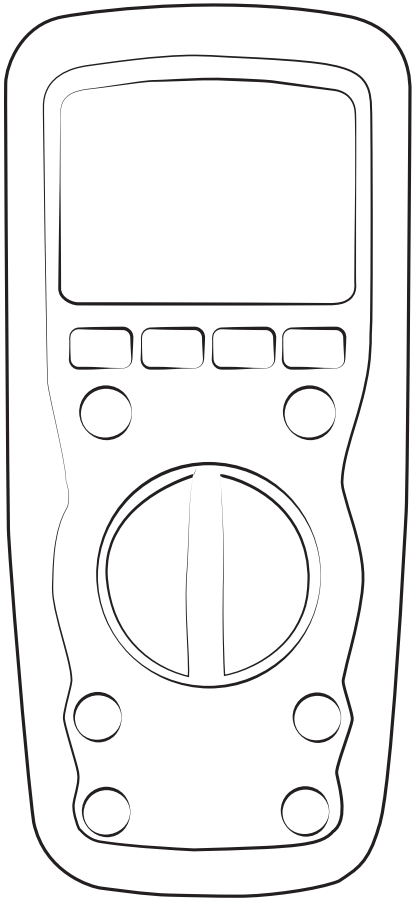
AUTO RANGING DIGITAL MULTIMETER



- Auto Ranging
- Data hold function
- Relative zero mode
- Auto power off and low battery indication
- Backlight
- Tilt Stand
- CAT III 1000V
- CAT IV 600V
- Test Leads
- Carrying Case

OPERATOR'S MANUAL
ORDER CODE: OXD-516-6487F

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

OXFORD PRECISION

SAFETY INFORMATION

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

- Do not use if the multimeter or test leads look damaged, or if you suspect that the Multimeter 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 it and expose the operator to a shock hazard. Always observe the Multimeter voltage limits as stated on the front of the unit.
- Never apply voltage or current to the Multimeter that exceeds the specified maximum.

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 Multimeter.

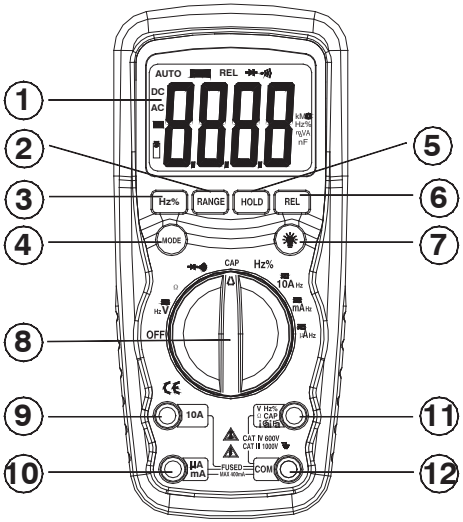


This symbol advises the user that the terminal(s) so marked must not be connected to a circuit point at which the voltage with respect to earth ground exceeds (in this case) 1000V AC or VDC.



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

PRODUCT FEATURES



1. Large 4000 count Liquid Crystal Display with symbolic signs
2. Range push button
3. Frequency/ % Duty button
4. Mode push button
5. Data Hold push button
6. Relative push button
7. Backlight push button
8. Function switch
9. 10A (positive) input jack
10. μA/mA input jack
11. Positive input jack for DC/AC Voltage, Hz/%duty cycle, Ohms, Diode, Continuity, Capacitance measurements
12. COM (negative) input jack

SYMBOLS AND ANNUNCIATORS

•)))	Continuity
BAT	Low Battery
▶|	Diode
DATA HOLD	Data Hold
AUTO	Auto Ranging
AC	Alternating Current or Voltage
DC	Direct Current or Voltage

SPECIFICATIONS

The instrument complies with:	EN61010-1
Insulation:	Class2, Double insulation
Over voltage category:	CAT III 1000V, CAT IV 600V
Display:	4000 counts LCD display with function indication
Polarity:	Automatic, (-) negative polarity indication
Over range:	"OL" mark indication
Low battery indication:	The "BAT" is displayed when the battery voltage drops below the operating level
Measurement rate:	2 times per second, nominal
Auto power off:	Meter automatically shuts down after approx. 15 minutes of inactivity
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:	182 (H) x 82 (W) x55 (D) mm
Weight: Approx.:	375g

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

DC Voltage (Auto ranging)

Range	Resolution	Accuracy
400.0mV	0.1mV	±0.5% of rdg ± 2 dgts
4.000V	1mV	±1.2% of rdg ± 2 dgts
40.00V	10mV	
400.0V	100mV	
1000V	1V	±1.5% of rdg ± 2 dgts

