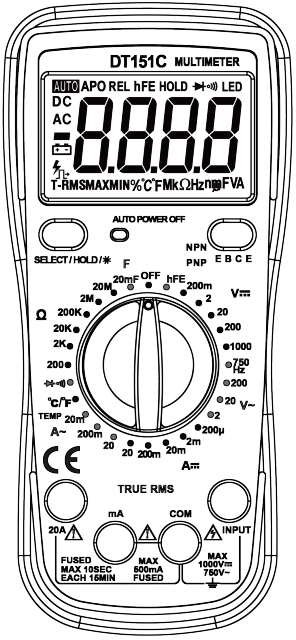
OPERATOR'S
INSTRUCTION
MANUAL
TRUE RMS
DIGITAL MULTIMETER

MODEL:
☑ DT151C
☑ DT151D
☑ DT151G
☑ DT151Q



Read this owners manual thoroughly before use

1. INTRODUCTION

■This manual provides all safety information, operation instruction, specifications and maintenance for the meter, which is compact, handheld, and battery operated.

■This instrument performs AC/DC voltage, AC/DC Current, Resistance,

Audible,Continuity,Diode,hFE,Frequency,Battery,Capacitance,and,Temperature, DWELL angel , tacho test .

■measurements; it is a 3 1/2 digits, 1999 counts multimeter with some automatic range function.

■It has the functions of polarity indication, data hold, over range indication and automatic power-off. It can be operated easily and is an ideal instrument tool.

■DT151series digital multimeter has been designed according to EN61010-1 oncoming electronic measuring instruments with an over voltage category (CAT III 600V,CAT II 1000V) and Pollution degree 2.

Warning

To avoid possible electric shock or personal injury, and to avoid possible damage to the meter or to the equipment under test, adhere to the following rules:

- Before using the Meter inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- The rotary switch should be placed in the right position and no any changeover of range shall be made during measurement is conducted to prevent damage of the Meter.
- When the meter working at an effective voltage over 60V in DC or 30V RMS in AC, special care should be taken for there is danger of electric shock.
- Use the proper terminals, function, and range for your measurements.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes or hFE.
- Remove the connection between the testing leads and the circuit being tested, and turn the Meter power off before opening the Meter case.
- When servicing the Meter, use only the same model number or identical electrical specifications replacement parts.
- The internal circuit of the Meter shall not be altered at will to avoid damage of the Meter and any accident.
- Soft cloth and mild detergent should be used to clean the surface of the Meter when servicing. No abrasive and solvent should be used to prevent the surface of the meter from corrosion, damage and accident.
- The meter is suitable for indoor use.

➢ Turn the meter power off when it is not in use and take out the battery when not using for a long time. Constantly check the battery as it may leak when it has been using for some time, replace the battery as soon as leaking appears. A leaking battery will damage the meter.

2、GENERAL CHARACTERISTICS

Display Digital	: 1999 counts updates 2 times /sec
LCD size	: 62 x 37mm
Polarity Indication	: "-" displayed automatically
Over-range Indication	: "OL" displayed
Low Battery Indication	: "+ −" displayed
Range select	: auto or manual
Operation Temperature	: 0°C to 40°C, less than 80%RH
Storage Temperature	: -10°C to 50°C, less than 85%RH
Battery Type	: 9V NEDA 1604, 6F22 equivalent
Dimension (H×W×D)	: 189x89x55mm
Weight	: Approx 365g including battery and holster

3. ELECTRICAL SYMBOLS

⚠---------Important safety information.
Refer to the manual.

---------Dangerous voltage may be present.

---------Earth ground.

