ONMEAS®

Rev.B4

AT4208/04/02

HANDHELD Multi Channel Temperature Meter



User's Guide

Scan QR code for operation video

Safety Summary

Warning  Dangerour：

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific WARNINGS elsewhere in this manual may impair the protection provided by the equipment. In addition it violates safety standards of design, manufacture, and intended use of the instrument.

Disclaimer	The Applent Instruments assumes no liability for the customer's failure to comply with these requirements.
Ground The Instrument	To avoid electric shock hazard, the instrument chassis and cabinet must be connected to a safety earth ground by the supplied power cable with earth blade.
DO NOT Operate In An Explosive Atmosphere	Do not operate the instrument in the presence of inflammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.
Keep away from live circuit	Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.
Operations not included in the manual are forbidden	The protection measurements will be failure while beyond the scope.
	Warning: TO AVOIDE INSTRUMENT DAMAGED, PLEASE DO NOT PUT DC VOLT OR CURRENT IN THE TESR TERMINAL MAKE SURE THE CAPACITOR IS DISCHARGED BEFORE TESTING

Safety Sign:

 Provide double insulation or reinforced insulation protection

Waste Electrical and Electronic Equipment (WEEE) order 2002/96/EC

 Do not leave in the trash can

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People's Republic of China
Jiangsu Province
Changzhou Applent Instruments Inc.
Oct. 2009
Rev.A1

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1. Installation and Setup Wizard

This chapter provides the following information:

- Packing List
- Power Requirements
- Operation Environment
- Cleaning
- Replace Battery
- Adjusting Tilt Stand

1.1 Packing List

After you receive the instrument, carry out checks during unpacking according to the following procedure.
Check that the packing box or shock-absorbing material used to package the instrument has not been damaged.
Referring to the packing list, check that all packaged items supplied with the meter have been provided as per the specified optioned.
If damaged or accessories shortage, please contact the sales department or our agent.

1.2 Power Supply

The Handheld Temperature Meter only can use our configured AC Adapter ATL909 and Li-battery ATL805
AC Adapter

Input Voltage: 90V-260VAC， 49Hz~62Hz

Power: Max 10VA



Warning: Other model AC Adapter is forbidden. Only L909 and L805 rechargeable Li-battery can be used.

1.3 Operation Environment

Ensure the operation environment meets the following requirements

Temperature Range: 0℃～55℃,

Humidity: 23℃,<70%RH

Altitude: 0~2000m

1.4 Cleaning

Do not attempt to clean the internal of AT4202/4204/4208

Warning:
Don't Use Organic Solvents (such as alcohol or gasoline) to clean the Instrument.

Use a dry cloth or a cloth slightly dipped in water to clean the casing.

1.5 Replace Battery

Build-in rechargeable Li-battery, battery has been installed in the instruments before factory. Change the battery according to the following steps:

Figure 1-1 Battery Change



1. Use the screwdriver to loosen the screw in the battery cover and remove the cover.
2. Remove the plug on the old battery, plug a new one, main direction of the plug.
3. Put the new battery in the instrument, recover and tighten the screws.

1.6 Adjusting Tilt Stand

Two positions are provided: degree 60 and degree 45
Degree 45 can provide a better stability for the instrument

Figure 1-2 Position of Degree 60



Folded up the bottom of the bracket to achieve degree 45 position

Figure 1-3 Position of Degree 45



2. Overview

This chapter provides the following information:

- Overview
- MainSpecification
- Main Function

2.1 Overview

Thank you for purchasing AT4202/4204/4208 Multi-channel Handheld Temperature Meter

The AT4202/4204/4208 adopts high-performance ARM microprocessor control, collects multi-channel temperature data simultaneously. The AT4202/4204/4208 can be compatible with a variety of temperature sensors, fast response, data stability while with the burnout detection function. Also you can separately calibrate the data of each channel. True-color TFT liquid crystal display, keypad and touch screen double control. Use Li- battery supply power and USB communication. Switch in both English and Chinese.

2.2 MainSpecification

- Graduation: thermocouple J ,K, T, E, S, N, B
- Basic Accuracy:see the appendix(accuracy table)
- Measurement Range: -200.0℃~1800.0℃ （change according to different thermocouple type）
- Resolution: 0.1℃
- Channel: 4202 2 channels
  4204 4 channels
  4208 8 channels

2.3 MainFunction

2.3.1 FUNCTION

1. Beep Setting
2. Temperature Unit Setting

2.3.2 Sorting Setting

Build-in sorting data, each temperature data can be set both up limit and low

limit

2.3.3 Correction Function

Each channel data can been corrected by the user.

