

**USER MANUAL  
FOR  
WATER LEAK DETECTOR**

**VERSION 1.01**

**DESIGNED, ENGINEERED AND MANUFACTURED BY**

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**1.Introduction**

A system for early detection of water leaks at particular locations in any water-dependent appliance and apparatus used in buildings such as homes, townhouses, apartments, mobile homes, and offices. The Product is equipped with a Central control Panel electrically interconnected with a plurality of circuits which enable water leaks to be accurately detected in a wide selection of devices including air conditioners, compressor coils, hot water appliances, and pipes, and communicates the severity of the water leak in the respective zone.

A plurality of water sensors are incorporated into specially designed probes of the preferred embodiment wherein water leaks may be accurately and reliably detected in a diversity of water-dependent appliances and devices. The product is designed such that it requires minimum competency for installation. The product is inherently devoid of any safety hazards. The total area under protection is divided into multiple zones and monitored for potential leaks.

Supply Voltage: 230Vac @ 50Hz

Supply current: 50mA max. Output Relay: 6A @ 250Vac.

Response time <1 sec. after exposure

Electrical Terminals for 0.5-2.5 Sq.mm cable

LED Status indication for: Error condition & Relay output mode

Alarm hysteresis Dependent on sensitivity

Audible alarm output 85dB@2.3Hz @ 10cm

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**2.Technology**

The product is designed using High Speed Microprocessor based proprietary hardware and uses 12V, 50Hz AC as sensing voltage for sensing potential leaks.

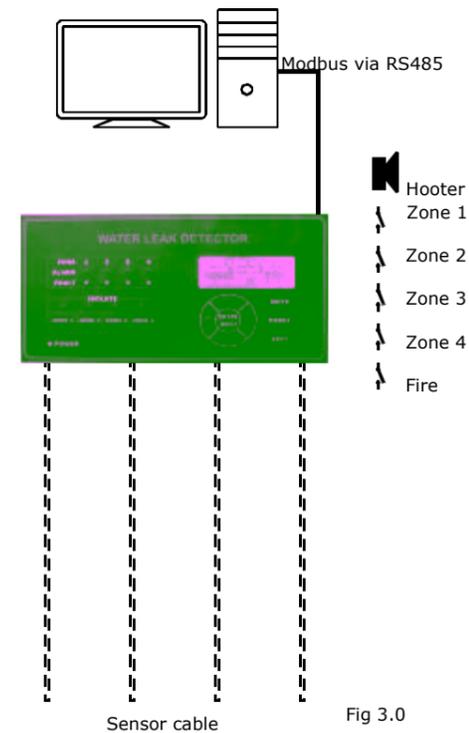
**TECHNOLOGICAL ADVANTAGE OVER EXISTING DESIGN**

Existing water leak detection systems available in the market, uses a 12V / 24V DC supply for sensing leaks. When DC excitation is used in the sensing cables, they form electrolysis during the presence of water and forms corrosion around the sensing cables. This reduces the sensitivity over a period of time to virtually 0. However, when AC current is used as a sensing voltage due to the alternating nature of the current it does not form corrosion and hence maintains the sensitivity of the sensing cables throughout its duty cycle.

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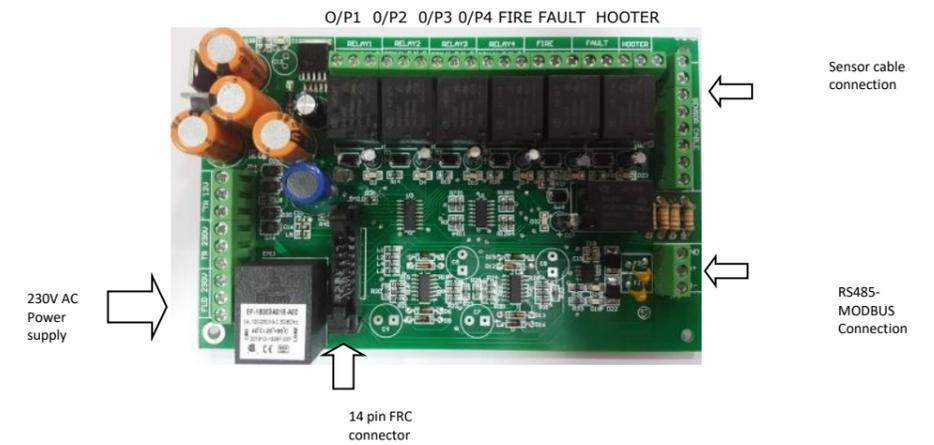
**3.System Overview**

A complete system overview of water leak detector is shown in Fig 3.0 The maximum inputs and outputs of the system that can be configured to the water leak detector is shown in the Fig 3.0.



