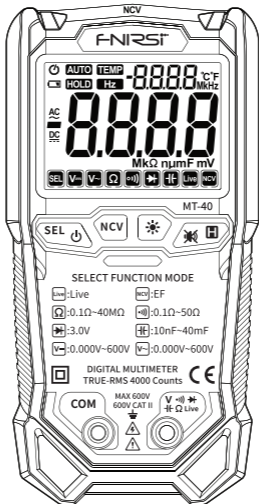


F-NIRSI™ 菲尼瑞斯

MT-40

智能数字万用表使用说明书

SMART DIGITAL MULTIMETER INSTRUCTION MANUAL



CE

Designed and Conforms
IEC61010-1
CAT.II 600V



* 保留变更规格不另行通知之权 △ 注意：使用本产品前，请仔细阅读本说明书

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1.安全信息



为了充分了解仪表的功能，确保安全操作，请仔细地阅读并遵循本说明书的使用方法。

使用此仪表时应特别注意，不当的使用可能造成电击或损坏仪表。在使用中应遵循通常的安全规程并采取有效的安全防范措施。

仪表符合IEC-61010-1, IEC-61010-2-030, IEC-61010-2-032) 电子测量仪器安全要求，属二级污染，过压标准为CAT II 600V 请遵循安全操作指南，安全使用仪表。

1.1安全须知

1.1.1 使用仪表时，用户必须遵守标准的安全规则

- 通用的防电击保护
- 防止误用仪表

1.1.2 接收仪表后，检查是否在运输中损坏。

1.1.3 在粗劣的条件下保存、装运后，检查并确认仪表是否损坏。

1.1.4 表笔必须处于好的状态。在使用之前，检查表笔的绝缘是否损坏，导线的金属丝是否裸露

1.2安全标示

	注意（重要的安全信息，参见使用说明书）
	双重绝缘保护（II类）
CAT II	II类测量适用于测试和测量与低电压电源装置的用电点（插座和相似点）直接连接的电路。
CE	符合欧共体（EU）标准
	接地

1.3界面简介



2.2 LCD 显示器



DC — — —	直流电压
AC ~	交流电压
o)	通断指示
→	二极管测量
AUTO	自动扫描模式
⏻	自动关机指示
🔋	电池电量不足
HOLD	读数保持
V	伏特(电压)
Ω , k Ω , M Ω	欧姆,千欧姆,兆欧姆(电阻)
Hz, kHz	赫兹, 千赫兹(频率)
nF,uF,mF	纳法,微法,毫法(电容)
°C°F	摄氏度、华氏度(温度)
NCV	非接触电压探测
Live	火线判断