Input Impedance: 7.8MΩ
Maximum Input: 1000V DC or 1000V AC rms

AC Voltage (Auto ranging except 400mV)

Range	Resolution	Accuracy
400.0mV	0.1mV	±1.5%of rdg ± 70 dgts
4.000V	1mV	±1.2% of rdg ± 3 dgts
40.00V	10mV	±1.5% of rdg ± 3 dgts
400.0V	100mV	
1000V	1V	±2.0% of rdg ± 4 dgts

Input Impedance: 7.8MΩ
AC Response: 50 Hz to 400 Hz
Maximum Input: 1000V DC or 1000V AC rms

DC Current (Auto ranging for µA and mA)

Range	Resolution	Accuracy
400.0uA	0.1µA	±1.0% of rdg ± 3 dgts
4000uA	1µA	±1.5% of rdg ± 3 dgts
40.00mA	10µA	
400.0mA	100µA	
10A	10mA	±2.5% of rdg ± 5 dgts

Overload Protection: 0.5A / 1000V and 10A / 1000V Fuse
Maximum Input: 400mA DC or 400mA AC rms on µA / mA ranges, 10A DC or AC rms on 10A range

AC Current (Auto ranging for µA and mA)

Range	Resolution	Accuracy
400.0uA	0.1µA	±1.5% of rdg ± 5 dgts
4000uA	1µA	±1.8% of rdg ± 5 dgts
40.00mA	10µA	
400.0mA	100µA	
10A	10mA	±3.0% of rdg ± 7 dgts

Overload Protection: 0.5A / 1000V and 10A / 1000V Fuse
AC Response: 50 Hz to 400 Hz
Maximum Input: 400mA DC or 400mA AC rms on µA / mA ranges, 10A DC or AC rms on 10A range

Resistance (Auto ranging)

Range	Resolution	Accuracy
400.0Ω	0.1Ω	±1.2% of rdg ± 4 dgts
4.000kΩ	1Ω	±1.0% of rdg ± 2 dgts
40.00kΩ	10Ω	±1.2% of rdg ± 2 dgts
400.0kΩ	100Ω	
4.000MΩ	1kΩ	
40.00MΩ	10kΩ	±2.0% of rdg ± 3 dgts

Input Protection: 600V DC or 600V AC rms

Capacitance (Auto ranging)

Range	Resolution	Accuracy
4.000nF	1pF	±5.0% of rdg±20 dgts
40.00nF	10pF	±5.0% of rdg ± 7 dgts
400.0nF	0.1nF	±3.0% of rdg ± 5 dgts
4.000uF	1nF	
40.00uF	10nF	
100.0uF	0.1μF	±5.0% of rdg ± 5 dgts

Input Protection: 600V DC or 600V AC rms

Frequency (Auto ranging)

Range	Resolution	Accuracy
9.999Hz	0.001Hz	±1.5% of rdg ± 5 dgts
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	±1.2% of rdg ± 3 dgts
9.999kHz	1Hz	
99.99kHz	10Hz	
999.9kHz	100Hz	
9.999MHz	1kHz	±1.5% of rdg ± 4 dgts

Sensitivity: <0.5V RMS while ≤1MHz
Sensitivity: >3V RMS while >1MHz
Overload protection: 600V DC or AC rms

Duty Cycle

Range	Resolution	Accuracy
0.1%~99.9%	0.1%	±1.2% of rdg ± 2 dgts

Pulse width: >100us, <100ms
Frequency width: 5Hz – 150kHz
Sensitivity: <0.5V RMS
Overload protection: 600V DC or AC rms

Diode Test

Test current	Resolution	Accuracy
0.3mA typical	1 mV	±10% of rdg ± 5 dgts

Open circuit voltage: 1.5V DC typical

Overload protection: 600V DC or AC rms

Audible continuity

Audible threshold: Less than 150Ω Test current: <0.3mA

Overload protection: 600V 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.

1. ALWAYS turn the function switch to the OFF position when the Multimeter is not in use. This Multimeter has Auto OFF that automatically shuts the meter OFF if 15 minutes elapse between uses.
2. If "OL" appears in the display during a measurement, the value exceeds the range you have selected. Change to a higher range.

NOTE: 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 stabilize and give a proper measurement when connected to a circuit.

