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Hydrosense

K1000 Series

1, 2, 4 & 6 Zone

Water Detection Panels

Operation and

Maintenance Manual



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SAFETY

IMPORTANT READ THIS SECTION FIRST!

- 1.1 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.
- 1.2 This product should be installed, commissioned and maintained by or under the supervision of competent persons according to good engineering practice and:-
 - i) IEE regulations for the electrical equipment of 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 any appropriate information about this product is made available by you to anyone concerned with its use.

- 1.3 This equipment is designed to be operated from 220-240V AC mains supplies and is of class I construction. As such it must be connected to a protective earthing conductor in the fixed wiring of the installation.
- 1.4 Failure to ensure that all conductive accessible parts of this equipment are adequately bonded to the protective earth will render the equipment unsafe.

INSTALLATION

- 2.1 Remove the front panel by unscrewing the two Socket screws with a key. This will expose the internal equipment and three fixing holes.
- 2.2 Place the circuit boards in a safe area for later installation.
- 2.3 Locate the unit on the wall in the agreed position and mark the fixing points through the dished mounting holes (see annex 2). Drill and fit suitable wall plugs and screw the panel to the wall.
- 2.4 Use the knockouts provided to make off the cables. Earth or drain wires should be kept as short as is practical and be connected to a metal cable gland making sound electrical contact with the enclosure.
- 2.5 If additional or larger cable entries are required, any swarf and debris must be cleared from the inside of the equipment. Failure to do this will result in equipment malfunction and could represent a danger to building occupants.
- 2.6 The mains fuse must only be replaced with a 2 amp fuse conforming to BS:4265.

INSTALLATION - Continued

- 2.7 This equipment is designed to be powered from the 220 - 240V C mains supply. The mains connection must include a protective Earth conductor to the requirements of BS:7671 (see annex 2).
- 2.8 The mains supply must be from a separate dedicated fused spur labelled "**WATER ALARMS DO NOT SWITCH OFF**".
- 2.9 Connection of the 24V battery supply should be carried out with great care and respect. Misconnection or short circuiting of the battery terminals will result in **FIRE**.
- 2.10 The system fuse F2 should only be replaced with mains and battery disconnected.

FRONT PANEL CONTROLS

3.1 Enable Controls

No Controls are enabled unless the enable controls key is inserted. While the enable controls key is inserted the buzzer will beep every few seconds.

3.2 Silence Alarm Switch

To silence an alarm activated by operation of a detection zone, press the silence alarm button. The alarm silenced indicator will illuminate and the sounders will stop.

To mute the fault buzzer, press the silence alarm switch. The fault buzzer will now beep every few seconds.

3.3 Reset & Lamp Test Switch

All Indicators may be illuminated, for testing purposes, by pressing the reset and lamp test switch. If any Zones are in alarm condition, these will reset provided that the silence alarms switch has first been operated and the input signal e.g. Hydrowire or probe has been restored to normal.

3.4 Alarm Test Switch

Press the alarm test switch to operate the Sounder Circuits. The Common alarm indicator will be illuminated and the buzzer will sound the alarm tone.

FRONT PANEL INDICATIONS

4.1 Supply Healthy Indicator

Under normal conditions only the green supply healthy indicator is illuminated. The system healthy indicator will extinguish in the event of:-

- (1) Mains Failure
- (2) Battery Disconnection.
- (3) System Fuse Failure
- (4) Total Power Failure
- (5) Battery Fuse Failure

FRONT PANEL INDICATIONS - Continued

4.2 System Fault Indicator

The system fault indicator will illuminate under any abnormal condition. Certain conditions may be diagnosed without looking inside the enclosure as follows:-

- | | | |
|---|---|---|
| (1) System Fault on. Supply Healthy off | = | Power failure or system fuse failure. |
| (2) System Fault on, Zone Fault on | = | Zone O/C or S/C in indicated zone. |
| (3) System Fault on, Zone test on | = | Zone indicated in test mode. |
| (4) System Fault on, Disabled Led on | = | Zone indicated in disabled/isolated mode. |
| (5) System Fault on. Sounder Fault on | = | Sounder Circuit O/C or S/C Fault. |

4.3 Alarm Silenced Indicator

The alarm silenced indicator should only be accompanied by one or more steady alarm indicators, and indicates that the sounders have been silenced.

