

Operating Manual



Pocket Size Type Digital Multimeter

Low Battery Display	Earth Ground	Warning
AC (Alternating Current)	DC (Direct Current)	Double Insulation
Buzzer Continuity	Diode	Capacitance
Conformity with Europe Demand		

III. Meter Description (See Figure 1)

1. LCD Display
2. DC&AC Voltage and Current, Resistance, Capacitance, Diode, Continuity measurement selector (SELECT Button)
3. Relative Measurement (REL Button)
4. Function Selection Switch
5. Hz/% Measurement (V, uA, mA and Hz/% Functions)
6. Data Hold (Hold Button)
7. Positive Input End (Red Test Lead)
8. Negative Input End (Black Test Lead)

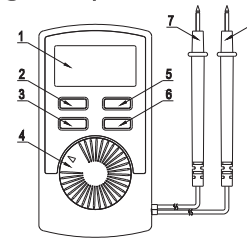


Figure 1

IV. Button Functional Description

1. SELECT Button

Used for switchover between DC & AC voltages, DC&AC Currents as well as among resistance, capacitance, buzzer continuity and diode measurements, indicated by beeping during the operation. Pressing this button can wake up the meter from sleep mode, which however will cancel the auto sleep function.

2. REL Button (Relative Measurement)

With this button pressed down, current reading is set as reference value which will be subtracted from subsequent readings. Press again to exit this mode and return to normal measuring status. This function is not available under frequency and duty cycle measurements.

3. HOLD Button (data hold)

Press this button to lock displayed values, release it to unlock this status and return to normal measuring mode.

4. Hz/% Measurement

The meter can switch into Hz or % measurement with this button pressed down if currently under V/uA/mA function (also used for frequency and duty cycle selection); when Hz/% operation is finished, the meter will return to V/uA/mA status with fixed range 400mA for DCV or 4V for ACV and meanwhile "AUTO" icon on LCD disappears. If high voltage is under test at the moment, set rotary switch to desired range or turn the meter off to reset auto-ranging for V/uA/mA function before starting the measurement.

Under Hz/% mode, press down Hz/% button to switch between frequency and duty cycle measurements

V. Operating Instructions

Switch on the meter to check if there is icon on the LCD, if any, it indicates the power supply falls low. To ensure high accuracy for measurement, please change batteries. You should also take notice of warnings, which indicates not to exceed maximum input limit when measuring voltage.

1. Measuring DC Voltage(See Figure 2)

- (1) Set rotary switch to V position, AUTO and DC icons appear on LCD;
- (2) Connect test leads to the power under test (Black to cathode, red to anode);
- (3) Read measuring results displayed on LCD;
- (4) Reverse test leads, then LCD will display negative readings.

2. Measuring AC Voltage (See Figure 2)

- (1) Set rotary switch to V position and press SELECT button, then LCD will display AUTO, AC icons;
- (2) Connect test leads to the power under test (Black to cathode, red to anode);
- (3) Read measuring values indicated on LCD;
- (4) If reversing rest lead connection, LCD will indicate negative readings.

Warnings:

- Do not input voltage above 600V, you may get desired values, however, which causes hazard to internal wiring.
- To avoid electric shock use extreme caution when measuring high voltage.
- Disconnect test leads with measured circuits after finishing all the operations

3. Measuring Resistance(See Figure 3)

- (1) Set rotary switch to Ω \rightarrow \rightarrow \rightarrow position;
- (2) Connect test leads to the resistor under test;
- (3) Read measured results on the LCD.

Warnings:

- Please ensure to turn off the power and discharge all capacitors before measuring online resistor so as to avoid meter damage.
- As for resistance 400 Ω range measurement test leads will cause error 0.1 Ω \rightarrow 0.3 Ω to readings. In order to get accurate readings, the final results should subtract the value when two test leads short circuit. It is suggested performing the operation under relative measurement mode.
- The meter should display "OL" if no signal is input, for instance, open circuit.
- For measurement $\geq 1M \Omega$, it normally takes several seconds to get stable readings

4. Measuring Frequency and Duty Cycle (See Figure 4)

- (1) Set rotary switch to Hz/% or V/uA/mA position;
- (2) Press Hz/% button to access frequency measurement;
- (3) Connect test leads to frequency signal source under test;
- (4) Read results on LCD;
- (5) Press Hz/% button again to access % measurement.

