PHYWE excellence in science

Analog multimeter, 500V AC/DC, 10A AC, 20MΩ

07021-12

PHYWE Systeme GmbH & Co. KG
Robert-Bosch-Breite 10
37079 Göttingen
Germany
Tel. +49 (0) 551 604-0
Fax +49 (0) 551 604-107
E-mail info@phywe.de

Fig. 1: 07021-12 Analog multimeter, 500V AC/DC, 10A AC, 20MΩ

Operating Instructions

CE The unit complies with the applicable EC regulations

TABLE OF CONTENTS

1 SAFETY INSTRUCTIONS

- Check the meter cover before use. The meter may not work if a rubber part is broken or missing. Do not use this meter under these circumstances.
- Check the insulation of the test leads if damaged, the conductor is exposed or the test leads are damaged. If the test leads are damaged, use a new one first and only then use this meter.
- Use only safety connecting cords.
- Check the multimeter if it works well by measuring the voltage. If the meter does not work, do not use it and send it back for repair.
- Do not apply voltage which exceeds the rated voltage of the meter on the input terminal.
- Be careful to operate the meter when it is operated at or above 60V DCV resp. 30V ACV. This may result in electric shock.
- Choose an appropriate input terminal and range.
- Do not measure voltages and currents which are above their given measurement ranges. When not sure about the measurement range, turn to the MAX range and test. Before continuity measurement (online), cut off the power of the circuit which is under test and keep all the capacitance out of power.
- When using test leads, you must keep your fingers behind the ring guard.
- Do not use or store the meter under high temperature, high humidity, flammable and combustible conditions and in strong electromagnetic fields.
- When performing maintenance, please use a soft cloth and neutral detergent to clean the surface. Do not use any abrasive or solvent, otherwise they will corrode the cover and cause damage.

Safety symbol

Dangerous voltage

GND

Dual insulation

Refer to safety instructions

Low battery

2 PURPOSE AND CHARACTERISTICS

This is an analog multimeter with high accuracy with CAT III 600V standard. It has 21 measurement ranges and can measure DC voltage, AC voltage, DC current, resistance. Also, it has a continuity buzzer function.

(1) Warning Safety Notes

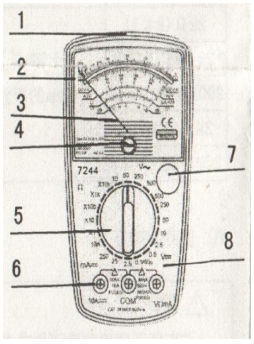
To avoid electric shock, personal injury, instrument damage, please read the warning and safety notes carefully before using this meter.

(2) Safety Notes

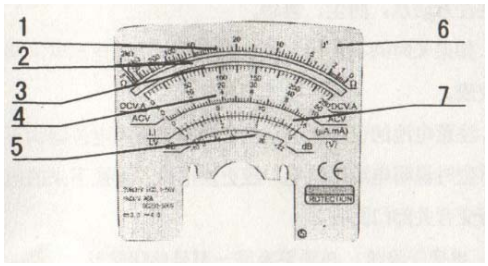
This analog multimeter meets the EN61010 standard and the CAT III 600V voltage standard. Please operate the multimeter according to the operating instructions, otherwise the multimeter will be damaged.

3 GENERAL CHARACTERISTICS

1. Protection holster
2. Meter cover
3. Pointer
4. Mechanical zero regulator
5. Function keys
6. Input jacks
7. Resistance zero regulator
8. Function panel



Analog display:

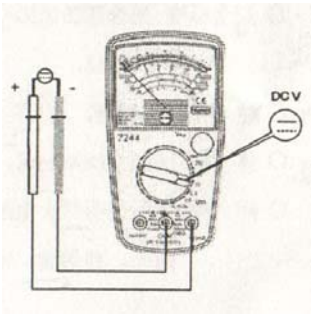


1. Resistance scale marks
2. Mirror slot
3. C/AC scale marks
4. ACV scale marks, battery and resistance scale marks
5. DB scale marks
6. Diode positive current scale marks

4 TECHNICAL DESCRIPTION

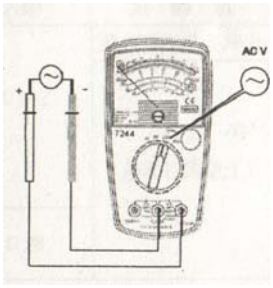
1. DC voltage: (DCV)

Switch to DCV range and insert the black and red test leads into the black jack and red jack. Select DCV 500V, 250V, 50V, 10V, 2.5V, 0.5V or 0.1V and read off the indicated value in the second scale mark on the dial.



2. AC voltage: (ACV)

Switch to ACV range and insert the black and red test leads. Select ACV 500V, 250V or 50V and read off the indicated value in the third scale mark on the dial.

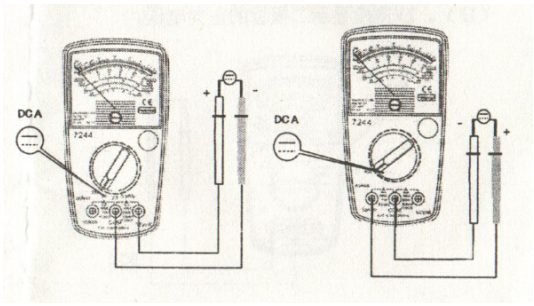


3. DC mA:

Warning!

In the DC mA range, the test leads must not test DCV and ACV, otherwise damage will result.

