# Tc-HR Data Logger

Thermocouple Temperature Logger mark 4

Two Channel High Resolution (16 bit) Temperature Data Logger.

Description.

The Tc-HR is a small Two Channel High Resolution (16 bit) Temperature data logger housed in a rugged 304 stainless steel case. The logger connects to an external Thermocouple probe and also has an internal temperature sensor for convenient logging of ambient temperature if desired. Logging can be configured to: start on time, immediate start, stop when full, loop around (overwrite oldest data).

HHT-03 (Type K thermocouple hand-held industrial food probe)

Tc-HR logger

Tc-HR plug set (Type K)
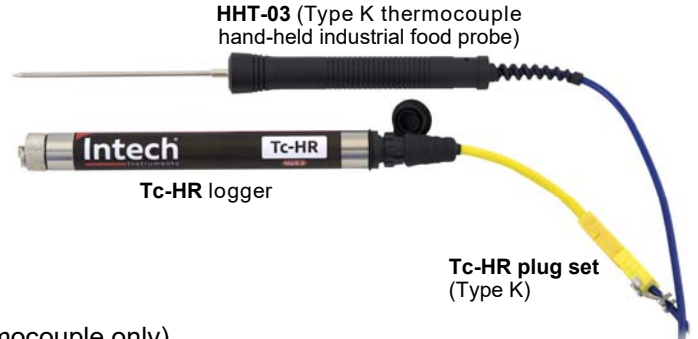
Features.

- Over 500,000 samples can be logged (when logging thermocouple only).
- The logger accepts Type J, K, N, R and T thermocouple probes (factory set to Type K).
- Temperature can be set to any combination of Point, Average, Maximum & Minimum readings.
- The battery voltage of the logger can be logged if required.
- The logger can be run in either "Stop when memory is Full", "Loop Around" mode or set to stop at a future time.
- The logger can be started "Now", started at a given time in the future or on a condition (e.g. temperature >20ºC).
- The data from any logger that records Temperature can be processed, by the Omni7 software, to give
- daily, weekly and monthly accumulated Grow Degree Day reports for a wide range of horticultural crops.

Ordering Information.

Tc-HR	Thermocouple Temperature data logger.
Tc-HR Plug Set	70mm lead (specify thermocouple type).

Includes Switchcraft plug (logger end) and Mini jack (connects to T/c Mini plug). Mini plugs are also available on request.

DLC3USB [USB] or **DLC3** [RS232]   Download cable (2m) to connect Tc-HR with computer.

Please Note: The Tc-HR data logger is not supplied with a thermocouple probe.
These can be ordered separately from Intech Instruments Ltd if required. See page 4.

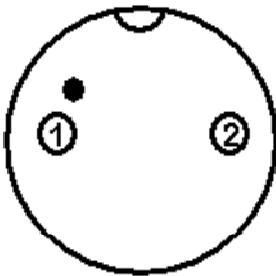### Tc-HR mark 4 Dimensions.

180mm

20mm

Putting into service with Omni7 Data Management software.

1. From the SWDL-DLC Omni7 software and Download cable kit, **first install the Omni7 software**, then plug the Download cable into a spare USB [standard size] or RS232 serial port on your computer (depending on which type you have). The Omni7 has an excellent "Help". This will need to be read to enable successful operation of the Omni7 Data Management Program and gain familiarisation of the many advanced features available.

2. Connect the data logger to the download cable. Select the correct connection type on the Omni7 screen. Omni7 requires manual connection and disconnection to the data logger using the Green 'Connect' and Red 'Disconnect' buttons. It will not connect to a data logger automatically. (Refer to "Help" for further assistance.)

3. On the "Logger Control" screen, click on "Channel and Probe Setup" button, and check the Battery Condition, plus other configurations.

4. Now click on the "Start Logger" tab for the final configurations, before putting the logger into service.

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Specifications.

