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Rev.B

[AT512 PRECISION RESISTANCE METER]

User’s Manual

ONMEAS®

Rev.B

AT512

DC Resistance Meter



User's Guide

Scan QR code for operation video

Safety Summary

Warning Dangerous：

When you notice any of the unusual conditions listed below, immediately terminate operation and disconnect the power cable.Please Contact Applent Instruments Incorporation sales representative for repair of the instrument. If you continue to operate without repairing the instrument, there is a potential fire or shock hazard for the operator.

- Instrument operates abnormally
- Instrument emits abnormal noise, smell, smoke or a spark-like light during the operation.
- Instrument generates high temperature or electrical shock during operation.
- Power cable, plug, or receptacle on instrument is damaged.
- Foreign substance or liquid has fallen into the instrument.

Safety Summary

Warning Dangerous：

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 Circuits	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.
DO NOT Service Or Adjust Alone	Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
DO NOT Substitute Parts Or Modify Instrument	Because of the danger of introducing additional hazards, do not install substitute parts or perform unauthorized modifications to the instrument. Return the instrument to an Applent Inc Sales and Service Office for service and repair to ensure that safety features are maintained.
 WARNING & DANGEROUS	Dangerous voltage levels, capable of causing death, are present in this instrument. Use extreme caution when handling, testing, and adjusting this instrument.

CERTIFIACTION, LIMITED & LIMITATION OF LIABILITY

Applent Instruments, Inc.（shortened form **Applent**）certifies that this product met its published specifications at the time of shipment from the factory. Applent further certifies that its calibration measurements are traceable to the People's Republic of China National Institute of Standards and Technology, to the extent allowed by the Institution's calibration facility or by the calibration facilities of other International Standards Organization members.

This Applent instrument product is warranted against defects in material and workmanship for a period corresponding to the individual warranty periods of its component products. **The warranty period is 1 years and begins on the date of shipment.** During the warranty period, Applent will, at its option, either repair or replace products that prove to be defective. This warranty extends only to the original buyer or end-user customer of a Applent authorized reseller, and does not apply to fuses, disposable batteries or to any product which, in Applent's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling.

For warranty service or repair, this product must be returned to a service facility designated by Applent. The buyer shall prepay shipping charges to Applent and Applent shall pay shipping charges to return the product to the Buyer. However, the Buyer shall pay all shipping charges, duties, and taxes for products returned to Applent from another country.

Applent warrants that its software and firmware designated by Applent for use with an instrument will execute its programming instruction when properly installed on that instrument. Applent does not warrant that the operation of the instrument, or software, or firmware, will be uninterrupted or error free.

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside the environmental specifications for the product, or improper site preparation or maintenance.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. APPLENT SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, WHETHER ARISING FROM BREACH OF WARRANTY OR BASED ON CONTRACT, TORT, RELIANCE OR ANY OTHER THEORY.

Applent Instruments, Inc.
Changzhou,
Jiangsu,
People's Republic of China.
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Rev.B0 January, 2008
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1. Unpacking and Inspection

This chapter provides the following information:

- Packing List
- Power Supply
- Setup Fuse
- Operating Environment
- Cleaning

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 Table 1-1, check that all packaged items supplied with the meter have been provided as per the specified optioned.

Table 1-1 Included Accessories

Name	Qty	Remark
User's Manual	1	
AC Power Cord	1	220V/50Hz
Fuse	2	1A Slow-Blow
Kelvin Test Leads	1	ATL501
Test Report	1	
Product & Warranty Certification	1	

1.2 Power Supply

Confirm that the power supplied to the AT512 meets the following requirements:

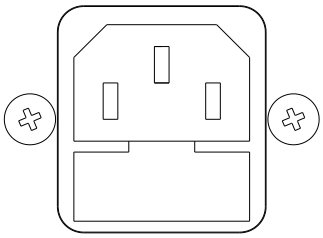
Voltage：198-252V AC/110V
Frequency：50/60Hz
Consumption：15VA



WARNING：
The ground wire should be earthed to avoid being electric shock.
If you change the power cord, make sure the ground wire earthed.

1.3 Setup Fuse

Figure 1-1 Fuse Holder



~Line: 47.5Hz - 52.5Hz
198VAC - 242VAC
10VA MAX

Fuse: 250V, 0.5AH
Slow Blow

Please use the following fuse type：
UL/CSA type, Slow-Blow, 5×20-mm miniature fuse, 0.5A, 250 V .

1.4 Operating Environment

Ensure that the operating environment meets the following requirements.
Temperature Range：0°C～55°C，
Humidity Range：<95%RH, 40°C

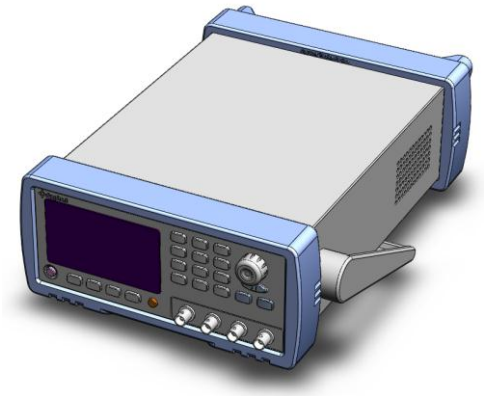
1.5 Cleaning

To prevent electrical shock, disconnect the AT512 power cable from the receptacle before cleaning.
Use a dry cloth or a cloth slightly dipped in water to clean the casing.
Do not attempt to clean the AT512 internally.

