USER GUIDE

pHTemp2000

MadgeTech

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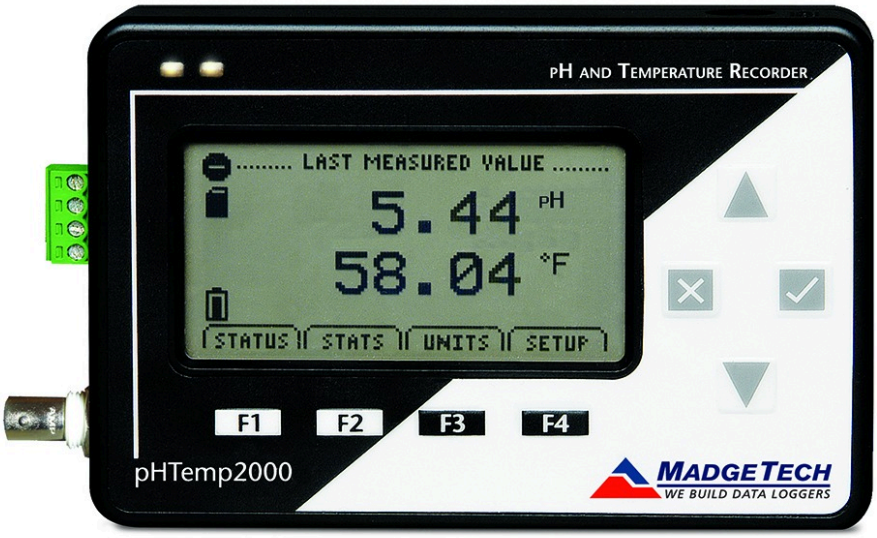
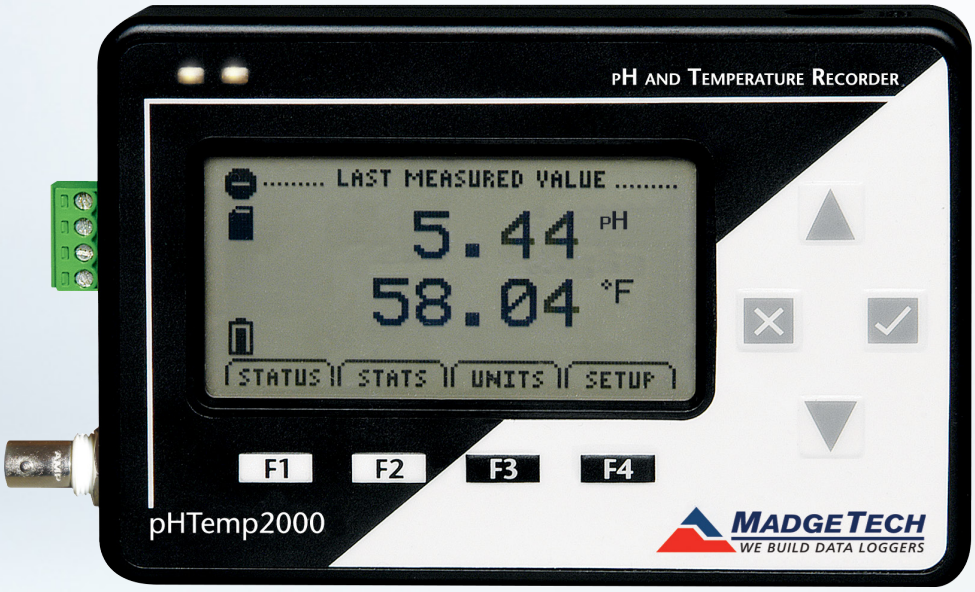


