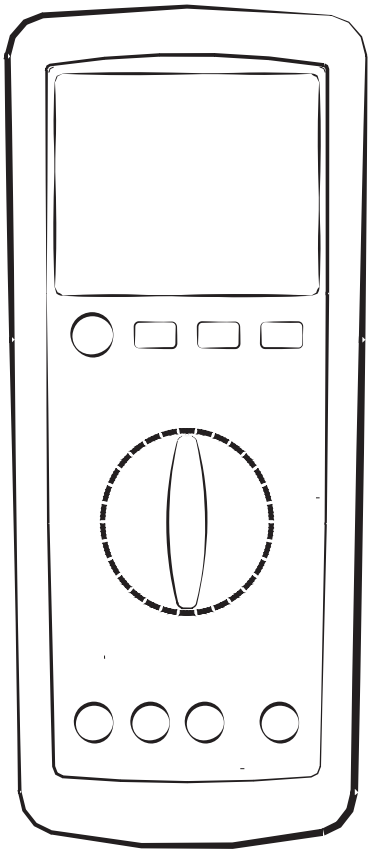
DIGITAL MULTIMETER



- Terminal blocking prevention
- Temperature measurement
- Extra large display
- Hold function
- Backlight
- Tilt stand
- Voltage DC 200mV~1000V
- Voltage AC 2V~700V
- Current DC 2mA~20A
- Current AC 2mA~20A
- Resistance 200Ω~20MΩ
- Capacitance 2nF~200µF
- Diode test
- Continuity buzzer
- Frequency 20kHz
- CAT II 1000V
- Test Leads
- Temperature Probe

OPERATOR'S MANUAL
ORDER CODE: OXD-516-4320M

CZ HU PL SK TH **cromwell.co.uk**

OXFORD PRECISION

SAFETY INFORMATION

The following safety information must be observed to ensure maximum personal safety during the operation of this meter:

- Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly.
- Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc., which might be at ground potential. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material.
- Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
- Use caution when working above 60V DC or 30V AC rms. Such voltages pose a shock hazard.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Measuring voltage which exceeds the limits of the multimeter may damage the meter and expose the operator to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.
- Never apply voltage or current to the meter that exceeds the specified maximum:

Input Limits	
Function	Maximum Input
V DC or V AC	1000V DC, 700V AC
mA DC/AC	200mA DC/AC
A DC/AC	20A DC/AC (30 seconds max every 15 minutes)
Frequency, Resistance, Capacitance, Diode, Continuity	250V DC/AC
Temperature	250V DC/AC

SYMBOLS USED



This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operator's manual to avoid personal injury or damage to the meter.

WARNING

This WARNING symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

CAUTION

This CAUTION symbol indicates a potentially hazardous situation, which if not avoided, may result in damage to the product.



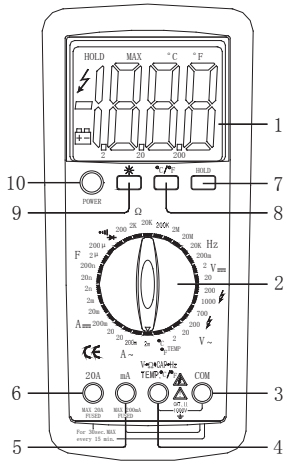
This symbol advises the user that the terminal(s) so marked must not be connected to a circuit point at which the voltage with respect to earth ground exceeds (in this case) 1000 VAC or VDC.

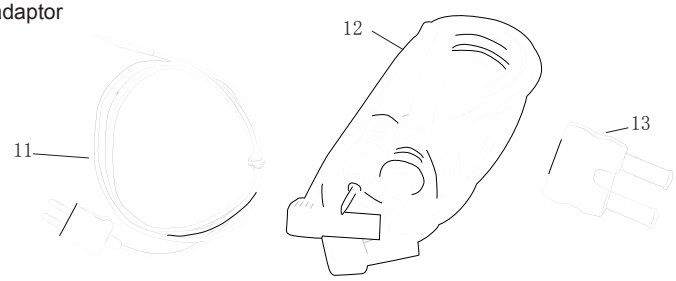


This symbol adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the Multimeter and its test leads should not be handled when these terminals are energised.

