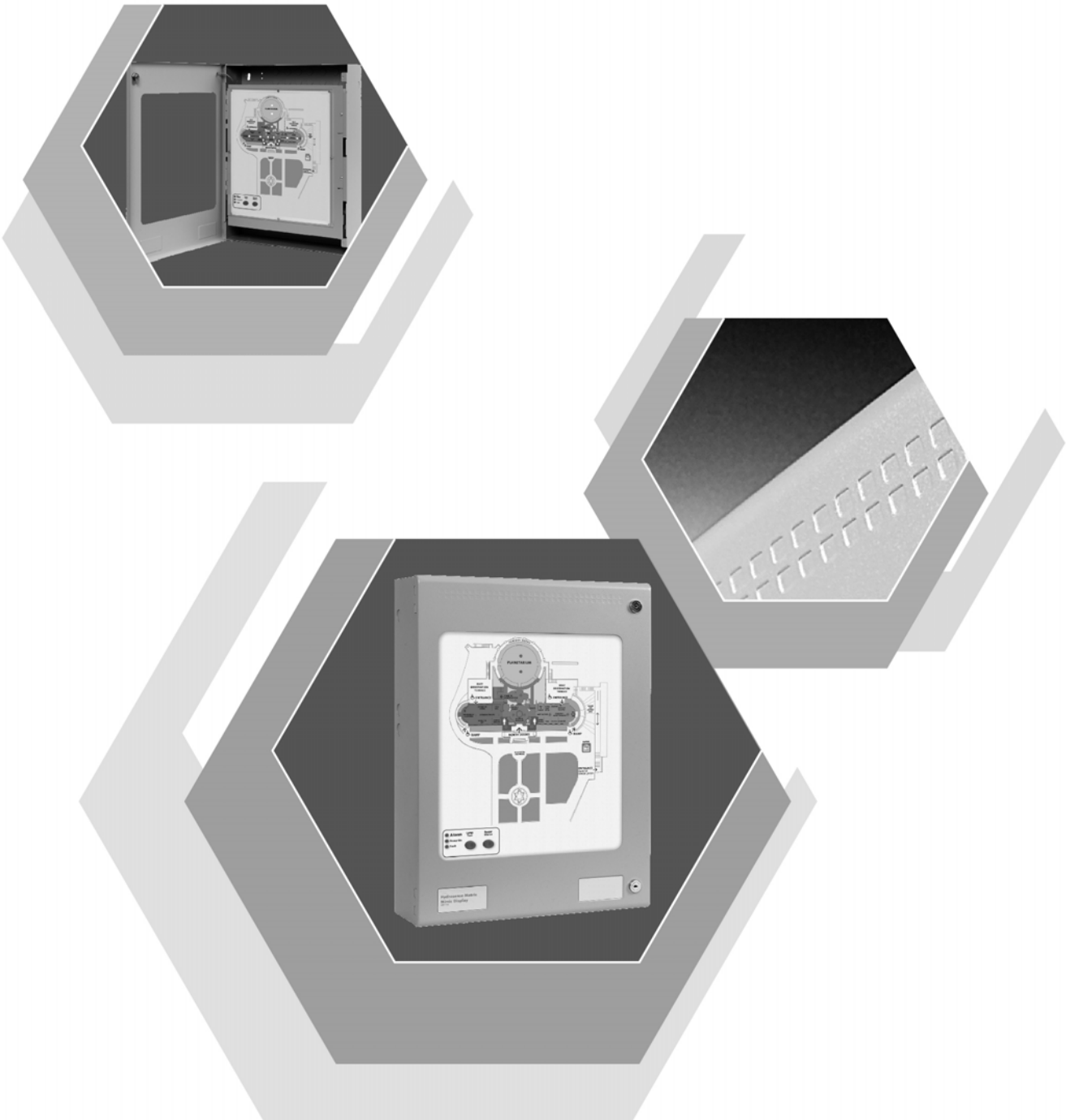
Hydrosense Matrix

Hydrosense Water Leak Detection

Operation and Maintenance Manual

Man-1140 Issue 02 June 2013



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1. Introduction

Hydrosense Matrix mimic panels provide a flexible and expandable solution for geographical water alarm system mimic panels via outputs from conventional water detection panels or output modules connected to addressable water detection panels.