2.3.4 System Setup

- Keypad Lock Function
- Switch in Both Chinese and English
- Data File will Be Saved Automatically
- Touch Screen Setup
- Power Saving Mode

2.3.5 Interface

USB Host Port:
USB high-speed mode: 48 MHz, USD-HID Protocol, ASCII Transi

3. Startup

This chapter describes:

- Front Panel Summery
- LCD Screen
- Interface
- Extern power and Battery
- Power up
- Connection of the Thermocouple

3.1 Front Panel Summery

Figure 3- 1 Front Panel

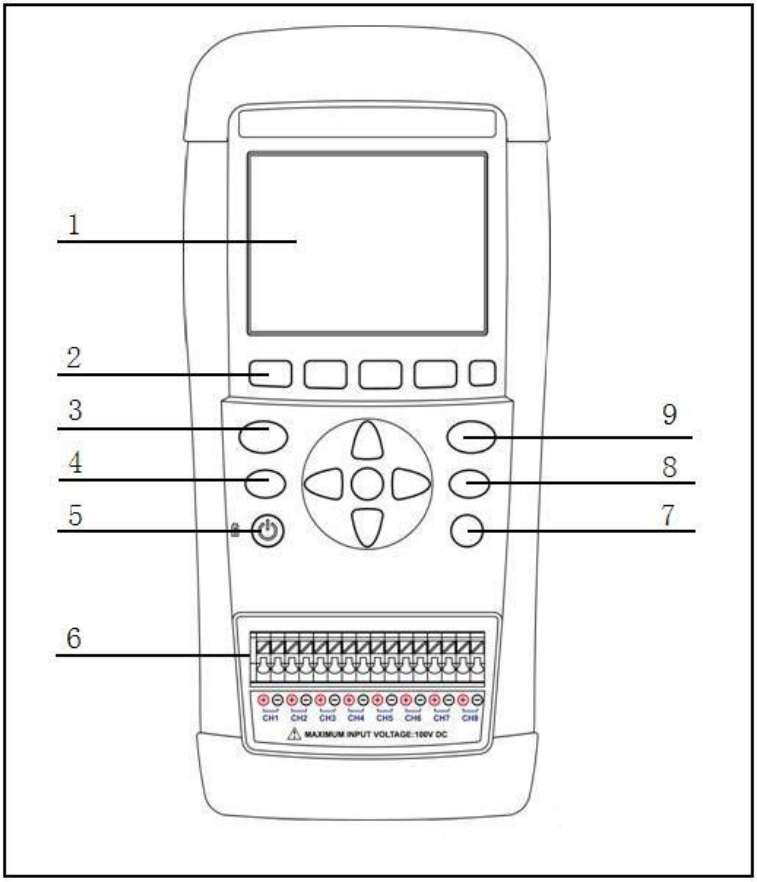


Table 3- 1 Description of the Front Panel

1	TFT-LCD Screen
2	Select Keys
3	MEAS Measurement Key——Enter Measurement Page (Page 15:[MEAS] Page)
4	SYST System Key ——Enter System Setting Page (Page 20: [SYSTEM] Page)
5	Power On/Off Battery Charging Indicator
6	Sensor access terminal
7	☼Background Brightness——30%,50%,70%, 100% Unlock the Keypad Lock
8	HOLD NULL
9	SETUP Enter Setup (Page 17:[ETUP] page)

3.2 **LCD Screen**

Figure 3- 2 LCD Screen

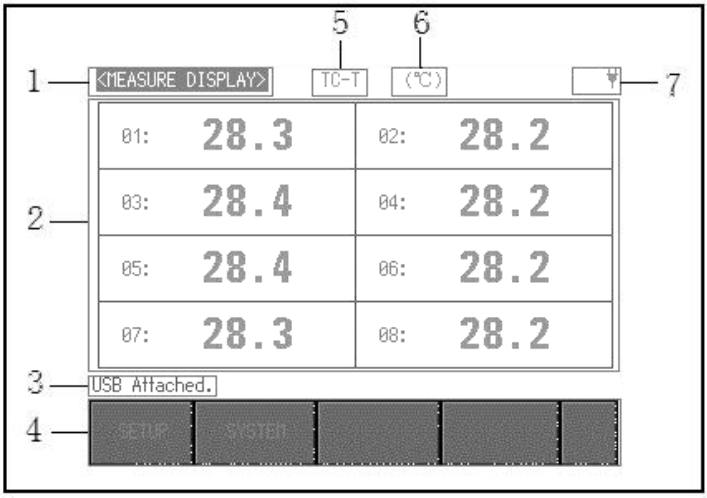


Table 3- 2 LCD Screen descriptions

1	The Page Title
2	The white fields are label; the yellow fields are list box.
3	Help and message information
4	Function Area, Use the select keys to select
5	Display the current sensor model
6	Displays the current temperature unit
7	Battery Percentage and Keypad Lock Indicators

