



hydrosense

Delivering a New Standard in Water Leak Detection

Installation Instructions

Issue 01 October 2018

By **VIMPEX**

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INSTALLATION INSTRUCTIONS

Hydrosense ID Addressable Water Detection System



1. Introduction

The **Hydrosense ID** is an addressable water leak detection and alarm control panel with 16 zonal LED indicators and is available in models with either 1 or 2 detection loops. Each loop can support up to 127 loop-powered I/O modules.

Any number of devices can be allocated to any zone ensuring that any system configuration can be easily accommodated.

To ensure that the system is installed and commissioned with the minimum of trouble, it should be carefully planned before the installation is begun.

This involves allocating an address to each device and allocating a message of up to 40 characters (including spaces) to each address to assist in the location of the devices. Each sub-address can also be allocated a text message so the actual location of the sensing element can be determined, the panel supports up to 800 sub-addresses.

Devices should then be grouped into zones in accordance with the equipment to be monitored / protected and building plans.

The control panel can be configured using the switches on the front as described in the menu descriptions within this manual or more comprehensively, using the Loop Explorer PC (LE2) configuration utility and download lead (IDAP-LEAD) which is available as a separate item.

The **Hydrosense ID** control panel offers an extensive list of features and options for the control and monitoring of plant, equipment and sounders, which can be configured via the Loop Explorer PC (LE2) configuration program or the front panel controls. The Cause & Effect configuration enables comprehensive systems to be implemented.

A Water Leak Detection module for example, may have a main address of 123, input 1 sub-address 123.1 and input 2 sub-address 123.2. (Three addresses from 800 available).

The sub-addresses can be treated as if they were individual addresses i.e. each can be allocated to any zone, given an individual address message and be operated by different cause and effect tables.

Although unlikely to be exceeded, the maximum number of sub-addresses available should be taken into consideration when designing systems that contain large numbers of I/O units.

Important: This control panel should be used only with compatible Hydrosense ID system components.

2. Safety

Suppliers of articles for use at work are required under section 6 of the Health and Safety at Work act 1974 to ensure as reasonably as is practical that the article will be safe and without risk to health when properly used.

An article is not regarded as properly used if it is used 'without regard to any relevant information or advice' relating to its use made available by the supplier.

This product should be installed, commissioned and maintained by trained service personnel in accordance with the following:

- (i) IEE regulations for electrical equipment in buildings
- (ii) Codes of practice
- (iii) Statutory requirements
- (iv) Any instructions specifically advised by the manufacturer

According to the provisions of the Act you are therefore requested to take such steps as are necessary to ensure that you make any appropriate information about this product available to anyone concerned with its use.

This equipment is designed to operate from 230V 50Hz mains supplies and is of class 1 construction. As such it **must** be connected to a protective earthing conductor in the fixed wiring of the installation. A readily accessible double pole disconnect device with a disconnect air gap of at least 3mm and conforming to EN 60950, shall be incorporated in the fixed wiring.

Failure to ensure that all conductive accessible parts of this equipment are adequately bonded to the protective earth will render the equipment unsafe.

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Hydrosense ID Addressable Water Detection System



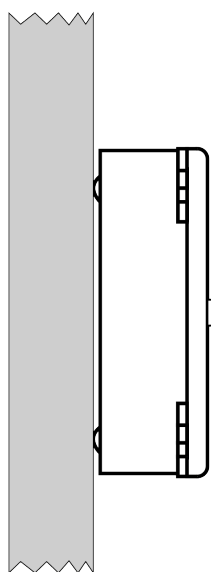
3. Technical Specification

Overall Size	385 mm x 310 mm x 90 mm
Finish	BS 00 A 05 mid grey fine texture
Mains Supply	230 VAC, 50Hz +10% -15% (100 Watts maximum)
Mains Supply fuse	1.6 Amp (F1.6A L250V)
Power Supply rating I_{max a}	400 mA
Power Supply rating I_{max b}	2.3 Amps
Operating Voltage	18 to 30 volts DC
Battery Charging circuit impedance R_{i max}	1.35R
Minimum Output current for correct operation I_{min}	130 mA
Maximum Ripple Voltage	1.5+/- 0.3 Volts
Battery Type	Genesis E-NP 7-12 (7Ah, 12V)
Battery Charge Voltage	27.6 VDC nominal (temperature compensated)
Battery Charge Current	0.7 Amps
Battery Fuse	20mm 3.15A glass
Maximum Current draw from batteries	3 Amps
Aux 24V Output Rating	300 mA maximum load (fused at 500 mA)
Sounder Output Rating (two outputs)	Each rated at 1A
Relay Contacts	30 VDC, 1 Amp maximum
Detection Loop Current	400 milliamps maximum

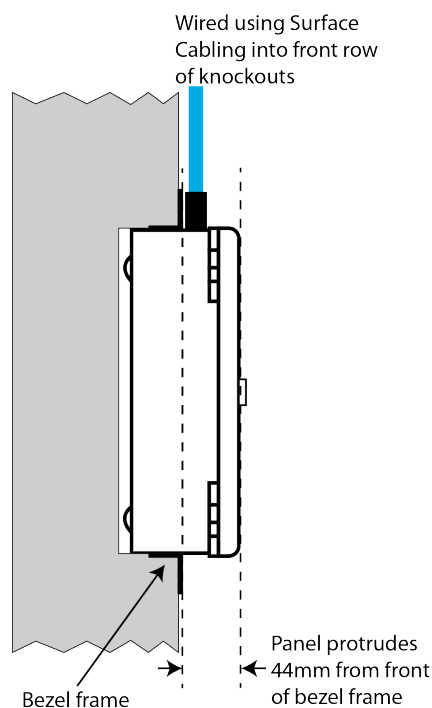
4. Mounting

The panel can be Surface, Semi or Deep recessed mounted using the bezel. The panel has knockouts on the two ends of the enclosure to locate the bezel in the correct position depending if a Semi or Deep recess is required.

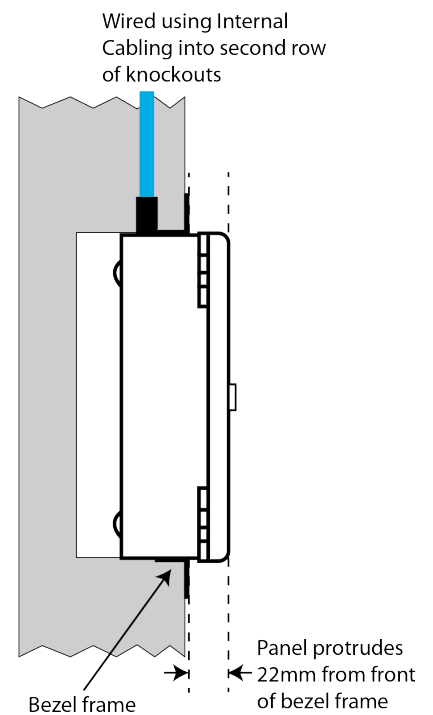
Surface Mounting



Semi-Recess Mounting



Deep-Recess Mounting



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Hydrosense ID Addressable Water Detection System



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4.1 Installation

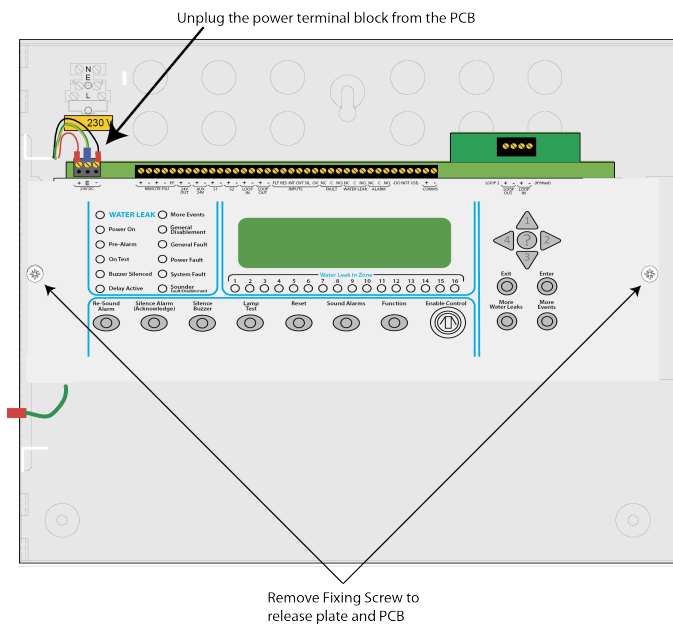
The installation of the panel should be carried out by qualified personnel only. The electronic components within the panel are vulnerable to physical damage and damage by electrostatic discharges.

It is advisable to wear a wrist strap designed to prevent the build-up of static charges within the body, before handling any electronic circuit boards.

Never insert or remove boards or components with the power on. To avoid this hazard a Mains Isolator Switch should be installed.

Mounting the Cabinet

The site chosen for the location of the panel should be clean and dry and not subject to shock or vibration. The temperature should be in the range -5° to $+35^{\circ}$ C, the humidity should not exceed 95%.

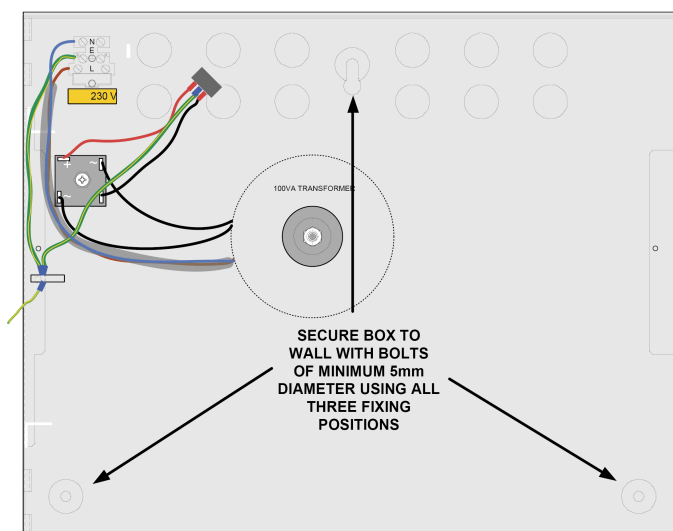


Open the outer cover using the key provided. Unplug the power terminal block from the left hand side of the circuit board, remove the two screws holding the plate in position and then remove the complete circuit board and plate.

Hold the assembly by gripping the metal plate only and try to avoid touching the circuit board.

Place the plate/circuit board assembly and fixing screws in a safe location to prevent accidental damage.

The outer cover can be removed to make fitting more manageable by removing the two pins holding it in position on the left hand side.



Remove knockouts from the top and or back of the box in the positions at which cables will enter.

When surface mounting use the box as a template, mark the position of the top-fixing hole, ensuring that the wall is flat at the chosen location. The top fixing is a keyhole slot and fitting a screw here and hanging the box first will assist in marking the remaining fixing points.