The modular nature of Hydrosense Matrix Mimic panels, allows mimics with up to 500 indicators to be realised very simply with the ability to add, remove or change the position of indicators with no wiring necessary by a unique method of flexible light pipes.

2. Safety

Suppliers of articles for use at work are required under section 6 of the UK, 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.

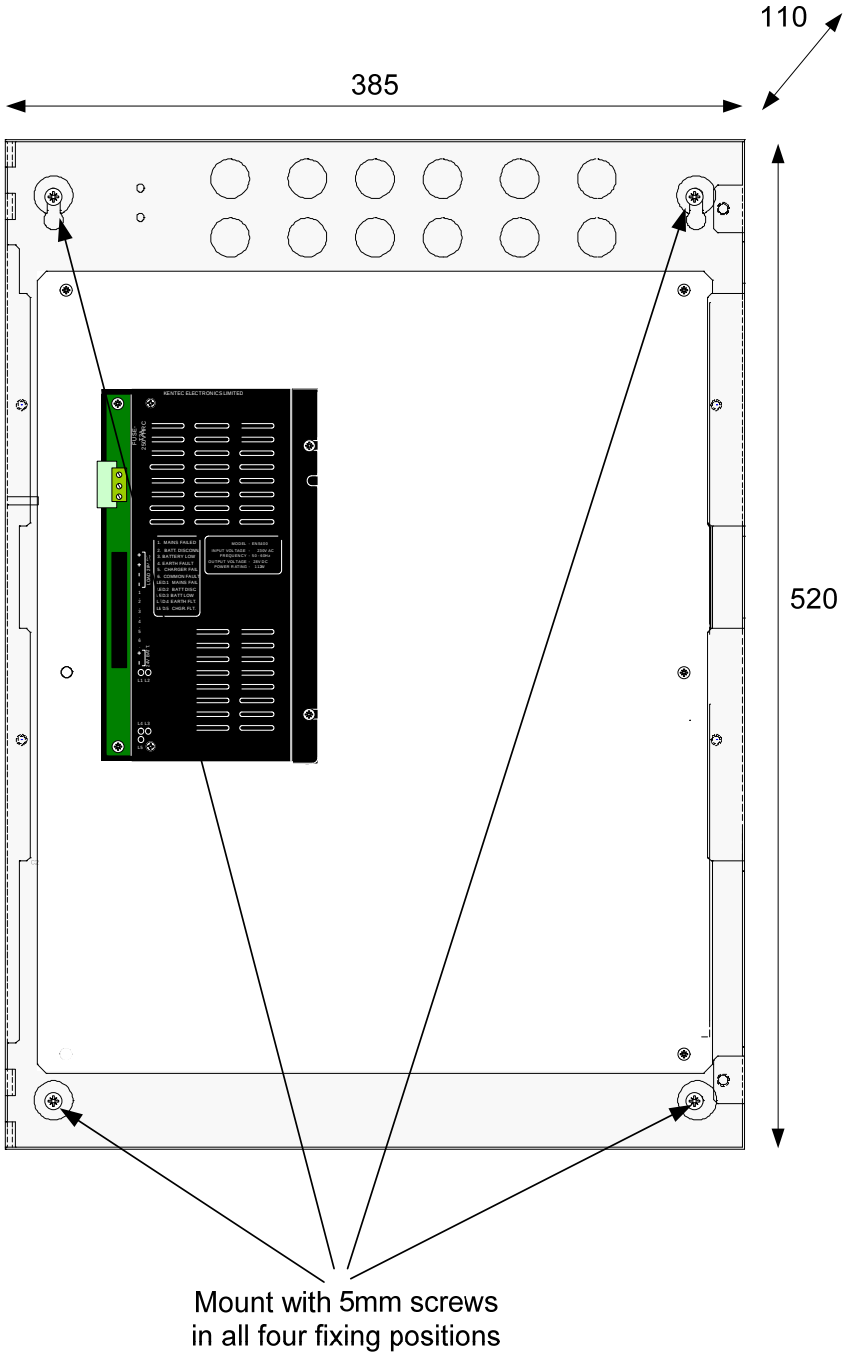
Some models of this equipment are designed to be operated from 230V, 50Hz mains supplies and are of class 1 construction. As such these models **must** be connected to a protective earthing conductor in the fixed wiring of the installation and a readily accessible double pole disconnect device meeting the requirements of EN60950/IEC950 which disconnects live and neutral simultaneously shall be incorporated in the fixed wiring.
Switch disconnect devices such as MK Sentry 63A or similar are suitable for this.

