Digital Multimeter

DM-310SRS, DM-341

Digital Multimeter
Operation manual

EZ Digital Co.,Ltd.

Digital Multimeter

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WARNING

Before using the meter, you must read the following safety information of Maximum input specification carefully.

▣ V measurements: Below 1000VDC, 750VAC RMS

▣ mA measurements: Below 200mA(Fuse rating 250V)

▣ 10A measurements: Below 10A(Fuse rating 250V)

▣ Ω measurements: Below 600VAC/DC(1 minute)

▣ measurements: Below 600VAC/DC(1 minute)

▣ Hz measurements: Below 250VAC/DC

▣ BAT : Don't input the any voltage, current but battery voltage.

If you don't follow the safety information, DMM SET may be damaged.
And, it can cause a roaring noise or a fire.

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name :	EZ Digital Co., Ltd.
Manufacturer's Address :	#222-28, Nae-dong, Ojeong-gu, Bucheon-si, Gyeonggi-do, KOREA, 421-160
Declares that the product :	
Product Name :	DIGITAL MULTIMETER
Model Numbers :	DM-311, DM-312
Date :	Sep. 27. 1995.
Conforms to the following product specification :	
	Certified by TÜV Rheinland
Safety :	EN61010-1:1993 (IEC 1010-1:1990+A1:1992, modified)
EMC :	EN50081-1:1992 EN50082-1:1992

Supplementary Information :
The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Bucheon, Gyeonggi
Location

C. Y. Kim
Cheol Young Kim
Quality Assurance Manager

WARRANTY

This instruments is warranted against defects in material and workmanship for a period of one year from the data of sale. During the warranty period, EZD will repair or replace it which Prove to be defective. But warranty shall not apply to defects resulting from improper or inadequate maintenance by buyer, In this case, the repair will be billed at a nominal cost.
For warranty service or repair, this instrument must be returned to a service facility designated by EZD.
Buyer shall prepay shipping charges to EZD and EZD shall pay Shipping charges to return it to buyer.

CONTENTS

(continued on page ii)

CONTENTS, continued

INTRODUCTION

NOTE

All material in this manual applies to the DM-310SRS AND DM-341 unless otherwise indicated.

This meter has been designed and tested according to EN 61010-1, Safety Requirements for Electronic Measuring Apparaturs.

This manual contains information and warnings which must be followed to ensure safe operation and retain the meter in safe operation and retain the meter in safe condition.

HOLSTER (Option)

The meter comes with a snap-on holster that absorbs shocks and protects the meter from rough handling. you can also hang the meter on your belt for easy viewing while probing.
The test leads may be snapped into the holster that allows you to hold both the meter and probe tip with one hand.

WARNING

READ"MELTIMETER SAFETY" BEFORE USING THE METER.

Your EZD Digital Multimeter (also referred to as the meter) is a handheld instrument that is designed for use in the field, laboratory and at home.
The meter combines the precision of a digital meter with the speed and versatility of a high resolution.
The meter is powered by a 9V battery and has a rugged case sealed against dirt, dust and moisture.
A snap-on holster protects the meter from rough handling.

After unpacking the meter, if you notice that the meter is damaged or something is missing, contact the place of purchase immediately. Save the shipping container and packing material in case you have to reship the meter.

The higher input voltage than the maximum one can cause the roaring noise by the spark gap included for protection.

MULTIMETER SAFETY

Before using the meter, read the following safety information carefully. In the manual the word "WARNING" is used for conditions and actions that pose hazards to the user, the word "CAUTION" is used for conditions and actions that may damage your meter.
The symbols shown in Figure 1 are used internationally to denote the electrical functions and conditions indicated.

⚠	DANGEROUS VOLTAGE	⏚	GROUND
~	AC-ALTERNATING CURRENT	⚠	SEE EXPLANATION IN MANUAL
⎓	DC-DIRECT CURRENT	▣	DOUBLE INSULATION
⎓~	EITHER DC OR AC	▭	FUSE

Figure 1. international Electrical Symbols

SAFETY DESIGNED

This meter has the feature that warns the dangerous mismatching between rotary switch's mode selection position and jack terminal used, Buzzer sound if rotary switch is not set to Amp mode (10A DC/AC) during 10A terminal which a detector is built in, pluged in by test lead(only DM-313). To avoid accidentally applying voltage to 10A terminal, verify that red test lead is connected to V input terminal before making voltage measurement. This restriction ensures protection against burns in the event that voltage is accidentally applied between 10A and COM terminals. v/Ω terminal is colored in red, COM terminal in black and 10A terminal in Red to be recognized with easy (refer to Fig.2).

