KUSAM-MECO®

An ISO 9001:2015 Company

5½ DIGIT BENCH TOP TRMS DIGITAL MULTIMETER

MODEL KM 3560



OPERATION MANUAL

Brief Introduction

This 5.5 digits digital multimeter is a high accuracy and stability instrument to measure electric parameters such as voltage, current, resistance, frequency, etc. The large screen and easy to use operation can meet user's measurement need conveniently.

All Functions:

Measurement Functions:

- DC Voltage: 0.1V, 1V, 10V, 100V, 1000V.
- AC Voltage: 0.1V, 1V, 10V, 100V, 750V.
- DC Current: 100μA, 1mA, 10mA, 100mA, 1A, 10A.
- AC Current: 100μA, 1mA, 10mA, 100mA, 1A, 10A.
- 2 & 4 wire resistance: 100Ω, 1KΩ, 10KΩ, 100KΩ, 1MΩ, 10MΩ, 100MΩ.
- Capacitance: 1nF, 10nF, 100nF, 1μF, 10μF, 100μF
- Frequency/Period: 5Hz-1MHz.
- Diode
- Continuity
- Temperature

Auxiliary function:

dB, dBm, MAX/MIN, Rel, Limits, Statistic, Hold, Store/Recall, Trig, etc.

Graphic display: Number, Bar, Trend Chart, Histogram

Double display: DC voltage (primary display)/AC voltage (auxiliary display), AC voltage (primary display)/frequency (auxiliary display), AC current (primary display)/frequency (auxiliary display), frequency/period (interactive display, when frequency is primary display, period will be auxiliary display; when period is primary display, frequency will be auxiliary display).

Packing list:

- 5.5 digits digital multimeter 1
- Power cord 1
- Test lead 1
- CD (User's Guide + PC software) 1
- PT100 Temperature probe 1

Communication Interfaces:

- RS-232
- USB Host
- USB Device
- LAN

Options

GPIB interface

Safety Information

Review the following safe precautions to avoid injury and prevent damage to the product or any products connected to it. To avoid potential hazards, please make sure of the product only as specified.

1. Use power cord as specified.

   Use only power cord specified for this product and approved for the country of use.

2. Ground the product

   This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals, ensure that the product is properly grounded.

3. Instructions

   Review user's manual for detailed information of rating values before making connections to this product.

4. Do not operate without covers

   Do not operate this product with covers or panels removed.

5. Use proper fuse.

   Use only the fuse type and rating specified for this product.

6. Do not operate with suspected failures.

   If you suspect there is damage, stop using and contact us.

7. Provide proper ventilation

   Do not operate this product under inflammable environment.

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Chapter 1 Quick Start

1.1 Preparation for usage

1.1.1 Check the list of supplied items

If the packaging has been damaged, do not dispose the damaged packaging or cushioning materials until the shipment has been checked for completeness and has passed both electrical and mechanical tests.

1.1.2 Connect the power

Turn on the instrument only the following conditions are met:

Power supply:

Voltage: 115V/230V (1±10%)

Frequency: 50Hz/60Hz

Power consumption: 15VA

Environment:

Working temperature: 0~45℃

Storage temperature: -10℃~50℃

Working humidity: ≤80%RH(resistance range≥10M, ≤70%RH) 0℃~28℃

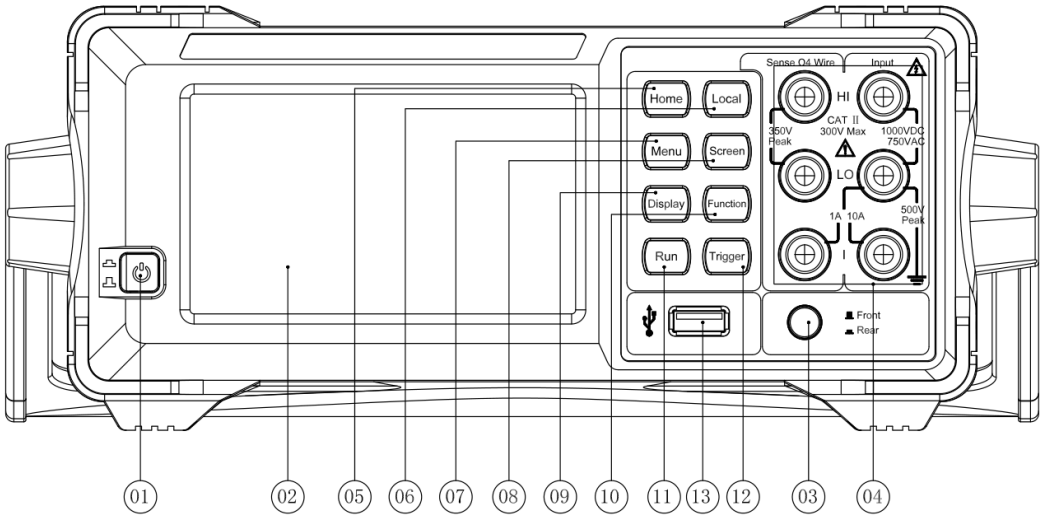
≤70%RH 28℃~45℃

Storage humidity: ≤80%RH -10℃~60℃

Plug the power cord into the socket with ground wire after checking the power-on switch at the rear panel conforms to the voltage in the power grid, and press On /Off switch at the front panel. The multimeter will start to initialize and enter the normal working state.

Warning: In order to ensure the security of the operator, use triple- core power socket with ground wire.

1.2 Front Panel overview



① Power Key

② Display

③ Front/Rear Switch

④ Connecting terminals

⑤ Return to Home

⑥ Return to Local

⑦ Menu key

⑧ Screenshot key

⑨ Graphic and double display key

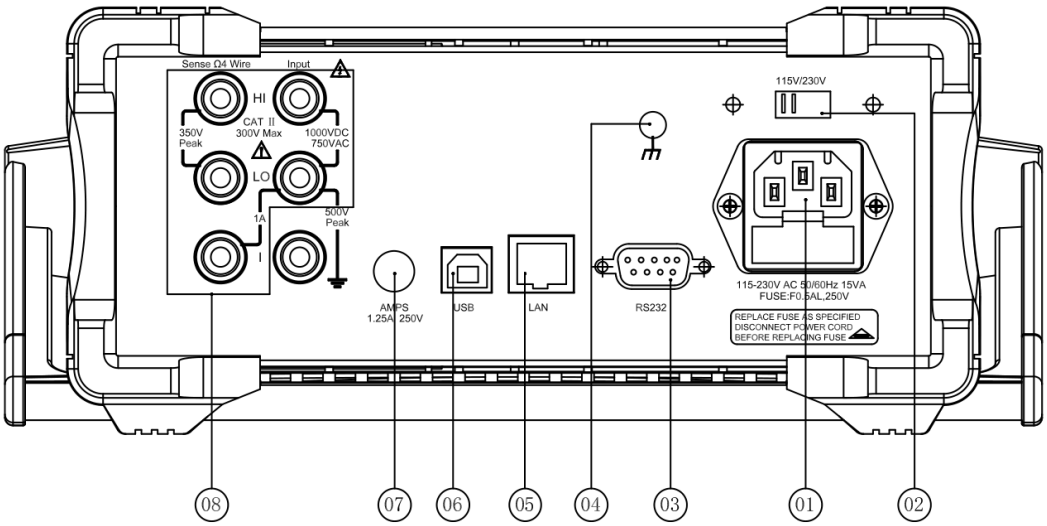
⑩ Measuring function key

⑪ Auto trigger key

⑫ Manual trigger key

⑬ USB HOST

1.3 Rear Panel overview



① Power socket

② 115V/230V Switch

③ RS232 interface

④ Ground interface

⑤ LAN interface

⑥ USB Device

⑦ Fuse socket

⑧ Connecting terminal in rear panel

1.4 Menu Reference

Keys	Application
Home	Return to Home
Menu	including Utility, Trigger, System
Display	Display mode, including Number/ Bar /Trend Chart/ Histogram
Run	Auto trigger function, it will work after starting trigger
Trigger	Single trigger

Function	To display main measuring functions
Screen	Support screenshot function, then store to USB Flash drive
Local	Exit the remote control mode

Function menu

Main menu	Parameters Setting
DCV	Range: Auto (default), 100mV, 1V, 10V, 100V, 1000V Rate: Slow (default), Med, Fast Auto zero: Off (default) or On Input Z: 10M (default) or High Z
DCI	Range: Auto (default), 100μA, 1mA, 10mA, 100mA, 1A(1A terminal) 10A(10A terminal) Rate: Slow (default), Med, Fast Auto zero: Off(default) or On
ACV	Range: Auto (default), 100mV, 1V, 10V, 100V, 750V Rate: 3Hz (default), 20Hz, 200Hz
ACI	Range: Auto (default), 100μA, 1mA, 10mA, 100mA, 1A(1A terminal) 10A (10A terminal) Rate: 3Hz (default), 20Hz, 200Hz
2W/4W	Range: Auto (default), 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100 MΩ Rate: Slow (default), Med, Fast
Freq/ Period	Range: Auto(default),100mV, 1V, 10V, 100V, 750V Rate: 3Hz Gate time: 1S, 100mS, 10mS (default)
Temp	Measuring method: 2-wires (default) or 4-wires temperature measurement

	Probe type: PT100 Unit: ℃, ℉, K
Cont	Continuity Range: 1kΩ Measuring current: 1mA Threshold value: 10Ω is in default，settable
Diode	Measuring voltage: 0-5V Measuring current: 1mA
CAP	Capacitance Measurement Range: Auto(default), 1nF, 10nF, 100nF, 1uF, 10uF, 100uF

Auxiliary menu

Math menu	Description
Rel	Relative measurement on basis of current measurement data
dB/dBm	Configure dB, dBm
Statistics	Enable or disable statistics
Limit value	Enable or disable upper/lower limits

Menu

Menu	Description
Utility	Configure RS232 and LAN
Triger	Configure Read Hold, Trig Delay, N Samples
System	Enable/disable save function, check software version

1.5 Other Introductions

1.5.1 If the multimeter does not turn on

1. Verify the power-line voltage setting.

The line voltage is set to the proper value for your country when the multimeter is shipped

from the factory. If it is not correct, please change the voltage setting as 115Vac or 230Vac.