pHTemp2000

pH and Temperature Data Logger with LCD



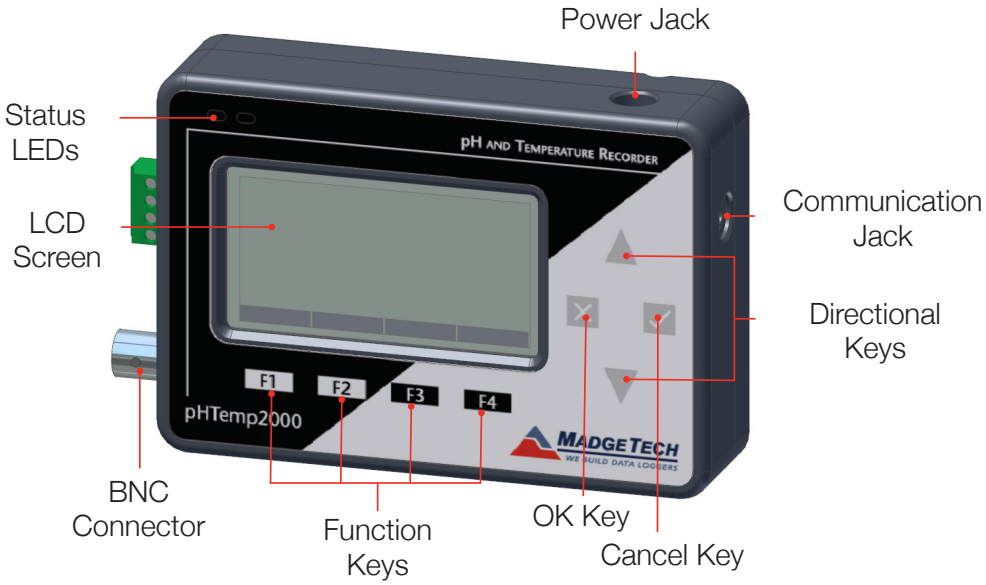
Product User Guide

To view the full MadgeTech product line, visit our website at **madgetech.com**.

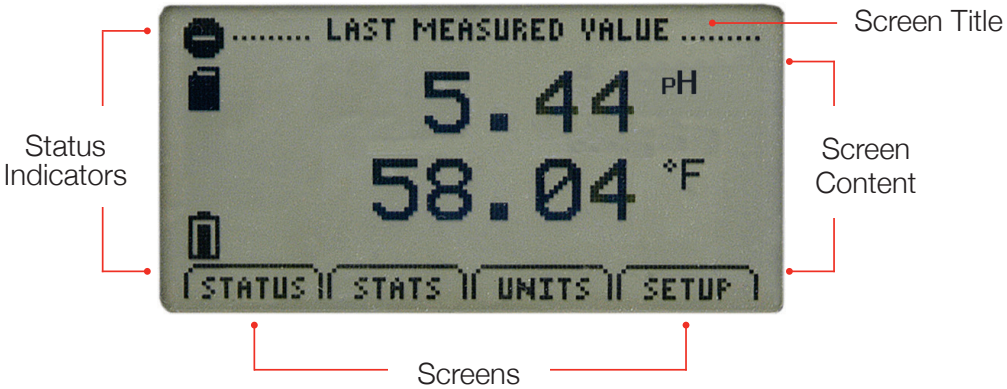
Product Overview

The pHTemp2000 is a pH and temperature data logger with LCD display. The convenient LCD provides access to the current pH and temperature readings, as well as minimum,maximum and average statistics.

Display Overview



LCD Screen Overview



Status Indicators

Battery Power (Full, Half-full, Empty)

Memory Remaining (Empty, Half-full, Full)

Device is running

Device is stopped

Delay Start

Wait Icon (device is busy)

Device reset has occurred

External power present

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.

Ordering Information

- 900988-00 — pHTemp2000
- 900298-00 — IFC200
- 901804-00 — U9VL-J Replacement Battery

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 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** or **Waiting to Start**, depending upon your start method.
6. Disconnect the data logger from the USB 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

