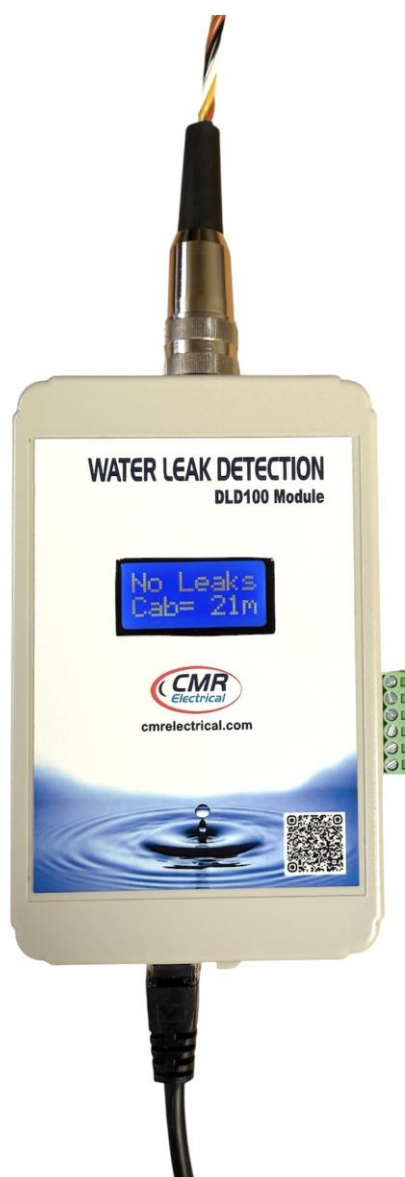




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DLD100

Water Leak Detection Manual



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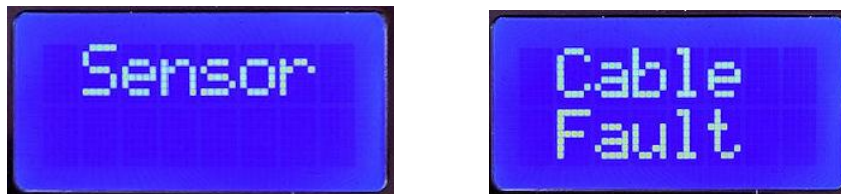
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1) System Overview

The unit as standard provides output relay contacts for both alarm and cable fault. The sensor can interface with existing alarm units, control PLC systems or Building Management Systems (BMS) via the volt free changeover contacts. A power supply between 12 to 24VDC/AC is required to power the system allowing power to be supplied from A/C units, BMS systems and control systems. Complete with an alpha numeric display, the unit will display the distance to a leak in metres i.e. "Leak at 20Mts". This feature will enhance the ability to find the leak when the detection cable is out of sight i.e. within a false floor void, ceiling cavities or large areas.

Item 1.1 Sensor cable damaged

On powering up, the unit will monitor the cable for damage, contaminants or water in the cable to ensure that when it self-calibrates by measuring the cable length, the cable is connected correctly and clean. If the cable is damaged or disconnected the display will show "Sensor Cable Fault" and the fault contact will operate.

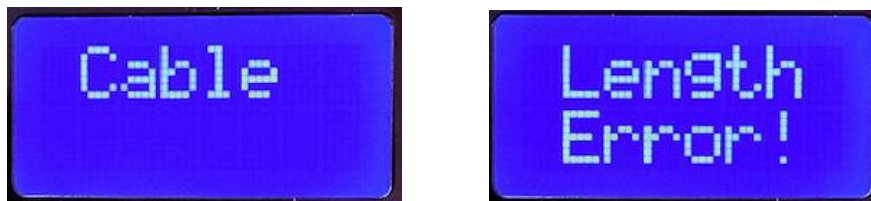


SCREEN 1

The above screens will alternate if the water detection cable is not connected to the sensor, the cable is damaged or the end of line connector is missing. This alarm will self-reset once the detection cable is connected correctly to the sensor with the end of line being fitted to the end of the cable run.

Item 1.2 Dirty or contaminated cable on power up

If the cable is contaminated i.e. water on the cable, the screen will show "Cable Length Error" and the fault contact will operate.

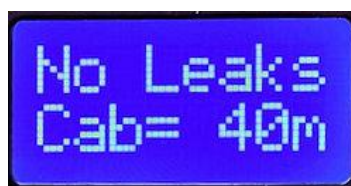


SCREEN 2

The above screens will alternate when the detection cable is contaminated with a conductive substance such as water or wet firestop. This alarm will self-reset once all contaminants have been removed.

