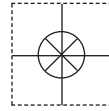


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User's Guide



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

Introduction:

HH-127 is a hand held digital thermometer which uses a microprocessor.
The HH-127 has USB and RS232 ports.

Accessories:

DC-1.5V/4 AAA batteries

Rubber boot

K-type thermocouple x 2 pcs

Users manual

PC on-line accessories:


Temp Monitor software users manual

IrDA-USB and IrDA-RE232 transmission cable

Temp Monitor software CD

 **Warning**

To avoid electrical shock or personal injury, follow these guidelines:

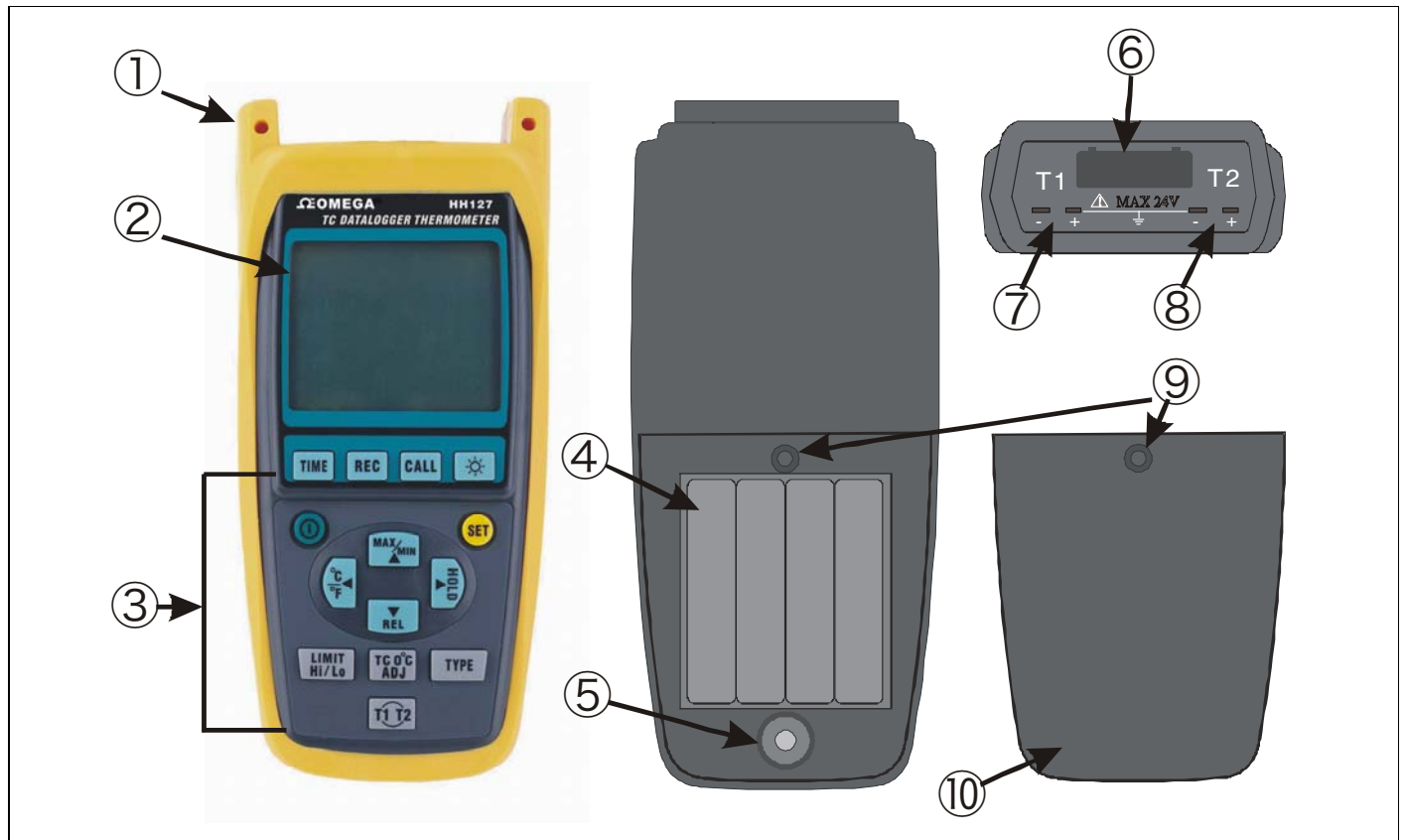
- Before using the thermometer inspect the case. Do not use the thermometer if it appears damaged. Look for cracks or missing plastic. Pay particular attention to the insulation around the connectors.
- Disconnect the thermocouple from the thermometer before opening the case.
- When the battery mark displays (), or you hear a short buzzing sound, please replace the battery immediately.
- Do not operate the thermometer around explosive gas, vapor, or dust.
- Do not apply more than the rated voltage, as marked on the thermometer, either between the thermocouple, or between any thermocouple and earth ground.

Caution

A Caution identifies conditions and actions that may damage the meter or the equipment under test.

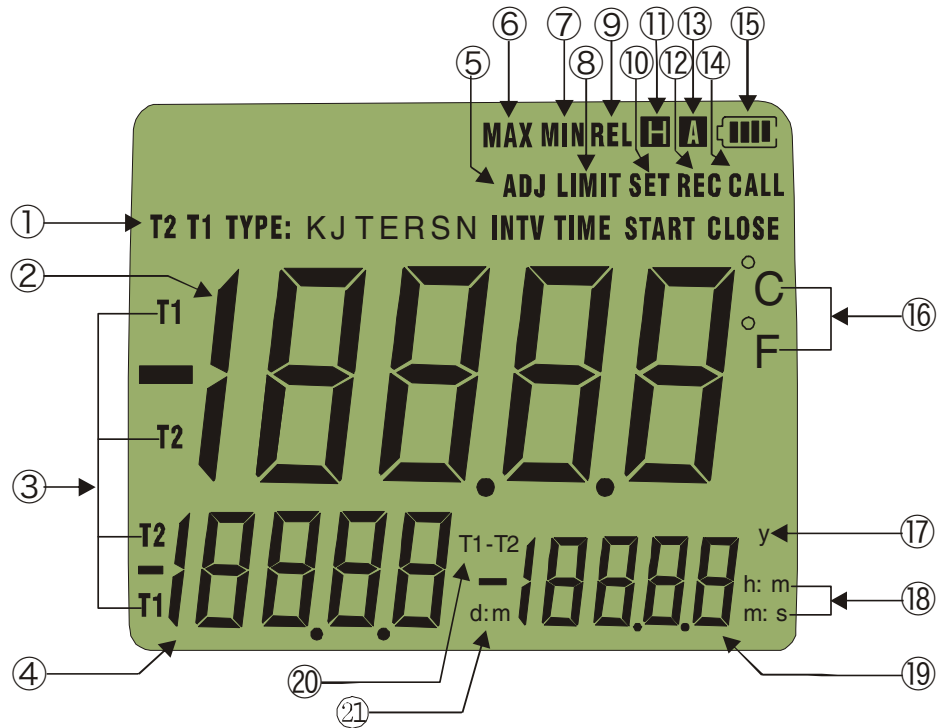
- Use the proper thermocouples, function, and range for your thermometer.
- Do not attempt to recharge the batteries.
- To prevent explosion, do not throw batteries into a fire.
- Follow local laws or regulations when disposing of batteries.
- Match the + and - polarities of the battery with the battery case.

Names of parts:



①	Housing	⑥	IrDA output port
②	LCD display	⑦	T1- thermocouple input
③	Function control keys	⑧	T2- thermocouple input
④	Battery seat	⑨	Screw hole
⑤	Reset key	⑩	Battery cover

Display Elements:




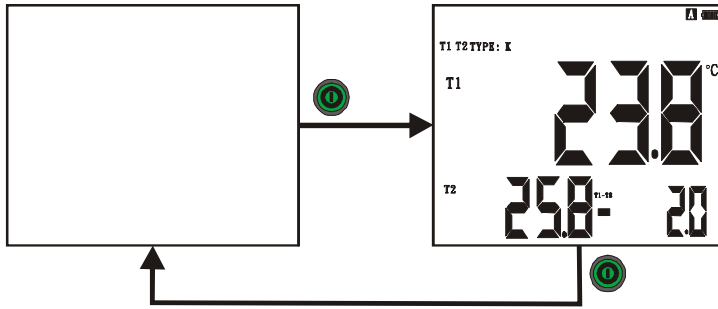
①	Choose T1.T2 thermocouple types	⑫	Carry out record function
②	Main display	⑬	20 minutes auto power off
③	Main, secondary display reading is T1 or T2	⑭	Examine recorded reading
④	Secondary display	⑮	Five sections of battery power instruction
⑤	Carry out TC- 0°C calibration function	⑯	Temperature unit
⑥	Main, secondary display maximum reading	⑰	Main display shows time's "year"
⑦	Main, secondary display minimum reading	⑱	Third display shows time's "hour:minute", or "minute:second"
⑧	Main display carry out alarm function	⑲	Third display
⑨	Main display carry out relative reading , third display shows relative reference reading	⑳	Third display shows "T1-T2" reading
⑩	Carry out set function	㉑	Secondary display shows time's "day", "month"
⑪	Hold display reading		

Battery power indicator and replacement:


- The battery power is expressed by five sections of batteries marks. ()
- When the battery mark shows () and you hear a short buzzing sound, this indicates the battery power is weak, please immediately close the unit and replace with 4 AAA batteries to ensure the measuring reading is accurate.
- When battery power is lower than normal operation, this will automatically stop the thermometer operation, and the main display will show BATT and the third display will show LO. Please immediately turn off the unit and replace the 4 AAA batteries.
- To replace the batteries please use a screwdriver to open battery cover.