Operation of subsequent alarm zones or the alarm test switch will extinguish the alarm silenced indicator.

4.4 Zone Fault Indicators

Illumination of a zone fault indicator may mean that one or more trigger devices are inoperative and requires immediate attention.

Zone fault indicators will illuminate in the event of:-

- (1) Disconnection or severance of zone wiring
- (2) Short Circuit on zone wiring
- (3) Removal of hydrowire or probes from zone
- (4) Disconnection of the end of line monitor resistor.

4.5 Alarm Indicators

Upon detection of an alarm the red zone alarm indicator will flash to give warning of the area (zone) in alarm and the common alarm indicator will be illuminated. This will be accompanied by a pulsing buzzer within the control panel and the operation of the sounders.

4.6 Sounder Fault Indicator

The sounder fault indicator and the system fault indicator will be illuminated if a sounder circuit is open or short circuit.

4.7 Zone Test Indicator

The zone test indicator will be illuminated if one or more zones are in zone test mode.

4.8 Disabled Indicator

The disabled indicator will be illuminated if :-

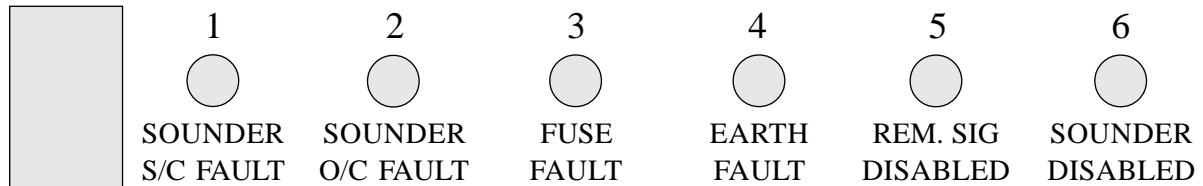
(A) one or more zones are in the disabled mode. This is accompanied by the zone fault indicator.

(B) The Sounder disable or remote signal, disable switch is operated. This Indicator will be accompanied by the system fault indicator.

4.9 Common Alarm/Alarm Test Indicator

The common alarm indicator will be illuminated if the panel is in an alarm condition or in an alarm test condition.

INTERNAL INDICATORS



5.1 Sounder S/C Fault Indicator

This indicator will illuminate in the event of a short circuit on one of the sounder lines.

5.2 Sounder O/C Fault Indicator

This indicator will illuminate in the event of an open circuit on one of the sounder lines.

5.3 Fuse Fault Indicator

This indicator will illuminate in the event of :-

- (A) Auxiliary fuse failure.
- (B) System fuse failure.

5.4 Earth Fault Indicator

This indicator will illuminate in the event of a positive or negative earth fault. (i.e. Field wiring connected to earth).

5.5 Rem Alarm Sig disabled indicator

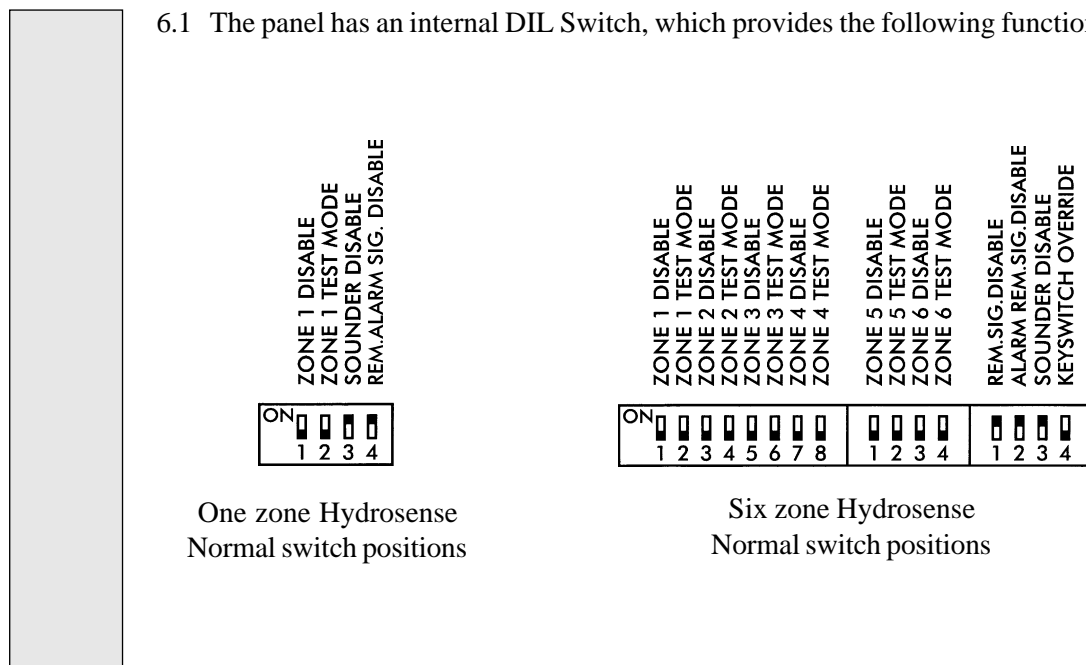
This indicator will illuminate in the event of the Remote Alarm Signalling disable switch being operated.

