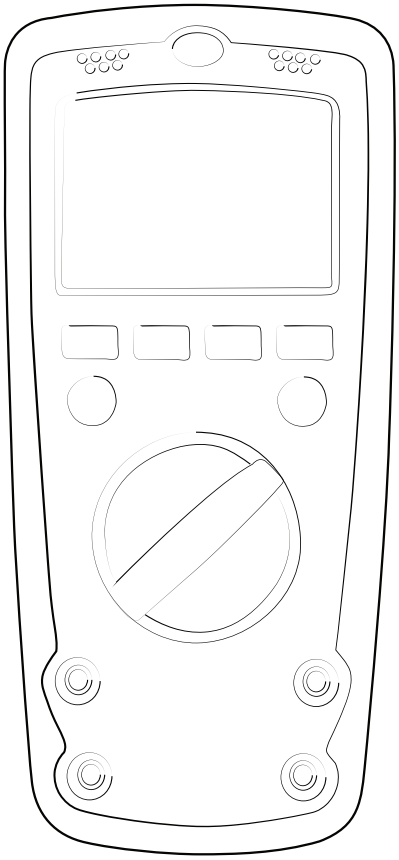
6 IN 1 DIGITAL MULTIMETER AND ENVIRONMENTAL TESTER



- Non-contact AC Voltage test meter
- Digital auto ranging multimeter
- Sound level meter
- Light meter
- Humidity meter
- Temperature meter
- CAT III 1000V
- CAT IV 600V
- Test leads
- Temperature probe

OPERATOR'S MANUAL
ORDER CODES: OXD-516-0625D

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

OXFORD PRECISION

INTRODUCTION

The 6 in 1 Digital Multimeter and Environmental Tester has been designed to combine the functions of Sound Level Meter, Light Meter, Humidity Meter, Temperature Meter, Non-contact AC Voltage Test Meter and Digital Multimeter.

It is an ideal multi-function Instrument with scores of practical applications for professional and home use.

The Sound Level function can be used to measure noise in factories, schools, offices, airports, home, etc., checking acoustics of studios, auditoriums and Hi-Fi installations.

The Light function is used to measure luminance in the field. It is fully cosine corrected for the angular incidence of light. The light sensitive component used in the Meter is a very stable, long life silicon diode. The Temperature function uses a semiconductor sensor and K type thermocouple. The digital Multimeter performs AC/DC Voltage, AC/DC Current, Resistance measurement and Audible Continuity, and Diode test

SAFETY INFORMATION

This Multimeter has been designed for safe use, but must be operated with caution. The rules listed below must be carefully followed for safe operation.

NEVER apply voltage or current to the Multimeter that exceeds the specified maximum:

Input Protection Limits	
Function	Maximum Input
VDC or VAC	600VDC/AC rms
mA AC/DC	500mA 660V fast acting fuse (500mA/660V)
A AC/DC	10A 600V fast acting fuse (10A for 30 seconds max every 15 minutes)
Frequency, Resistance, Capacitance, Duty Cycle, Diode Test, Continuity	600VDC/AC rms
Temperature	600VDC/AC rmsp

⚠ Indicates operators must refer to the explanation in this manual.
⚠ Indicates terminals at which dangerous voltage maybe present.

FEATURES

- 14 functions measure Sound level, Light, Humidity, Temperature, DC Voltage, AC Voltage, DC Current, AC Current, Resistance, Diode and Continuity test.
- 3 4/5Digital large LCD display with units of Lux, °C, % and dB indication.
- Sound level measures from 35dB to 100dB for C weighting checking with 0.1dB resolution.
- Light measuring levels ranging from 1 Lux to 40,000 Lux.
- Humidity measurement from 30%RH to 90%RH with 1%RH resolution and fast time response.

