Data Logging Solutions for USDA Regulation Compliance and HACCP Programs for

Seafood Processing

Simplifying How the World Measures & Records Data

MadgeTech, Inc. is a global company, based in New England and founded on old-fashioned principles, customer service, quality, and trust. MadgeTech's President, Norman Carlson, started the company in 1996 and charted the growth of the product lines and services while maintaining those solid core principles.

Our 'Can Do' team of engineers and technical staff consistently incorporate new and innovative ideas into our data loggers. In short, we push the envelope, raising the bar in innovation and quality. Our competitors have praised us by adopting many of our ideas as their own. Over time, MadgeTech has become the industry standard in the data logger market.

MadgeTech continuously develops new, cutting-edge products, creating solutions for our customers around the world in industries across the board. Our growing network of distributors has expanded our presence to markets far beyond our home-headquarters in New Hampshire, our products are now sold in over 100 countries around the world.

Our employees are committed to quality and customer satisfaction. Behind the full range of MadgeTech's products and services is the cumulative expertise of experienced engineers, manufacturing and electronic professionals and technicians. Our knowledgeable sales team can offer technical advice to assist in selecting the right product for each application, as well as providing after-sales support.

MadgeTech is dedicated to providing customers with reliable, affordable products, hassle-free ordering, and excellent service, saving customers time and money. It is our goal to earn your trust in meeting your needs and providing innovative solutions. The products and services that bear the MadgeTech name come with quality assurance and the best support in the industry today.

Norman E. Carlson,

Founder & President

Data Logging Solutions for Temperature Critical Applications in Seafood Processing

MadgeTech manufactures data loggers to monitor and record temperature during all phases of seafood processing, from cooking and cooling to shipping and storage. For high temperature seafood processing, the submersible HiTemp140 series of data loggers offer a variety of probe styles and various probe lengths to fit many different application needs.