5.6 Sounder Disable Indicator

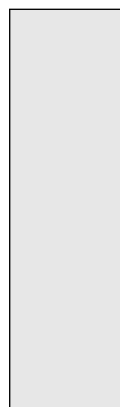
This indicator will illuminate in the event of the Sounder disable switch being operated.

INTERNAL CONTROLS

6.1 The panel has an internal DIL Switch, which provides the following functions:-



INTERNAL CONTROLS - Continued

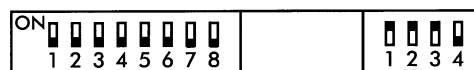


ALARM REM.SIG.DISABLE
KEYSWITCH OVERRIDE
ZONE 2 DISABLE
ZONE 2 TEST MODE
ZONE 1 DISABLE
ZONE 1 TEST MODE
SOUNDER DISABLE
REM.ALARM SIG. DISABLE



Two zone Hydrosense
Normal switch positions

ZONE 1 DISABLE
ZONE 1 TEST MODE
ZONE 2 DISABLE
ZONE 2 TEST MODE
ZONE 3 DISABLE
ZONE 3 TEST MODE
ZONE 4 DISABLE
ZONE 4 TEST MODE



Four zone Hydrosense
Normal switch positions

REM.SIG.DISABLE
ALARM REM.SIG.DISABLE
SOUNDER DISABLE
KEYSWITCH OVERRIDE

TERMINAL FUNCTIONS

Water Detection Circuits

- 7.1 One to six water detection circuits are provided and supply 28 Volts ($\pm 5\%$) for the operation of trigger devices, (hydrowire or probes). Terminals for the water detection circuits are labelled Z1+ and Z1- to Z6+ and Z6- for positive and negative connections respectively. It is important to observe the polarity of these connections for correct operation of the system.
- 7.2 A 6K8 end of line resistor must be fitted to the last device on the water detection circuit for correct operation of the monitoring functions. K1623 - Hydrowire, 6K8 - Probes.

Sounder Circuits

- 8.1 Two sounder circuits outputs are provided and labelled (S1+ & S1-) & (S2+ & S2-). These outputs will operate together upon activation of a water detection zone, or the remote Alarm input. Each sounder circuit is protected by a 500mA fuse.
- 8.2 Both outputs are monitored against open and short circuit faults in the field wiring. Any such faults are annunciated by the front panel system fault indicator immediately.
- 8.5 The sounder circuit is normally fitted with a 20K end of line monitoring resistor.

Fault VFCO Contacts

- 9.1 Volt free contacts are provided for remote signalling or plant shutdown on the occurrence of any fault condition.

Alarm VFCO Contacts

- 10.1 Volt free contacts are provided for remote signalling or plant shut down on the occurrence of any alarm condition or alarm test condition.
- 10.2 All contacts are rated at 30V DC 1 Amp maximum and should under no circumstances be used to switch greater voltages or currents.

Remote Alarm Input

- 11.1 The sounder circuits may be operated remotely via the remote alarm input.
- 11.2 The input is labelled (Rem AL I/P) Connection of the AUX common negative to this point will operate the sounders. This input is non latching.

TERMINAL FUNCTIONS - Continued

- 11.3 The AUX Common Negative Terminal is normally pulsing at around 2 second on, 2 second off. This will pulse the Sounders at this rate if connected to the remote alarm input. If continuous sounders is required then link R143 should be removed as indicated on annex 4.