Thermocouple Input:	External Sensor Connector	2 pin Switchcraft Plug (EN3C2M)		
		Weatherproof; IP66		
	Pinout	1 Positive		
		2 Negative		
	Temperature Coefficient	±0.1% per ºC of logger Temperature		

	Temperature Range	Type	Min Temp	Max Temp
		J	-200ºC	900ºC
		K	-250ºC	1300ºC
		N	-250ºC	1300ºC
		R	-50ºC	1760ºC
		T	-250ºC	400ºC

	Accuracy	Type	Min Temp	At 0ºC	Max Temp
This is the logger accuracy only and does not include		J	±1.0ºC	±0.5ºC	±1.0ºC
inaccuracies in the particular thermocouple probe used.		K	±1.0ºC	±0.5ºC	±1.0ºC
		N	±2.0ºC	±1.0ºC	±1.0ºC
		R	±3.5ºC	±2.0ºC	±2.0ºC
		T	±1.0ºC	±0.5ºC	±0.5ºC
	Resolution	±0.1ºC			

The thermocouple input can also be used as a -50mV to +50mV DC input.	Resolution	0.01mV
	Accuracy	±0.02mV

Internal Temperature:	Sensor Type	Thermister
	Linear accuracy over range	±0.3ºC (0ºC to 70ºC)
	Repeatability	±0.1ºC
	Long term stability	±0.1ºC

Logger:	Working Temperature	-30ºC to +70ºC
	Storage Temperature	-30ºC to +70ºC
	Sampling Rate	1 second minimum, 10 hours maximum; in 1 second intervals
	Storage capacity	522,240 samples logging thermocouple only
		362 days with 1min logging interval; 4.9 years with 5min logging interval
	Alarms	Two independent Alarms
		Triggered on any combination of six user configurable Alarm Conditions
		Both alarms can be configured to send SMS messages
		Alarms can be visually checked using the Omni7 Software
	Start modes	Start immediately / Start on date/time /
		Start on condition (e.g. temperature > 20ºC)
	Stop modes	Stop when memory is full / Stop on date/time /
		Loop around (continues logging)
	Logging modes	Each channel can be set to log any combination of:
		- Point readings - Maximum reading
		- Average reading - Minimum reading
tached	**Warning:** When using the Average, Maximum or Minimum reading(s), the logger reads the at-sensor(s) every second. **This will reduce battery life.**	
	Battery	One to Five year life depending on usage as above
		Using the logger in temperatures below -5°C (23°F) will reduce battery life
		One TruTrack 7.2V lithium cell; User Replaceable
		The data is retained in the case of battery failure
		Battery Status Monitor in Omni7 software
	Download time	9 minutes 30 seconds for Full Logger
	Case material	304 Stainless tube
	Screw on end cap	Plated brass
	Weight	140g
	Size	20mm diameter X 180mm long

*A **DLC3USB** [USB] or **DLC3** [RS232] **download cable** (2m) is required to connect the Tc-HR to a computer.*

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Thermocouple Probe Setup.

The Tc-HR is factory set for use with type K thermocouple probes.
For other thermocouple probe types the Tc-HR needs to be setup for the correct thermocouple probe type using a computer and the Omni7 software. There is no need to alter these settings if you are using a type K thermocouple probe!

To set the Thermocouple probe type of the Tc-HR:
- Run the Omni7 software.
- Connect to the logger using a **DLC3USB** [USB] or **DLC3** [RS232] **download cable** (2m).
- Select the Logger Control window.
- Select the 'Channel and Probe Setup' tab.
- Select the 'Ext Temperature (Ch1)' tab.
- In the Probe box, select the required Thermocouple Probe Type.
- Click on the "Write Unit Scaling and Calibration Values to the Logger" button.

Note: For complete calibration instructions for each Thermocouple probe type, please refer to the Omni7 Help.

For ±50mV DC input, follow the procedure above and select **±50mV Digital** as the Probe Type.

Tc-HR plug set.

The **Tc-HR plug set** is designed to make connecting thermocouple probes with the Tc-HR logger easy!
**Specify the Thermocouple Type when ordering.**
Note: Thermocouple Type **K**, **J** & **T** Mini jacks/plugs are held in stock. Type **N** or **R** are on request only.

The plug set includes a Switchcraft plug (connects to the Tc-HR logger end), 70mm lead and a Mini Jack (connects to a thermocouple Mini Plug).
As the vast majority of thermocouple probes have a Plug connector (male), the **Tc-HR plug set** is supplied with a Jack connector (female).
Mini plugs (which the thermocouple probe wires are wired into), can be supplied by Intech on request.