3.3 **Interface**

Figure 3- 3 Interface panel

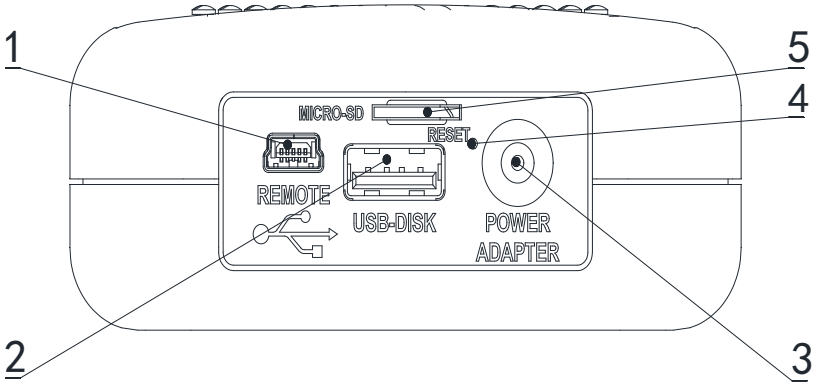


Table 3- 3 Interface panel description

1	Remote Control Interface(USB-HID)
2	USB Memory Interface
3	Power Adapter Jack(+9VDC)
4	RESET

3.4 **Extern power and Battery**

The Battery can only be charged by Power Adapter ATL909。

While using the external power supply, the power adapter is also charging the battery.

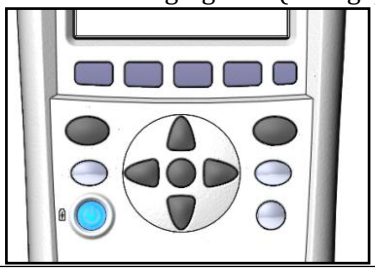
Figure 3- 4 Power Adapter



3.4.1 Charge Li Battery

When the battery power is low, you could use the power adapter to charge the battery. The Power key is orange indicating while charging the battery.

Figure 3- 5 Charging LED (Orange)



Attention! The key is also orange which charging even when the LCR meter is off previously.)

3.5 Power up

Press the Power key softly to start it.

3.6 Connection of the Thermocouple

AT4202 having 2 input ports
AT4204 having 4 input ports
AT4208 having 8 input ports

Figure 3- 4 Thermocouple Terminals

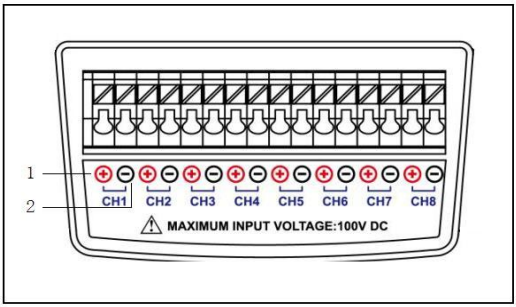


Table 3- 4 Interface baffle description

1	“ + ” positive pole of the thermocouple
2	“ - ”negative pole of the thermocouple

Warning : Do not exceed channel isolation voltage 100V, otherwise it will damage the instrument.

4. [MEAS] Page

This section includes all measure result display information.

- <Measure Display>Page

4.1 <MEAS DISPLAY>

When press the [Meas] key, the <MEAS DISPLAY> page appears. <MEASURE DISPLAY> page mainly highlights the measurement results, and current sorting results will be displayed in different font and color.
The following measurement controls can be set:

- Channel Setting

Figure 4- 1 AT4208 <MEAS DISPLAY> Page

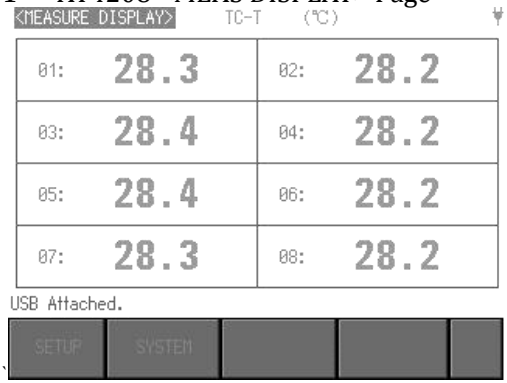


Figure 4- 2 AT4204 <MEAS DISPLAY> Page

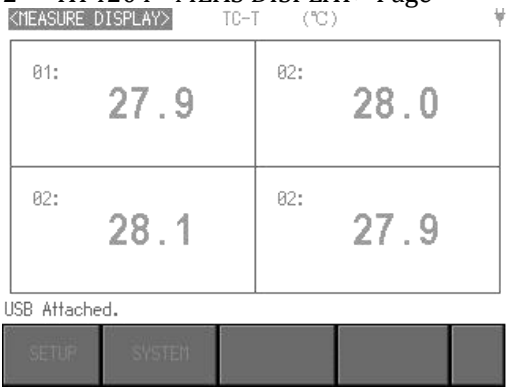
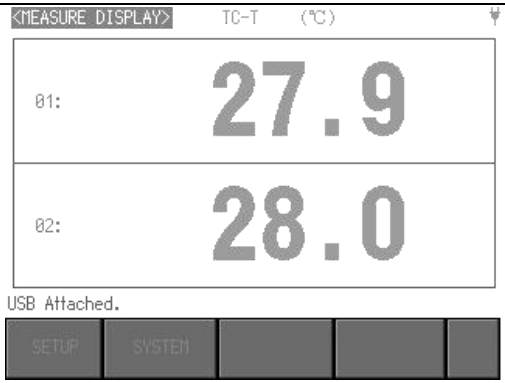


Figure 4- 3 AT4202 <MEAS DISPLAY> Page



4.1.1 **CHAN【01】**

■ Steps to Set Sensor Model

Step 1	Press[Meas] key to enter <MEASURE DISPLAY>page	
Step 2	Use the cursor keys to select[01]field	
Step 3	Use side soft keys to select	
	Soft key	Function
	OFF	Close the current channel
	ON	Open the current channel

*The same steps to close or open other channels

■ Step to set user Amend

Step 1	Press[Meas] key to enter <MEASURE DISPLAY>page	
Step 2	Use the cursor keys to select[01]field	
Step 3	Use side soft keys to select	
	Soft key	Function
	AMEND	Use touch screen to type in
	CLEAR	Delete amend value

*The same steps to correct other channel values

5. [SETUP]Page

This section includes all setup functions
At any time,press [SETUP]to enter <SETUP> page.

- <SETUP> Page

5.1 <Setup>Page

In < SETUP> page, the Instrument does not display any results,testing is not in progress.
The setup includes

- MODEL –Chose the type of the thermocouple
- UNIT –Temperature Unit Setting
- BEEP – Beep Setting
- HIGH – High Limit
- LOW – Low Limit
- INTERVAL – Date Save Interval

Figure5-1 AT4208 <Setup> Page

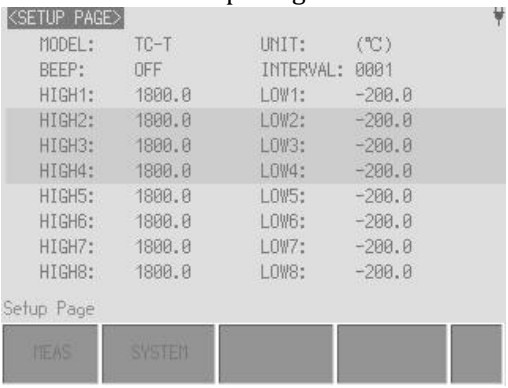


Figure5-2 AT4204 <Setup> Page

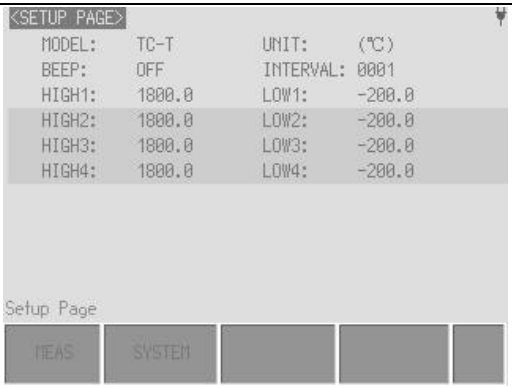
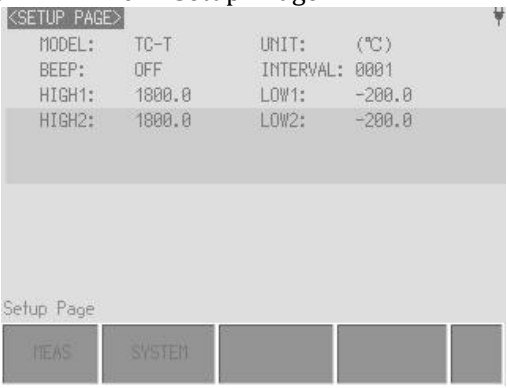