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

This equipment is designed for indoor use only and at temperatures between -5C (+/- 3) and +40C (+/- 2) and with a maximum relative humidity of 95%.
The IP rating for the enclosure is IP30.
Operation outside of these limits may render the equipment unsafe.

3. Mounting

The unit should be mounted on a dry, flat surface, at eye height to the centre of the display and in a level position such that the enclosure is not distorted.
Screws or bolts of a minimum of 5mm diameter must be used to mount the enclosure in all four mounting positions.
It should be mounted in an accessible position as agreed with the end user.
The unit should not be mounted in another enclosure or near sources of excessive heat.
Cables should be connected using suitable, 20mm cable glands fitted to the knockouts provided.
If additional cable entry points are required, all swarf and debris caused by drilling of additional cable entries must be cleared before power is applied to the unit.



(Unit shown here is A mains powered type)

4. Specifications

The information in the table below is for the standard range of Hydrosense Matrix Mimics with up to 64 LEDs in the standard 385mm X 520mm enclosure.
Some details are common to all models of Hydrosense Matrix Mimics.

Mains supply (230V Versions only)	230V AC +10% - 15% (100 Watts maximum)
Mains supply fuse (230 V Versions only)	T2A L250V Replace only with similar type
Power supply rating (230 V Versions only)	4 Amps total including battery charge 28V +/ 2V
Maximum ripple current (230 V Versions only)	200 millivolts
Battery type (Yuasa NP) (230 V Versions only)	Two 12 Volt sealed lead acid (7Ah maximum)
Battery charge voltage (230 V Versions only)	27.6VDC nominal (temperature compensated)
Battery charge current (230 V Versions only)	1.5A maximum
Maximum current draw from batteries (230 V Versions only)	3 Amps. With mains power source disconnected
Quiescent current	See section 8
Supply voltage (24V versions)	18 to 30V DC
Supply current	See section 8
Terminal capacity	$0.5mm^2$ to $2.5mm^2$ solid or stranded wire
Enclosure Size	385W X 520H X 110D
Mimic area	303W X 340H
Construction	1.2mm mild steel epoxy powder coated BS 00A 05 mid grey fine texture (Mimic 3mm Perspex™)
Controls (if fitted)	Lamp Test, Buzzer Silence
Common indicators (if fitted)	Alarm (red), Power On (green), Fault (yellow), Disablement (yellow)
Enable keyswitch	Standard 901 key
Cabinet locks	Two, standard 801 key
Inputs	Switched –ve or switched +ve
Number of indicators (standard models)	32 or 64

5. Common indications and controls

Versions of Hydrosense Matrix Mimic panels are available with common indications and controls or without this facility and with just the indicators on the map or floor plan.

So, in addition to the standard indicators for floor plans or maps, versions **with** common indicators and controls have the following:

COMMON ALARM LED – Lights whenever An alarm condition is present on the panel to which the mimic panel is connected.

POWER ON LED – Indicates that the mimic panel is supplied with power.

FAULT LED- Lights whenever the fault input on the terminal board is activated.

DISABLEMENT LED - Lights whenever the disablement input on the terminal board is activated.