Warnings:

- The measuring resolution will vary slightly based on frequency and waveform that have been input, and resolution for this meter is set with reference to sine wave.

5. Testing Diodes and Continuity(See Figure 5)

- (1) Set rotary switch to Ω \rightarrow \rightarrow \rightarrow position;
- (2) Press SELECT button to access diode measurement mode (repress to go into continuity testing);
- (3) Connect test leads to measured diode (red to anode, black to cathode), then LCD reading is approximate value for diode forward voltage drop (if resistance between two terminals of circuits under test is $\leq 60 \Omega$, the meter will beep and display resistance value on LCD).

Warnings:

- If measured diode is under open circuit status or reversing the polarity (namely, black to anode, red to cathode), the meter displays "OL" on LCD.
- This function can also measure PN voltage drop of diode or semiconductor. The reading of forward voltage drop should be within 0.5~0.8V for a normal silicon semiconductor.
- Turn the circuit power off and discharge the capacitor before measuring online diode so as to avoid meter damage.
- Do not input voltages above DC60V or AC 30Vrms to prevent damage to the meter or personal injury.

6. Measuring Capacitance(See Figure 6)

- (1) Set rotary switch to Ω \rightarrow \rightarrow \rightarrow position;
- (2) Press SELECT button three times to access capacitance status;
- (3) Given there is still readings under open circuit, choose relative measurement mode;

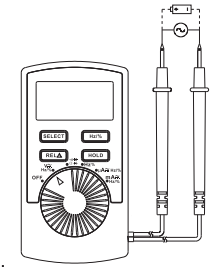


Figure 2

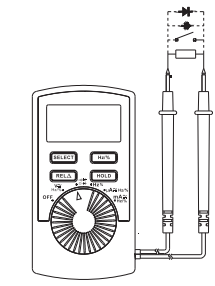


Figure 3

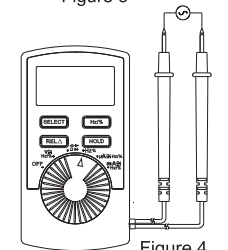


Figure 4

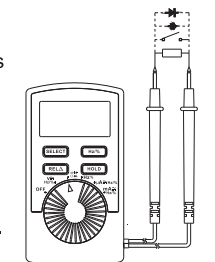


Figure 5

I. Introduction

120C is 4000 count notebook type auto-ranging digital multimeter with following advantages: complete functions, stable performance, high accuracy, low power consumption, novel structure, high degree of safety and reliability. It is capable of measuring AC/DC voltage and current, frequency, duty cycle, resistance, capacitance, diode forward voltage drop and continuity, and becomes an ideal choice for measurement.

This manual specifies safety information and notes related to this meter, please read the manual carefully before use and strictly follow all warnings and notes during the operation.

Warnings:

Please read "rules for safe operation" before operating the meter.

II. Safety Information

Pay attention to warning symbol and its corresponding contents. A Warning states situations or actions that may cause potential risks to users or damage to the meter or measured equipments.

120C is designed and manufactured in accordance with safety standards IEC61010, Double Insulation and CAT II 600V as well as Pollution Degree 2.

Warnings:

Operate the meter as specified in the manual; otherwise the protection offered the meter will be impaired.

1. Please ensure test leads are good and no insulation damage or broken wires before use. If test lead or meter housing is found with any obvious damage or undetermined failure, do not use the meter.
2. Keep your hands behind the finger guards during the operation.
3. To avoid electric shock or damage to the meter do not apply voltage above 600V between meter terminals and grounding
4. Please use caution when working voltages above DC60V and AC 42 Vrms so as to prevent electric shock.
5. The meter is prohibited to use when back cover is not well placed, otherwise, it may cause electric hazard.
6. Do not exceed the specified limit value in order to avoid shock hazard or meter damage
7. Function switchover is not allowed during measurement so as to protect the meter-
8. Do not change internal wiring without authorized permission which may endanger the meter or users.
9. To ensure accurate readings, please change batteries timely if icon appears.
10. Do not use the meter in environments exposed to high temperature and humidity, especially for stored meter which may not run normally after moisture-affected.
11. Clean the meter housing with soft cloth dampened with mild detergent, any abrasive or corrosive is prohibited.