CONTROLS AND JACKS

1. Large 2000 count Liquid Crystal Display with back light and HOLD, °C, °F, BAT symbolic signs
2. Function switch
3. COM (negative) input jack
4. V, Ω, CAP, Hz, TEMP. input jack
5. mA input jack for mA DC or AC measurements
6. 20A (positive) input jack for 20A DC or AC measurements
7. Data Hold push button
8. °C/°F push button
9. Backlight push button
10. Power push button: the power button turns the meter ON or OFF
11. Temperature probe
12. Test leads
13. Banana plug adaptor





SPECIFICATIONS

Insulation:	Class2, Double insulation.
Over voltage category:	CATII - 1000V.
Display:	2000 counts LCD display with function indication.
Polarity:	Automatic, (-) negative polarity indication.
Over range:	“OL” mark indication.
Low battery indication:	“BAT” is displayed when the battery voltage drops below the operating level.
Measurement rate:	2 times per second, nominal.
Operating environment:	0°C to 50 °C (32 °F to 122 °F) at < 70% relative humidity.
Storage temperature:	-20°C to 60°C (-4°F to 140°F) at < 80% relative humidity.
For inside use, max height:	2000m
Pollution degree:	2
Power:	One 9V battery , NEDA 1604, IEC 6F22.
Dimensions:	195 (H) x92 (W) x 38 (D) mm
Weight: Approx.:	380g.

Accuracy is given at 18°C to 28°C (65°F to 83°F), less than 70% RH

DC Voltage

Range	Resolution	Accuracy
200.0mV	0.1mV	±0.5% of rdg ± 2 dgts
2.000V	1mV	
20.00V	10mV	
200.0V	100mV	
1000V	1V	±0.8% of rdg ± 2 dgts

Input Impedance: 10MΩ.

200mV range Maximum Input: 250V DC or 250V AC rms.

Maximum Input: 1000V DC or 700V AC rms.

AC Voltage

Range	Resolution	Accuracy
2.000V	1mV	±1.0% of rdg ± 3 dgts
20.00V	10mV	
200.0V	100mV	
700V	1V	±1.2% of rdg ± 5 dgts

Input Impedance: 10MΩ.

Frequency Range: 50 to 400Hz

Maximum Input: 1000V DC or 700V AC rms.

DC Current

Range	Resolution	Accuracy
2.000mA	1μA	±1.0% of rdg ± 3 dgts
20.00mA	10uA	
200.0mA	100μA	±1.5% of rdg ± 3 dgts
20.00A	10mA	±2.5% of rdg ± 10 dgts

Overload Protection: 0.2A / 250V and 20A / 250V Fuse.
Maximum Input: 200mA DC or 200mA AC rms on mA ranges, 20A DC or AC rms on 20A range.

AC Current

Range	Resolution	Accuracy
2.000mA	1μA	±1.2% of rdg ± 3 dgts
20.00mA	10μA	±2.0% of rdg ± 3 dgts
200.0mA	100μA	
20.00A	10mA	±3% of rdg ± 10 dgts

Overload Protection: 0.2A / 250V and 20A / 250V Fuse. Frequency Range: 50 to 400 Hz
Maximum Input: 200mA DC or 200mA AC rms on mA ranges, 20A DC or AC rms on 20A range.

Resistance

Range	Resolution	Accuracy
200.0 Ω	0.1 Ω	±1.0% of rdg ± 4 dgts
2.000k Ω	1 Ω	±1.0% of rdg ± 2 dgts
20.00k Ω	10 Ω	±1.2% of rdg ± 2 dgts
200.0k Ω	100 Ω	
2.000M Ω	1k Ω	
20.00M Ω	10k Ω	±2.0% of rdg ± 5 dgts

Input Protection: 250V DC or 250V AC rms.

Capacitance

Range	Resolution	Accuracy
2.000nF	1pF	±4.0% of rdg±10dgts
20.00nF	10pF	±4.0% of rdg ± 3 dgts
200.0nF	0.1nF	±4.0% of rdg ± 3 dgts
2.000μF	1nF	
200.0μF	0.1μF	±4.0% of rdg ± 5 dgts

Input Protection: 250V DC or 250V AC rms

Frequency

Range	Resolution	Accuracy
20.00kHz	0.01Hz	±1.5% of rdg ± 5 dgts

Sensitivity: 200mV~ 10V RMS ;

Overload protection: 250V DC or AC rms.

Temperature

Range	Resolution	Accuracy
-20^{0}C~+1300^{0}C	1 ^{0}C	±3% of rdg ±3dgts
-4 ^{0}F~+2000 ^{0}F	1^{0}F	

Sensor: Type K Thermocouple

Input Protection: 0.5A/250V Fuse.

Diode Test
Test current: 1mA typical
Open circuit voltage: 2.8V DC typical
Overload protection: 250V AC or DC rms.

Audible continuity
Audible threshold: Less than 50Ω, Test current: <0.3mA
Overload protection: 250V AC or DC rms.

OPERATION

WARNING: Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

If "1" appears in the display during a measurement, the value exceeds the range you have selected. Change to a higher range.

