

# HITEMP140-FP

## HIGH TEMPERATURE DATA LOGGER

### WITH A FLEXIBLE RTD PROBE



#### Features

- $\pm 0.1^{\circ}\text{C}$  ( $0.18^{\circ}\text{F}$ ) Accuracy
- Probe Operates up to  $260^{\circ}\text{C}$
- Submersible (IP68)
- User-Replaceable Battery
- Durable
- Programmable Start and Stop Time
- Two probe lengths, 36 inches & 72 inches
- Battery life indicator

#### Benefits

- Simple Setup and Installation
- Minimal Long-Term Maintenance
- Long-Term Field Deployment

#### Applications

- Autoclave Verification and Mapping
- Lyophilization
- Monitoring High-Temperature Surfaces
- Container Mapping
- Measurements Inside Small Vials & Tubing

#### HiTemp140-FP-TSK Features

- Withstands Temperatures between  $-200^{\circ}\text{C}$  up to  $250^{\circ}\text{C}$
- Submersible
- Vented or Flush Enclosure Options

The HiTemp140-FP is a durable, user friendly high temperature data logger featuring a long, flexible RTD probe with a narrow diameter, making it ideal for use in steam sterilization and lyophilization processes.

Commonly used for mapping, validation and monitoring of high temperature surfaces and environments, this stainless steel data logger is available in two models, the HiTemp140-FP-36 and the HiTemp140-FP-72, which feature either 36 inch or 72 inch flexible probe lengths, respectively. The flexible probe is coated with PFA insulation and can withstand temperatures up to  $260^{\circ}\text{C}$  with an accuracy of  $\pm 0.1^{\circ}\text{C}$ . The HiTemp140-FP is also available with an optional thermal shield enclosure to extend the operating range of the data logger to  $-200^{\circ}\text{C}$  to  $+250^{\circ}\text{C}$  ( $-328^{\circ}\text{F}$  to  $+482^{\circ}\text{F}$ ). The HiTemp140-FP-TSK (*Thermal Shield Kit*) comes with either a vented or flush top enclosure to accommodate a multitude of applications.

The HiTemp140-FP probe design is narrow and lightweight making it ideal for placement within small vials, tubing, test tube and other small diameter or delicate applications. Because of the flexible probe, the risks of breakage (*both vial and probe*) generally associated with stainless steel probe loggers are diminished and the location and placement of the probe is easy to manipulate. The device records and stores up to 32,700 time stamped readings and is equipped with non-volatile solid state memory which retains data even if the battery becomes discharged.

The HiTemp140-FP can be configured for delayed start and is capable of reading rates as often as 4 times per second, up to once every 24 hours.

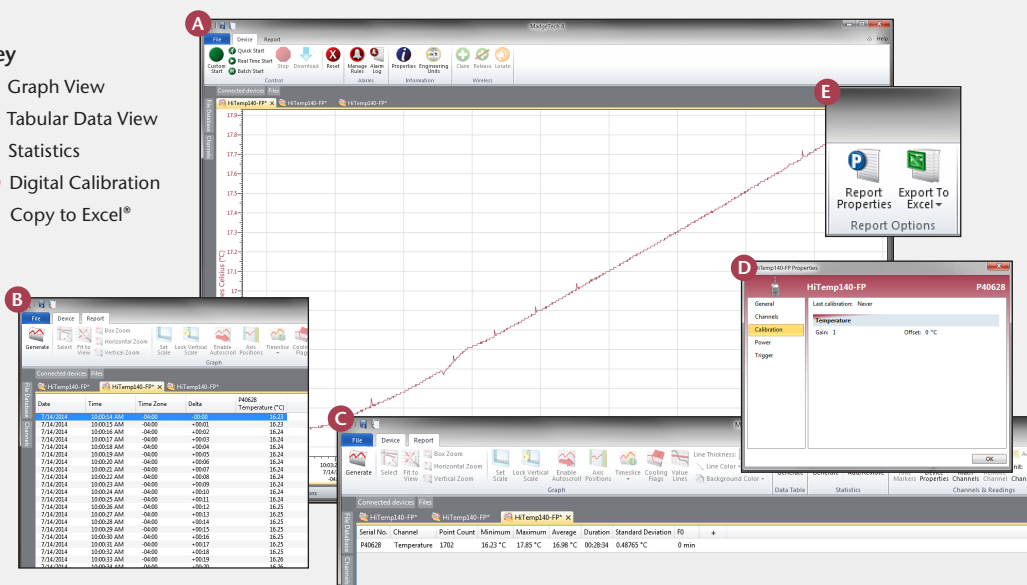
Compatible with the latest MadgeTech Data Logger Software, starting, stopping, and downloading data is simple and reporting capabilities are abundant. The device connects to a PC with the IFC400 interface or the IFC406 docking station (*sold separately*). Downloaded data can be viewed in graphical, tabular, and summary data form in the MadgeTech software, and all data can be exported to Excel® for further analysis and calculations.



## MADGETECH DATA LOGGER SOFTWARE

#### Key

- A** Graph View
- B** Tabular Data View
- C** Statistics
- D** Digital Calibration
- E** Copy to Excel®



#### Software Features:

- Multiple graph overlay
- Statistics
- Digital calibration
- Zoom in/ zoom out
- Lethality equations (F0, PU)
- Mean Kinetic Temperature
- Full time zone support
- Data annotation
- Min./Max./Average lines
- Data table view
- Automatic report generation
- Summary view
- Multilingual

# HITEMP140-FP SPECIFICATIONS\*

\*SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. SPECIFIC WARRANTY REMEDY LIMITATIONS APPLY. CALL 1-603-456-2011 OR GO TO [WWW.MADGETECH.COM](http://WWW.MADGETECH.COM) FOR DETAILS.