3.技术指标

仪表应指定一年为周期，在18°C- 28°C、相对湿度小于75% 的条件下重新较准。

3.1综合指标

自动选择测量功能及量程。

全量程过载保护。

测量端与大地之间允许的最大电压600V DC 或 600V AC

工作高度: 最大2000m

显示: LCD

最大显示值4000数字。

极性指示: 自动指示，' - ' 表示负极性。

超量程显示: ' OL' 或 '-OL' 。

采样时间约: 3 次 / 秒

单位显示: 具有电量单位显示。

自动关机时间: 15 分钟

电源: 1.5V AAA 7号电池2节

电池欠压指示: LCD 显示  符号。

温度系数: 小于0.1X准确度/°C

工作温度: 0°c - 40° c

储存温度: -10°C- 50°C

3.2技术指标

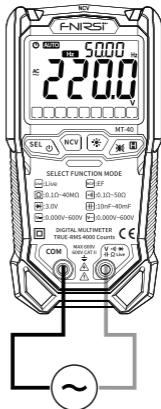
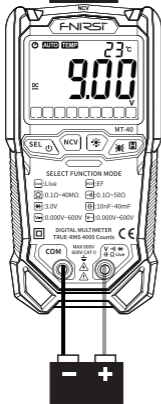
功能	量程范围		精度
直流电压	AUTO功能：0.500V~600V		±(0.8%+3)
	手动转换功能：0.000V~600V		
交流电压	AUTO功能：0.500V~600V		±(1.2%+3)
	手动转换功能：0.000V~600V		
电阻	400Ω/4KΩ/40KΩ/400KΩ		±(1.0%+5)
	4MΩ/40MΩ		
电容	4nF/40nF/400nF/4uF/40uF/400uF		±(4.0%+5)
	4mF/40mF		±(10%+5)
二极管测量(开路电压：约3.0V)			√
通断测试(电阻<50Ω蜂鸣器响,提示灯亮绿灯)			√(声光提示)
Live(火线判断)			√(声光提示)
NCV(非接触电压探测)			√(声光提示)
AUTO功能(自动识别交直流电压/电阻/通断)			√
真有效值	√	数据保持	√
屏幕背光	√	手电照明	√
低电压指示	√	自动关机	√
电源	2x1.5V AAA(两节7号电池)		
尺寸	140mm*70mm*31mm尺寸		

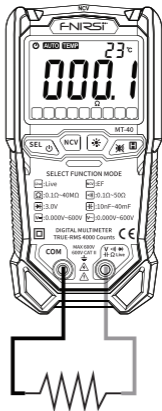
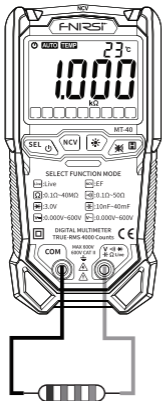
-输入阻抗：10M；最大输入电压：600V DC 或 AC 有效值。

4.测量方法

4.1自动扫描测量交直流电压/电阻测量/连通性检测


- 1.按下" $\text{\textcircled{I}}$ "电源开关键2秒，仪表开机进入AUTO自动扫描模式工作。
- 2.将表笔并联到待测电路、电源或电阻上。仪表自动判别交流电压、直流电压、电阻。LCD显示测量结果。
- 3.当测量电阻时，显示器显示测量结果，电阻小于 50Ω 时，绿色LED灯闪耀内置蜂鸣器发声，环境温度显示在显示屏的右上角。
- 4.测量直流电压时，显示器显示测量结果和电压极性，环境温度显示在显示屏的右上角。
测量交流电压时，显示器显示电压和显示屏的右上角显示交流频率。
- 5.测量结束，按下电源" $\text{\textcircled{I}}$ "开关键并保持2秒，关闭仪表电源。






4.2 手动模式测量

4.2.1 按“SEL”键切换到直流电压档

仪表LCD显示“”进入直流电压档。将黑色表笔插入COM插孔，红色表笔插入VΩ插孔。将表笔并接在电压源或负载两端进行测量，在LCD上读数。

4.2.2 按“SEL”键切换到交流电压档

仪表LCD显示“”进入交流电压档。将黑色表笔插入COM插孔，红色表笔插入VΩ插孔。将表笔并接在电压源或负载两端进行测量，在LCD上读数。

4.2.3 按“SEL”键切换到电阻档


仪表LCD显示“”进入电阻档。将黑色表笔插入COM插孔，

红色表笔插入VΩ插孔，将表笔接在被测电阻或线路两端进行测量，在LCD显示器读数。

注意：

- 1) 在测量线路上的阻抗时，应确定电路电源断开，电路上的电容器完全放电。
- 2) 输入开路时，LCD将显示“OL”超量程状态。
- 3) 如被测电阻电阻高于10MΩ，仪表可能需要几秒才能稳定读数，对于高阻值读数这是于常的。


4.2.4按“SEL”键切换到通断测量

仪表LCD显示“”进入通断测量档，将黑色表笔插入COM插孔，红色表笔插入VΩ插孔，将表笔连接在线路两端进行测量，如果被测线路的电阻小于50Ω，绿色LED灯闪耀仪表内部的蜂鸣器将发声。

注意：

- 1) 如果表笔开路或被测线路电阻大于400Ω，则显示“OL”。


4.2.5按“SEL”键切换到二极管档

1. 仪表LCD显示“”进入二极管档，并确保已经切断被测电路电源。将黑色表笔插入COM插孔，红色表笔插入VΩ插孔。
2. 将红表笔接触被测二极管阳极，黑表笔接触二极管阴极，在LCD上读数。
3. 如果表笔极性与二极管极性相反，仪表显示“OL”，这可以用来区分二极管的阳极和阴极。

