

# HITEMP140-TS

## THERMAL SHIELD FOR THE HITEMP140 DATA LOGGER



### Features

- Withstands Temperatures between -200 °C up to 250 °C
- Small Diameter: 2.0 in (51 mm)
- Submersible

### Applications

- Peanut Roasting
- Food Processing
- Autoclave Validation
- Conveyor Ovens
- Dishwasher Testing

The HiTemp140-TS is a thermal shield designed for use with the HiTemp140 data logger. This durable enclosure allows the data logger to be used in temperatures from -200 °C to +250 °C, making it ideal for peanut roasting, food processing, autoclave validation and other extreme temperature applications.

To use, simply place the HiTemp140 in the IFC400 or IFC406 docking station (*sold separately*). Use the MadgeTech software to program a start method and reading rate. Place the HiTemp140 in the HiTemp140-TS enclosure and screw it back together. The device is ready to be deployed.

The HiTemp140-TSK flush style is designed to have the probe entirely exposed while the data logger is protected by the thermal shield. This allows full use of the length of the probe for applications that require internal temperature monitoring. The Vented style offers more probe protection and is designed for shorter probe lengths in applications where the data logger might be subject to movement in a fully submerged application.



Flush

Vented

## HITEMP140-TS SPECIFICATIONS\*

<b>Operating Environment:</b>	-200 °C to +250 °C (-328 °F to +482 °F) (Time limited) 0 %RH to 100 %RH, 0.002 PSIA to 100 PSIA
<b>Dimensions:</b>	<ul style="list-style-type: none"> <li>• <b>Flush Top:</b> 2.75 in x 2.0 in dia. (69.85 mm x 51 mm dia.)</li> <li>• <b>Vented Top:</b> 4.3 in x 2.0 in dia. (109.2 mm x 50.8 mm dia.)</li> </ul>
<b>Material:</b>	Enclosure: PTFE
<b>Weight:</b>	<ul style="list-style-type: none"> <li>• <b>Flush:</b> 6.7 oz (190 g) (not including data logger)</li> <li>• <b>Vented:</b> 9.5 oz (270 g) (not including data logger)</li> </ul>

Ambient Temperature	HiTemp140-TS (Flush)		HiTemp140-TS (Vented)	
	Exposure Time in Air	Exposure Time in Liquid	Exposure Time in Air	Exposure Time in Liquid
-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

### 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.






## ORDERING INFORMATION

MODEL	DESCRIPTION
HiTemp140-TS	Thermal Shield for the HiTemp140-5.25 & the HiTemp140-7 Data Logger
HiTemp140-5.25/7"	Extended Range Temperature Data Logger
IFC400	Docking station with USB cable, software and manual
IFC406	6 Port, Multiplexer docking station with USB cable, software and manual

# HiTemp140 Series

## High Temperature Data Loggers

### Probe Selection Chart

HiTemp140 Model	Probe Size	Recommended Applications	
HiTemp140-1" 	1/8 in OD rounded tip (with 3/16 in OD x 0.6 in L transition)	<ul style="list-style-type: none"> <li>• Autoclave Monitoring</li> <li>• Refrigerator and Freezer Monitoring/Mapping</li> <li>• Pasteurization</li> </ul>	<ul style="list-style-type: none"> <li>• Incubator Monitoring</li> <li>• Oven Monitoring</li> </ul>
HiTemp140-2" 	2 in OAL x 3/16 in OD pointed tip	<ul style="list-style-type: none"> <li>• Meat Processing</li> <li>• Complying with USDA Regulations</li> <li>• Dishwasher/Dryer Studies</li> <li>• Conveyor Cooking/Cooling Cycles</li> <li>• Food Process Monitoring</li> <li>• Nut Roasting</li> </ul>	<ul style="list-style-type: none"> <li>• Smoke Houses</li> <li>• Canning</li> <li>• Meat Storage</li> <li>• HACCP Compliance</li> <li>• Retort Packaging</li> </ul>
HiTemp140-5.25" 	5.25 in OAL x 3/16 in OD pointed tip	<ul style="list-style-type: none"> <li>• Meat Processing - Internal temperature monitoring</li> <li>• Complying with USDA Regulations</li> <li>• Conveyor Cooking/Cooling Cycles</li> <li>• Food Process Monitoring</li> <li>• Canning</li> </ul>	<ul style="list-style-type: none"> <li>• Smoke Houses</li> <li>• Meat Storage</li> <li>• HACCP Compliance</li> <li>• Retort Packaging</li> </ul>
HiTemp140-7" 	7 in: 7.0 in OAL x 3/16 in OD pointed tip	<ul style="list-style-type: none"> <li>• Meat Processing – Internal temperature monitoring</li> <li>• Complying with USDA Regulations</li> <li>• Conveyor Cooking/Cooling Cycles</li> <li>• Food Process Monitoring</li> <li>• Canning</li> </ul>	<ul style="list-style-type: none"> <li>• Smoke Houses</li> <li>• Meat Storage</li> <li>• HACCP Compliance</li> <li>• Retort Packaging</li> </ul>
HiTemp140-PT 	Probe tip: 0.125 in OD x 1.5 in L Flexible Portion: 24 in x 0.062 in OD dia.	<ul style="list-style-type: none"> <li>• Autoclave Monitoring</li> <li>• Conveyor Cooking/Cooling Cycles</li> <li>• Refrigerator and Freezer Monitoring/Mapping</li> </ul>	<ul style="list-style-type: none"> <li>• Oven Monitoring</li> <li>• Open Air Applications</li> </ul>



