LF101A
Leaf Wetness Data Logger

PRODUCT USER GUIDE

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Product Notes

The LF101A is a complete data logging system that accurately measures and records leaf wetness. Not only does it record the presence of water but also logs the amount of water on the sensor. The sensor responds to environments the same way a real leaf does and can also detect when ice is present. This low cost system comes complete with a data logger, weatherproof enclosure and leaf wetness sensor.

Installation Guide

Installing the Interface Cable

IFC200 — Insert the device into a USB port. The drivers will install automatically.

Installing the Software

The Software can be downloaded from the MadgeTech website at **madgetech.com**. Follow the instructions provided in the Installation Wizard.

Wiring the Data Logger

The LF101A sensor has a three wire output:

- The white wire should attach to the Exc. Out.
- The red wire should attach to the In (+).
- The unsheathed wire should attach to the ground with a jumper from ground to In (-).

The diagram below outlines the wiring connections.

Exc. Out → White wire
In (+) → Red
In (-) → Jumper from ground
Ground → Unsheathed wire

Installing the Sensor*

The LF101A is designed to be deployed either in the canopy or on weather station masts. There are two holes in the non-sensing portion of the sensor body for mounting. The holes can be used with either zip ties or with 4-40 bolts.
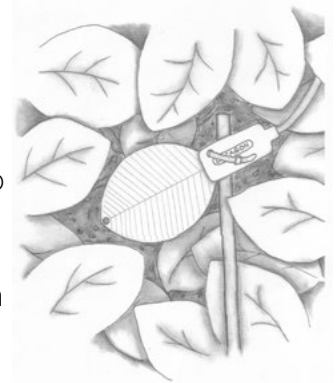
Extending the Sensor Leads*

Extension cables for the LF101A are available in 10 and 50 foot (3 and 15 meter) lengths. The leads can be extended up to 250 feet without signal attenuation. When using these extension cables in an unprotected environment, the junctions between cables must be water-proofed. This can be effectively accomplished by connecting the junction, applying silicone sealant to the junction, and shrinking appropriately sized heat-shrink tubing over the still-wet silicone sealant.

*Dielectric Leaf Wetness Sensor Operator's Manual; Version 3; 2007-2010 Decagon Devices, Inc

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Device Operation

Connecting and Starting the Data Logger

1. Once the software is installed and running, plug the interface cable into the data logger.

2. Connect the USB end of the interface cable into an open USB port on the computer.

3. The device will appear in the Connected Devices list, highlight the desired data logger.

4. For most applications, select **Custom Start** from the menu bar and choose the desired start method, reading rate and other parameters appropriate for the data logging application and click **Start**. *(Quick Start applies the most recent custom start options, **Batch Start** is used for managing multiple loggers at once, **Real Time Start** stores the dataset as it records while connected to the logger.)*

5. The status of the device will change to **Running**, **Waiting to Start** or **Waiting to Manual Start**, depending upon your start method.

6. Disconnect the data logger from the interface cable and place it in the environment to measure.

Note: The device will stop recording data when the end of memory is reached or the device is stopped. At this point the device cannot be restarted until it has been re-armed by the computer.

Downloading Data from a Data Logger

1. Connect the logger to the interface cable.

2. Highlight the data logger in the Connected Devices list. Click **Stop** on the menu bar.

3. Once the data logger is stopped, with the logger highlighted, click **Download**. You will be prompted to name your report.

4. Downloading will offload and save all the recorded data to the PC.

LED Indicators

Status: Green LED blinks every 5 seconds to indicate the device is logging.

Alarm: Red LED blinks every 1 second to indicate an alarm condition is set.

Graph

When read with the LF101A data logger, the LWS outputs 266 mV when dry. When the sensor is totally wet, as in a heavy rain, the signal can range up to around 833 mV. Varying amounts of water on the surface of the sensor case a sensor output proportional to the amount of water on the sensor's surface.
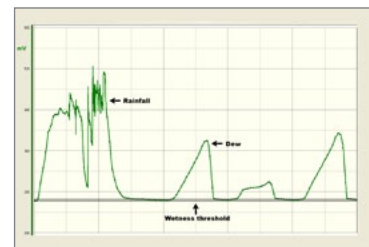
Alarm Settings

To change the settings for the alarm:

1. Select **Alarm Settings** from the **Device Menu** in the MadgeTech Software. A window will appear allowing to set the high and low alarms and warning alarms.

2. Press **Change** to edit the values.

3. Check **Enable Alarm Settings** to enable the feature and check each high and low, warn and alarm box to activate it. The values can be entered in the field manually or by using the scroll bars.

4. Click **Save** to save the changes. To clear an active alarm or warn, press the **Clear Alarm** or **Clear Warn** button.

5. To set an alarm delay, enter the duration of time into the **Alarm Delay** box in which the readings can be outside of the alarm parameters.

Set Password

To password protect the device so that others cannot start, stop or reset the device;

1. In the **Connected Devices** panel, click the device desired.

2. On the **Device** Tab, in the **Information** Group, click **Properties**. Or, right-click the device and select **Properties** in the context menu.

3. On the **General** Tab, click **Set Password**.

4. Enter and confirm the password in the box that appears, then select **OK**.

NEED HELP?

Device Operation (cont'd)

Multiple Start/Stop Mode Activation

- **To start device:** Press and hold the pushbutton for 5 seconds, the green LED will flash during this time. The device has started logging.

- **To stop the device:** Press and hold the pushbutton for 5 seconds, the red LED will flash during this time. The device has stopped logging.

Trigger Settings

The device can be programmed to only record based off user configured trigger settings.

1. In the **Connected Devices** panel, click the device desired.

2. On the **Device** Tab, in the Information Group, click **Properties**. Users can also right-click the device and select **Properties** in the context menu.

3. Select Trigger Settings from the Device Menu: Start Device or Identify Device and Read Status.

Note: Trigger formats are available in Window and Two Point (bi-level) mode. Window allows for one range of monitoring and two point mode allows for two ranges of monitoring.

Device Maintenance

Battery Replacement

Materials: Small Phillips Head Screwdriver, 3/32" HEX Driver and a Replacement Battery (LTC-7PN)

1. Remove the Data Logger from the Waterbox101A using the Allen Key.

2. Puncture the center of the back label with the screw driver and unscrew the enclosure.

3. Remove the battery by pulling it perpendicular to the circuit board.

4. Insert the new battery into the terminals and verify it is secure.

5. Screw the enclosure back together securely.

Note: Be sure not to over tighten the screws or strip the threads.

Recalibration

Recalibration is recommended annually. To send devices back for calibration, visit **madgetech.com**.

Product Support & Troubleshooting:

- Visit our Resources online at www.pacificsensortech.com.au
- Contact our friendly Customer Support Team at 1300 662 720.

MadgeTech 4 Software Support:

- Refer to the built-in help section of the MadgeTech 4 Software.
- Download the MadgeTech 4 Software Manual at www.pacificsensortech.com.au
- Contact our friendly Customer Support Team at 1300 662 720.

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