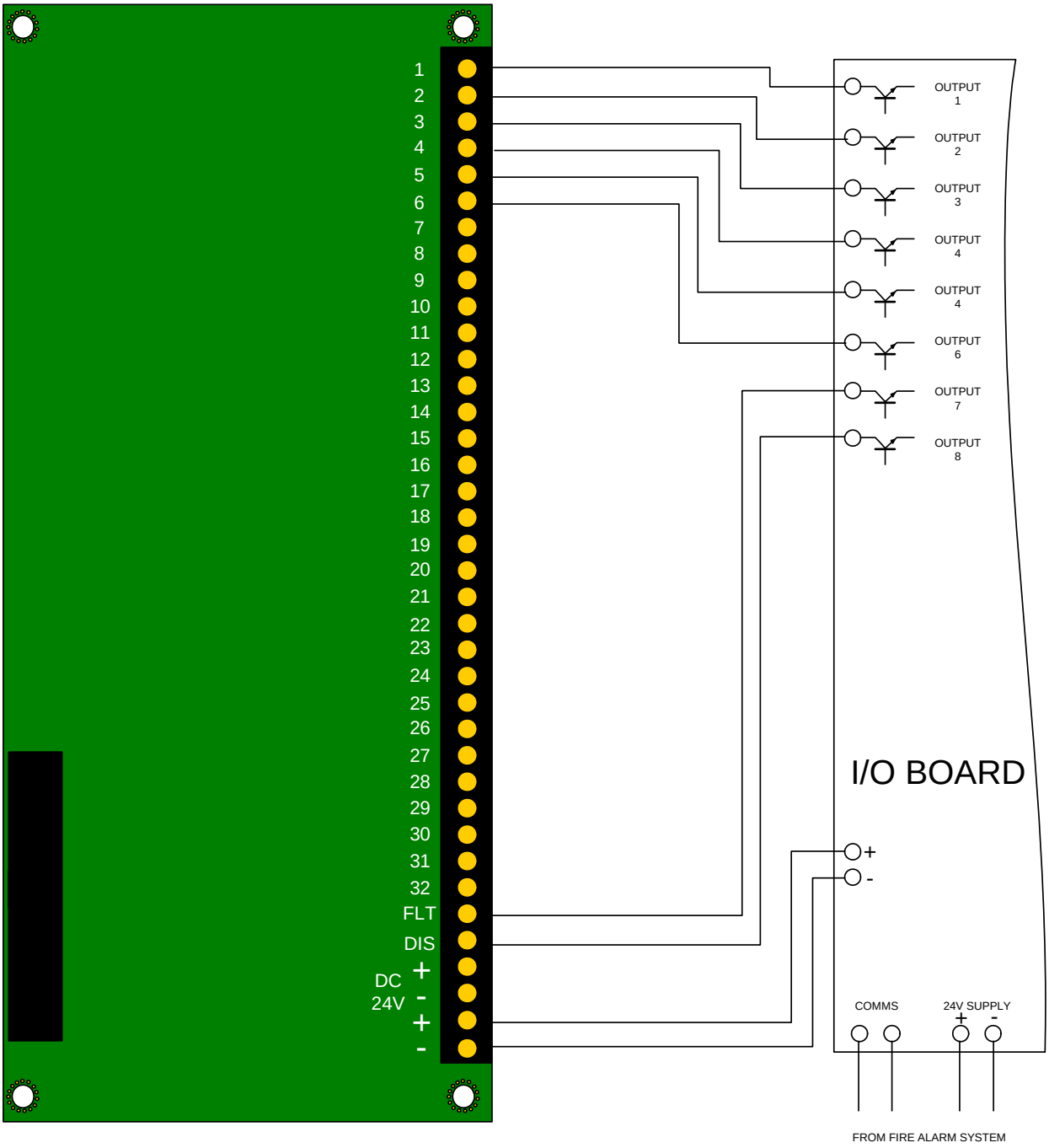
LAMP TEST BUTTON – Illuminates all indicators when pressed for testing purposes.

BUZZER SILENCE BUTTON – Silence the mimic's internal buzzer.

