

4 CHANNEL K THERMOMETER SD LOGGER

User Manual



English and Deutsche
Languages



INTRODUCTION

Thank you for purchasing the logger. This meter is user-friendly and reliable. Please read this manual thoroughly before operation.

Features:

- Portable size with super big LCD
- Wall mountable SD card type datalogger
- Measures temperature via K type thermocouple
- 4 channel K type thermocouple to use at once
- Unlimited manual memories with SD card
- Unlimited autologger memories with SD card
- Hold function freezes current readings
- Checking MAX/MIN value
- Beeper and LED alarm are both available
- One press to display T1-T2
- Display temperature change from baseline
- Programmable temperature high/low alarm threshold
- Temperature offset function for adjustment purpose
- Over-range indication with error messages
- Blue backlight for dark area operation
- 12hour/24hour time format selectable
- Real time display (YEAR-MONTH-DATE-, HOUR-MIN)
- Auto power off feature
- Temperature units ($^{\circ}\text{C}/^{\circ}\text{F}$) selection
- Low battery indicator

Material supplied:

Meter	x 1	Manual	x 1
K type thermocouple	x 2	AA alkaline batteries	x 4
SD card	x 1	Optional:	
Plain box	x 1	9V adaptor	

POWER SUPPLY

• ADAPTOR

For SD card logger series, it can be powered by 9VDC adaptor and 4 pcs AA batteries.

The power jack is on the right side of the meter.

CAUTION

1. Don't operate the adaptor with wet hands!!

• BATTERY

The SD logger is able to be powered by 4pcs AA batteries.

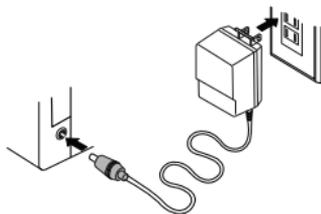
While in logging status, the battery can last a period of time. Suggest to use adaptor for long term operation.

Low battery might cause improper operation and reading. When battery level is lower than certain range, the logging function will be terminated.

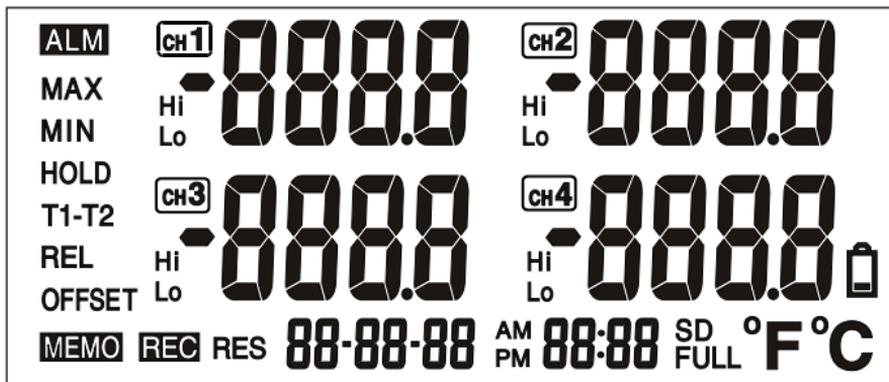
If the low battery icon appeared on the LCD, please remove the battery cover from the rear side and replaced 4 new AA batteries into the battery compartment. Please check the polarity and make good contact.

CAUTION

1. The battery life will be shorten when using a high capacity SD card or in high operating temperature.
2. Please remove the batteries before long term storage.
3. To avoid battery leakage, please do not mix the new and old batteries.
4. Please follow your local law for battery disposition.