Wireless Continuous Process Monitoring

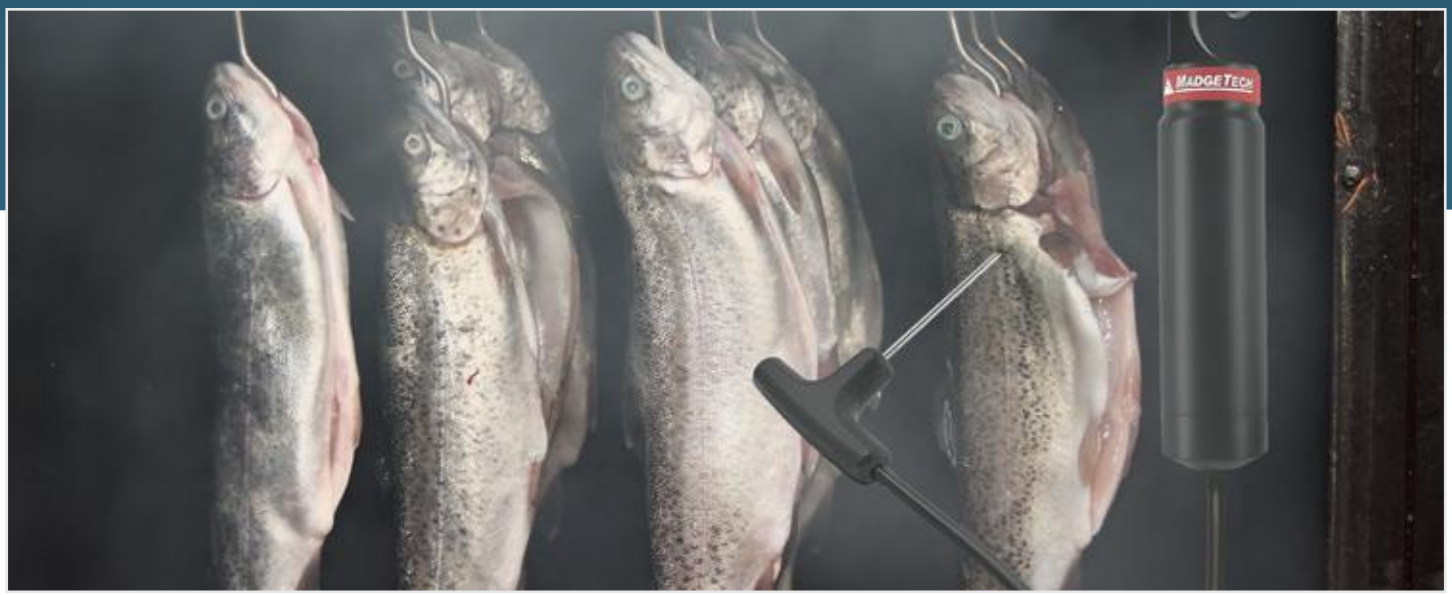
Seafood Cooking

Seafood Storage

Seafood Shipping

Wireless Continuous Process Monitoring

MadgeTech's wireless, continuous monitoring data logging systems provide a variety of streamlined solutions for measuring and recording the cooking, cooling and storage of seafood products. Wireless data loggers are deployed throughout a facility to measure processes such as cooking and cooling cycles or environmental monitoring in coolers, freezers or warehouses. RFC1000 wireless transceivers are placed throughout the site providing full communication with all wireless loggers to the MadgeTech Software on a central PC. Live data is transmitted the computer or to the MadgeTech Cloud for remote real-time monitoring. Alerts can be configured to notify users via email, text message or on screen if desired temperature limits are exceeded. The wireless system is easy to set up for a single logger, or can be scaled to accommodate hundreds of processes within a large facility.



Wireless Seafood Temperature Monitoring

RFOT

The **RFOT** is designed for use in monitoring and recording the temperature of meat and seafood products. It can be used in smokers and other cooking processes up to 212 °F (100 °C) as well as coolers and freezers down to -4 °F (-20 °C). It is completely splash proof and can withstand wash down cycles.

Once the loggers are deployed, they can be stopped and started, and data can be downloaded all conveniently from a central PC.

Rugged T-Handle

Tested to withstand thousands of cycles.

Wireless Data Loggers

RFRHTemp2000A & RFTCTemp2000A

MadgeTech has designed the 2000A Wireless Series to provide accurate, continuous monitoring of coolers, freezers, warehouses and more. This series includes a built in digital display for quick access to current readings, as well as minimum, maximum and average statistics based on the data recorded to memory. Recorded data is transmitted wirelessly back to a central PC via the RFC1000 wireless transceiver (sold separately).This series offers an audible alarm to alert users in close proximity or email and text message notifications if measurable thresholds exceed a safe range.

Features

- LCD Screen
- Audible and LED Alarm Indicators
- Battery Life Indicator

The **RFRHTemp2000A** is a wireless temperature and humidity data logger. It is ideal for monitoring warehouses and other temperature and humidity sensitive environments. The **RFTCTemp2000A** is a wireless thermocouple based temperature data logger. This device can measure both ambient temperature as well as thermocouple temperature and can be used for ovens, coolers, freezers and more.

Applications

- Coolers
- Freezers
- Warehouses
- Thermal Mapping

◄ RFRHTemp2000A
Wireless Temperature and Humidity Data Logger with LCD display on table mount.

RFTCTemp2000A ►
Wireless Thermocouple Based Temperature Data Logger with LCD display on wall mount.

Therm-A-lert Series

The Therm-A-lert Series is designed for wireless environmental monitoring throughout a facility. The **Therm-A-lert-P** is designed to measure temperatures within coolers and freezers. The built in external RTD probe comes with a rigid 4.0 in (102 mm) probe sheath with 9 ft of lead wire to thread into the cooler or freezer, while the body of the data logger can remain at ambient conditions.

The **Therm-A-lert** and **Therm-A-lert-RH** measure ambient temperature and humidity, respectively. They are ideal for monitoring warehouses and other temperature and humidity sensitive environments.

