

*(Note to user. This is a word document. Delete/amend variables in brackets and/or italics as required. Copy and paste body text as required)*

## **Specification for Water/ Liquid Leak Detection system** **- Attached Directly to Pipework**

### **LEAK DETECTION SYSTEM**

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

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

- *from Mains Cold Water / Chilled Water / Domestic water / Heating / Sprinklers, Condensate pipework etc.*

The system shall

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

The system shall comprise a network of sensing devices connected to a *locally mounted* control panel as indicated in the schedule and drawings. The sensing devices should include *water sensing cables*, as may be deemed appropriate to fully comply with the requirements of the project. 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 (5000m) of sensing cable and/or (500 no.) point/probe sensors or a combination thereof.

The length and/or number of sensing cable or 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*

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 section of detection cable, or individual (or group of) probe device(s) quickly and accurately. \**

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 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**

- *Attached directly to individual pipes (outside / inside any lagging or insulation)*

The cable will be attached to the pipework using relevant sized cable ties.

Where attached **inside pipe insulation** the detection cable will be taped or tie-wrapped at a maximum 1 metre intervals.

Where attached **outside pipe insulation** the detection cable will be taped or tie-wrapped at a approximately 150mm intervals or sufficient to prevent sagging and maintain constant contact with the pipe surface.

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.

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*Special Junction Boxes (or other device) will be used for zone changes and connection to leader cables.*

*To confirm location the Junction Boxes 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 or by a system which, uses a sensor cable which will report the location of a leak via a distance measurement displayed on the control. In any event the information the distance measurement or 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.

Any reasonable leak location and display method or technique will be considered as long as it can be demonstrated to meet the project requirements.

### **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.

### **5. Leader Cables**

Leader cables will be LSF Zero Halogen double insulated, multi-core, 7/0.2 strands (or solid equivalent) or similar. All leader cables must be monitored along their entire length for damage or disconnection.

## 6. **Control Panel**

The control panel will give a full range of status indicators - mains /battery etc. and visual and audible alarms for -

- **LEAK** – showing affected zone / leak location
- **SYSTEM FAULT** - detection device and/or leader cable damage      - **Short circuit**  
or   - disconnection /break      - **Open circuit**  
both occurrences will show the affected zone / fault location

### 6.1 **Multiple Alarms**

The control panel should be able to locate, accept, display and store concurrent and/or consecutive multiple alarms and show the exact status of all zones at all times (Leak, System Fault or Quiet).

### 6.2 **Outputs and Communication**

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.*

### 6.3 **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.

### 6.4 **Sensitivity**

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

### 6.5 **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.

## 7. **Manufacturer**

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The water leak detection system shall be as manufactured by:



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