WARNING: On some low AC and DC voltage ranges, with the test leads not connected to a device, the display may show a random, changing reading. This is normal and is caused by the high-input sensitivity. The reading will stabilise and give a proper measurement when connected to a circuit.

DATA HOLD BUTTON

The Data Hold function allows the Multimeter to "freeze" a measurement for later reference.

1. Press the DATA HOLD button to "freeze" the reading on the Multimeter. The indicators "HOLD" will appear in the display.
2. Press the DATA HOLD button to return to normal operation.

BACK LIGHT BUTTON

The BACK LIGHT BUTTON is used to turn the back light on only. To extend the battery life, the back light will turn off automatically within around 3 seconds.

°C/°F BUTTON

The ºC/ºF button is used to select °C or °F function when making temperature measurements. Set the rotary switch at TEMP position and "°C" is displayed. Push the °C/°F SWITCH, "°F" will be displayed.

DC VOLTAGE MEASUREMENTS

CAUTION: Do not measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the Multimeter.

1. Set the function switch to the V DC position ("mV" will appear in the display).
2. Insert the black test lead banana plug into the negative (COM) jack and the red test lead banana plug into the positive (V) jack.
3. Touch the test probe tips to the circuit under test. Be sure to observe the correct polarity (red lead to positive, black lead to negative).
4. Read the voltage in the display. The display will indicate the proper decimal point and value. If the polarity is reversed, the display will show (-) minus before the value.

AC VOLTAGE MEASUREMENTS

WARNING: Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 240V outlets for appliances because the contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are touching the metal contacts inside the outlet before assuming that no voltage is present.

CAUTION: Do not measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the Multimeter.

1. Set the function switch to the V AC position.
2. Insert the black test lead banana plug into the negative (COM) jack and the red test lead banana plug into the positive (V) jack.
3. Touch the test probe tips to the circuit under test.
4. Read the voltage in the display. The display will indicate the proper decimal point, value and symbol (AC, V, etc.).

DC CURRENT MEASUREMENTS

CAUTION: Do not make current measurements on the 20A scale for longer than 30 Seconds. Exceeding 30 seconds may cause damage to the Multimeter and/or the test leads.

1. Insert the black test lead banana plug into the negative (COM) jack.
2. For current measurements up to 200mA DC, set the function switch to the mA range and insert the red test lead banana plug into the (mA) jack.
3. For current measurements up to 20A DC, set the function switch to the A position and insert the red test lead banana plug into the 20A jack.
4. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
5. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
6. Apply power to the circuit.
7. Read the current in the display. The display will indicate the proper decimal point, value.

AC CURRENT MEASUREMENTS

WARNING: To avoid electric shock, do not measure AC current on any circuit whose voltage exceeds 250V AC.

CAUTION: Do not make current measurements on the 20A scale for longer than 30 seconds. Exceeding 30 seconds may cause damage to the Multimeter and/or the test leads.

1. Insert the black test lead banana plug into the negative (COM) jack.
2. For current measurements up to 200mA AC, set the function switch to the mA range and insert the red test lead banana plug into the (mA) jack.
3. For current measurements up to 20A AC, set the function switch to the A position and insert the red test lead banana plug into the 20A jack.
4. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
5. Touch the black test probe tip to the negative side of the circuit and touch the red test probe tip to the positive side of the circuit.
6. Apply power to the circuit.
7. Read the current in the display. The display will indicate the proper decimal point, value.

RESISTANCE MEASUREMENTS

WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

1. Set the function switch to the Ω position.
2. Insert the black test lead banana plug into the negative (COM) jack and the red test lead banana plug into the positive Ω jack.
3. Touch the test probe tips across the circuit or part under test. It Is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
4. Read the resistance in the display. The display will indicate the proper decimal point, value.

CONTINUITY CHECK

WARNING: To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

1. Set the function switch to the position.
2. Insert the black lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (Ω).
3. Touch the test probe tips to the circuit or wire you wish to check.
4. If the resistance is less than approximately 50Ω, an audible signal will sound. The display will also show the actual resistance.

DIODE TEST

WARNING: To avoid electric shock, do not test any diode that has voltage on it.

1. Set the function switch to position.
2. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (Ω).
3. Touch the test probe tips to the diode or semiconductor junction you wish to test.
   Note the meter reading.
4. Reverse the probe polarity by switching probe position. Note this reading.
5. The diode or junction can be evaluated as follows:
   - (A) If one reading shows a value and the other reading shows “1”, the diode is good.
   - (B) If both readings show “1”, the device is open.
   - (C) If both readings are very small or 0, the device is shorted.

NOTE: The value indicated in the display during the diode check is the forward voltage.

FREQUENCY MEASUREMENT

1. Set the function switch to the 20KHz position.
2. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (F).
3. Touch the test probe tips to the circuit under test.
4. Read the frequency in the display. The digital reading will indicate the proper decimal point, value.