Switch to DC mA range and insert the black and red test leads into the black jack and red jacks. Read off the DC mA value from the second DC mA scale mark on the dial. When selecting the DC 10A range, insert the red test lead into the 10A jack.



4. Resistance: (Ω)

Warning!

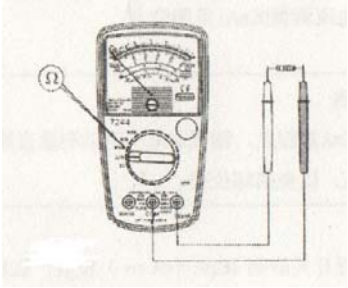
Before measuring resistance, make sure the power of the tested circuit is turned off and all the capacitances are out of power. Otherwise damage and electric shock may result.

Switch to Ω range and adjust the pointer to the zero position before measurement. Make sure that the pointer is in the zero position on the Ω scale mark. If not, adjust using the zero regulator. Then connect the test leads to the circuit and measure the resistance. Read off the value on the dial at the first scale mark.

Reading off the correct value: The value you get from the different measurement ranges must be multiplied with each mul-

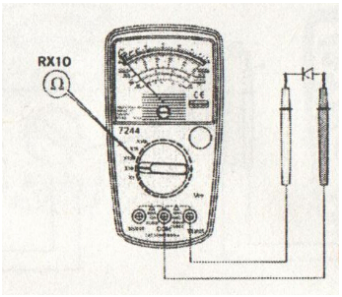
tiplicand.

When the test leads are short-circuited, despite adjusting the Ω regulator and the pointer is still not able to point to zero, this means that the battery is low. Replace battery.



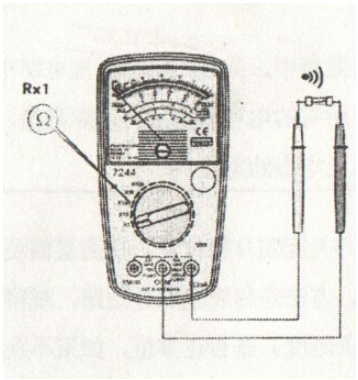
5. LED measurement

Switch to Ω*10 range and connect the test leads to the two terminals of the LED. The fourth LI scale mark shows the diode positive current (IF), the LV scale mark shows the diode positive voltage.



6. Continuity test

Switch to BUZZ(Rx1) range and connect the test leads to the tested resistance. When the resistance value is below 100 Ω, the buzzer alarm sounds.



7. Audio level measurement dB

The measurement functions like the ACV measurement. When the tested circuit contains a DC part, it series-connects a blocking capacitor of which the capacitance is 0.1μF and withstands voltage is more than 500 V. In the table below, as an example, for measurement range AC 10V the fourth scale mark shows -10~22dB:

ACV	ADD	dB
10	0	-10~22
50	14	4~36
250	28	18~50
500	34	24~56

5 TECHNICAL DATA

General features

- Function: ACV, DCV, DCA, Ω, dB, continuity test, diode test.
- Power: UM-3(AA), 1.5V*2, 6F22, 9V*1
- Fuses: F500mA/250V, Φ5*20mm F10A/250V, Φ5*20mm
- Batteries: 9V battery and 2 x 1.5V AA batteries
- Work environment: 0°C to 40°C, humidity<70%RH
- Storage environment: -10°C to 50°C, humidity <70%RH
- Applicable altitude: below 2000m
- Safety standard: IEC61010-1 Cat III 600V
- Pollution grade: level 2
- Dimensions:168 * 95 * 46 mm
- Weight: Approx. 320g
- Accessories: User manual, 1.5V battery (2pcs), 9V battery (1pc), protection holster

Electric property

Accuracy: DC ±3%, AC±4%, one year calibration period.
High accuracy work environment: 18℃ - 28℃,
Humidity <75%RH

DC voltage: (DCV)

Range	Accuracy	Input impedance
0.1V	±5%	20KΩ/DCV
0.5V	±3%	
2.5V		
10V		
50V		
250V		9KΩ/DCV
500V		

AC voltage: (ACV)

Range	Accuracy	Input impedance
10V	±4%	9KΩ/ACV
50V		
250V		
500V		

DC current: (DCA)

Range	Accuracy	Voltage drop
50uA	±3%	≤0.6V
2.5mA		
25mA		
250mA		
10A		≤0.12V

Resistance: (Ω)

Range	Accuracy	Center Value
2k Ω(RX1)	±3%	20
20k Ω(RX10)		
200k Ω(RX100)		
2M Ω(RX1k)		
20M (RX10k)		

6 WARRANTY

We give a warranty of 24 months for units supplied by us inside the EU, and a warranty of 12 months outside the EU. The following is excluded from the warranty: Damage that is due to non-compliance with the operating instructions, improper use, or natural wear.

The manufacturer can only be held liable for the function and safety-relevant properties of the unit, if the maintenance, service, and modifications of the unit are performed by the manufacturer or by an institution that is expressly authorised by the manufacturer.

7 PRODUCER

Xi'An BeiCheng Electronics Co., Ltd.
LiuHeng Road, JingHe Industrial Park, North District, Xi'An, China (Model 7244)

8 WASTE DISPOSAL

The packaging consists predominately of environmentally compatible materials that can be passed on for disposal by the local recycling service.

Should you no longer require this product, do not dispose of it with the household refuse. Please return it to the address below for proper waste disposal.

PHYWE Systeme GmbH & Co. KG

Abteilung Kundendienst (Customer Service)

Robert-Bosch-Breite 10

D-37079 Göttingen

Phone +49 (0) 551 604-274

Fax +49 (0) 551 604-246