Screws or bolts of a minimum of 5 mm diameter and 40 mm long must be used to mount the enclosure in all three mounting positions.

After the box is firmly fixed, remove any knockout blanks and dust or swarf caused by drilling and fixing the box.

See bezel installation instructions if Semi or Deep recess mounting.



5. Cabling

It is advisable to fit cable glands and cables before re-fitting the outer cover and plate/circuit board assembly. Cables should be brought into the cabinet using the knockouts provided and where necessary, using couplers to maximise the space within the enclosure. Use the knockouts closest to the terminating position for each cable, to ensure cable length within the enclosure is kept to a minimum.

Ensure that only the numbers of knockouts are removed to meet the cable termination requirements, as any additional apertures in the enclosure will compromise the IP30 ingress protection requirements.

Brass inlet bushings or cable glands should be used to maintain insulation and to ensure EMC compliance.

The screen or drain wires should be bonded to earth via metal cable glands.

The maximum size of cable, which can be terminated, is 2.5² mm.

The communications protocols are highly immune to noise but sensible segregation from known noise generating sources such as mains cables is recommended.

Detection loop circuit cable size and type is dependent on the number and type of devices used and should be calculated for each installation.

Cabling for sounder circuits should be sized according to sounder load and cable length but 1.5mm² should suffice in the majority of cases.

The control panel requires a 230 VAC supply, which should be derived from a separate fused mains isolator switch, labelled "**Water Leak Alarm - Isolator**".

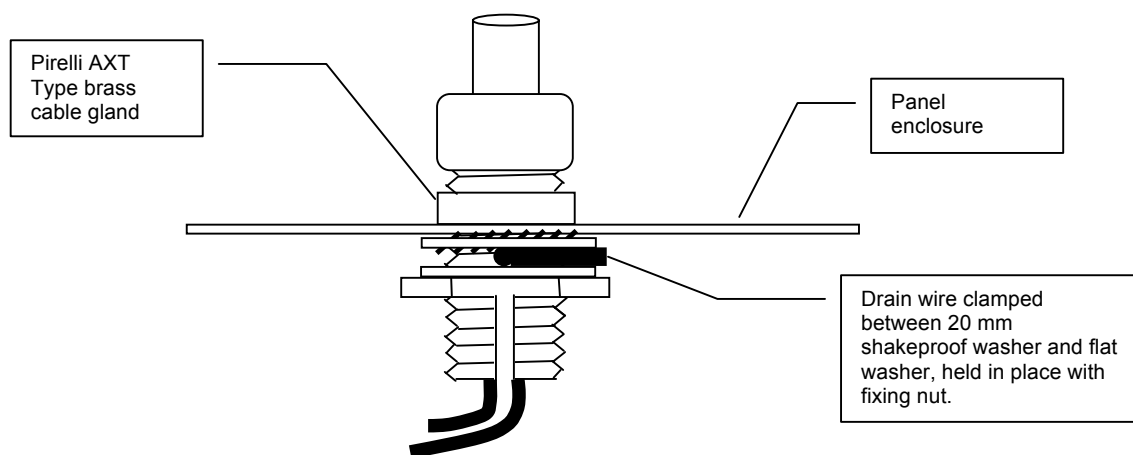
The mains supply must include an earth conductor connected to the fixed installation earthing system of the building.

This equipment relies on the building installation for protection and requires a 5 Amp protection device. The mains supply should use cable with a minimum cross section of 1.5 mm².

5.1. Cable Termination

Drain wires need to be terminated at the brass cable gland to ensure EMC compliance.

To ensure good earth bonding at entry to the panel enclosure, it is recommended that the cable drain wires are terminated using Pirelli AXT brass cable glands. These glands have a slotted fixing thread, which allows the drain wire to be clamped between the gland fixing nut and panel enclosure. To ensure that a good earth bonding between the drain wire and panel case, a 20 mm shakeproof washer should be used, as shown in the termination diagram below.



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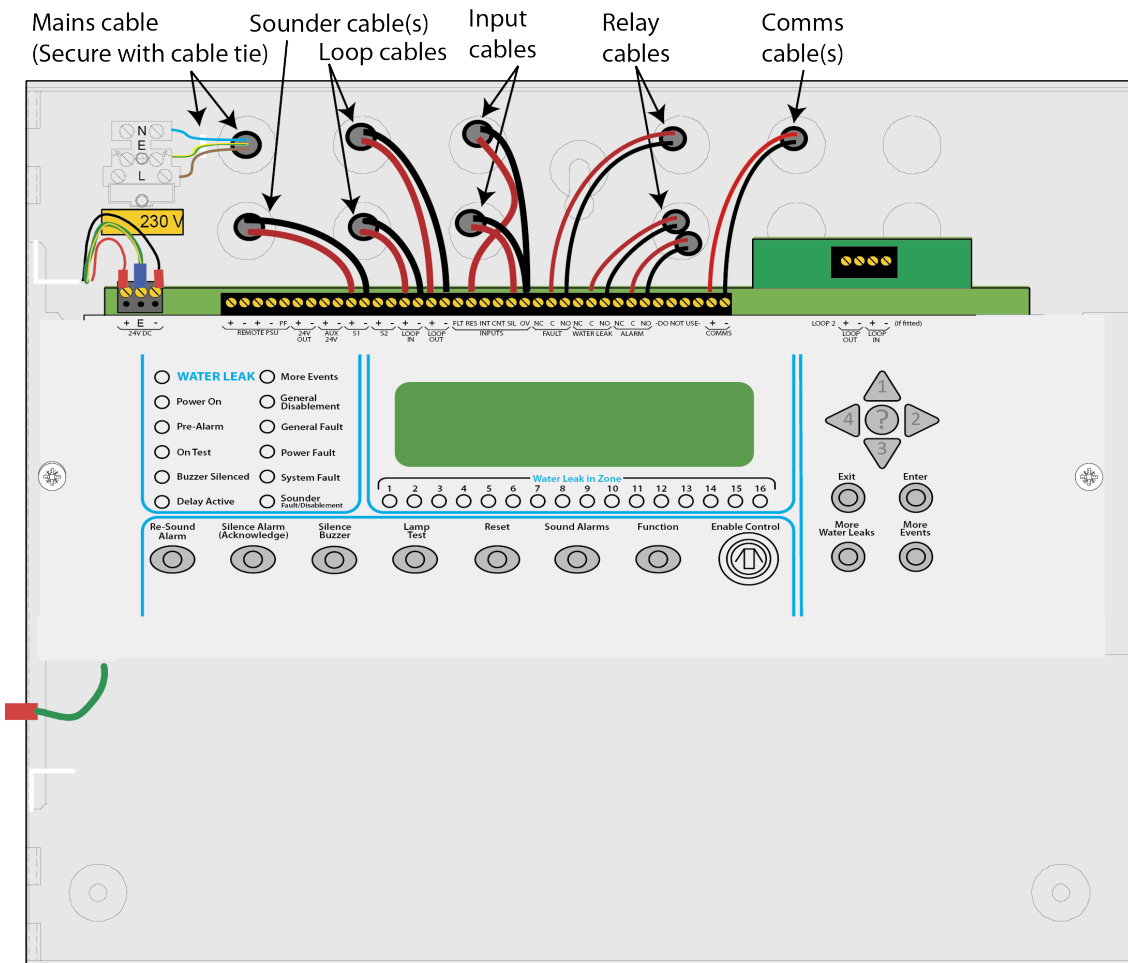
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6. Connecting to the Panel

All panel terminal block connections support cable with a maximum cross section capacity of 2.5 mm² capacity. Care should be taken to use the correct sized terminal screwdriver and not to over tighten the screws. If stranded cables are used then care should be taken to ensure that all strands are contained in the terminal block and that there are not any loose strands that may cause short circuits to other terminals or cables.

The mains connection should enter the enclosure via a knockout as near to the mains terminal block as possible and should be segregated from all other wiring. Mains connection cables should be kept short and be secured together with a cable tie near the mains terminal block to minimise the danger of them shorting to other parts of the equipment if they become disconnected.

The mains terminal block contains a F1.6A L250V fuse and must be replaced only with a fuse of the same type. The diagram below shows the recommended cable routing for connections to the panel. The diagram shows the rear cable entry points used. If top cable entry points are used then a similar arrangement should be employed.



To avoid the possibility of a confusing array of fault conditions, it is best to connect the system gradually so that faults can be cleared on one circuit before connecting another.

Polarity must be observed carefully on any terminals with + or - markings and end of line devices must be fitted to all circuits which connect to terminals that have had the supplied, end of line devices removed.

All wiring should be checked carefully before applying power to the control panel.

Do not connect or disconnect wiring with the power on.

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7. Front Panel Controls

The front panel contains controls for operating and programming the panel.

The "Lamp Test" and "Silence Buzzer" buttons can be operated at any time. (Access Level 1)

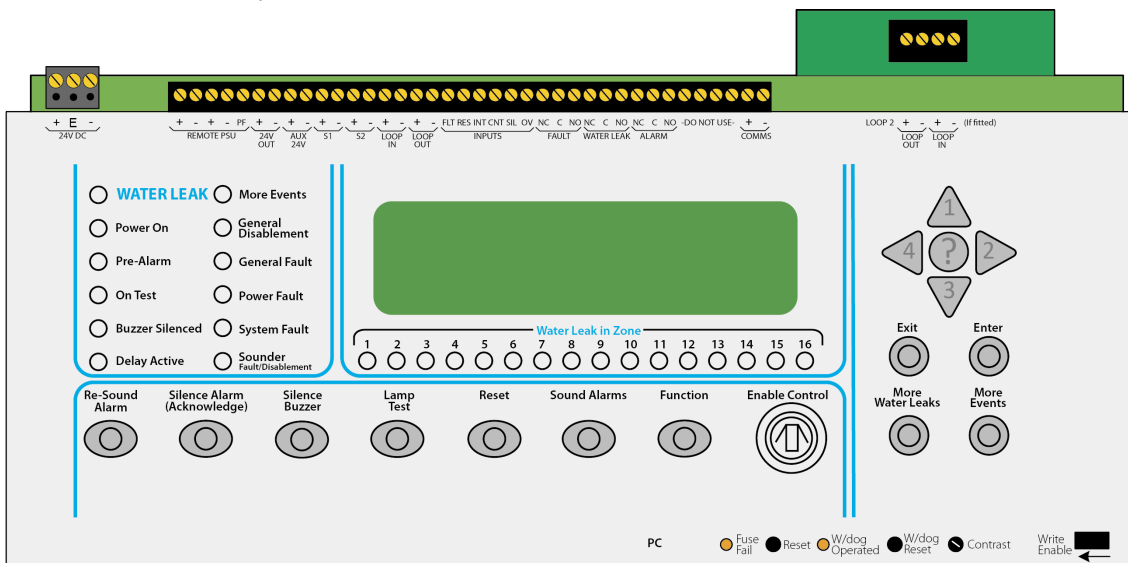
The "More Leak Events" and "More Events" buttons can be operated at any time when there are more events than can be displayed on the screen. (Access Level 1).

