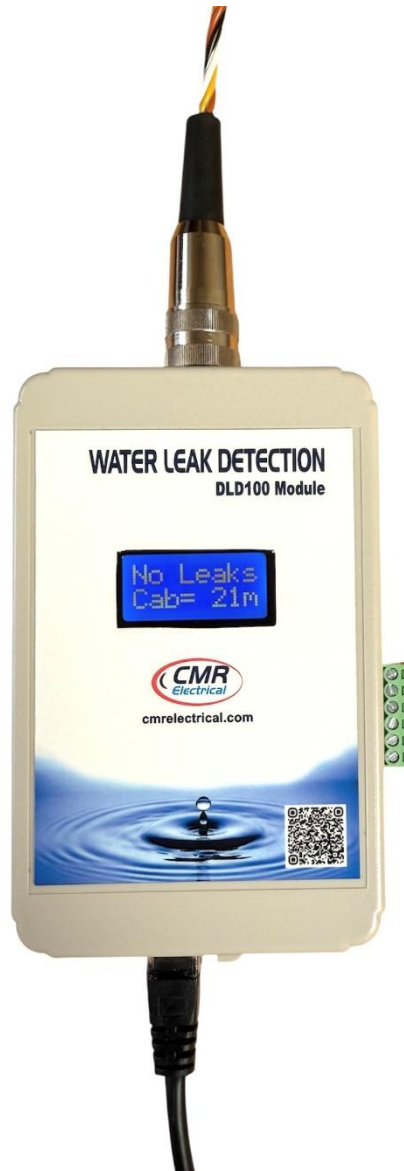




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DLD250



Distance to Water Leak Sensor Installation and Operation Manual



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1) System Overview

The leak detection controller is designed to detect water leaks along the connected



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sensing cable and accurately display the distance from the controller to the leak location.

As standard, the controller provides two volt-free (dry contact) changeover relay outputs:

- Leak alarm.
- Detection cable fault.

These relay outputs allow the unit to interface with existing alarm panels, PLC control systems, and Building Management Systems (BMS) for remote monitoring and alarm indication.

The controller operates from a 24 V AC or 24 V DC power supply, allowing it to be powered directly from air conditioning systems, BMS installations, or other control equipment.

A backlit alphanumeric display continuously indicates the system status. Under normal operating conditions, the display shows the connected detection cable length. When a leak is detected, the display indicates the distance to the leak in metres, for example: "Leak at 20 m"

Displaying the leak location significantly reduces the time required to locate the source of a leak, particularly where the detection cable is installed beneath raised floors, within ceiling voids, around pipework, or across other concealed or extensive areas.

1.1 Sensor cable damaged

When the controller is powered on, it automatically checks the detection cable for continuity, damage, contamination, and correct connection before performing its self-calibration.

If the detection cable is damaged, disconnected, or the end-of-line connector is missing, the display will alternate between:

- **"Sensor Cable Fault"**

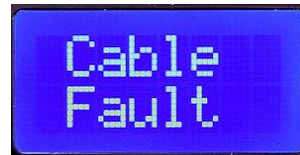


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- **"Check Sensor Cable"** (or the corresponding display message)

At the same time, the cable fault relay will energise.

The fault will automatically clear once the detection cable is correctly connected, the end-of-line connector is fitted, and the cable is free from damage.



1.2 Detection Cable Contaminated

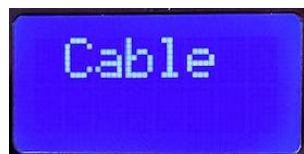
If the detection cable is contaminated during power-up by a conductive substance, such as water or wet firestop material, the controller will be unable to complete its automatic calibration.

The display will alternate between:

- "Cable Length Error"
- "Check Sensor Cable" (or the corresponding display message)

The cable fault relay will energise to indicate the fault condition.

Once the contamination has been removed and the cable is dry, the controller will automatically reset and resume normal operation.



1.3 Normal Operation

When the detection cable is connected correctly and is free from damage or



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contamination, the controller automatically measures the cable length and enters normal monitoring mode.

The display will show the connected cable length, for example:

"No Leaks – Cable = 40 m"

The system will continue to monitor the entire length of the detection cable for the presence of water.



1.4 Leak Detected

When water comes into contact with the detection cable, the controller measures the distance to the leak several times to verify the reading before raising an alarm.