LCD DISPLAY



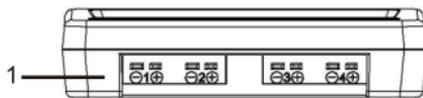
1. The "ALM" icon indicates the alarm function is activated.
2. The "MAX & MIN" icon indicates the minimum & maximum value since power on.
3. The "Hold" icon indicates freezes current reading.
4. The "T1-T2" icon indicates the difference value between CH1 and CH2.
5. The "REL" icon indicated the relative temperature from base line.
6. The "OFFSET" icon indicated the reading was adjusted manually.
7. The "MEMO" icon indicated Manual logging is in processing.
8. The "REC" icon indicated Auto logging is in processing.
9. The "RES" icon indicated the logging is in reservation status.
10. The "CH1, CH2, CH3, CH4" display probe temperature.
11. The "Hi, Lo" icon indicates the high or low threshold is over.
12. The "AM, PM" icon indicates the time format.
13. The "SD" icon indicates the SD card is inserted.
14. The "FULL" icon indicated the SD card capacity is full.
15.  battery low indicator.
16. The "°F, °C" icon indicates the temperature unit.

HOUSING AND KEYPAD

FRONT VIEW

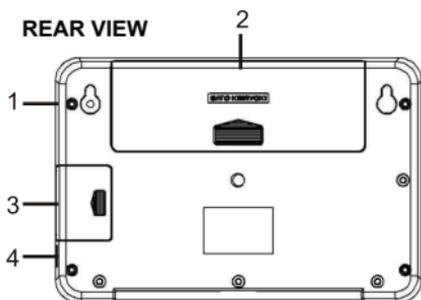


BOTTOM VIEW



1. 4 channel probe socket

REAR VIEW



1. Wall-mounted hole
2. Battery compartment
3. SD card slot
 - Push to open the cover
 - Insert the SD card by following the icon reminder on housing
 - To take out the SD card, press the SD card for ejection
4. Adaptor socket

KEYPAD



Red LED alarm indicator

FUNCTION

• ON/OFF

- Press and hold the “” key for about 5 seconds to turn on/off the meter.

• LCD BACKLIGHT

- While the meter is in measurement mode, press “” key to turn backlight on for 10 secs.

• REL

- Pressing “” key to switch to REL mode. The existing temperature will be set as a baseline, (0.0) will appear on the LCD. The meter will then show difference of the measured value from baseline. Press “” key again to return to normal measurement mode.

• MAX/MIN

This function can display the maximum and minimum value since power on.

1. Press “” key to see maximum and minimum value of each channel in turns.
2. The MAX/MIN value will be reset after power off.
3. The MAX/MIN will not be recorded if the ERROR message displayed.
4. This mode is also working in above “REL” status.

• HOLD

- Press “” key to freeze the readings. Press again to release and return to normal measurement mode.

• T1-T2

To view the temperature different between CH1 and CH2, press and hold the “” key for 2 seconds. When the “T1-T2” icon appears on the LCD, the difference (T1-T2) will show on the CH3 area. Press “” key for 2 seconds again to return to the measurement mode.

The temperature of CH3/Ch4 won't appear on the display under this function.

• AUTO LOGGING (press REC key to start)

Before starting the datalogging, be sure to program the meter with correct date and time. To change the data and time while logging will stop the logger right away.

1. Press " " key for 2 seconds, the "REC" symbol will appear on the LCD. It starts to record. The measurement mode will be off when the meter starts recording.
2. Press " " key for 2 seconds again, the meter will stop to record and return to the measurement mode.
3. The LCD is off during logging mode for power saving. Press " " key may turn the LCD on
4. While the LCD is on the displayed value will be updated every second.
5. The recording of data is unlimited. (after 30,000 data, it will create a new file in SD card)
6. When the meter is REC status, auto power off function will disable.
7. When the meter is in MAX/MIN, HOLD, T1-T2, REL status, the function will be relieved after pressing " " key.
8. When the meter is in recording status, press power key cannot turn the meter off. The recording mode must be stopped first to turn the meter off.

• AUTO LOGGING (reservation to start)

1. While the logger is pre-programmed as "reservation start", a "RES" icon will appear on LCD.
2. Do not power off the logger so the logger will start logging from the reserved start time.
3. When the meter is in RES status, pressing " " key to turn LCD ON or OFF.
4. Data recording is unlimited. A new file will be created if the data was over 30,000 points.
5. When the meter is in RES status, the auto power off function will not able to work.
6. Pressing " " key for 2 sec, it still can start recording immediately even the meter is preset as RES status (reservation start).