注意：

- 1) 测量线路上二极管时，读数受表笔之间的其他通路影响。
- 2) 测二极管的正向偏压一般在0.3V至1.5V范围内。


4.2.6按“SEL”键切换到电容档

1. 仪表LCD显示“”进入电容档，并确保已经切断被测电路电源。将黑色表笔插入COM插孔，红色表笔插入VΩ插孔。
2. 将表笔接触被测电容两端。读数稳定后，在LCD上读数。


注意：

- 1.测量线路上电容时请先断开电源并为所有高压电容器放电，否则可能损坏仪表，并可能遭到电击。
- 2.测量线路上电容时，读数受表笔之间的其他通路影响。

4.2.7按“SEL”键切换到Live火线检测或长按“LIVE”键2秒

- 1.仪表LCD显示“”进入Live火线检测。红色表笔插入VΩ插孔，然后表笔接触待测点。
- 2.当仪表检测到强交流信号时显示“----” 点亮红色指示灯，同时蜂鸣发出快速的滴滴提示音。

4.2.8按“SEL”键或短按“NCV”键切换到非接触电压探测（NCV）

- 1.仪表LCD显示“”进入NCV电压探测。将NCV感应区靠近被测导线，仪表可以探测被测导线是否>90V交流电压。当仪表探测到交流电压时，仪表蜂鸣器报警同时LCD模拟条显示感应强度。

注意：

- 1) 即使没有报警指示，电压仍然存在。不要依靠非接触电压探测器来判断导线是否存在电压。探测操作可能会受到插座设计、绝缘厚度类型不同等因素的影响。

4.3其它功能使用方法



4.3.1自动关机功能

开机后无操作，约15分钟仪表将自动切断电源，以节约能源。

4.3.2读数保持

- 1.按一下“HOLD”键，读数将被保持且“HOLD”符号同时显示在液晶显示器上。
- 2.再按一下“HOLD”键将使仪表恢复到正常测量状态。

4.3.3屏幕背光


长按“”键2秒开启背光。约15分钟后，背光将自动关闭。
或长按“”键2秒关闭背光。

4.3.4手电照明

长按“”键2秒开启手电筒。约15分钟后，手电筒将自动关闭。


或长按 “” 键2秒关闭手电筒。

5.维护

1. 请不要试图打开底壳调整或修理仪表，这样的操作只能由完全了解仪表及电击危险的技师执行。
2. 在打开仪表底壳之前，应将表笔从被测线路移开。
3. 为避免错误的读数可能引起的电击，当仪表显示 “” 符号时，应立即更换电池。
4. 使用湿布和温和洗涤剂清洁仪表，不要使用研磨剂或溶剂。
5. 仪表不使用时应将电源关掉。

6.更换电池

注意:

仪表更换电池过程中，应将表笔从测量电路移开，以避免电击危险。
出现 “” 符号表示需要更换电池。

7.附件

- | | |
|---------|----|
| 1)表笔 | 一付 |
| 2)使用说明书 | 一本 |
| 3)合格证 | 一张 |

8.生产信息

产品名称:智能数字万用表

品牌/型号:MT-40

服务电话:0755-28020752

生产商:深圳市菲尼瑞斯科技有限公司

网址:www.fnirsi.cn

地址:广东省深圳市龙华区大浪街道伟达工业园C栋西边8楼

执行标准:GB/T 32194-2015

1. Safety information



To fully understand the function of the meter and ensure safe operation, please read and follow it carefully. Follow the use method of this manual.

Special care should be taken when using this meter, improper use may cause electric shock or damage to the meter. In use, it should follow the usual safety regulations and take effective safety precautions.

The instrument meets the safety requirements of IEC-61010-1, IEC-61010-2-030, IEC-61010-2-032) electronic measuring instrument, belongs to secondary pollution, and the overvoltage standard is CAT II 600V

Please follow the safety operation guide and use the meter safely.

