HITEMP140-FP
HIGH TEMPERATURE DATA LOGGER WITH A FLEXIBLE RTD PROBE

VALUTEMP PTE LTD
WARMS YOUR HEART

Features
- ±0.1 °C (0.18 °F) Accuracy
- Probe Operates up to 260 °C
- Submersible (IP68)
- NIST Traceable
- 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
- Steam Sterilization
- Lyophilization
- Monitoring High-Temperature Surfaces
- Container Mapping
- Measurements Inside Small Vials & Tubing

HiTemp140-FP-TSK Features
- Withstands Temperatures between -200 ºC up to 250 ºC
- 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 °C with an accuracy of ±0.1 °C. The HiTemp140-FP is also available with an optional thermal shield enclosure to extend the operating range of the data logger to -200 °C to +250 °C *(-328 °F to +482 °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.

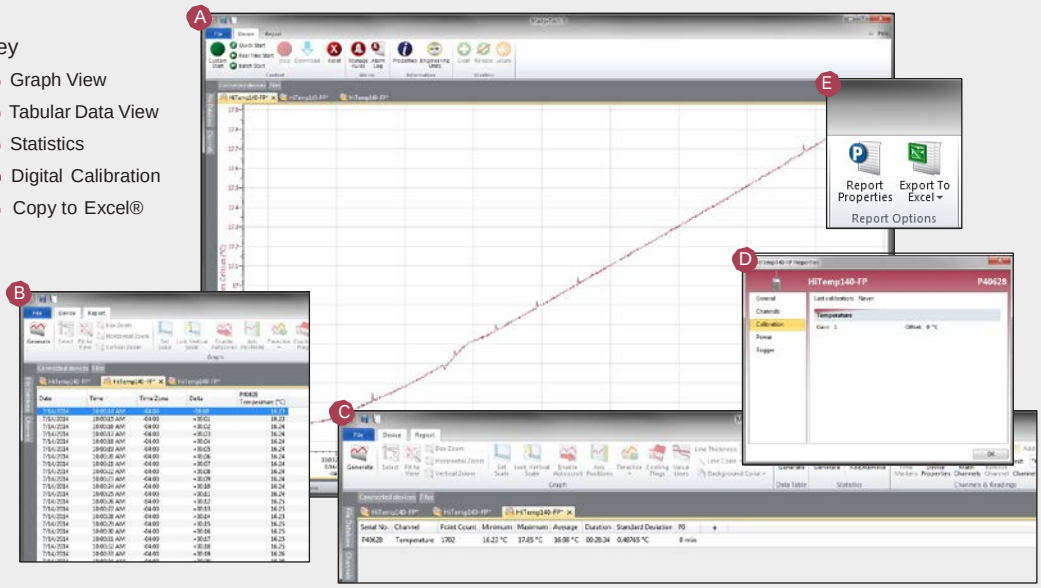
Flush *Vented*

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

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HITEMP140-FP SPECIFICATIONS*

*SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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

	In Air	In Water
Data Logger Response Time:	t_{60} - 0:00:30 t_{90} - 0:00:70	t_{60} - 0:00:03:50 t_{90} - 0:00:06:50
Reading Rate:	4 readings every second up to 1 reading every 24 hours	
Memory:	32,767 readings	
Start Modes:	• Software programmable immediate start • Delay start up to 18 months in advance	
Stop Modes:	Manual or Timed *(specific date and time)*	
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; user replaceable
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:	• 1 minute/month at 25 °C (77 °F) • Extended Operation: ±20 minutes/month at 140 °C (±450 ppm)
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:	• MadgeTech Standard Software version 4.2.1.1 • MadgeTech Secure Software version 4.2.0.1 or later
Operating Environment:	-40 °C to +140 °C (-40 °F to +284 °F) 0 %RH to 100 %RH
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)*:	• HiTemp140-FP-36: 36 in x 0.10 in (914 mm x 2.5 mm) • HiTemp140-FP-72: 72 in x 0.10 in (1829 mm x 2.5 mm)
Weight:	85 g (3 oz)
Materials:	• Body: 316 Stainless Steel • Probe: PFA Insulated Cable
Approvals:	CE