● Avoid working alone.

● Inspect the test leads for damaged insulation or exposed.

● Select the proper function and range for your measurement.

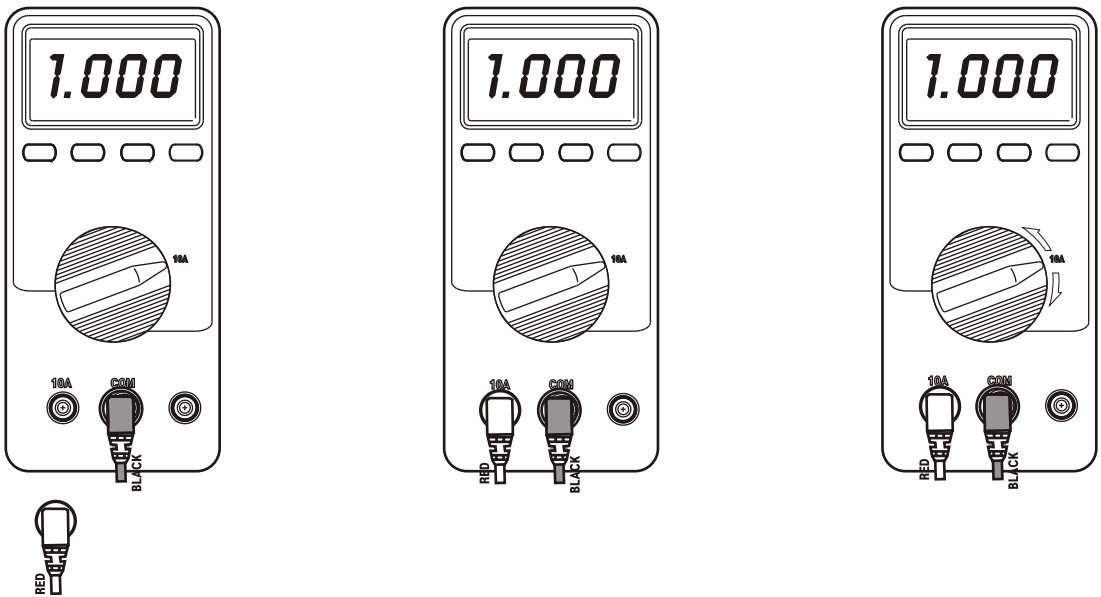


Figure 2

* Using Effect
  - (A):No plug in 10A JACK terminal.(Range selector : except 10A position)
  - (B):Performance good Measurement.
  - (C): Buzzer sound.

- Disconnect the live test lead (Red) before disconnecting the common test lead (Black).

- Follow all safety procedures for equipment being tested. Disconnect the input power and discharge all high voltage capacitors through a protective impedance before testing in the Ω and ⏩ functions.

- When making a current measurement, turn the power off before connection the meter in the circuit.
- Check the meter fused before measuring current transformer secondary or motor winding current. An open fuse may allow high voltage build-up, which is potentially hazardous.

- To take a measurement, use the test lead probes to make the proper contacts. Remember, insert the meter in the circuit in parallel for voltage and in series for current measurements.

WARNING

TO AVOID ELECTRICAL SHOCK OR DAMAGE TO THE METER, DO NOT APPLY MORE THAN 1000V BETWEEN COMTERMINAL AND EARTH GROUND.

TO AVOID ELECTRICAL SHOCK, USE CAUTION WHEN WORKING ABOVE 60V DC OR 30V AC RMS, SUCH VOLTAGES POSE A SHOCK HAZARD.

