

## **Specification for Water/ Liquid Leak Detection system in Kitchen / Vending Areas**

### **LEAK DETECTION SYSTEM**

#### **1. General requirement**

To provide a liquid leak detection and locating system to give the earliest warning of a leak

- *from all kitchen equipment (sinks/dishwashers etc)*
- *from all vending machines and associated pipework*

The system shall

- *Provide an alarm giving an accurate location of a leak at a specific point or zone.*

OR

*Provide a general alarm indicating a leak has occurred somewhere/ anywhere  
within the detection network area*

The system shall comprise a network of sensing devices connected to either a *locally OR remotely located* control panel as indicated in the schedule and drawings.

Where the area is of solid floor construction, the sensing devices should be *water sensing probe/point devices and any other type of liquid sensing device such as sensing pads, pipe-in-pipe probes, tundish/overflow type sensors* as may be deemed appropriate to fully comply with the requirements of the project. Whichever type of sensor is used It is recognised that liquid must touch a sensing device for an alarm to be activated.

Where the area is of raised floor construction the sensing devices should be a network of sensing devices connected to a locally mounted control panel. The sensing device shall consist of water sensing cables and It is recognised that liquid must touch a sensing device for an alarm to be activated.

The leak detection system will continuously monitor the network of sensing devices and give an alarm in the event of detecting a leak or system/sensing device malfunction, damage or disconnection.

A control panel will be capable of monitoring up to *500 no* point/ probe sensors or a combination thereof.

The number of sensing devices and their installation disposition shall be

- *as detailed in the schedule and drawings*
- *as recommended by the specialist sub-contractor or supplier in accordance with the general requirement set down in the schedule and drawings*

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The system shall be capable of

- *reporting the location of a leak to a sufficiently accurate position to enable the operator to locate and identify the activated individual (or group of) probe device(s) quickly and accurately. \**
- *reporting the presence of leak in within a general area. \**

A control panel shall be capable of providing the level of accuracy of leak detection required. This may be achieved by applying a contiguous number of separately reporting zones of appropriate length or by a system which will report the position of a leak as a measurement of metres along the defined route of a sensor. Wherever possible the allocation and installation of sensor lengths or zones shall be arranged to coincide with defined areas or “land-marks”, individual rooms, partition walls or other easily identifiable features. This is to facilitate speedy and positive leak location.

## **2. Leak Detection Sensor Cable/Tape**

The sensor cable shall be made from Low Smoke and Fume – Zero Halogen (LSF0H) materials for smoke reduction and low toxicity. The cable shall be made from durable, non-deteriorating materials and have no exposed metallic parts. It shall not be adversely affected by the build up of dust or other dry dirt / debris.

The sensor cable shall be available in rolls for cutting and terminating on site or in pre-connected lengths.

In the event of damage or irrevocable contamination the affected part of the cable should be capable of on-site repair. It should not be necessary to replace the whole length.

### **2.1 Application**

#### **Leak detection cable**

- Installed under the raised floor routed around the perimeter of the area & in front of any A/C units etc. to ensure a “barrier” or line is provided over which liquid must pass prior to passing into the critical area
- In any banded areas around down pipes passing through an area.

The cable will be fixed to the floor at approximately 1 metre intervals and at every change in direction. Acceptable fixings will be self-adhesive clips or cold adhesive or other approved fixing. Adhesive fixings will only be used where the floor finish is clean, stable and non-dusting. Only self-adhesive and cold adhesive clips will be permitted in drip trays.

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Identification/warning tags will be attached to the cable every 3 - 4 metres. Tags will state purpose of cable and will show any relevant information (such as zone number or distance reference) to confirm the location of that particular part.

Special 'Plug & Play Auto Zone Changeover Couplers (Type – RJ48) will be used for zone changes and connection to leader cables. To confirm location the Zone Couplers will be labelled showing its reference number and the preceding and following zone numbers.

Appropriate connectors will be used to join separate cable lengths and leader/ jumper cables. To confirm location the connectors will be labelled showing any reference number and relevant location information.

### **3. Leak Location**

The water detection system will be applied and mapped in such a way as to make the part of the sensor network detecting the leak easy to identify and physically locate. This may be achieved by sub-dividing the sensor network into a series of separately reporting zones displayed on the control. In any event the zone

displayed by the control panel shall be cross-referenced to a map, chart or diagram which shall clearly show the routing of the sensor network, its relationship to the building layout and any fixed zone positions or cumulative distance marks.

### **4. Standards.**

The leak detection cable shall be:-

- supplied in rolls for cutting and jointing according to site requirements or
- supplied as pre-connected standard lengths.
- capable of repeated re-use - (wetting then drying).
- (if damaged or irrevocably contaminated) capable of being spliced/ jointed or repaired on site with the minimum of wastage.
- robust construction - resistant to moderate physical abuse
- resistant to temperatures up to 100°C
- no exposes metal parts
- not affected by dust and debris
- capable of being attached directly to bare metal surfaces or pipes without "shorting" or other interference.
- capable of being monitored along its entire length for damage or disconnection.



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Volt free contact changeover relay outputs will be provided for connection to BMS or other remote alarm or monitoring system. As a minimum these will include:- **Common Leak, Common System Fault, Mains Fail/All Fail**

The option for individual zone outputs should also be available.

*Serial connections (via RS232, RS485 or similar) will be available for communication of system status and all alarm conditions to the BMS.*

### 7.3 Operation

The control panel should be mains operated (220/230VAC 50Hz) and must include a trickle charged sealed lead-acid stand-by battery capable of maintaining the system for 24 hours in quiet monitoring mode.

### 7.4 Sensitivity

The sensitivity of the system must be adjustable to suit particular site conditions.

### 7.5 Conformity

It is a statutory obligation that the system must conform to relevant EU regulations particularly the EMC and Low Voltage Directives and be "CE" marked accordingly.

## 8. Manufacturer

The water leak detection system shall be as manufactured by:



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