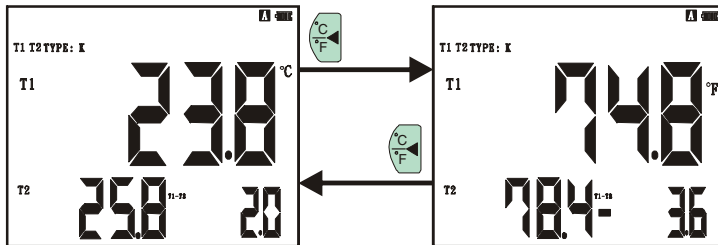
Keys:


 **Power key:** turn on/off thermometer. When not canceling auto power off function, after 20 minutes the meter will auto power off. Initial temperature unit is (°C), when you power on meter next it will keep the last power off state.

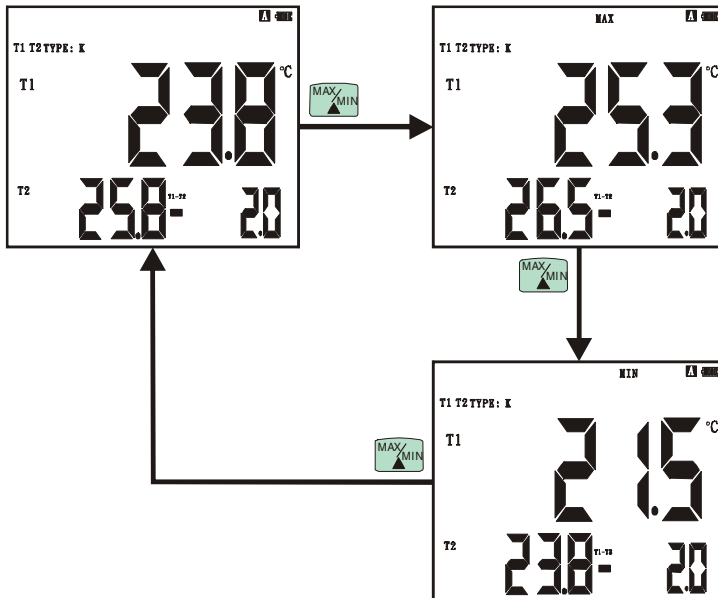


dual inputs: secondary display shows T2 measuring value and third display shows T1-T2 value.

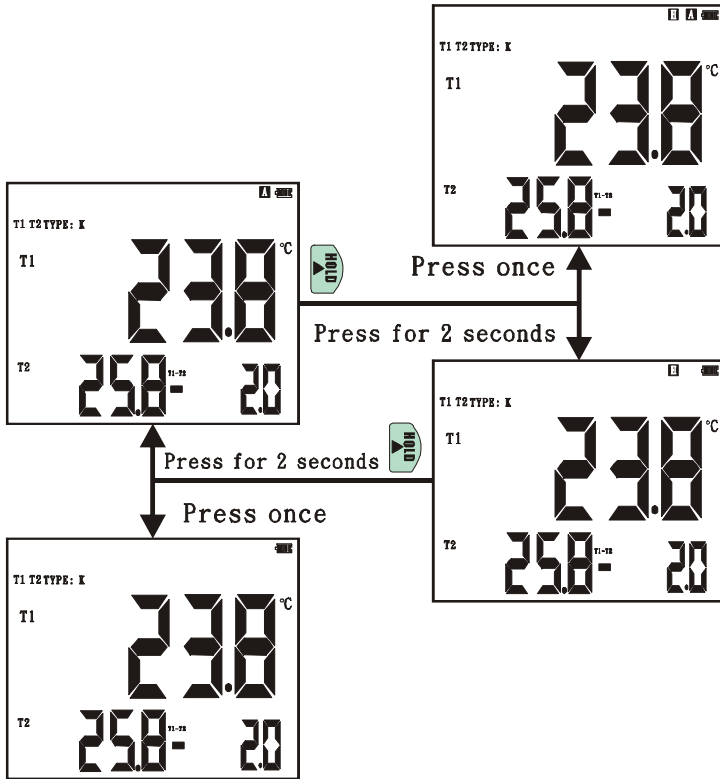
 **Temperature unit key:** Choose temperature unit to be Centigrade (°C) or Fahrenheit (°F).



 **Maximum/minimum key:** Main, secondary display show (T1, T2) maximum/minimum value at same time, third display shows (T1- T2) real time readings.



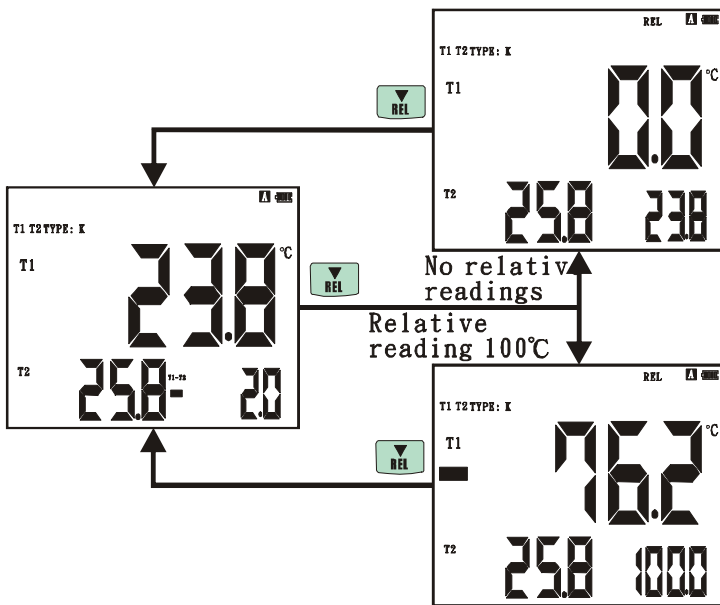
HOLD *Hold readings key:* Hold LCD display readings.



Press once: Cancels hold readings function.

Press for 2 seconds: Cancels hold readings function and cancels auto power off function.

REL *Relative readings key:* Main display shows (T1 or T2 readings - relative readings), third display shows relative readings.

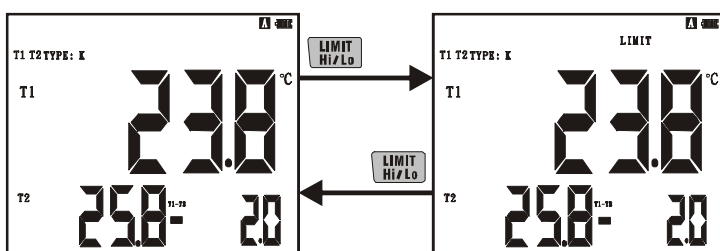


When not setting up relative readings: When pushing **REL** key the main display shows (T1 or T2) readings as the relative readings. Third display is the stored relative value.

When setting up relative readings: Pushing the **REL** key, the third display shows set relative reading.

Note: Set up operation for relative readings, please consult the explanation for setting up relative readings on page 11.

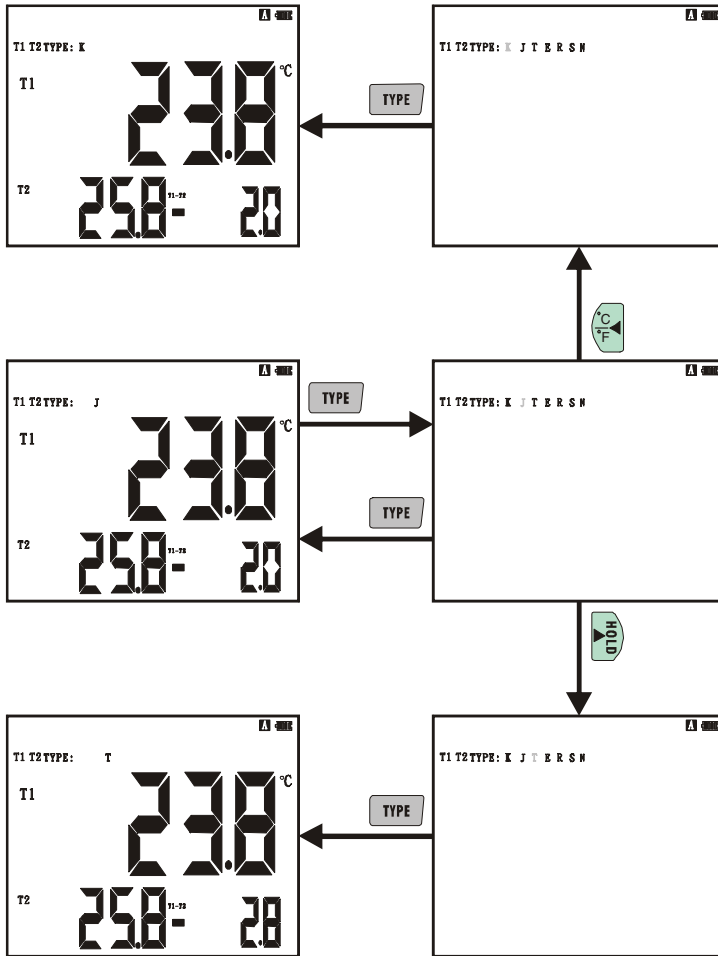
LIMIT Hi/Lo *Alarm function key:* Main display shows (T1 or T2) reading. If (T1 or T2) are greater than or





smaller than set up critical high value or low value of alarm, the buzzer will send out alarm sound continuously.