The display first shows:

"Leak Detected"

A few seconds later, the measured distance to the leak is displayed, for example:

"Leak at 39 m"

At the same time, the leak alarm relay is energised.

Once the leak has been removed and the detection cable has dried, the controller automatically resets and resumes normal monitoring without requiring any user intervention.

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2) **Installation**

2.1 Positioning the Controller

Install the controller in a location where the display can be easily viewed during normal operation.

The enclosure may be:

- Secured directly to a wall using the two mounting lugs.
- Cable-tied to pipework using the integrated fixing lugs.

Ensure the controller is mounted securely and that all cable connections are easily accessible.

2.2 Power Connection

This section does not apply when the controller is connected to a DLD16 alarm panel, as power is supplied directly by the panel.

The controller is supplied with a 3 m power cable fitted with an RJ45 connector at one end and stripped wire ends at the other for connection to a 24 V AC or 24 V DC power supply.

Connect the RJ45 plug to either of the two RJ45 sockets located on the bottom of the controller.

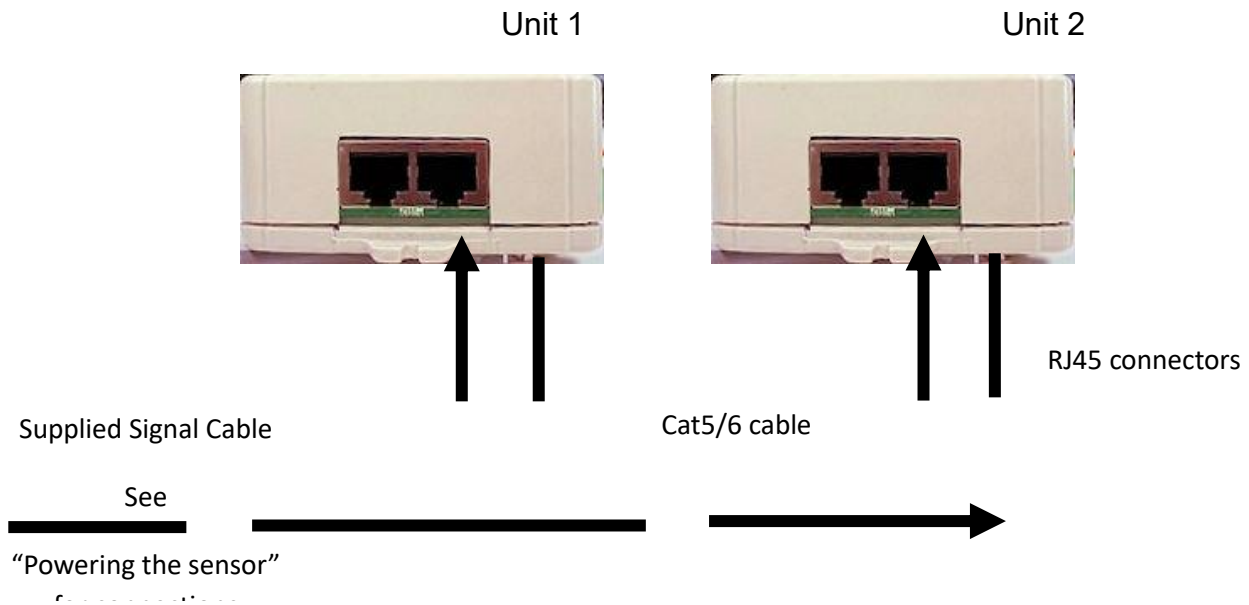
The power cable may be extended by up to 250 m using CAT6 cable.

The controller is not polarity sensitive, allowing either AC or DC power supplies to be used.

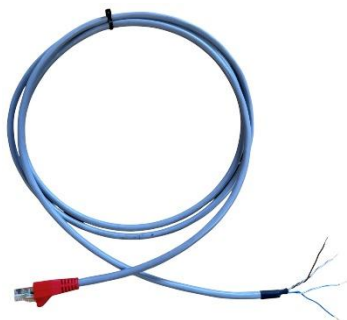
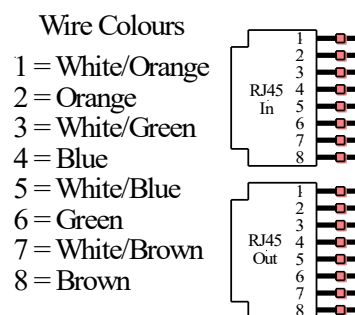
Two RJ45 power connectors are provided to allow multiple controllers to be daisy-chained from the same power source, simplifying installation and reducing wiring requirements.



