TENMARS

Thermometer

TM-80N TM-82N
TM-83N TM-84N

Users Manual

CE

HB2TM80N0000

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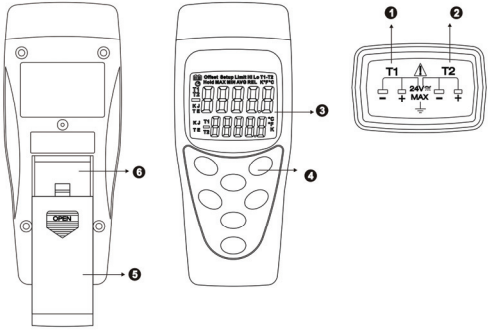
1 Introduction

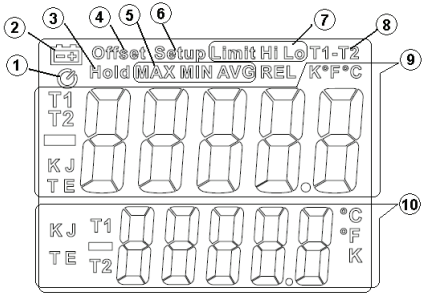
Tenmars TM-8X series thermometer is a digital thermometer use for thermocouple type. Build in microprocessor and high resolution analog to digital converter chip. The thermocouple probe has fast response, measure wide ranges, easy change shape and popular prices. This popular used to industry and homes.

2 Components



1. Thermocouple T1 input.
2. Thermocouple T2 input. (TM-82N/84N)
3. Display
4. Function keys
5. Battery cover
6. Battery placement

3 Display Element



1. Auto power off symbol indication.
2. Lower battery indication.
3. Freeze display and stop update.
4. Offset changed (≠0.0)。
5. Enable maximum, minimum and average record, and current mode indication.
6. Enter the SETUP mode symbol.
7. Symbol of Limit is ALARM function enabled.
   Symbol of Hi Lo is state of alarm detonated.
8. T1 subtract to T2 function enabled.
9. Primary display and state of channels, temperature unit and thermocouple type.
10. Secondary display and state of channels, temperature unit and thermocouple type.

4 Buttons Introduction

Temperature Unit Select.
Press and hold, Alarm function enable or disable.

Freeze display and update function enable or disable.
Press and hold, auto power off function enable or disable.
In the setup mode, “left” select function. (TM-83N/84N)

Thermocouple Type Select.
In the setup mode, “up” select function.

MAX, MIN and AVG record.
Press and hold, enter setup mode.
In the setup mode, “ENTER” function.

Deducting relative reading function enable or disable.
Press and hold, enter offset setup mode
In the setup mode, “right” select function. (TM-83N/84N)

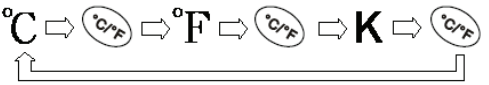
Power turn the on or off
In the setup mode, “down” select function.

T1 minus T2 Temperature function enable or disable.
Press and hold, T1 with T2 display location swap.

5 Instruction for Use

- **Temperature Unit Select (°C/°F/K):**

User can change temp unit to between Celsius(°C), Fahrenheit(°F), and Kelvin(K).Press °C/°F key to change, follow the figure circles.



(**K** only TM-83N/84N)

The device will auto save unit before shutdown, being as default for next power on.

- **MAX, MIN and AVG record :**

This function record maximum, minimum, and average. User can select viewing.

Press MAX MIN key to start record MAX, MIN, and AVG. Show the max reading to display. Press MAX MIN key to switch viewing between MAX, MIN, and AVG. Follow the figure circles.

Press and hold MAX MIN key to disable this function.

The primary display showed current channel reading of

MAX、MIN and AVG. The secondary display showed current channel reading of real temperature.
If want to show another channel reading of MAX, MIN, and AVG. Please press and hold T1-T2 key to swap T1 with T2. (TM-82N/84N)

If device auto power off and this function is enable, device will auto save record value, and showed for next power on.

- **Thermocouple Type Select :**

User must choice correctness thermocouple type. If choice the wrong type will caused inaccuracy temperature reading.
Press TYPE key to switch type between K, J, T, and E. Follow the figure circles.

(**T**、**E** only TM-83/84)

If want to setting T2 type, Please press and hold T1-T2 key to swap T2 being primary display.(TM-82N/84N)

The device will auto save type before shutdown, being as default for next power on.

- **Freeze Display and Stop Update (HOLD):**

User can press HOLD key to freeze display and stop

update temperature read. Press 

key again to unfreeze.
When the HOLD function is enable, all function keys was useless except for power key.

- **Deducting Relative Reading Function (REL):**

User can press 

key to show deducting relative reading. This function provides display becomes"0". Save the previous reading as the standard relative reading.

For example:

If the reading display is 25°C, press 

key to have a reading of "0" °C. Save the reading of 25°C as the standard relative reading, if the temperature up to 30°C, the display will be 30.0-25.0=5°C, if the temperature down to 20°C the display will be 25.0-30.0= -5°C.

Press 

key again to disable function.

