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User's Guide

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OM-CP-HITEMP140-FR
High Temperature Data Logger with a 2 inch Fast Response Probe

OM-CP-HITEMP140-FR-TSK
High Temperature Data Logger with a Thermal Shield

Product Overview

The OM-CP-HITEMP140-FR is a high temperature data logger with an ultra-fast response time, to record temperature during rapidly changing thermal processes. This high temperature data logger features a 2 inch x 0.0625 inch diameter probe and is capable of recording up to 4 Hz, which is 5 times faster than other data loggers in this class. This allows the temperature sensor to quickly adapt and accurately record temperature variations in changing environments. Applications include oven profiling, steam sterilization, chamber mapping, seafood processing, flash freezing and more.

The entire OM-CP-HITEMP140 data logger series is designed with food grade stainless steel. The device can be placed in environments up to 140 °C and the probe is capable of measuring from -200 °C to +260 °C (-328 °F to +500 °F). The OM-CP-HITEMP140-FR 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 OM-CP-HITEMP140-FR-TSK (Thermal Shield Kit) comes with either a vented or flush top enclosure to accommodate a multitude of applications.

The Trigger Settings feature of the OM-CP-HITEMP140-FR allows users to configure high and low temperature thresholds that when met or exceeded, will automatically start or stop recording data to memory. This data logger is capable of storing up to 32,700 date and time stamped readings and features a nonvolatile solid state memory which retains data even if the battery becomes discharged.

Submergibility

The OM-CP-HITEMP140-FR is rated IP68 and is fully submersible. It can be placed in environments up to 230' (70m) of water.

O-Rings

O-ring maintenance is a key factor when properly caring for the OM-CP-HITEMP140-FR. The O-rings ensure a tight seal and prevent liquid from entering the inside of the device.

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.

Troubleshooting Tips

Why is the data logger not appearing in the software?

If the OM-CP-HITEMP140-FR doesn't appear in the Connected Devices panel, or an error message is received while using the OM-CP-HITEMP140-FR, try the following:

- Check that the OM-CP-IFC400 is properly connected. For more information, see Troubleshooting Interface Cable problems (below).
- Ensure that the battery is not discharged. For best voltage accuracy, use a voltage meter connected to the battery of the device. If possible, try switching the battery with a new OM-CP-BAT110.
- Ensure that no other Omega software is running in the background.
- Ensure that **Omega Software** is being used.
- Ensure that the **Connected Devices** panel is large enough to display devices. This can be verified by positioning the cursor on the edge of the Connected Devices panel until the resize cursor appears, then dragging the edge of the panel to resize it. The screen layout may also be reset in the options menu by selecting **File**, **Options**, and scrolling to the bottom.

Troubleshooting Interface Cable problems

Check that the software properly recognizes the connected OM-CP-IFC400.

If the data logger is not appearing in the **Connected Devices** list, it may be that the OM-CP-IFC400 is not properly connected.

1. In the software, click the **File** button, then click **Options**.
2. In the **Options** window, click **Communications**.
3. The **Detected Interfaces** box will list all of the available communication interfaces. If the OM-CP-IFC400 is listed here, then the software has correctly recognized and is ready to use it.

Check that Windows recognizes the connected OM-CP-IFC400.

If the software does not recognize the OM-CP-IFC400, there may be a problem with Windows or the USB drivers.

1. In Windows, click **Start**, right-click **Computer** and choose **Properties** or press **Windows+Break** as a keyboard shortcut.
2. Click **Device Manager** in the left hand column.
3. Double click **Universal Serial Bus Controllers**.
4. Look for an entry for **Data logger Interface**.
5. If the entry is present, and there are no warning messages or icons, then windows has correctly recognized the connected OM-CP-IFC400.
6. If the entry is not present, or has an exclamation point icon next to it, the USB drivers may need to be installed. These are available on the software flash drive included with the OM-CP-IFC400.

Ensure that the USB end of the OM-CP-IFC400 is securely connected to the computer.

1. Locate the USB-A plug of the OM-CP-IFC400.
2. If the interface cable is connected to the PC, unplug it. Wait ten seconds.
3. Reconnect the cable to the PC.
4. Check to make sure that the red LED is lit, indicating a successful connection.