Features

- Greater Internal Memory Storage
- Great Value

Therm-A-lert-P
Wireless Temperature Data Logger with External RTD Probe

Therm-A-lert-RH
Wireless Humidity and Temperature Data Logger

Therm-A-lert
Wireless Temperature Data Logger

- Cooler/Freezer
- Smoker
- RFC1000
- RFOT
- RFRHTemp2000A
- Therm-A-lert-P
- RFTCTemp2000A

RFOT
Wireless Meat Temperature Data Logger

RFRHTemp2000A
Wireless Temperature and Humidity Data Logger with LCD Display

RFTCTemp2000A
Wireless Thermocouple Based Temperature Data Logger with LCD Display

RFC1000
Connected to a USB Port

Wireless Diagram

for the RFOT, 2000A Series and Therm-A-lert Series Data Loggers

It's Easy! Start Logging in 3 Steps...

1. Deploy the Data Loggers
2. Wirelessly Start the Data Loggers
3. Data is instantly transmitted to a computer for real-time monitoring. If user selectable alarm ranges have been exceeded, an email, text message or on-screen alarm will be received.

RFC1000
Connected to a Power Outlet

Therm-A-lert-P
Wireless Temperature
Data Logger with
External RTD Probe

RFC1000

Wireless Transceiver

The RFC1000 is a wireless transceiver for the RFOT, Therm-A-lert and RF2000A Series of Data Loggers. The RFC1000 features a 7.0 in (178 mm) pivoting external antenna, which increases the transmission distance and provides greater signal strength, and also allows more flexibility with mounting orientation.

RFC1000-IP69K

Splash Proof Wireless Transceiver

For environments that require high pressure, high temperature wash down, MadgeTech has designed the RFC1000-IP69K. This new splash proof transceiver can be installed directly in the wash down location, ensuring 100% communication throughout the entire process.

Cooking and Cooling Data Loggers

High Temperature Wet or Dry Processing Applications

HiTemp140 Series

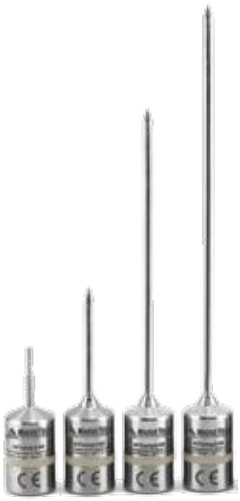
The MadgeTech **HiTemp140** and **HiTemp140-PT** series data loggers are designed to be used in a wide range of food and meat processing applications to help comply with HACCP requirements and USDA regulations. These data loggers can indefinitely withstand temperatures of up to 284 °F (140 °C) and are completely submersible. The RTD probe and food-grade stainless steel enclosure is available with both rigid and flexible probe models. This series allows customers to create a custom validation kit for smokehouse monitoring, oven mapping, pasteurization and more.

The **HiTemp140X2** series of dual probe high temperature data loggers offer extreme flexibility for high temperature monitoring applications. This product is ideal for applications such as oven mapping, surface temperature monitoring, food processing applications and much more.

A variety of flexible and ambient probe combinations are available.

New! Dual Probe Style

HiTemp140X2 *HiTemp140-1* *HiTemp140-2* *HiTemp140-5.25* *HiTemp140-7* *HiTemp140-PT-1*



The **HiTemp140** features a needle point rigid RTD probe for easy insertion into a product. Various probe lengths and diameters are available for different types of products.

Product Name	Applications
HiTemp140-2	Ambient Temperature within a Process
HiTemp140-2-TD	Internal Temperature Product Monitoring **or** Ambient Temperature within a Process
HiTemp140-5.25	Internal Temperature Product Monitoring
HiTemp140-5.25-TD	Internal Temperature Product Monitoring
HiTemp140-7	Internal Temperature Product Monitoring

The **HiTemp140-PT** features a 24.0 in (610 mm) stainless steel bendable wire with rigid probe sheath that is available in a 1.0 in (25 mm) or 5.0 in (127 mm) length.

Product Name	Applications
HiTemp140-PT-1	Internal Temperature Product Monitoring
HiTemp140-PT-5	Internal Temperature Product Monitoring

The **HiTemp140X2** series features a dual probe design comprised of a combination of two remote temperature probes (PT and FP) or one ambient (TD) and one remote temperature probe.