Item 1.3 Normal Screen

Provided the detection cable is not damaged or contaminated, the display will show the length of the detection cable it will be monitoring i.e. "No Leaks Cab = 40m".



SCREEN 3

This screen is displayed when the detection cable is connected correctly and there are no contaminants on the cable. The "Cab= 40m" part of the display shows the total length of the detection cable that will be monitored.

Item 1.4 Leak detected with distance to leak screen

When water comes into contact with the detection cable, the unit will measure the leaks length from the controller end a number of times before displaying “Leak Detected” followed by “Leak at 39m” a few seconds later, and the alarm volt free contact will energize. Once the leak has been removed, the system will automatically reset for the next event.

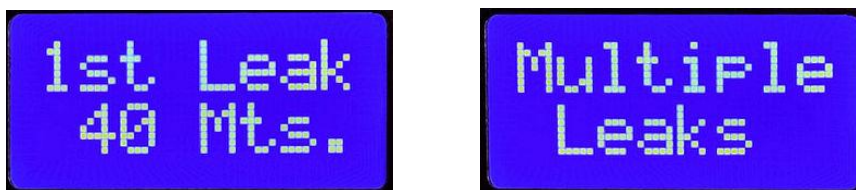


SCREEN 4

Displayed when a water leak has been detected in the cable. The distance from the sensor to the leak (39 Mts.) being shown on the display.

Item 1.5 Multiple leaks screen

The sensor is limited to just one leak at a time meaning that additional leaks at the same time will not be displayed with a distance to the leak. However, if the unit is detecting a leak, and another leak occurs, the display will alternate between “1st Leak 40 Mts.” (original leak) and “Multiple Leaks” indicating that the system is seeing more than one leak. The unit will continue to display both screens until all leaks have been cleaned up when the unit will revert back to “No Leaks Cab= 40m”. However, if the second and subsequent leaks are cleared before the original leak, the display will revert back to “Leak Detected” followed by “Leak at 39m”.



SCREEN 5

The above screens are displayed when the system detects more than one leak on the detection cable. The first leak was found at 40 metres from the sensor but the second leak can be anywhere along the detection cables length.

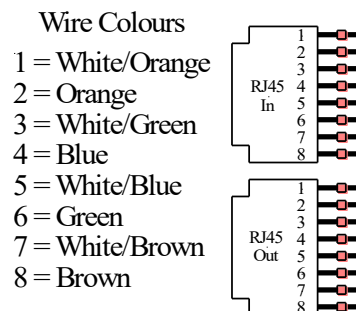
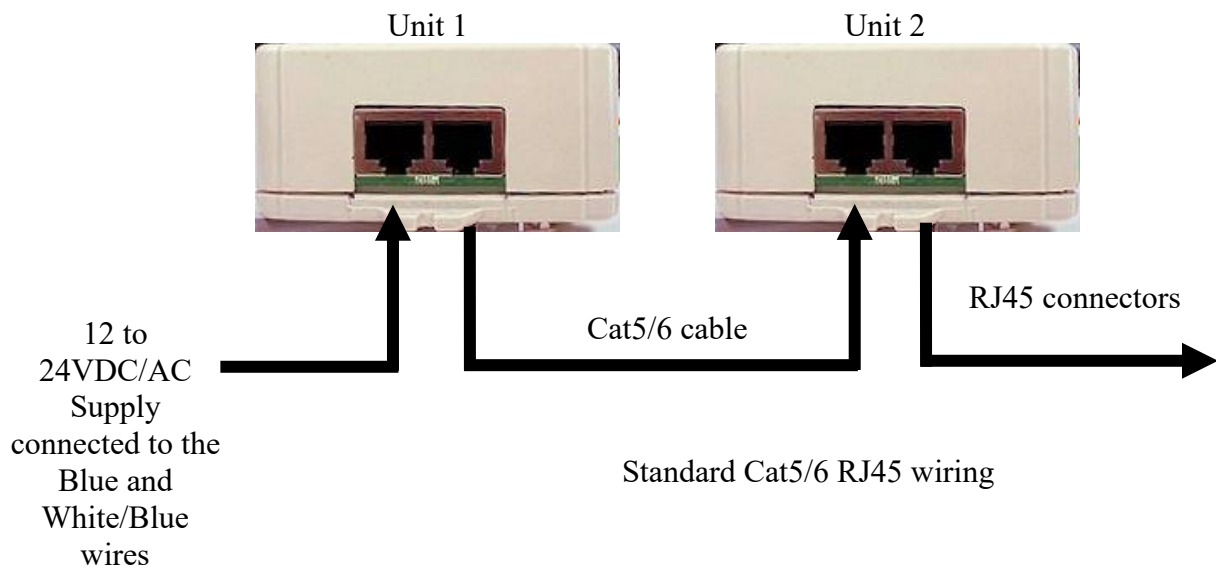
2) Installation

