

Description	LF101A
Measurement Range	Dry: 266 mV Typical 100% Saturated: 833 mV Typical
Resolution	0.002 m <sup>3</sup> /m <sup>3</sup>
Accuracy	±3% typical, all soils; ±1% with soil specific calibration
Input Range	0 V to 2.5 V
Reference Voltage	2.5 V
Memory	1,000,000 readings; software configurable memory wrap 330,000 readings in multiple start/stop
Reading Rate	4 Hz to 1 every 24 hours
Units	mV
Reg. Interface	IFC200
Baud rate	115,200
Battery Life	10 months typical at a 1 minute reading rate with a 350 Ω load 2 years typical at a 1 minute reading rate with a 1000 Ω load
Operating Environment	-20 °C to +50 °C (-4 °F to +122 °F) 0 %RH to 95 %RH non-condensing
Material	ABS plastic
Dimensions	Data Logger: 1.4 in x 2.5 in x 0.6 in (36 mm x 64 mm x 16 mm) Probe: 2.1 in x 0.6 in x 0.06 in (55 mm x 15 mm x 1.5 mm) Cable length - 16 ft (5 m), (tinned, wire leads) Waterbox: 2.9 in x 5.8 in x 1.5 in (74 mm x 148 mm x 39 mm)
CE Approval	Yes
Probe Power	25 VDC @ 2 mA to 5 VDC @ 7 mA
IP Rating	IP65
Specified Accuracy	Normal range @ 25 °C

### Battery Warning

**WARNING: FIRE, EXPLOSION, AND SEVERE BURN HAZARD. DO NOT SHORT CIRCUIT, CHARGE, FORCE OVER DISCHARGE, DISASSEMBLE, CRUSH, PENETRATE OR INCINERATE. BATTERY MAY LEAK OR EXPLODE IF HEATED ABOVE 80 °C (176 °F).**

*Specifications subject to change.*

See MadgeTech's terms and conditions at [www.madgetech.com](http://www.madgetech.com)

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

**MadgeTech, Inc.**  
6 Warner Road • Warner, NH 03278  
Phone 603.456.2011 • Fax 603.456.2012  
[www.madgetech.com](http://www.madgetech.com) • [info@madgetech.com](mailto:info@madgetech.com)

DOC-1240035-00 REV 5 2014.11.25

# Product Information Card

**LF101A**



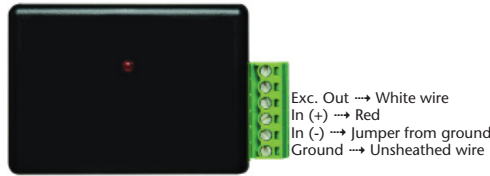
### LF101A

Leaf Wetness Data Logger

## Wiring the Data Logger

The LF101A sensor has a three wire output:

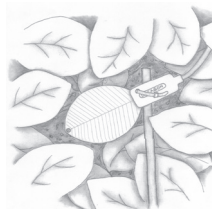
- The white wire should attach to the Exc. Out.
- The red wire should attach to the In (+).
- The unsheathed wire should attach to the ground with a jumper from ground to In (-).



The diagram to the right outlines the wiring connections.

### 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.

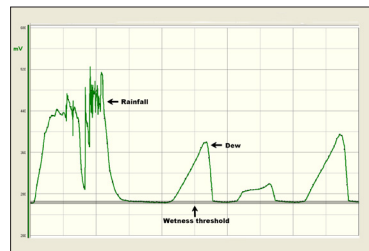
## Product Notes

### LEDs

- Green LED: every 10 seconds to indicate logging and 15 seconds to for delay start mode.
- Red LED: every 10 seconds to indicate low battery and/or memory and 1 seconds to indicate an alarm condition.

### 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.



## Installation Guide

### Installing the Interface cable

- IFC200

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

### Installing the software

Insert the Software USB Stick in an open USB port. If the autorun does not appear, locate the drive on the computer and double click on **Autorun.exe**. Follow the instructions provided in the Wizard.

## Device Operation

### Connecting and Starting the data logger

- Once the software is installed and running, plug the interface cable into the data logger.
- Connect the USB end of the interface cable into an open USB port on the computer.
- The device will appear in the Connected Devices list, highlight the desired data logger.
- 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.)
- The status of the device will change to **"Running"**, **"Waiting to Start"** or **"Waiting to Manual Start"**, depending upon your start method.
- 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

- Connect the logger to the interface cable.
- Highlight the data logger in the Connected Devices list. Click **"Stop"** on the menu bar.
- Once the data logger is stopped, with the logger highlighted, click **"Download"**. You will be prompted to name your report.
- Downloading will offload and save all the recorded data to the PC.

## Device Maintenance

### Battery Replacement

Materials:

Small Phillips Head Screwdriver

3/32" HEX Driver

Replacement Battery (LTC-7PN)

- Remove the Data Logger from the Waterbox101A using the Allen Key.
- Puncture the center of the back label with the screw driver and unscrew the enclosure.
- Remove the battery by pulling it perpendicular to the circuit board.
- Insert the new battery into the terminals and then screw the enclosure back together.

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

### Recalibration

LF101A standard calibration values are 0 V and 900-1000 mV:

### Additional:

Custom calibration and verification point options available, please call for pricing.

*Call for custom calibration options to accommodate specific application needs.*

*Prices and specifications subject to change. See MadgeTech's terms and conditions at [www.madgetech.com](http://www.madgetech.com)*

*To send devices to MadgeTech for calibration, service or repair, please use the MadgeTech RMA Process by visiting [www.madgetech.com](http://www.madgetech.com), then under the services tab, select RMA Process.*