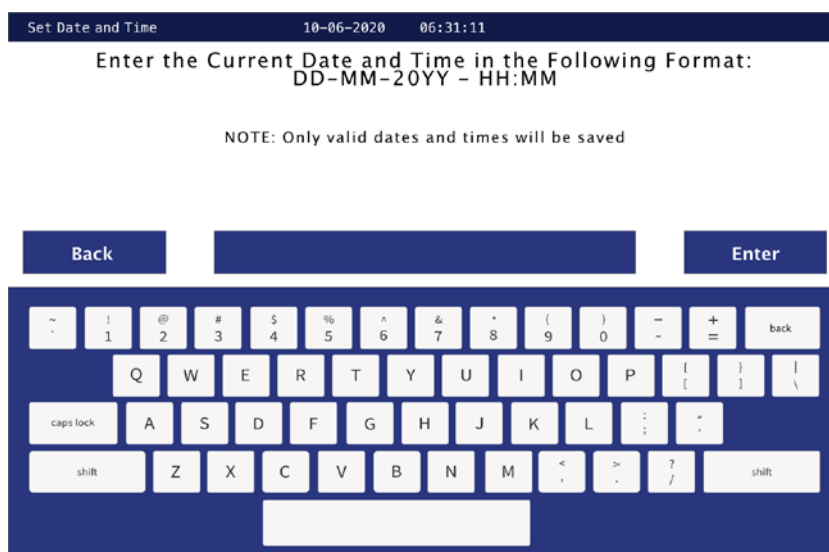
When at the 'set Device Name' screen, use the onscreen keyboard to enter the required name then press enter. The name will be changed.

If a mistake is made, or to rename, repeat the process.

Press back to exit.

F 1.2 TIME & DATE

Settings>>Setup>>Password>>Date/Time

The Time and Date MUST be correctly input for proper panel operation.

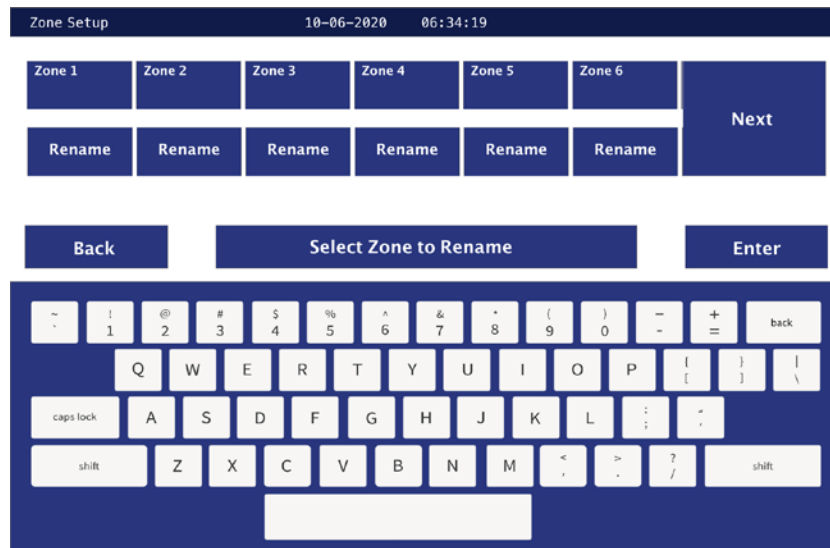At the 'set date and time screen' enter the correct information in the following format;

DD-MM-20YY – HH-MM

e.g. for the following time 1:07pm 2nd April 2020 you would input the numbers 02 04 20   13 07 *(hyphens are added automatically)*

A correct operation will take you out of this screen back to the settings menu. If you have input incorrect details press the Date/Time button and repeat the process inputting the correct details.

F 1.3 ZONES
Settings>>Setup>>Password>>Zones

By default all zones are disabled on first start-up of the panel. It is advisable to only enable zones that are being used are enabled. Any zones enabled that do not have sensors attached will show a fault on the main screen.

To enable a zone navigate to the zones screen. The zones are numbered 1-12, to access zones 7-12 press the next button. The background colour of the zone box will indicate whether the zone is enabled/disabled. An orange background indicates a disabled zone. Touching this button will turn the button blue, indicating an enabled zone.

Once enabled the zone will be displayed on the home screen

If you wish to rename the zone select the zone to be renamed by pressing the rename button underneath it, the text input display will change and display the zone number (ie: Z1:). Use the on screen keyboard to input the required zone name, up to 27 character maximum, then press enter. This will be displayed on the zone button, and home screen as long as the zone is enabled. **Note:** If a named zone is disabled it retains its name.

Press back to return to settings menu.

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F 1.4 RELAYS
Settings>>Setup>>Password>>Relays

Positioned on the left hand side of the main panel PCB, the AT-ZAP has fifteen on board volt free relays that can be utilised for communications outputs to BMS or control of accessories such as beacons or valves.