Product Name	Applications
HiTemp140X2-TD-PT	Internal Product Temperature Monitoring **and** Ambient Temperature within a Process
HiTemp140X2-FP-PT	Internal Temperature Product Monitoring in Two Separate Areas

IFC406

Multiplexer Data Logger Interface

The **IFC406** Multiplexer Data Logger Interface allows for multiple devices to be connected into one interface. Each IFC406 allows for 6 data loggers to be connected. Up to 3 IFC406 units may be daisy-chained together to communicate with a total of 18 devices through 1 USB port.

To connect multiple IFC406 Interfaces together, simply join the units side by side, making sure the spring pin contacts are connected and magnetically joined.

Cooking and Cooling Data Loggers

Extended Temperature Monitoring

Thermal Shield

For applications above 284 °F (140 °C), a thermal shield is available for the HiTemp140 and HiTemp140-PT series data loggers. Made of food-grade PTFE, the Thermal Shield extends the operating temperature range of the data logger for extreme temperature monitoring.

HiTemp140 series shown in Thermal Shields. Vented model and flush-top shown.

Vented Model
Probe Protection

Flush-Top Model
Allows for Probe Piercing

Time vs Temperature Chart

Ambient Temperature	Exposure Time in Air	Exposure Time in Liquid
-328 °F (-200 °C)	18 minutes	n/a
-292 °F (-180 °C)	19 minutes	n/a
-256 °F (-160 °C)	21 minutes	n/a
-220 °F (-140 °C)	24 minutes	n/a
-184 °F (-120 °C)	27 minutes	n/a
-148 °F (-100 °C)	32 minutes	n/a
-112 °F (-80 °C)	40 minutes	n/a
-76 °F (-60 °C)	55 minutes	25 minutes
-40 °F (-40 °C)	70 minutes	32 minutes
-4 °F to +284 °F (-20 °C to +140 °C)	Indefinitely	Indefinitely
302 °F (150 °C)	88 minutes	40 minutes
320 °F (160 °C)	75 minutes	34 minutes
338 °F (170 °C)	63 minutes	29 minutes
356 °F (180 °C)	55 minutes	26 minutes
374 °F (190 °C)	50 minutes	23 minutes
392 °F (200 °C)	45 minutes	21 minutes
410 °F (210 °C)	42 minutes	19 minutes
428 °F (220 °C)	39 minutes	18 minutes
446 °F (230 °C)	36 minutes	17 minutes
464 °F (240 °C)	34 minutes	16 minutes
482 °F (250 °C)	32 minutes	15 minutes

HiTemp140 Series Applications

- HACCP Programs
- Compliance with USDA Regulations
- Food and Meat Process Monitoring
- Oven Monitoring and Mapping
- Cooling and Storage Monitoring
- Pasteurization
- Conveyor Cooking and Cooling Cycles

Shipping and Storage Data Loggers

Refrigerated Products

TransiTempII

The **TransiTempII** is a low cost, splash proof temperature data logger that is ideal for shipping applications between the range of -40 °F to +176 °F (-40 °C to +80 °C). It is equipped with three LED's; green to signify that the logger is recording, orange indicates the user determined warning limits have been breached, and red indicates when the temperature alarm limits have been exceeded.

The features and compact form of this device make it ideal for monitoring the temperature of refrigerated goods during shipping. The **TransiTempII-RH** offers both temperature and humidity monitoring for moisture sensitive food storage areas and applications.