--------- Low battery

---------Diode

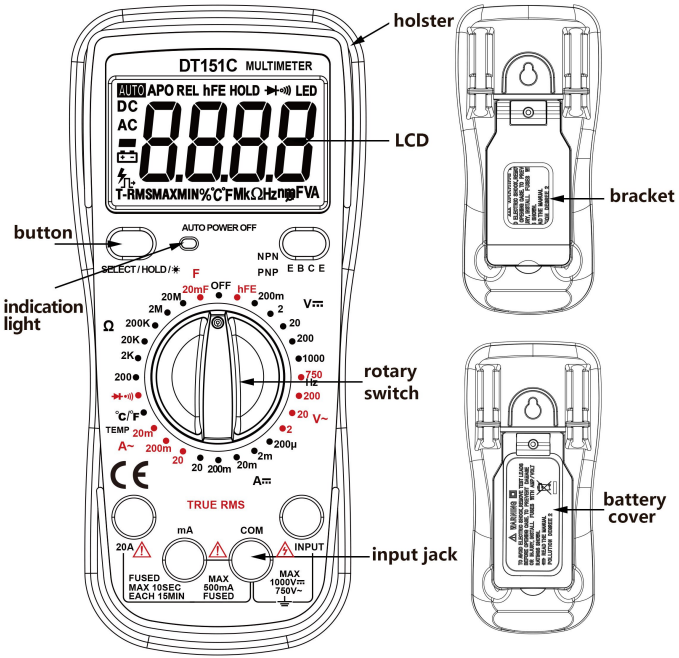
---------Continuity test

AUTO -------Auto range

CE ---------Conforms to European Union directive

--------Double insulated.

4.PANEL DESCRIPTION

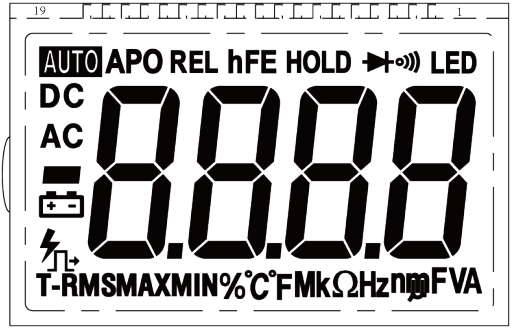


- LCD
- Button
  Indicator light
- Rotary switch / function switch
- Input jack
- Holster
- Bracket
- Battery cover

4.1 Series Multimeter Function Table

Model	DVC	AVC	DCA	ACA	Ω	CAP	hFE	Diode	Hz/Duty	TEMP
DT151C	✓	✓	✓	✓	✓	✓	✓	✓		✓
DT151D	✓	✓	✓	✓	✓	✓	✓	✓		
DT151G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

4.2 LCD DISPLAY



% ----- Duty Cycle is selected
℉ -----Fahrenheit temperature test is selected
℃-----Celsius degree test is selected
hFE--- Transistor hFE test is selected
---- Continuity test is selected
--- Diode test is selected
AUTO---Auto range mode is selected
APO--- Automatic power-off mode is selected
---- Data Hold is enabled
---- DC
--- Negative sign
--- AC
---- Low Battery and replaced immediate

5、SPECIFICATIONS

Accuracy is guarantied for 1 year 23°C±5°C less than 80%RH

5.1 Technical explanation

True RMS

5.1.1 For the measurement of non sine wave signal, True RMS value measurement method is smaller than average value value response method

5.1.2 RMS meter can accurately measure the non sine wave signal, but if testing AC voltage or current without input AC signal,The meter should display a reading between 1 to 50 count. These deviations from the readings are normal. In the measurement of the specified ranges, they do not affect the multimeter to measure the current or voltage accuracy.

True RMS requires the input signal to be measured at a certain level, so the range of the AC voltage and current is specified between 2% and 100% of the full scale

Duty ratio

5.1.3 Duty ratio refers to the high level of within a period of time. The ratio of square wave duty cycle is 50%, the duty ratio is 0.1, that is accounted for by the level for 0.1 cycles. The ratio of positive pulse duration - and pulse cycle. For example: the pulse width is 1 s, pulse sequence signal period 10 s duty cycle 0.1.

5-1. DC VOLTAGE

Range	Resolution	Accuracy
200mV	0.1mV	±(0.8% of rdg + 5dgts)
2V	1mV	±(0.8% of rdg + 3dgts)
20V	10mV	
200V	100mV	
1000V	1V	±(1.0% of rdg + 5dgts)

Input resistance: 5MΩ at mV range , other ranges: 10 MΩ
Overload protection: 250V DV or AC peak value at 200mV range.
1000V DC or AC peak value at other ranges.

5-2. AC VOLTAGE TRUE RMS

Range	Resolution	Accuracy
200mV	0.1mV	±(1.2% of rdg + 8dgts)
2V	1mV	±(1.0% of rdg + 8dgts)
20V	10mV	
200V	100mV	

750V	1V	±(1.2% of rdg + 8dgts)

Input resistance: 10MΩ
Overload protection: 1000V DC or AC peak value
Frequency response :（40～1000）Hz
（for standard sine wave and triangular wave）
Display: True RMS (just for reference when over 200Hz at other waves.)
In AC750V range, you can test AC380V and AC220V commercial power , press the "HOLD"key，the frequency of commercial power will be displayed.