● International Electrical Symbols

- (4) Press REL button one time;
- (5) Connect test leads to capacitance under test, then read data on LCD.

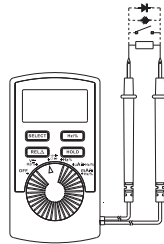


Figure 6

⚠ Warnings:

- Completely discharge all capacitors before measurement.
- As for online capacitor measurement, it must cut off all power supply of measured circuits and discharge completely all capacitors.
- When measuring capacitance with polarity distinction, ensure right connection between test leads and capacitor (red to anode, black to cathode).
- It normally takes several seconds to display readings when measuring more than 10 μF capacitance.
- To avoid damage to the meter or personal injury do not apply voltages above DC60V or AC 30Vrms.

7. Measuring DC & AC Current(See Figure 7,8)

- (1) Set rotary switch to “ μA ” or “mA” position, and press SELECT button to choose desired DC or AC range, then Connect test leads in series to measured loop.
- (2) Read current readings on LCD
- (3) It is RMS value displayed by UT120C when measuring AC current (Sine wave)

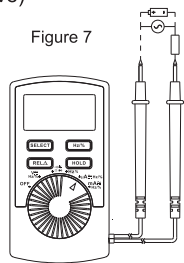


Figure 7

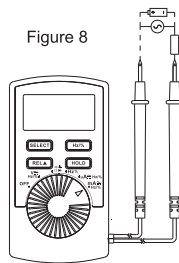



Figure 8

⚠ Warnings:

- (1) Cut off the current before connecting the meter to the loop, otherwise spark hazard occurs
- (2) Please ensure right input terminals and functions are selected during measurement; start from higher range if not sure about current flow under test.
- (3) 120C is not expected to measure current higher than 400mA.
- (4) Do not connect test leads in parallel to any circuit, otherwise it may burn internal fuse and damage the meter.
- (5) Cut off the power supply and then disconnect test leads with circuits under test after finishing all operations, which is particularly important when measuring large current

VI. Technical Specifications




General Specifications

1. Max. Input Voltage between Voltage Terminal and Grounding: 600VRMS or 600DCV
2. Range Selection: Auto-ranging
3. Measuring Speed Rate: 3 times per second
4. Max. Display: 3999, 3 $\frac{3}{4}$ digits
5. Over-Load Display: “OL”
6. Polar Indication: “-” icon for negative input
7. Low Battery Display:  on LCD
8. Battery: one Lithium-manganese button cell, 3V, model: CR2032
9. Operating Temperature: 0°C \sim 40°C (32°F \sim 104°F)
Humidity: \leq 75%
Storage Temperature: -10°C \sim 50°C (14°F \sim 122°F)
Operating Altitude Height: \leq 2000m
10. Dimensions: 109.8mm \times 58.2mm \times 10.8mm
11. Weight: about 76 g(test leads & batteries included)
12. Auto Power Off


The meter goes into sleep mode after 30 minutes of inactivity of rotary switch and buttons. It can restore the operation (working mode) using rotary switch or any button on the front panel. This function will be canceled if pressing SELECT button to power on

Accuracy Specifications

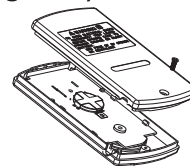
Accuracy: \pm (a% readings+ b digits), warranty period: one year;
Ambient Temperature: 23°C \pm 5°C;
Relative Humidity : \leq 75%;