Item 2.1 Positioning the sensor

The sensor should be fitted in a position that allows the display screen to be clearly read. The unit can be cable-tied to a water pipe using the two fixing lugs or screwed to a wall, again using the two fixing lugs.

Item 2.2 Powering the sensor

The unit is supplied with a 3m long signal cable with an RJ45 connector at one end and a Blue & White-Blue cables at the other. Plug this cable into either of the two RJ45 sockets at the bottom of the sensor. The other end of the signal cable will need to be connected to a 12 to 24VDC/AC supply. This cable can be extended up to 100m using any 2-core cable or CAT5/6 cables. Connect the blue cable to one side of the 12-24V power supply with the white-blue cable to the other, the sensor is not polarity conscious. The RJ45 connector terminals 4 is the Blue cable and terminal 5 is the White-Blue cable. Two RJ45 connectors are provided to allow power to be provided to a number of sensors.



Note;

Power connections are **NOT** polarity dependant. Only the Blue (pin 4) and White/Blue (pin 5) connectors are used for the power supply. However, all cable cores can be connected to the RJ45 socket in the normal way allowing the use of standard RJ45 Ethernet cables from any wholesalers to be used.

Item 2.3 Connecting the Detection cable

The water detection cable will be supplied with a 4-pin male connector at one end and a female connector fitted with a male End of Line terminator connector at the other. Start the installation by screwing the detection cable into the sensor, then running the cable around the area to be protected. The detection cable is susceptible to damage and should not be fitted to areas where the cable is likely to be damaged or walked on. If fitting the cable around Air Conditioning Units with humidifiers, ensure that cable is positioned at least one metre from the ACU to stop intermittent alarms being generated from over humidity or water droplets from the AHU.

Item 2.4 Fitting Cable Clips

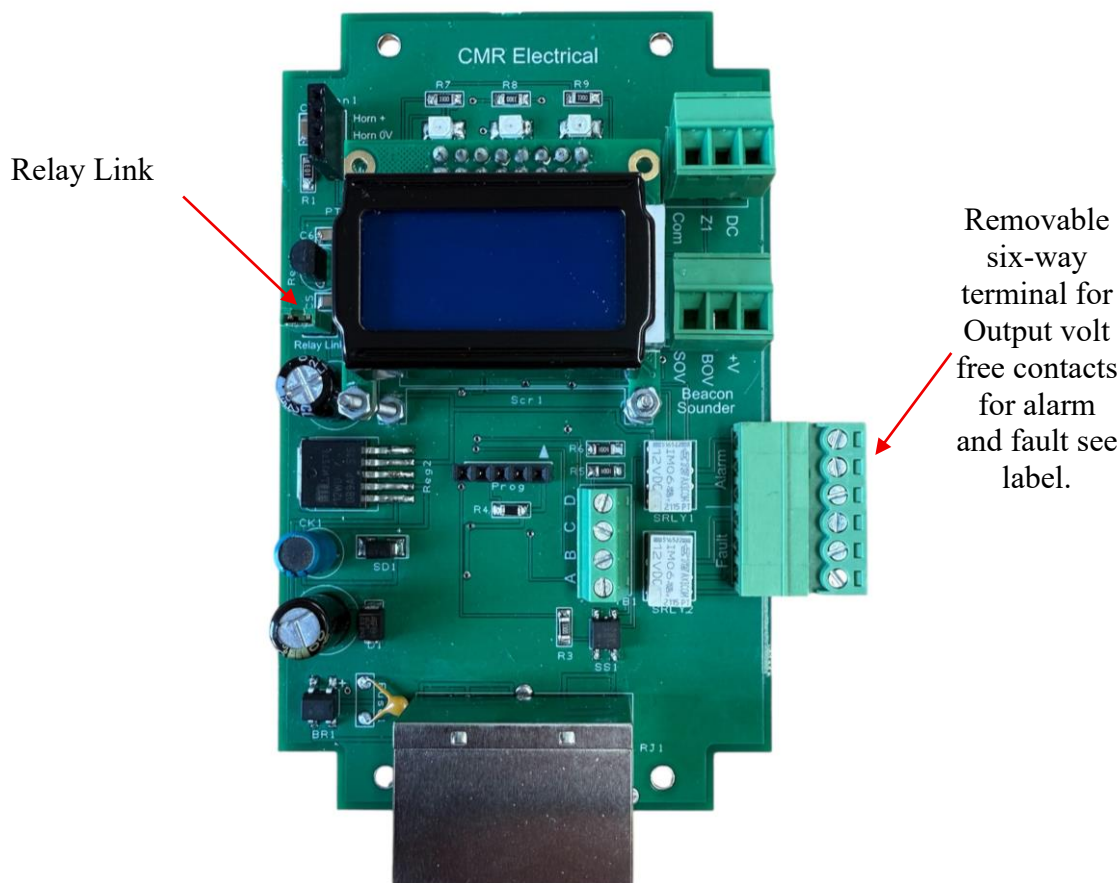
If cable clips are required, to protect the small sensor wires and to stop false 'water detected alarms' from occurring, insulating tape should be first applied around the detection cable before the clip tongue is closed. Clips should be fitted approximately every 1 to 1.5 metres apart. When using clips make sure that the cable touches the floor between the clips, **DO NOT** tighten the cable so that the cable does not touch the floor.

