1. **WATER LEAK DETECTION SYSTEM**
2. **General**
	1. Water leak detection System shall be designed to protect the Air-conditioned premises and to alert the personnel about the leak in the AC systems or to give an early warning of water/moisture leakage from any source, e.g. pipes, tanks and air conditioning plants. The system shall be capable of interfacing to addressable Water leak detection sensing cables& I/O modules.
	2. The system shall also be designed to trip the AC when the sensor is activated. Events should be clearly reported on **10.1 “Touch screen display** with full English language description of the nature of the fault in the panel.
	3. The Water leak detection system shall comprise of addressable sensing cables, addressable modules, I/O modules and sounders all connected to a Control Panel.
3. **Control Panel**
	1. The control panel shall be Digital locating type with +/- 1m leak accuracy and addressable with a facility to add on dialer and speech processor. The system shall be programmed through Touch screen interface for viewing various menus & events. The control panel should have password protection
	2. Leak detection system shall be addressable with precise leak location with +/-1 meter accuracy and capable to address minimum 32 individual sense cables or 3000m of sensing length from a single monitoring panel or its satellite panels and interconnected with 4 core jumper cable. Water sensing detection cables, which are connected individually, or in groups, to multi-zone control panels. The system shall be totally tamper proof with user password protection. The system should trigger “fault” alarms with exact cable section identification. The system shall log 1000 events. Each sensor is addressable and capable to provide leak location with +/-1 m accuracy within each zone.
	3. Multiple leaks

 Every sense cable shall be able to detect and locate leaks independently. The system shall be

 able to show 120 simultaneous faults.

* 1. Jumper Cables: The water sensing cables shall be connected to a system on a single 4 Core Cable Bus Low Smoke Zero Halogen to avoid individual cabling of zones. The system shall have a Buffer memory of minimum 1000 events and log each event with exact date and time. The controller shall have a RS485 port or a web monitoring page that alows easy viewing / printing from a computer / BMS screen.
	2. Dynamic Interactive Maps: The monitoring panel should be able to display dynamic interactive maps / communicate with BMS system with floor plan loaded in graphic screen that indicate the sense cable section in Leak or in Break with its exact position.
	3. Email Alerts: SNMP Traps with email alerts to multiple email addresses as optional.
	4. The controller shall work on 220/240V AC power supply
	5. The memory inside the controller shall be backed up by a battery. The controller shall work effectively over a temperature range of 5 Deg. C to + 55 Deg. C. and 0 to 80% of Humidity.
	6. The panel should have the facility to interface with an automatic two channel programmable speech dialer for verbal reporting of any alarm condition using its dry contacts. It shall be able to call four telephone numbers per channel. The programmable speech dialer shall have two alarm inputs and shall provide listen-in capabilities through the built-in microphone. The dialer shall have a built in keypad for easy operation, programming and voice recording.
	7. The panel should have local alarm and the output needs to be connected to the BMS system over Modbus RS485 /TCP-IP for central monitoring.
	8. This system is micro processor based system & programmed in a particular manner so that it can operate all the components for a desired result, this technology makes improve accuracy & reduce the wiring inside the panel.
	9. The Technical feature of W.L Panel is illustrated as follows: -

(1) Easy to maintain

(2) Easy to expand

(3) Easy to network

(4) Easy to install

(5) Easy to Configure

1. **Water Leak Detection Sensors**

Addressable Water Leak Detection sensors with +/-1m leak precision accuracy shall be able to mount in DIN rails, inside AHU’s, power distribution units or other equipment where localized leak detection is required. The detectors shall be resistant to oxidation and erosion and shall be using certified Low Smoke Zero Halogen material. The detector shall have relay output for connection to the controller. LED alarm indication shall also be provided. The sensing cables shall operate in on DC supply.

Water sensing cables The sense cable shall consist of a 4 wire helically-winded central core sensing & continuity cables), on which polymer conductor wires are spiralled. This shall ensure a prompt detection as well as a short drying time after the risk is eliminated.

The insulation and signal wires shall be made of flame-retardant polymer. The jacket of sense wires shall be made of conductive polymer on the ground wire. The active sense wire shall have a special dust-proof construction and shall not be affected if in contact with any metal parts like cable baskets, flooring or ground braids.

**Sounder**

The sounder shall give audible alarm when any sensor operates. It shall be complete with electronic oscillations / magnetic coil (sound coil) and accessories ready for mounting (fixing). The sound output from the Hooter should not be less than 85 decibels at the source point.

1. **Technical Specifications:**
	1. **Controller**

No. of Zones : Addressable with min capacity of 32 zones, 1800m per panel.

Events : 500 event log

Display : 10.1” Touch Screen Display

On board outputs : Programmable dry contacts

Temperature Range : 5 Deg C to +55 deg C

Humidity Range : 0% - 80% (non condensing)

Output (PFC) : 8 dry contacts per monitoring panel

* 1. **Water Leak Detection Cable**

Supply Voltage : 5VDC to 12VDC

Output : Programmable dry contacts

Response Time : <10 Sec.

Accuracy : +/-1m

Max sensor tape Length : Sections of lengths from 3m up to 50m

Ambient Temperature : 0° - 85°C

Relative Humidity : 0 - 80% RH

Dimension : 7.5 mm dia.

1. **COMMISSIONING AND TESTING**
2. Commissioning of the entire installation shall be done in the presence of the owner and/or its representative.
3. All necessary instrumentation, equipment, materials and labour shall be provided by the Contractor.
4. The Contractor shall record all tests and system calibrations and a copy of these results shall be retained on site in the system Log Book.
5. To have a functional test, simulate by having some water (1 to 2 inch) on the sensing cables. Sensing alarm not to exceed 90 seconds. Check if the dynamic display activates and shows exact sense cable.
6. Simulate a “cable break” test by disconnecting a sense cable/jumper cable and check if you have location of the break alarm.
7. Check if you have received the alarms on the BMS over Modbus RS485/TCP-IP
8. **DOCUMENTATION**
9. The Contractor shall be authorized and trained by the manufacturer to design, install, test and maintain the Water Leak Detection system and shall be able to produce a certificate issued by the manufacturer along with the offer.

Product data and performance criteria shall be submitted by the Contractor.