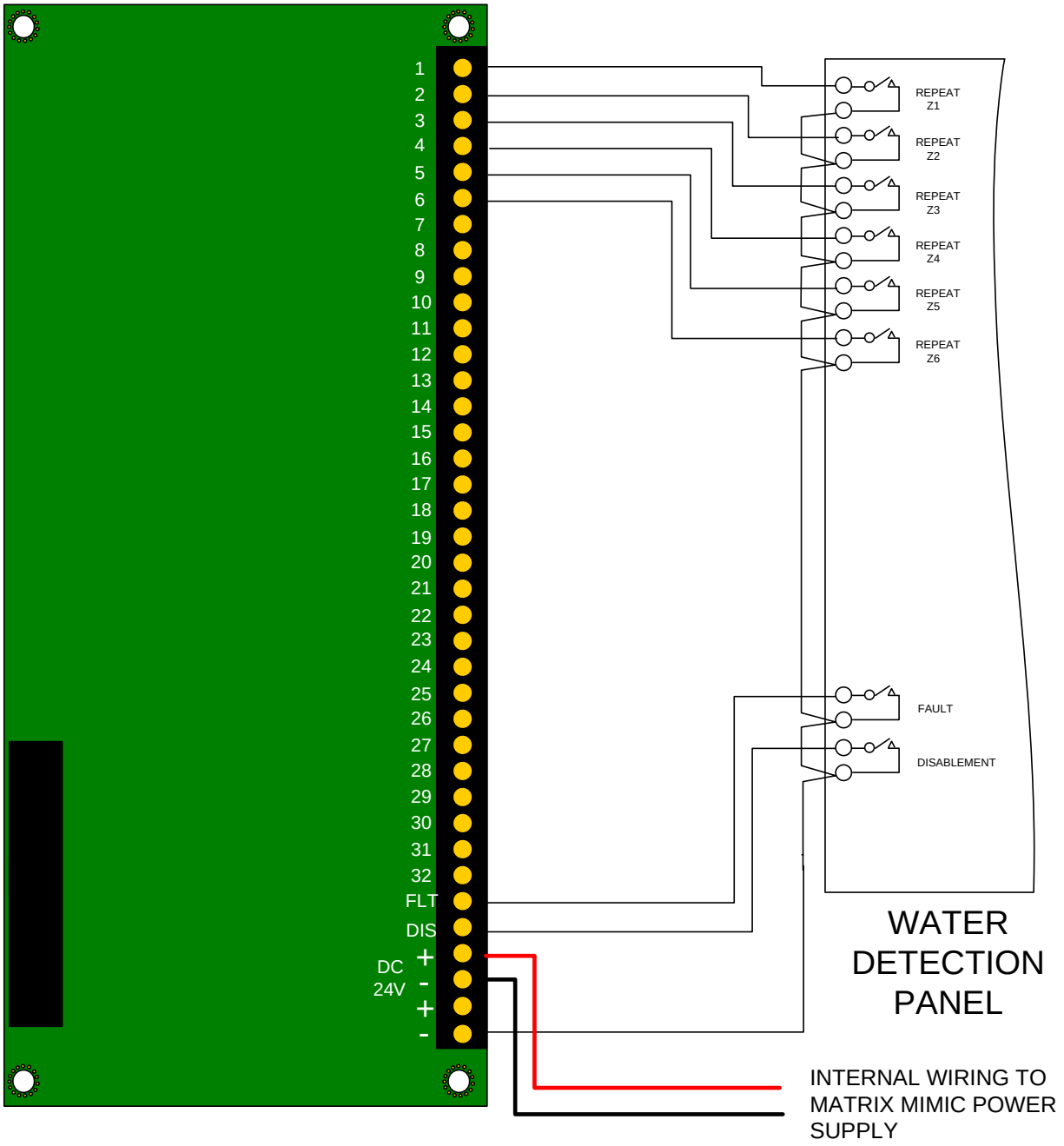
6. Connections

Hydrosense Matrix Mimics without a built in mains power supply and battery charger, require a DC supply of between 18V and 30V. This can normally be provided from the Auxiliary supply of a local water detection control panel and should be connected to the DC 24V terminals, carefully observing the polarity of the connections.

Inputs connect to terminals 1 to 32, FLT (Fault if used) and DIS (Disablement if used). The Hydrosense Matrix mimic can accept either switched + or switched – inputs of up to 30V DC (or a mixture of both +ve and –ve switched inputs) which makes is suitable for connection to a wide range control panels, I/O boards or addressable modules.