CAPACITANCE MEASUREMENTS

WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

1. Set the function switch to the CAP position.
2. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (CAP).
3. Touch the test leads to the capacitor to be tested. The display will indicate the proper decimal point, value.

TEMPERATURE MEASUREMENTS

WARNING: To avoid electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.

1. Set the function switch to Temp.
2. Plug the temperature probe into the banana plug adaptor, making sure to observe the correct polarity.
3. Plug the banana plug adaptor into the multimeter, making sure to observe the correct polarity.
4. Switch the multimeter on and select °C or °F.
5. Touch the temperature probe head to the part whose temperature you wish to measure. Keep the probe touching the part under test until the reading stabilises (about 30 seconds).
6. Read the temperature in the display. The digital reading will indicate the proper decimal point and value.

WARNING: To avoid electric shock, remove the temperature probe before changing to another measurement function.

REPLACING THE BATTERY

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery door.

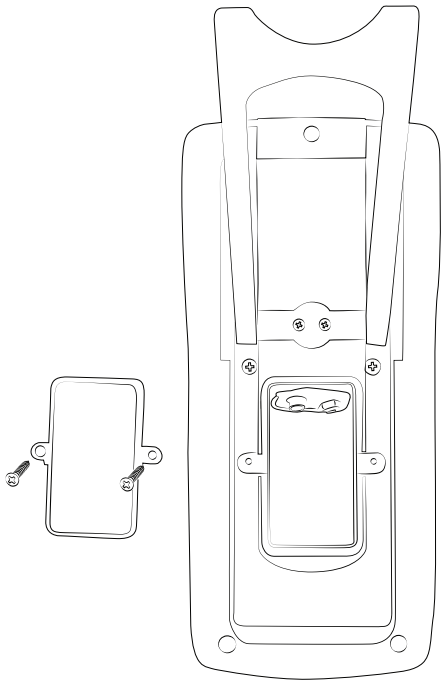
1. When the batteries become exhausted or drop below the operating voltage, “BAT” will appear in the right-hand side of the LCD display. The battery should be replaced.
2. Follow instructions for installing battery. See the Battery Installation section of this manual.
3. Dispose of the old battery properly.

WARNING: To avoid electric shock, do not operate your Multimeter until the battery door is in place and fastened securely.

BATTERY INSTALLATION

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery door.

1. Disconnect the test leads from the Multimeter.
2. Open the battery cover by loosening the screws using a Phillips head screwdriver.



3. Insert the battery into battery holder, observing the correct polarity.
4. Put the battery cover back in place. Secure the two screws.

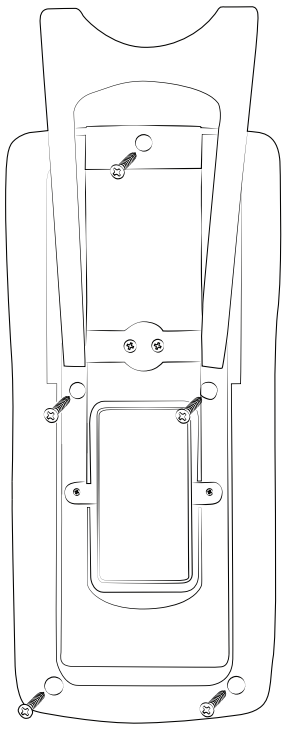
WARNING: To avoid electric shock, do not operate the Multimeter until the battery cover is in place and fastened securely.

NOTE: If your Multimeter does not work properly, check the fuses and battery to make sure that they are still good and that they are properly inserted.

REPLACING THE FUSES

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover.

1. Disconnect the test leads from the Multimeter and any item under test.
2. Open the back cover by loosening the screws on the back cover using a Phillips head screwdriver.



3. Remove the old fuse from its holder by gently pulling it out.
4. Install the new fuse into the holder.
5. Always use a fuse of the proper size and value (0.2A/250V fast blow for the 200mA range, 20A/250V fast blow for the 10A range).
6. Put the back cover on. Insert the screws and tighten them securely.

WARNING: To avoid electric shock, do not operate your Multimeter until the back cover is in place and fastened securely.

OXFORD
PRECISION

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 DIGITAL MULTIMETER (ORDER CODE: OXD-516-4320M) Complies with all the relevant provisions of the

EMC Electromagnetic Compatibility Directive 2014/30/EU

Standards Applied: EN61326-1:2013, EN61326-2-1:2013, IEC61326-1:2012, IEC61326-2-1:2012

LVD Low Voltage Directive 2014/35/EU

Standards Applied: EN61010-1:2010, 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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