MADGETECH PHTEMP2000 Temperature Data Logger User Guide

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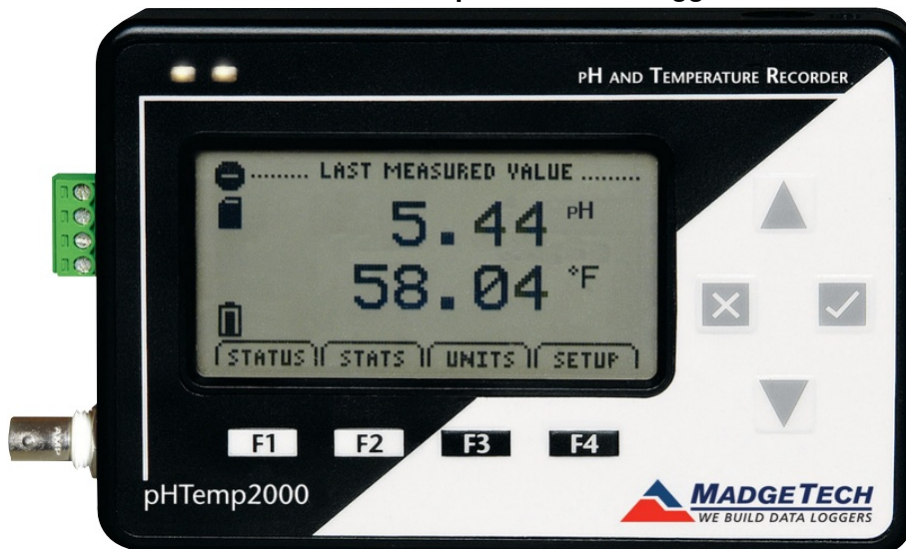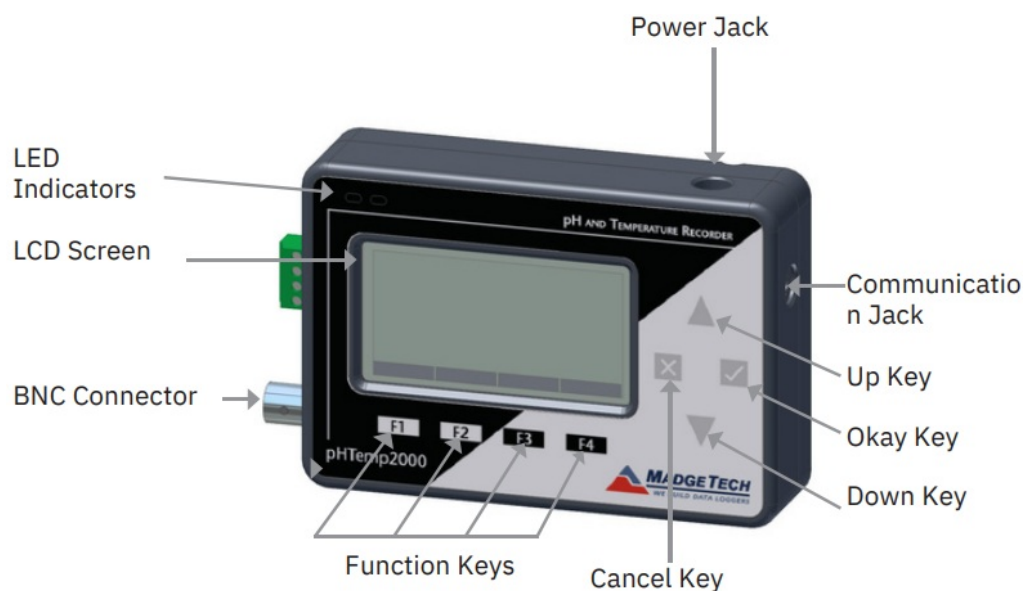
Contents

Quick Start Steps

1. Install the MadgeTech 4 Software and USB Drivers onto a Windows PC.
2. Wire the data logger with the desired probes.
3. Connect the data logger to the Windows PC with the IFC200 (sold separately).
4. Launch the MadgeTech 4 Software. The pHTemp2000 will appear in the Connected Devices window indicating the device has been recognized.
5. Select the start method, reading rate and any other parameters appropriate for the desired data logging application. Once configured, click the Start icon and deploy the data logger
6. To download data, connect the data logger to the windows PC with the IFC200, select the device in the list, click the Stop icon, and then click the Download icon. A graph will automatically display the data.

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

Power Jack

LED Indicators

LCD Screen

pH AND TEMPERATURE RECORDER

Communication Jack

BNC Connector

Up Key

Okay Key

F1 F2 F3 F4

Down Key

pHTemp2000

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Function Keys

Cancel Key

LCD Screen Overview

Screen Title

.... LAST MEASURED VALUE ....