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

1.6 How to Remove the Handle

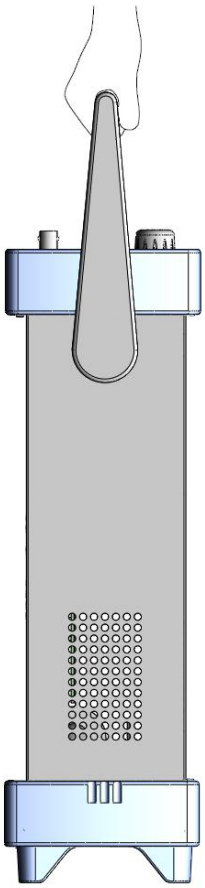
A handle kit is attached to the AT512



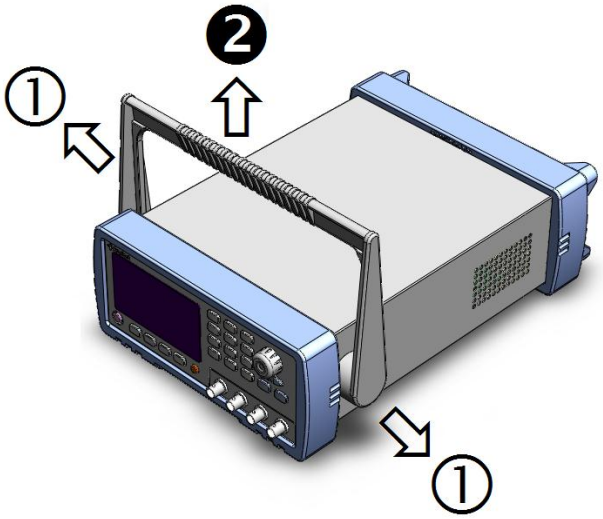
1 Retracted



2 Extended



Carrying Position



Remove Handle（Lift the handle perpendicular to the unit while pulling it in the direction of ①.）

2. General

This chapter provides the following information:

- Index
- Models Introduction
- Main Specification
- Feature Overview

2.1 Index

Thank you for purchasing AT512 Precision Resisitance Meter.

AT512 is one kind of high precision and wide measuring range resistance meter. High integration & scientific structure design make the case of AT512 not only light and handy, but also strong and quake-proof which makes AT512 suitable for laboratory, measuring room and site operation.AT512 has worldwide test performance. Resistance from 0.1 to 110M can be measured With the Speed 2/10/150times/second and the accuracy of 0.01%.

Sorting equipment with professional features, with a group of stored data, various sorting information ring settings, can also be equipped with Handler interface, used in automatic sorting system to complete fully automatic production line testing. And an RS232C interface for remote control, data acquisition and analysis.

Computer remote control commands compatible with SCPI (Standard Command for Programmable Instrument Programmable Instruments standard command set), complete and efficient remote control and data acquisition functions.

AT512 measures of high, medium and low-value resistor; various switch contact resistance; connector contact resistance; relay line package and the contact resistance; transformers, inductors, motors, deflection coil winding resistance; wire resistance; cars, boats, aircraft riveting metal resistance; printed version of the line and pore of resistance and so on.

2.2 Main Specification

AT512 technical specifications, including the basic technical specifications of the instrument and equipment testing allows. These specifications are in the instrument factory can achieve.



Detailed technical specifications see 6. Specification

- Basic Accuracy：0.01%
- Maximum display digits:105000
- 11 ranges automatic and range hold
  Resistance range :0.1μΩ ～ 100MΩ
- Fast-high accuracy measurement
  Test speed of 150 times / sec, it still can guarantee high test accuracy (0.01%) and maxim display digits: 105000
- 4-Terminal Test
- High test current and Low test current modes
  Test current modes are used for the different type DUT.
- Dual-display.
  Direct display ,ΔABS,Δ%,GD/NG
- Trigger Modes:
  Internal Trig, External Trig and Remote Trig.

2.3 Feature Overview

- High brightness Vacuum Fluorescent Display
  window size: 98mm×58mm
- Calibration
  Short Zeroing
- Comparator (sorting) function:
  Built-in 30 sorting files and Output 3 levels (HI, IN and Low) or (GD, NG), display, beep sound.
  - Display：Direct display on the VFD displayer.
  - Output：Output the sorting results by the Handler interface,RS232C or IEEE-488 interface.
  - Beep：Setup the sorting results and turn ON/OFF Beep.
- Beep and VFD Brightness can be Adjusted
  Setup GD or NG Beep and adjust VFD Brightness.
- Thermoelectric power compensation
  Small current pulse test mode, to compensate for thermoelectric power, minimizing the impact of thermoelectric power
- Keypad locked function
- Optional function：
- Handler interface：
  Output: the results of comparator ,EOC signal.
  Input: the numbers of the compare file, Trigger signal.
- RS232C interface：Used SCPI with single 3-wire serial interface.