Freezers Foods & Shipping Containers

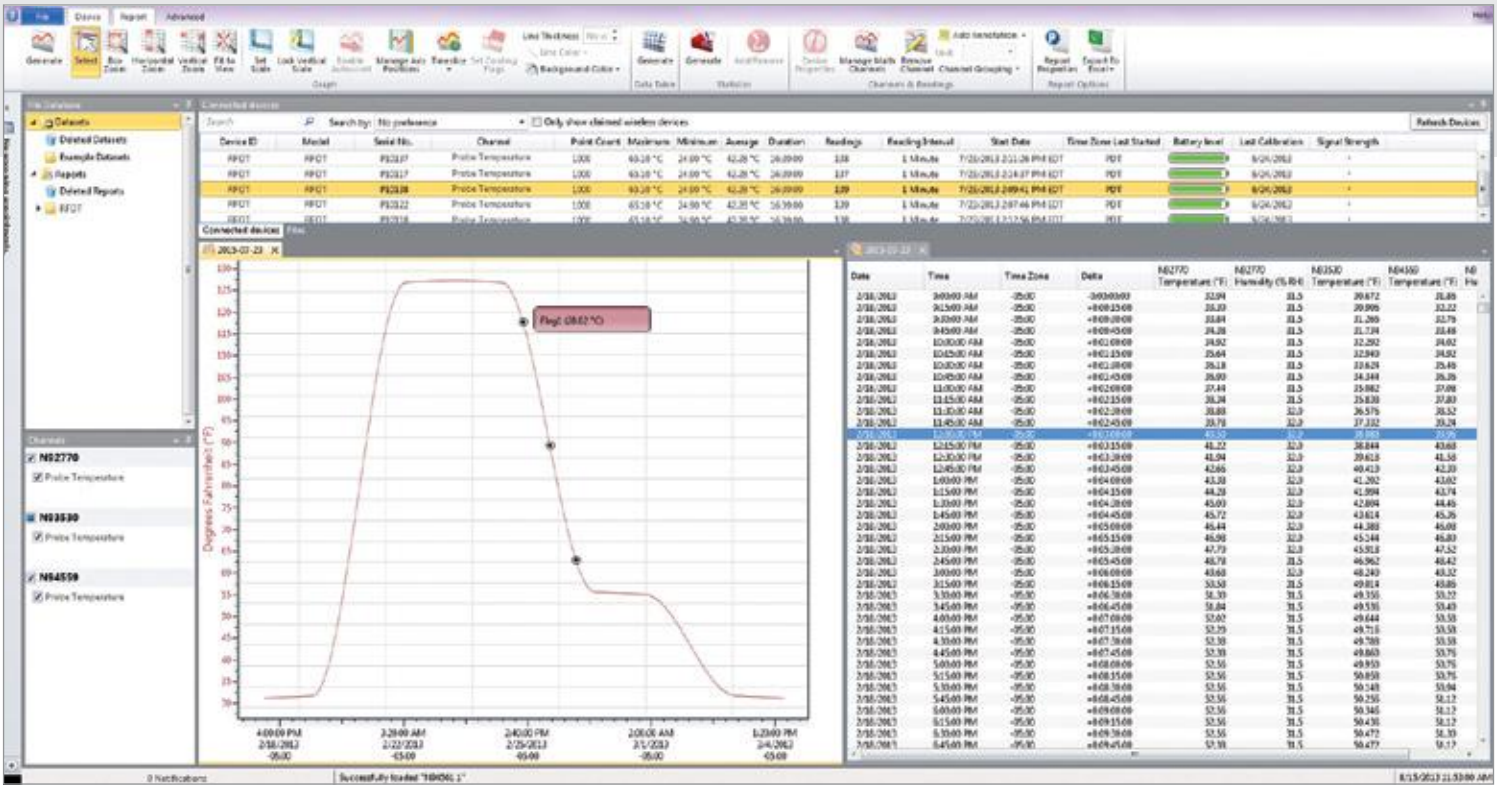
Cryo-Temp

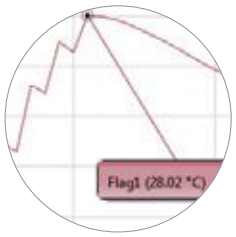
The **Cryo-Temp** is a stand alone, ultra low temperature logger that can measure as low as -122 °F (-86 °C) without the need for external probes. The enclosure is designed with a handle for easy attachment and is IP65 (splash proof). It is equipped with three LED's to signify logging, indicate when user-set warning limits have been breached and when temperature alarm limits have been exceeded. The features of this device make it ideal for monitoring frozen foods and shipping containers.

