

TS202 +TS203 operating instructions

Basic overview

This series digital clip-on table adopts the latest digital multimeter revolutionary chip, chip internal collocation digital processor do 1 KHZ, true RMS measurement capacitance range measuring 40 largest MF; Procedure in school is block external EEPROM collocation, can easily finish all kinds of high precision digital correction. This series digital clamp table has the high reliability, high safety, the characteristics of high precision, miniaturization, full range, overload protection, reliable measurement precision and unique appearance design, make it become more excellent performance of a new generation of practical electrical/electric power measuring instrument

Safety requirements:

This series digital clip-on table is based on the electronic measuring instrument and handheld current clip-on table and IEC1010-1 safety standards IEC1010-2-032 design and production. Strictly follow the double insulation CAT II dc 600 v or 600 v CAT III and pollution level 2 safety standards.

Electrical symbols

--- DC ~ AC  battery insufficient  grounding

 Warning  Double insulation  High risk

Matters needing attention

Low when using the instrument, please carefully read the instructions, special attention should be paid to the content of the "warning". Please follow the "warning".

Low before use to check the instrument and pens and beware of any damage or abnormal phenomenon. If not normal cases

When the instrument is measured, don't use the input end of the hit no.

Never measure is higher than low allows the voltage of the input value.

"Don't make the instrument is exposed to strong light, high temperature or humid place.

Such as crashes occur in use process, as long as the shut off the power to restart

maintenance

Low cleaning instrument can only use wet cloth and a small amount of detergent, avoid by all means use other chemical agent to wipe watchcase.

Observe any abnormal, the instrument shall be immediately stop using and maintenance.

Low please trained person or help in calibration or repair.

Product features

Low maximum showed: 4000

Low jaw openings for: 25 mm

Low automatic range

Low NCV (non-contact voltage detection) function

Low 600 v input protection

Low automatic shutdown

Low data maintain (HOLD) function

Low relative measurement (REL) can say measured values of (voltage, current and capacitance measurement)

Low temperature measurement

Low frequency measurement

Low capacitance measurement

Low process shows: "OL"

Low battery low voltage display: ""

Low power: 3 v 7battery 2 section

Low product size and weight: 183 (L) x 47(W) x 25 (H) amount to 165 (including battery)

Panel schematic

1. The jaw

2. The clamp head center mark. Tested cable placed in the center of the jaw as much as possible.

3. The trigger: used for opening and closing jaw.

4. The knob: used to select functions range.

5. NCV measurement indicator.

6. "HOLD" button: data measurement

7. "SELECT" button: function selection

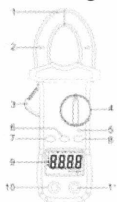
8. "REL" button: used for DCA zero key, relative voltage capacitance measurement, relative value measurement can be used to indicate changes in measured values. When press the key, the instrument is to press the save button with reference to the latest measurements before and after and then from the measured value minus the reference value, the result shows that on the LCD, press the button again and then convert to normal measurement mode.

9. Display: 3 3/4, full display symbols

10. com jack, namely public "to" short end








11. Voltage, resistance, frequency, temperature, capacitance measurement jack.

Schematic diagram



The LCD show that all



Symbol	instructions	Symbol	instructions
DC/AC	DC/AC symbols		diode
AUTO	Automatic range		buzzer
Ω , k Ω , M Ω	resistance		Negative readings
Hz, kHz, MHz	frequency		Reading zero/relative to
mV, V	voltage		Low voltage
A	current		Keeping data
nF, uF, mF	capacitance		Automatic shutdown

Instructions for

Ac/dc current measurement

1) alternating current

1. The function range switch in alternating current range.

2. Press the trigger, open the pliers head, the conductor is placed in the jaw, close the clamp head, can be measured current value of the wire. At the same time, clamp two or three wire can't be measured.

3. In order to ensure the accuracy of measurement, the conductor to be measured should be located in the jaw in the centre.

4. Read from the display on the measured results.

2) Dc current (TS203 only)

1. Press the "SELECT" button to choose ac voltage.

2. And the pens and connected to the power supply under test or the load.

3. Read from the display on measurement results.

Pay attention to

Low don't know in advance if the current to be measured range, please put function range switch in 600 a file, and then gradually reduce until satisfactory resolution.