1.1 Safety instructions

- 1.1.1 When using the meter, users must follow standard safety rules
 - Universal protection against electric shock
 - Prevent misuse of meter
- 1.1.2 After receiving the meter, check for damage in transit.
- 1.1.3 After storage and shipment in poor condition, check and confirm whether the meter is damaged.
- 1.1.4 The pen must be in good condition. Before use, check whether the insulation of the pen is damaged and whether the metal wire of the wire is exposed

1.2 safety mark

⚠ Note (For important safety information, please refer to the instruction manual)

☑ Double insulation protection (Class II)

CAT II Class II measurement is suitable for testing and measuring circuits directly connected to the electrical points (sockets and similar points) of low-voltage power supply devices.

CE Comply with European Community (EU) standards.

⏏ Grounding

1.3 Interface Introduction

Contactless voltage Sensing region

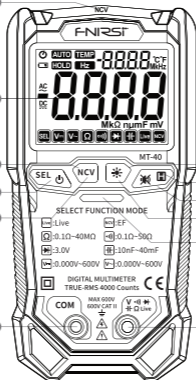
LCD display

Manual/automatic Function switching

Power button

Flashlight key

COM common terminal



Data hold

NCV test button

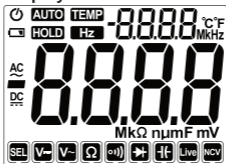
Live test button

Backlit key

Alarm light

Voltage/resistance
On/off buzzer/diode
Capacitance/frequency
Live test interface

2.2 LCD touch display




	DC Voltage
	AC Voltage
	On-off indication
	Diode
	Automatic scan mode
	Automatic sleep indication
	Low battery power
	Reading hold
V	Volts (voltage)
Ω , k Ω , M Ω	Ohms, kilohm, megohm
Hz, kHz	Hertz, kilohertz (frequency)
nF, uF, mF	Nanomethod, micromethod, millimethod
$^{\circ}\text{C}^{\circ}\text{F}$	temperature
NCV	Non-contact voltage detection
Live	Fire line judgment

3. Technical indicators

Gauges shall be specified for a period of one year, between 18°C and 28°C, with relative humidity less than Recalibration in 75% condition.

3.1 Comprehensive Indicators

1. Automatic selection of measuring function and range.
2. Full range overload protection.
3. The maximum voltage between the measuring end and the ground is 600V DC or 600V AC
4. Working height: maximum 2000m
5. Display: LCD
6. The maximum display value is 4000 digits.
7. Polarity indication: automatic indication, '-' indicates negative polarity.
8. Superview display: 'OL' or '-OL'.
9. Sampling time: about 3 times/second
10. Unit display: with function, electric quantity unit display.
11. Automatic shutdown time: 15 minutes
12. Power supply: Two 1.5V AAA 7 batteries
13. Battery undervoltage indicator: LCD  symbol.
14. Temperature coefficient: less than 0.1X accuracy /°C
15. Operating temperature: 0° C-40 ° C
16. Storage temperature: -10°C- 50°C

3.2 Technical indicators


Function	Range		Accuracy
DC Voltage	AUTO function : 0.800V~600V		±(0.8%+3)
	manual function : 0.000V~600V		
AC Voltage	AUTO function : 0.800V~600V		±(1.2%+3)
	manual function : 0.000V~600V		
Resistor	400Ω/4KΩ/40KΩ/400KΩ		±(1.0%+5)
	4MΩ/40MΩ		
Capacitor	4nF/40nF/400nF/4uF/40uF/400uF		±(4.0%+5)
	4mF/40mF		±(10%+5)
Diode Test			√
Continuity Buzzer			√
Fire line judgment(Live)			√
Non-contact voltage detection(NCV)			√
AUTO function/Manual conversion function			√
True RMS	√	Data hold	√
Back light	√	Flashlight lighting	√
undervoltage	√	Auto Power Off	√
Battery Type	2x1.5V AAA		
Dimension	140mm*70mm*31mm		

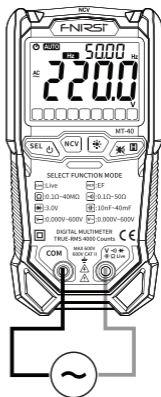
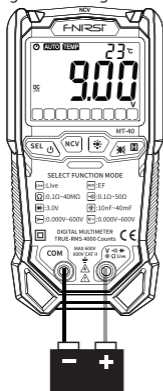
Input impedance: 10M.