The menu navigation buttons (1, 2, 3 and 4) can be used to enter the password to Access Level 2 (2222), which then enables the "Silence Alarm (Acknowledge)", "Re-sound Alarm", "Reset", "Sound Alarms" and "Function" button. This also gives the user access to the Access Level 2 menu facilities such as "Disabling" and testing parts of the system.

Access Level 2 can also be entered by operation of the "Enable Control" keyswitch.

The internal panel buzzer will "beep" whenever a button is pressed.

The help "?" button offers additional information relating to the current status of the control panel. For example, if the panel is in an Alarm or Fault condition then advice on the recommended action will be displayed when the "?" button is pressed or if a menu function is being accessed then help relating to that function will be displayed when the "?" button is pressed.



With the lid of the control panel open, Access Level 3 controls are revealed. These controls are strictly for service personnel and should not be operated by the user under any circumstances. Opening the front cover also gives access to the "PC" Connection Port for programming.

If the processor stops running or re-boots for any reason, the watchdog indicator "W/Dog Operated" will illuminate as a record of this event, this indicator can only be reset by operating the "W/dog Reset" switch.

It is necessary under some circumstances (after a firmware upgrade for instance) to re-start the processors in the panel. A reset switch is provided for this purpose labelled "Reset".

A display "Contrast" adjust control is provided which can be adjusted to suit the lighting conditions or position of the installed panel. This is a rotary control and can be adjusted with a small terminal screwdriver.

In order to change the configuration of the control panel, the configuration memory must be enabled. This is done by switching the "Write Enable" slide switch from its normal, right hand position, to the left as indicated by the arrow beneath it.

A warning is displayed on the LCD when the "Write Enable" switch is in the enabled position to prevent it from being inadvertently being left in this position. This warning can be reset after the switch has been returned to its normal position by pressing the front panel "Reset" button. If not reset, the warning will time out a short while after the "Write Enable" switch is returned to the right hand position.

All of the Access Level 3 controls are recessed to avoid accidental operation but all can be accessed using a small, terminal screwdriver or similar tool.

8. Powering the Panel

Never connect batteries before applying mains power first.

Ensure that the panel is free from swarf, wire ends, knockout blanks and any other debris.

Ensure that all cable connections to loops, sounder circuits and other inputs or outputs being used are correct and that the wiring is formed tidily away from the surface of the circuit board before applying power.

The panel requires two 12 V 7 Ah sealed lead acid batteries. The batteries should be placed in the bottom of the box with the terminals facing up and facing each other.

Batteries can be dangerous. Do not short the battery terminals to the enclosure or mounting plate. The polarity of the battery connection should be checked carefully before proceeding.

Connect the batteries together first by fitting the battery link to the battery terminals nearest the back of the enclosure.

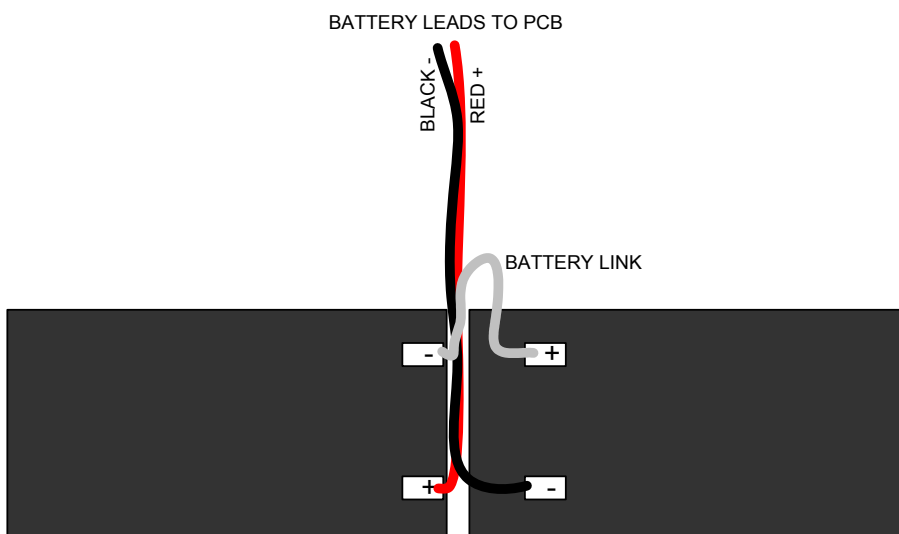
Connect the red battery lead to the terminal of the left hand battery nearest the front of the enclosure and the black battery lead to the terminal of the right hand battery nearest the front of the enclosure.

The supply from the battery is protected by a 3.15 Amp, 20mm glass fuse that will rupture if excessive current is demanded from the battery by the control panel. This fuse is labelled F4 and is located on the underside of the circuit board.

To replace the battery fuse, the power should be removed from the panel and the plate removed as described in section 4. The fuse must be replaced with one of the same type.

Never connect batteries before applying mains power first.

Battery connection viewed from above



Caution:
RISK OF EXPLOSION
IF BATTERY IS
REPLACED BY AN
INCORRECT TYPE.
DISPOSE OF USED
BATTERIES
ACCORDING TO THE
INSTRUCTIONS

Once all power connections are correctly made and power is applied, the panel is ready to start.

8.1. Configuration Data - Write Enable Switch

Panels have a memory "Write Enable" switch fitted. This switch is used to physically prevent the configuration memory contents from being changed.

Before making any changes to the panel configuration, it is necessary to ensure that this switch is in the "Write Enable" position. The "Write Enable" position is with the switch actuator set to the left in the direction of the arrow under the switch.

When left in the "Write Enable" position, a notification message will be given on the Hydrosense ID display. This warning message will disappear 1 minute after the switch has been turned off or can be cancelled immediately by operating the front panel "Reset" button.

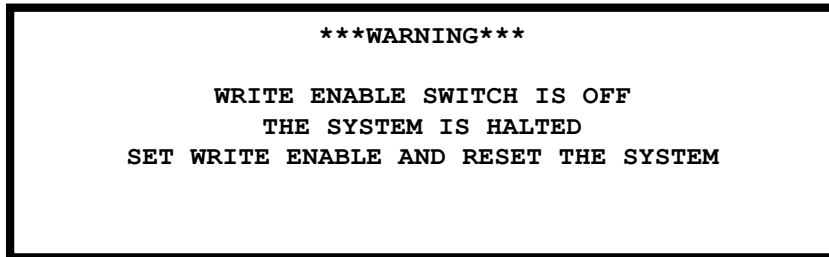


It will not be possible to perform the Autolearn sequence or transfer a configuration into the panel from the PC (as described below) unless the configuration memory is "Write Enabled".

It is also necessary to operate the "Write Enable" switch whenever any changes are made to the configuration memory using the Access Level 3 "Edit Configuration" or "Set Times" menu options via the front panel controls.

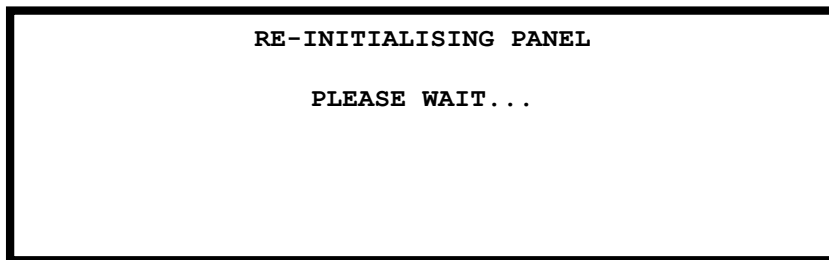
8.2. Configuring the Panel (Autolearn – Initial Startup)

When supplied, the panel will contain no configuration and when power is first applied the display will show:

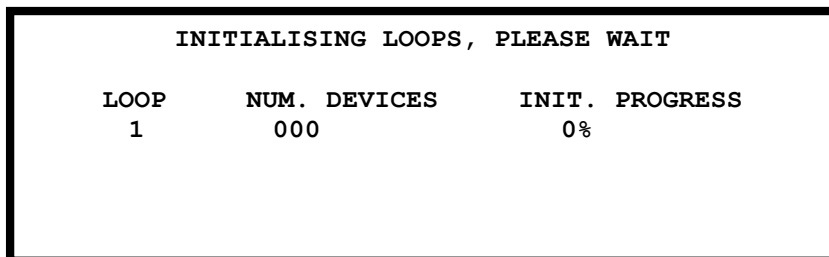


CAREFULLY slide the "Write Enable" slide switch (located behind the aperture in the bottom right corner of the plate) to the left position using a small screwdriver, or similar tool. Then press the internal "Reset" switch that can be seen through the hole in the plate with a small terminal screwdriver or similar tool.

The display will then show:



Followed by



Initialisation can take a few minutes to complete and the larger the number of devices on a loop the longer it takes.

At the end of the initialisation process, if there are no faults, and after the "Write Enable" switch has been CAREFULLY switched to the right position (using a small screwdriver or similar tool) the normal display will be shown as below.

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Hydrosense ID Addressable Water Detection System



13:05 Thursday 24 August 2017
AUTO CONFIGURED PANEL

USE ARROW KEYS TO ENABLE PANEL
PRESS? FOR HELP

On a system, which has been Auto learned; inputs, outputs and field devices will be configured to the default settings. Some of these defaults may be altered at Access Level 3 on the control panel. All can be altered via the Loop Explorer PC (LE2) configuration utility.

It is quite common for mistakes to occur when addressing large numbers of devices and it is possible that some devices may have been set to the same address. The control panel can detect devices that have been set to the same address and will announce a "double address" fault if it finds any.

It is not possible for the control panel to tell which devices have been double addressed but to help find them, enter Access Level 2 by entering the code 2222 or operating the key switch, go to the view devices option in the menu, select view devices by loop and make sure that all of the devices that are expected are listed.

If there is one double address fault and one device missing from the list of expected devices then it is fairly certain that the missing one is the one that has been addressed incorrectly.

It becomes a bit trickier when there are more than 2 devices with the same address or more than 1 double address but using the principle above it will be possible to find the errors by a process of elimination.

It is always much quicker and easier to commission a system which has been addressed correctly and extra care taken to fit devices with the correct address as per the installation plan will pay great dividends at the commissioning stage.

If a fairly heavily populated loop is disconnected from the panel, the panel will report all of the devices disconnected. Upon re-connection of the loop, the panel will find all of the devices again but it also has to run as a Leak Detection control panel, service other parts of the system and re-initialise the devices that have been detected. In the case of a large number of faults under these circumstances it is often quicker to get the system back to normal by re-starting the panel by pressing the "Reset" switch (located with the door open and to the right of the "Fuse Fail" LED).

8.3. Configuring the Panel (from PC)

To allow configuration from a PC it is necessary to have the Loop Explorer PC (LE2) configuration utility installed on the computer and for the download lead (Part Number: IDAP-LEAD) to be plugged into the serial port of the computer. The other end of the download lead should be connected to the "PC" connector which is exposed when the outer door is opened and is located to the left of the Fuse Fail LED Indicator.