Measurement, please pull out test table, to avoid electric shock

Straight/ac voltage measurement

1) dc voltage

1. Puts function range switch "range".

2. Insert the red pens and jack Ω "V", ".com" jack black pens and inserted.

3. And the pens and connected to a power source or load under test, the red table pen receive polarity will display on the screen at the same time.

4. Read from the display on the measured results.

2) ac voltage

1. Press the "SELECT" button to choose ac voltage.

2. And the pens and connected to the power supply under test or the load.

3. Read from the display on measurement results.

Pay attention to

Don't input is higher than 600 v low voltage, display higher voltage is possible, but there is a risk of damage to the instrument internal wiring.

When measuring high voltage, it is important to pay special attention to safety.

Resistor, on and off, diode, capacitor measurement

1) resistance

1. The function range switch in the " " position;

2. Red pens and and black pens and insert Ω "V" ".com" jack.

3. And the pens and connected to the measured resistance.

4. Read from the display on the measured results.

Pay attention to

If measured resistance value exceeds the maximum limit the selected range, "OL" display only shows that high.

Low when check online resistance, must first will be all the circuit being measured power shut off and all the capacitor discharge in full.

2) circuit on and off test

1. Press the "SELECT" button to choose "on-off" test.

2. The pens and connected to the two points of the circuit under test. If the resistance between two points is lower than 30 Ω , built-in buzzer sends out sound, indicating the conduction between two points.

3) diode

1. Press the "SELECT" key choice " " diode test.

2. The pens and jumper on diodes to be tested at both ends, the instrument shows diode to the positive pressure drop, the unit of "V"; When the diode reverse display range.

Pay attention to

When two pens and open circuit, display outrange (only shows high "OL").

Maximum 250 v low input protection, higher voltage may damage the instrument.

4) capacitance measurement

1. Press the "SELECT" button to choose "nF" capacitance measurement.

2. Will be a pole and capacitance measurement circuit disconnect, and put the electricity. Polar capacitor, red pens and testing needle the capacitance of the anode.

3. Connect the pens and the measured capacitance. Read from the display on the measured results.

Pay attention to

Low capacitance to be tested before testing must put the electricity, avoid reserved capacitance on the damage of electric instrument, especially the large capacity of capacitance.

The large capacity of capacitance measurement time is longer.

Frequency measurement

1. Puts function range switch "Hz" range.

2. Insert the red pens and jack Ω "V", ".com" jack black pens and inserted.

3. Connect the pens and the signal source under test.

4. Read from the display on the measured results.

Pay attention to

Low frequency shift measurement range 10 hz - 10 MHZ, according to the measured signal frequency automatic switching range.

Low frequency input sensitivity about 1 v.

Don't input is higher than 250 v low voltage, there is a risk of damage to the

instrument.

Temperature measurement

1. The rotation function/range switch to "°C / °F" range,
2. Insert the plug of the thermocouple black instrument COM insert, red V Ω jack plug inserted into the instrument.
3. The thermocouple measurement in temperature measuring point, temperature from the meter reading on the screen, press the "SELECT" button to switch to the "°F". (automatic conversion is based on a formula between)

Note:

Not insert the thermocouple, according to environmental temperature.

Low instrument random enclosed type K paperback thermocouple, extreme measure temperature is 250 °C (in the short term measurement is 300 °C).

Maximum 250 v low input protection, higher voltage may damage the instrument.

The NCV non-contact electric field measurement

1. The knob on the NCV range, such as to whether there is voltage or electromagnetic induction space, can be the instrument of the tong head front end close to the measured object about 8 ~ 15 mm for induction, induction voltage analog about: the critical voltage is 100 v or less now "EF", "show" - "critical voltage 100 v cross section, according to the size of the voltage sets" -- - "four section, and accompanied by section number Different rhythm of the buzzer sound,at the same time Accompanied by NCV lights flashing,to distinguish Measure the strength of the electric field.

Note: when you switch range NCV measurement, Please pull out test pens and, to avoid electric shock.



Other features

Low automatic shutdown: in the process of measuring a knob, and toggle switch in about 15 minutes, the instrument will automatically shutdown in energy saving. In the condition of automatic shutdown after turning the knob switch to OFF from the new boot, or press any key to wake up the instrument.