21.72 °C
7.00 PH

Status Indicators

Screen Content

[STATUS][STATS][UNITS][SETUP]

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

Software Installation

Installing the MadgeTech 4 Software The Madge Tech 4 Software makes the process of downloading and reviewing data quick and easy, and is free to download from the Madge Tech website.

1. Download the MadgeTech 4 Software on a Windows PC by going to: **madgetech.com**/software-download.
2. Locate and unzip the downloaded file (typically you can do this by right clicking on the file and selecting Extract).
3. Open the MTInstaller.exe file.
4. You will be prompted to select a language, then follow the instructions provided in the MadgeTech 4 Setup Wizard to finish the MadgeTech 4 Software installation.

Device Operation

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 0configuration. The pHTemp2000 is designed to achieve exceptional accuracy with the wire probe, but will still yield measurements better than required for a pH-measurement with the 2 or 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.
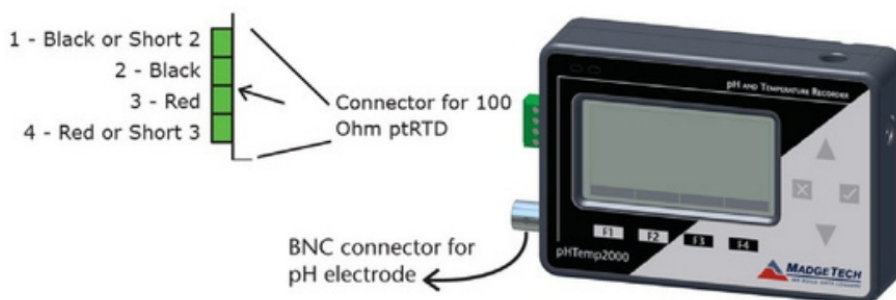
KEY

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)

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 Connecting and Starting the 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.

Computer Interface

STEREO CABLE PLUGS INTO THE COMMUNICATION JACK ON THE DATA LOGGER

USB CONNECTOR ON IFC200 PLUGS INTO THE USB PORT ON THE PC

IFC200

Fully insert the male connector of the IFC200 interface cable into the female receptacle of the data logger. Fully insert the female USB connector into the USB. (Please see the Data Logger Software manual for further information.)

WARNING: Install driver before connecting a device using a USB for the first time. See the Software manual for further information.

Front Panel Overview

Changing the display units

The pHTemp2000 comes with factory default display units of °C for the RTD temperature channel, and pH for the pH channel. These units can be easily changed by pressing the F3 button in the main screen and then selecting either F1 for the RTD temperature or F2 for pH probe. After selecting a channel, the available units can be scrolled through by either pressing the channel's function key repeatedly or using the UP and DOWN keys.

Button pressing chain: Main Screen -> F3 -> F1(temp), F2(pH) -> function key repeatedly or UP and DOWN

Changing the 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 Main Screen, press the F4 key to enter the Setup Menu and from this menu press the F1 key to enter the Display screen. On this screen, F1 corresponds to the RTD temperature channel and F2 to the 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.

Button pressing chain: Main Screen -> F4 -> F1 -> F1(internal temp) or F2 (pH probe)

To change the size of displayed channels:

From the Main Screen, press the F4 key to enter the Setup Menu and from this menu press the F1 key to enter the Display screen, then F4 to scroll to the next screen. Here the F2 key will change the size of the channels viewed. By pressing F2 repeatedly the size parameter will scroll between 3 sizes:

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.
Button pressing chain: Main Screen -> F4 -> F1 -> F4 -> F2 repeatedly to scroll or UP and DOWN to scroll

Checking the memory Status

Changing the number, type, and size of channels viewed 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. From the Main Screen press the F1 key to enter the Status screens then press F2 to view memory status information.