2. Verify that the power-line fuse is good.

Fuse type: 500mAF/ 250V

1.5.2 Replace the power-line fuse

The power-line fuse is assembled in the fuse-holder at rear panel. For all power voltage, the 500mAF/250V fast-melt fuse is needed.

1.5.3 Replace current input fuse

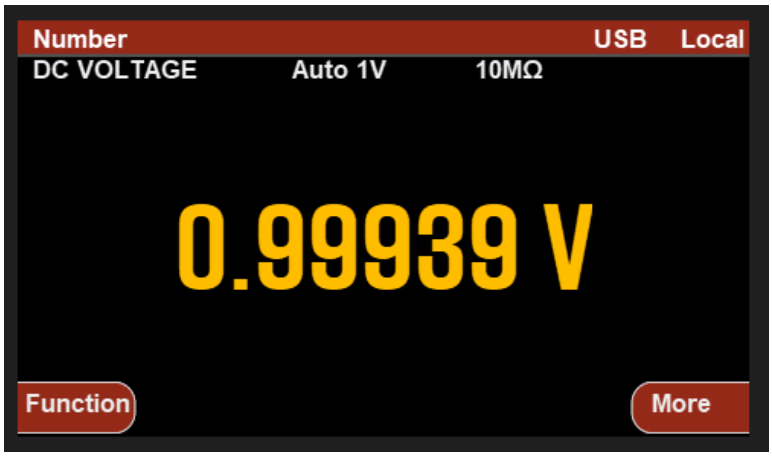
Current input terminal are protected by two fuses, one is 1.2A/250Vac fast-melt fuse on the rear panel.

The other one is assembled in the multimeter to supply the current protection for 10A input terminal, which is 10A/ 600Vac fuse. Once replace this fuse, the case of multimeter need to be opened.

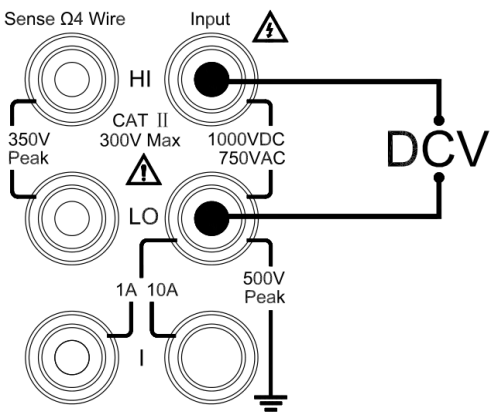
Chapter 2 Measurement Functions

2.1 To measure DC Voltage

Operate: press Function key to show below interface which contains the touch keys of all measuring functions.



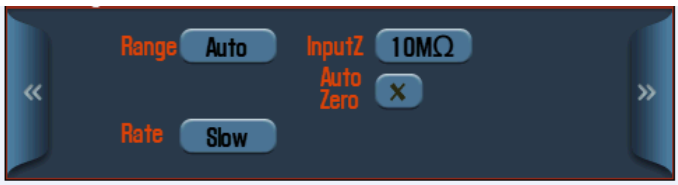
Configure the test leads as shown below.



DCV measuring function interface



Parameters can be set as follows:



Range: Auto, 100mV, 1V, 10V, 100V, 1000V

Note: Auto (adjusting the range automatically) based on input. Automatic range adjustment can turn the range up to 120% of the current range and down to less than 10% of the current range.

Rate: Slow, Med, Fast

Note: above parameters correspond to 100PLC, 10PLC, 1PLC separately. 100PLC selection can provide the best noise suppression. (1PLC=50readings/second@50Hz or 60 readings/second@60Hz)

Input Z: 10MΩ, High Z

Note: input impedance can be set as 10MΩ or High Z. 10MΩ applies to 100V and 1000V range.

Auto Zero

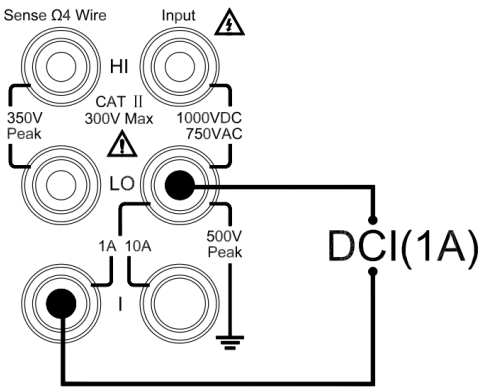
Note: Auto Zero provides the most accurate measurement, but requires additional time to perform the reset-to-zero measurement. With Auto Zero enabled, the DMM makes an internal measurement of the offset after each measurement. Then the offset value is

subtracted from the previous reading. This prevents the offset voltage on the DMM input circuit from affecting the measurement accuracy. This function will be enable when check it, OFF is default state.

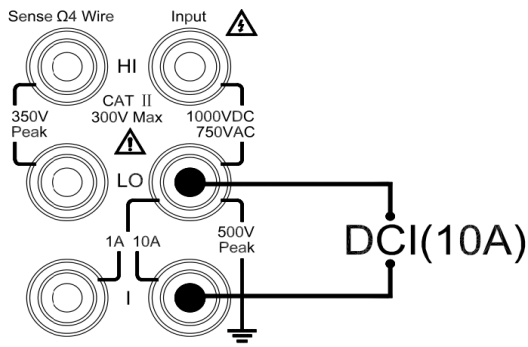
Warning: Don't input voltage exceeding 1000VDC in case instrument damage or any danger.

2.2 To measure DC Current

Configure the test leads as shown below (take 1A for example)



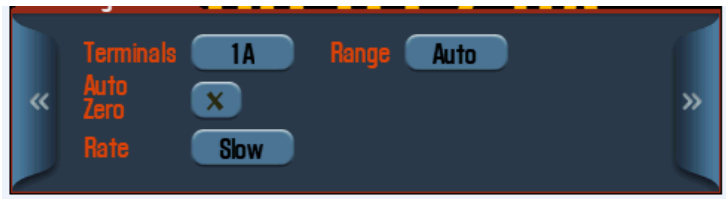
Configure the measurement as below shown (take 10A for example)



DCI measuring function interface



Parameters can be set as follows:



Terminals: select the input terminals of the tested signal. When 10A is selected, only 10A range is available, but when 1A is selected, several ranges are available and can be set to auto range or manual range.

Range: Auto, 100μA, 1mA, 10mA, 100mA, 1A

Note: Auto (auto range adjustment) automatically select range for measurement based on input. Auto range adjustment can turn the range up to 120% of the current range and down to less than 10% of the current range.

Rate: Slow, Med, Fast

Note: above parameters correspond to 100PLC, 10PLC, 1PLC separately. 100PLC can provide the best noise suppression.

Auto Zero:

Note: Auto Zero: Auto Zero provides the most accurate measured value but requires additional time to perform the reset-to-zero measurement. With Auto Zero enabled (ON), the DMM makes an internal measurement of the offset after each measurement and then the offset value is subtracted from the previous reading. This prevents the offset voltage on the DMM input circuit from affecting the measurement accuracy. Enable this function if check this box and OFF is default state.

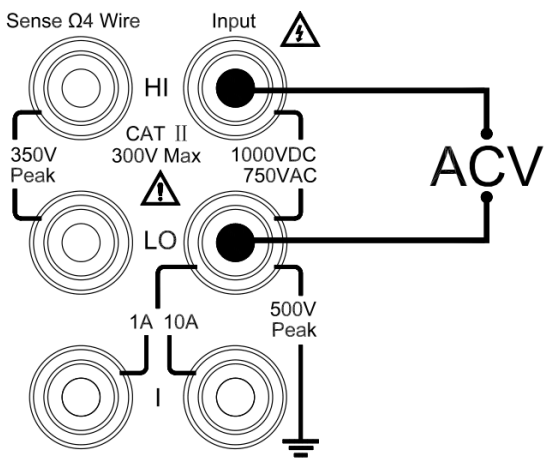
Warning: Please don't input DCI exceeding 1.2A or 10A to terminal in case instrument damage or any danger.

Note: If AMPS fuse is burned out due to current overload, please replace the fuse 1.25A/250V at the rear panel or 10A/600Vac fuse in the case of instrument.

Notice! When testing continuous DC current over 7A, multimeter should disconnect 30s after connecting for 30s.

2.3 To measure AC Voltage

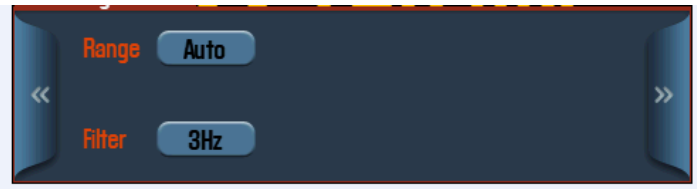
Configure the test leads, as shown below.



