



Operation Manual for HE70X/80X Series Multi-channel thermocouple thermometer

Huato Electronic (Shenzhen) Co., LTD

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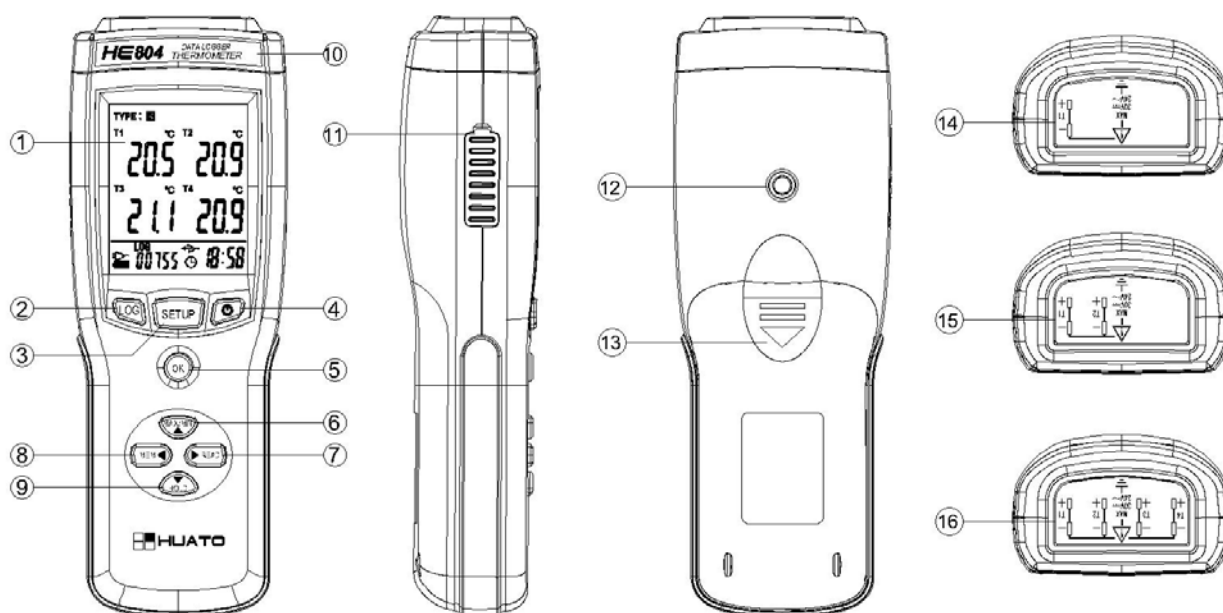
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Chapter 1. Products Introduction

HE70X-80X series is thermocouple thermometer, developed by HUATO company, these series goes through repeated professional testing and the mass production has proved the stability and the reliability. It enjoys elegant appearance, large LCD display, backlight function and USB port telecommunication. Besides, it can support 8 types thermocouple sensors (such as K, J, E, T, N, S, R, B), measuring -20degC to 1800degC with different sensor type suitable for the exact applications. HE700-800 series with Huato specialized Tespro software is easy to operate and quite convenient, widely applied in industrial production fields, food processing industry, pharmaceutical industry and research testing fields as well as other temperature monitoring applications.