When configuring the panel from a PC, it is very important to ensure that the actual configuration of devices installed matches the PC configuration. If this is not the case then there can be a bewildering array of missing and/or unexpected devices, which can be quite confusing and difficult to diagnose.

If the exact site configuration is not known in advance, it is possible to upload an Auto-Learned configuration to the PC, add text messages and any other changes required and then download this back to the control panel. This method ensures that the configurations match, is likely to proceed without errors and provides a quick and easy method of entering text and zone number information.

Panels that are configured from a PC can have default settings for devices changed so the system should be thoroughly tested after a download to ensure that all devices respond as expected.

To retrieve a configuration from the panel and save it onto a PC, connect the IDAP-LEAD download lead to the PC port of the panel and to the serial port of the PC. Open the Loop Explorer PC (LE2) configuration utility on the PC and select "Connect to Hydrosense ID panel" from the four options that are offered by the opening screen. Click OK and you will be given an option to save the file you are about to create.

Give the file a name that is easily identifiable with the site and the panel location/name. Once the configuration file is created and the program is open, there is an option in the panel settings to enable the panel name to be set and displayed on the panel.

Always keep a backup of configuration files with a different name to the original such as filename 01, filename 02 etc.

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Hydrosense ID Addressable Water Detection System



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Once the file has been saved an option to use a dial up connection will be offered. If this facility is going to be used, select yes and enter the telephone number that will need to be dialled to connect to the panel. If this is not required select no.

Loop Explorer PC (LE2) configuration utility will now open with a blank configuration. Click on the Connect icon, which is the third from the right in the row of icons along the top of the screen.

This will open the PC CONNECT screen. Click on the tick box in the column on the left labelled Sync then click the button labelled Synchronise in the second row of icons on the PC CONNECT screen.

A dialog box will be displayed showing the file transfer process from the panel to the PC. After a few minutes the file transfer will be complete. Close the PC connect box, click on the + sign next to the panel icon on the left then click on the + sign next to the loop icon. This will now show all of the devices that are connected to the panel and they can be viewed and edited as required by double clicking them. The file should be saved with an appropriate file name once edited as required.

To transfer the modified file back to the panel, first switch on the "Write Enable" switch at the panel by moving it to the left, click the connect icon at the top of the screen, put a tick in the box in the column labelled Sync and click Synchronise. The file will now be sent back to the panel with any changes that were made on the PC. The panel will display RECEIVING NEW CONFIGURATION, PLEASE WAIT... during the file transfer process and will then display the start up screens as per the Auto learn sequence above.

When the file transfer has finished, switch off the "Write Enable" switch on the panel, enter Access Level 2 and press the front panel reset button to clear the system fault message. The panel will now contain the modified configuration from the PC.

9. Facilities Menu

A number of facilities are provided which can only be reached at Access Level 2 or 3.

Access Level 2 can be reached by entering the correct password (a 4 digit number) and pressing the enter button or the "Enable Controls" key switch.

Access Level 3 can only be reached from Access Level 2 and only by entering the correct, 4-digit password then pressing the enter button.

Panels that have not been configured, or have been configured using the Auto Learn option, have 2222 as the default password for Access Level 2 and 3333 as the default password for Access Level 3.

Passwords can only be changed using the Loop Explorer PC (LE2) configuration utility.

The Access Level 2 password is required by the end user, to "Silence/Acknowledge", "Resound Alarms", "Sound Alarms", operate the "Function button" and to "Reset" the system.

Any persons responsible for safety and who have been trained and authorised to use the Leak Detection control system should be made aware of the Access Level 2 password or given the enable controls key where applicable.

Without the Access Level 2 password or the enable controls key where applicable, it is not possible to control the Hydrosense ID Water Leak detection panel so it is most important that the responsible person knows the password or is in possession of the enable key.

Main menu items available at access levels 2 and 3 are as follows:

ACCESS LEVEL 2 (2222)	ACCESS LEVEL 3 (3333)
Disablements	Edit configuration
View devices	Set times
Test Zones	View/print event log
Set system time	Print configuration
Access level 3	Engineering Disablements and settings
	Loop Data Test

Access Level 3 enables a much higher level of control and must be restricted to persons trained and authorised to reconfigure the site-specific data and to maintain the Hydrosense ID panel. Typically, engineers of the installation company will be responsible for Access Level 3 functions.

Before any changes are made to the configuration memory, using either the Edit Configuration or Set Times menu options, it will be necessary to CAREFULLY set the memory "Write Enable" switch to the left hand "Enabled" position, using a small screwdriver, or similar tool.

INSTALLATION INSTRUCTIONS

Hydrosense ID Addressable Water Detection System



hydrosense

10. Detection circuits

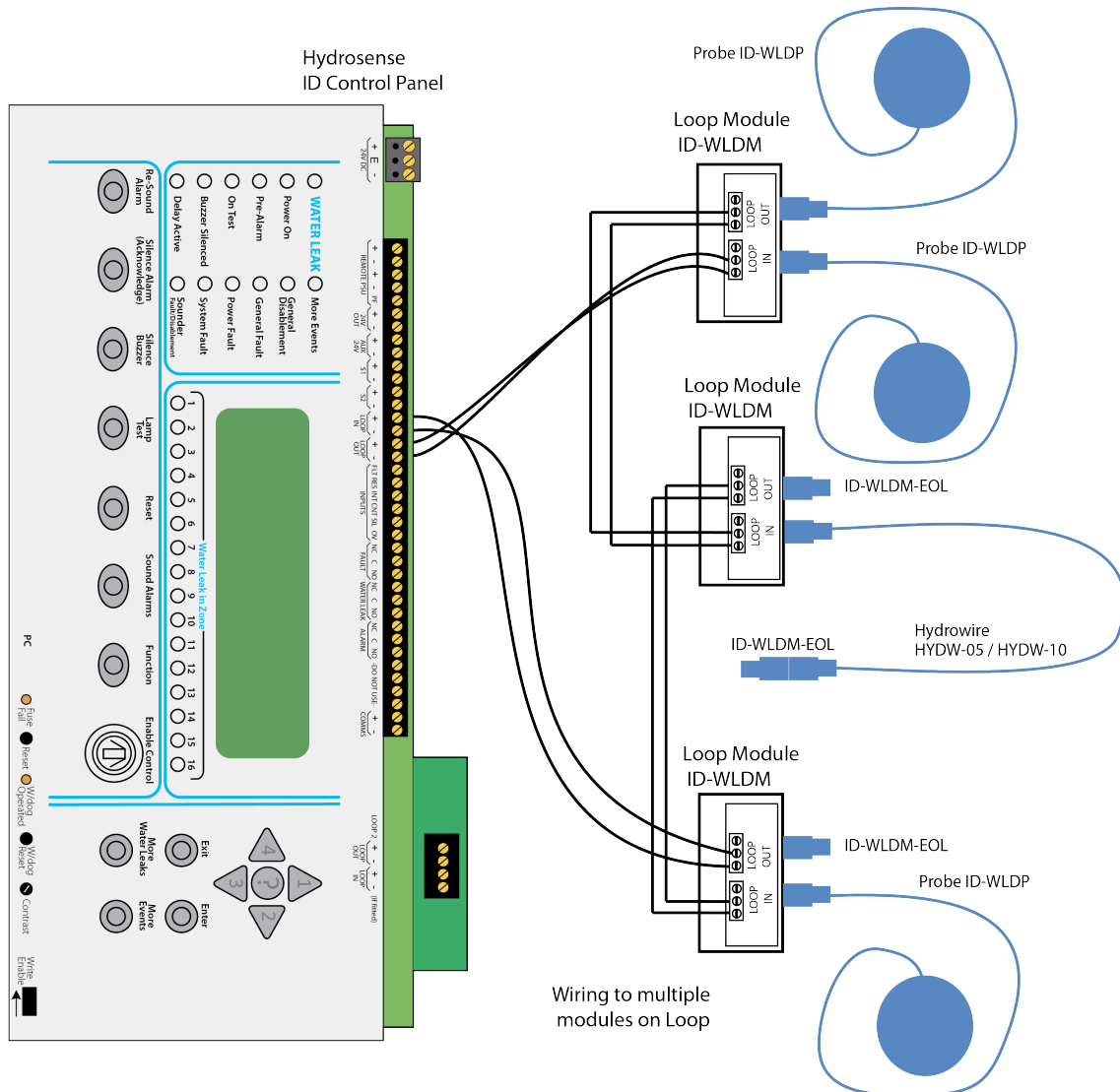
Hydrosense ID control panels are configured to communicate using only Hydrosense ID loop components.

Power is driven from the "LOOP OUT" terminals and is returned to the "LOOP IN" terminals, where it is monitored for detection loop continuity.

If the loop is open-circuit (a cable fault or short circuit isolator operated), the panel will drive power from both the "LOOP OUT" and "LOOP IN" terminals. This ensures that despite a single break or short circuit in the wiring, all of the devices will still remain connected to the control panel. In the case of a short circuit, the short circuit isolators will isolate the faulty section of the wiring and the panel will report devices between the isolators as missing.

Both the "LOOP OUT" and "LOOP IN" connections of the panel are fitted with short circuit isolation so that a short on the cable between these terminals and the first isolator fitted to the detection circuit will be isolated, leaving the remainder of the circuit operational.

Detection loops should be wired in a screened 2-core cable and terminated at the panel using brass cable glands. Detection loops should have the drain wire terminated at the cable gland, as described in [Section 4.1](#)



10.1. Fitting additional Detection Circuit (Loop Card: IDAP-LEC)

On a single loop Hydrosense ID panel an additional detection circuit (loop card) can be fitted, it must be compatible with the existing detection circuit. **Note: The system can only support a maximum of two loops.**

To fit the Loop Card, the control panel must have mains and battery power removed.

The metal chassis should then be removed by removing the two fixing screws that hold it in place.

The Loop Card is supplied in a static dissipative bag and should remain in this bag until it is to be fitted.

As with all electronic components, this circuit board is very sensitive and can be easily damaged by electrostatic discharge.

Where possible, a static protective wrist strap should be worn when handling circuit boards. Where this is not available; it is advisable to touch a surface that is known to be connected to the earth of the fixed installation.

The additional Loop Card mounts on the left hand side of the main board and fits into two connectors labelled X7 and X8.