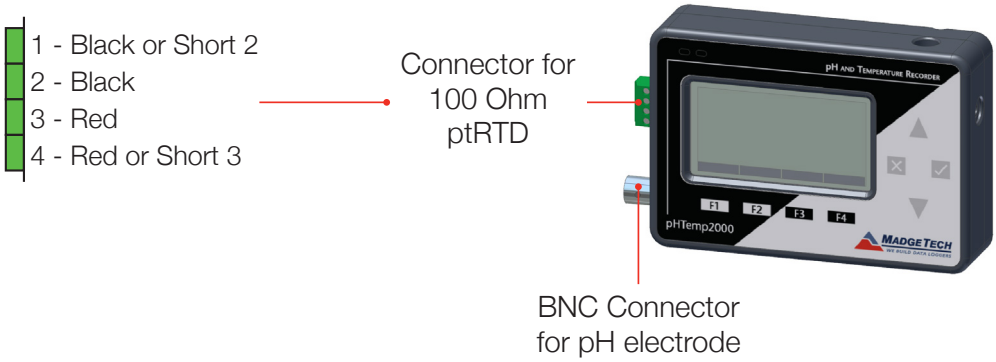
1. Connect the logger to the interface cable.
2. Highlight the data logger in the Connected Devices list. Click **Stop** on the menu bar.
3. Once the data logger is stopped, with the logger highlighted, click **Download**.
4. Downloading will offload and save all the recorded data to the PC.

Using the pHTemp2000

1. The pH electrode should have a BNC output connection, or an appropriate adapter. Select a probe with an output impedance less than 300 megaohms at the desired temperature.
2. The temperature probe must be a 100 Ω platinum RTD, in the standard 2,3 or 4-wire configuration. The pHTemp2000 is designed to achieve exceptional accuracy with the 4-wire probe, but will still yield measurements better than required for a pH-measurement with the 2 or 3-wire probes.
3. Insure that the probe you select can be connected to the pHTemp2000 RTD input by selecting a probe with lead wires, or by attaching an adapter that will allow you to connect wire leads to the probe.
4. Connect the probes to the data logger.
5. Refer to the description of your pH probe for a calibration procedure

KEY

1 - Reference (-)
2 - Measurement (-) Input
3 - Measurement (+) Input
4 - Excitation Current Out (+)



Warning: Note the polarity instructions. Do not attach wires to the wrong terminals.
100 Ω, 2 or 4 wire RTD probes are recommended for the most accurate performance.

Most 100 Ω, 3-wire RTD probes will work, but MadgeTech cannot guarantee the accuracy. To determine whether or not the 3-wire RTD probe will work, the resistance between the two same colored wires should be less than 1 Ω. (Note: Please contact the manufacturer of the RTD probe for questions on the resistance.)

Device Functions

Changing Display Units

The pHTemp2000 comes with factory default display units of °C for the RTD temperature channel, and pH for the pH channel. To change the units from the **Home Screen:**

1. Press F3 to view the Units Screen
2. Press F1 for temperature or F2 for pH
3. Scroll through the available units using ▲▼

Changing Number, Type, and Size of Channels Viewed

By default the pHTemp2000 displays recently measured values of both channels (RTD temperature and pH probe) on its Main Screen with the two channels taking up the maximum amount of screen space available. Channels can, however, be hidden or viewed on a smaller or larger scale.

To change the number and type of displayed channels from the Home Screen:

1. Press F4 to enter the **Setup Menu**
2. Press F1 to enter the **Display Screen**
3. Press F1 for **RTD temperature** or F2 for **pH probe**. Pressing these function keys will cause the channels to scroll between "show" or "hide" channels displaying "show" will appear on the main screen and channels displaying "hide" will not. Any number of channels between zero and two may be shown.

To change the size of displayed channels from the Home Screen:

1. Press F4 to enter the Setup Menu
2. Press F1 to enter the Display Screen
3. Press F4 to scroll to the next screen.
4. Press F2 repeatedly to scroll between 3 size parameters:
   Small: Both channels can be displayed and appear much smaller than the available screen space.
   Medium: Both channels can be displayed and take up two-thirds of available screen space.
   Large: Both channels can be displayed and take up entire available screen space.

Checking Memory Status

A status icon appears on all screens representing memory, but further information including percent memory left and number of readings taken can also be viewed.

To check the memory status from the **Home Screen:**

1. Press F1 to view the Status Screen
2. Press F2 to view memory status information

Checking Power Status

A battery status and external power status (if available) icon appear on all screens, but percent battery power remaining and external power presence as well as battery type, current battery voltage, and current external voltage can also be viewed.

To check the power status from the **Home Screen:**

1. Press F4 to view the **Device Configuration Menu**
2. Press F2 to access the power options
3. Press F4 and F4 again to view the **Power Status Screen**, including battery power percent remaining and the presence of external power. Battery type and battery voltage are also displayed, as well as external power voltage (if connected).