1.1 Brief Instructions for Multi-channel Thermocouple Thermometer

(1) Buttons and instruments structure



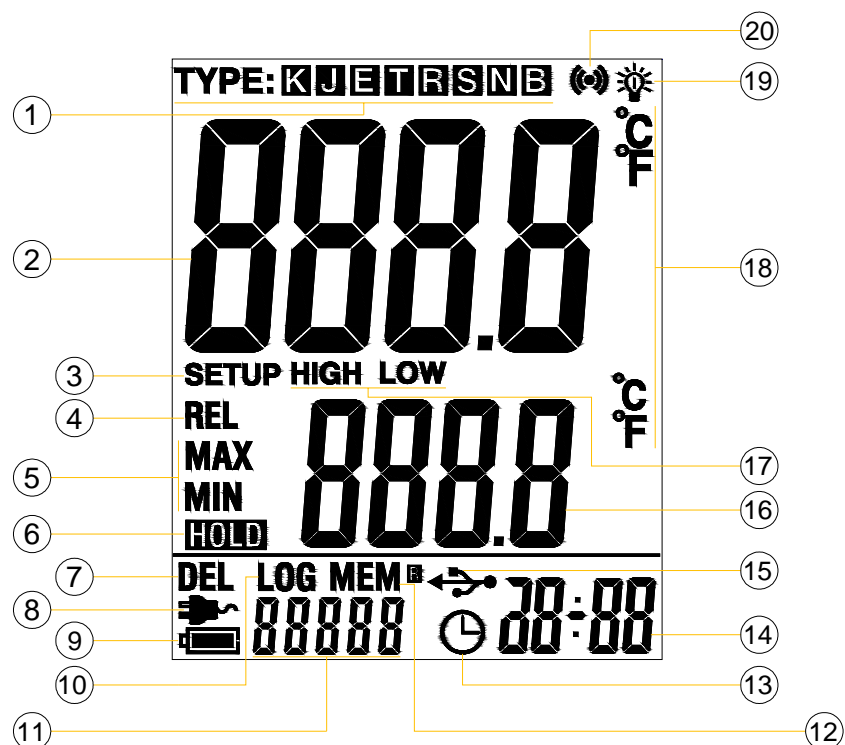
- | | |
|--|------------------------------------|
| ① LCD display | ⑨ Manual recording function button |
| ② Log button | ⑩ Model label |
| ③ Setup button | ⑪ USB port |
| ④ ON/OFF | ⑫ Hole for fixed frame |
| ⑤ OK button under the setup mode, and backlight button under normal working mode | ⑬ Battery cover |
| ⑥ Maximum and minimum checking buttons | ⑭ 701/801 cap (sensor port) |
| ⑦ Manual recording data checking button | ⑮ 702/802 cap (sensor port) |
| ⑧ The previous data checking button | ⑯ 704/804 cap (sensor port) |

1.2 Multi-channel Thermocouple Thermometers Model Number

Model	Temperature channel	Measuring accuracy	Auto-Recording (capacity)	Manual-recording (capacity)
HE701	1	$\pm 0.1\%$ ± 0.5	--	88
HE702	2	$\pm 0.1\%$ ± 0.5	--	88
HE704	4	$\pm 0.1\%$ ± 0.5	--	88
HE801	1	$\pm 0.1\%$ ± 0.5	36000	88
HE802	2	$\pm 0.1\%$ ± 0.5	36000	88
HE804	4	$\pm 0.1\%$ ± 0.5	36000	88

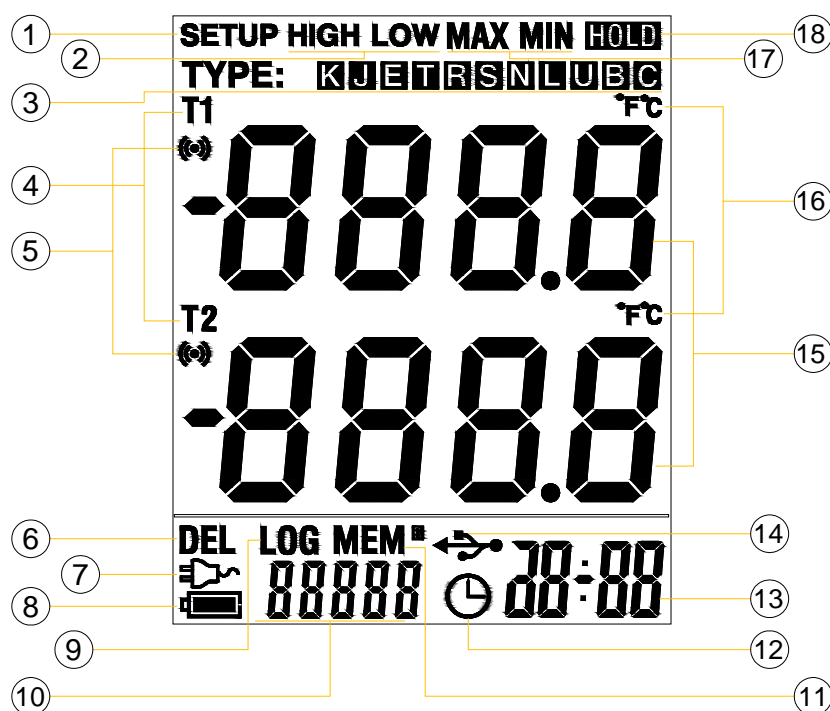
Notice: The accuracy on the above table is only the accuracy for thermometer itself. The precision in the practical applications has relation with the accuracy of thermocouple that customers adopt. Please avoid adopting inferior thermocouple plug in case of any i terminal damage to thermometers.

