

Product User Guide

HiTemp140-M12



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High Temperature Data Logger with an M12 Probe Connector

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Product Overview

The HiTemp140-M12 is a rugged and versatile high temperature data logger featuring an M12 probe connector. Compatible with a wide variety of M12 RTD probe styles, this data logger is capable of measuring up to 850 °C (1562 °F) (probe dependent).

All of MadgeTech's HiTemp140 data loggers have a water tight body enclosure made of food grade stainless steel and can be placed in environments with temperatures as high as 140 °C (284 °F). The operating range of the data logger body can be extended to higher temperatures when used with MadgeTech's thermal barrier options and a suitable probe.

The HiTemp140-M12 records and stores up to 43,690 time stamped readings and is equipped with non-volatile solid state memory which retains data even if the battery becomes discharged.

A wide selection of compatible M12 probes are available on the market to choose from, making the HiTemp140-M12 the most dynamic data logger of its kind. With the ability to change probes as needed, this device satisfies a multitude of application needs with one powerful data logger versus the need for multiple loggers.

Note: Specific M12 wiring configuration is required for compatibility. (see page 4)

Submergibility

The HiTemp140-M12 logger itself is rated IP40 and not submersible. It will inherit the IP rating of the probe it is attached to, allowing for potential submergibility, depending upon the probe.

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.

Trigger Settings

The device can be programmed to only record based off user configured trigger settings.

1. In the **Connected devices** panel, select the intended device to change the settings.
2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
3. Click **Trigger** and configure the Trigger settings. Trigger formats are available in Window and Two Point (bi-level) mode. Window mode allows for one range of temperature monitoring and two point mode allows for two ranges.

Note: This product is rated for use up to 140 °C. Please heed the battery warning. The product will explode if exposed to temperatures above 140 °C.

Installation Guide

Installing the Interface cable

- IFC400 or IFC406

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

Installing the software

The MadgeTech 4 software can be downloaded at the following link www.madgetech.com/software-download. Follow the instructions provided in the Wizard to complete download

Device Operation

Connecting and Starting the data logger

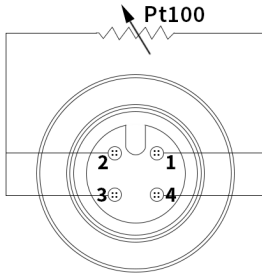
- Once the software is installed and running, plug the interface cable into the docking station.
- Connect the USB end of the interface cable into an open USB port on the computer.
- The device will appear in the Connected Devices list, highlight the desired data logger.
- For most applications, select “**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.

Wiring the Data Logger

HiTemp140-M12 connector is a 4 pin female M12 connection port which allows the user to change probes as desired. The HiTemp140-M12 will inherit the IP rating of the probe it is attached to, (up to, and including IP68/IP69K).



The HiTemp140-M12 is compatible with probes that have the wiring configuration as shown to the left.

Probe Connection

Connecting probes to the HiTemp140-M12

Materials: 15 mm wrench, Compatible Probe with M12 Connector

1. Connect the probe to the data logger, using the wiring diagram above.
2. Use a 15 mm hex wrench to tighten the threads and secure the probe to the data logger.



Product Maintenance

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 Ω and 150 Ω and is verified at 100 Ω .

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°C (302°F).

HiTemp140-M12 General Specifications

Temperature Sensor	Various RTD Probes with M12 Connector (<i>Sold Separately</i>)
Measurement Range	18 Ω to 400 Ω -200 $^{\circ}\text{C}$ to +850 $^{\circ}\text{C}$ (-328 $^{\circ}\text{F}$ to +1562 $^{\circ}\text{F}$) (<i>Probe Dependent</i>)
Temperature Resolution	0.0001 Ω 0.01 $^{\circ}\text{C}$ (0.018 $^{\circ}\text{F}$) (<i>Probe Dependent</i>)
Calibrated Accuracy	$\pm 0.015 \Omega$ $\pm 0.05 \text{ }^{\circ}\text{C}$ ($\pm 0.09 \text{ }^{\circ}\text{F}$) (<i>Probe Dependent</i>)
*Calibrated Accuracy Range	18 Ω to 200 Ω -200 $^{\circ}\text{C}$ to +265 $^{\circ}\text{C}$ (-328 $^{\circ}\text{F}$ to +509 $^{\circ}\text{F}$)
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"> • Software programmable immediate start • Delay start up to 18 months in advance
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; user replaceable
Battery Life	2 years 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	± 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
MadgeTech Software Compatibility	<ul style="list-style-type: none"> • MadgeTech Standard Software version 4.2.5.0 • MadgeTech Secure Software version 4.2.4.0 or later
Operating Environment	-40 $^{\circ}\text{C}$ to +140 $^{\circ}\text{C}$ (-40 $^{\circ}\text{F}$ to +284 $^{\circ}\text{F}$), 0 %RH to 100 %RH non-condensing, 0.002 PSIA to 60 PSIA
IP Rating	IP40 - logger alone (with no probe connected). The logger will inherit IP rating of the attached probe (up to, and including IP68/IP69K).
Dimensions (<i>body</i>)	2.15 in x 0.97 in x 0.97 in (54.5 mm x 24.6 mm x 24.6 mm)
Dimensions (<i>probe</i>)	Probe dependent
Weight	85 g (3.0 oz)
Materials	Body: 316 Stainless Steel
Approvals	CE

*Calibrated accuracies based on standard MadgeTech calibrations for 0 Ω to 200 Ω range.

