

# Product User Guide

## DHS Data Logging System



### DHS Data Logging System Dry Heat Sterilization Data Logging System



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## Product Overview

The DHS Data Logging System for Dry Heat Sterilization is an all in one depyrogenation solution that comes equipped with:

- HiTemp140-M12, High Temperature Data Logger
- 36 inch Glass Braided RTD depyrogenation probe with M12 connector and flat probe tip
- ThermoVault Max, Extreme Temperature Thermal Barrier

## Installation Guide

### Installing the Interface cable

- IFC400 or IFC406

Refer to the **“Quick Start Guide”** included in the package.

### 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 docking station.
- 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.*

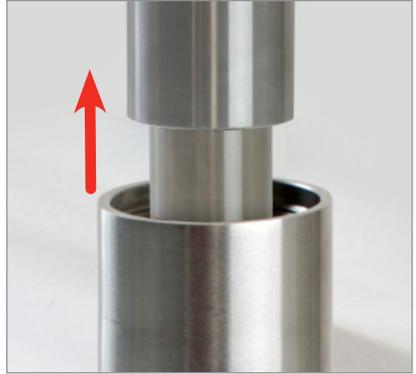
### Downloading data from a data logger

- Place the logger into the docking station.
- 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.

## Removing the Data Logger from the Thermal Barrier



1. Unscrew the lid of the thermal barrier.



2. Slide out the data logger and lid from the barrier body.



3. Unscrew the HiTemp140-M12 data logger, from the lid of the thermal barrier.



4. Slide the probe of the data logger out from the lid of the thermal barrier.

## Product Maintenance

### O-Rings

O-ring maintenance is a key factor when properly caring for the HiTemp140-M12. 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.

### Battery Replacement

**Materials:** ER1425S-HT Battery

1. Unscrew the bottom of the logger and remove the battery.
2. Place the new battery into the logger. Note the polarity of the battery.
3. Screw the cover back onto the logger.

### Recalibration

The HiTemp140-M12 standard calibrations are two points at 50  $\Omega$  and 150  $\Omega$  and is verified at 100  $\Omega$ .

### Pricing:

Recalibration traceable to NIST	\$70.00
Recalibration only	\$40.00

*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.*

## RMA Instructions

To send a device back in to MadgeTech, follow the instructions below to create an RMA (Return Merchandise Authorization) on the MadgeTech website:

1. Visit [www.madgetech.com](http://www.madgetech.com), under the **Services** tab select **RMA Process**.
2. When the web page opens, please sign in. If this is the first time, select **Click here to register an account** and create one. Once signed in, click on the **Make New RMA** button and fill in all the blank fields.
3. Complete the applicable fields on the form including customer Billing and Shipping information, even if they are the same. Please see the field explanation below for a more detailed description about questions asked in the Device Information section.
4. When all of the fields are complete, click **Generate RMA**.
5. Print out the confirmation page that follows containing the RMA number and MadgeTech's address for shipping. **A Return Merchandise Authorization must be accompanied by a copy of the RMA paperwork and shipping is prepaid by the customer.** The RMA number should be clearly marked on the outside of the package.
6. Please ship the package via UPS, FedEx, TNT, or DHL to the address listed on the confirmation page. USPS will not ship MadgeTech data loggers.
7. A notification email will be automatically sent when MadgeTech has received the RMA.

## General Specifications

Temperature Sensor	36 inch Glass Braided RTD depyrogenation probe
Temperature Resolution	0.0001 $\Omega$ , 0.01 $^{\circ}\text{C}$ (0.02 $^{\circ}\text{F}$ )
Temperature Accuracy	$\pm 1.2$ $^{\circ}\text{C}$ (-200 $^{\circ}\text{C}$ to +400 $^{\circ}\text{C}$ )
Probe Measurement Range	-200 $^{\circ}\text{C}$ to +400 $^{\circ}\text{C}$
Connector Type	M12 Female, 4 Pin
Reading Rate	4 readings per second up to 1 reading every 24 hours
Memory	43,690 readings
Start Modes	<ul style="list-style-type: none"> <li>• Software programmable immediate start</li> <li>• Delay start up to 18 months in advance</li> </ul>
Stop Modes	Manual or Timed (specific date and time)
Trigger Settings	High & Low limits may be set. Once data meets or exceed sets limits, the device will record to memory. Bi-level start and stop triggers can also be programmed. Users can specify the number of readings to take after the device triggers.
Readings in Trigger Settings Mode	18,724 readings
Real Time Recording	May be used with PC to monitor and record data in real time
Password Protection	An optional password may be programmed into the device to restrict access to configuration options. Data may be read out without the password.
Memory Wrap Around	Yes
Battery Type	3.6V high-temperature lithium battery included; <b>user replaceable</b>
Battery Life	1 year typical (1 minute reading rate)
Calibration	Digital calibration through software
Calibration Date	Automatically recorded within device
Data Format	Date and time stamped $^{\circ}\text{C}$ , $^{\circ}\text{F}$ , $^{\circ}\text{R}$ , K
Time Accuracy	$\pm 1$ minute/month at 25 $^{\circ}\text{C}$
Computer Interface	IFC400 or IFC406 USB docking station required; 125,000 baud
Operating System Compatibility	XP SP3/Vista/Windows 7/Windows 8/Windows 10
Dimensions	Body: 2.15 in x 0.97 in x 0.97 in (54.5 mm x 24.6 mm x 24.6 mm) Probe: 0.10 in dia. x 36 in L (2.54 mm dia. x 76.2 mm L)
Materials	Body: 316 Stainless Steel Probe: Stainless Steel, Fiberglass, PEEK
Approvals	CE