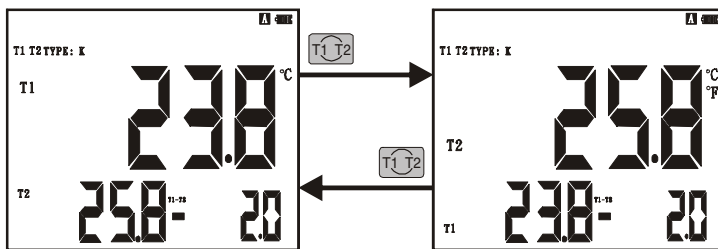
Note: Set up operation of alarm limit value, please consult the explanation for setting up alarm critical value on page 12.

TYPE Choose types key of thermocouple: To choose types of thermocouple.

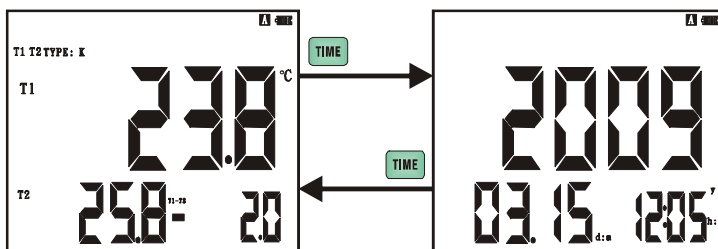


Press **TYPE** button.
 -> Press to move right one -figure that thermocouple types chosen.
 -> Press to move left one -figure that thermocouple types chosen.
 Press **TYPE** to enter.

T1 T2 T1, T2 exchange key : Main, secondary displays are exchanged (T1, T2) measurement readings.

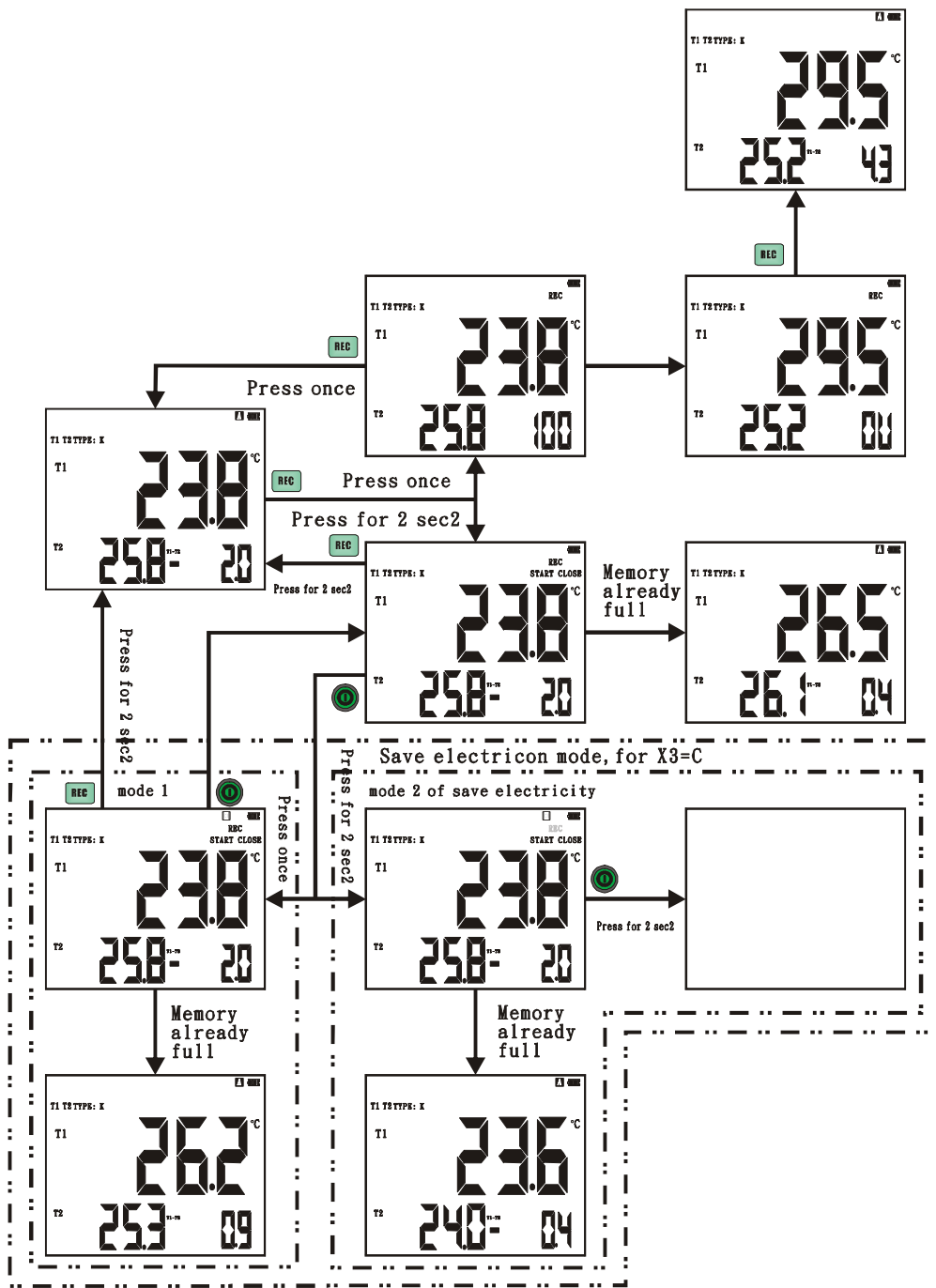


TIME Look over key of the perpetual calendar: Main display shows year, secondary display shows month, third display shows hour: minute.



REC *The data record key:* The data record is divided into real time recording and scheduled recording on page 13. Set up the recording interval time from instructions on page 16.

To start recording in real time press the **REC** button. Data logging starts at the interval set quantity of data points appears in the third display. To stop recording press the **REC** button. Review logged data pen instructions on page 9.



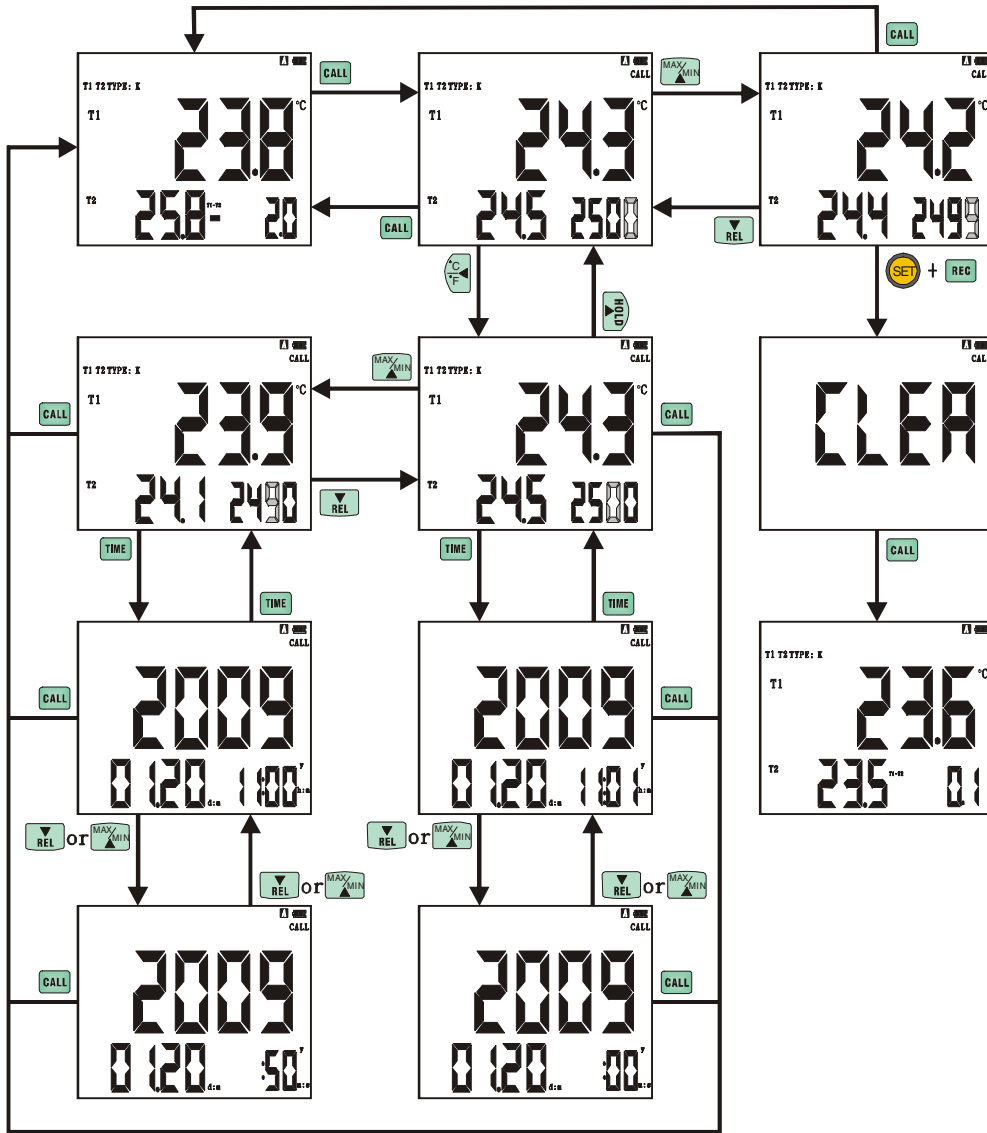
When in the scheduled record mode the following electricity settings are available.