3. Start up

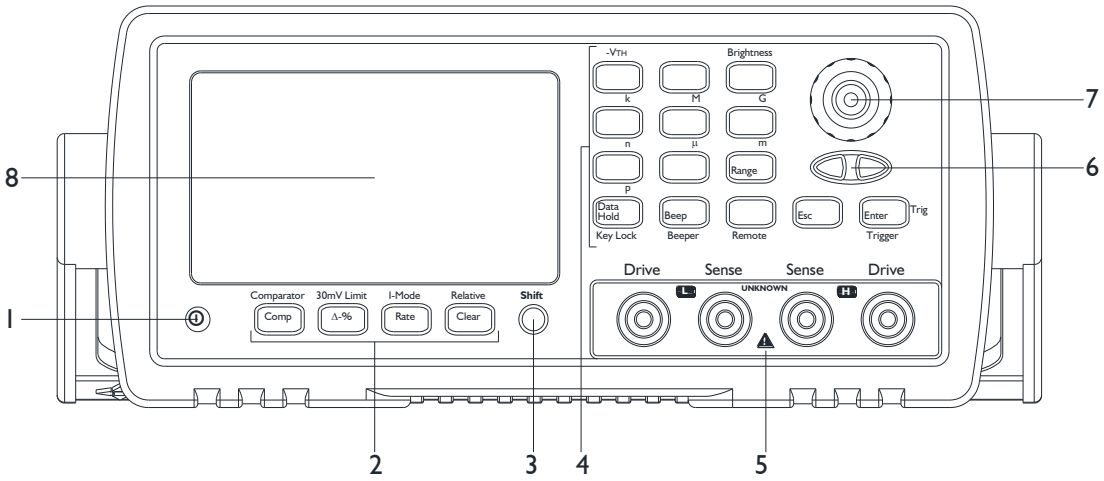
This chapter provides the following information:

- A tour of front panel
- A tour of rear panel
- How to Remove the Handle
- Power Up
- Display information
- Measurement configuration

3.1 A tour of front panel

3.1.1 Front Panel Overview

Figure 3-1 Front Panel Overview



	Function
1	Power Switch. Down：ON; Up：OFF.
2	Keypad I
3	Shift key (Yellow).Press the key, the “shift” indication is ON and the keys are the 2nd Function (Yellow).
4	Keypad II
5	Input Pot Connect with Kelvin test leads. H High-Pot L Low-Pot.
6	Arrow keys：Select the options.
7	Knob: To choose function and input number value.

3.1.2 Keypad

ASSUMER：

On the front Panel:

Black Words on Button represents 1st Function；

Orange Words on Panel represents 2nd Function;
Blue Words on Button represents Numeric Key.

Figure 3-2 Keypad I

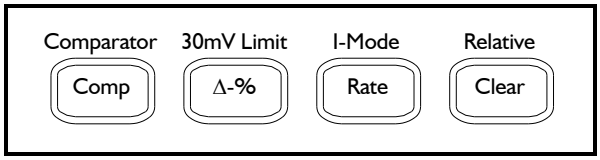
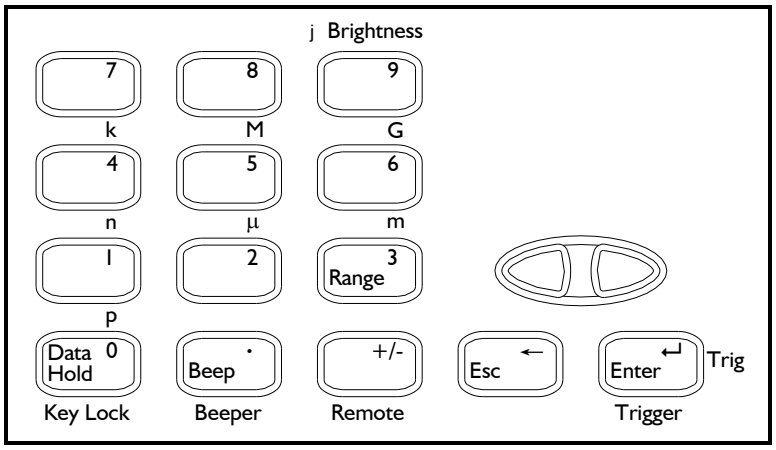


Figure 3-3 Keypad II



1. Primary Function

ASSUMER:

Black Words on Button represents 1st Function;
The keys will be 1st functions while the Shift mark on VFD is off.

Key	Function
Comparator	Setup comparator
Δ-Δ%	*The function is invalid.
Speed	Measurement speed:（Slow），（Medium），（Fast）.
Clear	Correction(Short Zeroing)
Range	Automatic, Range Hold. The AUTO indication is ON, range is automatic.
DH	Data maintained. Equipment to stop testing, current measurements remains on the displayer, not to refresh. The *DH* indication is ON, the data is held.
Beep	Turn ON/OFF Beep.
<,> Arrow keys	Select the range. It is enabled in the range hold status.
Esc	Return to the upper status. It is enabled in the setup status.
Enter	Confirm the operations. It is enabled in the setup status.

2. Secondary Function（Shift）

ASSUMER:

On the front Panel:
Orange Words on Panel represents 2nd Function;
The keys will be 2nd function while the Shift mark on VFD is on.

Key	Function
Comparator	Open or close comparator function.