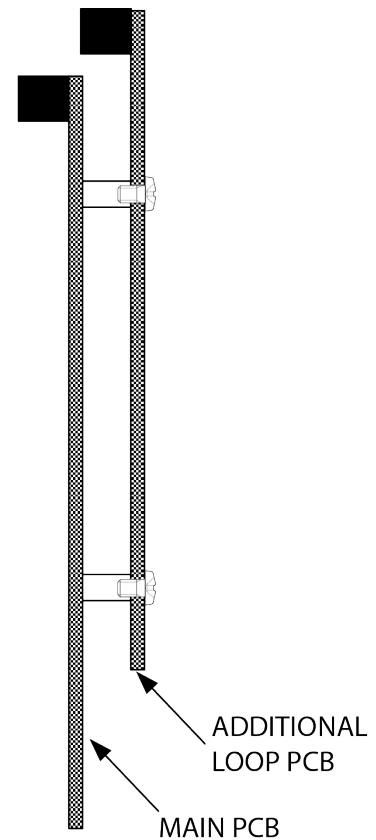
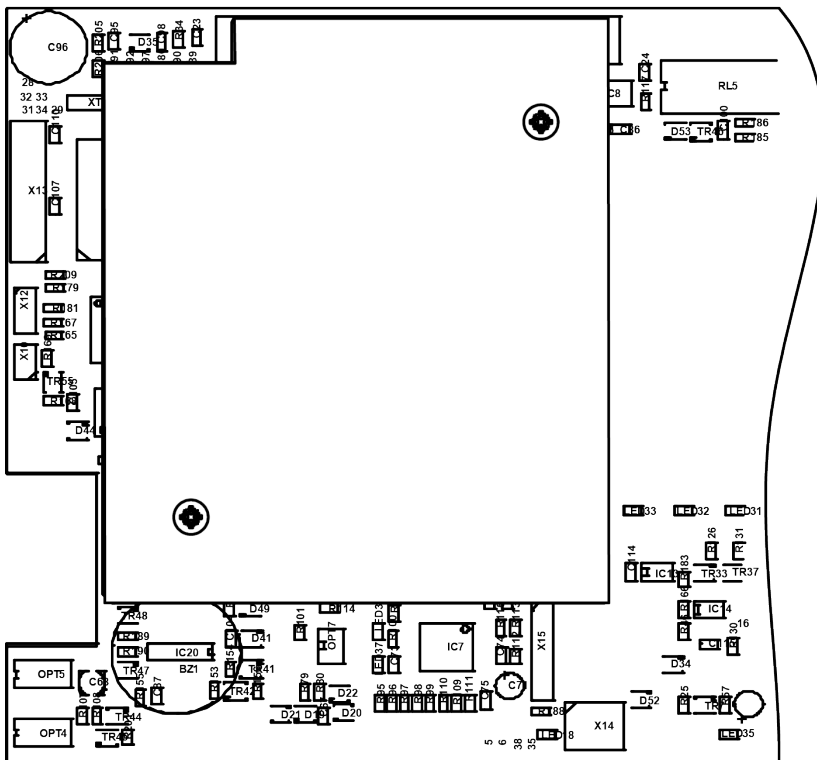
There are two mounting pillars on the main board to which the additional Loop Card should be fitted using the M3 screws and fibre washers supplied.

After checking that the Loop Card is firmly located and making good contact with its connectors, the metal chassis can be screwed back into place in the enclosure.

Unused detection circuits must have the "LOOP + OUT" to "LOOP + IN" and "LOOP - OUT" to "LOOP - IN" terminals wired together to prevent open circuit faults from being reported.

The devices on the new detection loop should be added to the original configuration file using the Loop Explorer PC (LE2) configuration utility and downloaded to the panel as described in section 8.3. If this is not done the panel will report unexpected devices on loop 2.

CAUTION - If an Autolearn is done to detect the devices on the additional loop, any previous configuration such as location text that had been allocated to the existing devices on the original loop will be erased. For this reason, it is preferable to update the control panel configuration via a PC.



11. Panel Sounder Circuits

Two conventional sounder circuits are provided in the panel, each fused at 1 Amp. A 10K Ω end of line resistor monitors the circuits for open and short circuit faults.

Both circuits are configured to activate upon any Leak Detection condition and to de-activate when the "Silence Alarm/ Acknowledge" button is pressed on the front panel or a "Silence input" is operated. Each sounder circuit can be configured independently via the Loop Explorer PC (LE2) configuration utility or the front panel pushbuttons (at Access Level 3).

This allows sounder circuits to be operated by different methods such as Zonal Alarm or via Cause & Effects.

11.1. Stage one and stage two delays

The sounder circuits can have a single or two-stage delay if required. The first stage of delay allows up to 5 minutes for the alarm to be acknowledged.

If the alarm is not acknowledged before the first stage delay expires, then the sounders will operate.

If the alarm is acknowledged during the first stage delay, the second stage delay (again up to 5 minutes) will start.

If the alarm is acknowledged during the first stage delay and the second stage delay is zero then the sounders will not operate.

If the alarm is acknowledged during the second stage delay, the second stage delay (up to 5 minutes) will start and the sounders will operate at the end of the delay unless the panel is reset.

Activation of two or more devices producing a Water Leak action, an input configured to override output delays, will override the delays and operate the sounders immediately.

12. Relays

Volt free changeover relay contacts rated at 30 VDC at 1 Amp are provided for ancillary switching functions in all panels.

Under no circumstances should voltage or current outside of this limit be used with these contacts.

The default actions of these contacts as supplied from the factory are as described below: -

NAME	ACTION
LEAK DETECTION	Activates on any Leak Detection condition and remains active until panel is reset
FAULT	Activates on any fault or on total loss of power and clears when faults are cleared
ALARM	Activates on any alarm, de-activates when alarm silenced / acknowledged

Each volt free changeover contact can be reconfigured independently for other actions via the PC configuration program or the front panel pushbuttons (at Access Level 3).

13. Remote Control Inputs

Five inputs are provided in the panel, which have default actions as described in the table below:

INPUT	DEFAULT ACTION
FLT	Operates outputs configured to operate on fault condition.
RES	Resets the control panel
INT	Operates all sounder outputs intermittently
CNT	Operates all sounder outputs continuously
SIL	Acknowledges the alarm (silences all sounders)

NOTE: The RES / INT / CNT / SIL inputs should only be available at Access Level 2. Care must be taken to ensure these inputs cannot be operated without some form of access control.

INSTALLATION INSTRUCTIONS

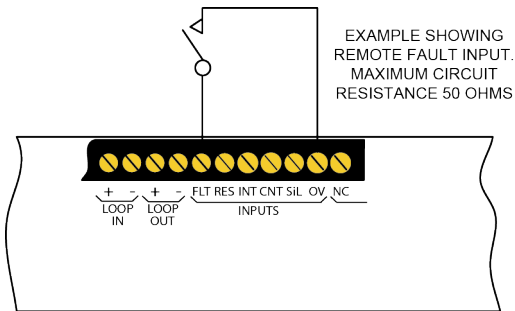
Hydrosense ID Addressable Water Detection System



All inputs can be re-programmed to have a different action, delay, zone and location message using the Loop Explorer PC (LE2) configuration utility or front panel controls (at Access Level 3)

To activate the inputs, the "0V" connection is connected to the input(s) as shown below.

All inputs are non-latching as default.



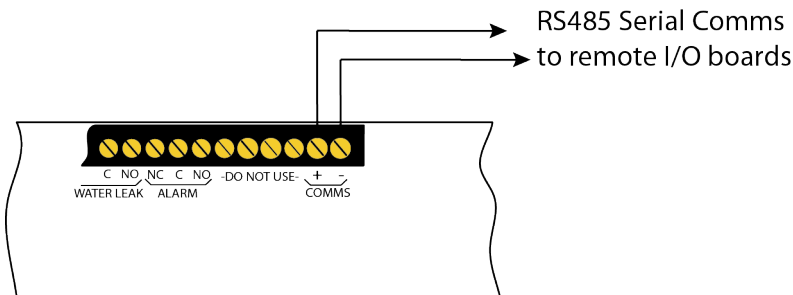
The line impedance should be less than 50 Ohms for reliable operation.

14. Remote I/O Serial Bus

The Hydrosense ID control panel has a serial communications bus to which additional I/O, relay, sounder and conventional detection zone boards may be connected. The serial bus also supports up to 15 repeater panels.

Up to 32 I/O units can be connected to the serial bus and these can be a mix of any type.

Limited numbers of these units may be connected to the panel's Auxiliary 24 VDC supply however the fuse rating of the Auxiliary supply and the effect of the extra power required on battery standby must be taken into consideration. Full details of power consumption for devices that connect to the serial I/O bus can be found in the Installation manuals of the individual devices.



Connection of remote I/O boards to Hydrosense ID panel.

14.1. 16 Channel I/O Board (ID-SIO-16)

The 16 channel I/O boards can be individually configured using the Loop Explorer PC (LE2) configuration utility to modify its operation in response to Alarms or Cause & Effects as required.

Each channel can be programmed as an Input or an Output. When added to a control panel, all channels default to Inputs (default action when activated will be FAULT). Any or all channels may be changed to Outputs via the Loop Explorer PC (LE2) configuration utility. When channels are changed to Outputs (default action - DEFAULT RING MODE). This means that they will switch on when a Leak Detection condition is present on the control panel as COMMON ALARM, ZONED ALARM or 2-STAGE ALARM (see section 19.3.2).

Inputs to these boards are via Opto-Isolators, which offer good protection against electrical noise and transient voltages. Channels configured as Outputs are Open Collector, so must be used with care to avoid damage by shorting or sourcing too much current. For full details of 16 channel I/O boards refer to manual 3500041.

14.2. 8 way Relay Board (ID-SIO-8R)

The 8 way Relay Boards have individual, volt free changeover relay contacts which can be configured using the Loop Explorer PC (LE2) configuration utility to operate in response to Alarms or Cause & Effects as required.

Relay contacts are rated at 30 VDC, 1 Amp. For full details of 8 way Relay Boards refer to manual 3500042.

14.3. 6 way Sounder Board (ID-SIO-6S)

The 6 way sounder board has 6 voltage reversing, monitored Sounder Outputs which can be programmed to operate as required on response to Alarms or Cause & Effects.

The sounder board also have two programmable, volt free changeover relay contacts and two Opto-Isolated Inputs all of which are also fully programmable via the Loop Explorer PC (LE2) configuration utility. For full details of 6 way Sounder Board refer to manual 3500043.