Functions	Range	Resolution	Accuracy \pm (a% readings+ b digits)	Input Protection	Description
DC Voltage DCV	400mV	0.1mV	\pm (0.8%+3)	600V DC 600 V AC	Input Impedance \geq 10M Ω
	4V	1mV	\pm (0.8%+1)		
	40V	10mV			
	400V	100mV	\pm (1%+3)		
AC Voltage ACV	4V	1mV	\pm (1.2%+3)	600V DC 600 V AC	Input Impedance \geq 10M Ω Frequency Response: 40Hz \sim 400Hz; Display: RMS of Sine wave (Mean Value Response)
	40V	10mV			
	400V	100mV	\pm (1.5%+5)		
	600V	1V			
Resistance Ω	400 Ω	0.1 Ω	\pm (1.2%+2)	600 V AC	0.45V for open circuit status
	4K Ω	1 Ω			
	40K Ω	10 Ω	\pm (1%+2)		
	400K Ω	100 Ω			
	4M Ω	1K Ω			
40M Ω	10K Ω	\pm (1.5%+2)			
Capacitance CAP(F)	4.000nF	0.001nF	\pm (4%+3)	600 V AC	For reference Measured under relative measurement 0.45V for open circuit Just for reading reference when measured capacitance above “100 μF ”
	40.00nF	0.01nF			
	400.0nF	0.1nF			
	4.000 μF	0.001 μF			
	40.00 μF	0.01 μF	\pm (5%+10)		
100 μF	0.1 μF				
Frequency Hz	99.9Hz	0.1Hz	\pm (0.5%+3)	600 V AC	Input sine wave 10Hz \sim 10kHz: \geq 1Vrms 10kHz \sim 100kHz: \geq 30Vrms
	0.999kHz	0.001kHz			
	9.99kHz	0.01kHz			
	99.9kHz	0.1kHz			
Duty Cycle	0.1% \sim 99.9%	0.10%		600V AC	Press DUTY button to switch into DUTY measuring mode if under AC/DC mode (just for reading reference)
Diode		1mV	0.5V \sim 0.8V	600V AC	1.5 V for open circuit status
Buzzer Continuity		0.1 Ω	About \leq 60 Ω	600V AC	Continuity Resistance \leq 60 Ω : buzzer beeps; $>$ 60 Ω : not necessary beep, resistance approximate value displays, unit is Ω
Low Battery Display			About $<$ 2.4V		 Icon appears
DC Current DCA	400 μA	0.1 μA	\pm (1.0%+3)	Fuse 400mA, 600V	
	4000 μA	1 μA			
	40mA	10 μA	\pm (1.2%+5)		
	400mA	100 μA			
AC Current ACA	400 μA	0.1 μA	\pm (1.5%+5)	Fuse 400mA, 600V	
	4000 μA	1 μA			
	40mA	10 μA	\pm (2%+5)		
	400mA	100 μA			

VII. Battery Replacement (See Figure 9)

If  icon appears on LCD, please change batteries and do as below:

1. Disconnect test leads with circuits under test, set rotary switch to OFF position, then power off the meter.
2. Unscrew the back housing and remove it.
3. Replace old batteries with the new 3V.



(Figure 9)

WARRANTY

This product is guaranteed against defects for a period of 12 months from date of purchase. This warranty is provided by Super Cheap Auto Pty Ltd ACN 085 395 124 (Supercheap Auto) of 751 Gympie Rd Lawnton QLD 4501 Ph (07) 3482 7500. Supercheap Auto will offer a repair, replacement product or store credit if the product is assessed as being defective during the warranty period.

To claim under this warranty, take this product to the Front Service Desk of your nearest Supercheap Auto store. For store locations, visit www.supercheapauto.com.au (AUS) or www.supercheapauto.co.nz (NZ). You will need your receipt or proof of purchase. Additional information may be requested of you to process your claim. Should you not be able to provide proof of purchase with a receipt or a bank statement, identification showing your name, address and signature may be required to process your claim.

This product may need to be sent to the manufacturer to assess the defect before determining any claim. Faults or defects caused by product modification, misuse and abuse, normal wear and tear or failure to follow user instructions are not covered under this warranty. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.




Any expenses incurred relating to the return of this product to store will normally have to be paid by you. For more information contact your nearest Supercheap Auto store.

The benefits to the consumer given by this warranty are in addition to other rights and remedies of the Australian Consumer Law in relation to the goods and services to which this warranty relates.

END

This operating manual is subject to change without notice.

说明书菲林做货要求:

序号	项目	内容
1	尺寸	展开尺寸285*256±1MM 折叠尺寸95*128±1MM
2	材质	60g书纸做货
3	颜色	黑字
4	外观要求	印刷完整清晰、版面整洁, 无斑墨、残损、毛边、刀线错位等缺陷。
5	装订方式	无
6	表面处理	无
7	其它	/
版本		1
DWH 设计	赵有平13/11/14	MODEL UT120C 机型: AT-019-H
CHK 审核		Part NO. 物料编号: 110401104706X
APPRO. 批准		 优利德科技(中国)有限公司 UNI-TREND TECHNOLOGY (CHINA) LIMITED