1.3 Single-channel LCD display instructions (HE701, HE801)



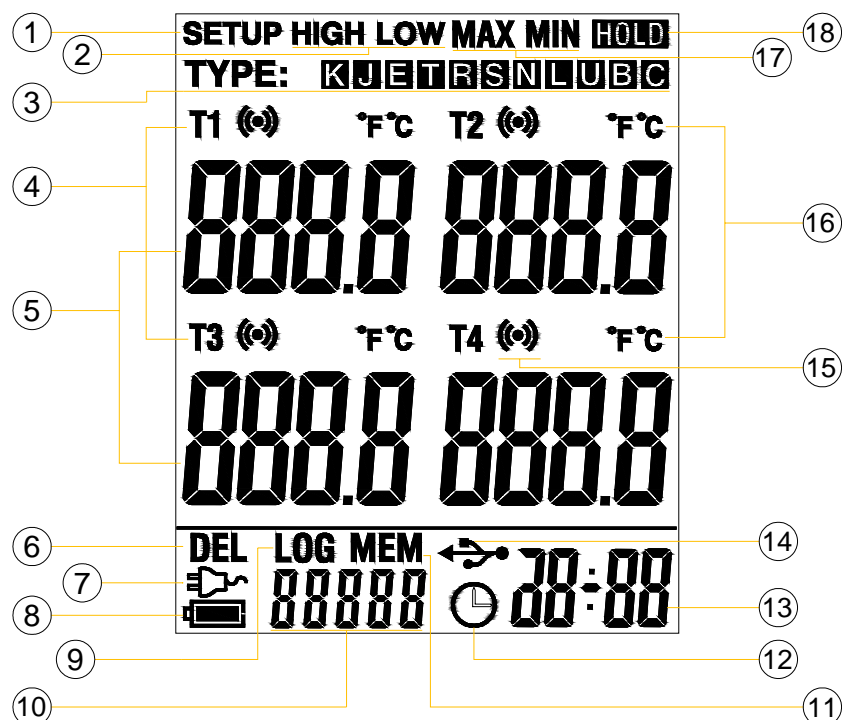
- 1 Sensor type symbol display area.
- 2 Temperature data display area
- 3 This symbol shows being the setup status
- 4 This symbol shows being the manual recording data checking status
- 5 This symbol shows being the maximum and minimum data checking status
- 6 This symbol shows being the holding fixed measuring data status
- 7 This symbols shows that data can be deleted
- 8 This symbol shows instrument is supported by external DC power
- 9 Battery status indication
- 10 This symbols shows being the logging status
- 11 Capacity for auto-recording and manual-recording data
- 12 This symbol shows being the manual-recording checking status
- 13 Clock symbol
- 14 Time display area
- 15 This symbol shows instruments being the connection status with PC.
- 16 Maximum and minimum data checking buttons
- 17 This symbol shows being the maximum or minimum data checking status
- 18 Symbol for temperature unit
- 19 This symbol shows being the backlight status
- 20 This symbol shows the setting limits are being exceeded