5-3. DC CURRENT

Range	Resolution	Accuracy
20μA	0.01μA	±(1.2% of rdg + 8dgts)
200μA	0.1μA	
2mA	1μA	
20mA	10μA	
200mA	100μA	
20A	10mA	

Overload Protection: 250V DV or AC peak value
The use of self restoring fuse, after the disappear of the external fault, the fuse returned to normal, the meter can be used normally
Max. measuring volt drop: 200mV
Max. input current: 20A（the test time should be within 10 seconds）
Frequency response: （40～1000）Hz （for standard sine wave and triangular wave）
Display: True RMS (just for reference when over 200Hz at other waves.)

5-4. AC CURRENT

Range	Resolution	Accuracy
20μA	0.01μA	±(1.5% of rdg +8dgts)
200μA	0.1μA	
2mA	1μA	
20mA	10μA	
200mA	100μA	
20A	10mA	±(2.0% of rdg +10dgts)

Overload Protection: 250V RMS

The use of self restoring fuse, after the disappear of the external fault, the fuse returned to normal, the meter can be used normally

Max. measuring volt drop: 200mV

Max. input current: 20A（the test time should be within 10 seconds）

Frequency response: （40～1000）Hz （for standard sine wave and triangular wave）

Display: True RMS (just for reference when over 200Hz at other waves.)

5-5. RESISTANCE (Auto Ranging)

Range	Resolution	Accuracy
200Ω	0.1Ω	±(1.2% of rdg + 5dgts)
2KΩ	1Ω	
20KΩ	10Ω	
200KΩ	100Ω	
2MΩ	1KΩ	
20MΩ	10KΩ	±(1.5% of rdg + 5dgts)
200 MΩ	100 MΩ	±(2.5% of rdg + 5dgts)

Overload protection: 250V DC and AC peak value

NOTE: at 200Ω range, the test leads should be short-circuit, and measure the down-lead resistance, then, subtract from the real measuring.

WARNING: DO NOT input any voltage at resistance range for safety!

5- 6. Capacitance (AUTO RANGE)

Range	Resolution	Accuracy
20nF – 20mF	Divided by 1000	±(8% of rdg + 5dgts)

Overload Protection: 250V DC and AC peak value

5-7.TEMPERATURE

Range	Resolution	Accuracy
-40 ~ 1000°C	1°C	±(3% + 4)
-40 ~ 1832°F	1°F	

Overload Protection: 250V DV or AC peak value

5-8.Diode and Continuity

Range	Introduction	Remark
	The approximate forward voltage drop will be displayed	Open circuit voltage: about 1.5V
	The built-in buzzer will sound if the resistance is less than about 30Ω.	Open circuit voltage: about 0.5V

Overload Protection: 250V DC and AC peak value

For continuity test: When the resistance is between 30Ω and 70Ω, the buzzer may sound or may not sound. When the resistance is more than 70Ω, the buzzer won't sound

5-9. Transistor hFE Test (connect Adapter)

Range	hFE	Test Current	Test Voltage
PNP & NPN	0~1000	Ib≈2μA	Vce≈1V

5-10. FREQUENCY (Auto Ranging)

Range	Accuracy
0~60MHz	±(1.0% + 5)

Overload Protection: 250V DC and AC peak value

5-11 Duty test

Range	Resolution	Accuracy
10 - 95%	0.1%	± (2.0% + 3)

5-12 DWELL ANGEL test (ONLY 151Q)

Range	Scope(°)	Resolution	Accuracy
4 CYL	0 ~ 90	0.1°	±(2.0%±5)
6 CYL	0 ~ 60		
8 CYL	0 ~ 45		

5-13 TACHO test (ONLY 151Q)

Range	Scope	Resolution	Accuracy
4 CYL	20000PRM	10 x RPM	±(1.5%±5)
6 CYL			
8 CYL			

1、PRECAUTIONS AND PREPARATIONS FOR MEASUREMENT

1)Be sure that battery is correctly placed in the battery case and connected to the battery snap.