MadgeTech Data Logger Software

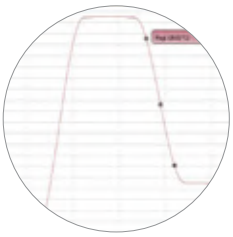
This simple, easy-to-use, Windows-based software enables the user to effortlessly collect, display, and analyze data. A variety of powerful tools can be used to examine, export, and print professional quality reports with just a click of the mouse. This software can be downloaded for free from the MadgeTech website.

Simple, Easy-to-use, Windows-based Software





Cooling Flags


Graph View


Tabular Data View


Statistics

Automation

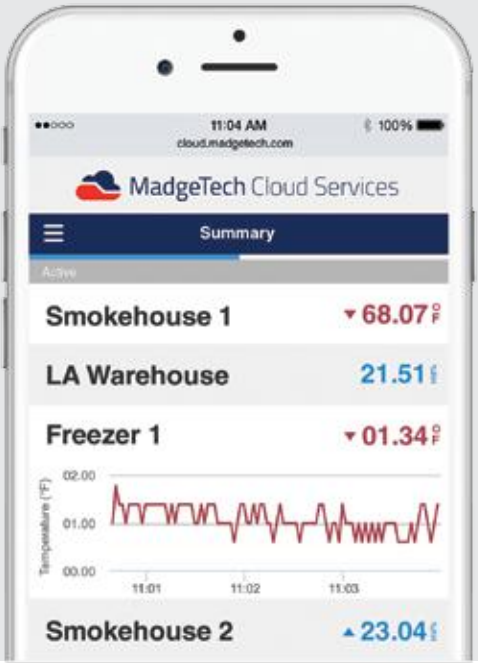
Copy to Excel

Software Features

- Multiple Graph Overlay
- Statistics
- Digital Calibration
- Zoom In / Zoom Out
- Timeslice
- Lethality Equations (F0, PU)
- Mean Kinetic Temperature
- Full Time Zone Support
- Data Annotation
- User Friendly File Management
- Min. / Max. / Average Lines
- Cooling Flags
- Data Table View
- Automatic Report Generation
- Summary View
- Workflows / Automation

MadgeTech Cloud Services

Access Data Instantly and Securely from Anywhere in the World



The MadgeTech Cloud Hosted data logging platform provides continuous logging and monitoring of temperature, pressure, and humidity data while giving users instant access from any location. With MadgeTech Cloud Services, data loggers can securely transmit data in real time to be viewed on any internet or data enabled device such as a computer, tablet, or cell phone.

Scalable Solution with Limitless Applications

With MadgeTech Cloud Services, this system is dynamically designed to perfectly fit applications requiring anywhere from a single data logger, to networks of hundreds of loggers in multiple locations. The MadgeTech Cloud platform provides facilities on-demand data supervision offering peace of mind and flexibility like never before.

Monitoring and Logging Continuously

As a monitoring system, the MadgeTech Cloud allows for instant access to real time data in the palm of your hand. As a logging solution, recorded data is buffered and saved to the device's internal memory. This provides uninterrupted continuous monitoring even in the event of a power loss or network failure.

Email & Text Message Alarm Notifications

The MadgeTech Cloud platform allows users to configure alarms to custom fit their needs. Notifications can be sent via email or text message the moment a threshold is exceeded. Notifications are also available on screen as well as audible and visual alerts directly on the device. When an alarm is triggered, users get immediate notifications via text message or email and have instant access to review the situation within seconds.

Quick & Easy Setup

View Data From Anywhere

Access Data Instantly

Secure Solution

Email & Text Notifications

Compatible Data Loggers

- RFOT
- RFRHTemp2000A
- RFPRHTemp2000A
- RFRTDTemp2000A
- Therm-A-lert-RH
- RFTemp2000A
- RFCO2RHTemp2000A
- RFTCTemp2000A
- Therm-A-lert
- Therm-A-lert-P