Auxiliary 24V Output (Max. O/P Current = 100mA)

- 12.1 The auxiliary 24V output is provided to power any additional equipment which is fitted to the system such as remote shutdown relays. This output is individually fused to protect the main system fuse in the case of inadvertent overloading of the auxiliary 24V output.

HYDROWIRE COMMISSIONING DETAILS

Installation

- 13.1 Lengths of hydrowire should be laid on the floor in the protected area such that the distance between any two hydrowires is no more than 2 metres.
- 13.2 For localised protection of sources of potential water leakage, such as air conditioning systems or water filled radiators, the distance between hydrowires may be greater.
- 13.3 The cable should be installed such that it remains in contact with the floor along as much of its length as possible. This may require the use of P clips, particularly in areas where the cable may be disturbed.
- 13.4 Although the construction is quite sturdy, the cable may be damaged by crushing or excessive bending. A bend radius of 150 mm is recommended as a minimum.
- 13.5 The end of the hydrowire must be terminated with an end of line plug (K1623).
- 13.6 The terminating connection box (K1622) should be secured to the wall or floor such that the hydrowire does not have to be stretched or pulled to reach it.
- 13.7 The installed hydrowire should consist of a K1622 connection box, hydrowire cable (K1620 or/and K1621) and end of line plug unit (K1623).
- 13.8 The red warning label should be left such that it is clearly visible.
- 13.9 Hydrowire should not come into contact with surface temperatures greater than 70°C.
- 13.10 Lengths greater than 50 metres are not allowed.

Connection to Control Panel

- 14.1 The K1622 connection box, when triggered presents an impedance of 470 R to the 24 volt circuit from the control panel.
- 14.2 The + and - terminals inside the connection box must be connected to the Z+ and Z- terminals at the control panel.
- 14.3 The end of line resistors at the control panel should be discarded.
- 14.4 It is advisable to leave off the lid of the connection box, until all testing is complete.

HYDROWIRE COMMISSIONING DETAILS - Continued

Remote Lamp Connection

- 15.1 In some installations, particularly in floor voids, it is desirable to identify the area in which water has been detected, with a remote indicator unit mounted above the void.
- 15.2 This can be achieved by wiring a K1615 remote lamp unit to the - and rem. terminals in the K1622 connection box.
- 15.3 Only one remote lamp unit should be connected to each connection box.

Testing

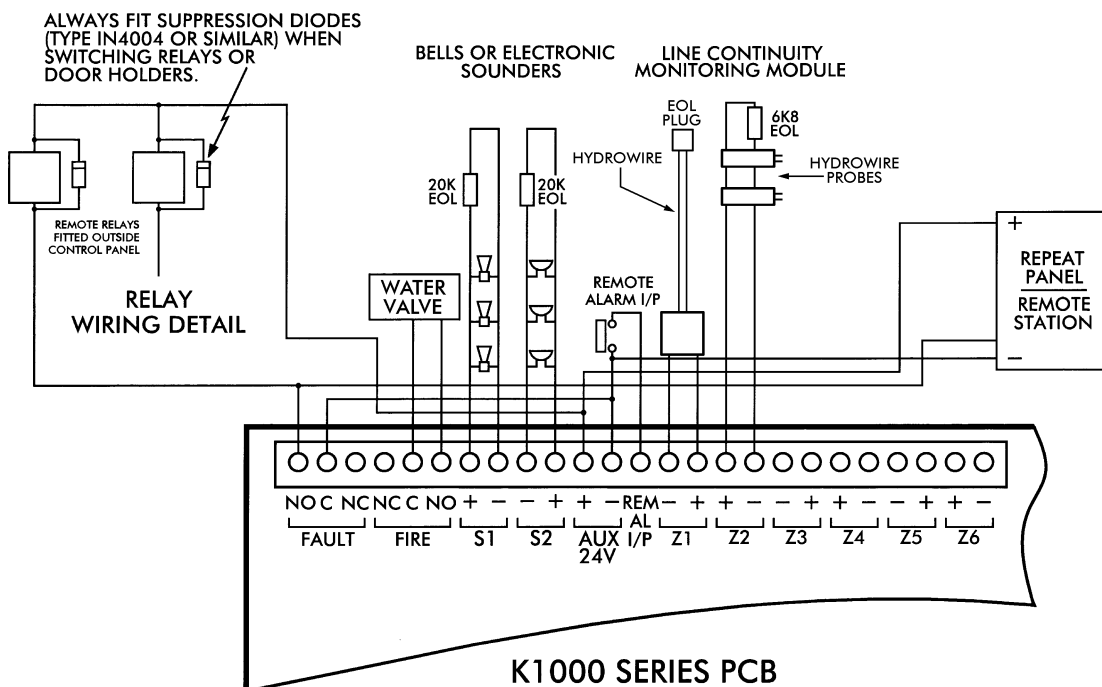
- 16.1 Once all terminations have been made and the system is powered, the hydrowire is ready for testing.
- 16.2 Testing is best done by dipping the thumb and forefinger into a cup of tap water, shaking off the excess drips and then gripping the hydrowire firmly whilst rolling it slowly. This should produce an immediate indication at the control panel.
- 16.3 Over wetting the hydrowire should be avoided as a great deal of time can be wasted by waiting for it to dry out.