6. OPERATION INSTRUCTION

6-1. Voltage Measurement

6.1.1 Insert the black test lead to “COM” jack, the red one to“INPUT”jack.

6.1.2 Set the function switch to a proper DCV range, connect the test leads across to the circuit under tested, the polarity and voltage of the point which red lead connect will display on LCD.

NOTE:

1.If the measured voltage is unsure beforehand, should set the function switch to the highest range, then, switch to a proper range according to the displayed value.

2.If LCD displays “OL”, it means over range, should set the function switch to a higher range.

6-2 ACV True RMS MEASUREMENT

6.2.1. Insert the black test lead to “COM” jack, the red one to “INPUT”jack.

6.2.2. Set the function switch to a proper ACV range, connect the test leads across to the circuit under tested.

NOTE:

1.If the measured voltage is unsure beforehand, should set the function switch to the highest range, then, switch to a proper range according to the displayed value.

2.If LCD displays “OL”, it means over range, should set the function switch to a higher range.

6-3 DCA MEASUREMENT

6.3.1.Insert the black test lead to “COM” jack and the red one to“mA” jack（max. 200mA），or insert the red one to “20A” jack（max. 20A）.

6.3.2.Set the function switch to a proper DCA range, connect the test leads across to the circuit under tested, the current value and polarity of the point

which red lead connect will display on LCD.
NOTE:
1.If the measured current is unsure beforehand, should set the function switch to a higher range, then, switch to a proper range according to the displayed value.
2.If LCD displays “OL” , it means overrange, should set the function switch to a higher range.
3. When measuring 20A.. Continuously measuring large current may heat the circuit, affect the accuracy, eve damage the meter.

6.4 ACA MEASUREMENT

6.4.11.Insert the black test lead to “COM” jack and the red one to“mA” jack（max. 200mA），or insert the red one to “20A” jack（max. 20A）.
6.4.2.Set the function switch to a proper ACA range; connect the test leads across to the circuit under tested.
NOTE:
1.If the measured current range is unsure beforehand, should set the function switch to the highest range, then set to a proper range according to the displayed value.
2.If LCD displays “OL” , it means overrange, should set the function switch to a higher range.
3. Pay attention to measure 20A.. Continuously measuring large current may heat the circuit, affect the accuracy, eve damage the meter.

6.5 RESISTANCE MEASUREMENT

6.5.1.Insert the black test lead to “COM” jack and the red one to“INPUT” jack.
6.5.2.Set the function switch to a proper resistance range, connect the test leads across to the resistance under measured.
NOTE:
1.If the resistance value being measured exceeds the max value of the range selected, LCD displays "OL", thus, should set the function switchb to a higher range. When the resistance is over 1MΩ, the meter may take a few seconds to stabilize. This is normal for high resistance readings.
2.When input terminal is in open circuit, overload displays.
3.When measuring in-line resistance, be sure that power is off and all capacitors are released completely.

6.6 CAPACITANCE MEASUREMENT (AUTO RANGE)

6.6.1.Insert the red test lead to “INPUT”terminal and the black one to “COM”

jack.

6.6.2.Set the function switch to 20mF range, connect the test leads to the capacitor under measured（note: the polarity of red test lead is "+"）.

NOTE:

1.Before measuring, LCD display might not be zero, the residual reading will be decreased gradually and could be disregarded.

2.When measuring large capacitance, if creeps seriously or break capacitance, LCD will display some instability value.

3.Discharge all capacitors completely before capacitance measurement to avoid damage.

6.7 DIODE AND CONTINUITY TEST

6.7.1.Insert the black test lead to "COM"terminal and the red one to"INPUT"jack(Note: the polarity of red test lead is"+").

6.7.2. Set the function switch to"  "range, connect the test leads to the diode under measured, reading is the approximation of the diode positive volt drop.

6.7.3.Connect the test leads to two points of the measured circuit, if buzzer sounds, the resistance is lower than approx.50Ω.

6.8 TRIODE hFE MEASURE

6.8.1.Set the range knob to hFE.

6.8.2.Verify the type of the transistor is NPN or PNP, insert the emitter, basic and collector to the proper jack on test accessory.

6-9. Temperature Measurement

6.9.1 Set the function switch to "ºC/ºF" range.

6.9.2 Insert the black (or "-") plug of the K-type thermocouple to the "COM" jack, and the red(or "+") plug to the" INPUT " jack.