FEATURES

· 3½ Digit 2000 count LCD(DM-310SRS)
· 4½ Digit 20000 count LCD(DM-341)
· Measurement rate : 2 times/sec
· Different colors of input terminals
· Low battery indication
· Protection for input overload
· Dual-slop integration A/D converter system.
· Over range indication : Most-significant digit flickered (DM-313), 1 displayed
· Battery life : Typical 200HRS with a regular battery
· Temperatures
Operation : 0℃ ~ 40℃ (below 80% RH)
Storage : -10℃ ~ 60℃ (below 70% RH)
Guaranteed accuracy : 23℃±5℃
· Accessories : Operating Manual
9V Battery
Test leads(Red&Black 1pair)
Spare fuse(0.25A)
· SAFETY
Certified by TÜV Rheinland.
- EMC ┬ EMI : EN50081-1
└ EMS : EN50082-1
- Safety : EN61010-1
- Over voltage cat. II
- pollution deg. II

HOW TO USE THE METER

This section describes your meter and how to use it, For ease of reference, each description is numbered and keyed the illustration in page 27, 28 of this manual.

Input terminals

Item ①~⑤ describe the input terminals and the different colors of input terminal allow you to have easy operation. (See Table 1 for overload limits.)

① **10A Amperes Input Terminal**
For current measurements (AC or DC) up to 10A continuous when the function selector switch is in the 10A position.

② **COM Common Terminal (Black color)**
Return terminal for all measurements.
Do not apply more than 1000V between The COM terminal and Earth ground.

③ **v/Ω Volts, Ohms, Continuity, BAT, Frequency, Diode test input Terminal (Red color)**

④ mA mA **Input Terminal**

⑤ SOCKET Transistor hFE input terminal
⑥ SOCKET capacitance input terminal

Function Selector Rotary Switch

⑥ item ⑥ describes functions that are selected by setting the rotary switch. The meter is ready for normal operations and will respond to the rotary switch and pushbuttons.

~V	Volts AC	⎓V	Volts DC
~A	Amperes AC	⎓A	Amperes DC
Ω	Resistance	BAT	Battery Test
▶|	Diode Test	hFE	TR hFE Test
)))	Beeper Sound Continuity Test		
CAP	Capacitance Test	Hz	Frequency Test

Table 1. Input Terminals and Limits(DM-310SRS)

FUNCTION	INPUT TERMINALS		MIN DISPLAY READING		MAX DISPLAY READING		MAXIMUM INPUT
	RED	BLACK	DM-311.312	DM-313	DM-311. 312	DM-313	
V	V/Ω	COM	0.1㎷	0.1㎷	1000V	1000V	1000VDC,750VAC
10A	10A	COM	0.01A	0.01A	10.00A	10.00A	10A/250V
㎃	V/Ω	COM		10㎂		199.9㎃	200㎃/250V
	㎃	COM	1㎂		199.9㎃		
Ω	V/Ω	COM	0.1Ω	0.1Ω	19.99㏁	19.99㏁	600VAC/DC(1min)
Hz	V/Ω	COM	10Hz (DM-312)	-	199.9㎑ (DM-312)	-	250VAC/DC
BAT	V/Ω	COM	1㎷ (DM-311)	-	19.99V (DM-311)	-	Do not Apply any Voltage or Current(only Battery)
	V/Ω	COM					600VAC/DC(1min)

Table 1. Input Terminals and Limits(DM-341)

NCTION	INPUT TERMINALS		MIN DISPLAY READING	MAX DISPLAY READING	MAXIMUM INPUT
	RED	BLACK			
V	V/Ω	COM	0.01mV	1000V	1000VDC,750VAC
10A	10A	COM	0.001A	10.000A	10A/250V
mA	mA	COM	1μA	199.99mA	200mA/250V
Ω	V/Ω	COM	0.01Ω	19.999MΩ	600VAC/DC(1min)
Hz	V/Ω	COM	1Hz	199.99kHz	250VAC/DC
▶| •)))	V/Ω	COM			600VAC/DC(1min)

Pushbuttons(DM-313)

Items ⑥ ~ ⑫ describe how to use the pushbuttons.
Press the power button to turn on the meter.

⑦ MANUAL RANGING

Press RANGE to select the manual range mode, then the AUTO annunciator is disappear (the meter remains in the range it was in when manual ranging was selected).
In the manual range mode, each time for press range button, the range increments, and a new value is displayed. To exit the manual range mode and turn to the auto ranging, press and hold down range mode and turn to the auto ranging, press and hold down range switch for 2 seconds the AUTO annunciator turns back on.

⑧ - MEM

Press MEM button to enter -MEM store mode. The MEM annunciator is displayed as the last two significant digits are stored and then subtracted from all the following inputs. Press the MEM switch again to cancel. The MEM mode is also canceled whenever the measurement mode or range is changed. The MEM operation mode can be very useful in resistance measurement errors. It can also be used to measure deviations of voltage or current measurements.