Example Tc-HR plug set (Type K):
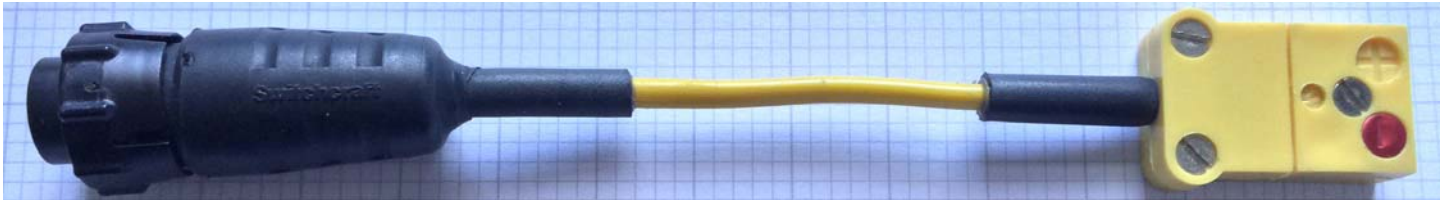
Example Mini Plug (Type K):
(Available on request)

Thermocouple Probes.

The Tc-HR data logger is not supplied with a thermocouple probe. These can be ordered separately from Intech Instruments Ltd if required.

Hand-held Thermocouple Probes available from Intech include:
All these probes are fitted with a 2-pin miniature plug for connection to the **Tc-HR plug set (Type K)**.

CODE	DESCRIPTION
Bead probe	**Miniature plug and cable. Type K.** Probe: Bead tip. Cable: 2m Teflon. Temp: min/max of probe: 0/100°C.
HHT-01	**Industrial food probe. Type K.** Probe: 4.7 x 100mm Spear tip. 316 Stainless steel. Cable: 900mm PVC. Curly cord. Temp: min/max of probe: -30/400°C.
HHT-02	**Insertion probe. Type K.** Probe: 3.2 x 200mm. Stainless steel. Cable: 900mm PVC. Temp: min/max of probe: -30/600°C.
HHT-03	**Mini spear probe. Type K.** Probe: 3.2 x 100mm. Stainless steel. Cable: 900mm PVC. Temp: min/max of probe: -30/300°C.
HHT-04	**Surface probe. Type K.** Probe: Foil sensor. Fast response. Cable: 900mm PVC. Temp: min/max of probe: 0/400°C

Bead probe

HHT-02

HHT-03

with Tc-HR plug set (Type K)

HHT-04
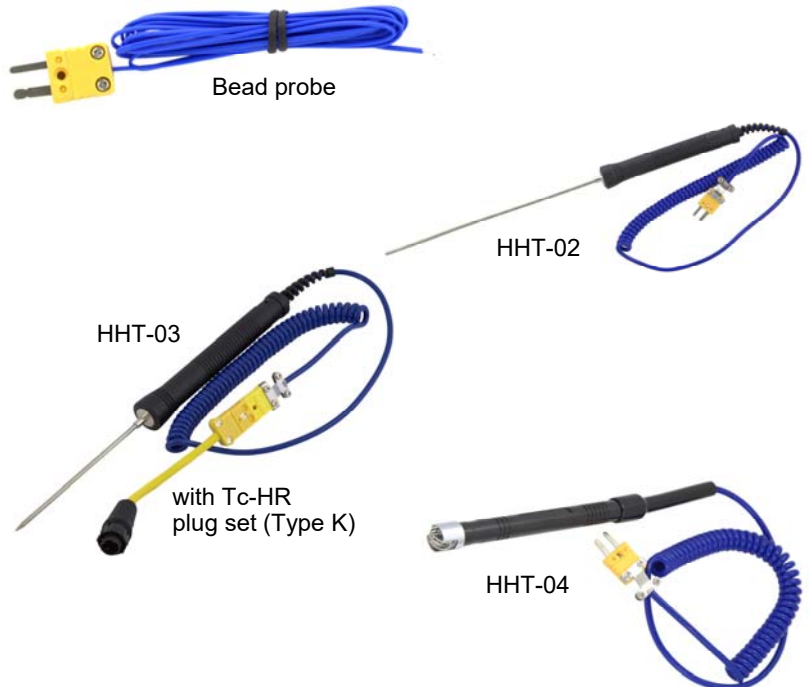
Note: The above covers the more common Hand-Held Thermocouple probes.
We can supply thermocouple probes to your particular specification.