## Temperature

|                          |                                      |
|--------------------------|--------------------------------------|
| Temperature Sensor:      | Flexible RTD Probe                   |
| Probe Measurement Range: | -60 °C to +260 °C (-76 °F to 500 °F) |
| Temperature Resolution:  | 0.01 °C ( 0.02 °F)                   |
| Calibrated Accuracy:     | ±0.1 °C ( 0.18 °F)                   |

## General

| Data Logger Response Time:         | In Air                                                                                                                                                                                                                                        | In Water                                                       |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
|                                    | (hours : minutes : seconds : fractions of a second)                                                                                                                                                                                           |                                                                |
|                                    | t <sub>60</sub> - 00:00:30:00<br>t <sub>90</sub> - 00:01:10:00                                                                                                                                                                                | t <sub>60</sub> - 00:00:03:50<br>t <sub>90</sub> - 00:00:06:50 |
| Reading Rate:                      | 4 readings every second up to 1 reading every 24 hours                                                                                                                                                                                        |                                                                |
| Memory:                            | 32,767 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 ( <i>specific date and time</i> )                                                                                                                                                                                             |                                                                |
| Trigger Settings:                  | High and 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: | 10,922 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 at 25 °C/ 77 °F)                                                                                                         |
| Calibration:                      | Digital calibration through software                                                                                                                           |
| Calibration Date:                 | Automatically recorded within device                                                                                                                           |
| Data Format:                      | Date and time stamped °C, °F, °R, K,                                                                                                                           |
| Time Accuracy:                    | <ul style="list-style-type: none"><li>1 minute/month at 25 °C (77 °F)</li><li>Extended Operation: ±20 minutes/month at 140 °C (±450 ppm)</li></ul>             |
| 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"><li>MadgeTech Standard Software version 4.2.1.1</li><li>MadgeTech Secure Software version 4.2.0.1 or later</li></ul>         |
| Operating Environment:            | -40 °C to +140 °C (-40 °F to +284 °F) 0 %RH to 100 %RH, 0.002 PSIA to 60 PSIA                                                                                  |
| IP Rating:                        | IP68                                                                                                                                                           |
| Dimensions (body):                | 2.95 in x 0.97 in x 0.97 in (75 mm x 24.6 mm x 24.6 mm)                                                                                                        |
| Dimensions (probe):               | <ul style="list-style-type: none"><li>HiTemp140-FP-36: 36 in x 0.10 in (914 mm x 2.5 mm)</li><li>HiTemp140-FP-72: 72 in x 0.10 in (1829 mm x 2.5 mm)</li></ul> |
| Weight:                           | 85 g (3 oz)                                                                                                                                                    |
| Materials:                        | <ul style="list-style-type: none"><li>Body: 316 Stainless Steel</li><li>Probe: PFA Insulated Cable</li></ul>                                                   |
| Approvals:                        | CE                                                                                                                                                             |

## Notice: Steam Sterilization Applications

The pervasive nature of pressurized steam creates a very difficult environment for electronics. Please refer to the following preventative maintenance procedure when using this device in steam sterilization applications. Additionally, this device is not ideal for steam sterilization applications above 121 °C/1.1 bar.

### PREVENTATIVE MAINTENANCE

After every 3 hours of steam exposure:

1. Remove the endcap and battery from the device (ref. battery change procedure on Product User Guide)
2. Place open logger (minus battery) in an oven at 120°C (250°F) for a minimum of 30 minutes
3. Remove logger from oven and allow to cool to room temp
4. Re-assemble the logger with the battery (note polarity) and endcap

### Disclaimer and Terms of Use

Listed specifications can be used to determine maximum allowable exposure times for the HiTemp140 with Thermal Shield at different temperatures beyond the normal operating range of the logger. Both the data logger and Thermal Shield must be at ambient temperature (*approximately 25 °C*) before being placed in the extreme temperature environment. Immediately following exposure to high temperature, the data logger should be removed from the thermal shield (*using appropriate precautions, as it could be VERY hot*) OR the data logger and shield should be placed in a water bath (*approximately 25 °C*) for at least 15 minutes to allow it to cool. Failing to do this may allow heat trapped in the Thermal Shield to continue to heat the data logger to potentially unsafe levels. If your application involves a ramp up to a temperature above 140 °C and/or any complex temperature profile that isn't simply a constant temperature, please contact MadgeTech to determine whether the HiTemp140 with Thermal Shield is suitable.

Please provide MadgeTech with a detailed description of your temperature profile, including temperatures, durations, ramp times, and process media (*air, steam, oil, water, etc.*) If MadgeTech is unable to definitively calculate the suitability of our product for your application, we can provide a test unit outfitted with a high temperature indicator sticker. This sticker has an indicator dot which will turn black if exposed to temperatures above 143 °C. Apply the sticker to the bottom of the data logger itself (*not the thermal shield*), remove the battery for safety, place the data logger into the thermal shield and run the assembly through the proposed temperature program. The first indicator dot on the sticker will turn black at 143 °C. If that happens, the HiTemp140 with thermal shield is not appropriate for the application and we will work to find a solution that is.

**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 140 °C (284 °F).

For Quantity Discounts call (603) 456-2011 or email [sales@madgetech.com](mailto:sales@madgetech.com)