

Description	Level1000
Temperature Sensor	Internal Semiconductor
Temperature Range	-40 °C to +80 °C (-40 °F to +176 °F)
Temperature Resolution	0.1 °C (0.18 °F)
Calibrated Accuracy	±0.5 °C (±0.9 °F)
Pressure Sensor	Semiconductor (strain gauge)
Measurement Range	0 ft to 30 ft (0 m to 9 m)
Level Resolution	0.05 in (1.27 mm)
Calibrated Accuracy	±8.3 inches of water (1.0 in typical at 25 °C)*
Memory	16,383/channel
Reading Rate	1 reading every 2 seconds up to 1 reading every 12 hours
Required Interface Package	IFC110 or IFC200
Baud Rate	2,400
Typical Battery Life	1 year
Operating Environment	-40 °C to +80 °C (-40 °F to +176 °F) 0 %RH to 100 %RH
Material	303 stainless steel
Dimensions	5.7 in x 1.25 in dia. (145 mm x 32 mm dia.)
Weight	8 oz (220 g)
Approvals	CE

\*Note: The Level1000 does not compensate for barometric pressure changes, therefore these changes are not included in the accuracy specifications.

### 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.*

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### Level1000

Water Level and Temperature Data Logger

## Product Notes

The Level1000 is a water level and temperature data logger. The stainless steel housing allows the device to be used in fresh water applications. The device is equipped with a 30 PSIA sensor, allowing the device to measure down to 30 ft of water.

The Level1000 is not atmospheric pressure compensated, therefore a reading should be taken prior to submerging the device into water. That reading will then need to be subtracted from all readings to provide accurate water level measurement.

### Getting Started

To access the COM Port for the interface cable, unscrew the key-ring end cap. Screw the end cap onto the data logger until the o-ring cannot be seen, before deploying it.

### Submergibility

The Level1000 is fully submergible and rated IP68. The standard model can be placed in environments with up to 30 feet (9 m) of water. Custom ranges are available and can be placed in environments with up to 230 feet (70 m) of water.

### O-Rings

O-ring maintenance is a key factor when properly caring for the Level1000. The o-rings ensure a tight seal and prevent liquid from entering the inside of the device.

Please refer to the application note "O-Rings 101: Protecting Your Data", found on the MadgeTech website, for information on how to prevent O-ring failure.

## Installation Guide

### Installing the Interface cable

- IFC200: Insert the device into a USB port. The drivers will install automatically.
- IFC110: Plug the serial cable into the port and verify it is secure.

### 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

- 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: [Snap Ring Pliers](#), [9/16" \(15 mm\) Wrench](#) and a [Replacement Battery \(TLH-5902\)](#)

#### Procedure:

- Remove the end cap of the data logger.
- Remove the retaining clip using pliers.
- Remove the white Teflon washer.
- **VERY CAREFULLY** Use a 9/16" (15 mm) wrench to remove the NPT end of the data logger.
- Once the NPT end is completely unscrewed, gently slide the circuit board out of the enclosure. Be careful not to break or sharply bend the cable between the level sensor and the electronics.
- The battery is the purple cylinder on the circuit board, gently pull out the battery
- Insert the new battery one lead at a time, pressing down firmly with your index finger to make sure the lead is secure in its terminal. *Note: the battery should be flat against the circuit board, and the positive lead should be closest to the communications jack.*
- Insert the electronics back into the tube. Make sure the cable is not twisted, sharply bent, or kinked. From the connection to the circuit board, it should run up towards the battery, then down the sensor.
- **VERY CAREFULLY** screw the NPT end cap back onto the tube, making sure the electronics rotate with the end cap.
- Insert the Teflon washer and retaining clip to secure the electronics.
- Replace the end cap.

### Recalibration

The Level1000 standard calibration is performed at 25 °C for the temperature channel and ~400 inH2O and ~800 inH2O for the level channel.

#### Pricing:

Recalibration traceable to NIST	\$110.00
Recalibration	\$70.00

#### Additional Services:

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

Prices and specifications subject to change. See MadgeTech's terms and conditions at [www.madgetech.com](http://www.madgetech.com). To send the devices back, visit [www.madgetech.com](http://www.madgetech.com), select Services then RMA Process.