1.4 Two-channel LCD display instructions (HE702, HE802)



- | | |
|---|--|
| <p>① This symbol shows being the setup mode</p> <p>② This symbol shows being the maximum/minimum data checking status</p> <p>③ Sensor type symbol display area</p> <p>④ Symbol for channel 1 and channel 2</p> <p>⑤ This symbol shows that the setting limits for channel 1 or channel 2 are being exceeded</p> <p>⑥ This symbol shows manual-recording data can be deleted</p> <p>⑦ This symbol shows that the instrument is being supported by DC external power</p> <p>⑧ Battery status indication</p> <p>⑨ This symbol shows being the logging status</p> <p>⑩ Capacity for manual-recording or auto-recording data</p> | <p>⑪ This symbol shows being the manual-recording data checking status</p> <p>⑫ Symbol for clock</p> <p>⑬ Year/month-date/clock alternate display area</p> <p>⑭ This symbol shows that instrument is being connected with PC</p> <p>⑮ Display area for channel 1 and channel 2</p> <p>⑯ Symbols for temperature unit for channel 1 and channel 2</p> <p>⑰ This symbol shows being the maximum or minimum data checking status</p> <p>⑱ This symbol shows being the holding fixed measuring data status</p> |
|---|--|

1.5 Four-channel LCD display instructions (HE704, HE804)



① This symbol showing being the setup mode

② This symbol shows being the maximum or minimum data checking status

③ Sensor type symbol display area

④ T1,T2,T3,T4 for channel 1, channel 2, channel 3 and channel 4 respectively

⑤ Data symbol for channel 1, channel 2, channel 3 and channel 4

⑥ This symbol shows that manual-recording data can be deleted

⑦ This symbol shows that instrument is being connected with PC

⑧ Battery status indication

⑨ This symbol shows instrument is being the logging status

⑩ Capacity for auto-recording or manual-recording data

⑪ This symbol shows being the manual-recoding data checking status

⑫ Symbol for clock

⑬ Year/month-date/time alternate display area

⑭ This symbol shows that instrument is being connected with PC

















⑮ This symbol shows setting limits are being exceeded

⑯ Temperature unit for channel 1, channel 2, channel 3 and channel 4

⑰ This symbol shows being the maximum and minimum data checking status

⑱ This symbol shows being the holding fixed measuring data status

1.6 Instructions for buttons function

Buttons	Introduction for buttons operation
	Click to turn on the instrument and press long for 3 seconds to turn it off.
	Click to enter into the logging mode, click again to exit the logging mode.
	<p>Click to enter into the setup mode, click again to exit the current mode and save the settings.</p> <p>1、℃/ °F switching button, usually °C,   switch °C/ °F, °F lighting, OK to enter into the next setting mode</p> <p>2、SETUP DEL MEM : show DIS in the LCD corner means CAN'T,   switch, show En and press OK to delete the manual-recording data</p> <p>3、SETUP DEL LOG : show DIS in the LCD corner means CAN'T,   switch, show En and press OK to delete auto-recording data</p> <p>4、SETUP TYPE: lighting from K,   moving on one by one, OK key to confirm the sensor type.</p>
	<p>1) Setup switch button during the setup mode</p> <p>2) Backlight button during the normal working mode</p>
	<p>1) Direction button during the setup mode</p> <p>2) Maximum/minimum data checking button during the normal working mode</p>
	<p>1) Direction button during the setup mode</p> <p>2) Button for checking the previous manual-recording data during normal working status.</p>
	<p>1) Direction button during the setup mode</p> <p>2) Button for checking the manual-recording data during normal working status, total in 88 (capacity)</p>
	<p>1) Direction button during the setup mode</p> <p>2) Holding the fixed measuring data status during the normal working mode</p>

Chapter 2 Instructions for software operation

2.1 Quick Start

Follow the procedure below to quickly start using your thermometer data logger:

1. Connect the data logger to a free USB port on the computer.
2. Start Tespro software on the PC.
3. From the toolbar select Connect.
4. Then you can setup or download data, delete data from the logger.
5. Unplug the cable from the logger, and then the logger is in Standby mode. Press button LOG on the logger, then LOG displays on the screen and the logger begins to record.
6. Press LOG/STD for about five seconds, the logger will be power on (LOG mode) or off (OFF mode).