Figure5-3 AT4202 <Setup> Page



5.1.1 **[MODEL] Setting**

The model set includes :8 types thermocouple T , K , J , N , E, S , R , B

■ Steps to set the model

Step 1	Press [Setup] keyto enter <SETUP>page	
Step 2	Use cursor keys to select[MODEL]field	
Step 3	Use soft key to select	
	Soft Key	Function
	TC-T	Setting the thermocouple T type
	TC-K	Setting the thermocouple K type
	TC-J	Setting the thermocouple J type
	TC-N	Setting the thermocouple N type
	TC-R	Setting the thermocouple R type
	TC-S	Setting the thermocouple S type
	TC-E	Setting the thermocouple E type
	TC-B	Setting the thermocouple B type

5.1.2 **[UNIT]Setting**

Units Includes:(℃),(K),(F)

■ Steps to set beep feature

Step 1	Press [Setup] key to enter <SETUP> page	
Step 2	Use cursor keys to select[UNIT]field	
Step 3	Use soft keys to select	
	Soft Key	Function
	(℃)	Degree Celsius
	(K)	Degree Kelvin
	(F)	Degree Fahrenheit

5.1.3 **[BEEP] setting**

The Beep set include: OFF and ON.

■ Steps to Set the Beep:

Step 1	Press [Setup] keyto enter <SETUP >page	
Step 2	Use cursor keys to select[UNIT]field	
Step 3	Use soft keys to select	
	Soft Key	Function
	OFF	Turn off the Beep feature
	ON	Turn on the Beep feature

5.1.4 **[HIGH] setting**

■ Steps to set Highlimit

Step 1	Press [Setup] key to enter < SETUP > page	
Step 2	Use cursor keys to select [1800.0] field	
Step 3	Use soft keys to select	
	Soft Key	Function
	UPPER VALUE	Use touch screen to type in
	RESET	Restore Defaults

5.1.5 **[LOW] setting**

■ Steps to set Lowlimit

Step 1	Press [Setup] key to enter < SETUP > page	
Step 2	Use cursor keys to select [-200.0] field	
Step 3	Use soft keys to select	
	Soft Key	Function
	UPPER VALUE	Use touch screen to type in
	RESET	Restore Defaults

5.1.6 **[INTERVAL**

■ Steps to set interval

Step 1	Press [Setup] key to enter < SETUP > page
Step 2	Use cursor keys to select [INTERVAL]

Step 3	Use soft keys to select	
	Soft Key	Function
	UPPER VALUE	Use touch screen to type in
	RESET	Restore Defaults

Note:

insert the USB memory card, the instrument automatically starts recording data.

Example :

Instrument current time is :2013 -11-20 15:30:35

Memory created under the root directory folder name : 20131120 , file name : 153035.CSV

The data format is Float type, reserve 1 digit behind the decimal point, channels are separated by ″, ″ .

MODEL-TC-T（℃）	CH01	CH02	CH03	CH04	CH05	CH06	CH07	CH08
2013-12-04 15:00:00	28.0	28.1	100.5	19.2	32.4	54.3	21.6	41.9
2013-12-04 15:00:05	28.1	28.0	100.4	19.2	32.4	54.2	21.5	42.0
2013-12-04 15:00:10	28.0	28.1	100.5	19.1	32.3	54.2	21.5	42.0
2013-12-04 15:00:15	28.0	28.1	100.5	19.2	32.4	54.2	21.5	42.0

6. [SYSTEM]Page

This section includes all system information.

At any time, press [SYST] key to enter [SYSTEM] page.

6.1 <SYSTEM CONFIG> page

Following information can be configured in the <SYSTEM CONFIG> page.

- System date and time configuration [DATE/TIME]
- LANGUAGE
- FILE
- TOUCH PANEL
- BRIGHTNESS
- DIM DISPLAY
- APO – Auto Power Off

Figure 6- 1 <SYSTEM SETUP> Page



6.1.1 [DATA]

■ Procedure to set data

Step 1	Press [SYST] key to enter<SYSTEM CONFIG> page.	
Step 2	Select[DATA]	
Step 3	YEAR INCR+	+1Year
	YEAR DECR-	-1Year
	MONTH INCR+	+1Month

	MONTH DECR-	-1Month
	DAY INCR+	+1Day
	DAY DECR-	-1Day

6.1.2 **[TIME]**

■ Procedure to set time

Step 1	Press [SYST] key to enter<SYSTEM CONFIG> page.	
Step 2	Select[TIME]	
Step 3	HOUR INCR+	+1Hour
	HOUR DECR-	-1Hour
	MINUTE INCR+	+1Minute
	MINUTE DECR-	-1Minute
	SECOND INCR+	+1Second
	SECOND DECR-	-1Second

6.1.3 **[LANGUAGE]**

You can switch system language in both Chinese and English.