14.4. 4 way Zone Board (ID-SIO-4Z)

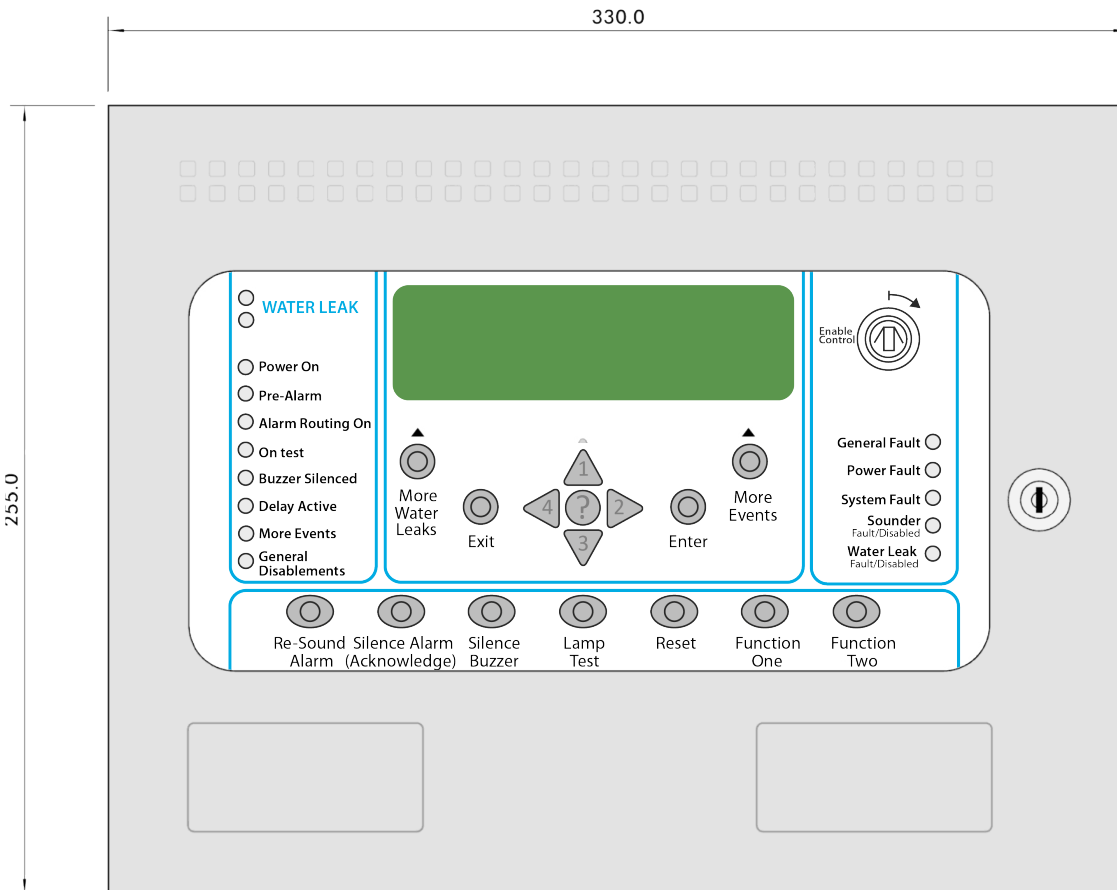
The 4-way Zone Board has four conventional Detection Zones, two monitored Sounder Outputs and two programmable volt free, Relay Contacts which default to Leak Detection and Fault actions.

The 4-way Zone Board is in effect a self contained 4 zone conventional control unit. For full details of 4 way zone boards refer to manual 3500044.

14.5. Hydrosense ID Repeater Unit (IDAP-S-R-24 / IDAP-S-R-230)

The Hydrosense ID Repeater is a very cost effective, full function repeater panel that connects to the remote serial I/O bus and provides full indication and control of all panels' status and functions in a compact, slimline enclosure.

Up to 15 Hydrosense ID Repeaters may be connected to the serial bus as well as any combination of the other types of I/O boards up to a maximum of 32.



Hydrosense ID Repeaters have a low standby current consumption and can be powered by the Aux 24V output of the Hydrosense ID control panel or 230 VAC (depending upon model purchased). For full details of Hydrosense ID Repeater Units refer to manual 3500045.



15. Power Supply

The control panel is fitted with a 2.3 Amp power supply and battery charger capable of charging up to 9 Ah batteries. A separate power supply should be used if larger batteries are required.

The power supply requires a 230 VAC mains connection to the fused, mains terminal block in the top left corner of the back box.

The power is split between the charging circuit and power supply such that a maximum of 1 Amp is available to charge the batteries if required, which leaves 2 Amps to run the control panel and peripherals. If the batteries are fully charged and do not require any power, the full 3 Amps is available to run the control panel and sounder load.

The power supply incorporates sophisticated monitoring of the condition of the power system. The battery charging output is temperature compensated to maximise the service life of the batteries.

The following fault conditions are signalled at the control panel: -

- MAINS FAILED
- BATTERY DISCONNECTED
- BATTERY LOW VOLTAGE
- EARTH FAULT

The mains fuse fitted is a T1.6A 250V HRC 20mm type and must be replaced upon failure with a fuse of the same type to maintain the safety rating of the power supply.

15.1. Aux. 24V Supply

A separately fused auxiliary 24 Volt output is provided for powering additional I/O boards or other equipment connected to the Hydrosense ID system. When switching inductive loads such as relays, these should be adequately suppressed using a reverse connected diode.

The "Aux. 24V" supply fuse is of the self-resetting type and is rated at 500 mA. Failure of the fuse is monitored by the system and announced as "Aux. 24V" fuse failed.

The impact on battery standby duration must be carefully considered when using the "Aux 24V" Output. Constant use of the full 500 mA capability of this output for instance would require an additional 15 Ah of battery capacity. Ideally, use of the "Aux. 24V" Output should be restricted to powering a limited number of additional I/O boards or switching equipment when an Alarm condition occurs.

15.2. 24V OUT Terminals

The terminals on the circuit board marked "24V OUT" should not be used for any part of the installation. These terminals are reserved for powering additional equipment that is factory fitted only. Using these outputs to power equipment outside of the panel enclosure will compromise the integrity of the system.

15.3. Remote PSU

The terminals marked "Remote PSU" are for the connection of a remote power supply. These terminals are used on control panels that have an external power supply and larger batteries in cases where standby periods longer than 24 hours are required.

There are two sets of terminals, which allow two transmission paths to be accommodated. A Power Fault Input is also provided to signal faults from a remote power supply on the Hydrosense ID Panel.

15.4. Battery Capacity

To enable the system to continue to function in the event of a failure of the mains supply, batteries must be fitted. These are not supplied with the control panel and must be purchased as a separate line item.

Batteries should be of the re-chargeable, sealed lead acid type. They should be new (less than six months old) and sized according to the local codes of practice for the standby period required, preferably by measuring quiescent and alarm loads for the particular hardware configuration installed or using the formula listed below to calculate the required capacity.

The battery capacity required can be calculated using the following information.

This table shows the panel current consumption but does not take into account device loads, additional I/O boards, or use of the "Aux. 24 Volt" output. Systems using these facilities should have their battery size calculated according to the additional information below.

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PANEL TYPE	QUIESCENT CURRENT	ALARM CURRENT
Single loop panel	0.13 A	0.3 A
Two loop panel (Single Loop with Additional loop Card)	0.195 A	0.37 A

To calculate the capacity of the batteries required the following formula should be used.

$$(\text{Quiescent Load (A)} \times 1.25) \times \text{Standby Period (hours)} + ((\text{Alarm Load} \times 1.75)/2) = \text{Ah}$$

The maximum size of battery, which can be fitted inside standard control panels, is 9 Ah (2 x PBQ 9HR-12).

Batteries above this size will need to be fitted in a separate enclosure and charged by a suitably rated battery charger.

Any additional load connected to the system from the "Aux. 24V" Output such as additional I/O boards should be catered for by additional capacity using the same formula as above and adding the result to the calculated capacity required to maintain the control panel.

The current consumption of additional I/O boards is as follows:

- 16 channel I/O board - 20 mA quiescent, up to 1 A full alarm
- 8 way relay board - 10 mA quiescent, 250 mA alarm
- 6 way sounder board - 30 mA quiescent, 260 mA alarm (plus sounder load)
- 4 way conventional zone monitor board - 70 mA quiescent, 200 mA alarm (plus sounder load)

If several I/O boards need to be powered then it is likely that the standby battery capacity will be exceeded and a separate, power supply and battery set should be installed to power these.

The standby power requirements for the loop devices should be calculated using the device technical data.



16. Programming via Loop Explorer PC (LE2) Configuration Utility

Due to the use of the very latest microprocessor and memory technology, the Hydrosense ID Water Leak control Panel is an extremely powerful controller.

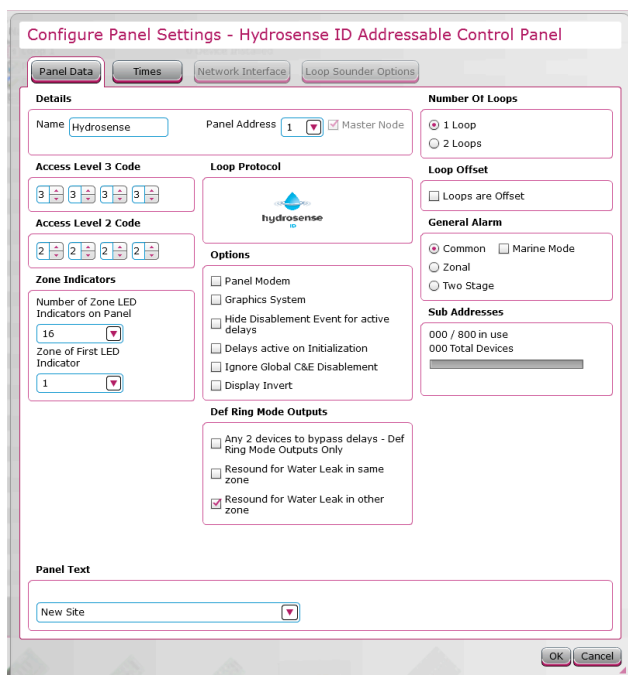
As such, it can be programmed in an almost infinite number of ways, some of which will not give the visual and audible indications expected from a Water Detection system.

Any re-programming from the factory default settings must therefore be carried out by competent systems engineers and thoroughly tested against the system plans before final commissioning.

Although the Hydrosense ID is very powerful and can be programmed to perform some complex tasks, the principals adopted in the way that inputs and outputs are handled make it conceptually very simple.

16.1. Panel Settings

There are a number of attributes for the panel, which can be changed using the configuration programme as shown below.



16.1.1. Panel Name

By default the panel name will be set to the panel type. "Hydrosense ID"

The panel name would normally describe its location such as the name of the building or facility where the panel is mounted.

The panel name can be up to 15 characters long.

16.1.2. Panel Address

Hydrosense ID panels should always be set to address 1.

16.1.3. Protocol

Control panels are supplied as Hydrosense compatible only. **(Note: System only works with specific devices for the Hydrosense ID system).**

The label inside the control panel showing the part number identifies which protocol is being used, it must start with a H

16.1.4. Number of Loops

Control panels are supplied with 1 or 2 detection loops fitted. The configuration file should be created with the same number of loops as the control panel for which it is destined.

The repeater panel does NOT support any detection loops, and has its own communication protocol. This panel option may be selected when adding panels to the configuration only.

16.1.5. Default Ringing Mode

The default-ringing mode is set to common alarm. In this mode, any Water Leak condition will operate all sounders continuously.

The mode can be changed to Zonal Alarm, which means that only sounders in the same zone as the signal that originated the alarm will operate.

A third option of 2-stage alarm is also available which causes the sounders in the same zone as the signal that originated the alarm to operate continuously and sounders in all other zones to operate intermittently.

16.1.5.1 – Marine Mode

Function not applicable – Currently this feature is not used.