• MANUAL LOGGING (record for one data)

1. Pressing " " key, the "MEMO" symbol will be appeared on the LCD to indicate the manual recording is in process.
2. It will record 1 data and return to the measurement mode.
3. The shortest interval for taking manual memory is 5 seconds.
4. Data recording is unlimited.
5. If the meter is in MAX/MIN, HOLD, T1-T2 or REL status, these functions will be relieved and return to the measurement mode if you press " " key.

• MANUAL LOGGING (record continuously)

1. Press and hold " " key for more 2 seconds, the meter will record the data continuously by the 2 seconds interval.
2. If you released the key, it will stop recording and return to the measurement mode.

• TEMPERATURE ALARM

1. This meter provides alarm warning by beeper and red flashing LED. High/Low alarm threshold of each channel are selectable and adjustable.
2. Once temperature alarm function is activated, a "ALM" icon always appear on LCD to indicate the alarm function is ON.
3. When the measured temperature is out of threshold, beeper sounds and red LED lit to remind user. It stops 30 seconds later or while the measured values is returned to normal. You may also press any key to mute the beeper but red LED remains flashing.
4. A "Lo" or "Hi" icon appears while reading is out of threshold. Once the reading return to normal, the icon remains on LCD to remind user the alarm issue happened already. To eliminate the "Lo" or "Hi" icon from LCD, press " " >2 seconds.

• ENABLING / DISABLING THE AUTO POWER OFF

1. When the meter is on, the meter will automatically power off after 20 minutes of inactivity.
2. When the power is off, press " " key and " " key simultaneously, "n" mark will appear on the LCD. It means that the auto power off function is now disabled.
3. The auto power off will not work when the meter is on manual logging and auto logging mode.
4. The default setting of the auto power off function is activated.

• LOW BATTERY ICON

1. When the battery is low, the low battery icon will be appeared on the display. Suggest changing the batteries.
2. The manual logging or Auto logging is invalid when the low battery icon appears on the display.
3. When the low battery icon appears on the LCD, the reservation function will not work.
4. If the low battery icon appears during the recording mode, the data will be recorded until the power is too low to work normally. In above condition, the logging will be terminated automatically and return to normal measurement mode.

• BURN OUT NOTIFICATION

If the sensor is not connected or is broken, the [- - -] will be displayed on LCD and the data in the SD card is blank.

OPERATION

• STARTING UP

1. For long term logging, suggest connecting the meter to the adaptor and installing 4 pcs AA batteries as spare power source. Or, you may just use battery as power source.
2. Insert the Type K probes into probe socket.
3. Power on the meter by pressing the "POWER" key for about 5 seconds.
4. When the meter is on, pressing the "ON/OFF" key for about 5 seconds can turn the meter off.
5. Program the real time and alarm setting for the first time usage. You may refer to page 6 in SETUP MODE. Without the batteries as spare power source, all the parameters will be reset after the adaptor power is removed.
6. The temperature default unit is °C, to change it from °C to °F, you may refer to page 6 in SETUP MODE.
7. A "----" will be displayed on LCD if the probe is not plugged.

• SET UP

The advanced SETUP function lets you customize your meter's preferences and defaults. The programmable parameters are:

1. Recording setting

Auto logging related setup, such as reservation start and sampling rate (1 sec., 2secs., 5secs., 10secs., 15secs., 30secs., 1 min., 2mins., 5mins., 10min., 15mins., 30mins., 60mins., 90mins.)

2. Alarm setting

Temperature High/Low threshold setting of each channel

3. Offset setting

Manually adjust (increasing/decreasing) measured temperature

4. Real time setting

Time format and date/time setting

5. Temp unit setting

Degree C or Degree F setting

• SETTING KEY OPERATION

1. Press the "ON/OFF" key for 2 sec into the set up mode when the meter is in measurement mode.
2. Pressing "F1" or "F2" key to choose the setting mode:
Recording setting P1.0, Alarm setting P2.0, Offset setting P3.0, Real time setting P4.0,
Temperature Unit setting P5.0
3. Pressing "ENTER" key to confirm the setting and enter next layer.
4. Pressing "UP" key to increase the value in the setting mode.
5. Pressing "DOWN" key for decrease the value in the setting mode.
6. Pressing "ESC" key to return to the previous setting item
7. Pressing "ON/OFF" for more than 2 seconds will return to normal measurement mode.