Mode to save electricity is under order setting record: Need to set up (INTV) interval time ≥ 10 seconds. Can increase the service time of order setting record.

press **power key once** > Enter mode 1 of save electricity, symbol **REC** will glimmer, MCU will enter the sleep state, will start MCU when the measurement recorded. Press **power key** again finishes mode of save electricity 1.

press **power key for 2 seconds** > Enter mode 2 of save electricity, symbol **REC** and **REC** will glimmer, MCU will enter the sleep state and close the peripheral drive circuit, will start MCU and drive circuit when wanting to measurement record. If unable to finish the function of order setting record under mode of save electricity 2, press **power key 2 seconds** to finish order setting record function.

Press **CALL** button to review recorded data: Main, secondary display shows recorded data.



Record data on (T1, T2), third display shows the log of recorded data, if it shows OU the memory is already full.

MAX/MIN > press once to look over each logged data, press and hold to look over the recorded data forward fast.

REL > press once to look over each logged data, press and hold to look over the recorded data backwards fast.

← > Press to move left one -figure that adjusted.

→ > Press to move right one -figure that adjusted.

TIME > Press once to look over record time that the record loggers, main display shows year, secondary display shows month, date, third display shows hour: minute. Press **MAX/MIN** or **REL** key each time at this moment, can circulate and change third display shows hour: minute or: second.

SET + REC > Press **SET** key first and then press **REC** key, carry out clear memory function, press **CALL** key again, get back to measuring state.

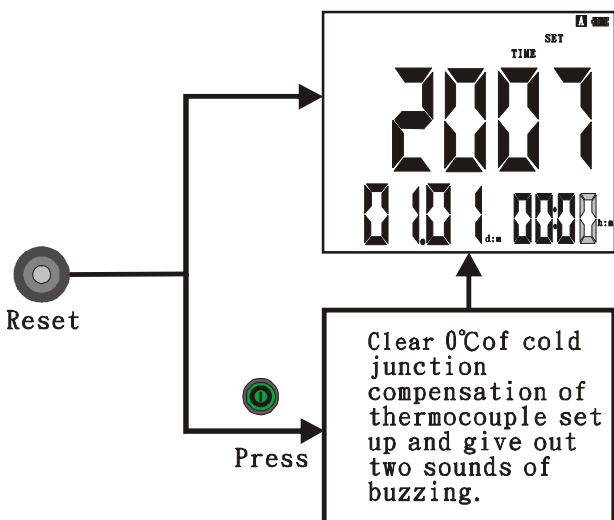
☀ **Back light:** Open/close LCD back light, will close automatically after opening one minute.

⊖ **Function key of reset:** Take a cross screwdriver, unlock after pressing Reset key under the battery cover, the system will produce reset movement.

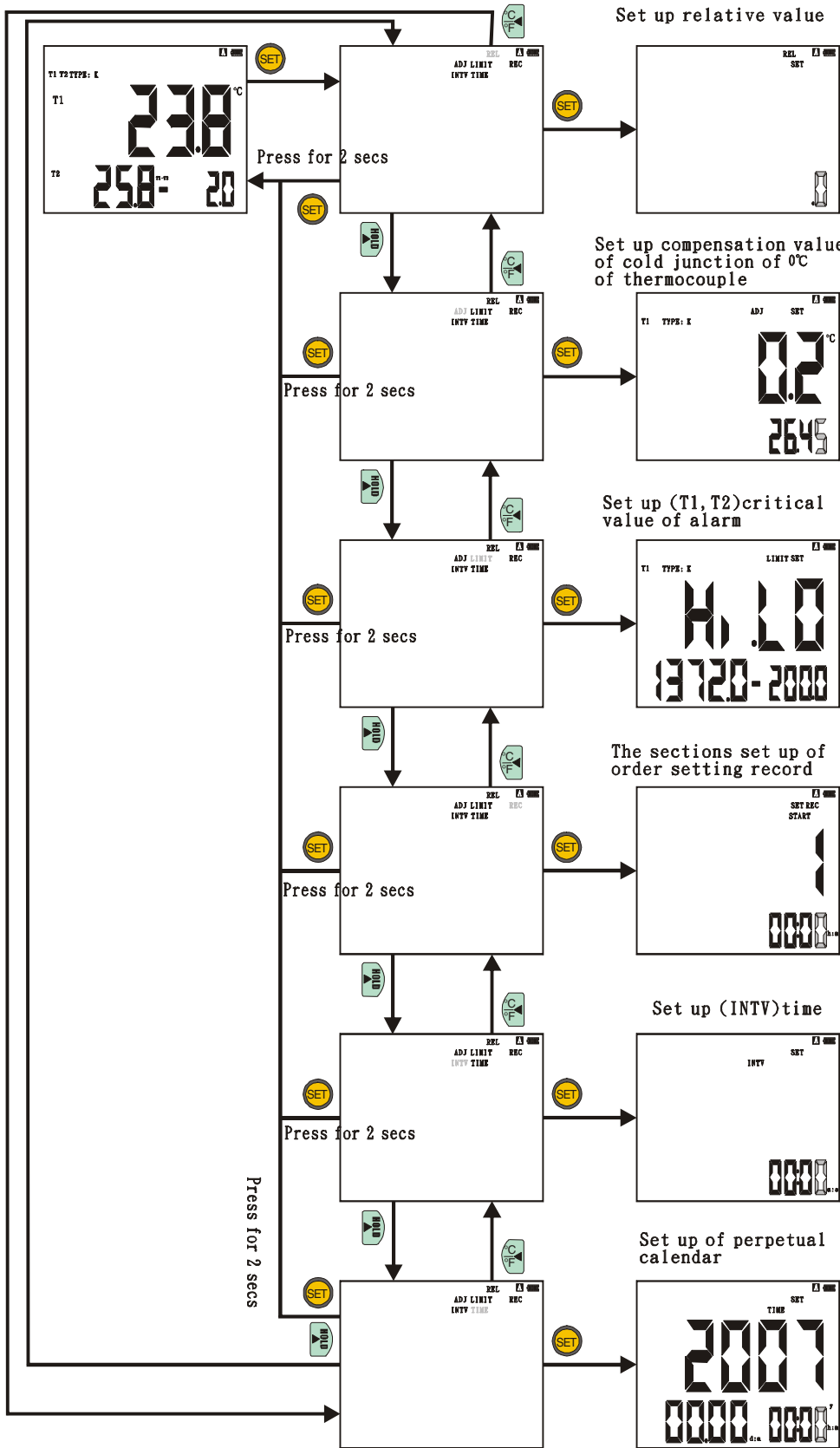
No press **⊖** **power key:** The system will be produced reset. except 0°C of cold junction compensation of the thermocouple that set up, will all resume for the initial state and enter and set up the function of the perpetual calendar.

Press **⊖** **power key:** The system is produced reset, clear 0°C of cold junction compensation of the thermocouple set up and give out two sounds of buzzing, resume for the initial state and enter and set up the function of the perpetual calendar.

Note: Set up operation method of perpetual calendar, please consult set up the perpetual calendar explanation.



SET *Set up the options function key:* To enter the choice of the set up function required, carry out the set up function.