Note: The logger has three modes:

1. LOG: In the mode, the logger samples and records data timely.
2. Standby: In the mode, the logger stops to sample and record, but the LCD display is on.
3. OFF: In the mode, the logger stops to sample and record, and the LCD display is off. Tespro cannot connect to the logger also.

2.2 Connecting the Thermometer Data Logger to PC

To connect the thermometer data logger to the computer, follow these steps:

1. Connect the USB cable to the logger and to a free USB port on the computer.
2. If you are connecting the logger to the PC for the first time, the logger will automatically be recognized and installed on the computer.
3. Start Tespro software.




4. Click the button **Connect** from the toolbar, then Tespro connects to the logger.


If more than one logger is connected to your computer at the same time, the program will ask you to choose COM port manually.

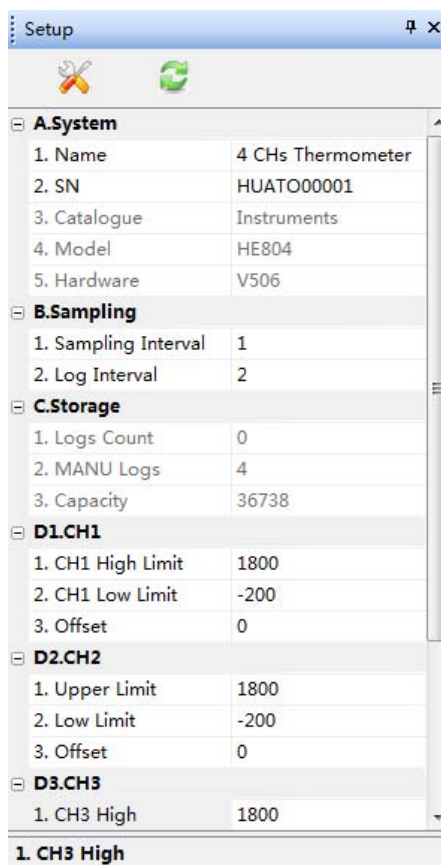
Note: The windows operating system can not handle USB devices being unplugged and plugged back too fast. When unplugging the logger, wait for about 5 seconds before plugging it in again. If you unplug and plug back a device too quickly, the computer may stop recognizing any USB devices on that port. If this happens you will have to restart the computer. This is a windows USB problem and is not related to Tespro.



2.3 Setup the attributes of the thermometer data logger


To setup the attributes of the thermometer data logger according to different requirements before the

normal working, click the  **Setup** button on the toolbar, or select Setup from the menu.

-  : Get current setup information from the thermometer data logger. Click this button, and then the old setup information is shown below.



Setup	
 	
A.System	
1. Name	4 CHs Thermometer
2. SN	HUATO00001
3. Catalogue	Instruments
4. Model	HE804
5. Hardware	V506
B.Sampling	
1. Sampling Interval	1
2. Log Interval	2
C.Storage	
1. Logs Count	0
2. MANU Logs	4
3. Capacity	36738
D1.CH1	
1. CH1 High Limit	1800
2. CH1 Low Limit	-200
3. Offset	0
D2.CH2	
1. Upper Limit	1800
2. Low Limit	-200
3. Offset	0
D3.CH3	
1. CH3 High	1800
1. CH3 High	

-  : Synchronize the new setup information to the logger. After changing the configuration, **do not forget** clicking this button to make sure that the new configuration is wrote to the logger. **The PC time will be synchronized to the logger as well.**
- Name: Gives a name to the logger.
- SN: Every logger has a SN with 10 characters. The length must be 10.
- Sampling Interval: The interval of sampling.
- LOG Intervals(s): The interval of recording.
- Logs Count: The count of the logs that the logger has recorded.
- MANU Count: The records in the memory. The maximum capacity is 88 readings. It will be recorded when manually press the “MEM” button.
- Capacity: The total capacity of the logger storage. One reading includes time and three channels' data.
- **Calibrate the logger:** The logger is factory calibrated to an accuracy given in the device specifications. However, there may be times when you wish to adjust the calibration of your logger. Tespro provides you with the ability to perform a single point offset calibration. This calibration can be used to increase the accuracy of the logger for a restricted data range.