ACV measuring interface



Parameters can be set as follows:



Range: Auto, 100mV, 1V, 10V, 100V, 750V

Note: Auto (auto range adjustment) selects range for measurement based on input.

Auto range adjustment can turn the range up to 120% of the current range and down to less than 10% of the current range.

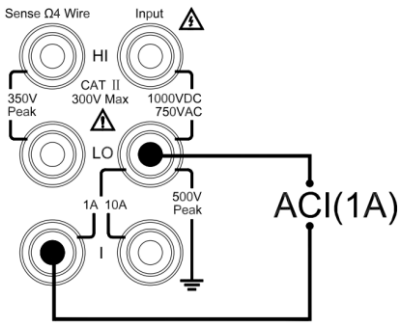
Filter: 3Hz, 20Hz, 200Hz

Note: above parameters correspond to Slow, Med, Fast. 3Hz selection can provide the best noise suppression.

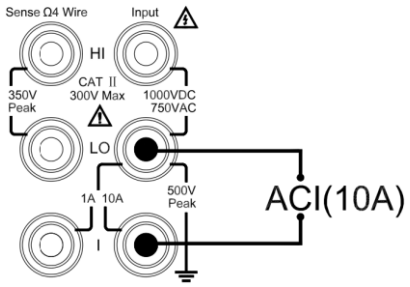
Warning: Please don't input ACV exceeding 750Vrms to terminal in case instrument damage and any danger.

2.4 To measure AC Current

Configure the test leads, as shown below (take 1A for example):



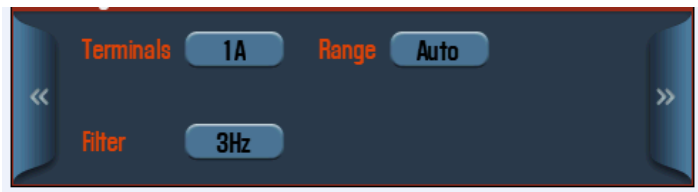
Configure test leads, as below shown (take 10Afor example):



ACI measuring interface:



Parameters can be set as follows:



Terminals: select the input terminals of the tested signal. When 10A is selected, only 10A range is available, but when 1A is selected, several ranges are available and can be set to auto range or manual range.

Range: Auto, 100μA, 1mA, 10mA, 100mA, 1A

Note: Auto (auto range adjustment) automatically select range for measurement based on input. Auto range adjustment can turn the range up to 120% of the current range and down to less than 10% of the current range.

Filter: 3Hz, 20Hz, 200Hz

Note: above parameters correspond to Slow, Med, Fast. 3Hz selection can provide the best noise suppression.

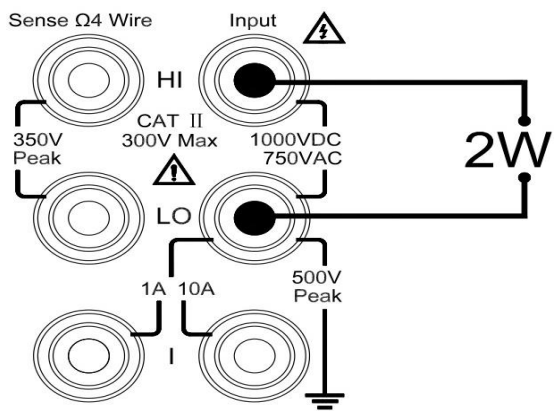
Warning: Please don't input current exceeding 1.25A into 1A input terminal or current 10A into 10 input terminal in case the instrument damage or any danger.

Note: If AMPS fuse is burned out due to current overload, please replace the fuse 1.25A/250V at the rear panel or 10A/600Vac fuse in the case of instrument damage or any danger.

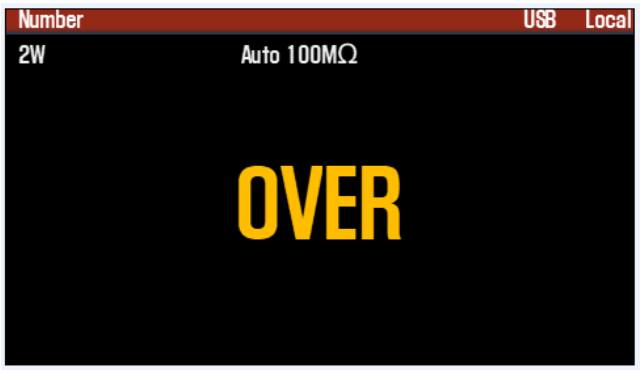
Notice! When testing continuous AC current over 7A rms, multimeter should disconnect 30s after connecting for 30s.

2.5 To measure 2-wire resistance

Configure the test lead, as shown below:



2W measuring interface



Parameters can be set as follows:



Ranges: Auto, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100MΩ

Note: Auto (auto range adjustment) automatically select range for measurement based on input. Auto range adjustment can turn the range up to 120% of the current range and down to less than 10% of the current range.

Rate: Slow, Med, Fast

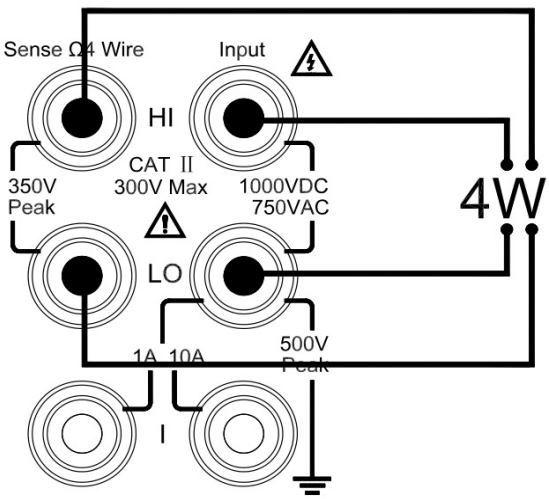
Note: above parameters correspond to 100PLC, 10PLC, 1PLC separately. 100PLC selection can provide the best noise suppression.

Auto Zero:

Note: Auto Zero provides the most accurate measured value but requires additional time to perform the reset-to-zero measurement. With Auto Zero enabled, the DMM makes an internal measurement of the offset after each measurement and then the offset value is subtracted from the previous reading. This prevents the offset voltage on the DMM input circuit from affecting the measurement accuracy. Enable this function if check this box and OFF is default state.

2.6 To measure 4-wire resistance

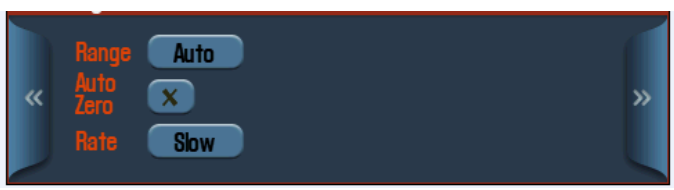
Configure the test leads, as shown below.



4W measuring interface:



Parameters can be set as follows:



Ranges: Auto, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100MΩ

Note: Auto (auto range adjustment) automatically select range for measurement based on

input. Auto range adjustment can turn the range up to 120% of the current range and down to less than 10% of the current range.

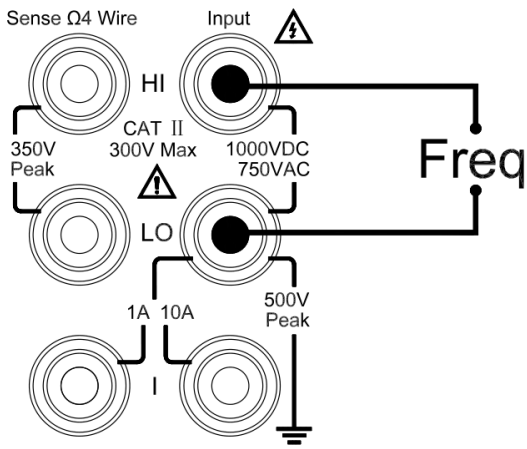
Rate: Slow, Med, Fast

Note: above parameters correspond to 100PLC, 10PLC, 1PLC separately. 100PLC selection can provide the best noise suppression.

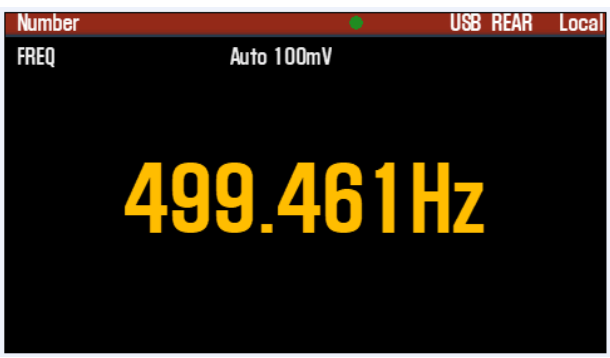
Warning: Please don't input DCV exceeding 300V to input terminal in case multimeter damage or any danger.

2.7 To measure Frequency (or Period)

Configure the test leads, as shown below.



Freq measuring interface:



Parameters can be set as follows:



Voltage Range: Auto, 100mV, 1V, 10V, 100V, 750V

Note: Auto (auto range adjustment) automatically select range for measurement based on input. Auto range adjustment can turn the range up to 120% of the current range and down to less than 10% of the current range.