Matrix






Product	RFOT	RFRHTemp2000A	RFTCTemp2000A	Therm-A-lert-P	Therm-A-lert	Therm-A-lert-RH
Measurement Range	-58 °F to +392 °F (-50 °C to +200 °C)	-4 °F to +140 °F (-20 °C to +60 °C) 0 %RH to 95 %RH	Ambient: -4 °F to +140 °F (-20 °C to +60 °C) Thermocouple Dependant	-328 °F to +500 °F (-200 °C to +260 °C)	-4 °F to +176 °F (-20 °C to +80 °C)	-4 °F to +176 °F (-20 °C to +80 °C) 0 %RH to 95 %RH non-condensing
Resolution	0.018 °F (0.01 °C)	0.018 °F (0.01 °C) 0.1 %RH	0.018 °F (0.01 °C)	0.018 °F (0.01 °C)	0.018 °F (0.01 °C)	0.018 °F (0.01 °C) 0.1 %RH
Calibrated Accuracy	±0.18 °F / ±0.1 °C (+14 °F to +302 °F / -10 °C to +150 °C) ±0.9 °F / ±0.5 °C (outside of that range)	±0.9 °F / ±0.5 °C (+32 °F to +131 °F / 0 °C to +55 °C) ±3.0 %RH, ±2.0 %RH typical @ +25 °C (10 %RH to 90 %RH; +5 °C to +55 °C)	±0.9 °F (±0.50 °C)	±0.18 °F / ±0.1 °C (-4 °F to +176 °F / -20 °C to +80 °C)	±0.9 °F / ±0.5 °C (+32 °F to +122 °F / 0 °C to +50 °C)	±0.9 °F / ±0.5 °C (+32 °F to +122 °F / 0 °C to +50 °C) ±3.0 %RH (±2 %RH typical at +77 °F / +25 °C)
Operating Range	-4 °F to +212 °F (-20 °C to +100 °C) 0 %RH to 100 %RH	-4 °F to +140 °F (-20 °C to +60 °C) 0 %RH to 95 %RH	-4 °F to +140 °F (-20 °C to +60 °C) 0 %RH to 95 %RH	-4 °F to +176 °F (-20 °C to +80 °C) 0 %RH to 95 %RH	-4 °F to +176 °F (-20 °C to +80 °C) 0 %RH to 95 %RH	-4 °F to +176 °F (-20 °C to +80 °C) 0 %RH to 95 %RH
Memory	20,000 Readings	16,128 Readings	16,128 Readings	30,000 Readings	30,000 Readings	15,000 Readings
IP Rating	IP67, Splash Proof	IP22	IP22	IP20	IP20	IP20
Material	Acetal Copolymer	ABS Plastic	ABS Plastic	ABS Plastic	ABS Plastic	ABS Plastic
Required Interface Cable	RFC1000	RFC1000	RFC1000	RFC1000	RFC1000	RFC1000
Sensor	4.0 in (102 mm) External RTD Probe	Internal Sensor	Internal Sensor External Thermocouple Probe, *Not Included*	4.5 in (114 mm) External RTD Probe	Internal Sensor	Internal Sensor
More Details	Refer to page 4	Refer to page 5	Refer to page 13	Refer to page 5	Refer to page 5	Refer to page 5

HACCP (Hazard Analysis and Critical Control Points): Seven Principal Steps

1. Conduct a hazard analysis

Identify the potential hazard(s) associated with food production at all stages, from primary production, processing, manufacture and distribution until the point of consumption. Assess the likelihood of occurrence of the hazard(s) and identify measures for their control.

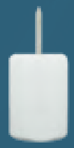
2. Identify the critical control points (CCPs)

Determine the points, procedures, or operational steps that can be controlled to eliminate the hazard(s) or minimize its (their) likelihood of occurrence. A “step” means any stage in food production and/or manufacture including the receipt and/or production of raw materials, harvesting, transport, formulation, processing, storage, etc.

3. Establish critical limit(s)

Establish critical limit(s) which must be met to ensure the CCP is under control.

MadgeTech offers data loggers that enable the user to monitor and record temperature, humidity and other parameters to define and establish critical limits.