Installation Guide

Installing the Interface cable
- OM-CP-IFC400 or OM-CP-IFC406
  Refer to the "Quick Start Guide" included in the package.

Installing the software
Insert the Omega Software Flash Drive in an open USB port. If the autorun does not appear, locate the drive on the computer and double click on **Autorun.exe**. Follow the instructions provided in the Installation Wizard.

Device Operation

Connecting and Starting the data logger
1. Once the software is installed and running, plug the interface cable into the docking station.
2. Connect the USB end of the interface cable into an open USB port on the computer. Place the data logger into the docking station.
3. The data logger will automatically appear under **Connected Devices** within the software.
4. 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.*)
5. The status of the device will change to "**Running**", "**Waiting to Start**" or "**Waiting to Manual Start**", depending upon your start method.
6. Disconnect the data logger from the docking station 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
1. Connect the logger to the docking station.
2. Highlight the data logger in the **Connected Devices** list. Click "**Stop**" on the menu bar.
3. Once the data logger is stopped, with the logger highlighted, click "**Download**". You will be prompted to name your report.
4. Downloading will offload and save all the recorded data to the PC.

Product Maintenance

Battery Replacement
Materials: OM-CP-BAT110
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 OM-CP-HITEMP140-FR standard calibrations are two points at 30°C and 140°C.

Recalibration is recommended annually for any Omega data logger; a reminder is automatically displayed in the software when the device is due.

OM-CP-HITEMP140-FR General Specifications

Temperature Sensor	100Ω Platinum RTD	
Probe Measurement Range	-200°C to +260°C (-328°F to +500°F)	
Temperature Resolution	0.01°C (0.02°F)	
Calibrated Accuracy	±0.1°C/±0.18°F (20°C to +140°C/68°F to +284°F)	
Data Logger Response Time	**In Air**	**In Water**
	t_{60} - 0:00:39 t_{90} - 0:02:43	t_{60} - 0:00:10 t_{90} - 0:00:12
Reading Rate	4 readings per 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 & 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	2 years typical (1 minute reading rate)	
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 • Extended Operation: ±20 minutes/month at 140°C (±450ppm)	
Computer Interface	OM-CP-IFC400 or OM-CP-IFC406 USB docking station required; 125,000 baud	
Operating System Compatibility	XP SP3/Vista/Windows 7/Windows 8	
OM-CP Software Compatibility	• OM-CP Standard Software version 4.2.3.0 • OM-CP Secure Software version 4.2.2.0 or later	
Operating Environment	-40°C to +140°C (-40°F to +284°F), 0%RH to 100%RH, 0 to 100PSIA	
IP Rating	IP68	
Dimensions *(body)*	1.89” x 0.970” x 0.970” (48mm x 24.6mm x 24.6mm)	
Dimensions *(probe)*	1.75” x 0.0625” dia. (0.188” transitional dia.) 44.5mm x 1.59mm (4.78mm Transitional dia.)	
Weight	65g (2.3oz)	
Materials	316 Stainless Steel	
Approvals	CE	

OM-CP-HITEMP140-FR-TSK General Specifications

	OM-CP-HITEMP140-FR-TSK *(Flush)*		**OM-CP-HITEMP140-FR-TSK** *(Vented)*	
Temperature Sensor	Exposure Time in Air	Exposure Time in Water	Exposure Time in Air	Exposure Time in Water
	t_{60} - 0:00:30	t_{60} - 0:00:09	t_{60} - 0:00:59	t_{60} - 0:00:10
	t_{90} - 0:13:10	t_{90} - 0:00:12	t_{90} - 0:22:10	t_{90} - 0:00:12
Dimensions *(enclosure)*	2.75" x 2.0" dia. (69.85mm x 51mm dia.)		4.3" x 2.0" dia. (109.2mm x 50.8mm dia.)	
Weight	6.7oz (190g) not including data logger		9.5oz (270g) not including data logger	
Operating Environment	-200°C to +250°C (-328°F to +482°F) (Time limited) 0%RH to 100%RH			
Material	Enclosure: PTFE			

Maximum Exposure Time Chart	**OM-CP-HITEMP140-TS** *(Flush)*		**OM-CP-HITEMP140-TS** *(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

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).

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MADE IN USA

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **61 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **five (5) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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