Frequency range: 5Hz~1MHz (1 μs~0.2S)

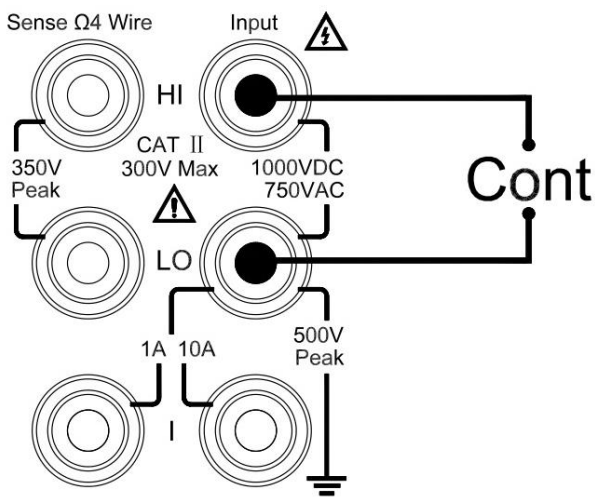
GATE: 1S, 100ms, 10ms

Note: The longer the gate time is, the higher the accuracy is, but the lower speed is.

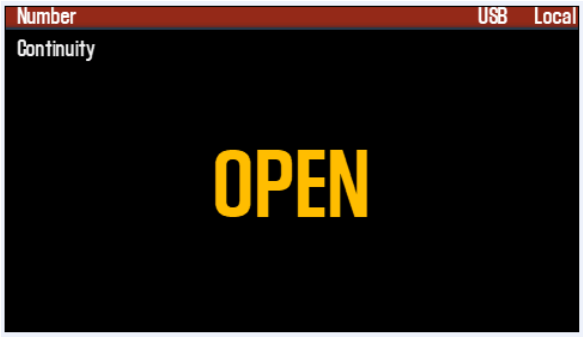
Warning: Please don't input ACV exceeding 750V to input terminal in case multimeter damage or any danger.

2.8 To test continuity

Configure the test leads, as shown below.



Continuity measuring interface



Parameters can be set as follows:



Test current source: 1mA

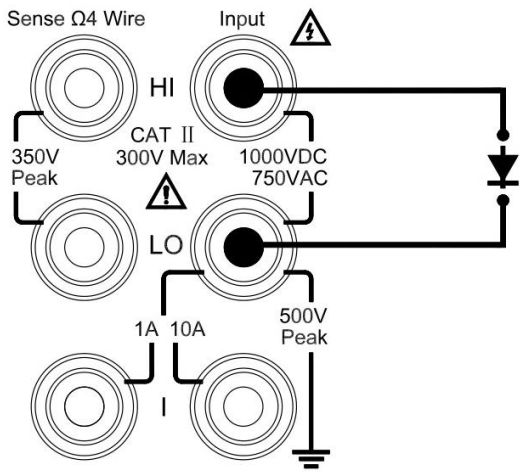
Range: 1kΩ

Beeper threshold: ≤10Ω (show the measured resistance and beep when beeper is open)

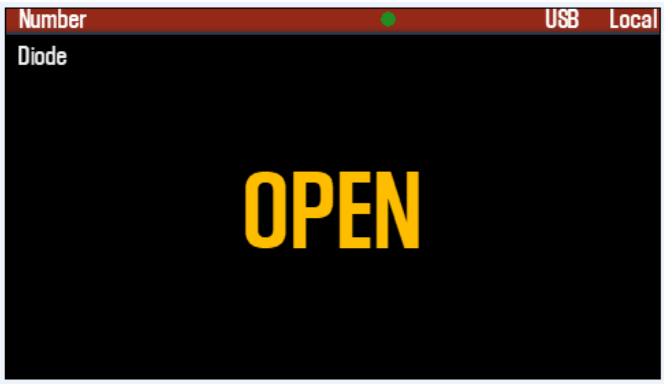
>1.2kΩ (display OPEN).

2.9 To measure diode

Configure the test leads, as shown below.



Diode measuring interface



Test current source: 1mA

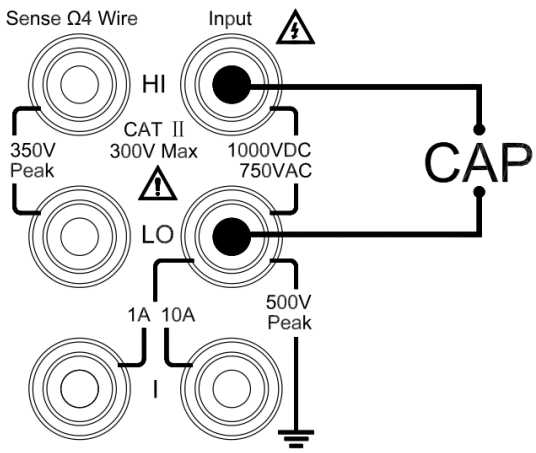
Range: 10VDC

Beeper threshold: 0.3V≤ threshold value ≤ 0.8V (not adjustable)

Warning: Please don't input DCV exceeding 1000V to input terminal in case multimeter damage or any danger.

2.10 To measure capacitance

Configure the test leads, as shown below.



Capacitance measuring interface



Parameters can be set as follows:

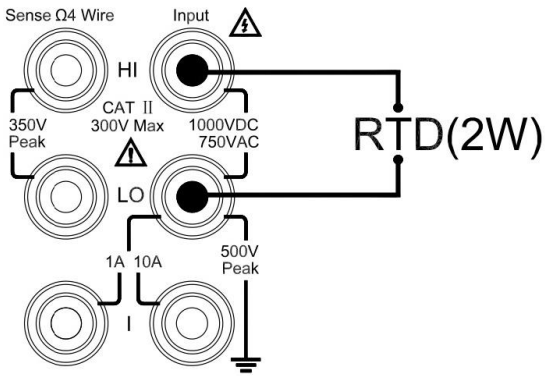


Ranges: 1nF, 10nF, 100nF, 1uF, 10uF

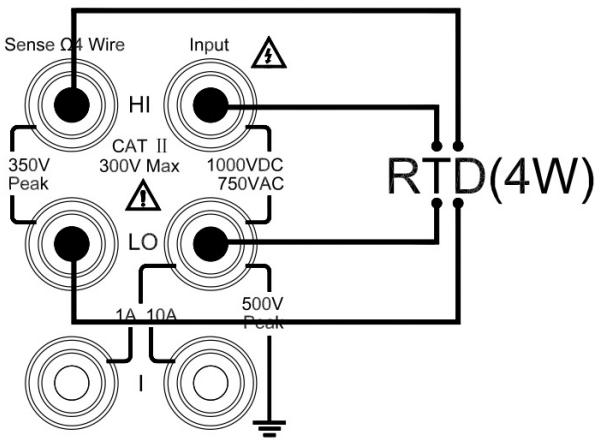
Warning: Please don't input DCV exceeding 1000V to input terminal in case multimeter damage or any danger.

2.11 To measure temperature

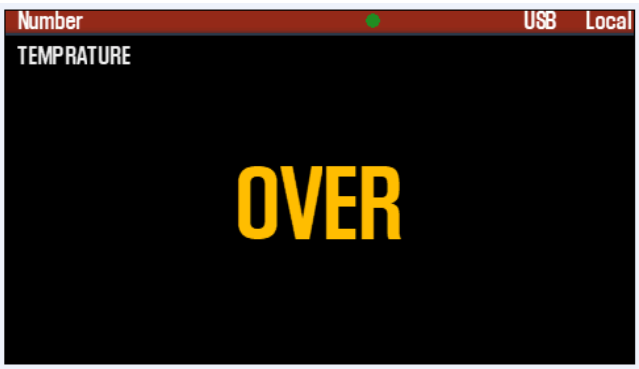
Configure the test leads, as shown below (take 2W temperature measurement for example)



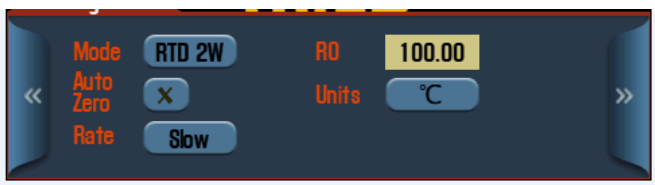
Configure the test leads, as shown below (take 4W temperature measurement for example)



Temperature measuring interface



Parameters can be set as follows:



Mode: 2W or 4W

Note: 2-Wire temperature measurement is enough for common test, and 4-Wire will be selected for the higher accurate measurement. Choose PT100 thermal resistance sensor, temperature range is -200~800℃.

Auto Zero

Note: Auto Zero provides the most accurate measured value but requires additional time to

perform the reset-to-zero measurement. With Auto Zero enabled, the DMM makes an internal measurement of the offset after each measurement and then the offset value is subtracted from the previous reading. This prevents the offset voltage on the DMM input circuit from affecting the measurement accuracy. Enable this function if check this box and OFF is default state.

Rate: Slow, Med, Fast

Note: above parameters correspond to 100PLC, 10PLC, 1PLC separately. 100PLC selection can provide the best noise suppression.

R0: reference resistance value

Note: range 90~120Ω

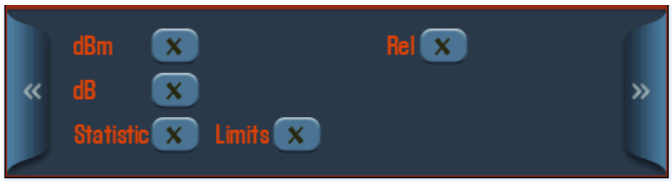
Units:

Note: ℃, ℉, K selectable

Warning: Please don't input DCV exceeding 1000V to input terminal in case multimeter damage or any danger.