No voltage output is available directly from any of these relays.

There are three 'common' relays. Two for leak alarms and one for fault alarms. These relays are not configurable and will operate if ANY zone goes into alarm.

The relays 1-12 are configured entirely in software. Default setting is normally open (N/O) operation on leak & fault alarms, assigned to its default zone (ie. relay 1= zone 1, relay 2=zone 2, etc.).

To change a relays operation navigate the 'Relays' screen. There are three buttons for each relay. Touching a button will scroll through the options available.

Description	Options Available	Result
Function	N/O	Relay is normally open and closes on alarm
	N/C	Relay is normally closed and opens on alarm
	Sound	Relay is normally open, closes on alarm, opens on Mute
Action	Leak	Relay operates on Leak alarms only
	Break	Relay operates on Break alarms only
	Both	Relay operates on Leak and Break alarms
Assignment	1,2,3,4,5,6,7,8,9, 10,11,12	Selects what zone number the relay reacts to

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More than one relay can be assigned to a zone to accommodate multiple functions from a single alarm.

Press back to return to settings menu.

F 1.5 SOLENOID VALVE OUTPUTS
Settings>>Setup>>Password>>Solenoids

Positioned on the right hand side of the main panel PCB, the AT-ZAP has twelve on board solenoid valve outputs. These outputs allow for AquiTron valves to be controlled directly by the AT-ZAP. This is a pulsed output there is no measurable voltage output.

ONLY CONNECT AQUITRON AT-V-P-xx AND AT-V-B-xx 6Vdc LATCHING VALVES OR AQUITRON AT-RU1 TO THESE OUTPUTS.

The solenoid outputs 1-12 are configured entirely in software. Default setting is normally open (N/O) operation on leak alarm only, assigned to its default zone (ie. relay 1= zone 1, relay 2=zone 2, etc.).

To change a solenoid's operation navigate to the 'Solenoids' screen. There are three buttons for each relay. Touching a button will scroll through the options available.

Description	Options Available	Result
Function	N/O	Solenoid is normally open and closes on alarm
	N/C	Solenoid is normally closed and opens on alarm
Action	Leak	Solenoid operates on Leak alarms only
	Break	Solenoid operates on Break alarms only
	Both	Solenoid operates on Leak and Break alarms
Assignment	1,2,3,4,5,6,7,8,9, 10,11,12	Selects what zone number the solenoid reacts to

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More than one solenoid can be assigned to a zone to accommodate multiple functions from a single alarm.

Press back to return to settings menu.

F 1.6 ACCESSORY VOLTAGE
Settings>>Setup>>Password>>Accessory Voltage

Accessory Voltage	10-06-2020	06:42:49

Selected Accessory Voltage

WARNING! Do not exceed 3A maximum load

12V DC Selected   24V DC

Back

It is possible to power 12/24Vdc accessories directly from the panel up to a maximum load of 3amps. E.g. AT-RAP, AT-Opsens, AT-BCN-A beacons etc.

These should be connected to the 12/24Vdc connector. Layout Diagram connection number 27.

To change to output between available voltages navigate to the Accessory voltage screen and select the correct voltage for your accessory.

F 1.7 RE-ALARM
Settings>>Setup>>Password>>Re-Alarm

Set Re-Alarm	10-06-2020	06:43:22

Set Re-Alarm time
Description of Re-Alarm button options

24H

Back

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The AT-ZAP can be set up to re-alarm. If enabled the system will reactivate the sounder if the panel has been muted only without the alarm being reset.

Available time options are 1h, 6h, 12h, 24h, OFF

Description	Options Available	Result
Re-Alarm	Off	Re-alarm function off. Panel will not go back into alarm unless new alarm occurs
	1h	Panel will go back into alarm 1 hour after being muted
	6h	Panel will go back into alarm 6 hours after being muted
	12h	Panel will go back into alarm 12 hours after being muted
	24h	Panel will go back into alarm 24 hours after being muted

NOTE: The Mute/Re-alarm cycle will not affect relay operation unless set to 'Sound' function. Re-Alarm has no effect on solenoid outputs.

F 2. Settings Menu

F 2.1 MANUAL OVERRIDE
Settings>>Manual Override

This page allows you to override the individual relay and solenoid current operations.

NOTE: the 'On' or 'Off' applies to the override status, which may not be the relay/solenoid position.

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Description	Options Available	Result
Relay Override	Off	Override function off. Relay will operate as normal
	1h	Relay override will function for one hour before returning to previous state
	12h	Relay override will function for twelve hours before returning to previous state
	24h	Relay override will function for twenty four hours before returning to previous state
	On	Relay override will function permanently until manually reset by user
Solenoid Override	Off	Override function off. Solenoid will operate as normal
	1h	Solenoid override will function for one hour before returning to previous state
	12h	Solenoid override will function for twelve hours before returning to previous state
	24h	Solenoid override will function for twenty four hours before returning to previous state
	On	Solenoid override will function permanently until manually reset by user

NOTE: Override control and resets will react differently depending on alarm condition of the overridden zone/relay.