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**4.Wiring Terminal Details**

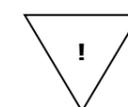


The figure above shows the I/O board of water leak detector. All the wiring details are provided in the above figure.

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**5. Installation and commissioning procedure**

- 1.Unpack the water leak detector carefully without damaging the membrane keypad**
- 2.Care should be taken when a knife or sharp tool is used for unpacking.**
- 3.Unscrew the 3 mm bolt fitted on the right side face of the panel door.**
- 4.Open the front door, and wire the line input terminals (Phase, Neutral & Earth).**
- 5.Power On the panel and observe the information displayed in the LCD.**
- 6.Setup category for normal display and operation.**
- 7.Power OFF the system and lay the sensor cables in the detection area by fitting the fixing clips on the floor and clip the identification tags to the corresponding sensor cables. Identification tags are very useful during alarm and fault situations.**
- 8.After successful laying of sensor cables, terminate the sensors cable to the corresponding zone terminals.**
- 9.Wire the output of the corresponding zone relay to the for 3<sup>rd</sup> party Integration.**
- 10. Power On the panel and observe the display information in the LCD.**

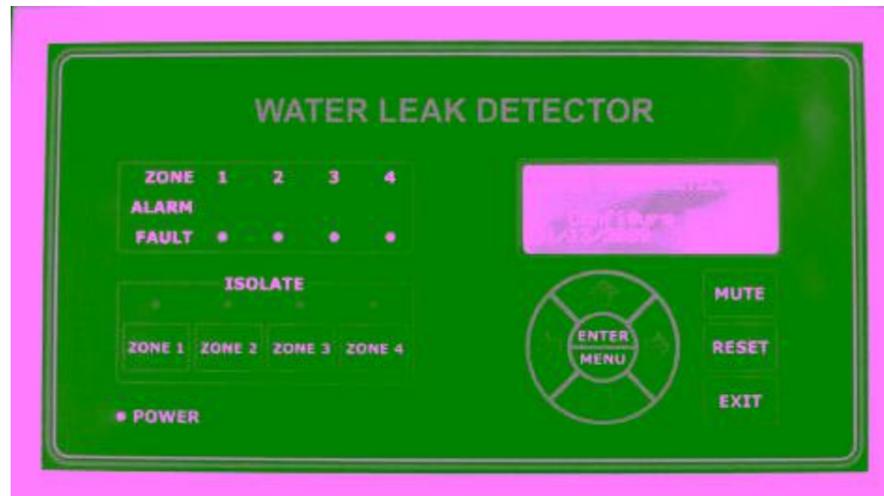


**Caution - DO NOT WIRE THE SENSOR CABLES AND OUTPUT CABLES WHEN THE WATER LEAK PANEL IS POWERED ON. DO NOT LAY SENSOR CABLES WHEN THE SYSTEM IS POWERED ON**

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## 6. Setup

The default screen from factory setting is shown below. To configure the water leak detector, press ENTER key in the membrane keypad.



On power up, the water leak detector displays the following.

1. First line displays "water leak Detector".
2. Second line is empty.
3. Third line toggles between "Site Name" and "Configure Zone".
4. Fourth line displays the current date & time.
5. Power LED glows constantly.
6. All the Alarm, Fault & Isolate LEDs will be in off conditions.

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To view the Main Menu, Press the "ENTER/MENU" key in the soft membrane keypad. Main Menu is displayed in the LCD as shown in the figure.

```

→ Site Information
  Configuration
  Clock Settings
  Event Log
    
```

Press UP/Down keys to select the menu. The arrow in the LCD moves up and down. Position the arrow to the desired menu and press enter key.