■ Procedure to change language

Step 1	Press [SYST] key to enter<SYSTEM CONFIG> page.	
Step 2	Select[LANGUAGE]	
Step 3	中文 (CHS)	Switch into Chinese
	ENGLISH	Switch into English

6.1.4 **[FILE]**

■ Procedure of file setting

Step 1	Press [SYST] key to enter<SYSTEM CONFIG> page.	
Step 2	Select [FILE] field	
Step 3	AUTO	All parameters set by user will be saved in system.
	IGNORED	The parameters will be lost after power off
	SAVE NOW	All parameters set by user will be saved in system.

6.1.5 **[TOUCH PANEL]**

Tips	The LCR meter can work well without touch panel. But you cannot type number without touch panel. When you need to input numbers, the touch panel will be activated even it is shut down in system setting.

■ Procedure of setting touch panel

Step 1	Press [SYST] key to enter<SYSTEM CONFIG> page.	
Step 2	Select [TOUCH PANEL] field	
Step 3	ENABLE	Enable touch panel
	DISABLE	Disable touch panel
	CALIBRATE	Calibrate touch panel
	RESET	Reset touch panel data

■ Procedure to calibrate touch panel

Tips	You will need a screen pen to calibrate touch pane. Do not use your finger!

Step 1	Press[SYST]key to enter<SYSTEM CONFIG> page.
Step 2	Select[TOUCH PANEL]soft key
Step 3	Select[CALIBRATE]soft key
Step 4	Use a screen pen to click screen softly to start calibration 
Step 5	Tap the middle of the circle with a pen on Left-Up corner. Then tap the middle of the circle with a pen on the Right-Bottom corner to finish the calibration.
Step 6	Click on the screen softly to exit.

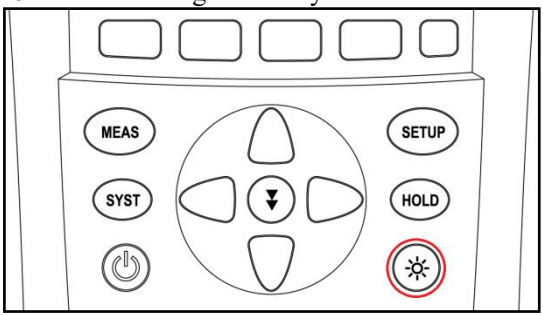
6.1.6 **[BRIGHTNESS]**

Four degrees of brightness 30%,50%,70%,100%

Tips	If powered by external power, the brightness is 100%. If powered by battery, the low brightness can make the meter work longer.

Also, press [☼]to change the brightness.

Figure6- 2 The Brightness key



■ Procedure to change brightness

Step 1	Press [SYST] key to enter<SYSTEM CONFIG> page.	
Step 2	Select [BRIGHTNESS] field.	
Step 3	30%	30% of full brightness
	50%	50% of full brightness
	70%	70% of full brightness
	100%	Full brightness

6.1.7 **DIM DISPLAY [DIM]**

■ Procedure to dim display:

Step 1	Press [SYST] key to enter<SYSTEM CONFIG> page.	
Step 2	Select [DIM DISPLAY]	
Step 3	5 minutes	5 minutes later, brightness becomes 30%
	10 minutes	10 minutes later, brightness becomes 30%
	20 minutes	20 minutes later, brightness becomes 30%
	30 minutes	30 minutes later, brightness becomes 30%
	OFF	Dim display off

Tips: Timer will be reset when press any keys or touch screen.

6.1.8 **AUTO POWER OFF [APO]**

■ Procedure of set auto power off:

Step 1	Press [SYST] to enter<SYSTEM CONFIG> page.	
Step 2	Select[APO]	
Step 3	5 minutes	5 minutes later, power off
	10 minutes	10 minutes later, power off
	20 minutes	20 minutes later, power off
	30minutes	30 minutes later, power off

	OFF	[APO]off

Tips: Timer will be reset when press any keys or touch screen.

7. RemoteControl

This chapter provides the following information to remotely control the AT4202/4204/4208 via the USB interface.

7.1 USB-HID

The USB-Serial Interface allows you to connect AT824/825/826 to a USB port on you PC.
You needn't to install a driver in Windows system.

Figure7- 1 The APPLENT USB logo in windows device manager



7.2 Programming guide

The instrument goes along with data communication and acquisition software. You can also go to our website: www.applent.comto download.

Tips:	If you want to program the software by yourself, you need to know some basic knowledge about USB and USB-HID. Go towww.usb.org to find out more.

Basic API functions:

- CreateFile(

```
devDetail->DevicePath,
ENERIC_READ | GENERIC_WRITE,
FILE_SHARE_READ | FILE_SHARE_WRITE,
NULL,
OPEN_EXISTING,
FILE_FLAG_OVERLAPPED,
NULL);
```

Use CreateFile to open HID equipment, equipment communication channels can be found through functionSetupDiGetInterfaceDeviceDetail.