⑨ HOLD(display hold)

Press hold switch to toggle in and out of the touch hold mode. In the touch hold Mode, the HOLD annunciator is displayed and the last reading is hold on the display(Except 10A Range).

⑩ DC/AC (Ω/Lo Ω)

Press this switch to measure AC voltage or AC current in the voltage or current mode, or to measure low- power ohm in the resistance mode. Press it again to cancel.

Digital display

1) DIGITAL DISPLAY

The digital display has a 2000 count (DM-310SRS) or 20000 count (DM-341) display with polarity indication.

2) AUTO AUTO-RANGE (DM-313)

The meter is the auto-range mode and will automatically select range with the best resolution.
The meter powers on in auto-range mode.

3) — NEGATIVE POLARITY

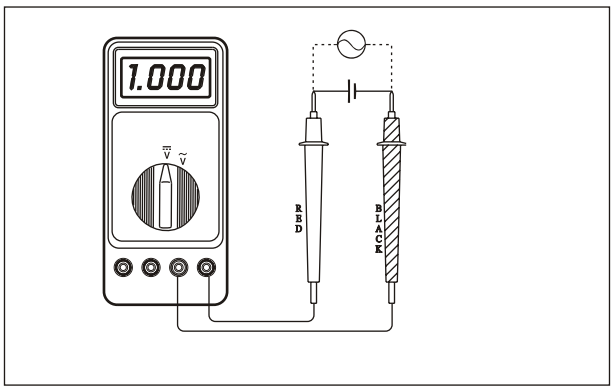
Automatically indicates negative inputs.

4) BEEPER

continuity test is enabled.

5) -MEM MODE (DM-313)

When MEM is enabled, indicates as the last two significant digits are stored.



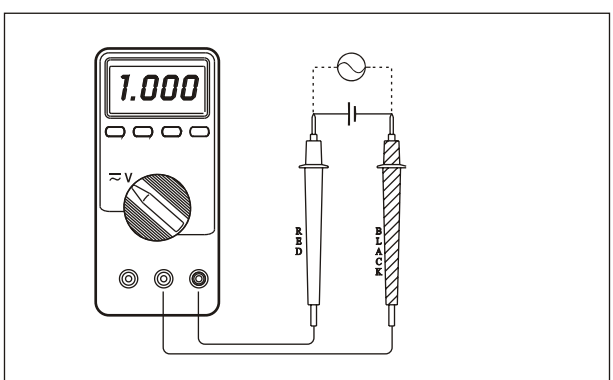


Figure 5-1. Measuring Voltage

APPLICATIONS

This section discusses some common applications for your meter, and alerts you to some considerations to keep in mind when taking measurements.

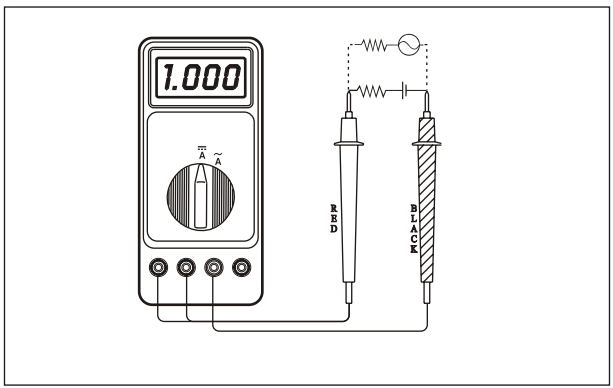
Measuring Voltage (AC/DC)

To measure voltage, connect the black lead to common terminal and red one to v/Ω terminal, and turn the rotary switch to DCV or ACV range as Figure 5-1.

Connect the meter in parallel with the load or circuit under test.