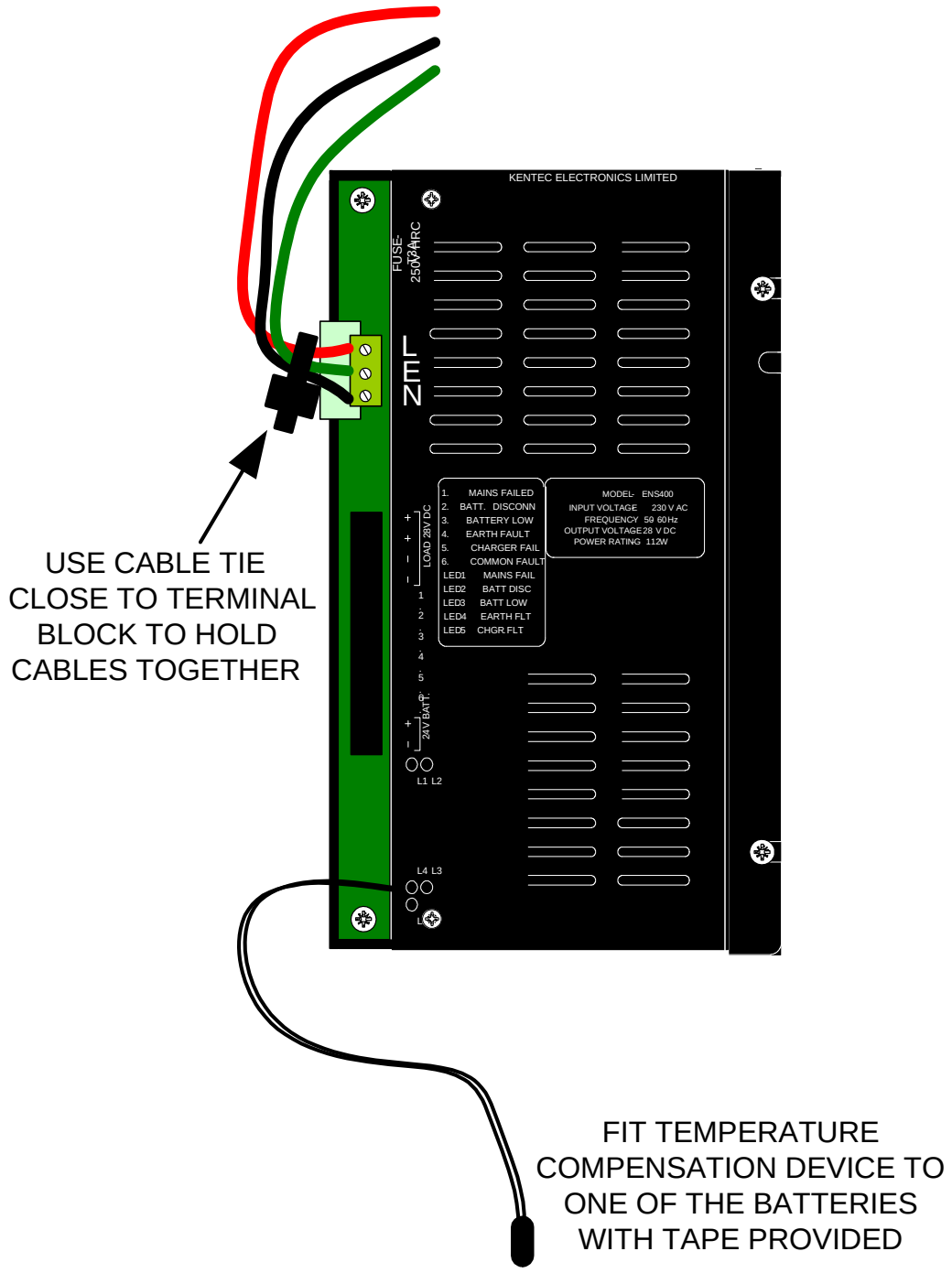
EXAMPLE OF WIRING TO AN I/O BOARD WITH OPEN COLLECTOR OUTPUTS (-VE OR +VE SWITCHING IS OK)



EXAMPLE OF WIRING A MAINS POWERED MIMIC PANEL TO A WATER DETECTION PANEL USING VOLT FREE CONTACTS AND SWITCHING THE MATRIX MIMIC POWER SUPPLY