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Standard Cat5/6 RJ45 wiring



Supplied Signal cable



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Power Connection Notes

Important

The power input is **not polarity sensitive** and may be connected to either a **24 V AC** or **24 V DC** supply.

For power connections, only the following RJ45 conductors are used:

RJ45 Pin Wire Colour Function

4	Blue	Power
5	White/Blue	Power
7	Brown/White	Power
8	Brown	Power

Although only these four conductors are required, it is recommended that all eight cores are terminated in the RJ45 connector. This allows standard CAT5e or CAT6 Ethernet patch leads and installation cable to be used without modification, simplifying installation and future maintenance.

2.3 Connecting the Detection cable

The detection cable is supplied pre-terminated with:

- A 4-pin male screw-lock connector at one end for connection to the controller.
- A 4-pin female connector fitted with a male end-of-line (EOL) terminator at the opposite end.

To install the detection cable:

1. Connect the 4-pin male connector to the controller and tighten the screw-lock connector securely.
-



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2. Route the detection cable around the area to be monitored.
3. Ensure the end-of-line terminator remains fitted at the far end of the cable.

The detection cable should be installed where it is protected from mechanical damage. Avoid locations where it may be crushed, cut, or subjected to regular foot traffic.

When monitoring air conditioning units or humidifiers, position the detection cable at least 1 metre from the unit. This helps prevent nuisance alarms caused by condensation, excessive humidity, or water droplets.

Fitting Cable Clips

Where cable clips are used to secure the detection cable, care should be taken not to damage the sensing wires.

Before closing each cable clip, wrap a layer of insulating tape around the detection cable at the clip location. This protects the sensing elements and helps prevent false leak alarms caused by conductive contact with the fixing clip.

Install cable clips at intervals of approximately **1 to 1.5 metres**.

Do **not** pull the detection cable tight between clips. The cable should rest naturally on the floor or monitored surface between fixing points to ensure reliable leak detection along its entire length.





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3. Configuring the Alarm Relay Outputs

3.1 Changing the Relay Operating Mode

As standard, both the Leak Alarm and Cable Fault volt-free relay outputs are configured as:

- Normally energised during normal operation.
- De-energised when an alarm or fault condition occurs.

If required, the relay operation can be changed so that the relays are:

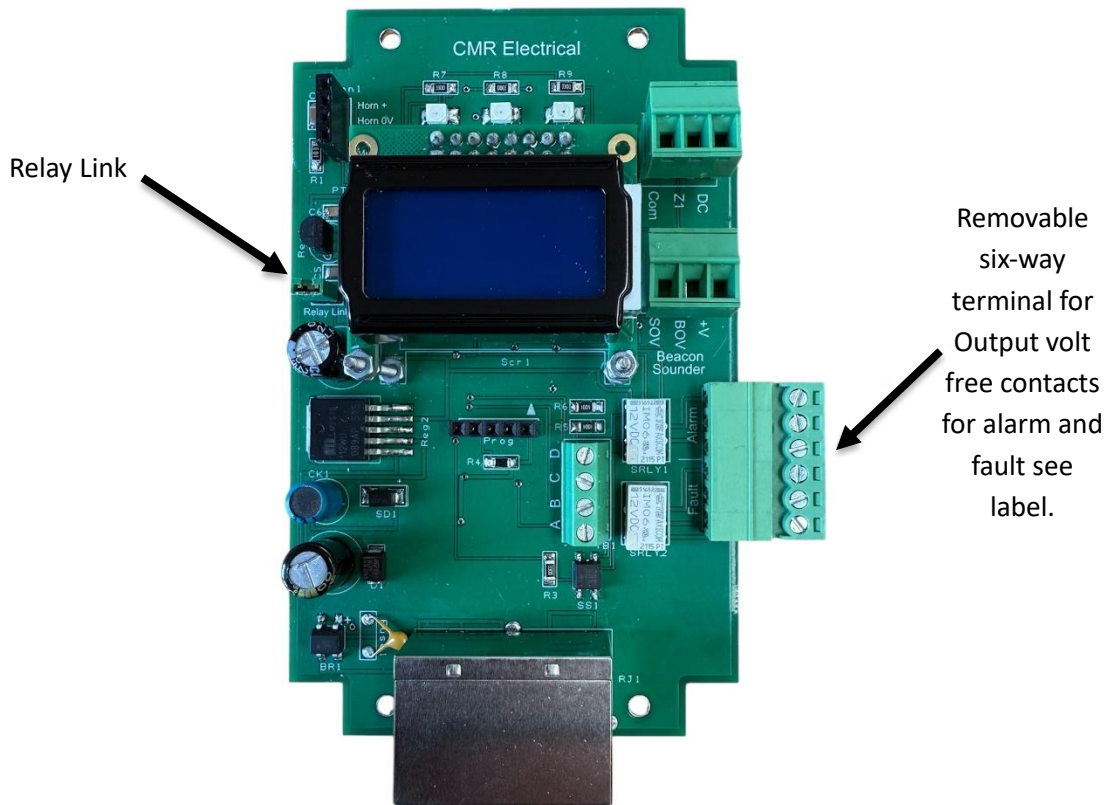
- Normally de-energised during normal operation.
- Energised when an alarm or fault condition occurs.