Set up relative value

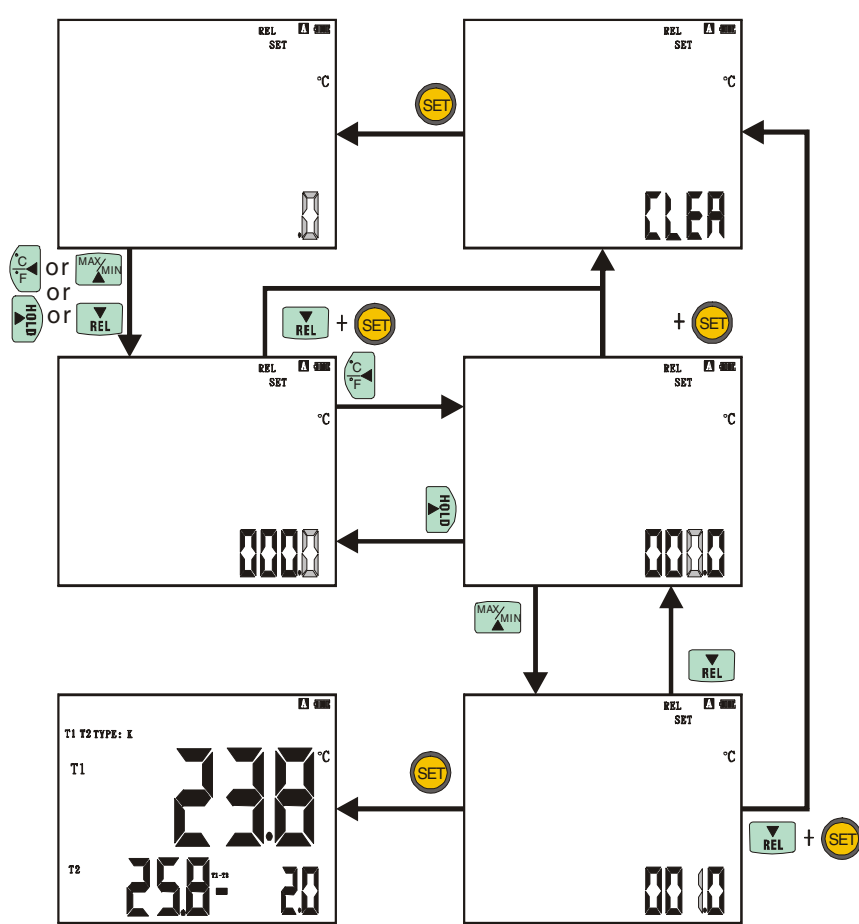
HOLD > Press once to move right one-figure of the set up function chosen.

TEMP > Press once to move left one-figure of the set up function chosen.

Press SET once: Confirms selection of the chosen function.

Press for 2 seconds: Leaves set up function.

Set up relative value: When setting up relative value the third display will show 0 at beginning of set up. Press



SET and highlight REL, then use MAX/MIN, REL, °C/°F, HOLD, keys to select value then press SET.

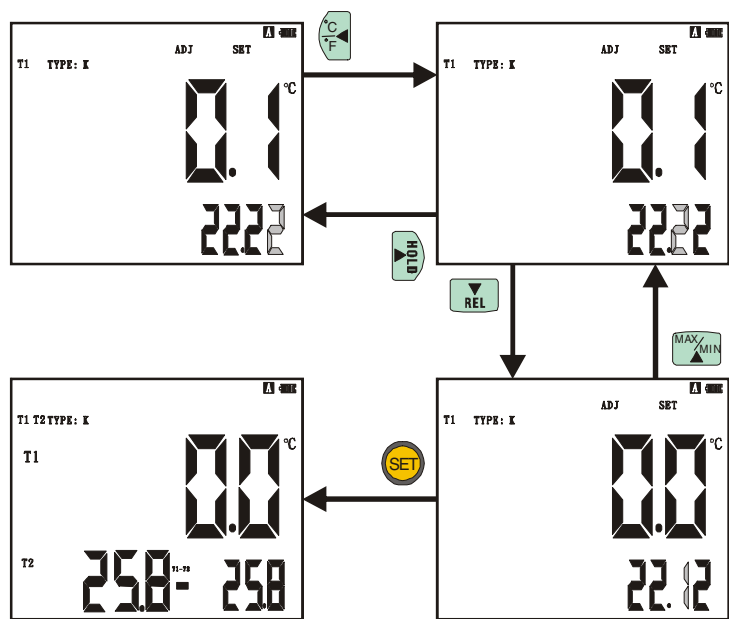
Set up range is limited to the highest and lowest temperature range that each thermocouple can be measured. Adjust to the set up value that you want then press SET key to finish set up.

Can set up the range in every type thermocouple:

- K-TYPE : -200°C to 1372°C
(-328°F to 2501°F)
- J-TYPE : -210°C to 1200°C
(-346°F to 2192°F)
- T-TYPE : -250°C to 400°C
(-418°F to 752°F)
- E-TYPE : -210°C to 1000°C
(-346°F to 1832°F)
- R-S-TYPE : 0°C to 1767°C
(-32°F to 3212°F)
- N-TYPE : -150°C to 1300°C
(-238°F to 2372°F)

HOLD Press to move right one-figure that adjusted. °C/°F Press to move left one-figure that adjusted when in Rel value set mode. Press REL key then press SET key, third display shows CLEA to clear set relative value, press SET key again to finish clearing.

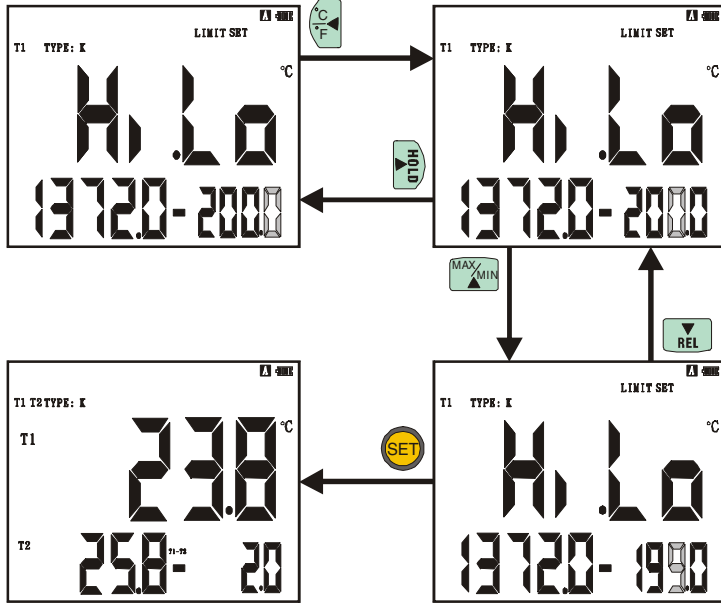
Set up compensation value of cold junction of 0°C of thermocouple: Use and main display (T1 or T2) thermocouple of the same type, from main display (T1 or T2) inputs 0°C (32°F) temperature value, adjust third display shows the cold junction compensating value, enable main display shows 0°C (32°F). Press SET key again to finish setting up. third display shows the cold junction compensating value and the adjusting range is about 0°C~50°C (32°F~122°F), will show Err and unable to continue adjusting when exceeding the range, need to press SET key to give up leaving. The set up cold junction compensating value need to use Reset add key to clear the set up value.



HOLD Press to move right one-figure that adjusted.
 °C/°F Press to move left one-figure that adjusted.
 MAX/MIN Press to add one-figure upward that adjusted.
 REL Press to minus one-figure downward that adjusted.

Note: Operation of Reset, please consult Reset function explanation.

Set up critical value of alarm: Set up main display shows (T1 or T2) critical value level of the alarm, secondary display shows high critical value of the alarm and third display shows low critical value of the alarm.



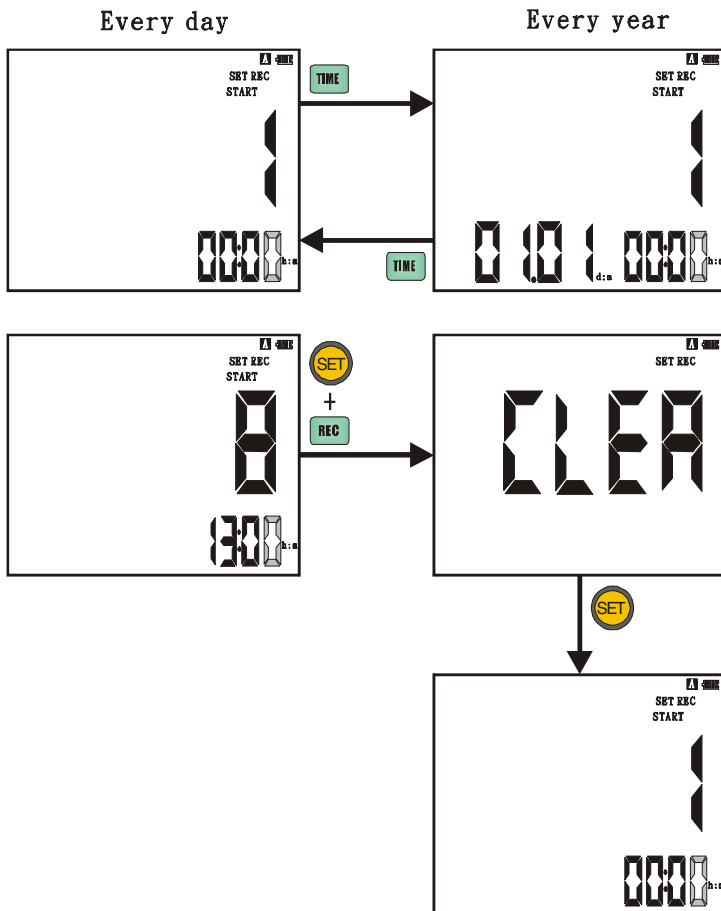
While use not choosing type function of thermocouple or temperature unit to choose function and use not setting up critical value of alarm, the high, low critical value of alarm shows that can be measured for every type thermocouple highest and minimum temperature value, adjust to you want and press **SET** key again to finish setting up.