HITEMP140-FP-TSK SPECIFICATIONS*

Thermal Shield Specifications	HiTemp140-FP-TSK *(Flush)*	HiTemp140-FP-TSK *(Vented)*
Dimensions *(enclosure)*:	2.75 in x 2.0 in dia. (69.85 mm x 51 mm dia.)	4.3 in x 2.0 in dia. (109.2 mm x 50.8 mm dia.)
Weight:	6.7 oz (190 g) not including data logger	9.5 oz (270 g) not including data logger
Operating Environment:	-200 ºC to +250 ºC (-328 ºF to +482 ºF) (*Time limited*) 0 %RH to 100 %RH	
Material:	Enclosure: PTFE	

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 datalogger 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 datalogger 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 150 ºC (302 ºF).

Maximum Exposure Time Chart	HiTemp140-FP-TSK *(Flush)*		HiTemp140-FP-TSK *(Vented)*	
Ambient Temperature	Exposure Time in Air (150 °C/302 °F)	Exposure Time in Liquid (150 °C/302 °F)	Exposure Time in Air (150 °C/302 °F)	Exposure Time in Liquid (150 °C/302 °F)
-200 °C (-328 °F)	12 minutes	N/A	14 minutes	N/A
-180 °C (-292 °F)	13 minutes	N/A	15 minutes	N/A
-160 °C (-256 °F)	15 minutes	N/A	16 minutes	N/A
-140 °C (-220 °F)	17 minutes	N/A	18 minutes	N/A
-120 °C (-184 °F)	19 minutes	N/A	21 minutes	N/A
-100 °C (-148 °F)	22 minutes	N/A	24 minutes	N/A
-80 °C (-112 °F)	27 minutes	N/A	30 minutes	N/A
-60 °C (-76 °F)	37 minutes	22 minutes	42 minutes	25 minutes
-40 °C to +140 °C (-40 °F to +284 °F)	Indefinitely	Indefinitely	Indefinitely	Indefinitely
150 °C (302 °F)	59 minutes	34 minutes	66 minutes	40 minutes
160 °C (320 °F)	51 minutes	29 minutes	57 minutes	34 minutes
170 °C (338 °F)	43 minutes	25 minutes	48 minutes	29 minutes
180 °C (356 °F)	37 minutes	23 minutes	42 minutes	26 minutes
190 °C (374 °F)	34 minutes	20 minutes	38 minutes	23 minutes
200 °C (392 °F)	31 minutes	18 minutes	34 minutes	21 minutes
210 °C (410 °F)	29 minutes	17 minutes	32 minutes	19 minutes
220 °C (428 °F)	27 minutes	16 minutes	30 minutes	18 minutes
230 °C (446 °F)	25 minutes	15 minutes	27 minutes	17 minutes
240 °C (464 °F)	23 minutes	14 minutes	26 minutes	16 minutes
250 °C (482 °F)	22 minutes	13 minutes	24 minutes	15 minutes

ORDERING INFORMATION

MODEL	DESCRIPTION
HiTemp140-FP-36	High Temperature Data Logger with a 36 inch Flexible probe.
HiTemp140-FP-72	High Temperature Data Logger with a 72 inch Flexible probe.
HiTemp140-FP-TSK	HiTemp140-FP data logger and thermal shield with either a 36 inch or 72 inch flexible probe *(Flush or Vented)*.
HiTemp140-TS	Thermal Shield for the HiTemp140-FP data logger *(Flush or Vented)*.
IFC400	Docking station with USB cable, software and manual.
IFC406	6 Port, Multiplexer docking station with USB cable, software and manual.
ER1425S-HT	Replacement battery for the HiTemp140-FP.
*NIST	NIST Calibration Certificate.

*To order the product with the NIST certificate add *-CERT* to the end of the part number.

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