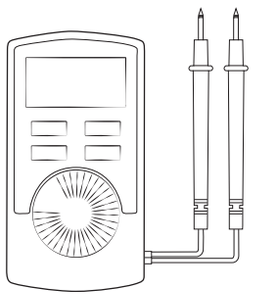
POCKET DIGITAL MULTIMETER

- Auto ranging
- AC/DC Voltage 4-600V
- AC/DC Current
- Resistance
- Capacitance
- Frequency
- Continuity
- Diode test
- Data hold
- Relative mode
- Auto power off
- CAT II 600V



OPERATOR'S MANUAL
ORDER CODE: OXD-516-6462E
CZ HU PL SK TH **cromwell.co.uk**

OXFORD PRECISION

INTRODUCTION

OXD-516-6462E is a 4000 count notebook type digital Multimeter with following advantages: auto-ranging, 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.
This manual specifies safety information and notes related to this Multimeter, please read the manual carefully before use and strictly follow all warnings and notes during the operation.

WARNING: Please read "the manual" before operating the Multimeter

SAFETY INFORMATION

Pay attention to ⚠ warning symbol and its corresponding contents. Warning items state situations or actions that may cause potential risks to users or damage to the Multimeter or measured equipment. OXD-516-6462E is designed and manufactured in accordance with safety standards IEC61010, Double Insulation and CAT II 600V as well as Pollution Degree 2.

Warning: Operate the Multimeter as specified in the manual; otherwise the protection offered by the Multimeter will be impaired.

1. Before use, ensure test leads are in good condition with no insulation damage or broken wires.
2. Keep your hands within protection area during the operation.
3. To avoid electric shock or damage to the meter do not apply voltage above 600V between Multimeter terminals and grounding.
4. Please use caution when working on voltages above DC 60V and AC 42VRMS so as to prevent electric shock.
5. Do not use the Multimeter when the 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 Multimeter damage
7. Function switch over is not allowed during measurement so as to protect the Multimeter.
8. Do not change internal wiring without authorised permission which may endanger the Multimeter or users.
9. To ensure accurate readings, please change the battery if 🔋 icon appears.
10. Do not use or store the Multimeter in environments exposed to high temperature and humidity.
11. Clean the Multimeter housing with a soft damp cloth with mild detergent.

TECHNICAL SPECIFICATIONS

Max. Input Voltage between Voltage Terminal and Grounding 600VRMS or 600DCV

Range Selection:	Auto-ranging
Measuring Speed Rate:	3 times per second
Max. Display:	3999, 3¾ digits
Over-Load Display:	"OL"
Polar Indication:	"-" Icon for negative input
Low Battery Display:	🔋 on LCD
Battery:	One Lithium-manganese button cell, 3V, model: CR2032
Operating Temperature:	0°C~ 40°C (32°F~104°F)
Humidity:	⩽ 75%
Storage Temperature:	-10°C~ 50°C (14°F~122°F)
Operating Altitude Height:	⩽ 2000m
Dimensions:	109.8mm x 58.2mm x 10.8mm
Weight:	76g (test leads & batteries included)
Auto Power Off:	After 30 minutes

ACCURACY SPECIFICATIONS

Accuracy: ± (a% readings+ b digits), warranty period: one year.

Ambient Temperature: 23°C±5°C.

Relative Humidity: ⩽ 75%.