To type the site name, position the arrow in the LCD to site name and press ENTER key. A new screen is displayed as shown in the figure. Press UP/Down keys to select the characters. Press Left & Right arrows to shift to next character. Maximum 20 characters can be typed as site name. After typing the site name, press ENTER key. A message "Successfully Updated" will be displayed for 2 seconds and returns to the menu screen.

```

→ Site Name
  System Address
  Communication
    
```

```

Enter Site Name?
Site Name
ARROW-Edit
ENTER-Save
    
```

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To configure the zones, position the arrow in the LCD to "Configuration" menu and press ENTER key.

The number of zones to be used shall be configured by positioning the arrow in the LCD to "Enable Zones" menu.

```

→ Enable Zones
  Zone Name
  Sensitivity
  Event Log Clear
    
```

The zone configuration screen is shown in the figure below. Maximum 4 zones can be configured. For example, If two zones are enabled, only zone 1 & 2 will accept any leak in the field. Zone 3 & 4 will not detect leak, even when the sensor cables are connected in the corresponding zone terminals.

Use UP/Down keys to edit the number of zones to be enabled. Press ENTER key to save the setting. A message "Successfully Updated" will be displayed for 2 seconds and returns to the menu

```

Maximum Zones: 4
Enable Zones: 0
ARROW-Edit
ENTER-Save
    
```

Select the Zone name menu by positioning the arrow in LCD screen. Press ENTER key to edit the zone names. Factory default setting will be empty space. The names of the zones enabled can only be edited.

```

Zone1: BI Adyar
Zone2: Airtel Porur
Zone3: C-Systems
Zone4: Data center
    
```

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To set the sensitivity, select the menu and press ENTER. The sensitivity can be set in terms of eight steps. The "HIGH" sensitivity means even a very small amount of water in the sensor cable will raise an alarm. Similarly, "LOW" sensitivity reacts only in the presence of plural of water.

```

Enter Sensitivity?
High ..... Low
    
```

To clear the log events, select the menu and press ENTER. The Event Log clear needs authorization. Press up/down key and set 5555 as password.

```

Enter Password?
5
ARROW-Edit
ENTER-Save
    
```

To Edit the date and time settings, select the clock settings from the main menu and press ENTER. The date format is shown in figure. Select the date format and press ENTER.

```

→ MM/DD/YYYY
  DD/MM/YYYY
    
```

To configure the zones, the number of zones to be used shall be configured by positioning the arrow in the LCD to "Enable Zones" menu.

```

→ Enable Zones
  Zone Name
  Sensitivity
  Event Log Clear
    
```

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To Edit the date and time setting, select the clock setting in the main menu and select the set date / set time menu. Edit the date and time by pressing up/down/left & right keys. Press Enter to save the setting.

```

Date Set?
01/13/2008
ARROW-Edit
ENTER-Save
    
```

```

Time Set?
12:58:19 PM
ARROW-Edit
ENTER-Save
    
```

To view the event log, select "Event Log" in the main menu. All the events are logged along with the date and time. Press up/down arrow keys to view the event logs. All the five events like Alarm, Mute, Isolated, Integrated & Reset are shown in the images below

```

Event 4:ALARM!
Zone4: Data center
01/09/2009 05:58 PM
    
```

```

Event 5:MUTE
Zone4: Data center
01/09/2009 05:58 PM
    
```

```

Event 6:ISOLATED
Zone4: Data center
01/09/2009 05:59 PM
    
```

```

Event 8:RESET
Zone4: Data center
01/09/2009 05:59 PM
    
```

## 7. Indications

All the three types of indications are provided as LED's in the membrane keypad. When a leak is detected by the system, RED LED is lighted up in the corresponding zone. When the zone(s) is isolated, the corresponding zone green LED is lighted up.

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RED LED (fault) is lighted up when a zone is configured and sensor cable is not connected or the sensor cable is break open. If fault LED(s) are lighted up, the fault shall be immediately rectified to avoid false alarms or non-operation of system during critical



## 8. MODBUS COMMUNICATION

Configure the parameters in system address and communication menu. Other parameters such as 9600 as baud rate, 8 data bits, 1 stop bit, 1 start bit and no parity are static.

### Modbus Values:

Faulty – 0; Healthy – 1; Isolate – 2; Disable – 3; Alarm – 4

Description	Modbus Register	Function Code	Read / Write Mode
Zone 1	4000	0x03	Read only
Zone 2	4001	0x03	Read only
Zone 3	4002	0x03	Read only
Zone 4	4003	0x03	Read only

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