Preliminary Examination

Remove the thermologger from the packing material and examine it carefully. If you require any further information, please contact Hanna Instruments technical support team at: tech@hannainst.com.

Each HI148 is delivered in a cardboard box and is supplied with:

- USB Type A to C cable
- AAA alkaline batteries
- Wall cradle
- Quality certificate
- Instruction manual

Note: Ensure that the thermologger functions correctly and save all packing material. Items that need to be returned must be returned in their original packing material with the supplied accessories.

PC Software

The HI92148 PC application software supports communication between the logger and a PC running Windows XP or newer. The PC application allows users to set data acquisition parameters and download logged data when connected to the PC. The PC software is available for download at http://software.hannainst.com. After download is complete, use the setup.exe file to install the software.

General Description & Intended Use

The HI148 thermologgers are designed to monitor facilities in food processing industry, transportation sectors, museums or horticulture. There are four models of HI148 thermologgers available.

The thermologgers feature extensive memory capacity: 16,000 samples for 1-channel models and 8000 samples/channel for 2-channel models.
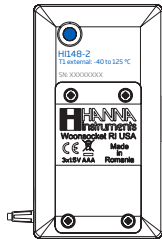
HI148 Models

HI148-1
1 internal sensor
no external sensor
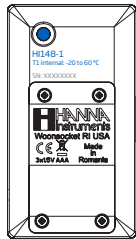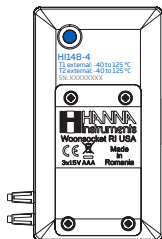
HI148-2
no internal sensor
1 external sensor

HI148-3
1 internal sensor
1 external sensor

HI148-4
no internal sensor
2 external sensor

Specifications

Model	Sensor(s)	
HI148-1	T1 internal	-20.0 to 60.0 ºC / -4.0 to 140.0 ºF
HI148-2	T1 external	-40.0 to 125.0 ºC / -40.0 to 257.0 ºF
HI148-3	T1 internal T2 external	-20.0 to 60.0 ºC / -4.0 to 140.0 ºF -40.0 to 125.0 ºC / -40.0 to 257.0 ºF
HI148-4	T1 external T2 external	-40.0 to 125.0 ºC / -40.0 to 257.0 ºF -40.0 to 125.0 ºC / -40.0 to 257.0 ºF
Resolution		0.1 ºC (-40.0 to 100.0 ºC); 0.2 ºC (temp. >100.0 ºC) 0.1 ºF (-40.0 to 190.0 ºF) ; 0.3 ºF (temp. >190.0 ºF)
Accuracy		±0.5 ºC (-40.0 to 0.0 ºC and 70.0 to 100.0 ºC) ±0.4 ºC (0.0 to 70.0 ºC) ±1 ºC (>100.0 ºC)
		±1 ºF (-40.0 to 32.0 ºF and 158.0 to 212.0 ºF) ±0.8 ºF (32.0 to 158.0 ºF) ±2 ºF (>212.0 ºF)
Probe		stainless steel probe with 1 m (3.3') silicone cable; 33.5 mm (13.2") length, 3.5 mm (0.14") diameter
Battery Type		3 x 1.5V AAA
Battery Life		approximately 2 years of use
Environment		-20.0 to 60.0 ºC (-4.0 to 140.0 ºF); RH 100%
Dimensions		107 x 59 x 17 mm (4.2 x 2.3 x 0.7")
Weight		130 g (4.6 oz)

Note: HI148-4 has the probes marked with T1 and T2.

Main Features

- One or two channels, with internal and/or external sensor
- 16,000 samples (for 1-channel models) or 8000 samples/channels (for 2-channels models)
- Programmable logging interval from 1 second to 24 hours for 1-channel models, from 2 seconds to 24 hours for 2-channel models
- Storing of temperature at logging interval, or min. or max. temperature between logging intervals
- Logging delay start from 1 second to 199 hours using the HI92148 PC application or the Log start button
- Programmable high and low alarms
- Non-volatile storage of logging parameters and data in EEPROM
- BEPS (Battery Error Prevention System)
- Security password and lot serial number
- USB Type-C connector
- IP67 waterproof casing

Expected battery-life is 2 years at 1 minute measuring and logging intervals.
All HI148 thermologgers are factory calibrated.

Probe Features

- The temperature sensor is located at the tip of the probe.
- The 1 m (3.3') silicone cable maintains flexibility and performance in applications where temperatures are widely variable.
- The recommended immersion level is 2.5 cm (1.0").

Display Description

Status
Temperature
Information
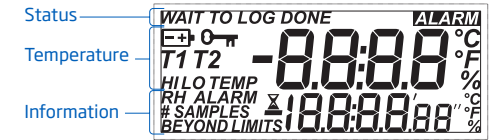
The LCD display features a wide temperature range and viewing angle. It displays the following information: status — first line at the top, readout temperature — middle line and additional information — bottom line.

The information shown on the bottom line is user selectable, and can include the min. and max. temperature, the high and low alarm thresholds, the current number of samples and the number of samples outside alarm limits.