Changing LCD Contrast

To change the LCD screen contrast from **Any Screen**:

1. Press ☒ + ▲ to increase or ☒ + ▼ to decrease

Screen Descriptions

Main Screen

Displays last measured values.

Status Screens

Displays last measured values.

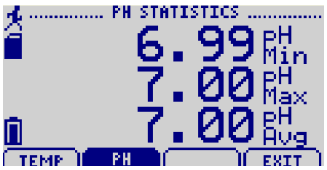
Run Parameters

Memory Status

Date and Time

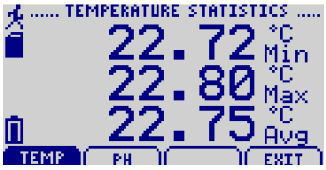
Statistics

Statistics Menu Screen:
Displays options available within the statistics menu

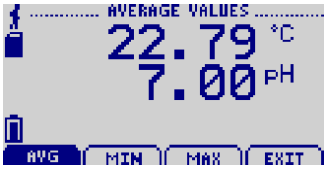


pH Channel Statistics:
Displays pH statistics

Type Statistics:
Displays statistics from pH statistics



Temperature Channel Statistics:
Displays temperature statistics



Statistics Information Screen:
Displays current statistics information

Device Configuration Menu

Displays options available within the device configuration menu.

F1 = DISPLAY: enters Adjust Visibility screen
F2 = POWER: enters Power Modes screen
F3 = INFO: goes to Device Information screens
F4 = EXIT: returns to main screen
☒ or ☑ = returns to main screen
▲▼ = no function

Device Reset

This device includes two reset options, Hardware and Power Interruption.

F1 = OK: accepts notification and displays main screen
F2 = no function
F3 = no function
F4 = no function
☒ = no function
☑ = accepts notification and displays main screen
▲▼ = no function

Hardware Reset:
Displayed as notification when a hardware reset has occurred.

Power Interruption:
Displayed as notification when power is interrupted during device operation.

Device Maintenance

Battery Replacement

Materials: 3/32 inch HEX Driver (Allen Key) and Replacement Battery (9VL-J)

1. Remove the cover from the device by unscrewing the four screws.
2. Remove the battery from the compartment and unsnap it from the connector.
3. Snap the new batteries into the terminals and verify it is secure.
4. Replace the cover taking care not to pinch the wires. 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**.

Offset Values For Temperature Simulation

While Automatic Temperature Compensation is preferred, a temperature can be simulated using the included resistor. Plug the resistor terminal block into the logger and adjust the temperature calibration in the software by selecting Calibration from the Device menu.

Record the Temperature Offset Value here for later use:

_____

Locate the temperature closest to your application in the chart. Click Calibrate and enter the corresponding Offset Value into the Temperature Offset Value field and click Save to program the new calibration to the logger. Simulated temperatures within 5 °C of the application temperature will introduce no greater than 0.1 pH error.

APPLICATION TEMPERATURE	OFFSET VALUE
0 °C (32 °F)	0
5 °C (41 °F)	-1.95
10 °C (50 °F)	-3.9
15 °C (59 °F)	-5.85
20 °C (68 °F)	-7.79
25 °C (77 °F)	-9.74
30 °C (86 °F)	-11.7
35 °C (95 °F)	-13.6
40 °C (104 °F)	-15.5
45 °C (113 °F)	-17.5
50 °C (122 °F)	-19.4
55 °C (131 °F)	-21.3
60 °C (140 °F)	-23.2
65 °C (149 °F)	-25.2

Need Help?

Product Support & Troubleshooting:

- Visit our Knowledge Base online at **madgetech.com/resources**.
- Contact our friendly Customer Support Team at **(603) 456-2011 or support@madgetech.com**.

MadgeTech 4 Software Support:

- Refer to the built-in help section of the MadgeTech 4 Software.
- Download the MadgeTech 4 Software Manual at **madgetech.com**.
- Contact our friendly Customer Support Team at **(603) 456-2011 or support@madgetech.com**.

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