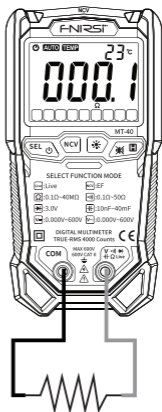
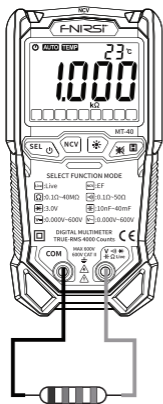
Maximum input voltage: 600V DC or AC Valid value.

4. Measurement method

4.1 Automatic scanning measurement of AC/DC voltage/resistance measurement/connectivity detection

1. Press the "  " button for 2 seconds, and enter the AUTO automatic scanning mode after turning on.
2. Connect the probes in parallel to the circuit, power supply, or resistor to be tested. The instrument automatically identifies AC voltage, DC voltage, and resistance. LCD displays the measurement results.
3. When measuring resistance, the display will display the measurement result. When the resistance is less than $50\ \Omega$, the green LED light flashes, the built-in buzzer sounds, and







the ambient temperature is displayed in the upper right corner of the display screen,



4. When measuring DC voltage, the display shows the measurement result and voltage polarity, and the ambient temperature is displayed in the upper right corner of the display screen.
5. When measuring AC voltage, the display screen displays voltage and the AC frequency is displayed in the upper right corner of the display screen.
6. After the measurement is completed, press the "⏻" button and hold for 2 seconds to turn off the instrument power.

4.2 Manual Mode Measurement



4.2.1 Press the "SEL" button to switch to DC voltage

The instrument LCD displays " " entering the DC voltage range. Insert the black probe into the COM socket, Insert the red probe into the " " socket. Connect the probes in parallel to both ends of the voltage source or load for measurement, Read on the LCD.

4.2.2 Press the "SEL" button to switch to AC voltage

The instrument LCD displays " " entering the AC voltage range. Insert the black probe into the COM socket, Insert the red probe into the " " socket. Connect the probes in parallel to both ends of the voltage source or load for measurement, Read on the LCD.


4.2.3 Press the "SEL" button to switch to resistance

The instrument LCD displays " " and enters the resistance range. Insert the black probe into the COM socket, the red probe into the " " socket, and connect the probe to the measurement resistance or both ends of the circuit for measurement. Read on the LCD display.

Attention:

- 1) When measuring the impedance on a circuit, it should be ensured that the circuit power has been disconnected and the capacitance on the circuit has been fully discharged.
- 2) When the input is disconnected, the LCD will display "OL" out of range status.
- 3) If the measured resistance is higher than 10M Ω , the instrument may take a few seconds to stabilize the reading. For high resistance readings, this is normal.



4.2.4 Press the "SEL" button to switch to on/off measurement

The instrument LCD displays " " and enters the on/off measurement mode. Insert the black probe into the COM socket and the red probe into the V Ω socket. Connect the probe to both ends of the circuit for measurement. If the resistance of the measured circuit is less than 50 Ω , the green LED light will flash and the buzzer inside the instrument will sound.

Attention:

1) If the probe is open or the resistance of the measured circuit is greater than 400 Ω , it will display "OL".

4.2.5 Press the "SEL" button to switch to the diode mode

1. The instrument LCD displays " " and enters the diode mode, ensuring that the power supply to the tested circuit has been cut off. Insert the black probe into the COM socket and the red probe into the " " socket.

2. Contact the red probe with the anode of the diode being tested, and the black probe with the cathode of the diode to read on the LCD.


3. If the polarity of the probe is opposite to that of the diode, the dashboard displays "OL", which can be used to distinguish the anode and cathode of the diode.

Attention:

1) When measuring diodes on a circuit, the reading is influenced by other paths between probes.