Each of AC/DC voltage ranges presents an input impedance of approximately 10MΩ in parallel with less than 50 pF. AC voltage is AC-Coupled to the 10MΩ input, and frequency range is 50Hz to 400Hz

Over range is being indicated by flickered figure 1 in display (DM-313) and by figure 1 (DM-311, 312, 341)



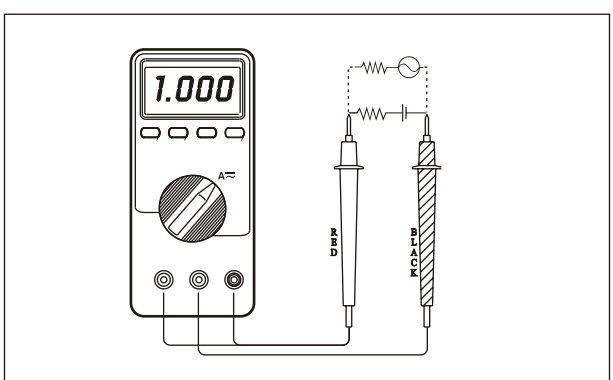


Figure 5-2. Measuring Current

Measuring Current (AC/DC)

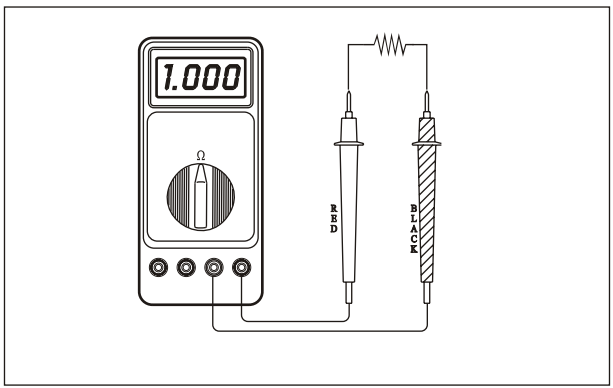
If you do not know approximately what the current is, connect the black lead to common terminal and red one to 10A input terminal first to see if you have a safe level for the mA input (max. 200mA) terminal and turn the rotary switch to DCA or ACA range as Figure 5-2.

Connect the meter in series with the load or circuit under test, and note that the frequency range for AC current measurement is 50Hz to 400Hz

When measuring current, the meter's internal shunt resistors develop a voltage across the meter's terminals called "burden voltage". This voltage drop is very low in your meter, but it may affect precision circuits or measurements.

Over range is being indicated by flickered figure "1" in display. (DM-313) and by digit "1" (DM-311, 312, 341)

WARNING
DO NOT APPLY THE VOLTAGE OF MORE THAN 60V DC OR 30V AC RMS.



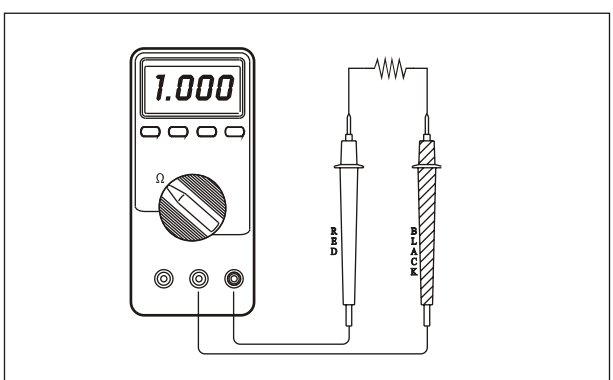


Figure 5-3. Measuring Resistance

Measuring Resistance

To measure resistance, connect the black lead to common terminal and red one to v/Ω terminal, and turn the rotary switch to Ω range as Figure 5-3. Connect the test leads across the resistance under measurement.

CAUTION

Turn off power on the test circuit and discharge all capacitors before attempting in-circuit resistance measurements, If an external voltage is present across a component, it will be impossible to take an accurate measurement of the resistance of that component.

To measure in-circuit resistance shunted by a semiconductor junction, Press the Ω/Lo Ω function and make sure the Lo Ω annunciator is displayed of the LCD(DM-313)

Due to the sensitive nature of the 200 Ω range, a residual resistance is present. This resistance will display itself, if the probes are shorted. This residual resistance is due to the lead, track and switch resistance. To obtain measurement within the stated accuracy when using the 200 Ω range subtract from your value the residual resistance reading.