F 2.2 HISTORY OPTIONS
Settings>>Event History

This screen allows the user to view any events recorded by the panel.

All events and occurrences will be accompanied by a time stamp of that event. 1000 events are stored. Once this storage is full the events will scroll keeping only the most recent 1000 events.

Note: for history to be correctly displayed time and date must be set. History events are shown in time / date order. The page opens by default at the top of the list an d this is the most recent entry.

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Use the Up and Down buttons to scroll through the history to the required date/event.

It is possible to download the events history to a USB memory stick, clear the events history. This is done via the following menu;

Settings>>Setup>>Password>>History Options

Ensure you have inserted your USB device prior to pressing the 'Backup to USB Device' button.

The button will show 'Backing Up' and then 'Done' when the operation is complete. Use notepad, or a similar text editor to view the information.

If you wish to clear the events history press the 'Clear Events History' button. It will ask you to confirm. To carry out the clear press confirm. To abort press the back button.

NOTE: Clearing the event history is NOT recoverable. It is strongly recommended to back up the history prior to clearing.

After clearing, an entry showing time and date of this action will now be the first history entry.

F 3. Installer Menu

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F 3.1 COMPANY DETAILS
Settings>>Installer>>Password>>Company Details

By default the AT-ZAP contains contact details for Aquilar Ltd. This can be changed on this screen to show the details of the installation/ Service company.

Select the entry you wish to update, Company name or company contact details, enter the new details within the 'Enter Text' box using the on screen keyboard, then press enter to save the new details.

Press Back to return to Installer menu.

F 3.2 ENGINEER DETAILS
Settings>>Installer>>Password>>Engineer Details

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This can be changed on this screen to show the date of commissioning and name of the engineer or installation/Service company.

Part of the commissioning process for this panel should be to fill in this section. Until this has been done the details will show as 'Not Commissioned'.

Select the entry you wish to update, Date or company/engineer details, enter the new details within the 'Enter Text' box using the on screen keyboard, then press enter to save the new details.

Press Back to return to Installer menu.

F 3.3 SERVICE INDICATOR
Settings>>Installer>>Password>>Service Indicator

To maintain maximum protection from leaks it is strongly recommended this function is set to 6 , 12 months.

The options are for a reminder to be shown on the home screen in 6 or 12 months from date of setting.

To set select the desired interval period then press the 'Confirm' button. Check the displayed dates are correct.

This should be carried out as part of the system commissioning activity.

NOTE: This function requires the correct date and time to have been previously entered properly.

There is the option to have the service reminder trigger the common fault/break relay output to indicate remotely a service is required. To enable this select yes in the Trigger Fault Relay button.

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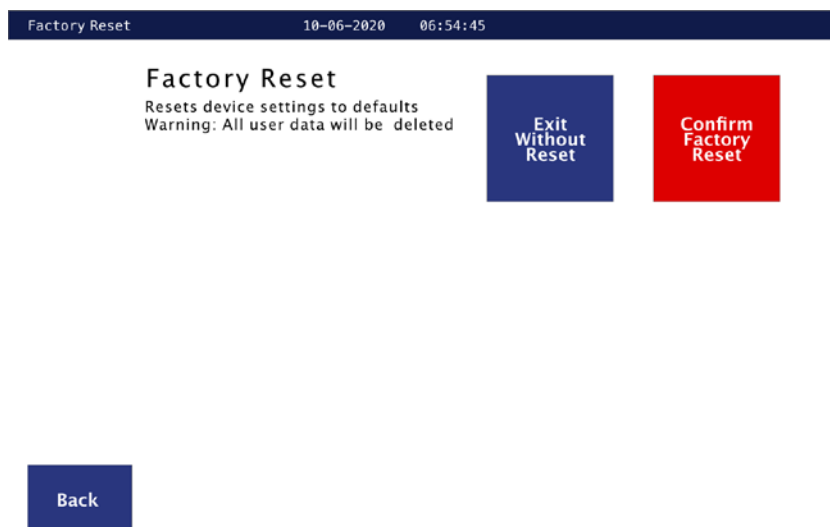| Options Available	Action
Never	Service reminder is disabled
6 Months	Service Due will show on the home screen display 6 months from the 'service now' confirmation date
12 Months	Service Due will show on the home screen display 12 months from the 'service now' confirmation date
Trigger Fault Relay 'Yes'	Common fault relay will be triggered in conjunction with the message selected above
Trigger Fault Relay 'No'	Common fault relay will not be triggered in conjunction with the message selected above

F 3.4 FACTORY RESET
Settings>>Installer>>Password>>Factory Reset

EXTREME CARE SHOULD BE USED WITH THIS OPTION.

Using the factory reset will erase all information contained within the settings of the panel, including setup and user details. The system will require re-commissioning following this action.

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