Chapter 3 Auxiliary Function

3.1 Math function



Math function menu includes: dB, dBm, Rel, Statistic, Limits

Operation: When a measuring function is selected, touch the left arrow, it will enter the math function.

3.1.1 dB

dB function interface



Note:

1. dB function is only applicable to ACV and DCV measurements.

2. dB definition: dBm value of reading - dBm value of relative

3. Relative value is adjustable and could be any value from range 0 ~ 200dBm.

3.1.2 dBm

dBm function interface



Note:

1. dBm function is only applicable to ACV and DCV measurements.

2. dBm definition:

dBm=10 ×log (V_{in} ^{2}/Z/1mW)

V_{in} is input signal, Z is reference resistance.

3. Default resistance for Z is 600Ω, and reference resistance have 17 selections as:

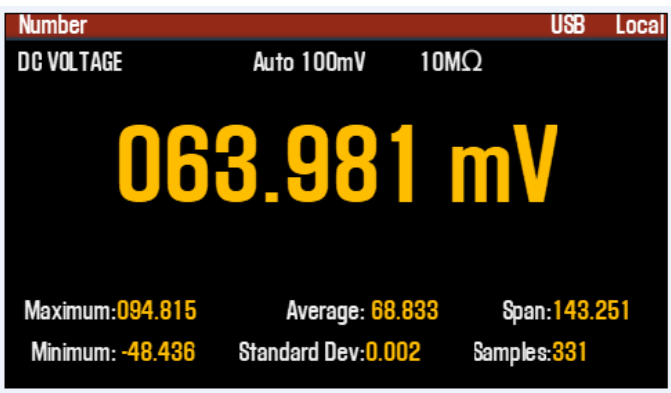
50,75,93,110,124,125,135,150,250,300,500,600,800,900,1000,1200,8000

3.1.3 Rel

Note: when this function is ticked, the current display value will be seen as the Zero value, and the display is the value that's subtracted from Zero value.

3.1.4 Statistic

Statistic function interface



Instruction:

1. Maximum /MINimum: The first two readings as the initial maximum and minimum, and the third reading as the new MAX/MIN, or ignored. And analogize in turn.

2. Span is the value of Max minus Min.

3. Average: average value of the continuous measurement readings

4. Standard Dev: it's defined as find the sample standard deviation

The formula of the sample standard deviation is as follows:

$$S = \sqrt{\frac{\sum \left(X_i - \overline{X}\right)^2}{n-1}}$$

Of which,

$$\overline{X} = \frac{x_1 + x_2 + \cdots + x_n}{n}$$

For example: Find the sample standard deviation of a set of numbers: 200, 50, 100, and 200.

$\overline{X}$ = (200+50+100+200)/4=550/4=137.5

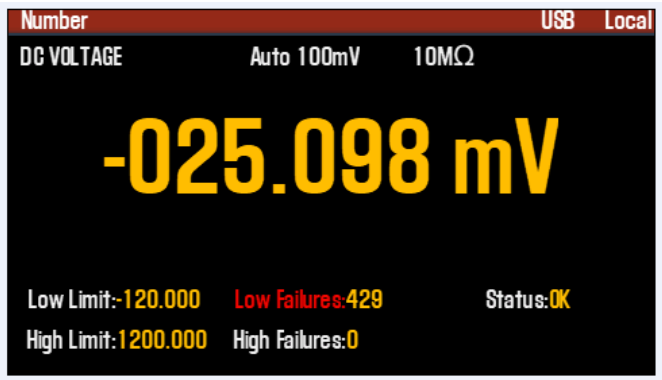
S ≒ [(200-137.5)^2+(50-137.5)^2+(100-137.5)^2+(200-137.5)^2]/3

S=Sqrt (S^2)=75

4. Sample: Record the number of samples

3.1.5 Limits

Limit display screen



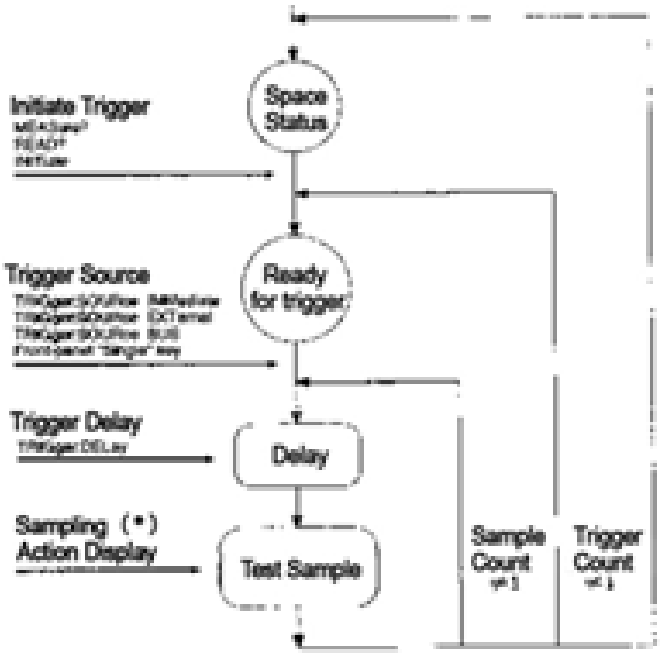
Instruction:

1. After checking the Limit function, Low Limit and High Limit setting bars will be displayed.

2. If the test value over the limit, the number of invalidations is counted and the font is displayed in red.

3.2 Trigger

The multimeter can emit a new trigger in the way of manual or auto trigger. Many samples could be collected for each time trigger. Usually one sample will be collected per single trigger, but you can set the number of Sample to be sampled per trigger (50000 at most).



The processing of trigger

3.2.1 To select trigger source

The multimeter will emit a new trigger if setting trigger source in front panel to be Single or Auto trigger, or setting BUS trigger or immediate trigger through remote control interface.

Auto trigger

Auto trigger is only enabled on front panel is default trigger mode when power on.

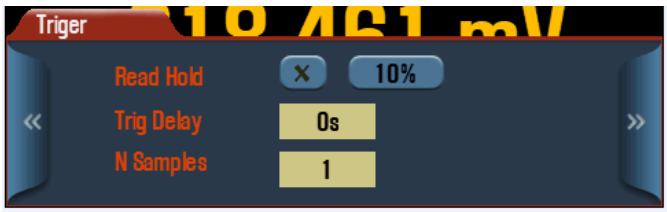
The instrument makes continuous measurement as specified setting for function, range, resolution, ect. and will automatically emit a new trigger as soon as a measurement is completed.

Single trigger

This instrument will emit a trigger with one sample or specified sample count every time the 【Trigger】key on the front panel is pressed. When multimeter waits for next trigger, the Trig indicator is on.

3.2.2 Sampling delay/numbers

Sampling delay/numbers display interface.



Set delay time in area of "Trig Delay", up to 3600s.

Set sample number in area of "N Samples", up to 5000.

3.2.3 Read hold

Please check Read Hold to enable this function.

Read Hold mode can capture and hold the stable readings on screen. This is very useful in the following applications: keep the reading stay on the screen if sample a count and remove the probe or if instrument detects a stable signal and will beep if the buzzer in front panel is enable.

The read hold function has an adjustable sensitivity range to determine whether the reading is stable enough to be displayed. This range is expressed as a percentage of the reading at the selected range. The instrument will display a new reading only if three consecutive readings are within the selected sensitivity range. The sensitivity range is one of the following values: 0.01%, 0.1%, 1.00%, or 10.00% of the reading.

3.3 System Operation

3.3.1 Reading Store

Store display interface



Select RDGS STORE，data up to 1024 readings can be stored in FIFO sequence (first-in-first-out. Unselect the option to disable the store function. Click ToUSB to save the data to a USB flash drive.

3.3.2 Program control interface configuration

Interface display interface.



① The RS232 interface has six baud rates to select: 2400, 4800, 9600 (default), 19200, 38400, 57600. Other parameters: data bit 8bit, 1 start bit, 1 stop bit, no parity check.

② LAN interface: support DHCP mode, or set IP address according to user's PC setting.

③ USB Device interface is applied in Win7 or higher version PC system. The device could be recognized by PC through the PC software after a successful connection, then communicate with device via. programming commands

Chapter 4 Remote Interface

4.1 SCPI language

SCPI (Standard Commands for Programmable Instruments) is a standardized set of commands and be based on ASCII code, through the remote interface to programmer control the instruments.

Based on the level structure (or named as tree system), SCPI commands in this system belongs to common root, which forms as the sub-system. Take the part of sub-system SENSE for example:

SENSE:

VOLTage:

DC : RANGe{<range>|MINimum|MAXimurn}

VOLTage:

DC:RANGe? {MINimum|MAXimum}

SENSe is the root keyword of command, VOLTage and FREQuency are second keywords, DC and VOLTage are third level keywords, the colon (:) separate the keywords from lower level.

Command format

The SCPI command follows the format rule as:

VOLTage ; DC : RANGe { <range>}MINimum}MAXimum}

As command Syntax, most command and parameter are written with both capital and lower-case. Capital is used as abbreviation.

For above command, VOLT and VOLTAGE are both acceptable, same as volt or voltage. But VOL or VOLTAG are wrong words because they are neither abbreviation nor entire words.

Brace { } contains the parameter options, but itself won't be send with command.

Separating character |: separate several parameter options.

Angular bracket < > indicate that a value must be assigned to the parameter. For example, the statement above indicates the <range> parameter, but itself won't be send with command, You must specify a value for this parameter (for example 'VOLT:DC:RANG 1'), unless you select one of the other options displayed in the syntax (for example 'VOLT:DC:RANG MIN').