Can set up the range in every type thermocouple:

- K-TYPE : -200 to 1372°C (-328 to 2501°F)
- J-TYPE : -210 to 1200°C (-346 to 2192°F)
- T-TYPE : -250 to 400°C (-418 to 752°F)
- E-TYPE : -210 to 1000°C (-346 to 1832°F)
- R、S-TYPE : 0 to 1767°C (32 to 3212°F)
- N-TYPE : -150 to 1300°C (-238 to 2372°F)

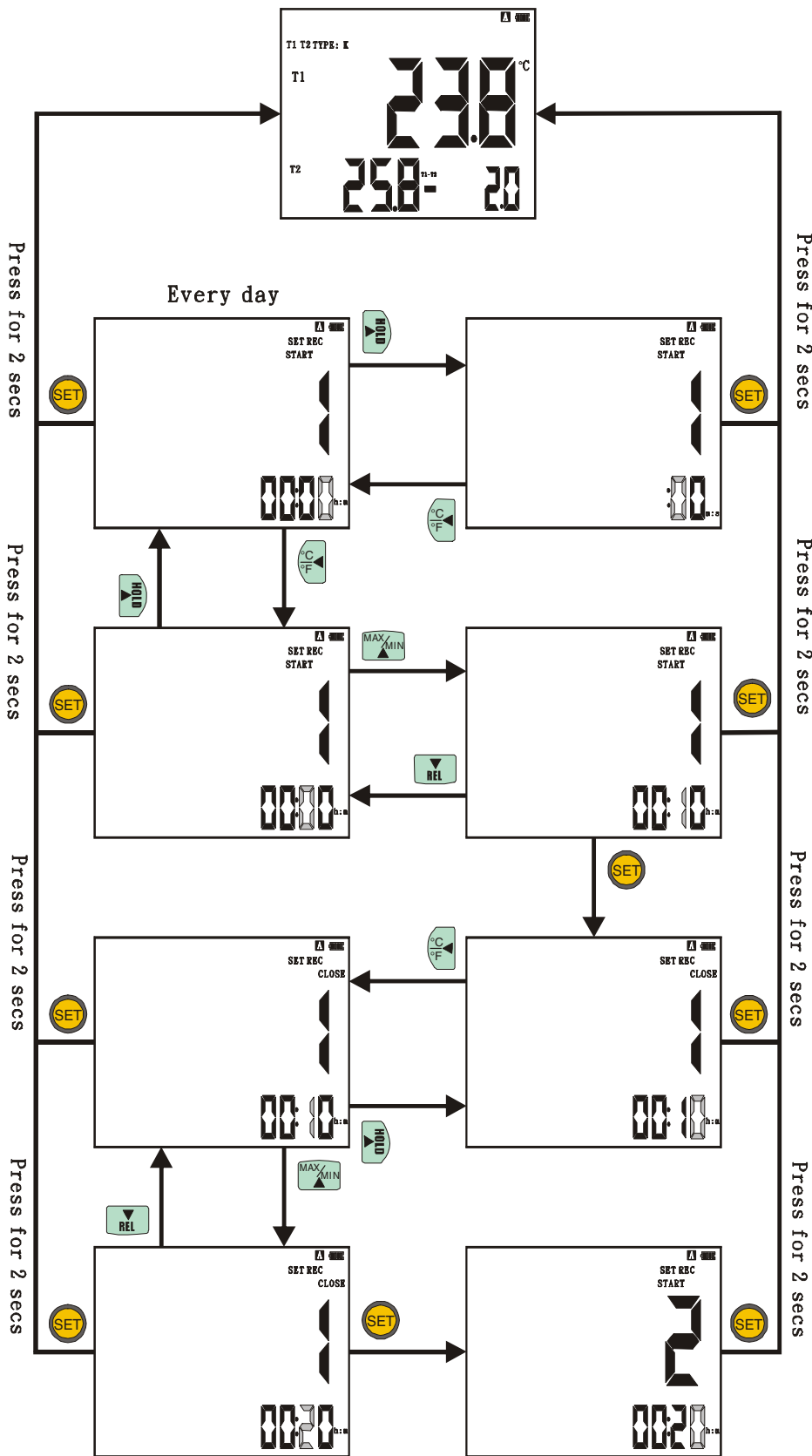
- MAX/MIN** > Press to add one-figure upward that adjusted.
- REL** > Press to minus one-figure downward that adjusted.
- RIGHT** > Press to move right one-figure that adjusted.
- LEFT** > Press to move left one-figure that adjusted.

The sections set up of order setting record: Divide into the sections of order setting record (circulation of every day) and (circulation of every year). Can only choose one to set up, every kind can be set up for 9 sections at most.



Choose circulation of every day or circulation of every year: Can press **TIME** key to switch over and choose circulation of every day or circulation of every year under not finishing the set up in any section.

To delete the set up sections of circulation of every day: Press **SET** key then press **REC** key, when main display shows CLEA then press **SET** key to finish deleting.



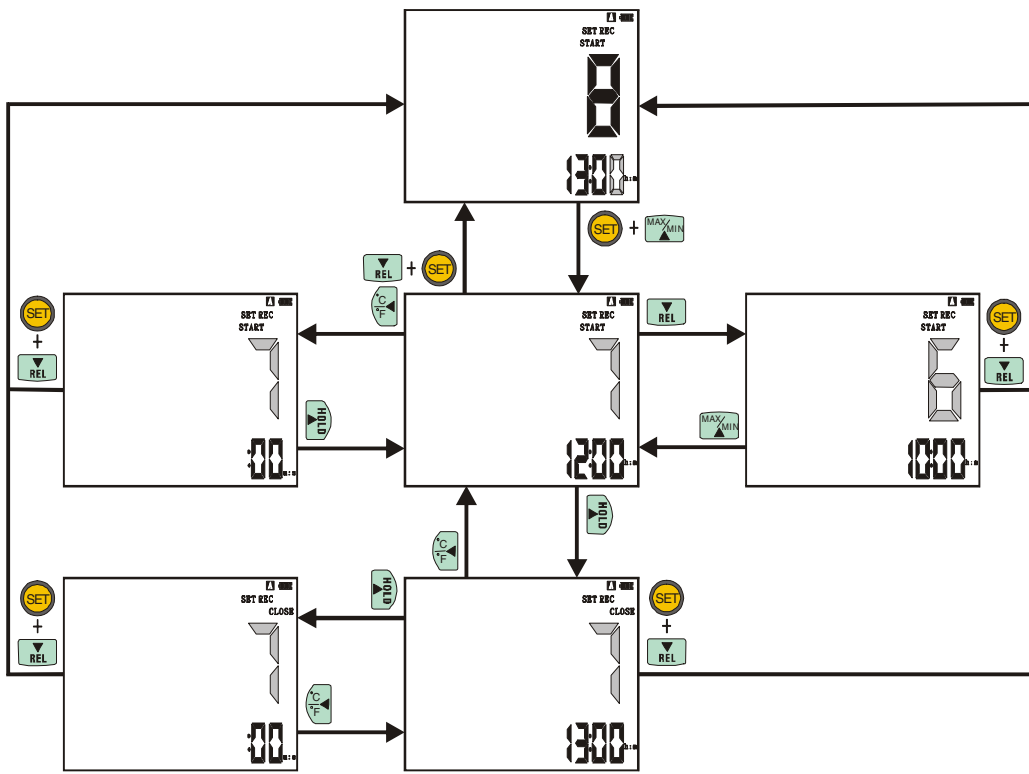
The order setting of circulation of every day: A day 24 hours from (00: 00: 00) 0 hour 0 minute 0 second to (23: 59: 59) 23 hours 59 minutes 59 seconds, at most can set up 9 sections from 1 to 9 that shows in main display. Symbol START represents sets up the beginning record time of section. Symbol CLOSE represents sets up the end record time of section. Need from small to big when to set up sections of order setting, At the same time the set up time of each section can not overlap and repeat. It will be unable to finish setting up to violate the above rule of setting up. After finishing sections of set up order setting record, after carrying out, unless the capacity of memory has been already full or to cancel the function of order setting, repeated execution that will be incessant every day.