- ReadFile(

```
hDev,
recvBuffer,
```

```
IN_REPORT_LEN,
  &recvBytes,
&ol);
```

Use ReadFileto read HID equipment. Report based on the data fransferred from IN.

-
```
WriteFile(
hDev,
reportBuf,
OUT_REPORT_LEN,
&sendBytes,
&ol);
```

WriteFile is used to transfer an output report to HID equipment.

- Communication Parameters

VIP:0825
PID:0826
Packet size:64bits

Tips:	Any problems in programming, please contact our tech department, you can send an email to tech@applent.com. USB is always available, you needn't set any parameters.

7.3 Command set

7.3.1 Command packet

Use 64 bits/pack to transfer data; every USB-HID command is 1 pack.

Tips:	Command packets have a fixed format, the user must follow the format agreed by the instrument of writing, and otherwise it is impossible to establish communication. The command word is case-insensitive. Each command packet contains the first 60 bytes of checksum, fill in the last four bytes.

PC command pack format(a C language-defined pack structure):

```
#define program pack(1)
typedef __packed struct
{
 uint     cSize;    //packet size 4bytes    =60
 char  sHeader[24]; //command 24bytes
 char     sPara[28];//parameter   28bytes
 uint  nSignature;  //signature   4bytes
 uint  nChecksum;   //Checksum    4bytes
} TUSB_CMD;
#define program pack()
```

Here,

cSize: 60
nSignature: 0x88805550
sCmd,sPara: reference at SCPI set
nChecksum: 32 checksum

A complete send command pack(from PC) as follows:
cSize: 0x0000003C,
sHeader: IDN?
sPara: (blank)
nSignature: 0x88805550
nChecksum: 0x00002BC1

As command pack format and number of bits are fixed, so command words and parameters which are not qualified with the specified number of bytes must be filled hexadecimal. HEX:0x00.

Table 7- 1 A complete command pack in Hex format.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
00	00	00	40	49	44	4E	3F	00	00	00	00	00	00	00	00
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
00	00	00	00	00	00	00	00	88	80	55	50	00	00	2B	C1

Instrument response pack is 64 bytes, not sufficient for 0x00fill out. (Not ASCII“0”)
A response pack (from instrument):
ASCII format: AT4202,REV A1.0,00000000,Applent Instruments Inc.

To test instrument USB-HID, we have free “ApplentHID communication tester” software, you can download from:www.applent.com

7.3.2 Notation Conventions and Definitions

A definition is not a part of a command, just used in interpretation and is not included in transfer.
The following conventions and definitions are used in this chapter todescribe USB-HID operation

Table7- 2 Notation Conventions and Definitions

<>	Name of a parameter
[ ]	The content is optional
|	Select from several options

7.3.3 Parameter types

Parameters may be of four types as follows.

Table7- 3 Available data type

Format		Samples
<NR1>	Integer	100,+100,-100
<NR2>	Rational	1.23,+1.23,-1.23
<NR3>	Floating-point	1.23E4,+1.23E4,-1.23E4,-1.23e-4
<NR4>	Floating-point with magnification	1.23K,1.23N,1.23U (magnification in following Table)

Table7- 4 Magnification

Definition	Suffix
1E18 (EXA)	EX
1E15 (PETA)	PE
1E12 (TERA)	T
1E9 (GIGA)	G
1E6 (MEGA)	MA
1E3 (KILO)	K
1E-3 (MILLI)	M
1E-6 (MICRO)	U
1E-9 (NANO)	N
1E-12 (PICO)	P
1E-15 (PEMTO)	F
1E-18 (ATTO)	A

7.4 Command Reference

All commands in this reference are fully explained and listed in thefollowing functional command order.

- MODEL Model subsystems
- BEEP Beep subsystem
- UNIT Unit subsystem
- CHANON Chanon subsystem
- HIGH High subsystem
- LOW Low subsystem
- FETC? Fetc? subsystem
- IDN? Version check subsystem
- RST Hot start subsystem
- ERR Error subsystem

7.4.1 MODELSubsystem

- model <tc-t|tc-k|tc-j|tc-n|tc-e|tc-s|tc-r|tc-b>

	To set the model
sHeader	Model
sPara	<tc-t|tc-k|tc-j|tc-n|tc-e|tc-s|tc-r|tc-b>

- model?

	To check the current model
sHeader	Model?
sPara	
Response	<tc-t|tc-k|tc-j|tc-n|tc-e|tc-s|tc-r|tc-b>

7.4.2 BEEPSubsystem

- beep <on|off>

	To set the beep
sHeader	Beep
sPara	<on|off>

- beep?