30mV-limited	*The function is invalid in the version.
Test Current Modes	Select test current modes: High current（H-Cur）、Low current（L-Cur）and Plus current（P-Cur）
Relative Value	Relative value display. The REL indicator is ON, the value is the Correction value.
Clear	Correction(Short Zeroing)
Temperature Correction	Used to set the compensation coefficient and temperature.
Brightness	Adjust VFD Brightness
p,n,μ,m,k,M	Unit. Select the unit in the input status.
Key Lock	Keypad Locked. Keypad locked, only Shift + keypad lock (KeyLock) button can respond
Beep	Setup beep's tone.
Remote Control	Choose interfaces: RS232, GPIB and setup communication parameters.
Trigger	Choose Trig modes: internal, external, manual and remote.

3. Numeric Keys

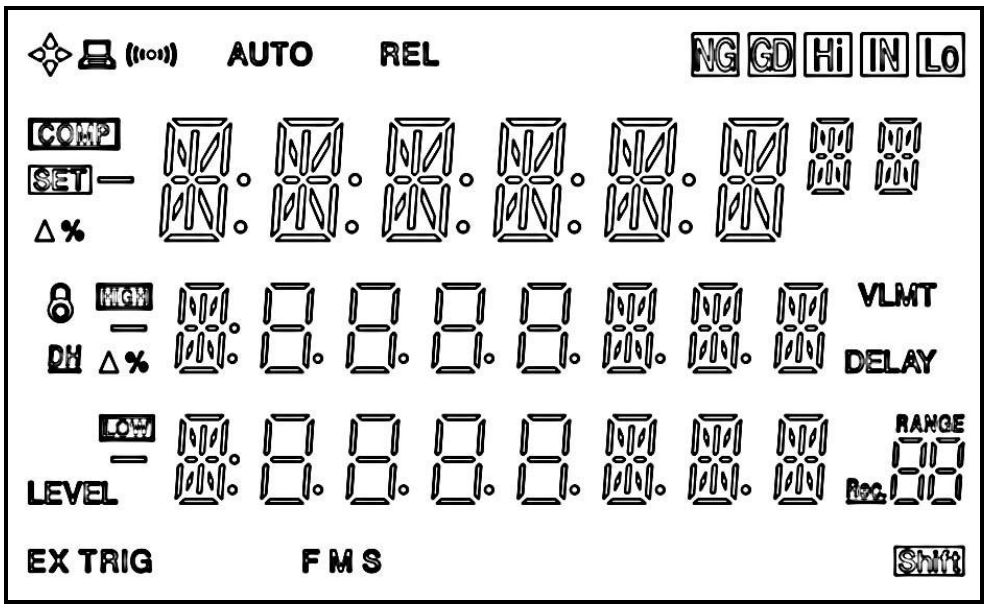
ASSUMER:

On the front Panel:
Blue Words on Button represents Numeric Key.

The numeric keys include blue word keys, ESC key, Enter key and units (p, n, μ, m, k, M, G).

3.1.3 VFD

Figure 3-4 VFD



Applent's Trade Mark.

Remote Control Indication.

Beep is ON.

AUTO Range automatic indication.

REL Relative function is ON.

■	Fail.
■	Good.
■	Above the upper limit value.
■	Pass.
■	Blow the lower limit value.
COMP	Comparator function is ON.
■	Setup comparator status.
■	Upper limit value.
■	Lower limit value.
🔒	Keypad Locked.
DH	Data Hold.
LEVEL	Test Current Mode
EX	External Trigger Mode.
TRIG	Manual Trigger Mode.
F M S	Speed: Fast, Medium and Slow.
DELAY	The function is invalid in the version.



Display Range number in the measurement status and display the sorting number in the comparator setup status.

■ The stall function.