6.9.3 Carefully touch the end of the thermocouple to the object to be measured.

6.9.4 Wait a while, read the reading on the display.

6.9.5 Press the " Select " button to select "°C" or "°F"mode, and the symbol "°C" or "°F" will appear as an indicator.

6-10. Frequency and Duty Measurement

6.10.1 Set the function switch to the required "Hz Duty" position.

6.10.2 Connect the black test lead to the "COM" jack and

6.10.3 the red to the "INPUT" jack (Note: The polarity of the red test lead is positive "+").

6.10.1Read the reading on the display

6.10.1Press the “ Select ” button to select “Hz” or “Duty”mode, and the symbol“Hz” or “Duty” will appear as an indicator.

Note: Do not apply more than 250V RMS to the input. Indication is possible a voltage higher than 100V rms, but reading maybe out of specification.

6.11 MEASURING DWELL ANGLE (ONLY 151Q)

6.11.1 Connect the black test lead to the “COM” jack and the red test lead to the “INPUT” jack.

6.11.2 Set the rotary switch to the desired “DWELL” range, according to the cylinders of the motor to be measured.

6.11.3 Connect the black test lead to the iron bars or the negative pole of the battery, and the red test lead to the distributor terminal of the ignition coil.

6.11.4 Start the motor to set it in idle-speed. Read the value of the dwell angle on the LCD.

6.12 TESTING DUTY CYCLE (ONLY 151Q)

6.12.1Connect the black test lead to “COM” jack, red test lead to “INPUT” jack.

6.12.2Set the rotary switch in “DUTY” position.

6.12.3Connect the test leads to the circuit to be measured. Read the reading on the display.

7. AUTO POWER-OFF AND LCD BACKLIGHT ON

7.1 After power on ,LCD displays “APO” ,mean the meter is in automatic power off mode 。when meter automatic power off .Press “HOLD” button to power on the meter 。

7.2 Shortly press “HOLD” button to turn on/off the “HOLD” function , Long press “HOLD ” button to turn on/off the backlight .

7.3 Long press HOLD” button, rotary function switch, you can cancel the automatic power off mode, APO symbols disappear on the screen（only fit DT151C DT151D）

8. BATTERY REPLACEMENT

If the sign “ ” appear on the display, it indicates battery should be replaced. Remove screws and open the back case, replace the exhausted battery with new batteries (NEDA 1604, 6F22 or equivalent,please see

Figure 4)

9. ACCESSORIES

Owners manual:	1 piece
Test leads:	1 pair
K-type thermocouple (only fit temperature):	1 piece
Battery 9V 6F22	1 piece

10. FUSE REPLACEMENT

The use of self restoring fuse, after the disappear of the external fault, the fuse returned to normal, the meter can be used normally，So no need to replace the fuse.

20A range has a 20A/250V fast-melt fuse, Please replace the fuse according to the specification. 20A, 250V, FAST, Min.Interrupt Rating 20000A, Ø5 X 20mm.

11.Warning

To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator (" ⊞") appears.

To prevent damage or injury, install only replacement fuses with the specified amperage, voltage, and interrupt ratings.

Disconnect the test leads before opening the back cover or the battery cover.

1)Battery and fuse replacement should only do after the test leads have been disconnected and power is off.

2)Loosen screws with suitable screwdriver and remove case bottom.

3)The meter is powered by a single 9V battery (IEC 6F22, NEDA 1604, JIS006P). Snap the battery connector leads to the terminals of a new battery and reinsert the battery into the case top. Dress the battery leads so that they will not be pinched between the case bottoms can case top.

To open and battery cover

To replace the fuse, remove the screws on support frame, remove the meter from its holster, remove the back cover, replace the fuse with a new one of the same ratings. Rejoin the support frame, reinstall the screws.

DISPOSAL OF THIS ARTICLE

Dear Customer,

If you as some point intend to dispose of this article, then please keep in mind that many of its components consist of valuable materials, which can

be recycled. Please do not discharge it in the garbage bin, but check with your local council for recycling facilities in your area.

WARRANTY:

This Instrument is warrante e from defects in material and workmanship for a period of o / instrument found defective within one year from the delivery date and returned to the factory with transportation charges prepaid, will be repaired, adjusted, or replaced at no charge to the original purchaser. This warranty does not cover expandable items such as batteries & fuses. If the defect has been caused by a misuse or abnormal operating conditions, the repair will be billed at a nominal cost.