SPECIFICATIONS

Display:	3 4/5Digital 4000 counts LCD display with function of Lux, °C, % and dB indication.
Polarity:	Automatic, (-) negative polarity indication.
Over-range:	"OL" indication.
Low battery indication:	The " " is displayed when the battery voltage drops below the operating level.
Measurement rate:	3 times per second, nominal.
Operating environment:	0°C~40°C (32°F~104°F) at < 70- % relative humidity.
Storage temperature:	-10°C to 60°C (14°F to 140°F) at < 80% relative humidity.
Power:	One standard 9V, NEDA1604 or 6F22 battery.
Dimensions:	170 (H) x 78(W) x 48(D) mm
Weight: Approx.:	335g including holster.

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

Sound Level

Measurement range:	35-100dB
Resolution:	0.1dB
Typical instrument frequency range:	30Hz-10kHz
Frequency Weighting:	C –weighting
Time Weighting:	Fast
Accuracy:	±5 dB at 94 dB sound level, 1kHZ sine wave.
Microphone:	Electric condenser microphone.

Light

Measuring Range:	4000, 40,000 Lux (40,000lux range reading x 10)
Value exceeds the range:	Highest digit of "OL" is displayed .
Accuracy:	+5% rdg + 10 dgts (calibrated to standard incandescent lamp at colour temperature 2856k).
Repeatability:	±2%.
Temperature Characteristic:	±0.1% / °C.
Photo detector:	One silicon photo diode with filter.

HUMIDITY/TEMPERATURE

K type temperature Measurement Range:

Range	Resolution	Accuracy
-4°F to 1382°F	1°F	3% of rdg ± 9dgts
-20°C to 750°C	1°C	3% of rdg ± 5dgts

Input Impedance: 10MΩ.

Overload Protection: 250VDC or AC rms. For 400mV range and 250V DC or 250V AC rms. For other ranges.

Indoor Temperature Range:

Range	Resolution	Accuracy
0°C to 50°C	0.1°C	3% of rdg ± 5 dgts

Indoor Humidity Range:

Range	Resolution	Accuracy
33%RH to 99%RH	1%RH	3% of rdg ± 5 dgts

Input Impedance: 10MΩ.

Overload Protection: 250VDC or AC rms. For 400mV range and 250V DC or 250V AC rms for other ranges.

MULTIMETER

DC Voltage (Auto ranging)

Range	Resolution	Accuracy
400.0mV	0.1mV	±1.0% of rdg ±4 dgts
4.000V	1.0mV	
40.00V	10mV	
400.0V	100mV	±1.5% of rdg ±4 dgts
600V	1V	

Input Impedance: 10MΩ .

Overload Protection: 600VDC or AC rms. For 400mV range and 600V DC or 600V AC rms. For other ranges.

AC VOLTAGE (Auto ranging except 400mV)

Range	Resolution	Accuracy
400.0mV	0.1mV	±1.5% of rdg ±15 dgts
4.000V	1.0mV	±1.0% of rdg ±4 dgts
40.00V	10mV	
400.0V	100mV	±1.5% of rdg ±4 dgts
600V	1V	±2% of rdg ±4 dgts

Input Impedance: 10MΩ

Frequency Range: 50 to 400Hz

Maximum Input: 600V DC or 600V AC rms.

DC CURRENT (Auto ranging for µA and mA)

Range	Resolution	Accuracy
400.0µA	0.1µA	±1.0% of rdg ±2 dgts
4000µA	1µA	±1.0% of rdg ±2 dgts
400.0mA	1 00µA	±1.2% of rdg ±2 dgts
10.00A	10mA	±2.0% of rdg ±5 dgts

AC CURRENT (Auto ranging for µA and mA)

Range	Resolution	Accuracy
400.0µA	0.1µA	±1.2% of rdg ±2 dgts
4000µA	1µA	±1.2% of rdg ±2 dgts
400.0mA	100µA	±1.5% of rdg ±2 dgts
10.00A	10mA	±2.0% of rdg ±5 dgts

Overload Protection: 500mA /660V and 10A / 600V 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	±1.5% of rdg ±4 dgts
4.000kΩ	1Ω	±1.5% of rdg ±2 dgts
40.00kΩ	10Ω	
400.0kΩ	100Ω	
4.000MΩ	10kΩ	±2.0% of rdg ±2 dgts
40.00MΩ	1MΩ	±2.5% of rdg ±2 dgts

Overload Protection: 15 seconds maximum 250V DC or
250V AC rms. on all ranges.
Maximum open circuit voltage: 2.8V.