3.2 Rear Panel

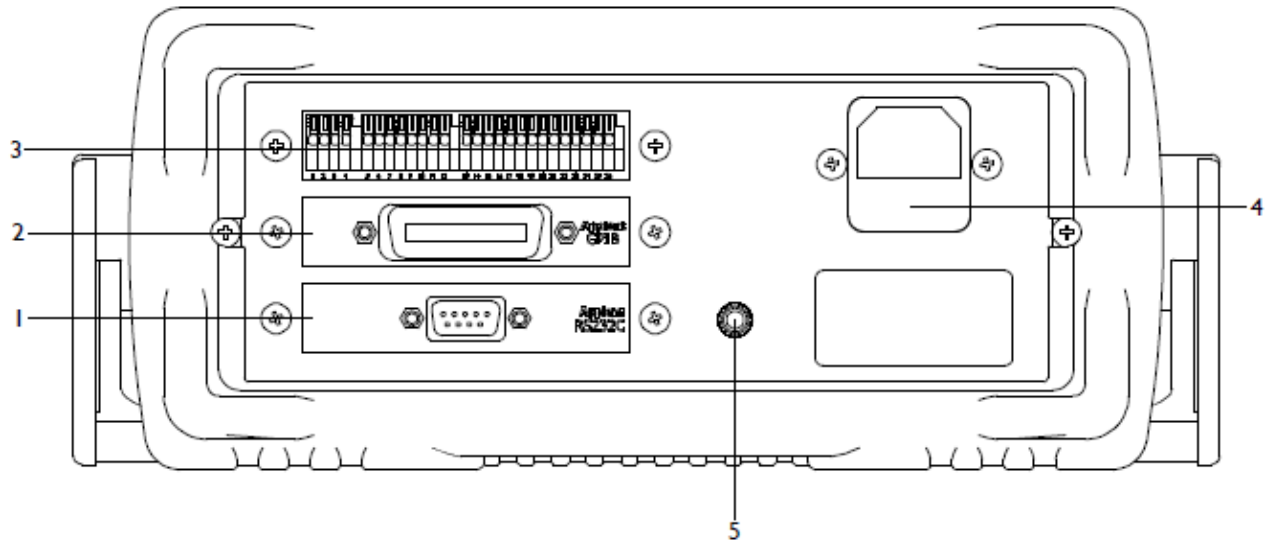


Figure3-5 Rear Panel

1. RS232C interface.
2. GPIB（IEEE-488） interface (option)
3. Handler interface
4. AC power cord receptacle and fuse holder

5. Grand terminal

3.3 Power Up

3.3.1 Line Power Connection

The “+”key is power switch.

 Power ON.  Power OFF.

3.3.2 Power-up Sequence：

AT512 is power up, it performs self-tests on its Flash-Rom, RAM and momentarily lights all segments and indicators. If a failure is detected, the instrument will not enter the measurement state.

3.3.3 Power-up Defaults

The power-on default will be the last configuration you saved.

3.3.4 Warm-up Time

AT512 is ready to be used as soon as the power-up sequence has completed. However, to achieve the accuracy rating, warm up the instrument for 15 minutes.

3.4 Measurement configuration

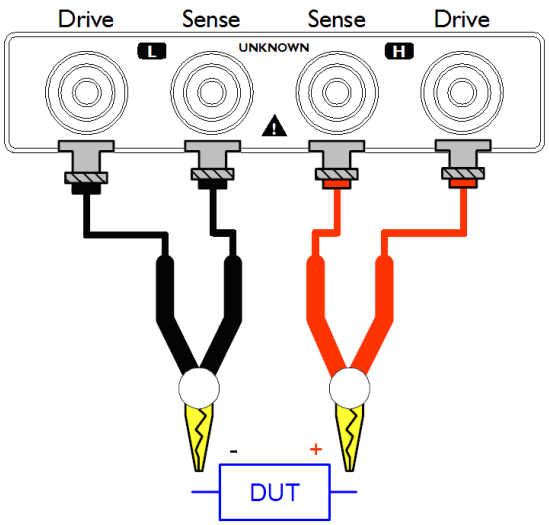
3.4.1 Connection Test side

r ed logo testing BNC cables into the H in the first rotation;

black logo testing BNC cables into the L in the first rotation.

Red cable to test the high-pot

Black cable to test the low-pot



Warning:
No putting current source, voltage source directly access test side. Energy storage device access to testing after discharging.

3.4.2 Range

In the automatic range status, AT512 will choose the fit range by the following table:

Table 3-1 Range

NO.	Reference Resistance	Up	Down
1	10mΩ	↓	↑
2	100mΩ	10.5mΩ ↓	10.2mΩ ↑
3	1Ω	105mΩ ↓	102mΩ ↑
4	10Ω	1.05Ω ↓	1.02Ω ↑
5	100Ω	10.5Ω ↓	10.2Ω ↑
6	1kΩ	105Ω ↓	102Ω ↑
7	10kΩ	1.05kΩ ↓	1.02kΩ ↑
8	100kΩ	10.5kΩ ↓	10.2kΩ ↑
9	1MΩ	105kΩ ↓	102kΩ ↑
10	10MΩ	1.05MΩ ↓	1.02MΩ ↑
11	100MΩ	10.5MΩ	10.2MΩ

Press Range < > keys to choose the fit range.

Tip:

Range Hold is help increasing the measurement rate..
In the "automatic range" status, the meter should be calibration (zeroing) when it can't choose the fit Range.
Full calibration (Zeroing) in the "Calibration".

3.4.3 Speed

Press Rate key to choose the following speed:

Fast: Fast Sampling
Medium: Medium Sampling
Slow: Slow Sampling

Full Sampling Speed in the Appendix A.

3.4.4 Calibration (Short Zeroing)

1. Press Clear key to the Clearing status and make the test clips short-circuit like the following way before zeroing.

Figure 3-5 ight Way

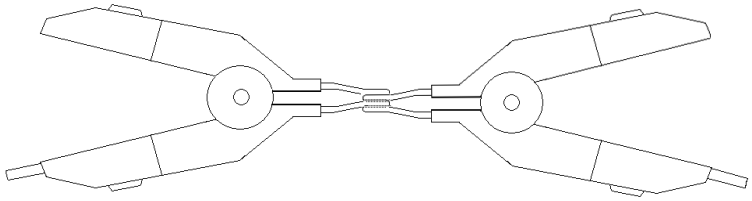
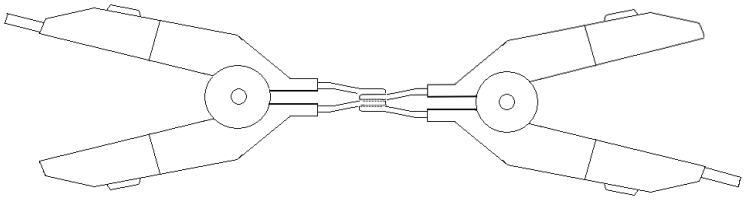


Figure 3-6 rong Way



2. Press Enter key to Calibration.The meter zeroing all ranges in the automatic range or the present range in the hold range.