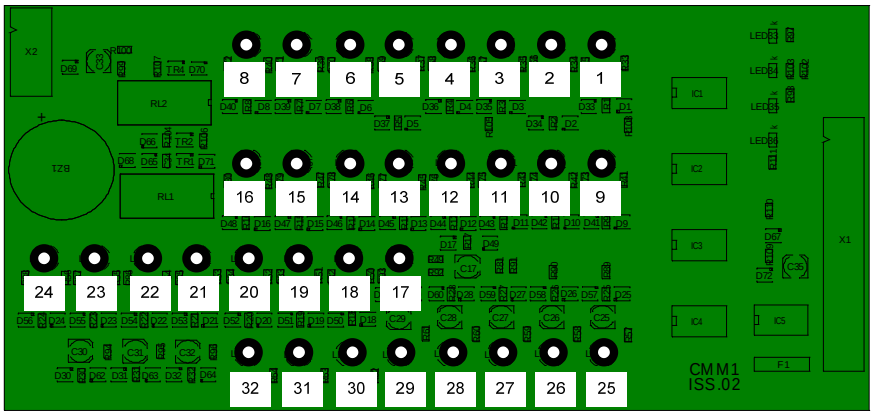
Mains powered Hydrosense Matrix mimic panels require a 230V AC supply which should be segregated from all other cabling by at least 50mm. 24V supplies from other sources such as fire panels should not be connected to the 24V supply of the Matrix Mimic panels to avoid the possibility or creating an earth fault indication.

The power supply has a temperature compensated battery charging output and in order for this to accurately monitor the temperature of the batteries, the temperature monitoring device must be fixed to one of the batteries using the tape supplied to hold the device to the power supply chassis in transit.



7. LED layout

The diagram below shows how the LED positions relate to the input terminals for inputs 1 to 32. The layout of 32 way extension boards is similar so the top right LED of the first extension board would be 33 and so on.



8. Power requirements

Versions of the Hydrosense Matrix Mimic without a power supply and battery back up facility, need 24V DC power from a suitable, battery backed power source. This must be sufficiently rated to provide power for the maximum number of LEDs and with batteries of a suitable size to provide power for the standby period required.

The table below shows the power required in standby and full alarm condition for the range of Hydrosense Matrix Mimics with up to 96 indicators.

NUMBER OF LEDs	STANDBY CURRENT	FULL ALARM CURRENT	BATTERIES FOR 24 HOURS	BATTERIES FOR 48 HOURS
32	0.044	0.230	1.4Ah	2.8Ah
64	0.066	0.460	2.3Ah	4.5Ah

The battery size in Ampere hours is calculated as follows:

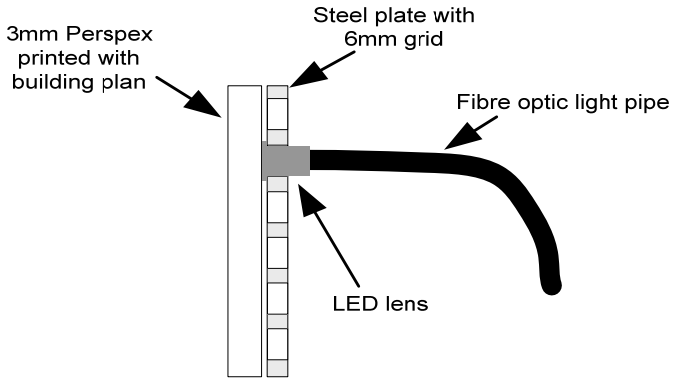
(Standby period in hours x 1.25) x (Standby current + ((Full Alarm current/2) x 1.75)

Versions of the Hydrosense Matrix Mimic that have an integral power supply require 230V AC mains power. Standby battery capacity is calculated as above.

The power supply fitted to standard Hydrosense Matrix Mimic panels is an ENS400 model rated at 4 Amps.