2) The forward bias voltage of a diode is usually in the range of 0.3V to 1.5V.

4.2.6 Press the "SEL" button to switch to capacitor mode

1. The instrument LCD displays " " and enters the capacitor level to ensure that the power supply of the tested circuit has been cut off. Insert the black probe into the COM socket and the

red probe into the $V \Omega$ socket.



2>Contact the probe with both ends of the tested capacitor. After the reading stabilizes, read on the LCD.

Attention :

1)When measuring the capacitance on the circuit, please disconnect the power supply first and discharge all high-voltage capacitors, otherwise it may damage the instrument and potential electric shock.


2) When measuring capacitance on a circuit, the reading is influenced by other paths between probes.

4.2.7 Press and hold the "SEL" button to switch to the LIVE function or press and hold the "Live" button for 2 seconds

1.The instrument LCD displays " " and enters the live line detection function. Insert the red probe into the " $V \Omega \rightarrow$  " socket, and then the probe contacts the test point.

2.When the instrument detects a strong communication signal, it will display "---" to light up the red indicator light, and a buzzing sound will generate a quick beep prompt.

4.2.8 Press the "SEL" key or short press the "NCV" key to switch to non-contact voltage detection (NCV)

1.The instrument LCD displays " " and enters NCV voltage detection. By placing the NCV sensing area close to the tested wire, the instrument can detect whether the tested wire has an AC voltage greater than 90V. When the instrument detects AC power, the instrument buzzer will sound an alarm, and the LCD analog bar will display the induction strength.

Attention :

1) Even without alarm indications, voltage may still exist. Do not rely on non-contact voltage detectors to determine the presence of voltage in the wires. The detection operation may

be affected by factors such as socket design and different types of insulation thickness.

4.3 How to use other functions

4.3.1 Auto Power Off

After starting up, if there is no operation, the instrument will automatically cut off the power for about 15 minutes to save energy.

4.3.2 Reading hold

1. Press the "hold" button once, the reading will remain unchanged, and the "hold" symbol will be displayed on the LCD screen.

2. Pressing the "HOLD" button again will restore the instrument to its normal measurement state.

4.3.3 Screen backlight

Long press the "☼" button for 2 seconds to turn on the backlight. After approximately 15 minutes, the backlight will automatically turn off. Alternatively, press and hold the "☼" button for 2 seconds to turn off the backlight.

4.3.4 Flashlight lighting

Press and hold the "☹" button for 2 seconds to turn on the flashlight. After about 15 minutes, the flashlight will automatically turn off. Or press and hold the "☹" button for 2 seconds to turn off the flashlight.

5. Maintenance


1. Please do not attempt to open the bottom shell to adjust or repair the instrument panel, as such operations can only be carried out completely by Technicians who are familiar with instruments and electrical shock hazards are responsible for their execution.

2. Before opening the instrument panel shell, the probe should be removed from the tested circuit.

5.Maintenance

1 . Please do not attempt to open the bottom shell to adjust or repair the instrument panel, as such operations can only be carried out completely Technicians who are familiar with instruments and electrical shock hazards are responsible for their execution.

2 . Before opening the instrument panel shell, the probe should be removed from the tested circuit.


3 . To avoid electric shock caused by incorrect readings, when the instrument displays the " " symbol, The battery should be replaced immediately.

4 . Use a damp cloth and mild detergent to clean the instrument, do not use abrasives or solvents.

5 . The power should be turned off when the instrument is not in use.

6.Replacing the battery

Attention :

During the battery replacement process of the instrument, the probe should be removed from the measuring circuit to avoid the risk of electric shock. The appearance of the " " symbol indicates the need to replace the battery.

7.Accessory

- | | |
|--------------------------|--------|
| 1)Detection probe | 1pair |
| 2)operation instructions | a copy |

8.Contate-nos

Qualquer utilizador da FNIRSI com questões que nos contate, tem a nossa promessa que terá uma solução satisfatória e 6 meses de garantia extra como agradecimento do seu suporte!

Já agora, criámos uma comunidade interessante, esteja à vontade para contactar a equipa da FNIRSI na nossa comunidade.

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