Program	Note
P1.0 (rEc) recording,	
P1.1 (int) interval	Sampling rate starts from 1 second to 90 minutes
P1.2(rEs) Reservation start	First, decide to turn ON or OFF the reservation function.
1, rES ON or OFF select	While turn it on, setup the start Date & Time.
1A ~ 1E, start date to minute	Warning: Reservation start time CANNOT be earlier than now.
P2.0 (AL) temperature alarm	First, choose the channel and decide high or low alarm threshold. Then, each high or low alarm can be enabled or disable by choosing ON or OFF, even a previous alarm threshold value is stored in meter.
P2.1, CH1 to CH4 select	
P2.2, High or Low select	
P2.3, ON or OFF select	
P2.4, alarm threshold	The last step is to setup the threshold. The adjustable range is -200°C to 1370°C
P3.0 (oFSt) offset	First, choose the channel. Then, each offset value can be enabled or disable by choosing ON or OFF, even a previous offset value is stored in meter.
P3.1, CH1 to CH4 select	
P3.2, ON or OFF select	
P3.3, offset value	The last step is to setup the value. The adjustable range is -12°C to 12°C
P4.0 (dAt) Date, real time clock	First choose the time format as 12H or 24H
P4.1, time format	Then, setup the time from year, month, day, hour to minute.
P4.2 ~ 4.6, High or Low select	
P5.0 (UNit) Unit	Select the temperature unit as °C/°F. Default as °C.
P5.1, °C/°F select	

DATALOGGING

The advanced SD card logging function lets you record all data into SD card per your preset sampling rate. The sampling rate can be 1 sec to 90mins.

Once a new logging is started, a file name will be auto created. The file name is given per the start date and time. For example: If the logging starts at 2012/08/31 09:30, the file name will be given as 08310930.txt. The maximum file size is 30000 records. Once the file size is bigger than 30000 records, a new file will be created and the file name will be generated.

The "REC" will appear on LCD when the meter is starting logging.

The "SD" icon will appear on LCD if you insert the SD card to the meter. It will not appear "SD" icon if you take off the SD card from meter.

While the SD card capacity is less than 10M byte, "SD" icon flashes. You can't reserve setting or start recording if "SD" icon is flashing.

"FULL" icon appears when the SD card capacity is full.

• SD CARD PREPARATION

This product is compatible format SD/SDHC card. Suggest maximum SD card capacity is 16GB SD/SDHC card.

Before loading or unloading the SD card into meter, please follow the suggestion below:

1. The data loss caused by the damaged SD card is not in the product warranty. Please make sure your SD card can function well before start a logging.
2. This product is compatible with FAT16 & FAT32. No NTES format.
3. Check the available SD card capacity before logging.
4. This meter is designed to use SD or SDHC cards only.

5. Over 16GB SD or SDHC card are not allowed to use.
6. Not all brand of SD card compatible with this meter are within our warranty. We suggest you run a short logging trial to ensure your SD card is working with this logger before official recording.
7. Please don't add extra label on SD card in case the label is stuck on the SD card slot.
8. Following the correct direction to load the SD card. **Always power off the meter before loading and unloading the SD card.**
9. Avoid using the SD card in strong statics, high temperature or high humidity environment in order to minimize the SD card damage.
10. For the first time usage of the SD card, it is recommended to format the SD card first.
11. If possible, please using both battery and adaptor, so even in a black-out, the logging can be last by using battery.

File name & content

1. AUTO LOGGING

File timing: the file will be made when the meter starts recording

File name: mmdatatime.txt (such as: recording time is from Jan 25th 13:24pm, the file name is 01251324.txt.

The records will be covered if the recording time is same as one year ago.