CAPACITANCE (Auto ranging)

Range	Resolution	Accuracy
50.00nF	10pF	±5.0% of rdg ±7 dgts
500.0nF	0.1nF	±3.0% of rdg ±5 dgts
5.000uF	1nF	
50.00uF	10nF	
100.0uF	0.1µF	±4.0% of rdg ±5 dgts

Input Protection: 600V DC or 600V AC rms

FREQUENCY (Auto ranging)

Range	Resolution	Accuracy
5.000Hz	0.001Hz	±1.2% of rdg ±3 dgts
50.00Hz	0.01Hz	
500.0Hz	0.1Hz	
5.000kHz	1Hz	
50.00kHz	10Hz	
500.0kHz	100Hz	
10.00MHz	1kHz	±1.5% of rdg ±4 dgts

Sensitivity: >0.5V RMS while ≤1MHz ;
Sensitivity: >3V RMS while >1MHz ;
Input Protection: 250V DC or 250V ac rms.

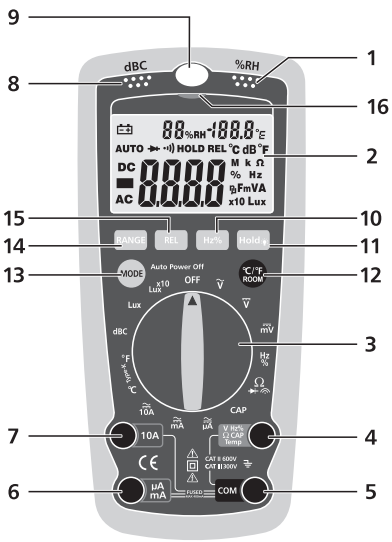
DIODE AND CONTINUITY CHECK

Diode: Test current 1.4mA DC and open circuit voltage 2.8V DC.

Continuity: Built in Buzzer will be sound if the circuit resistance is less than 50Ω

Overload Protection: maximum 600V DC or 600V AC rms.

PANEL DESCRIPTION



1. Humidity & Temperature: Humidity Sensor and Semiconductor Sensor inside for Indoor use.
2. LCD display: 3 4/5 digits LCD display
3. Function switch
4. V/Hz%/Ω/Cap/ Temp input jack
5. COM input jack
6. μA/mA input jack
7. 10A input jack
8. Microphone: Electric condenser microphone inside.
9. Photo Detector: Long life silicon photo diode inside.
10. Hz/% button
    The button at AC/DC Voltage measurement and AC/DC Current measurement and Hz % measurement Function is available
11. Hold & backlight button
    The HOLD function allows the meter to "freeze" a measurement for later reference. Press the HOLD button to "freeze" the reading on the indicator.
    The "HOLD" message will be appear in the display. Back light button
    Press the back light button for a few seconds for the LCD light , again Press the back light button to exit light mode.
12. Temperature unit of measurement.
13. MODE button
    Press the button to select AC or DC measurement when in A, mA , μA ,and Ω →|– •))) ranges.
14. Range button
    Press the button to select AC or DC measurement when in Voltage, Ω ranges.
15. REL button
    - The relative measurement feature allows you to make measurements relative to a stored reference value. A reference voltage, current, Capacitor, 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.
    - Perform the measurement as described in the operating instructions.
    - Press the REL button to store the reading in the display and the "REL" indicator will appear on the display.
    - The display will now indicate the difference between the stored value and the measured value.
    - Press the REL button to exit the relative mode.
16. NCV Non-contact Voltage test indicating light.