Data will be saved in the nonvolatile memory when zeroing is over.

3. Press Esc or when zeroing is over, return to the measurement status.

3.4.5 Relative Value

Press [redacted] Relative key to Turn ON/OFF the relative function. The REL indicator is OFF; the value is the real measurement value.

3.4.6 Temperature Correction Function

The temperature probe is plugged into the jack，the function is enabled.

Resistance value of temperature compensation woks when the meter is equipped with temperature probe temperature.

Press [redacted] ＋ “8” keys to turn ON/OFF temperature relative function. The REL indication is ON, the function works.

Input temperature coefficientα：

1. Press [redacted] ＋ “ 8 “keys to input password “11111” （5 digits）and setup the α.
2. For example, copper material temperature coefficient of 20 ℃ is 0.00393,enter 0.393％.
3. Press [redacted] ＋ “8 “ keys to input password“22222”（5 digits）and setup temperature status.
4. Press number keys to input the temperature value. The normal relative temperature is room-temperature (20°C).

Compensation formula：

$$F2 = \frac{100 + \alpha \times (T - To)}{100} \times F1$$

T0 － Reference temperature（take 20℃）

T － Current temperature

α— Temperature coefficient of reference temperature
F1 — Without compensation value
F2 — Temperature compensated value

3.4.7 Keypad Locked

Press Shift Key Lock key to lock/unlocked the keypad.

The Key Lock key is only available and the other keys are in vain when the keypad is locked

 indicator lighted means the keypad is locked.

4. Comparator

This chapter provides the following information:

- Turn ON/OFF
- Setup comparator record number file
- Setup nominal value and limit value
- Setup Beep

4.1 Turn ON/OFF Comparator

AT512's boot comparator is ON in default, you can press Comp key to close.
When the comparator function is OFF, apparatus, sorting system will no longer work at the same time with the Handler interface signals on the comparator output will be shut down.

4.1.1 Setup Comparator Record File Number



1. Press Shift Comparator to the setup comparator.
2. Rec.09 indicator at the lower right corner of screen flashes means you can setup record number.
3. Press < >or twist knob to choose the record number which built-in 30 files.
4. Press digits to input value.

a. Press Enter to input nominal value and limit value.
b. Press Esc to exit setup comparator and the record file is saved.

4.1.2 Setup nominal value and limit value



1. Press Shift Comparator key to the setup comparator status.
2. Repeat steps from 2-3 and press Enter to input the comparator status and the digits are blink.
3. Press < > keys or twist knob to choose the resistance's nominal value (1st line), upper limit value (2nd line) and lower limit (3rd line)
4. Press digit number keys or Enter key to input the value.
5. Press Enter key orShift + Unit keys to input the current value.
6. Repeat steps from 3~5 to input the other values.
7. PressEsckey to exit the setup and return the

measurement status.

TIP：

Using skill：The present value is flashed ,you can press digits to input the value directly and it's not necessary to press the Enter key first to enter the input status.

NOTE：In the number input status, press Enter key, the unit is 1.
For example： 10+Enter :input value is :10Ω。

4.2 Setup Beep

4.2.1 Turn ON/OFF Beep

Press Beep key to turn ON/OFF beep function.

Indication is ON, the beep function is ON.

4.2.2 Setup Beep

1. Press [redacted] + Beep keys to the beep setup status.
2. Twist the Knob to choose::GD（Pass）,NG（Fail）
3. Press Esc key to exit the setup and back to the measurement status.
5. PressEnter key to end the setup and store the setup value and back to the measurement status.

4.2.3 How comparator works

When the comparator function is enabled, the measure value compares with the upper limit and the lower limit values.

Sorting Flow：

Limit Lower value ≤ Rx ≤ Upper Limit	Pass	Display GD and IN
Rx < Limit Lower value	Fail	Display NG and LO
Rx > Limit Upper value	Fail	Display NG and HI

5. Handler Interface

!

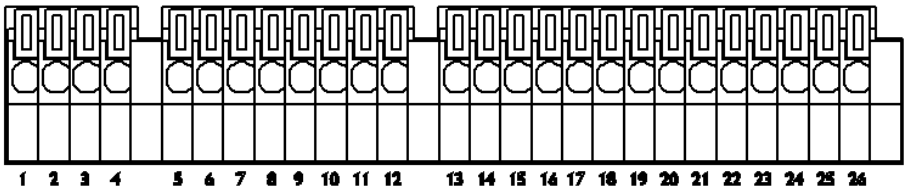
This chapter provides information of AT512's built-in handler interface. Include:

- Pin Assignment
- Circuit Diagram
- Timing Chart

The AT512's built-in handler interface outputs signals that indicate the end of a measurement cycle, the result of bin sorting by the comparator. In addition, the instrument accepts input of external trigger. You can use these signals to easily integrate the AT512 with system controller.