General Checklist

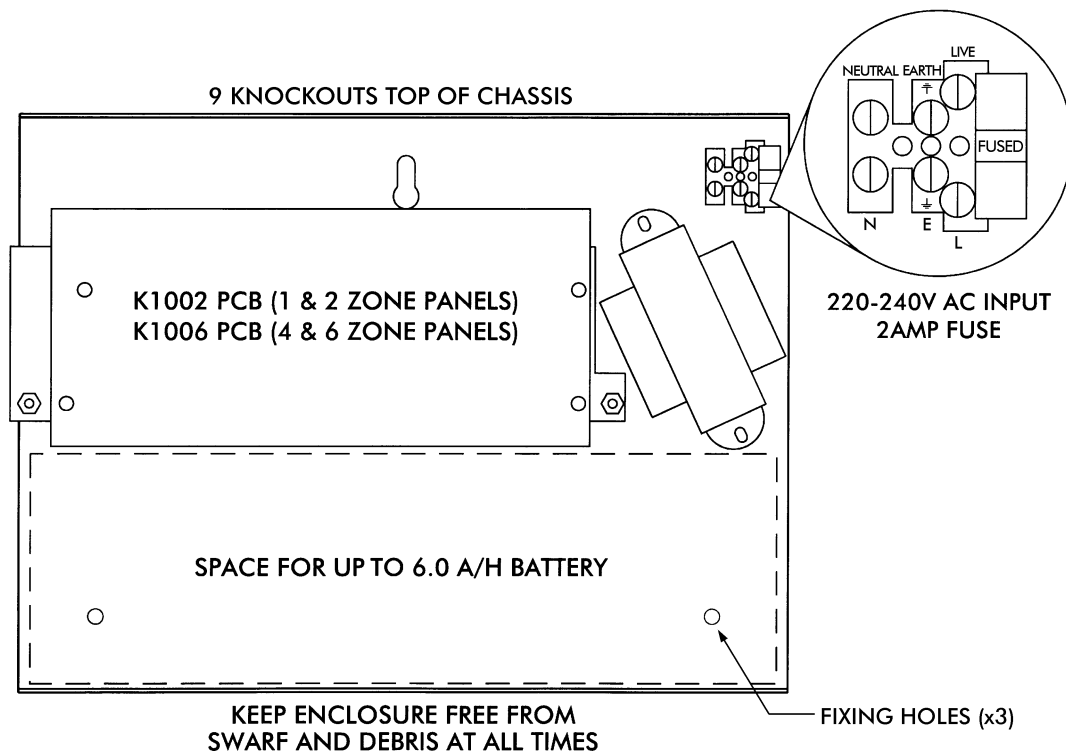
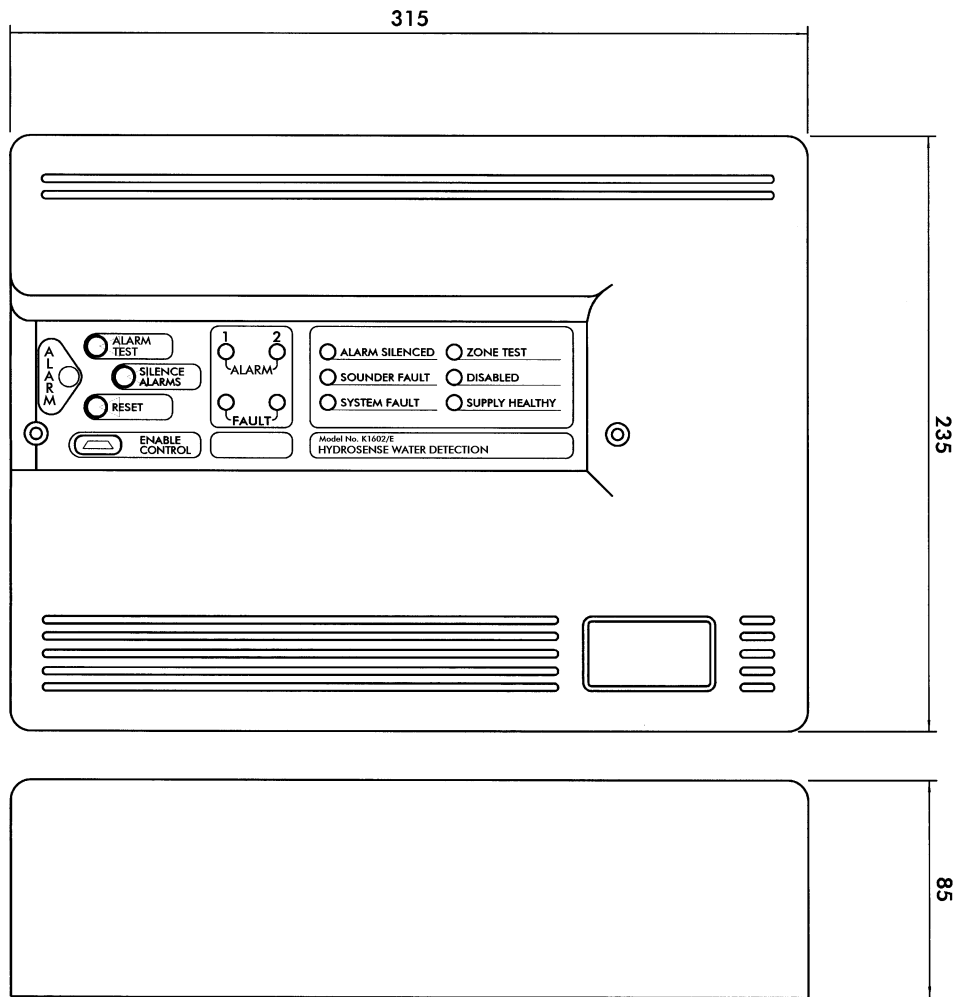
- 17.1 Avoid excessive wetting.
- 17.2 Observe polarity of all connections.
- 17.3 Long lengths of hydrowire may be susceptible to high levels of electrical noise. Keep lengths short wherever possible and do not install close to other cables.
- 17.4 Do not twist, bend sharply, stretch, stand on or crush the hydrowire.
- 17.5 Do not expose to surface temperatures above 70°C.
- 17.6 Use only recommended hydrowire system components.