OPERATING INSTRUCTION

Measuring Sound Level

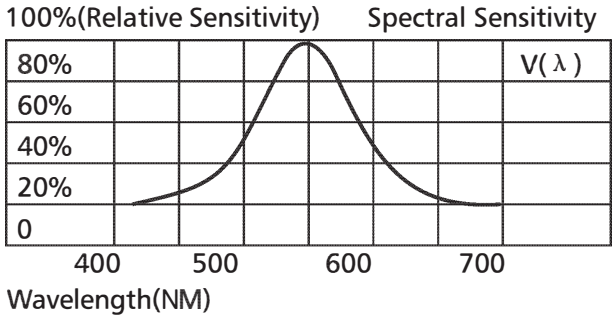
1. Set the function switch to the dBC position.
2. Face the microphone to sound source in a horizontal position.
3. The C-weighting curve is nearly uniform over the frequency range from 30 to 10,000Hz, thus giving an indication of overall Sound level.
4. The Fast response is suitable to measure shout bursts and peak values from sound source.
5. The sound level will be displayed.
6. Note: Strong wind (over 10m/sec.) striking the microphone can cause misreading for measurement in windy locations, a windscreen should be used in front of microphone.

Measuring Humidity

1. Humidity Measurement for indoor use.
2. Set the function switch to the ON position.
3. Place the meter in the room.
4. Read the %RH in the display for about two hours.

Measuring Light

1. Set the function switch to the desired ("lux" or "x10 lux") range.
2. Face the photo detector to the light source in a horizontal position.
3. Read the luminance nominal from the LCD display.
4. Over-range: If the instrument display "OL", the input signal is too strong, and a higher range should be selected.
5. When the measurement is completed, Remove the photo detector from the light source.
6. Spectral sensitivity characteristic: To the detector, the applied photo diode with filters makes the spectral sensitivity characteristic almost meet C.I.E. (International Commission on Illumination) photopia curve V (λ) as the following chart describes.



Recommended Illumination:

Locations	Lux
Office	
Conference, Reception room.	200 ~ 750
Clerical work	700 ~ 1,500
Typing drafting	1000 ~ 2,000
Factory	
Packing work, Entrance passage	150 ~ 300
Visual work at production line	300 ~ 750
Inspection work	750 ~ 1,500
Electronic parts assembly line	1500 ~ 3,000
Hotel	
Public room, Cloakroom	100 ~ 200
Reception, Cashier	200 ~ 1,000
Store	
Indoors Stairs Corridor	150 ~ 200
Show window, Packing table	750 ~ 1,500
Forefront of show window	1500 ~ 3,000
Hospital	
Sickroom, Warehouse	100 ~ 200
Medical Examination room	300 ~ 750
Operating or Emergency Treatment room	750 ~ 1,500
School	
Auditorium, Indoor Gymnasium	100 ~ 300
Class room	200 ~ 750
Laboratory, Library, Drafting room	500 ~ 1,500

MEASURING TEMPERATURE

- Set the function switch to either °F or °C position.
- Then the display will show the environment temperature reading value.
- Insert the black plug of temperature probe the COM jack and red plug to the " V/Hz%/Ω/Cap/ Temp jack.
- Touch the end of the temperature sensor to the area or surface of the object to be measured. The display will show the temperature reading value.

MEASURING DC VOLTAGE

- Insert the black test lead banana to the COM jack and red test lead banana to the "V/Hz%/Ω/Cap/ Temp jack.
- Read LCD display. The polarity of red connection will be indicated when making a DC measurement.
- Press the Hz% button to indicate "Hz".
- Read the frequency in the display.
- Press the Hz% button again to indicate "%".
- Read the % of duty cycle in the display.

MEASURING AC VOLTAGE

- Insert the black test lead banana to the COM jack and red test lead banana to the "V/Hz%/Ω/Cap/ Temp jack.
- Set the function switch to the AC voltage position and connect the test leads across the source or load under measurement.
- Read LCD display. The polarity of red connection will be indicated when making a AC measurement.
- Press the Hz% button to indicate "Hz".
- Read the frequency in the display.
- Press the Hz% button again to indicate "%".
- Read the % of duty cycle in the display.