Square bracket [ ]: parameters contains in this character is optional and could be omitted, but it won't be send with command. If no value appointed to optional parameters, the default value will be chosen.

Command separator

Colon (:) is used to separate the keywords for next level, just enter the space between and separate parameter and command keyword with space, if the command contains many parameters, you can use comma (,) to separate

"CONF:VOLT:DC 10,0.03"

Semicolon ";" is used to separate two commands under one subsystem, easy to reduce the character to minimum. For example:

TRIG:DELAY 1; COUNT 10

Which is same as the below two commands.

TRIG:DELAY 1

TRIG:COUNT 10

Use a semicolon and a colon ";:" to link several commands under different subsystems, if not, will make misunderstanding as below:

SAMP:COUN 10;:TRIG:SOUR EXT

Min/Max parameter

You can use MINimum or MAXimum to specify the parameter, for example:

VOLTage:DC:RANGe{<range>|MINimum|MAXimum|DEF}

MIN is the mimum of range,MAX is maximum of range and DEF is the default of range.

Setting of query parameters

You can add interrogation ? in the end of command to query the current value of parameters. For example, the below command to sample count 10 readings:

SAMP:COUNt 10

You can use below command to query the sample count:

SAMP:COUNt?

You also can query the minimum and maximum count allowed:

SAMP:COUNt? MIN

SAMP:COUNt? MAX"

SCPI parameters

SCPI parameter type has 4 formats as following:

Numeric value parameter:

Numeric value parameter is presented by decimal number, composed by digits, minus and decimal point. Floating-point number could be used to indicate either. Specific values for numeric value parameters such as MINimum, MAXimun and DEFault< DEFault value > are also accepted. The following command uses Numeric value parameter,

VOLTage:DC:RANGe{<range>|MINimum|MAXimum|DEF}

Discrete parameter:

Discrete parameter only has a few of value, and be same as commands, you can use full or abbreviation format, or mixing uppercase and lowercase is also allowed.

TRLGger:SOURce { BUS|IMMediate|EXTernal}

Boolean parameter

A Boolean parameter specifies a single binary condition which is either true or false. For "True", the parameter value is "ON" or "1", and for "False". When you query a Boolean setting, the instrument always returns to "1" or "0". The following commands use Boolean

arguments.

INPut:IMPedance:AUTO {OFF|ON}

4.2 Command set

MEASure

:VOLTage:DC? {<range>|MIN|MAX|DEF}

:VOLTage:AC? {<range>|MIN|MAX|DEF}

:CURRent:DC? {<range>|MIN|MAX|DEF}

:CURRent:AC? {<range>|MIN|MAX|DEF}

:RESistance? {<range>|MIN|MAX|DEF}

:FRESistance? {<range>|MIN|MAX|DEF}

:FREQuency? {<range>|MIN|MAX|DEF}

:PERiod? {<range>|MIN|MAX|DEF}

:CAPacitance? {<range>|MIN|MAX|DEF}

:TEMPerature? {RTD|FRTD}

:CONTinuity?

:DIODe?

:CONFigure?

:CONFigure

:VOLTage:DC {<range>|MIN|MAX|DEF}

:VOLTage:AC {<range>|MIN|MAX|DEF}

:CURRent:DC {<range>|MIN|MAX|DEF}

:CURRent:AC {<range>|MIN|MAX|DEF}

:RESistance {<range>|MIN|MAX|DEF}

:FRESistance {<range>|MIN|MAX|DEF}

:FREQuency {<range>|MIN|MAX|DEF}

:PERiod {<range>|MIN|MAX|DEF}

:CAPacitance {<range>|MIN|MAX|DEF}

:TEMPerature {RTD|FRTD}

:CONTinuity

:DIODe

[SENSe:]

FUNCtion?

FUNCtion "VOLTage:DC"

FUNCtion "VOLTage:AC"

FUNCtion "CURRent:DC"

FUNCtion "CURRent:AC"

FUNCtion "RESistance"

FUNCtion "FRESistance"

FUNCtion "FREQuency"

FUNCtion "PERiod"

FUNCtion "CONTinuity"

FUNCtion "DIODe"

FUNCtion "TEMPerature"

FUNCtion "CAPacitance"

[SENSe:]

VOLTage:DC:RANGe {<range>|MINimum|MAXimum}

VOLTage:DC:RANGe? [MINimum|MAXimum]

VOLTage:AC:RANGe {<range>|MINimum|MAXimum}

VOLTage:AC:RANGe? [MINimum|MAXimum]

CURRent:DC:RANGe {<range>|MINimum|MAXimum}

CURRent:DC:RANGe? [MINimum|MAXimum]

CURRent:AC:RANGe {<range>|MINimum|MAXimum}

CURRent:AC:RANGe? [MINimum|MAXimum]

RESistance:RANGe {<range>|MINimum|MAXimum}

RESistance:RANGe? [MINimum|MAXimum]

FRESistance:RANGe {<range>|MINimum|MAXimum}

FRESistance:RANGe? [MINimum|MAXimum]

FREQuency:VOLTage:RANGe {<range>|MINimum|MAXimum}

FREQuency:VOLTage:RANGe? [MINimum|MAXimum]

PERiod:VOLTage:RANGe {<range>|MINimum|MAXimum}

PERiod:VOLTage:RANGe? [MINimum|MAXimum]

CAPacity:RANGe {<range>|MINimum|MAXimum}

UNIT:TEMPerature {Cel|Far|K}

UNIT:TEMPerature?

TEMPerature:TYPE {RTD|FRTD}

TEMPerature:TYPE?

[SENSe:]

VOLTage:DC:RANGe:AUTO {OFF|ON}

VOLTage:DC:RANGe:AUTO?

VOLTage:AC:RANGe:AUTO {OFF|ON}

VOLTage:AC:RANGe:AUTO?

CURRent:DC:RANGe:AUTO {OFF|ON}

CURRent:DC:RANGe:AUTO?

CURRent:AC:RANGe:AUTO {OFF|ON}

CURRent:AC:RANGe:AUTO?

RESistance:RANGe:AUTO {OFF|ON}

RESistance:RANGe:AUTO?

FRESistance:RANGe:AUTO {OFF|ON}

FRESistance:RANGe:AUTO?

FREQuency:VOLTage:RANGe:AUTO {OFF|ON}

FREQuency:VOLTage:RANGe:AUTO?

PERiod:VOLTage:RANGe:AUTO {OFF|ON}

PERiod:VOLTage:RANGe:AUTO?

CAPacity: RANGe:AUTO {OFF|ON}

CAPacity: RANGe:AUTO?

[SENSe:]

VOLTage:DC:NPLCycleS {MINimum|MAXimum}

VOLTage:DC:NPLCycleS? [MINimum|MAXimum]

CURRent:DC:NPLCycleS {MINimum|MAXimum}

CURRent:DC:NPLCycleS? [MINimum|MAXimum]

RESistance:NPLCycleS {MINimum|MAXimum}

RESistance:NPLCycleS? [MINimum|MAXimum]

FRESistance:NPLCycleS {MINimum|MAXimum}

FRESistance:NPLCycles? [MINimum|MAXimum]

[SENSe:]

FREQuency:APERture {0.01|0.1|1|MINimum|MAXimum}

FREQuency:APERture? [MINimum|MAXimum]

PERiod:APERture {0.01|0.1|1|MINimum|MAXimum}

PERiod:APERture? [MINimum|MAXimum]

[SENSe:]

DETector:BANDwidth {3|20|200|MINimum|MAXimum}

DETector:BANDwidth? [MINimum|MAXimum]

CALCulate

:FUNCtion {NULL|DB|DBM|STATistic|LIMit}

:FUNCtion?

:STATe {OFF|ON}

:STATe?

CALCulate

:DB:REFerence {<value>|MINimum|MAXimum}

:DB:REFerence? [MINimum|MAXimum]

CALCulate

:DBM:REFerence {<value>|MINimum|MAXimum}

:DBM:REFerence? [MINimum|MAXimum]

CALCulate

:LIMit:UPPer{ <Value>|MIN|MAX}

:LIMit:UPPer？{ MIN| MAX}

:LIMit:LOWer{<Value>|MIN|MAX}

:LIMit:LOWer？{MIN|MAX}

INITiate

TRIGger

:SOURce {BUS|IMMediate}

:SOURce?

:DELay {<seconds>|MIN|MAX}

:DELay:AUTO{OFF|ON}

SAMPle

:COUNt {<value>|MINimum|MAXimum}

:COUNt? [MINimum|MAXimum]

FETCh?

SYSTem

:BEEPer

:BEEPer:STATe {OFF|ON}

:BEEPer:STATe?

SYSTem:ERRor?

SYSTem:VERSion?

***RST**

***IDN?**

SYSTem:LOCal

SYSTem:REMote

4.3 Command Reference

4.3.1 MEASure? Command

Instruction: Using the MEASure? Command to change function and range parameters. Other parameters keep the default values.

For example: MEAS:VOLT:DC? 10

The example configured DC 10Vvoltage range, the default Rate is Slow, and the screen displays the measurement results.