Low closed automatic shutdown: press the SELECT key, and then on the battery switch on, buzzer 5 consecutive cancel voice prompt automatic shutdown function, the display screen of automatic shutdown symbol also disappear at the same time, the turning on and off to turn it off after the automatic shutdown function recovery. Instrument for 1 minute before the automatic shutdown buzzer made five consecutive warnings, one long buzzer will send warning before shutdown. When shut down automatically, every 15 minutes will send out 5 continuous warning.

Low buzzer: press any button or turn the function switch, if the effective function buttons, buzzer will send out a "Beep" sound.

Technical indicators

The accuracy of the quasi: ± (% reading + word) guarantee period is one year.

Ambient temperature: 23 °C ± 5 °C Relative humidity: < 75%

Alternating current (202 +) only

range	resolution	The accuracy of
4A/40A	1mA	± (3.0%+5)
400A/600A	0.1A	± (2.5%+5)

Overload protection: 600 A

Show a true RMS and frequency response: 50 ~ 60 Hz

Alternating current (only 203).

range	resolution	The accuracy of
40A	10mA	± (2.5%+5)
400A	1A	± (2.5%+5)

Overload protection: 400 A

Show a true RMS and frequency response: 50 ~ 60 Hz

Dc current (203) only

range	resolution	The accuracy of
40A	10mA	± (2.5%+5)
400A	1A	± (2.5%+5)

Overload protection: 400 A

Due to the existence of the external electromagnetic field, in order to ensure the accuracy of the reading, before measurement, need to press the zero key (REL), the reading to zero value, if a reading is not zero, can press a few times more, until the reading to zero.

Dc voltage

range	resolution	The accuracy of
400mV	0.1mV	± (0.8%+5)
4V	1mV	
40V	10mV	
400V	100mV	
600V	1V	

Input impedance: 10 m

Maximum input voltage: 600 v

Ac voltage

range	resolution	The accuracy of
4V	1mV	± (1.0%+3)
40V	10mV	
400V	100mV	
600V	1V	

Input impedance: 10 m

Maximum input voltage: 600 v

According to the true effective value. Frequency response: 45 ~ 400Hz

resistance

range	resolution	The accuracy of
400 Ω	0.1 Ω	± (1.0%+2)
4k Ω	1 Ω	
40k Ω	10 Ω	
400k Ω	100 Ω	
4M Ω	1k Ω	± (1.2%+2)
40M Ω	10k Ω	

The open circuit voltage: about 1 v

Overload protection: 250 v

Buzzer, diode

range	resolution	The accuracy of
○)	0.1 Ω	28 Ω buzzer or less voice in a row

	1mV	open circuit voltage of 3.2 V, normal silicon PN junction voltage value is about 0.5 ~ 0.8 V.
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Overload protection: 250 v

capacitance

range	resolution	The accuracy of
2nF	1pF	± (4%+10)
40nF~400uF	10pF~100nF	± (4%+5)
4mF~40mF	1uF~1uF	± (10%)

Overload protection: 250 v

1 or less uf REL measured capacitance recommended zero mode to ensure measurement accuracy

The temperature

range	resolution	The accuracy of
-20°C~750°C	1°C	± (1.0%+3)

Overload protection: 250 v

Frequency

range	resolution	The accuracy of
10Hz~10MHz	0.01Hz	± (0.1%+5)

Maximum input voltage: 250 v

Sensitivity to 10 MHZ to 2 v, and the rest of 1 v.

General features

Using the environment temperature 5 °C, 35 °C

Storage temperature: - 10 °C, 50 °C



Open the back cover before, convinced that pens and not connected to the circuit under test, before using the instrument should be check sure back cover has been tightening. If there is a "symbol", said the battery need to change, please click the following steps:

1, pens and should disconnect test circuit, rotating function range switch to "OFF", pull out the pens and from the input jack.

2, use a screwdriver unscrewed the screw on the battery cover and remove the battery cover.

3, remove the old battery, replace the new battery.

4, cover the battery cover, screw down the screws.

The operation instruction handbook"

The warranty card/certificate

Pens and a pair of

Battery: two batteries

K type temperature sensor