ANNEX 1

Typical wiring connections & use of Aux.24V output

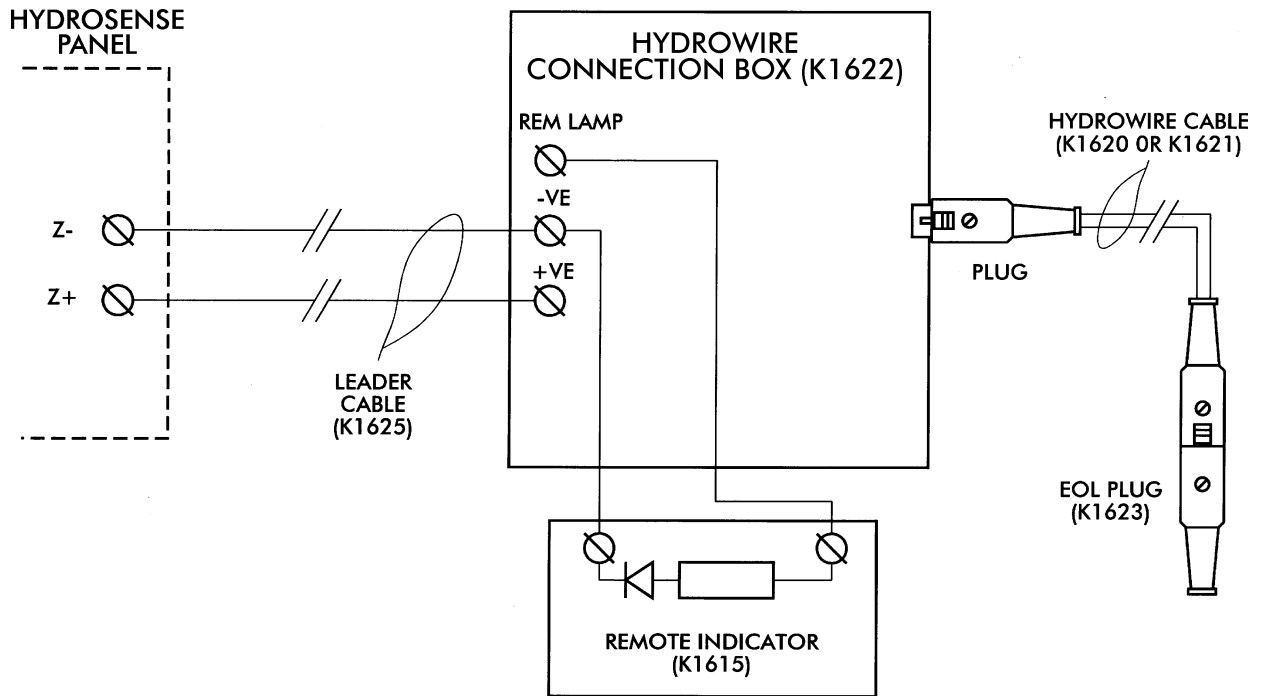


ANNEX 2

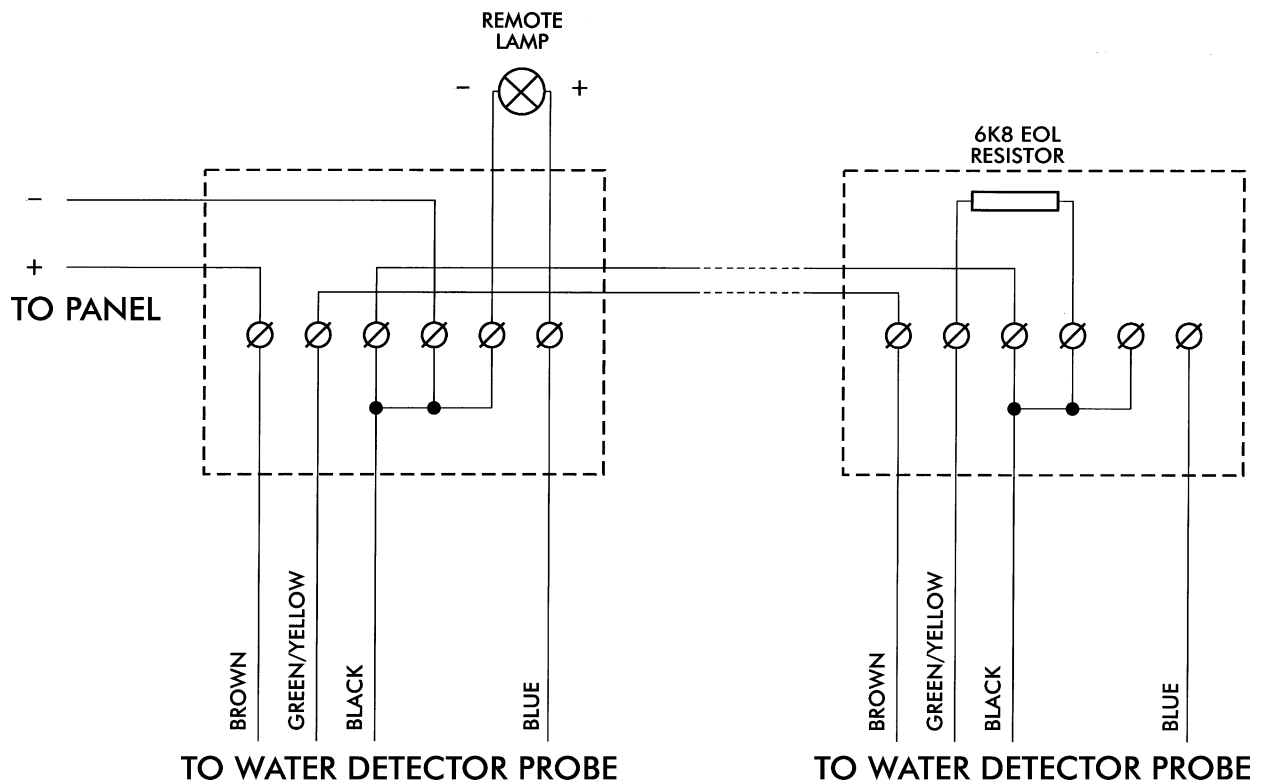


ANNEX 3

Hydrowire connection diagram



Hydrosense probe wiring diagram



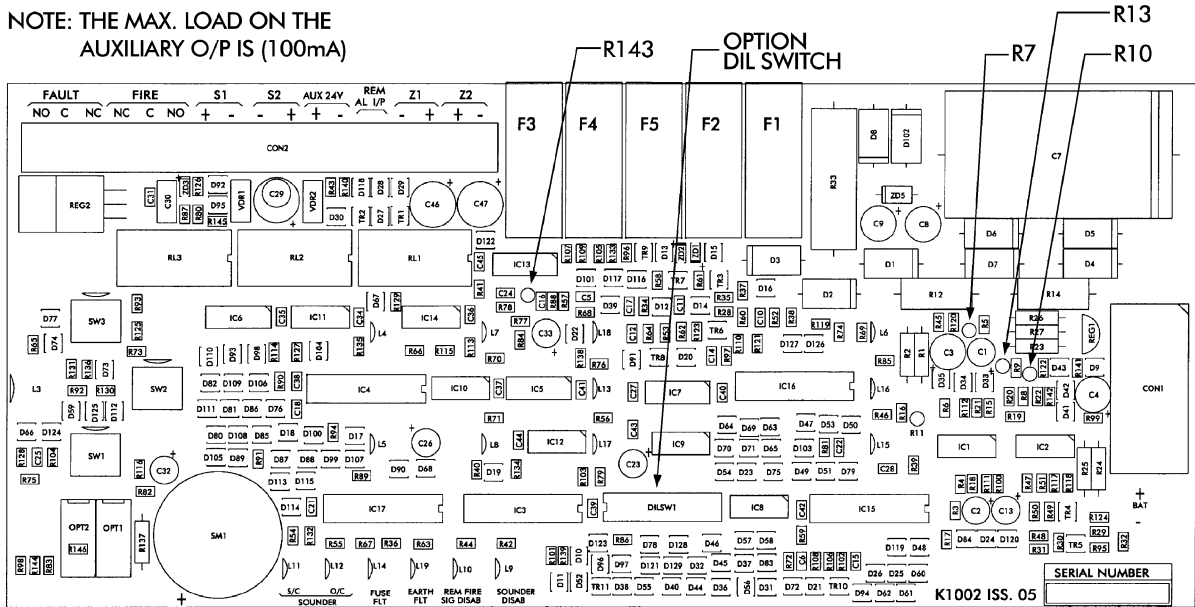
ANNEX 4

K1002 PCB layout - 1 & 2 zone Hydrosense, fuse & option resistor locations

- F1 - BATTERY FUSE (500mA)
- F2 - SYSTEM FUSE (2A)
- F3 - AUXILIARY 24V OUTPUT FUSE (250mA)
- F4 - SOUNDER 1 FUSE (500mA)
- F5 - SOUNDER 2 FUSE (500mA)

PULSING AUX.24V O/P = R143 IN
CONTINUOUS AUX.24V O/P = R143 OUT

NOTE: THE MAX. LOAD ON THE AUXILIARY O/P IS (100mA)



K1006 PCB layout - 4 & 6 zone Hydrosense, fuse & option resistor locations

- F1 - BATTERY FUSE (500mA)
- F2 - SYSTEM FUSE (2A)
- F3 - AUXILIARY 24V OUTPUT FUSE (200mA)
- F4 - SOUNDER 1 FUSE (500mA)
- F5 - SOUNDER 2 FUSE (500mA)

PULSING AUX.24V O/P = R143 IN
CONTINUOUS AUX.24V O/P = R143 OUT

NOTE: THE MAX. LOAD ON THE AUXILIARY O/P IS (100mA)