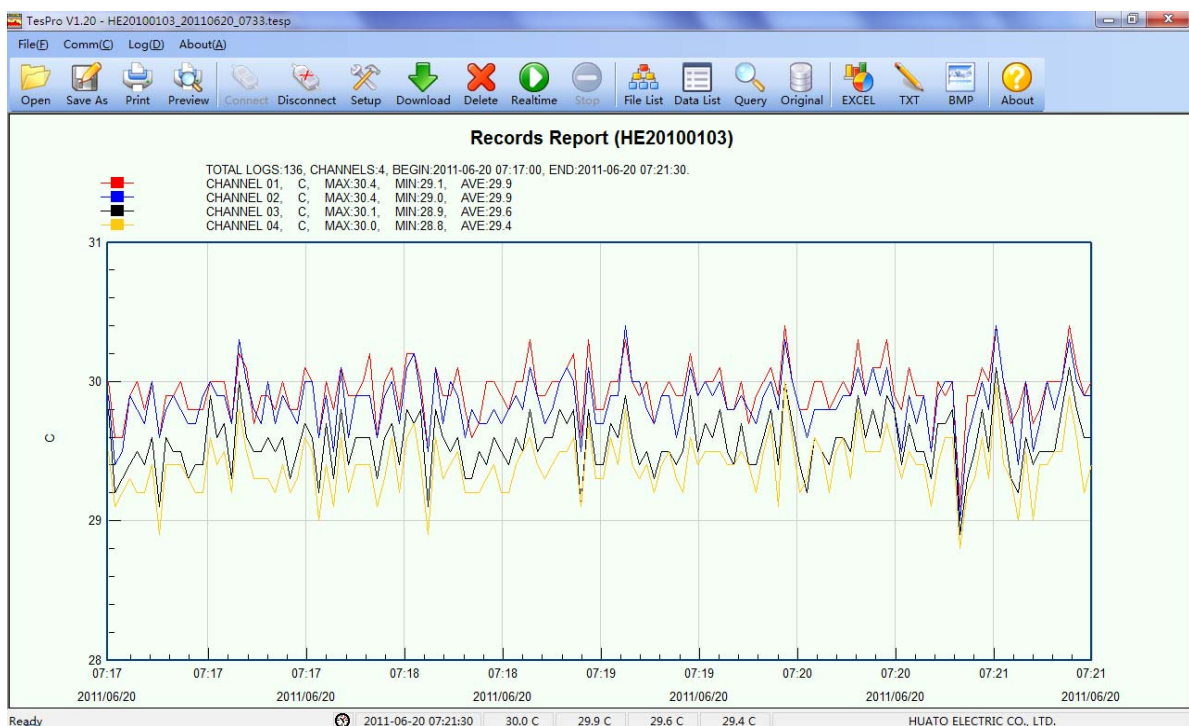
2.4 Download data from the thermometer data logger.



To get the recorded logs from the logger, connect the logger to your computer and click the [Download](#) button on the toolbar. Once the data is transferred from the logger to the PC, the data graph and data listing windows will be displayed.

The graph display will be blank if there are not any logs.

Note: Push left mouse button down, and then move to select a rectangle area, when the left mouse button is up, the graph will be redraw with the data in the selected rectangle area. Click right button, then the graph will be redrawing with all the data in the logs file.



2.5 Delete all the logs from the thermometer data logger.



To erase all data from the logger, connect to the logger, and then click the [Delete](#) button on the toolbar.

2.6 Data Listing Window



Click **Data List** button on the toolbar, and then the data listing window is shown below.