Functional Description
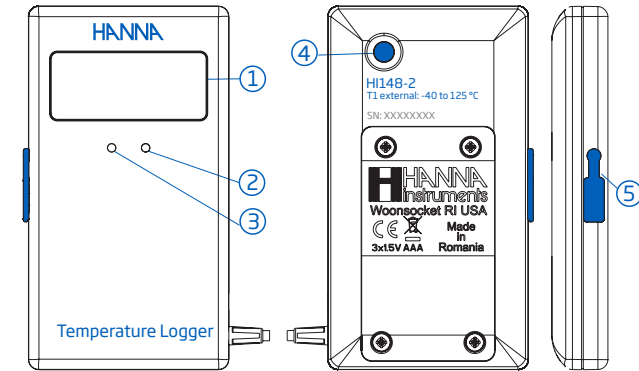
1. LCD
2. Red LED
3. Green LED
4. Log start button
5. USB port cover

The status of the thermologger is indicated by the green and red LEDs, and LCD status line.

Condition	LEDs	LCD Status Line
Waiting to start logging	Green LED flashes twice every 4 seconds	WAIT TO LOG
Currently logging	Green LED flashes once every 4 seconds	LOG
Completed logging	Green LED off	LOG DONE
User alarm thresholds exceeded during logging	Red LED flashes once every 4 seconds	ALARM
Low battery	Red LED flashes once every 4 seconds	BATT
Dead battery	Red LED flashes twice every 4 seconds	BATT only

Keeping the log start button pressed will light up the green LED (even outside logging session).

Startup

Connect the HI48 to your computer through the USB-C cable. In order to communicate with the thermologger, the HI92148 application software must be installed on your PC.
Start the application and the "Connect to device" window will appear with the thermologger icon.
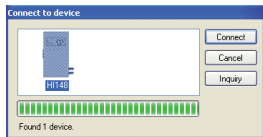
Click "Connect" to start the communication between the application and your thermologger.

Operational Guide

Click on "Logging" tab to start a new logging session or load existing logged data.
When creating a new logging session the following operating parameters can be set:
- Logging start mode (fixed start time or delayed start)
- Display settings (measurement unit — ºC/ºF, total number of samples, number of samples beyond limit, min/max values, high/low alarm thresholds)
- Alarm settings/channels (high and low alarm values)
- Logging interval (from 1 second to 24 hours for 1-channel models, from 2 seconds to 24 hours for 2-channels models)
- Measurement interval (from 1 to 60 seconds for 1-channel models, from 2 to 60 seconds for 2-channels models
- Delayed logging start time (from 1 second to 199 hours)

Each logging session can be assigned a ID number, a password and can be saved.
Recalled logged data is displayed as both a table and a graphical representation.
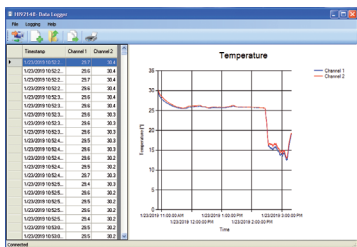
When low-battery status is indicated, save the logged data first then replace the batteries and start a new logging session.

Wall Cradle

The thermologger is supplied with a wall cradle to ensure upright positioning and ease of use.
Position the wall cradle at the desired location and fix it to the wall with two screws.
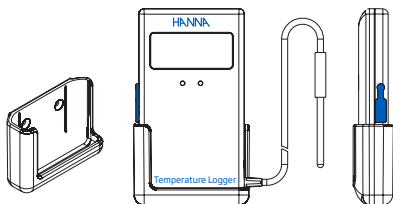
Battery Replacement

When the batteries need to be replaced, remove the four screws from the back cover, remove the cover and replace the batteries with new ones paying attention to the correct polarity. Replace the cover and tighten the four screws.

When batteries are replaced, both LEDs will turn on, and the red LED will then turn off followed by the green LED. If this does not occur, reinstall the batteries, the battery has not been properly reset.
The LCD will display all segments for about 1 second.
After battery replacement ensure to follow Startup and Operational Guide details.
Ensure that replacement batteries meet environment specifications.

Note: Batteries should only be replaced in a safe area using the battery type specified in this instruction manual. Old batteries should be disposed in accordance with local regulations.

Recommendations for Users

Before using this product, make sure it is entirely suitable for your specific application and for the environment in which it is used. Any variation introduced by the user to the supplied equipment may degrade the thermologger's performance. For yours and the thermologger's safety do not use or store the thermologger in hazardous environments.

Warranty

HI148 thermologgers are warranted for a period of one year against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. This warranty is limited to repair or replacement free of charge. Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered. If service is required, contact your local Hanna Instruments Office. If under warranty, report the model number, date of purchase, serial number and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the thermologger is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization (RGA) number from the Technical Service department and then send it with shipping costs prepaid. When shipping any thermologger, make sure it is properly packaged for complete protection.

Certification

All Hanna Instruments conform to the **CE European Directives**.

Disposal of Electrical & Electronic Equipment. The product should not be treated as household waste. Instead hand it over to the appropriate collection point for the recycling of electrical and electronic equipment which will conserve natural resources.
Disposal of waste batteries. This product contains batteries, do not dispose of them with other household waste. Hand them over to the appropriate collection point for recycling.

Ensuring proper product and battery disposal prevents potential negative consequences for the environment and human health. For more information, contact your city, your local household waste disposal service, the place of purchase or go to www.hannainst.com.

Hanna Instruments reserves the right to modify the design, construction or appearance of its products without advance notice.

HI148 Series Thermologgers