Functions	Range	Resolution	Accuracy ± (a% reading + b digits)	Input Protection	Description
DC Voltage DCV	400mV	.1mV	±(0.8%+3)	600V DC 600V AC	Input Impedance 10MΩ
	4V	1mV	±(0.8%+1)		
	40V	10mV			
	400V	100mV			
	600V	1V	±(1%+3)		
AC Voltage ACV	4V	1mV	±(1.2%+3)	600V DC 600 V AC	Input Impedance ⩾10MΩ Frequency Response: 40Hz~400Hz; Display: RMS of Sine wave (Mean Value Response)
	40V	10mV			
	400V	100mV			
	600V	1V	±(1.5%+5)		
Resistance Ω	400Ω	0.1Ω	±(1. 2%+2)	600 V AC	0.45V for open circuit status
	4KΩ	1Ω	±(1%+2)		
	40KΩ	10Ω			
	400KΩ	100Ω			
	4MΩ	1KΩ	±(1. 2%+2)		
	40MΩ	10KΩ	±(1. 5%+2)		
Capacitance CAP(F)	4.000nF	0.001nF		600 V AC	For reference
	40.00nF	0.01nF	±(4%+3)		Measured under relative measurement 0.45V for open circuit
	400.0nF	0.1nF			
	4.000μF	0.001μF			
	40.00μF	0.01μF			Just for reading reference when measured capacitance above"100μF"
	100 μF	0.1 μF	±(5%+10)		
Frequency Hz	99.9Hz	0.1Hz	±(0.5%+3)	600 V AC	Input sine wave 10Hz~10kHz: ⩾1Vrms 10kHz~100kHz: ⩾30V rms
	0.999kHz	0.001kHz			
	9.99kHz	0.01kHz			
	99.9kHz	0.1kHz			
Duty Cycle	0.1%~99.9%	0.10%		600V AC	Press DUTY button to switch into DUTY measuring mode if under AC/DC mode (just for reading reference)

Duty Cycle	0.1%~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~0.8V	600V AC	1.5 V for open circuit status
Buzzer Continuity	•))	0.1Ω	About ⩽60Ω	600V AC	Continuity Resistance ⩽60Ω : buzzer beeps; >60Ω : 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	±(1.0%+3)	Fuse 400mA, 600V	
	4000 μA	1 μA			
	40mA	10 μA	±(1.2%+5)		
	400mA	100 μA			
AC Current ACA	400 μA	0.1 μA	±(1.5%+5)	Fuse 400mA, 600V	
	4000 μA	1 μA			
	40mA	10 μA	±(2%+5)		
	400mA	100 μA			

BATTERY REPLACEMENT

If 🔋 icon appears on LCD, please change the battery and do as below:

1. Disconnect test leads from circuits under test and set rotary switch to OFF position.
2. Unscrew the back housing and remove it.
3. Replace old battery with the new 3V CR2032

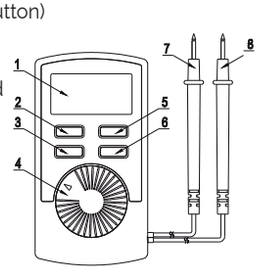


INTERNATIONAL ELECTRICAL SYMBOLS

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

MULTIMETER DESCRIPTION

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)



BUTTON FUNCTION DESCRIPTION

SELECT Button

Used to switch over between DC & AC voltages, DC & AC Currents as well as for resistance, capacitance, buzzer continuity and diode measurements, indicated by beeping during the operation. Pressing this button can wake up the Multimeter from sleep mode and cancel the auto sleep function.

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.

HOLD Button (Data hold)

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

Hz/% Measurement

The Multimeter 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 Multimeter 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, set rotary switch to desired range or turn the Multimeter off to reset auto-ranging for V/uA/mA function before starting the measurement. Under Hz/% mode, the Multimeter can switch over to measure frequency or duty cycle.

OPERATING INSTRUCTIONS

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

Measuring DC Voltage (see Figure 1)

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.

MEASURING AC VOLTAGE (see Figure 1)

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).

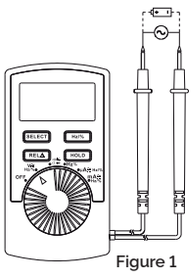


Figure 1

3. Read measuring values indicated on LCD.
4. If reversing test 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.***

MEASURING RESISTANCE (see Figure 2)

1. Set rotary switch to Ω •)) ⊣ ⊣⊢ position.
2. Connect test leads to the resistor under test.
3. Read measured results on the LCD.

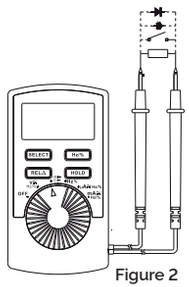


Figure 2

⚠WARNINGS:

- ***Please ensure to turn off the power and discharge all capacitors before measuring online resistor so as to avoid Multimeter damage.***
- ***As for resistance 400Ω range measurement, test leads will cause error 0.1Ω~0.3Ω to readings. In order to get accurate readings, the ultimate 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 ≥ 1MΩ, it normally takes several seconds to get stable readings.***

MEASURING FREQUENCY AND DUTY CYCLE (See Figure 3)

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.