HiTemp140	HiTemp140-PT	HiTemp140-TSK	TransiTempII	TransiTempII-RH	Cryo-Temp
-328 °F to +500 °F (-200 °C to +260 °C)	-328 °F to +662 °F (-200 °C to +350 °C)	-328 °F to +500 °F (-200 °C to +260 °C)	-40 °F to +176 °F (-40 °C to +80 °C)	-40 °F to +176 °F (-40 °C to +80 °C)	-122.8 °F to +95 °F (-86 °C to +35 °C)
0.018 °F (0.01 °C)	0.018 °F (0.01 °C)	0.018 °F (0.01 °C)	0.18 °F (0.1 °C)	0.18 °F (0.1 °C) 0 %RH to 100 %RH	0.18 °F (0.1 °C)
±0.18 °F / ±0.1 °C (+68 °F to +284 °F / +20 °C to +140 °C) ±0.54 °F / ±0.3 °C (-4 °F to +67.98 °F / -20 °C to +19.99 °C) ±0.72 °F / ±0.4 °C (-40 °F to -4.02 °F / -40 °C to -20.01 °C)	±0.18 °F / ±0.1 °C (+68 °F to +284 °F / +20 °C to +140 °C) ±0.54 °F / ±0.3 °C (-4 °F to +67.98 °F / -20 °C to +19.99 °C) ±0.72 °F / ±0.4 °C (-40 °F to -4.02 °F / -40 °C to -20.01 °C)	±0.18 °F / ±0.1 °C (+68 °F to +284 °F / +20 °C to +140 °C) ±0.54 °F / ±0.3 °C (-4 °F to +67.98 °F / -20 °C to +19.99 °C) ±0.72 °F / ±0.4 °C (-40 °F to -4.02 °F / -40 °C to -20.01 °C)	±0.9 °F (±0.5 °C) +10 °F to +104 °F (-10 °C to +40 °C)	±0.9 °F (±0.5 °C) +10 °F to +104 °F (-10 °C to +40 °C) 0.1 %RH	±1.8 °F (±1.0 °C)
-40 °F to +284 °F (-40 °C to +140 °C) 0 %RH to 100 %RH	-40 °F to +284 °F (-40 °C to +140 °C) 0 %RH to 100 %RH	-328 °F to +482 °F (-200 °C to +250 °C) 0 %RH to 100 %RH	-40 °F to +176 °F (-40 °C to +80 °C) 0 %RH to 100 %RH	-40 °F to +176 °F (-40 °C to +80 °C) ±5 %RH (±3.5 %RH typical at 77°F) from 20 %RH to 80 %RH, +50 °F to +104 °F	-122.8 °F to +95 °F (-86 °C to +35 °C) 0 %RH to 100 %RH
32,700 Readings	32,700 Readings	32,700 Readings	32,767 Readings	16,383 Readings per Channel	32,767 Readings
IP68	IP68	Not Rated	IP64	IP64	IP64
316 Stainless Steel	316 Stainless Steel	316 Stainless Steel Enclosure: PTFE	ABS Plastic	ABS Plastic	ABS Plastic
IFC400 or IFC406	IFC400 or IFC406	IFC400 or IFC406	IFC300	IFC300	IFC300
External RTD Probe	External RTD Probe	External RTD Probe	Internal Sensor	Internal Sensor	Internal Sensor
Refer to page 8	Refer to page 8	Refer to page 10	Refer to page 11	Refer to page 11	Refer to page 11

4. Establish Procedures to Monitor control of the CCP

a. What will be monitored b. How will it be monitored c. How often will it be monitored d. Who will perform the monitoring

MadgeTech Data Loggers help users ensure that critical control limits are not exceeded. They can be used to validate ovens, freezers, coolers or be used to monitor the internal temperature of product in process.

5. Establish Corrective Action Procedures

Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.

6. Establish a Record Keeping System

Establish documentation concerning all procedures and records appropriate to these principles and their application.

The MadgeTech Software makes record keeping a simple task. Easily tailor graphs and create custom reports for the product being processed to help comply with federal guidelines and regulations.

7. Establish Verification Procedures

Establish procedures for verification to confirm that the HACCP system is working effectively.

MadgeTech data loggers play a key role in the HACCP plan. MadgeTech offers SOP's (Standard Operating Procedure's) that aid the user to ensure the data loggers are installed correctly, operating properly and performing as they should.