# HITEMP140

## HIGH TEMPERATURE

## DATA LOGGER



### Features

- $\pm 0.1$  °C (0.18 °F) Accuracy
- Operates Up To 140 °C (284 °F)
- Submersible (IP68)
- User Replaceable Battery
- Rugged
- Programmable start time
- Programmable stop time
- Engraved Label
- Probe Lengths Up To 7 inches
- Battery Life Indicator

### Benefits

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

### Applications

- Autoclave Verification
- Implement HACCP Programs
- Food Preparation and Processing
- Environmental Studies
- Well Monitoring
- Dishwasher Testing
- Pasteurization

The HiTemp140 is a rugged, high precision, temperature data logger that is built for use in harsh environments. This stainless steel device is submersible and can withstand temperatures up to 140 °C (284 °F). With the HiTemp140's standard calibration, an accuracy of  $\pm 0.1$  °C (0.18 °F) can be achieved over a wide temperature range.

The HiTemp140 can store up to 32,700 readings, and features a rigid external probe capable of measuring extended temperatures, up to 260 °C (500 °F). Custom probe lengths are available up to 7 inches. The device records date and time stamped readings, and has non-volatile solid state memory which retains data even if the battery becomes discharged.

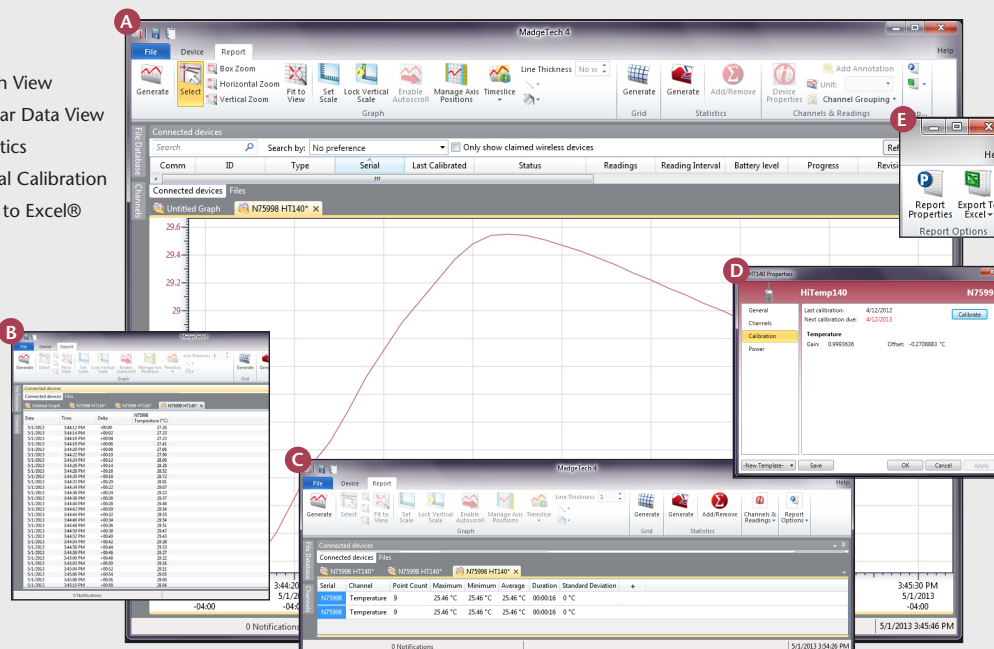
Using the MadgeTech Software, starting, stopping and downloading the HiTemp140 is simple and easy. To use, simply place the HiTemp140 in the IFC400 or IFC406 docking station (*sold separately*). Using the software, an immediate or delay start can be chosen, as well as the reading rate. Start the data logger, remove it from the docking station and the device is ready to be deployed. Graphical, tabular and summary data is provided for analysis and data can be viewed in °C, °F, K or °R. The data can also be automatically exported to Excel® for further 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 SPECIFICATIONS\*