The primary display showed current channel reading of REL. The secondary display showed current channel reading of real temperature.
If want to show another channel reading of REL. Please press and hold 

key to swap T1 with T2. (TM-82N/84N)

- **T1 minus T2 Temperature (T1-T2):**

This function provides display T1 minus T2 temperature value.

User press T1-T2 key to display T1 minus T2 temperature value.

Press T1-T2 key again to disable this function.

The primary display showed T1-T2 temperature. The secondary display showed current channel reading of real temperature.

If secondary display want to show another channel reading of real temperature. Please press and hold T1-T2 key to swap T1 with T2. (TM-82N/84N)

- **T1 with T2 Display Location Swap : (TM-82N/84N)**

User can swap display location of T1 with T2.

Press and hold T1-T2 key to swap display location.

- **Auto Power Off Function :**

The device will auto power off if there is no action for 15 minutes.

If want to disable or enable the auto power off function,

Please press and hold HOLD (Auto-off) key.

- **Power On/Off :**

Press ⏻ key to turn on or turn off the power.

*In the SETUP mode, can't turn off the power, Please leave the SETUP mode.
*If can't turn on the power, please check battery connect normal and power enough.

- **Changing the Offset :**

  User can adjust the offset to compensate for the error of specific thermocouple.

  1. Press and hold REL (OFFSET) key to setting offset.

  2. Press TYPE ▲ and ▼ ⏻ key to increase or decrease offset value.

  The allowable adjustment range is ±5℃, ±5K, and ±9°F. once 0.1℃/°F/K.

  3. Press MAX MIN (SET) key to save and leave setup mode.

  If want to adjust another channel the offset, please press T1-T2 T1=T2 key to setting, and repeat step 2,3. (TM-82N/84N)

  The device will auto save offset value before shutdown, being as default for next power on.

  *When you change the thermocouple probe or don't need offset compensate, please adjust value to be 0.0℃.

- **Alarm Function :(TM-83N/84N only)**

User can setting a Hi and Lo limit, when temperature read over limit range, the buzzer will be sounded until the reading come back in the limit range or disable this function.

Press and hold °C/°F (ALARM) key to turn the alarm enable or disable.

- **Setting Limit Range for Alarm: (TM-83N/84N only)**

User can enter setup mode to set limit hi and lo for alarm function.

1. Press and hold MAX/MIN (Limit) key to set T1 Hi

2. Press up TYPE ▲ and down ▼ ① key to increase or decrease temperature.
   Press left HOLD ◀ and right ▶ REL key to select digit and negative symbol.

3. Press MAX/MIN (SET) Key to save setting value. Into set T1 Lo.

4. Repeat step 2 to set T1 Lo temperature.

5. Press MAX/MIN (SET) Key to save setting value and leave setup mode. (TM-82N/84N into the set T2 Hi)

6. Repeat step 2 to set T2 Hi temperature.

7. Press MAX/MIN (SET) Key to save setting value.

Into set T2 Lo.

8. Repeat step 2 to set T2 Lo temperature.

9. Press 

(SET) Key to save setting value and leave setup mode.

6 Specification

- **Display:** dual 5 digit LCD
- **Temp Unit:** ℃、℉、K(TM-83N//84N)
- **Resolution:** 0.1
- **Measurement Range:**

K-TYPE:-200℃~1370℃(-328℉~2498℉)

J-TYPE:-200℃~1050℃(-328℉~1922℉)

(TM-83N/84N only)

T-TYPE:-250℃~400℃(-418℉~752℉)

E-TYPE:-210℃~1000℃(-346℉~1832℉)

- **Accuracy:** (at 23±5℃ Relative humidity<80%RH)

±(0.05% reading+0.7℃)

±(0.05% reading+1.4℉)

0.01% of reading + 0.03°C per °C

(0.01% of reading+ 0.06°F per °F)

outside the specified +18°C to+28°C(+64°F to+82°F)range

- **Overload index:**

"OL" stands for positive temperature

"-OL" stands for negative temperature

- **Input protection:** Maximum 24V DC or AC
- **Battery:** 9V (NEDA 1604、IEC 6F22 或 JIS 006P)
- **Battery Life:** Approx. 200 hours。
- **Shutdown Rated Power:** 9uW
- **Operate Rated Power:** 26mW
- **Operating temperature & humidity:**

5℃to 40℃,below 80% RH.

- **Storage temperature & humidity:**

-10℃ to 60℃, below 70%.

- **Weight:** About 170g.
- **Dimensions:** 130(L)*56(W)*38(H)mm.

Accessories:

User's manual, 9V battery, K Type thermocouple.

7 Battery Replacement

WARNING

If the symbol " " appears on the LCD, please replace the battery immediately

- Turn off the instrument.
- Remove the battery cover
- Replace the battery.
- Install the battery cover.

8 Safety Precaution

- For cleaning the instrument use a soft dry cloth. Never use a wet cloth, solvents or water, etc..
- Operation Altitude: Up to 2000M.

9 End of Life

Caution: this symbol indicates that equipment and its accessories shall be subject to a separate collection and correct disposal

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