- > Press to add one-figure upward that adjusted.
- > Press to minus one-figure downward that adjusted.
- > Press to move right one-figure that adjusted. When the -figure of adjusted in hour: minute (?: ??) that the most right-figure, press again turn into: second (: ??).
- > Press to move left one-figure that adjusted. When the -figure of adjusted in: second (:??) that the most left-figure, press again turn into hour: minute (?: ??).

> Press once to confirm set up, press for 2 seconds to leave the set up function.

To start order setting scheduled Data Logging press and hold (REC) for 2 seconds. Display will show REC, START and CLOSE.

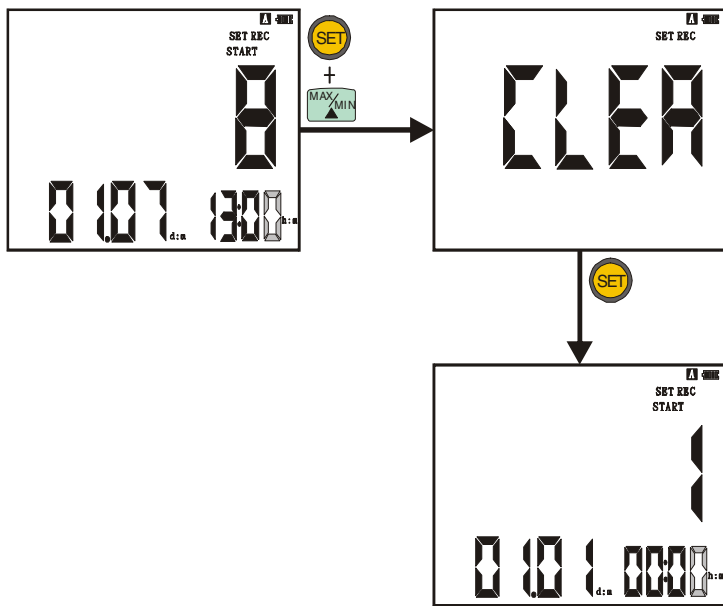
START or CLOSE will only appear during the section presently active. When complete data can be viewed by using review mode on page 9.



Inquire about set up sections of circulation of every day: Press **SET** key then press **MAX/MIN** key, main display glimmers shows sections of order setting inquired, wish to leave the inquire function, press **SET** key then press **REL** key.
MAX/MIN > Press once to inquire the set up sections will add 1, there is no function when the last one set up section.
REL > Presses once to inquire the set up sections will minus 1, there is no function when the first set up section.

REL > At start time (START) that inquire the set up sections to press once, will turn into stop time (CLOSE). Press once in stop time (CLOSE), the third display shows hour: minute (?: ??) will turn into: second (: ??).

F/C > At stop time (CLOSE) that inquire the set up sections to press once, will turn into start time (START). Press once in start time (START), the third display shows hour: minute (?: ??) will turn into: second (: ??).

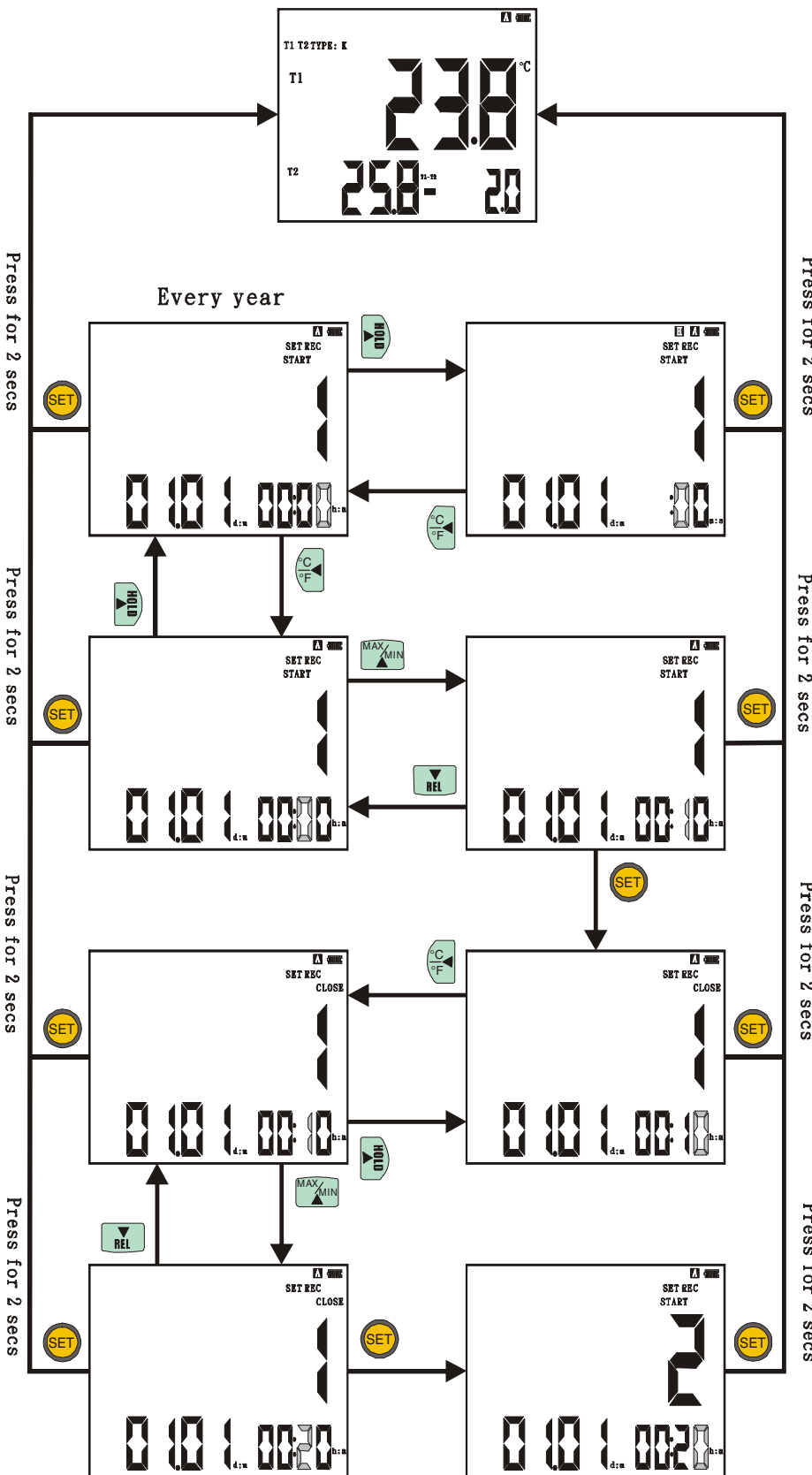


To delete the set up sections of circulation of every year: Press **SET** key then press **REC** key, while main display shows CLEA then to press **SET** key to finish deleting.

Scheduled Data Logging

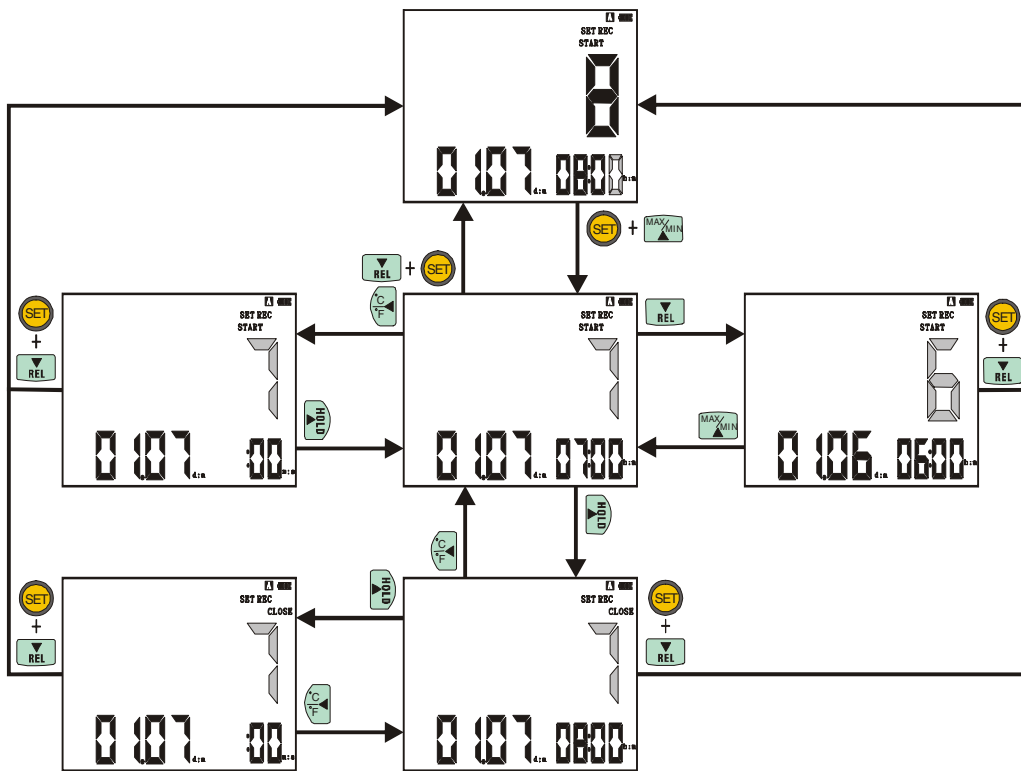
The order setting of circulation of every year:

One year is divided into 12 months, A day 24 hours from (00: 00: 00) 0 hour 0 minute 0 second to (23: 59: 59) 23 hours 59 minutes 59 seconds, at most can set up 9 sections from 1 to 9 that shows in main display. Symbol START represents sets up the beginning record time of section. Symbol CLOSE represents sets up the end record time of section. Need from small to big when to set up sections of order setting, At the same time the set up time of each section can not overlap and repeat. It will be unable to finish setting up to violate the above rule of setting up. After finishing sections of set up order setting record, after carrying out, unless the capacity of memory has been already full or to cancel the function of order setting, repeated execution that will be incessant every year.