<b>Temperature Sensor:</b>	100 Ω Platinum RTD
<b>Probe Measurement Range:</b>	-200 °C to +260 °C (-328 °F to +500 °F)
<b>Temperature Resolution:</b>	0.01 °C (0.02 °F)
<b>Calibrated Accuracy:</b>	±0.1 °C/±0.18 °F (20 °C to +140 °C/68 °F to +284 °F) ±0.3 °C/±0.54 °F (-20 °C to +19.99 °C/-4 °F to +67.98 °F) ±0.4 °C/±0.72 °F (-40 °C to -20.01 °C/-40 °F to -4.02 °F)
<b>Start Modes:</b>	<ul style="list-style-type: none"> <li>Software programmable immediate start</li> <li>Delay start up to 18 months in advance</li> </ul>
<b>Stop Modes:</b>	Manual or Timed (specific date and time)
<b>Real Time Recording:</b>	May be used with PC to monitor and record data in real time
<b>Password Protection:</b>	An optional password may be programmed into the device to restrict access to configuration options. Data may be read out without the password.
<b>Memory:</b>	32,700 readings
<b>Wrap Around:</b>	Yes
<b>Reading Rate:</b>	1 reading every second up to 1 reading every 24 hours
<b>Battery Type:</b>	3.6V high-temperature lithium battery included; <b>user replaceable</b>
<b>Battery Life:</b>	1 year typical (1 minute reading rate at 25 °C/77 °F)

<b>Calibration:</b>	Digital calibration through software
<b>Calibration Date:</b>	Automatically recorded within device
<b>Data Format:</b>	Date and time stamped °C, °F, K, °R
<b>Time Accuracy:</b>	±1 minute/month at 20 °C to 30 °C (68 °F to 86 °F) (Stand alone mode)
<b>Computer Interface:</b>	IFC400 OR IFC406 USB docking station required; 125,000 baud
<b>Software:</b>	XP SP3/Vista/Windows 7/Windows 8 ( <i>MadgeTech 4 Only</i> )
<b>Operating Environment:</b>	-40 °C to +140 °C (-40 °F to +284 °F), 0 %RH to 100 %RH, 0.002 PSIA to 100 PSIA
<b>Dimensions (Body HiTemp140-1):</b>	1.6 in x 0.970 in dia. (40 mm x 24.6 mm dia.)
<b>Dimensions (Body HiTemp140-2, 5.25, 7):</b>	1.9 in x 0.970 in dia. (48 mm x 24.6 mm dia.)
<b>Model Number</b>	<b>Dimensions (Probe)</b>
HITEMP140-1:	1.1 in x 0.125 in dia. (0.188 in transitional dia.) 27 mm x 3.2 mm dia. (4.8 mm transitional dia.)
HITEMP140-2: HITEMP140-2-TD:	2.0 in x 0.188 in dia. (51 mm x 4.8 mm) 2.0 in x 0.125 in dia. (0.188 in transitional dia.) 51 mm x 3.2 mm dia. (4.8 mm transitional dia.)
HITEMP140-5.25: HITEMP140-5.25-TD:	5.25 in x 0.188 in dia. (133 mm x 4.8 mm dia.) 5.25 in x 0.125 in dia. (0.188 in transitional dia.) 133 mm x 3.2 mm dia. (4.8 mm transitional dia.)
HITEMP140-7:	7.0 in x 0.188 in dia. (178 mm x 4.8 mm dia.)
<b>Weight:</b>	4.2 oz (120 g)
<b>Material:</b>	316 Stainless Steel
<b>Approvals:</b>	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 °C (302 °F).

## ORDERING INFORMATION

MODEL	DESCRIPTION
HITEMP140-1	High Temperature Data Logger with a 1" probe
HITEMP140-2/ HITEMP140-2-TD	High Temperature Data Logger with a 2" probe / 2" transitional diameter probe
HITEMP140-5.25/ HITEMP140-5.25-TD	High Temperature Data Logger with a 5.25" probe/5.25" transitional diameter probe
HITEMP140-7	High Temperature Data Logger with a 7" probe
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
Calibration Certificate	Calibration Certificate available for data logger

ASK ABOUT  
OUR OTHER  
DATA  
LOGGERS

Temperature  
Humidity  
Pressure  
pH  
Level  
Shock  
LCD Display  
Pulse/Event/State  
Current  
Voltage  
Wireless  
Intrinsically Safe  
Spectral Vibration  
Motion