5.1 Pin Assignment

Figure 5-1 Pin Assignment



■ Power Supply

PIN	Signal	Description
1	NC	Unused
2	EXT.DC+5V	External DC Voltage: +5V.
3	GND	Power ground.
4	NC	Unused

■ External control signal input

5	TRIG	An external trigger signal
6	NC	Unused
7	NC	Unused
8	COMP.4	Comparator record files.
9	COMP.3	Built-in 30 files.
10	COMP.2	
11	COMP.1	
12	COMP.0	

■ Comparator record files

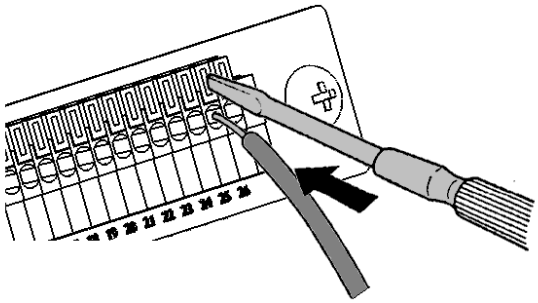
COMP 4-0	NO.	COMP 4-0	NO.	COMP 4-0	NO.	COMP 4-0	NO.
11111	Unchanged	10111	7	01111	15	00111	23
11110	0	10110	8	01110	16	00110	24

11101	1	10101	9	01101	17	00101	25
11100	2	10100	10	01100	18	00100	26
11011	3	10011	11	01011	19	00011	27
11010	4	10010	12	01010	20	00010	28
11001	5	10001	13	01001	21	00001	29
11000	6	10000	14	01000	22	00000	Unchanged

■ External signal output

13	NC	Unused
14	NC	Unused
15	NC	Unused
16	NC	Unused
17	NC	Unused
18	NC	Unused
19	Lo	“Parameter below lower limit” signal. This signal is output when the parameter is below the lower limit.
20	IN	Output the Pass signal.
21	Hi	“Parameter beyond upper limit” signal. This signal is output when the parameter has above the upper limit.
22	GD	Output the Pass signal.
23	NG	Output the Fail signal.
24	NC	Unused
25	NC	Unused
26	EOC	“End of measurement cycle” signal. When this signal is output, the measurement data and sorting results are available.

5.2 Connection



1. Using the screwdriver under the pressure lock button.
2. Press the lock button, insert the cable.
3. Release lock button, the cable will be locked.
4. Insert or remove the cable, repeating the above steps.

ϕ Recommended diameter:
Single-core: ϕ0.65mm (AWG #22)
Multi-core:0.32mm^2 (AWG #22)
Wire Limit: AWG # 16-24.
Strip length: 4 ~ 5mm
Locking button :(ϕ3, tip width 2.6mm).

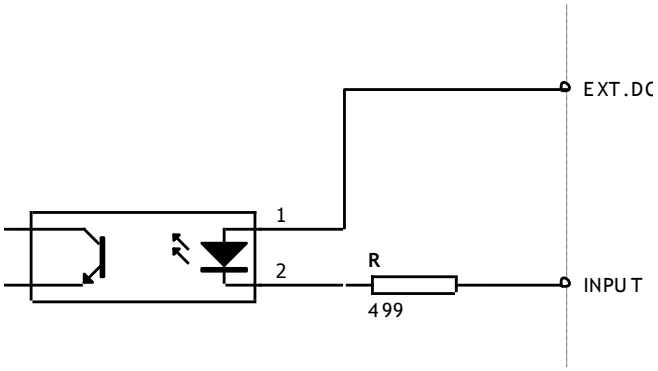
- Electrical Parameters

Power Supply： +5~24VDC
Output Signal： Built-in pull-up resistor on the collector output.

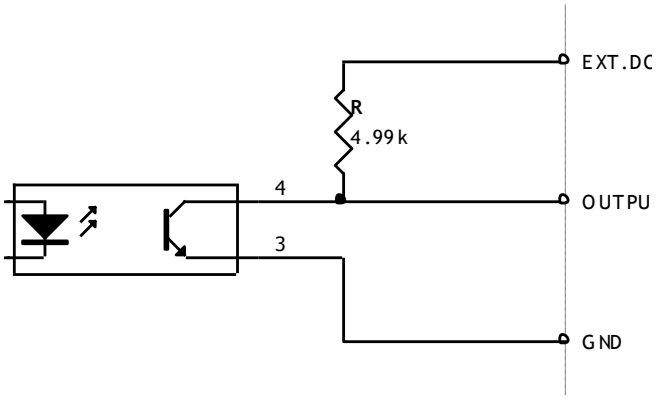
Optical isolation.
Low level is enabled.
Maximum voltage: Power supply voltage.
Maximum current：5~8mA。
Input signal： Optical isolation.
Low level is enabled.
Maximum current：50mA

NOTE：
Power supply voltage should not exceed the power requirements to avoid damage to the interfaces.
To avoid damage to the interfaces, after the wiring in the meter off.
If the output signal of the user to control the relay, the relay must use the reverse diode energy release.

- Typical Circuit Diagram of Handler Interface Input signals.



- Typical Circuit Diagram of Handler Interface Output signals.