To change the relay operating mode:

1. Disconnect power from the controller.
2. Remove the four enclosure retaining screws.
3. Carefully separate the front and rear halves of the enclosure.
4. Take care not to strain or damage the internal wiring connected to the display and terminal block.
5. Locate the Relay Link shown in the illustration below.
6. Remove the link by pulling it vertically upwards.
7. Reassemble the enclosure, ensuring that no wires are trapped.
8. Refit the four retaining screws and restore power to the controller.

Removing the Relay Link changes the operating mode of both the leak alarm relay and the cable fault relay.

Important: Always disconnect the power supply before opening the enclosure or making any internal adjustments.



3.2 Relay Output Connections

The controller is fitted with two independent volt-free (dry contact) changeover relays:

- Leak Alarm Relay – operates when water is detected on the sensing cable.
- Cable Fault Relay – operates if the sensing cable is damaged, disconnected, or a cable fault is detected.

Both relay outputs are rated at:

- 24 V AC/DC
- 0.5 A maximum switching current

The relay operating mode can be configured as either:

- Normally energised, de-energised on alarm/fault (factory default), or
- Normally de-energised, energised on alarm/fault.

For instructions on changing the relay operating mode, refer to Section 3.1.



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4) Commissioning

After completing all wiring connections, switch on the power supply to the controller.

During start-up, the controller will automatically verify the condition of the detection cable and measure its length.

If the installation is correct and no faults are present, the display will show the connected cable length, for example:

"No Leaks – Cable = 40 m"



The controller is now commissioned and will begin continuously monitoring the detection cable for water leaks.

If the controller does not display the normal operating screen, refer to Section 5 – Fault Diagnostics.

4.3 Functional Testing

After commissioning the controller, carry out the following tests to confirm correct operation of the system.

Using a cup of clean water, immerse approximately 50 mm of the detection cable into the water.

The controller should detect the water and display:

"Leak At XX m"

where XX represents the measured distance from the controller to the point of water contact.



If the expected display is not shown, refer to Section 5 – Fault Diagnostics.

While the controller is in the leak alarm condition, verify that the volt-free Leak Alarm relay contact has changed state.



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After completing the test, remove the detection cable from the water and dry the cable thoroughly using a paper towel. The display should return to the normal operating screen:

"No Leaks – Cable = XX m"

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 paper towel until the “No Leaks” statement appears.

With the unit displaying the no leaks screen, remove the end of line connector. The screen should change to “Sensor Cable Fault”.



With the unit in Fault Alarm, test that the volt free “fault” contact has changed state. Replace the end of line connector.



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5) Fault Diagnostics

Fault	Possible Reason
Display is OFF and the unit appears dead	1) No power to the sensor. <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 paper towel to dry the cable.</i> 2) The cable has a short between the sensors due to contaminants. <i>Clean the cable using soapy water and use paper towels to 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>
"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 too "Cab = 1m" in display 5) System fault. <i>Return to manufacturer</i>

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.