MEASURING DC CURRENT

- Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the "μA/mA"or "10A" jack.
- 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/mA jack.
- For current measurements up to 400mA DC, set the function switch to the mA position and insert the red test lead banana plug into the μA/mA jack.
- For current measurements up to 10A DC, set the function switch to the 10A position and insert the red test lead banana plug into the 10A jack.
- Press the MODE button to indicate "DC" on the display.
- Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
- 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.
- Apply power to the circuit.
- Read the current in the display.

MEASURING AC CURRENT

- Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the "uA/mA"or "10A" jack.
- For current measurements up to 4000uA AC, set the function switch to the uA position and insert the red test lead banana plug into the uA/mA jack.
- For current measurements up to 400mA AC, set the function switch to the mA position and insert the red test lead banana plug into the uA/mA jack
- For current measurements up to 10A AC, set the function switch to the 10A position and insert the red test lead banana plug into the 10A jack
- Press the MODE button to indicate "AC" on the display.
- Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
- 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.
- Apply power to the circuit.
- Read the current in the display.
- Press and hold the Hz% button to indicate "Hz".
- Read the frequency in the display.
- Momentarily press the Hz% button again to indicate "%".
- Read the % duty cycle in the display.
- Press and hold the Hz% button to return to current measurement

MEASURING CAPACITANCY

- Set the function switch to the CAP position.
- Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the "V/Hz%/Ω/Cap/"C" jack. (If value is no zero in the display. Press the REL button to zero)
- Touch the test probe tips across the part under test.
- Read the capacitance value in the display.
- The display will indicate the proper decimal point and value.

MEASURING FREQUENCEY

- Set the function switch to the Hz position.
- Insert the black test lead banana plug into the negative (COM) jack
- Insert the red test lead banana plug into the V/Hz%/Ω/Cap/Temp jack.
- Touch the test probe tips to the circuit under test.
- Read the frequency in the display.
- The digital reading will indicate the proper decimal point, symbols (Hz,kHz, MHz) and value.

MEASURING RESISTANCE

- Set the function switch to the Ω →+ •))) position.
- Insert the black test lead banana plug into the negative COM jack.
- Insert the red test lead banana plug into the V/Hz%/Ω/Cap/Temp jack.
- Indicate "OL" "MΩ"on the display.
- 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.
- Read the resistance in the display.

MEASURING DIODES

- Set the function switch to the Ω →|– •))) position.
- Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the V/Hz%/Ω/Cap/Temp jack.
- Press the MODE button to indicate " →|– " and "V" on the display.
- Touch the test probes to the diode under test. Forward voltage will typically indicate 0.400 to 0.700V. Reverse voltage will indicate "OL". Shorted devices will indicate near 0V and an open device will indicate "OL" in both polarities.

AUDIBLE CONTINUITY TEST

- Set the function switch to the Ω →|– •))) position.
- Insert the black lead banana plug into the negative COM jack.
  Insert the red test lead banana plug into the V/Hz%/Ω/Cap/Temp jack.
- Press the MODE button to indicate" →|– " and "Ω" on the display
- Touch the test probe tips to the circuit or wire you wish to check.
- If the resistance is less than approximately 50Ω, the audible signal will sound. If the circuit is open, the display will indicate "OL".

NON-CONTACT AC VOLTAGE TEST (NCV)

- Set the function switch to the ON position.
- Face the NCV detector to ACV source.
- If source voltage is 50-1000V the NCV indicating lamp will light.

MAINTENANCE

Battery and Fuse Replacement

If the sign " 🔋 " appears on the LCD display, it indicates that the battery should be replaced. Remove screws on the back cover and open the case. Replace the exhausted battery with new batteries. (1 x 9V battery NEDA 1604, 6F22 or equivalent)

The fuse rarely needs replacement and blows almost always as a result of the operator's error. Open the case and replace the blown fuse with ratings specified.

Warning: Before attempting to open the case, be sure that test leads have been disconnected from measurement circuit to avoid electric shock hazard.

Replace fuse only with specified ratings:

Fuse1: F 10A / 600V fast blow.

Fuse2: F 500mA / 660V fast blow.

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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 6 in 1 DIGITAL MULTIMETER AND ENVIRONMENTAL TESTER (ORDER CODE: OXD-516-0625D) 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.

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