2. MANUAL LOGGING

File time: Power on, made the file. The data will record on the same file.

File name: azxxx.txt (such as: power on, Jan 26 1324pm, the file name is 01261324.txt.

The recorded data is stored in SD card in the following format:

The temperature unit is determine by setting

- AUTO logging :AT
- MANUAL logging: MN

MN/AT	Date	Time	Int	1ch	2ch	3ch	4ch	Unit
AT	2011/1/1	12:55:21	10s	155.5	300.5	658.4	1357	C
AT	2011/1/1	13:55:31	10s	155.1	300.1	653.2	1341	C
AT	2011/1/1	14:55:41	10s	154.9	299.5	640.2	1256	C

MN/AT	Date	Time	Int	1ch	2ch	3ch	4ch	Unit
MN	2011/1/1	12:55:21		155.5	300.5	658.4	1357	C
MN	2011/1/2	13:55:54		155.1	300.1	653.2	1341	C
MN	2011/1/4	14:54:48		154.9	299.5	640.2	1256	C

TROUBLESHOOTING

METER COULD NOT BE POWERED ON

- Please check the meter by pressing " " key about 5 seconds first.
- Then check the connection status of adaptor or batteries

ERROR CODES STAND FOR

Error	Problem and solution
----	<p>K type cable cant connect</p> <p>Solution: Check whether the cable is connected correctly in the meter, if ---- still appears on the LCD, send back for repair.</p>

Error	Problem and solution
E02	Temp. Measurement is below lower limit. Solution: Put the meter in room temp for 30 minutes. If the error message still appears, send back for repair.
E03	Temp. Measurement exceeds the upper limit. Solution: Put the meter in room temp. for 30 minutes. If the error message still appears, send back for repair.
E04	The data sourcing is wrong. Solution: Put the meter in regular room for 30minutes. If the error message still appears, send back for repair.
E07	The room temp. is lower than 10°C Solution: Put the meter in regular room for 30 minutes. If the error message still appears, send back for repair.
E08	The room temp is higher than 60°C. Solution: Put the meter in regular room for 30 minutes. If the error message still appears, send back for repair.
E09	This error message indicated the reservation start time or stop time setting is wrong Solution: review setting
E10	SD card doesn't insert or SD card's capacity is low when you start setting , start manual logging/Auto logging Solution: Power off and insert SD card to meter
E11	The SD card is not presented when the reservation or recording is running Solution: Power off and insert SD card to the meter
E12	Error in SD card
E13	Low battery icon appear on the LCD, starting record or setting reservation Solution: Change to new battery or use Adaptor for start record or setting reservation
E14	SD card can't be read Solution: We suggest to use adaptor for long time recording
E31	Error in circuit Solution: Send back for repair

SPECIFICATION

K temp range	-200 ~ 1370°C, -328 ~ 2498°F
K temp resolution	0.1°C , 0.1°F
K temp accuracy (under 18-28°C ambient temp.)	±0.3%rdg+1°C
Sampling rate	Programmable from 1 second up
LCD size (mm, H x W)	47 x 104
Operating temp.	0 ~ 50°C
Operating RH%	Humidity < 80%
Storage temp	-20 ~ 50°C
Storage RH%	Humidity <90%
Dimension (mm,L x W x T)	152 x 100 x 39
Weight	-300g
Battery	4 pcs. AA alkaline batteries or 9V adaptor
Standard packaging	Meter, 2 pcs. bead type K thermocouple, battery, manual, SD card, plain box
K temp range	K type thermocouple (custom made thermocouple is available upon request)

Warranty

The meter is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase.

This warranty covers normal operation and does not cover battery, misuse, abuse, alteration, tampering, neglect, improper maintenance or damage resulting from leaking batteries.

Proof of purchase is required for warranty repairs. Warranty is void if the meter has been opened.

Return authorization

Authorization must be obtained from the supplier before returning items for any reason. When requiring a RA (Return Authorization), please include data regarding the defective reason, the meters are returned a long with good packaging to prevent any damage in shipment and insured against possible damage or loss.