- > Press to add one-figure upward that adjusted.
- > Press to minus one-figure downward that adjusted.
- > Press to move right one-figure that adjusted. When the -figure of adjusted in hour: minute (?: ??) that the most right-figure, press again turn into: second (: ??).
- > Press to move left one-figure that adjusted. When the -figure of adjusted in: second (:??) that the most left-figure, press again turn into hour: minute (?: ??).

> Press once to confirm set up, press for 2 seconds to leave the set up function.



Inquire about set up sections of circulation of every year: Press **SET** key then press **MAX/MIN** key, main display glimmers shows sections of order setting inquired, wish to leave the inquire function, press **SET** key then press **REL** key.

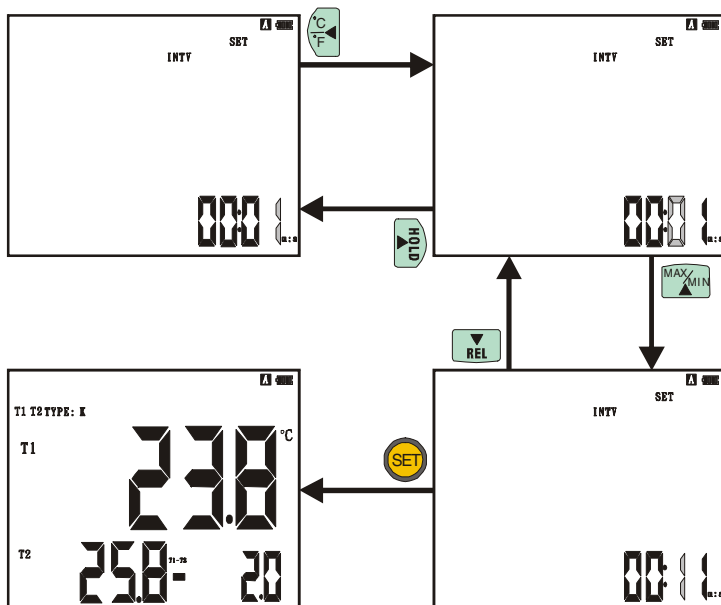
MAX/MIN > Press once to inquire the set up sections will add 1, there is no function when the last one set up section.

REL > Presses once to inquire the set up sections will minus 1, there is no function when the first set up section.

HOLD > At start time (START) that inquire the set up sections to press once, will turn into stop time (CLOSE). Press once in stop time (CLOSE), the third display shows hour: minute (?: ??) will turn into: second (: ??).

C/F > At stop time (CLOSE) that inquire the set up sections to press once, will turn into start time (START). Press once in start time (START), the third display shows hour: minute (?: ??) will turn into: second (: ??).

Set up interval time of record: The interval time of record, minimum interval time is one second, the biggest interval time is 59 minutes and 59 seconds, adjust to you want value and press **SET** key to finish setting up to.



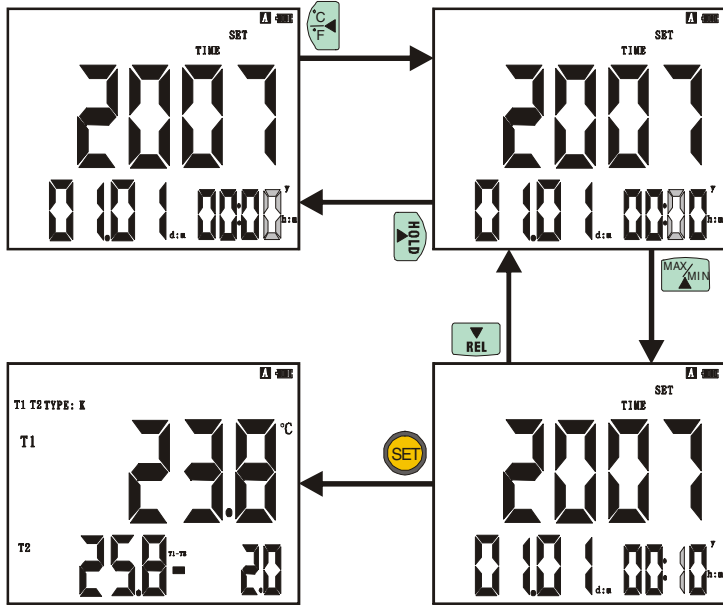
MAX/MIN > Press to add one-figure upward that adjusted.





REL > Press to minus one-figure downward that adjusted.

HOLD > Press to move right one-figure that adjusted.



C/F > Press to move left one-figure that adjusted.

The time to set up of perpetual calendar: Main display shows year, the adjust range is from 2000 to 2099, secondary display shows date. month (xx. xx), Third display shows hour: minute(24 hours system). The adjust range from (00: 00) 0 hour 0 minute to (23: 59) 23 hours 59 minutes. Adjust to set up value the effective date that you want then to press **SET** key to finish setting up. If ineffective time of date, need to adjust to time of effective date could be left and set up.



-  > Press to add one-figure upward that adjusted.
-  > Press to minus one-figure downward that adjusted.
-  > Press to move right one-figure that adjusted.
-  > Press to move left one-figure that adjusted.

General specification:

Display	4 1/2 digit crystal display, max display 19999	
Polarity indicator	No indicator in positive, negative indicator “-”	
Overload indicator	Positive overload show “OL”, negative overload show “-OL”	
Low power indicator	When five sections of batteries mark show(□), expressed battery power is run low.	
Power	4 AAA batteries	
Auto power off	The pressed key use has not reached 20 minutes the battery power will be turned off, hold down  key for 3 seconds to cancel auto power off function, and  mark of display will be disappeared.	
Reading renewal	4 times/sec	
Data logger	Every channel 9999 loggers at most (only for X3 = B, C)	
Battery life	General mode	Approximately 250 hours/alkaline battery
	Mode 1 of save electricity	Approximately 3000 hours (interval = 15 minutes)/alkaline battery
	Mode 2 of save electricity	Approximately 7 months (interval = 15 minutes)/alkaline battery
Operating temperature	0° ~ 50°C (32° ~ 122°F), <80% RH	
Storage temperature	-10° ~ 60°C (-4° ~ 140°F) <70% RH	
Dimension	164 L x 76 W x 32mm H	
Weight	Approximately 415g (include batteries)	

Electrical specification:

Measurement range	TC	K-TYPE : -200 ~ 1372°C (-328 ~ 2502°F) J-TYPE : -210 ~ 1200°C (-346 ~ 2192°F) T-TYPE : -250 ~ 400°C (-418 ~ 752°F) E-TYPE : -210 ~ 1000°C (-346 ~ 1832°F) R、S-TYPE : 0 ~ 1767°C (32 ~ 3212°F) N-TYPE : -150 ~ 1300°C (-238 ~ 2372°F)
Resolution	0.1	K、J、T、E、N < +2000°C/°F K、J、T、E、N > -2000°C/°F R、S < +1000°C/-1832°F R、S > -1000°C/-1832°F
	1	K、J、T、E、N > +2000°C/°F K、J、T、E、N < -2000°C/°F R、S > +1000°C/-1832°F R、S < -1000°C/-1832°F
Accuracy		K、J、T、E、N : ± [0.05% reading +0.3°C (0.6°F) 【below-100°C (-148°F) : K、J、T、E add 0.15% of reading, N、 add 0.45% of reading】 R、S : ± [0.05% of reading+1°C (1.8°F)]
Temperature coefficient		0.01°C of reading 0.03°C (0.06°F per °F) outside the specified 18 to 28°C (64 to 82°F) range [below -100°C (-148°F) : K、J、T、E add 0.04% of reading N、 add 0.08% of reading]
Temperature scale		ITS-90
Accuracy is specified for ambient temperatures between 18°C (64°F). The above specifications do not include error of thermocouple.		

NOTES:

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) 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.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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