Button pressing chain: Main Screen -> F1 -> F2

Screen Descriptions

Main Screen: Displays last measured

- **values Status Screens:**
- 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
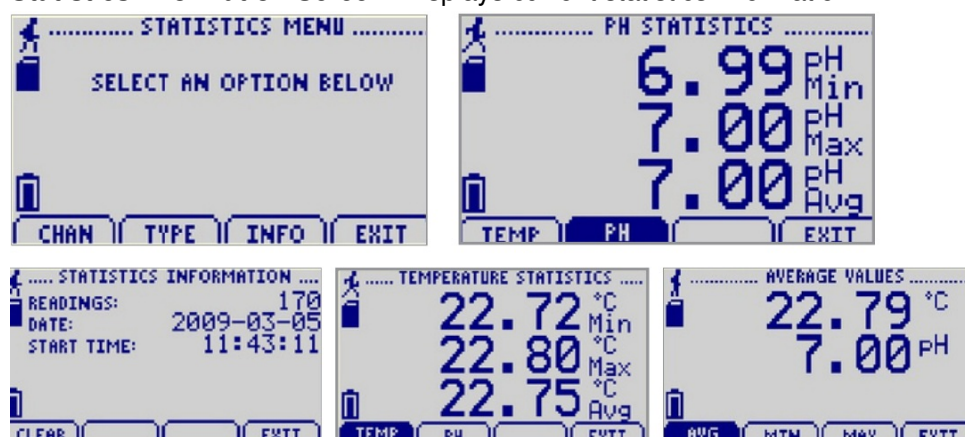
Device Configuration Menu

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
- **CANCEL** = returns to main screen
- **OK** = returns to main screen
- **UP** = no function
- **Down** = no function

Device Reset

This device include two reset options, Hardware and Power Interruption

Power Interruption:

isplayed as notification when power is interrupted during device operation.

- **F1 = OK:** accepts notification and displays main screen
- **F2** = no function
- **F3** = no function
- **F4** = no function
- **CANCEL** = no function
- **OK** = accepts notification and displays main screen
- **UP** = no function
- **DOWN** = no function

Hardware Reset:

Displayed as notification when a hardware reset has occurred.

- **F1 = OK:** accepts notification and displays main screen
- **F2** = no function
- **F3** = no function
- **F4** = no function
- **CANCEL** = no function
- **OK** = accepts notification and displays main screen
- **9UP** = no function
- **DOWN** = no function

Device Maintenance

Battery Information

BATTERY WARNING

This data logger contains a lithium battery. Do not cut the battery open, incinerate, or recharge. Do not heat lithium batteries above the specified operating temperature. Dispose of the battery in accordance with local regulations.

- See the individual specification sheets at **www.madgetech.com**

Battery Replacement

This product does not have any user-serviceable parts except the battery which should be replaced periodically. The battery life is affected by battery type, ambient temperature, sample rate, sensor selection, off-loads and LCD usage. The device has a battery status indicator on the LCD. If the battery indication is low, or if the device seems to be inoperable, it is recommended that the battery be replaced.

Materials: 3/32" HEX Driver (Allen Key) and a Replacement Battery (U9VL-J)

- Remove the back cover from the device by unscrewing the four screws.
- Remove the battery from its compartment and unsnap it from the connector.
- Snap the new battery into the terminals and verify it is secure.
- Replace the cover taking care not to pinch the wires. Screw the enclosure back together

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

For any other maintenance or calibration issues, we recommend the unit be returned to the factory for service. Before returning the device, you must obtain an RMA from the factory.

Recalibration

The pHTemp2000 standard calibration is performed at 50 Ω and 150 Ω for the RTD c hannel and 0 mV and 250 mV for the pH channel.

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 **madgetech.com**

To send devices to MadgeTech for calibration, service or repair, please use the MadgeTech RMA Process by visiting madgetech.com, then under the services tab, select RMA Process.

General Specifications

Description	
pH input Connection	pHTemp2000
pH Range	Female BNC jack
pH Resolution	-2.00 pH to +16.00 pH
Calibrated Accuracy	0.01 pH (0.1 mV)
Temperature Sensor	+0.01 pH
Temperature Range	2, 3, or 4-wire 100 Ω platinum RTD80 Ω to 145 Ω
Temperature Resolution	-40 °C to +110 °C (-40 °F to 230 °F)0.001 Ω0.01 °C (0.018 °F)
Calibrated Accuracy	±0.015 Ω±0.04 °C (±0.072 °F)
Memor y	131,071/channel
Reading Rate	1 reading every 2 seconds up to 1 reading every 24 hours
Required Interface Package	IFC200
Baud Rate	115,200
Typical Battery Life	1 year with display off, 30 days with continuous LCD and no backlight-5 °C to +50 °C (+23 °F to +122 °F),
Operating Environment	0 to 95 %RH (non-condensing) Black Anodized Aluminum
Material	4.8 in x 3.3 in x 1.25 in (122 mm x 84 mm x 32 mm)
Dimensions	16 oz (440 g)
Weight	CE
Approvals	

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Documents / Resources

MADGETECH PHTEMP2000 Temperature Data Logger [pdf] User Guide
PHTEMP2000 Temperature Data Logger, PHTEMP2000, Temperature Data Logger, Data Logger, Logger

References

- **MadgeTech Data Loggers | Solutions for Critical Applications**
- **MadgeTech 4 Software | MadgeTech**
- **MadgeTech Data Loggers | Solutions for Critical Applications**
- **User Manual**