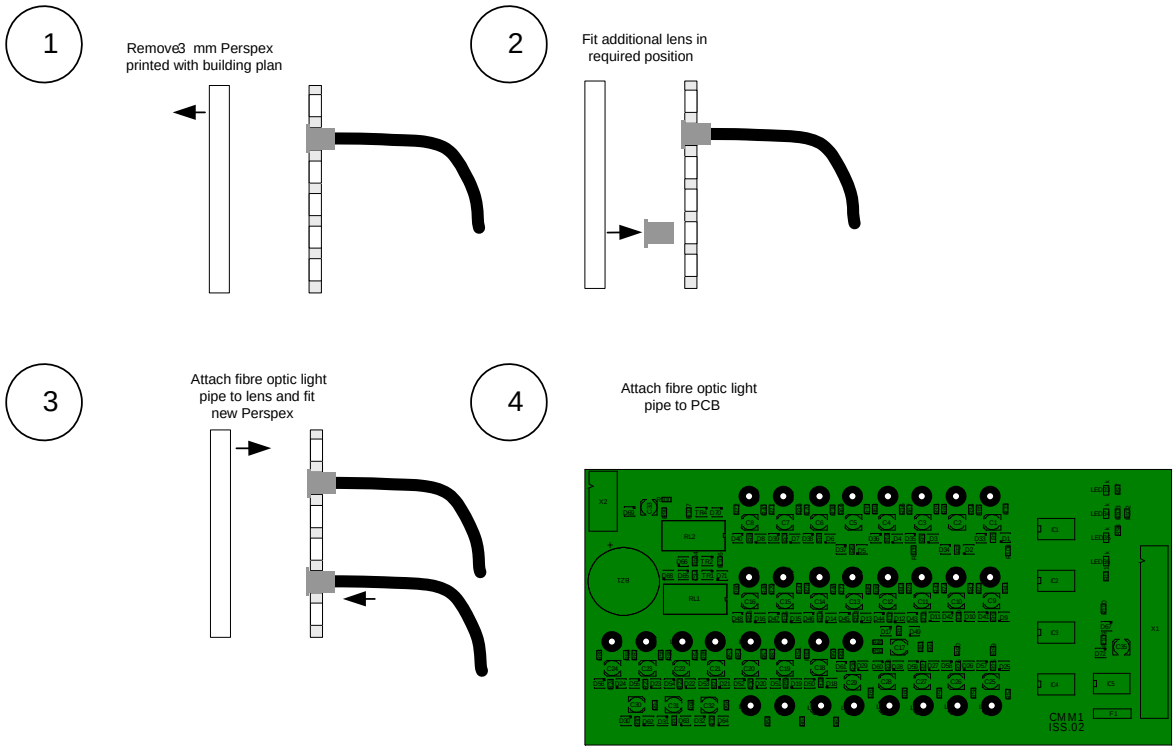
9. Changing or adding LED positions

The construction of Hydrosense Matrix Mimic panels is such that it is simple to add, remove or change the position of LED indicators without the need for special tools or wiring.
The indicators are fitted to a steel plate which has a matrix of holes on a 6 millimetre grid. The steel plate is covered by the printed building plan which reveals only the areas of the plate where indicators are fitted. If changes or additions are made to the building plan, a new building plan can be produced and fitted to an existing Hydrosense Matrix mimic panel.



Sigma Matrix Mimic Construction

To add or change the position of an indicator, follow the four steps shown below.



Fitting additional indicators

Parts required for adding or changing LED positions on Hydrosense Matrix Mimic panels:

M3 Perspex with controls.
M3 Perspex without controls.
S707 – Additional 16 way LED board
B2522 – Fibre optic cable (1 metre length)
B2531 – Lens
B5712 – Fibre optic cable cutting tool

10. Maintenance and testing

The mimic panel should be periodically tested at the same time as the rest of the water detection system in a systematic manner which ensures that all indicators show the correct information.
Mimic panels with controls, have a lamp test facility which can be used to verify that all indicators and the internal buzzer are working correctly. The silence buzzer, silence alarm and reset controls should also be tested periodically.

The mimic panels require little or no maintenance other than to ensure that the fascia is clean and clear of obstructions. If required, the fascia can be wiped with a barely damp cloth. Cleaning solutions other than those specifically designed for plastics such as anti static spray cleaners should not be used.

Mains powered versions of the mimic panels contain sealed lead acid batteries which are float charged. The batteries can be expected to provide adequate service for 3 to 4 years and should be tested annually in accordance with the manufacturer's recommendations. Batteries should be replaced with the same type at the end of their useful life.