16.1.6. Access Level Code Changes

The default codes to enter Access Level 2 and Access Level 3 can be changed via the Loop Explorer PC (LE2) configuration utility only.

16.1.7. Panel Text

A forty-character message can be entered which is displayed when the control panel is in a quiescent condition. This may be the company name and service contact telephone number or any other message agreed with the end user.

16.1.8. Panel Modem Fitted

When selected, the panel expects a modem to be fitted to the PC port. The panel will poll the modem at 90-second intervals and expect a response from the modem. If the modem does not respond, then a "Disconnected Modem" message will be shown on the panel display.

16.1.9. Graphics System

When this is selected, event cleared messages will be sent to the PC port and printer port. This allows a graphics system to track and automatically clear events, provided this facility is supported by the graphics system. This is deselected by default, to reduce printer paper consumption. When selected, event cleared messages will be printed after each event or activation has been reset.

16.1.10. – Zone Indicators

This option should always be set to 16 to match the zone LED's on the panel.

16.1.11. – Display Invert

This option is used to change the LCD status display format. By default, black lettering is shown on a green background.

Selecting this option will change the display to green lettering on a black background. This is useful in reducing the brightness of the display when the panel is installed in darkened locations, such as control rooms and ships bridges.

16.1.12. – Any 2 Devices to Bypass Delays – Def Ring Mode Outputs Only

When this option is set, any delayed outputs configured to respond to the "Default Ring Mode" pattern will operate immediately upon the activation of any second Water Leak signal.

16.1.13. – Resound for Water Leak in Same Zone

When a Water Leak occurs in a zone and the sounders have been silenced, by default the sounders will not activate when a second detector in the same zone goes to "Leak Detected".

Selecting this option will cause the silenced sounders to activate from a second detection device in the same zone.

16.1.14. – Resound for Leak Detection in Other Zone

When a Water Leak occurs in a zone and the sounders have been silenced, by default the sounders re-sound when new Water Leak event is reported from a different zone.

Deselecting this configuration option will stop the silenced sounders from activating on the new zone Water Leak event.

16.1.15. – Hide Disablement Event for Active Delays

This option applies to historical "V5.xx firmware" control panels only. As the Water Leak detection system is currently on V6.xx this option should not be used.

16.1.16. – Delays Active on Initialisation

This option will switch delays On by default when the panel is restarted or powered on. It is recommended that this option be selected on any system where delayed outputs are configured.

16.1.17. – Ignore Global C&E Disablement

Function not applicable – Currently this feature is not used.

16.1.18. Day/Night Times

Day night change times can be set for each day of the week by selecting the "Times" tab on the panel settings screen.

Currently this feature is not used.

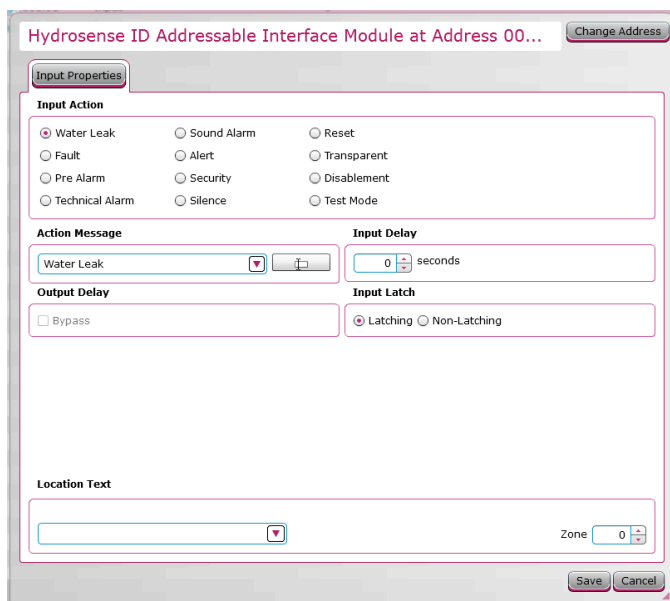


16.2. Inputs

To simplify programming and promote an easy understanding of the system, the operation of the Hydrosense ID panel has been designed around a very simple principle.

This principle is that all inputs are handled in exactly the same way, whether they are from a loop device, a programmable input on the panel, an I/O board or the programmable pushbutton on the front panel.

This means that any input can be allotted a set of attributes, which define how the control panel will respond when the input is activated.



As can be seen from the screen capture of the Loop Explorer PC (LE2) configuration utility, there are many attributes to choose from for each input.

The key to the flexibility of the Hydrosense ID system is the ability to vary these attributes for each input.

Inputs need not simply report a Water Leak or fault but can be used to signal all manner of other conditions and to control the system in many different ways.

Probably the most useful of these attributes is the INPUT ACTION and the following describes how the control panel will respond to each of these.

As mentioned previously, because this is fundamentally a Water Leak detection system

16.2.1. Water Leak Action

Being a Water Leakage control panel, the Water Leak action will probably be the most widely used and a Water Leak input will be announced by the following:

- COMMON WATER LEAK LEDS
- ZONAL WATER LEAK LEDs
- PULSING BUZZER
- PANEL SOUNDER OUTPUTS
- ALARM CONTACT
- WATER LEAK CONTACT
- LCD WATER LEAK MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

16.2.2. Fault Action

Inputs attributed the Fault Action will be announced by the control panel as follows:

- GENERAL FAULT LED
- CONTINUOUS BUZZER
- FAULT CONTACT
- LCD FAULT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

16.2.3. Pre-alarm Action

Inputs that can generate a Pre-alarm. The control panel will respond as follows to a Pre-alarm event:

- PRE-ALARM LED
- CONTINUOUS BUZZER
- LCD PRE-ALARM MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

16.2.4. Technical Alarm Action

To allow a message to appear at the panel without necessarily performing any actions, Technical Alarm input is available which produces the following response by the panel:

- CONTINUOUS BUZZER
- LCD TECHNICAL ALARM MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

16.2.5. Sound Alarm Action

The Sound Alarm Action allows all sounder outputs and sounders to be operated continuously from an input anywhere on the system with the following response at the panel:

- COMMON WATER LEAK LED's
- CONTINUOUS BUZZER
- ALARM CONTACT
- PANEL SOUNDER OUTPUTS CONTINUOUS
- LCD WATER LEAK MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

16.2.6. Alert Action

The Alert Action allows all sounder outputs and sounders to be operated in a pulsing mode from an input anywhere on the system with the following response at the panel:

- CONTINUOUS BUZZER
- PANEL SOUNDER OUTPUTS PULSING
- LCD WATER LEAK ALERT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

16.2.7. Security Action

The Security Action gives the following response at the panel:

- LCD SECURITY ALERT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT
- CONTINUOUS BUZZER

16.2.8. Silence Alarm Action

An input programmed as "Silence" will silence any sounders that are operating and display an event message on the panel for the duration of the input being activated. The event is also stored in the event log.

16.2.9. Reset Action

An input designated as "Reset" will not produce any visible effect at the control panel but will reproduce the action of the Reset Button on the panel i.e. reset the alarms.

- LCD RESET MESSAGE

16.2.10. Transparent Action

A Transparent Input will have no effect at all on the panel. The only result of a Transparent Input is to control outputs via Cause and Effects configuration

16.2.11. Disablement Action

Disablement Inputs are used to disable a part or parts of the system via Cause and Effects configuration (normally for testing purposes).

When an input designated as a Disablement is operated, the panel will display the following:

- GENERAL DISABLEMENT INDICATOR
- CONTINUOUS BUZZER
- ADDRESS (1-240)
- ZONE (0-500)
- LCD DISABLEMENT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

Note: If sounders are disabled by the action of a Cause & Effect then the "Sounders Disabled" LED indicator will also be illuminated.

16.2.12. Test Mode Action

Inputs given the Test Mode attribute activate a special type of Cause & Effect that enables the system to be tested without activating selected parts of the system (plant shutdown relays for instance).

When a Test Mode Input is operated, the panel will respond as follows:

- ON TEST LED
- LCD ON TEST MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT



16.3. Outputs

Control of Outputs uses the same philosophy as that described for Inputs, i.e. all outputs are treated the same, whether they are loop controlled relays, panel sounder outputs, panel programmable relays, remote I/O board outputs or the panel mounted programmable LED indicators.

Any output can be given a set of attributes, which defines how the output will respond to input conditions.

Although this may appear to be nonsense in some cases, this approach does provide simplicity of understanding and a versatility and flexibility that would not exist if there were a different set of rules for each output.

There are default attributes for all types of output, which are factory set and will not change unless re-configured. This ensures that panel sounder outputs will respond to Water Leak conditions unless the configuration for these outputs is deliberately changed.

NOTE – When configuring system outputs, care should be taken to ensure that the output operation conforms to the local regulation requirements.

The editable attributes are as shown in this screen capture from the Loop Explorer PC (LE2) configuration utility.

The following describes how each of these attributes affects the operation of the output.

16.3.1. Sound Alarm Output

A Sound Alarm Output will turn on continuously when any sound alarm input is operated. This normally applies to sounders and would normally be accompanied by the "Def. Ring Mode" and "Silenceable" attributes.

Note: Any output on the Hydrosense ID System is treated as a sounder if the "Silenceable" and "Sound Alarm" Output attributes are selected. If any of these outputs are faulty or disabled, the "Sounder Fault/Disabled" indicator will illuminate. These outputs would also be disabled by the "Disable all sounders" menu option.

16.3.2. Def Ring Mode.

Normally applicable to sounders, "Def. Ring Mode" will turn the output on, upon a Water Leak condition as defined by the global default ring mode set on the Panel Settings page of the Loop Explorer PC (LE2) configuration utility or as set via the Edit Configuration menus on the panel.

There are three options for Def. Ring Mode:-

Common Alarm - All outputs operate continuously regardless of which zone they are in.

Zoned Alarm - Outputs in the same zone as the input, which caused the alarm, will operate continuously.

2 Stage Alarm - Outputs that are in the same zone as the input which caused the alarm will operate continuously whilst outputs in all other zones will pulse 1 second on - 1 second off.

The factory default setting for the panel Default Ring Mode is Common Alarm. This normally applies to sounders and would normally be accompanied by the "Sound Alarm" and "Silenceable" attributes.

Note: When controlling outputs using Cause & Effects the Def. ring mode should be de-selected to ensure that the output is only controlled by the Cause and Effect logic.



16.3.3. Silenceable

Silenceable is normally applicable to sounder outputs and ensures that the output switches off when the alarm is silenced/acknowledged by the front panel pushbutton or operation of an input that is configured as an Ack. Alarm (Acknowledge Alarm input) .

Note: Any output on the Hydrosense ID System is considered as a sounder if the "Silenceable" and "Sound Alarm" Output attributes are selected. If any of these outputs are faulty or disabled, the "Sounder Fault/Disabled" indicator will illuminate. These outputs would also be disabled by the "Disable All Sounders" menu option.

16.3.4. Alert

An alert output will pulse on and off when any alert input is operated. This normally applies to sounders and would normally be accompanied by the Def. Ring Mode and Silenceable attributes i.e. a sounder output. Note: Some devices do not support pulsing outputs.