6. Specification

Appendix provides the following information:

- Feature Index
- General Specification
- Dimensions

6.1 Feature Index

The following data are measured under the following conditions：
Temperature：23℃ ±5℃
Humidity: <=80% R.H
Correction：Short Zeroing
Warm up：60 minutes and more
Calibration Time：6 months

6.2 High Current Test

Sample Speed：
Fast： 150 meas/sec
Medium： 10 meas/sec
Slow： 2meas/sec

Test Current Accuracy：0.1%

Range		Maxim Display Value	Resolution	Fast	Medium & Slow	Test Current	Open-circuit terminal voltage
1	10mΩ	10.5mΩ	0.1μΩ	0.2%+200 bit	0.1%±10 bit	1A	<1V
2	100mΩ	105mΩ	1μΩ	0.1%+100 bit	0.05%±4 bit	100mA	<1V
3	1Ω	1.05Ω	10μΩ	0.05%+20 bit	0.02%±2 bit	100mA	<1V
4	10Ω	10.5Ω	0.1mΩ	0.05%+20 bit	0.01%±2 bit	10mA	<1V
5	100Ω	105Ω	1mΩ	0.02%+10 bit	0.01%±2 bit	1mA	<5V
6	1kΩ	1.05kΩ	10mΩ	0.01%+5 bit	0.01%±2 bit	1mA	<5V
7	10kΩ	10.5kΩ	0.1Ω	0.02%+5 bit	0.01%±2 bit	0.1mA	<5V
8	100kΩ	105kΩ	1Ω	0.02%+5 bit	0.02%±2 bit	1mA	<10V
9	1MΩ	1.05MΩ	10Ω	0.05%+20 bit	0.05%±3bit	0.1mA	<10V
10	10MΩ	10.5MΩ	0.1kΩ	0.1%+50 bit	0.05%±10 bit	10uA	<10V
11	100MΩ	100.500MΩ	1kΩ	0.3%+50 bit	0.2%±10 bit	1μA	<10V

6.3 Low Current Test

（Only for:1Ω ~1kΩ，Other rangs are the same with High Current ）

Sample Speed：

Fast： 150 meas/sec

Medium： 10 meas/sec

Slow： 2 meas/sec

Test Current Accuracy：0.1％

Range		Maxim Display Value	Resolution	Fast ,Medium & Slow	Test Current	Open-circuit terminal voltage
3	1Ω	1.05Ω	100μΩ	0.1%±1bit	10mA	<1V
4	10Ω	10.5Ω	1mΩ	0.1%±1bit	1mA	<1V
5	100Ω	105Ω	10mΩ	0.1%±1bit	0.1mA	<1V
6	1kΩ	1.05kΩ	100mΩ	0.1%±1bit	0.1mA	<1V

6.4 General Specification

Displayer： Vacuum Fluorescent Display,Size:98mmx55mm.

Parameters： Direct reading ,（ΔABS），（Δ%）and Sorting Results..

Resistance Range： 0.1uΩ ~ 100MΩ ，Resolution：1μΩ。

Maxim Display Value: 10500

Test Signal： 10mΩ~10kΩ (Constant Current Test)，100kΩ~100MΩ (Constant Voltage Test).

Trigger Mode： Internal、External and Remote.

Range： Automatic and Manual

Correction： Short Zeroing

Comparator： Output NG-LO, GD-IN, NG-HI，built-in 30 sorting files.

Beep： GD、NG、Open/Close Function and Adjust volume.

Test Terminal： 4 terminals (2 tester terminals & 2 device terminals), Outside the shielding to terminal.

Interface： Handler interface；

RS232 interface；

GPIB（IEEE488） interface.

Programmed Language： SCPI

Environment： Operating： T & H: 10℃~40℃, 10~90% RH

Storage： T & H: 0℃~50℃, 10~90% RH

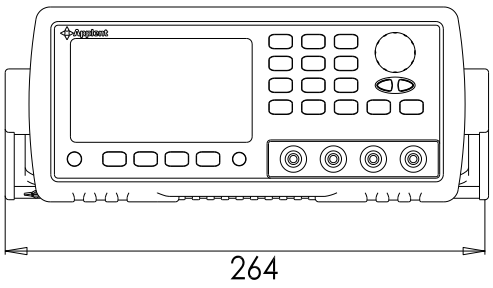
Power： 198V ~ 252VAC ,48.5Hz ~ 52.5Hz

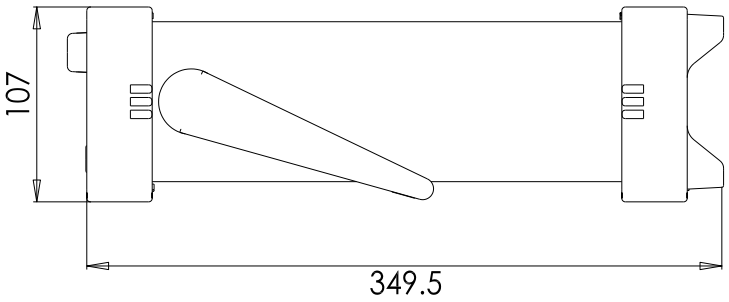
Fuse： 0.5A ,Slow-Blow

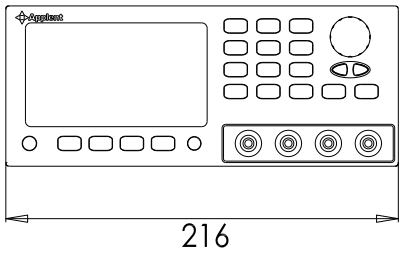
Consumption： <=15VA

Weight： 3.5kg Net

6.5 Dimensions









Applent Instruments

-AT512 User's Guide-English

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