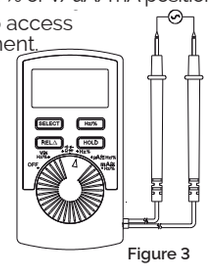


Figure 3

⚠WARNINGS:

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

TESTING DIODE AND CONTINUITY (see Figure 4)

1. Set rotary switch to Ω •)) ⊣ ⊣⊢ 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 ≤60Ω, the meter will beep and display resistance value on LCD).

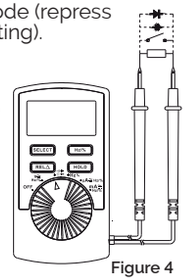


Figure 4

⚠WARNINGS: If measured diode is under open circuit status or reversing the polarity (namely, black to anode, red to cathode), the Multimeter 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.***
- ***Cut off all circuits and discharge the capacitor before measuring online diode so as to avoid Multimeter damage.***
- ***Do not input voltages above DC60V or AC 30Vrms to prevent damage to the meter or personal injury.***

CAPACITANCE MEASUREMENT (see Figure 5)

1. Set rotary switch to Ω •)) ⊣ ⊣⊢ position;
2. Press SELECT button three times to access capacitance status.
3. Given there is still readings under open circuit, choose relative measurement mode.
4. Press REL button one time.
5. Connect test leads to capacitance under test, then read data on LCD.

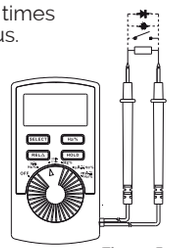


Figure 5

⚠WARNINGS:

- ***Completely discharge all capacitors before measurement.***
- ***As for online capacitor measurement, you 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 10μF Capacitance.***
- ***To avoid damage to the Multimeter or personal injury do not apply voltages above DC60V or AC 30Vrms.***

DC & AC CURRENT MEASUREMENTS (see Figure 6 & 7)

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. RMS value displayed when measuring AC current (Sine wave).

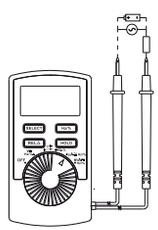


Figure 6

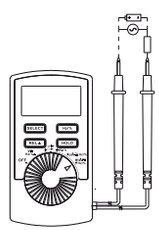


Figure 7

WARNINGS:

- ***Cut off the current before connecting the Multimeter to the loop, otherwise spark hazard occurs.***
- ***Please ensure right input terminals and functions are selected during measurement; start from higher range if not sure about current flow under test.***
- ***This Multimeter is not expected to measure current higher than 400mA.***
- ***Do not connect test leads in parallel to any circuit, otherwise it may burn internal fuse and damage the meter.***
- ***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.***

THE ENVIRONMENT

Always dispose of unwanted tools, accessories and packaging materials in an environmentally friendly manner.
In observance of European Directive on Waste Electrical and Electronic Equipment (WEEE) and its implementation in accordance with national law, electrical goods that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.
Do not dispose of electrical goods with domestic waste materials as inappropriate disposal may cause potential hazards to the environment and human health.
For further information, please contact your local authority or the retailer from whom you purchased the product.

QUALITY GUARANTEE & WARRANTY

OXFORD PRECISION products carry a one year manufacturer's warranty.
OXFORD PRECISION products are designed & manufactured to the highest standards & specifications.
Assuring the quality and performance required by all sectors of industry.
OXFORD PRECISION products are fully guaranteed against faulty materials & workmanship.
Should they be found to be defective, they will either be repaired or replaced free of charge (fair wear and tear and/or misuse excepted).
Please retain supplier invoice as proof of purchase.

DECLARATION OF CONFORMITY

We hereby certify that the OXFORD POCKET DIGITAL MULTIMETER (ORDER CODE: OXD-516-6462E)
Complies with all the relevant provisions of the EMC Electromagnetic Compatibility Directive 2014/30/EU
Standards Applied: EN61326-1:2013, EN61326-2-2:2013
LVD Low Voltage Directive 2014/35/EU
Standards Applied: EN61010-1:2010, EN61010-2-030:2010 EN61010-2-033:2012, EN61010-031:2015
RoHS2 Restriction of Hazardous Substances Directive 2011/65/EU

Signed:
Date: September 2019
Name: Toni Johnson
Position: Compliance Director.

CE

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