Mode Button

To select Diode/Continuity or DC/AC current

Range Button

When the meter is first turned on, it automatically goes into Auto Ranging. This automatically selects the best range for the measurements being made and is generally the best mode for most measurements. For measurement situations requiring that a range be manually selected, perform the following:

1. Press the RANGE button. The "AUTO" display indicator will turn off.
2. Press the RANGE button to step through the available ranges until you select the range you want.
3. Press and hold the RANGE button for 2 seconds to exit the Manual Ranging mode and return to Auto Ranging. (If backlight is turned on, press BACKLIGHT button to turn off).

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 indicator. The indicator "HOLD" will be appear in the display.
2. Press the DATA HOLD button to return to normal operation.

Relative Button

The relative measurement feature allows you to make measurements relative to a stored reference value. A reference voltage, current, etc. can be stored and measurements made in comparison to that value. The displayed value is the difference between the reference value and the measured value.

1. Perform any measurement as described in the operating instructions.
2. Press the RELATIVE button to store the reading in the display and the "REL" indicator will appear on the display.
3. The display will now indicate the difference between the stored value and the measured value.
4. Press the RELATIVE button to return to normal operation.

Backlight Button

1. Press the BACKLIGHT button for 2 seconds to switch the light ON.
2. Press BACKLIGHT button again to exit the light mode.

Hz/% Duty Button

Press Hz/Duty Button to choose Frequency or Duty Cycle in the range of Frequency; Press Hz/%Duty Button to measure Frequency or Duty Cycle while measures voltage or Current, the Voltage/Current requirement and range of Frequency (see the following table), press Hz/%Duty Button to return to measurement of Voltage or Current.

Range (DC/AC)	Sensitivity	Frequency width
4V	≥1.5V rms	5Hz~10kHz
40V, 400V	≥10V rms	5Hz~20kHz
	≥20V rms	5Hz~200kHz
1000V/1000V	≥420V rms	50Hz~1kHz
400mA	≥45mA rms	5Hz~5kHz
10A	≥4A rms	5Hz~1kHz

Note: The above data is only for reference.

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 VAC 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 10A 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 4000µA DC, set the function switch to the µA position and insert the red test lead banana plug into the (µA) jack.
3. For current measurements up to 400mA DC, set the function switch to the mA range and insert the red test lead banana plug into the (mA) jack.
4. For current measurements up to 10A DC, set the function switch to the A position and insert the red test lead banana plug into the 10A jack.
5. Press the AC/DC button until "DC" appears in the display.
6. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
7. 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.
8. Apply power to the circuit.
9. Read the current in the display. The display will indicate the proper decimal point, value and symbol.

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 10A 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 4000µA AC, set the function switch to the µA position and insert the red test lead banana plug into the (µA) jack.
3. For current measurements up to 400mA AC, set the function switch to the mA range and insert the red test lead banana plug into the (mA) jack.
4. For current measurements up to 10A AC, set the function switch to the A position and insert the red test lead banana plug into the 10A jack.
5. Press the AC/DC button until "AC" appears in the display.
6. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
7. 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.
8. Apply power to the circuit. Read the current in the display. The display will indicate the proper decimal point, value and symbol.

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 power leads.

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 and symbol.

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. Press the ⊣•)) button until the •)) symbol appears in the display.
4. Touch the test probe tips to the circuit or wire you wish to check.
5. If the resistance is less than approximately 150Ω, the 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. Press the ⊣•)) button until the ⊣ symbol appears in the display.
3. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (Ω).
4. Touch the test probe tips to the diode or semiconductor junction you wish to test. Note the meter reading.
5. Reverse the probe polarity by switching probe position. Note this reading.
6. The diode or junction can be evaluated as follows:

- If one reading shows a value and the other reading shows OL, the diode is good.
- If both readings show OL, the device is open.
- 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 Hz 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 (Hz%).
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, symbols (Hz, kHz) and 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 power leads.

1. Set the function switch to the CAP position. ("nF" and a small value will appear in the display).
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 and symbol.

REPLACING THE BATTERY

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

1. When the batteries become exhausted or drop below the operating voltage, the battery symbol will appear in the left-hand corner of the LCD display. The battery should be replaced.
2. Follow instructions for installing battery. See the Battery Installation section below.
3. Dispose of the old battery properly.

WARNING: To avoid electric shock, do not operate your Multimeter until the battery cover 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 cover.

1. Disconnect the test leads from the Multimeter.
2. Open the battery cover by loosening the screw 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 with 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. Loosen 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 (0.5A/1000V fast blow for the 400mA range, 10A/1000V fast blow for the 10A range).
6. Put the fuse back cover back in place. Insert the screws and tighten it 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 AUTO RANGING DIGITAL MULTIMETER (ORDER CODE: OXD-516-6487F)

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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