Insulating tape to be used under the fixing clip tongue



Item 3.1 Set alarm contact to normally energised

As standard both alarm and fault volt free outputs are normally de-energised, energised in alarm. However, If the contacts are required to be normally energised, de-energised in alarm, the “Relay Link” highlighted below will need to be removed. To do this first remove the four screws holding the housing together. Carefully separate both halves making sure that the sensor wires to the four-way terminal block are not damaged. Remove the link by pulling upward on the link. Gently put the two halves back together and replace the screws.



Item 3.2 Output alarm contacts

Two sets of changeover volt free contacts have been provided, one set for water detected alarm the other for cable fault. Both sets of contacts are rated at 24VAC/DC 0.5A and can be configured as normally energised, de-energise in alarm or normally de-energised, energised in alarm, see Item 3.1 above.

Item 4 Commissioning

- Once the unit has been connected as described above, turn on the power to the unit. The screen should display, Screen 3 above, i.e. “**No Leaks Cab**= the length of fitted detection cable” If not, refer to the “Fault Diagnostics” below.
- Using a cup of CLEAN water, immerse a small area (50mm long) of cable into the water. The controller should display screen 4 i.e. “Leak At with the distance from the sensor to the leak” if not refer to the “Fault Diagnostics” below. With the unit in alarm, test that the volt free “alarm” contact has changed state. Once this test has been carried out wipe the cable with some tissue paper until screen 3 reappears.
- With the unit displaying Screen 3 above, remove the end of line connector. Screen 1 above “Sensor Cable Fault” should appear. With the unit in Fault Alarm, test that the volt free “fault” contact has changed state. Replace the end of line connector, screen 3 should re-appear.

Item 5 Fault Diagnostics

Fault		Possible Reason
Display is OFF and the unit appears dead		1) No power to the control unit. <i>Test with a meter at RJ45 connector pins 4 and 5</i> 2) System fault. <i>Return to manufacturer</i>
The Water Detected statement remains on the screen all the time.		1) The cable needs drying out after detecting water. <i>Using tissue paper to dry the cable.</i> 2) The cable has a short between the sensors due to contaminants. <i>Clean the cable using water and tissue paper dry out afterwards</i> 3) The cable has been damaged. <i>Visually check the cable for damage.</i> 4) System fault. <i>Return to manufacturer</i>
Screen 1 “Sensor Cable Fault” on permanent display		1) The detection cable is not connected to the sensor 2) The detection cable end of line connector is not fitted 3) The detection cable has been damaged 4) Unplug the end of line connector and plug directly into the sensor, display should change to Screen 3 but Cab = 1m 5) System fault. <i>Return to manufacturer</i>
Screen 2 “Cable Length Error” on permanent display		1) Unit could not determine the detection cable length 2) Unplug the end of line connector and plug directly into the sensor, display should change to Screen 3 but Cab = 1m 3) System fault. <i>Return to manufacturer</i>

Item 6 Maintenance

The system should be fully tested at least one a year for correct operation. The detection cable should be inspected at the same time for signs of damage, dirt contamination or mis-placement.