### Battery Warning

**WARNING: FIRE, EXPLOSION, AND SEVERE BURN HAZARD. DO NOT SHORT CIRCUIT, CHARGE, FORCE OVER DISCHARGE, CRUSH, PENETRATE, OR INCINERATE. BATTERY MAY LEAK OR EXPLODE IF HEATED ABOVE 150 $^{\circ}\text{C}$  (302 $^{\circ}\text{F}$ ).**

## Thermal Barrier Specifications

<b>Operating Environment</b>	Refer to the Time vs. Temperature Chart
<b>IP Rating</b>	Not Rated
<b>Barrier Materials</b>	316 Stainless Steel, PTFE, Silicone
<b>Enclosure Dimensions</b>	1.75 in OD x 9.6 in L (44.45 mm OD x 243.8 mm L)
<b>Weight</b>	3.0 lb (1350 g)

## Time vs. Temperature Chart

Ambient Temperature	Maximum Exposure Time (air)
-200 °C	128 minutes
-180 °C	137 minutes
-160 °C	148 minutes
-140 °C	163 minutes
-120 °C	183 minutes
-100 °C	213 minutes
-80 °C	263 minutes
-60 °C	368 minutes
-40 °C to +140 °C	Indefinitely
150 °C	601 minutes
160 °C	468 minutes
170 °C	396 minutes
180 °C	348 minutes
190 °C	313 minutes
200 °C	286 minutes
210 °C	265 minutes
220 °C	247 minutes
230 °C	233 minutes
240 °C	220 minutes
250 °C	209 minutes
260 °C	200 minutes
270 °C	192 minutes
280 °C	184 minutes
290 °C	178 minutes
300 °C	172 minutes
310 °C	166 minutes
320 °C	161 minutes
330 °C	157 minutes
340 °C	153 minutes
350 °C - 400 °C	60 minutes

## Disclaimer & Terms of Use

Listed specifications can be used to determine maximum allowable exposure times for the HiTemp140 with ThermoVault Max. The barrier extends the operating temperature of the logger up to, but not exceeding, the measurement range. Please consult the measurement range of the probe for temperatures above 250 °C (482 °F).

Both the data logger and ThermoVault Max must be at ambient temperature, approximately 25 °C (77 °F) before being placed in the extreme temperature environment. Immediately following exposure to high temperature, the data logger should be removed from the ThermoVault Max, using appropriate precautions, as it could be VERY hot. Failing to remove the data logger may allow heat trapped in the ThermoVault Max to continue to heat the data logger to potentially unsafe levels.

The ThermoVault Max may take hours to fully cool down. Even if the exterior of the ThermoVault Max is cool to the touch, the interior of the barrier and its contents may still be VERY hot.

The ThermoVault Max is primarily intended for use in dry air environments, but with the addition of the TMAX Wet Seal Kit, the ThermoVault Max may also be used in liquids and steam environments.

If your application involves a ramp up to a temperature above 150 °C (302 °F) and/or any complex temperature profile that isn't a constant process, please contact MadgeTech to determine whether the HiTemp140 with ThermoVault Max is suitable for the application.

To determine if the HiTemp140 with ThermoVault Max is suitable for the application, please provide MadgeTech with a detailed description of your process, including temperatures, durations, ramp times and process media such as air, steam, oil or water. If MadgeTech is unable to definitively calculate the suitability of our product for your application, a test unit outfitted with a high temperature indicator can be provided.

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