Syntax: MEASure:VOLTage:DC?{<range>|MIN | MAX|DEF}

Parameter: <range>:{0.1|1|10|100|1000}

Syntax: MEASure:VOLTage:AC?{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|750}

Syntax: MEASure:CURRent:DC?{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.0001|0.001|0.01|0.1|1|10}

Syntax: MEASure:CURRent:AC?{<range >|MIN|MAX|DEF}

Parameter: <range>:{0.0001|0.001|0.01|0.1|1|10}

Syntax: MEASure:RESistance?{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|1000|10000|100000 }

Syntax: MEASure:FRESistance?{<range >|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|1000|10000|100000 }

Syntax: MEASure:FREQuency?{<range>}MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|750}

Syntax: MEASure:PERiod?{<range >|MIN|MAX|DEF }

Parameter: <range>:{0.1|1|10|100|750}

Syntax: MEASure:CONTinuity?

Parameter: None

Syntax: MEASure:DIODe?

Parameter: None

Syntax: MEASure:TEMPerature? {FRTD|RTD }

Parameter: FRTD|RTD

Syntax: MEASure:CAPacitance?{<range>|MIN | MAX|DEF}

Parameter: <range>:{0.001|0.01|0.1|1|10|100}

4.3.2 CONFigure command

Instruction: Using the CONF Command to change function and range parameters. Other parameters keep the default values. Unlike the MEAS command, the command does not automatically start measuring. Please use INITiate or READ? Command to enable the auto measurement.

For example: CONF:VOLT:DC 10

The example configured DC 10V voltage range, other parameter keep default, and the screen doesn't have measurement results.

Syntax: CONFigure:VOLTage:DC{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|1000}

Syntax: CONFigure:VOLTage:AC{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|750}

Syntax: CONFigure:CURRent:DC{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.0001|0.001|0.01|0.1|1|10}

Syntax: CONFigure:CURRent:AC{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.0001|0.001|0.01|0.1|1|10}

Syntax: CONFigure:RESistance{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|1000|10000|100000 }

Syntax: CONFigure:FRESistance{<range>|MIN|MAX|DEF

Parameter: <range>:{0.1|1|10|100|1000|10000|100000 }

Syntax: CONFigure:FREQuency{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|750}

Syntax: CONFigure:PERiodi{<range>|MIN|MAX|DEF}

Parameter: <range>:{0.1|1|10|100|750}

Syntax: CONFigure:CAPacitance{<range>|MIN | MAX|DEF}

Parameter: <range>:{0.001|0.01|0.1|1|10|100}

Syntax: CONFigure:CONTinuity

Parameter: None

Syntax: CONFigure:DIODe

Parameter: None

Syntax: CONFigure:TEMPerature{FRTD|RTD }

Parameter: FRTD|RTD

Syntax: CONFigure?

Query the current configuration of the multimeter and returns a quoted string.

4.3.3 FUNCtion commands

Select measurement function. The function content among the command strings need to be indicated by quotation mark, like (FUNC "VOLTDC").

Syntax: FUNCtion"<function>"

Parameter: refer to command set

4.3.4 FUNCtion:RANGe commands

Select range for current measurement. For frequency and period measurement, range is applicable for input voltage not frequency (please use FREQuency:VOLTage, or PERiod:VOLTage). MIN is selected as minimum range and MAX is as maximum range.

Syntax: <function>:RANGe{<range>|MIN|MAX}

<function>:RANGe?[MIN|MAX]

Parameter: See range in the MEASure command

Disables or enables automatic selection for specified functions.

Syntax: <function>:RANGe:AUTO{OFF|ON}

<function>:RANGe:AUTO?

Parameter: ON/OFF

Select the integration time of the current function, in unit of the cycle number of the power supply, this command is only applicable to DC voltage, DC current, two-wire resistance and four-wire resistance measurements.

Syntax: <function>:NPLCycles?{ MIN|MAX}

Parameter: None or MIN/MAX

4.3.5 APERture commands

Select aperture time (or gate time) for frequency measurement (default is 1s). You can specify 10ms(3½ digits), 100ms(4½ digits), 1s(5½ digits).MIN=0.0ls MAX=ls

Syntax: FREQuency:APERture{ 0.01|0.1|1|MIN|MAX}

PERiod:APERture{0.01|0.1|1|MIN|MAX}

Parameter: 0.01|0.1|1|MIN|MAX

Query the aperture time of frequency measurement.

Syntax: FREQuency:APERture?[MIN|MAX]

PERiod:APERture?[MIN|MAX]

Parameter: None or MIN/MAX

4.3.6 BANDwidtn commands

Specify the lowest possible frequency of the input signal.The multimeter could choose slow, fast(default),or fast AC filter according to the specified frequency

Syntax: [SENSe:]DETector:BANDwidtn{3|20|200|MIN|MAX}

[SENSe:]DETector:BANDwidtn? [MIN|MAX]

4.3.7 CALCulate Math operation commands

Select math function and only one selected for each time. Default function is Zero

Syntax: CALCulate:FUNCtion{ NULL|DB|DBM|STATistic|LIMit}

CALCulate:FUNCtion?

CALCulate:STATe { OFF|ON}

CALCulate:STATe?

Parameter: NULL|DB|DBM|STATistic|LIMit

Save a relative value in dBrelative register. Before writing in math register, you must enable the math operation first and the relatve value setting can be set within the range from 0dBm to ± 120dBm. MIN=-200.OOdBm MAX=200.OOdBm

Syntax: CALCulate:DB:REFerence{<Value>| MIN|MAX}

CALCulate:DB:REFerence?[MIN|MAX]

Parameter: 0~200dBm

Select dBm reference value, range from 50 to 8000. MIN=50Ω,MAX=8000Ω,

Syntax: CALCulate:DBM:REFerence{ <Value>|MIN|MAX}

CALCulate:DBM:REFerence{ MIN | MAX}

Parameter: 50~8000Ω

The upper and lower limits of the limit test can be set as any number between ± 120% of the maximum range of current function.

Syntax: CALCulate:LIMit:UPPer{ <Value>|MIN|MAX}

CALCulate:LIMit:UPPer？{ MIN| MAX}

CALCulate:LIMit:LOWer{<Value>|MIN|MAX}

CALCulate:LIMit:LOWer？{MIN|MAX}

Parameter: Value is any number between ± 120% of the maximum range of current function.

4.3.8 Trigger System

Instruction: Set instrument to be Trigger mode. After receiving INITiate Command, measurement starts once it meets with the specified trigger conditions and the reading will be saved in internal memory until to be recalled. Please use FETCh? Command to recall the reading.

Syntax: INITiate

Parameter: None

For example: CONF:VOLT:DC 10

Trig:sour IMM

INIT

Note: ①: Set DC voltage to 10V range

②: select INITiate

③：init trigger display，readings are also stored in memory, and if the first command is sent, the init command is trigger only once and only one data is stored at the same time, and if the first command is not sent, it is stored continuously. The number of storage is to be determined according to the remaining storage capacity. After sending the INIT command, the multimeter will not receive any more commands until all the data of this function is stored.

Instruction: Set instrument to be Trigger mode. After receiving READ? Command, measurement starts once it meets with the specified trigger conditions and the reading will be sent to screen.

Syntax: TRIGger:SOURce { BUS|IMMediate }

TRIGger:SOURce?

Parameter: BUS|IMMediate

Instruction: Select trigger source, a delay time will be added between each trigger signal and the following sample, which helps make the input signal stable before capture the reading.

Syntax: TRIGger:DELay {<seconds>}

Parameter: seconds=0~3600S

Instruction: Set the sample count for each trigger, the count range should be from 1 to 50000.MIN=1, MAX=50,000.

Syntax: SAMPIe:COUNt{<Value>|MIN|MAX}

SAMPIe:COUNe? [MIN|MAX]

Parameter: Value=1~5000

Instruction: Send the reading from internal memory to output buffer, and you can read them by bus controller.

Syntax: FETCh?

Parameter: None

For example: CONF:VOLT:DC 10

Trig:sour BUS

INIT

*TRG

FETCh?

Note: If the trigger source is BUS, then INIT is sent but without response, because the trigger condition is not met. In this case, * TRG is sent to trigger and can only be displayed once, and a reading is stored in the internal memory. In this case, FETCh? is sent, the upper computer can read a data.

4.3.9 System commands

Instruction: a beeper sound at once.

Syntax: SYSTem:BEEPer

SYSTem:BEEPer:STATe { OFF|ON}

SYSTem:BEEPer:STATe?

Parameter: None

Instruction: Query current SCPI version.

Syntax: SYSTem:VERSion?

Parameter: None

Instruction: Reset the multimeter before power on.

Syntax: *RST

Parameter: None

Instruction: Query version of the instrument.

Syntax: *IDN?

Parameter: None

4.3.10 RS-232 interface commands

Instruction: Set the instrument in local mode through RS-232 and all keys on front panel are availabe.

Syntax: SYSTem:LOCal

Parameter: None

Instruction: Set the remote mode through RS-232, and all keys on front panel are not available except of LOCAL key.

Syntax: SYSTem:REMote

Parameter: None

Chapter 6 Specifications

6.1 General Specifications

Power

Voltage: 115V/230V(1±10%)

Power frequency: 50Hz/60Hz

Consumption: 15VA

Environment

Working temperature: 0℃~45℃

Storage temperature: -10℃~50℃

Working humidity: ≤ 80%RH (Resistance range≥10M, ≤70%RH) 0℃~28℃

≤ 70%RH 28℃~45℃

Storage humidity: ≤ 80%RH -10℃~60℃

Dimensions

H×W×D: 106mm×256mm×322mm

Weight: 3.5kg

Safety

Accord with IEC61010-1: 2001, CAT I 1000V/CAT II 600V, pollution class 2.