16.3.5. Stage One Delay

Outputs can be delayed from 0 to 5 minutes in half-minute steps by changing the default delay of zero to the desired time delay setting.

16.3.6. Stage two Delay

If the output is "silenceable", the stage two-delay option becomes available. The stage two delay gives an additional time before the output operates after the alarm is acknowledged during the stage one delay.

Note: Care must be taken when configuring outputs with a combination of delays to some outputs and no delays to other outputs. To start the stage two delay, the "Silence Alarm(Acknowledge button)" must be pressed during the stage one delay period. If outputs elsewhere on the system are configured with no output delays and are also configured as "Silenceable", then these outputs will be silenced when the stage one delay is acknowledged.

In the majority of systems, the delays to outputs are configured to all sounder outputs to allow a variable search time and therefore this comment is not applicable.

16.3.7. Zoning

Each output can also be put into a zone or not as required. It is useful to put outputs into zones if the output is required to respond to Def. ring mode or is to be controlled by a Cause & Effect entry.

Outputs that are not put into a zone and are configured to respond to "Def. ring mode" will always turn on with any Water Leak condition (i.e. Common Alarm). Care should be taken to ensure that no more than 32 devices should be affected by a single short or break in any detection circuit.

16.3.8. Location Text

Finally, each output can be given a location address. As well as being useful in identifying devices with monitored outputs and additional power, for fault conditions, the location address can be useful in identifying the device when compiling Cause & Effects programmes.

16.3.9. Tech Alarm

A Tech Alarm Output will turn on continuously when any Tech Alarm Input is operated.

16.3.10. Pre-alarm

A Pre-alarm Output will turn on continuously when any pre-alarm Input is operated.



17. Cause & Effect Programming

For more complex applications, it is often a requirement to control plant in the event of Water Leak situations to assist with shutdown of equipment or the water supply.

Because the Hydrosense ID system has inherent flexibility, this is simple to achieve by applying Cause & Effects to Inputs and Outputs anywhere on the system.

Cause & Effects can be started or acted upon by any part of the system not just the detection loop or control panel but by both of these and by the additional I/O modules too.

With careful planning, this can save costs on installation by reduced wiring runs and can be changed at any time to suit changes in requirements.

Cause & Effects programming requires the Loop Explorer PC (LE2) configuration utility (which will run on a Windows compatible computer) and a download lead to transfer the data to the control panels.

Using Cause & Effect programming it is possible to combine Inputs or Zones using logical operators, to operate on Outputs in any manner desired.

It should be noted here however that when using Zonal Cause & Effects the system will act upon Water Leak Inputs in the zone of activation only. Inputs in the selected zone that are not configured as Water leak event type will not contribute to a Zonal Cause & Effect.

Cause & Effects can also be used to disable any Outputs or groups of Outputs in response to the chosen Input conditions. This is particularly useful where normal operation of the Water Leak system requires regular intervention by the end user as switches can be provided anywhere on the system to allow isolations to be performed without operating the control panel.

Also to assist the end user and encourage regular testing, a special "Test Mode" Cause & Effect facility is included which allows specific parts of the system to be tested without operating sounders or shutting down plant etc. This would normally have to be done by disabling individual outputs at the control panel with the risk of missing something and shutting down an important plant or process.

Full details of Cause & Effect programming are included within the Loop Explorer PC (LE2) configuration utility, which also allows full system configurations to be created and downloaded to individual control panels using a simple graphical user interface.

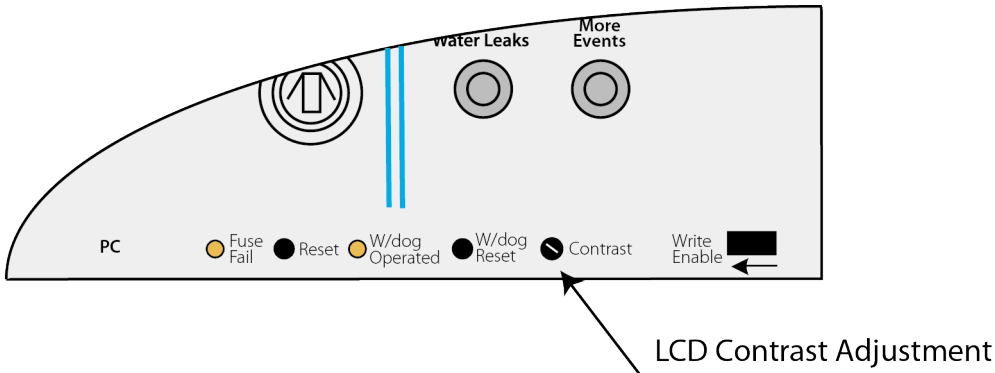
The Loop Explorer PC (LE2) configuration utility contains comprehensive, context sensitive help files and example applications.

NOTE – When configuring the system using Cause & Effects, care should be taken to ensure that the system operation conforms to the local regulation requirements.

18. Panel Settings

18.1. Contrast Adjust

The viewing angle/contrast of the Hydrosense ID front panel display may be adjusted by turning the "CONTRAST" adjust potentiometer. The contrast adjust potentiometer can be accessed by opening the front cover of the control panel and is labelled "CONTRAST".





19. Panel Specification Summary

19.1. Recommended Cables

All field wiring should be installed using a shielded twin core cable (ideally with a blue outer sheath to allow easy identification). The minimum cross sectional area should be 1mm although in the case of the detection loops this depends upon the length of the cable and the number and type of devices fitted. Loop length calculators for various cable types are available. Drain wires of any field wiring should be maintained throughout the length of the cable and terminated at the panel via brass cable glands. Refer to [Section 4.1](#) for loop earth termination requirements.

19.2. Sounder Load

Panel Sounder - Two 24 volt sounder circuits, each fused with a 1 Amp self-resetting electronic fuse. Each sounder circuit is monitored using reverse polarity and a 10 kΩ ohm end of line resistor.

19.3. Current Consumption

1 loop panel current consumption	130 mA (power fault) 300 mA in alarm (no alarm load)
2 loop panel current consumption	195 mA (power fault) 370 mA in alarm (no alarm load)
I/O board current consumption	20 mA (quiescent), up to 1A in full alarm
8 way relay card current consumption	10 mA (quiescent), 250 mA in full alarm
6 way sounder card current consumption	30 mA (quiescent), 260 mA in full alarm + sounder load
4 way zone board current consumption	70 mA (quiescent), 250 mA in full alarm

19.4. Power Supply

Supply Voltage	230 VAC nominal (+10% / 15%)
Supply rating	3 Amps.
Battery Charger	Charges up to 9 Ah sealed lead acid batteries with temperature compensation over the range -5 to +50 degrees Celsius.
Battery Type	Two 12 V sealed lead acid 9 Ah maximum
Output current split	Battery 1 Amp max, load 2 Amps min.
Battery low indication	21V,
Earth fault indication	< 30 KΩ +28 V or 0 V to earth.

19.5. Field Devices

Vimpex	127 devices per loop
Per 1 loop panel	127 ID Addressable modules
Per 2 loop panel	254 ID Addressable modules
Sub-address total	800 addresses and sub-address limit per panel.

19.6. Water Leak / Alarm / Fault Relay Ratings (see also Section 12)

All panel relay contacts are rated at 30 VDC and 1 Amp maximum.

Under no circumstances should voltages or currents outside of these limits be connected.

19.7. Zones

All panels have 16 Zonal LED indicators fitted. Care should be taken to ensure that no more than 32 devices will be affected by a single short or break in any detection circuit.

19.8. Remote Control Inputs (see also Section 16)

Unmonitored digital inputs, activated when connected to the Remote Control 0V terminal with an in line resistance of less than 50 Ohms.

Note: Remote control inputs must be restricted by the Access Level requirements. Therefore it should not be possible to remotely reset, silence or operate the alarm devices without some means of gaining access to this function.

19.9. Auxiliary 24 Volt Monitored Output (see also Section 15.1)

Permanent 24 volt output protected by a 500 mA self-resetting electronic fuse, monitored for fuse failure.



19.10. Fuse Ratings

All panel power supplies, monitored outputs and auxiliary power outputs are protected by non-serviceable self resetting electronic fuses.

Detection circuits are protected using digital current monitoring circuits and FET switching techniques.

The Hydrosense ID panel has a serviceable fuse to protect the incoming mains supply. This fuse is a T1.6A 250HRC 20mm type and must be replaced with a fuse of the same type only.

The battery supply is protected by a 3.15A, 20mm glass fuse (F4) mounted on the reverse of the circuit board. This fuse must only be replaced with one of the same type.

20. Additional Features

20.1. Loop Data Test

The data signalling between the control panel and detection devices has some level of data error checking built into the protocol. The purpose of this data checking is to ensure that any spurious signals received by the control panel are not incorrectly interpreted as Water Leak signals, thus avoiding an unwanted activation. Information received at the control panel that is not exactly as it is expected to be is known as bad data.

There are a number of sources of signalling errors. The most common is due to electrical interference resulting in current spikes induced on the detection circuit. Other possible causes are poor loop wiring connections, earth leakage between loops, cross-talk between circuits, defective devices installed on the detection circuit and incorrect devices connected on the detection circuit. Excessive loop resistance is the cause of many bad data faults. These tend to be from devices located nearest the Loop In terminals. If loop resistance is suspected, swap the loop in and loop out cables and see if the bad data faults start occurring from devices fitted at the other end of the loop.

Also excessive Loop Sounder Current will cause bad data faults to occur when the sounders are operated

In general, the user is unaware of problems on the detection circuit, as the panel has some "software filtering" built in, to reject invalid data returned from devices. However, if a single device returns invalid data on four consecutive polls, the panel will report a bad data fault for that device. If a single device returns invalid data for three polls, followed by a single good poll, then the panel will report no faults for that device.

The purpose of the system diagnostics facility is to see what level of invalid data signalling is occurring on the loops, to get a "feel" for the quality of the signalling and to predict any potential problems that may affect the end user.

The diagnostics facility comprises of two counters for each loop. These counters have a maximum value of 9,999,999. There is a "good" counter, which is incremented for every successful detection device poll and a "bad" counter, which is incremented every time there is an error in the signalling when a device is polled.

This good/bad counter selection allows an engineer to see the proportion of bad readings versus good readings, and compare these between loops for a system. From this information, it should be possible to make a judgement on the signalling quality for each detection circuit on any control panel.

To activate the diagnostics, select the Loop Data Test menu option at Access Level 3. This menu will then allow the user to start the testing for each loop in turn. When started, the user may view the good and bad counters, plus the time that the test was started.

At any time it is possible to view the counters or cancel the testing.

When either of the two counters reaches the maximum value, the test for that loop is halted.

20.2. Contamination Status

Currently not used

20.3. Analogue Value Transfer

Currently not used

INSTALLATION INSTRUCTIONS

Hydrosense ID Addressable Water Detection System



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