Data List							✕
SN	DATE	TIME	1st	2nd	3rd	4th	
1	2011-06-20	07:17:00	30.0	29.9	29.8	29.5	
2	2011-06-20	07:17:02	29.6	29.4	29.2	29.1	
3	2011-06-20	07:17:04	29.6	29.5	29.3	29.2	
4	2011-06-20	07:17:06	29.9	29.9	29.4	29.3	
5	2011-06-20	07:17:08	30.0	29.8	29.5	29.2	
6	2011-06-20	07:17:10	29.8	29.7	29.4	29.2	
7	2011-06-20	07:17:12	30.0	30.0	29.6	29.4	
8	2011-06-20	07:17:14	29.6	29.6	29.1	28.9	
9	2011-06-20	07:17:16	29.9	29.8	29.6	29.4	
10	2011-06-20	07:17:18	29.9	29.9	29.5	29.4	
11	2011-06-20	07:17:20	30.0	29.8	29.5	29.4	
12	2011-06-20	07:17:22	29.8	29.7	29.3	29.3	
13	2011-06-20	07:17:24	29.8	29.7	29.4	29.2	
14	2011-06-20	07:17:26	29.8	29.9	29.4	29.2	
15	2011-06-20	07:17:28	30.0	30.0	29.9	29.6	
16	2011-06-20	07:17:30	30.0	29.9	29.6	29.4	
17	2011-06-20	07:17:32	30.0	29.9	29.7	29.5	
18	2011-06-20	07:17:34	29.7	29.7	29.3	29.2	
19	2011-06-20	07:17:36	30.2	30.3	30.0	29.8	
20	2011-06-20	07:17:38	30.1	30.0	29.6	29.5	
21	2011-06-20	07:17:40	29.7	29.8	29.5	29.3	
22	2011-06-20	07:17:42	29.9	29.7	29.5	29.3	
23	2011-06-20	07:17:44	29.9	30.0	29.6	29.3	
24	2011-06-20	07:17:46	29.8	29.7	29.5	29.2	
25	2011-06-20	07:17:48	30.0	29.9	29.6	29.4	
26	2011-06-20	07:17:50	29.8	29.8	29.3	29.2	
27	2011-06-20	07:17:52	29.8	29.7	29.5	29.3	
28	2011-06-20	07:17:54	30.1	30.0	29.7	29.6	
29	2011-06-20	07:17:56	30.0	30.0	29.6	29.5	
30	2011-06-20	07:17:58	29.6	29.6	29.2	29.0	
31	2011-06-20	07:18:00	30.0	29.9	29.7	29.4	
32	2011-06-20	07:18:02	29.8	29.5	29.3	29.1	

The data pane lists the data samples collected by the logging device.

The column width of each column is adjustable by using the left mouse button and dragging the column to the desired width.

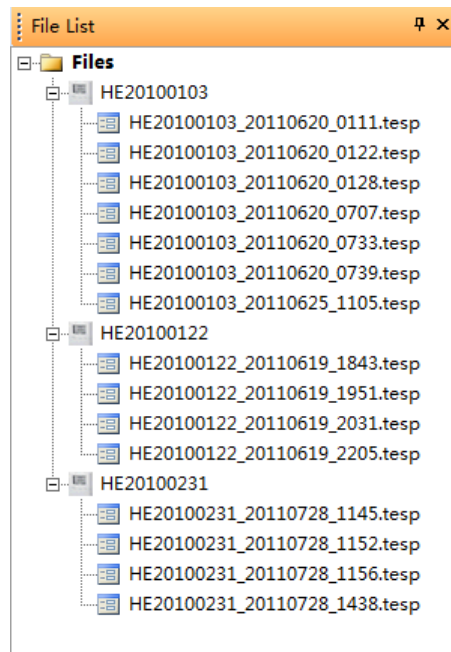
2.7 Exporting logs from thermometer data logger

You can use Tespro to export sample data to a text file or to a Microsoft Excel file or BMP file.

-  **EXCEL**: Export sample data to an Excel file.
-  **TXT**: Export sample data to a text file.
-  **BMP**: Export graph to a BMP file.

2.8 File List

The file list pane lists all the files in the directory Logfiles which is located in the installed directory of Tespro.



- Double click left mouse button, then the selected file is opened.
- Click right mouse button, a popup menu is shown as below, you can rename or delete or log file.