6.2 Performance Specifications

Note:

- warm up time more than 30minutes
- Accuracy: ±(reading%+range%)，
- Environment temperature:18℃~28℃。

Measurement Function	Slow Speed-S (reading/sec)	Medium Speed- M (reading/sec)	Fast Speed- F (reading/sec)
DC Voltage	2	35	130
DC Curren	2	35	130
AC Voltage	2	35	130
AC Current	2	35	130

2-Wire	2	35	130
4-Wire	1	17	75
Capacitance	2	---	---
Temperature	2	---	---
Frequency	1	---	---

DC Voltage

Range	Full Scale	Resolution			Input Impedance
		5 1/2	4 1/2	3 1/2	
100mV	119.999mV	1μV	10μV	100μV	≥10,000MΩ
1V	1.19999V	10μV	100μV	1mV	≥10,000MΩ
10V	11.9999V	100μV	1mV	10mV	≥10,000MΩ
100V	119.999V	1mV	10mV	100mV	10MΩ
1000V	1010.00V	10mV	100mV	1V	10MΩ
Note: exceed 20% of specified range is readable except of 1000V range. exceed 1% of specified range is readable except of 1000V range.					

Rate	Range	1year 23±5℃ accuracy	Temperature Coefficient 0~18℃ 28~45℃
S	100mV	0.015+0.008(1)	0.0020+0.0008
	1V	0.012+0.006	0.0015+0.0008
	10V	0.012+0.006	0.0020+0.0008
	100V	0.012+0.010	0.0020+0.0008
	1000V	0.012+0.010	0.0020+0.0008
Note: (1) in Rel mode			

DC Current

Range	Full Scale)	Resolution		
		5 1/2	4 1/2	3 1/2
100μA	119.000μA	1nA	10nA	100nA
1mA	1.19000mA	10nA	100nA	1mA
10mA	11.9000mA	0.1μA	1μA	10μA
100mA	119.000mA	1μA	10μA	100μA
1A	1.190000A	10μA	100μA	1mA
10A	10.0000A(	100μA	1mA	10mA
Note: exceed 20% of specified range is readable except 1A range.				

Speed	Range	Sampling Resistance	1year 23±5℃ accuracy	Temperature Coefficient 0~18℃ 28~45℃
S	100μA	100Ω	0.05+0.015(1)	0.007+0.0015
	1mA	100Ω	0.05+0.007(1)	0.007+0.0010
	10mA	1Ω	0.05+0.020	0.008+0.0015
	100mA	1Ω	0.05+0.007	0.008+0.0010
	1A	0.1Ω	0.10+0.015	0.012+0.0015
	10A	0.01Ω	0.2+0.01	0.015+0.0010
Note:(1) The 100 μA and 1mA ranges use Rel mode				

AC Voltage

Range	Full Scale(1)	Resolution			Input Impedance
		5 1/2	4 1/2	3 1/2	
100mV	119.999mV	1μV	10μV	100μV	1MΩ
1V	1.19999V	10μV	100μV	1mV	Shunt
10V	11.9999V	100μV	1mV	10mV	capacitance<100PF
100V	119.999V	1mV	10mV	100mV	
750V	750.00V	10mV	100mV	1V	
Note: exceed 20% of specified range is readable except of 750V range					

Speed	Range			
		Frequency Range	1year23±5℃ accuracy	Temperature Coefficient 0~18℃ 28~45℃
S	100.000mV	20Hz-45Hz	1+0.1	0.02+0.02
		45Hz-10kHz	0.2+0.1	0.02+0.02
		10kHz-50kHz	0.8+0.2	0.05+0.02
		50kHz-100kHz	2.0+0.2	0.10+0.02
	1.00000V to 750.00V	20Hz-45Hz	1+0.1	0.02+0.02
		45Hz-10kHz	0.2+0.1	0.02+0.02
		10kHz-50kHz	0.8+0.2	0.05+0.02
		50kHz-100kHz	2.0+0.2	0.10+0.02

Note: Measuring mode: true RMS
Max. Crest factor: 3.0 at full scale
Max input:750Vrms。
Any range input can be up to the multiple of $3x10^{-7}$ voltage and frequency(V-Hz)。
Input impedance: 1 MΩ and <120pF series connection

AC Current

Range	Full Scale(1)	Resolution		
		5 1/2	4 1/2	3 1/2
100μA	119.00μA		10nA	100nA
1mA	1.19000mA	10nA	100nA	1mA
10mA	11.9000mA	0.1μA	1μA	10μA
100mA	119.000mA	1μA	10μA	100μA
1A	1.190000A	10μA	100μA	1mA
10A	10.0000A	100μA	1mA	10mA
Note: exceed 20% of specified range except 10A range is readable.				

Speed	Range	Frequency Range	1 year23±5℃ accuracy	Temperature Coefficient 0~18℃ 28~45℃
S	100μA to 10A	20Hz-45Hz 45Hz-2kHz 2kHz-10kHz	1.5+0.1 0.5+0.1 2.0+0.2	0.02+0.02 0.02+0.02 0.02+0.02
Note: Measuring mode: true RMS Max. Crest factor: 3.0 at full scale Input protection: 10A 600Vac fuse				

2-4 wire Resistance

Range	Full scale(1)	Resolution			Pass Current
		5 1/2	4 1/2	3 1/2	
100Ω	119.999Ω	1mΩ	10mΩ	100mΩ	1mA
1kΩ	1.19999kΩ	10mΩ	100mΩ	1Ω	1mA
10kΩ	11.9999kΩ	100mΩ	1Ω	10Ω	100μA
100kΩ	119.999kΩ	1Ω	10Ω	100Ω	10μA
1MΩ	1.19999MΩ	10Ω	100Ω	1kΩ	5μA
10MΩ	11.9999MΩ	100Ω	1kΩ	10kΩ	0.5μA
100MΩ	100.000MΩ	1kΩ	10kΩ	100kΩ	0.5μA

Note: exceed 20% of specified range except 100MΩ range is readable.

Speed	**Range**	1 year 23±5℃ accuracy	Temperature Coefficient 0~18℃ 28~45℃
S	100Ω	0.05+0.008	0.006+0.0006
	1kΩ	0.05+0.008	0.006+0.0005
	10kΩ	0.05+0.005	0.006+0.0005
	100kΩ	0.05+0.005	0.006+0.0005
	1MΩ	0.05+0.005	0.006+0.0005
	10MΩ	0.35+0.005	0.025+0.0005
	100MΩ	3.00+0.005	0.200+0.0005
Note: To avoid the noise interference to test lead, the shield leads are suggested for resistance measurement above 100kΩ. Relative zero mode (Rel), an additional error of ± 0.2Ω is added when no zero is performed.			

Capacitance

Range	Resolution	1year 23±5℃	Temperature Coefficient 0~18℃ 28~45℃
1nF(1)	1pF	2.0+2.5	0.02+0.05
10nF	1pF	1.0+0.5	0.02+0.001
100nF	10pF	1.0+0.5	0.02+0.001
1μF	0.1nF	1.0+0.5	0.02+0.001
10μF	1nF	1.0+0.5	0.02+0.001
100μF	10nF	1.0+0.5	0.02+0.001
Note: (1) 1nF range is suitable for capacitors above 200pF。			

Continuity

Speed	Range	Resolution	Max. Reading	Accuracy
F	1000.0Ω	100mΩ	1200Ω	0.1+0.1
Note: Max. input protection: 1000Vdc or 750Vac Test current: 1mAVdc Threshold resistance: reading less than 10Ω to buzzer				

Diode/regulator test

Speed	Range	Max.Reading	Resolution	Accuracy
M	10V	05.000	1mV	0.5+0.01
Note: Max. input protection: 1000Vdc or 750Vac Max. 5V stabilivolt measurement				

Frequency

Frequency Range	Gate Time	Resolution	Full Scale
5-10Hz		0.01mHz	9.99999Hz
10-100Hz		0.1mHz	99.9999Hz
100-1k	1s(slow)	1mHz	999.999Hz
1-10k		10mHz	9.99999kHz
10-100k		100mHz	99.9999kHz
100-1MHz		1Hz	1000.00kHz

Voltage Range	Frequency Range	1year 23±5℃ accuracy	Temperature Coefficient0~18℃ 28~45℃
100mV-750V	5-20Hz	1	0.005
	20-1MHz	0.1	0.005
Note: Measuring mode: true RMS Max. Crest factor: 3.0 at full scale Max. Input Voltage: 750Vrms on whole range Sensitivity: Over 60mVrms			

Temperature

Temperature Range	Probe Type	1year 23±5℃ accuracy	Temperature Coefficient 0~18℃ 28~45℃
-200℃~800℃	PT100 thermal resistance sensor	Accuracy of PT100 ±0.2℃	0.002℃

TEST CERTIFICATE

This Test Certificate that warranty the product has been inspected and Tested in accordance with the published specifications. The instrument has been calibrated by using equipment which has already been calibrated to standards traceable to national standards.

MODEL NO. _____

SERIAL NO. _____

DATE: _____

ISO 9001:2015 REGISTERED

QC
KUSAM-MECO
PASS

WARRANTY

Each “KUSAM-MECO” product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you. This warranty extends only to the original buyer or end-user customer of a “KUSAM-MECO” authorized dealer. This warranty does not apply for damaged Ic’s, fuses, disposable batteries, carrying case, test leads, or to any product which in “KUSAM-MECO’s” opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling. “KUSAM-MECO” authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of “KUSAM-MECO”. “KUSAM-MECO’s” warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a “KUSAM-MECO” authorized service center within the warranty period.

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