	To check the current beep
sHeader	beep?
sPara	
Response	<on|off>

7.4.3 UNIT SubSystem

- unit<unit-c|unit-k|unit-f>

	To set the unit
sHeader	Unit
sPara	<unit-c|unit-k|unit-f>

- unit?

	To check the current unit
sHeader	Unit?
sPara	
Response	<(℃)|(K)|(F)>

7.4.4 CHANON SubSystem

- Chanon<integer>

	To set the channel status
sHeader	chanon
sPara	<integer> 8-bit data , each bit representing a channel 0: off 1: Open Example: 11111110 , channel 1 is closed , 2 to 8 channels is open

- chanon?

	To check the current channel status
sHeader	chanon?
sPara	
Response	<integer>

7.4.5 HIGH SubSystem

- high<float>

	To set upper limit
sHeader	High
sPara	<float>

- chigh<int,float>

	To set upper limit
sHeader	High
sPara	<int,float>

- high?

	To query current upper limit
sHeader	High?
sPara	
Response	<float,float,…float>

7.4.6 LOWSubSystem

- low<float>

	To set low limit
sHeader	Low
sPara	<float>

- clow<int,float>

	To set low limit
sHeader	Low
sPara	<int,float>

- low?

	To query current low limit
sHeader	low?
sPara	
Response	<float,float,…float>

7.4.7 FETC? SubSystem

- FETC?

	To query test result
sHeader	FETC?
sPara	
Response	<float,float,float,float,float,float,float,float> **RET>28.0,27.9,28.1*<NL>***

7.4.8 SYST System SubSystem

■ SYST:KEYL <ON | OFF | 1 | 0>

	To lock/unlock keypad and touch screen
sHeader	SYST:KEYL
sPara	<ON | OFF | 1 | 0>

Tips: When the keypad and screen is locked, press[HOLD]to unlock!
Power key cannot be locked

7.4.9 IDN? Subsystem

■ IDN?

	To check version information
sHeader	IDN?
sPara	
Response	AT4202,REV A1.0,<Serial Number>,Applent Instruments Inc.

7.4.10 RST Subsystem

■ RST

	To start in heat
sHeader	RST
sPara	

7.4.11 Error Subsystem

■ ERR?

	To check the message sent previously
sHeader	ERR?
sPara	
Response	In the following Table

Table 7- 5 The Error Code and message

0, No error
1, Bad command
2, Parameter error
3, Missing parameter
4, Invalid multiplier
5, Numeric data error
6, Value too long
7, Invalid command

8. Specification

This chapter describes the specifications and supplemental performance characteristics of the AT4202/4204/4208:

- Specifications
- Dimension

8.1 General Specification

The Data is Achieved under the Following Conditions:

- Temperature: 23℃±5℃
- Humidity: ≤65% R.H.
- Warm-up Time: >60 minutes
- Calibration Time：12months

Test Environment:

- Temperature and humidity range: 15℃~35℃,80% RH or less
- Storage temperature and humidity range: 10℃~40℃,10~90% RH

Thermocouple Type:	T,K,J,N,E,S,R,B
Display:	5 digits
Max Reading:	1800.0℃
Min Reading:	-200.0℃
Beep:	ON/OFF
Interface:	USB-HID
Program Language:	SCPI
Auxiliary Function:	Keypad Lock

8.2 Accuracies

Instrument Accuracy does not include the standard contact compenstation
Precision.

Model	Range（℃）	Accuracy (℃)
T	-150℃ to 0℃	±1.0℃
	0℃ to 400℃	±0.8℃
K	-100℃ to 0℃	±1.2℃
	0℃ to 1350℃	±0.8℃
J	-100℃ to 0℃	±1.0℃
	0℃ to1200℃	±0.7℃
N	-100℃ to 0℃	±1.5℃
	0℃ to 1300℃	±0.9℃
E	-100℃ to 0℃	±0.9℃
	0℃ to 850℃	±0.7℃
S	0℃ to 100℃	±4.5℃
	100℃ to 300℃	±3.0℃
	300℃ to 1750℃	±2.2℃
R	0℃ to 100℃	±4.5℃
	100℃ to 300℃	±3.0℃
	300℃ to 1750℃	±2.2℃
B	600℃ to 800℃	±5.5℃
	800℃ to 1000℃	±3.8℃
	1000℃ to 1800℃	±2.5℃

Standard connection compensation need to add ±0.5℃ based on thermocouple measuring accuracy.
The measuring accuracy of thermocouple sensor gives priority to sensor supplier's standard.

8.3 Dimension