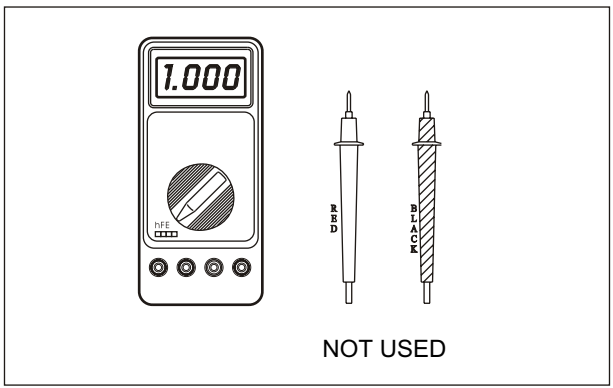
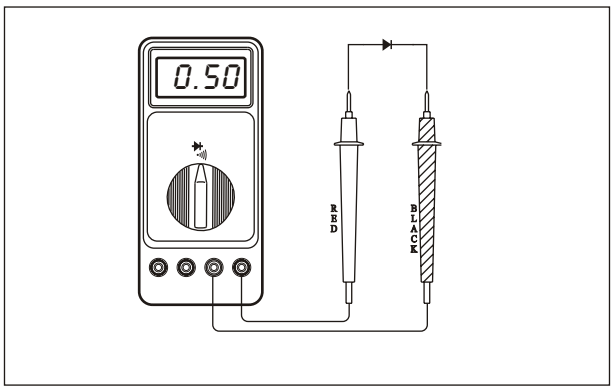


Figure 5-4.hFE Test

Transistor hFE Test (DM-312, 341)

Set rotary function switch to hFE range as Figure 5-4. insert the leads (Emitter, Base, Collector) into the proper holes of the socket on the front panel, according to transistor type NPN or PNP.

The display reads approximate eFE value at the test condition of Base current 2.4μA and VCE 3V.



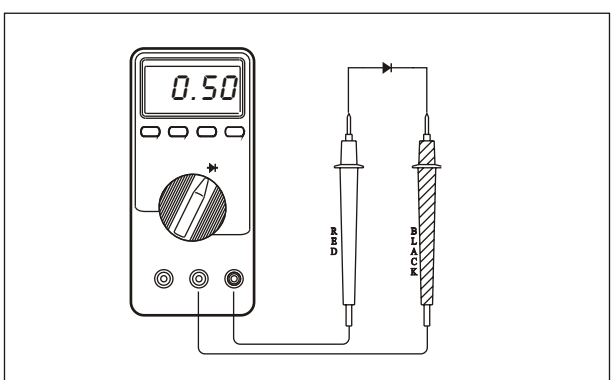


Figure 5-5. Diode Test

Diode Test

To perform a diode test, plug the black test lead to COM terminal and the red one into v/Ω inputs, turn the rotary switch to ⇸, and connect the test leads across the diode under measurement as Figure 5-5.

The forward voltage drop is displayed in V unit.

Test condition : Forward DC current (1㎃)
Reversed DC voltage (2.6V)

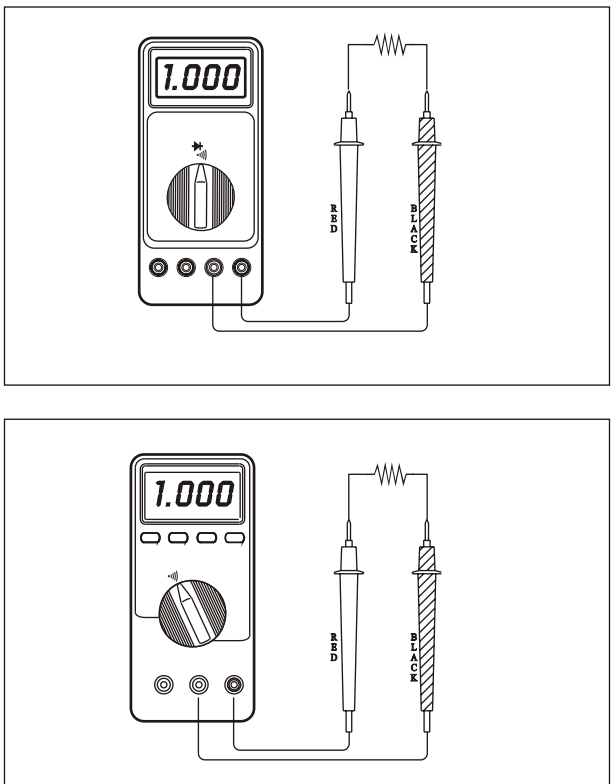


Figure 5-6. Continuity Test

Continuity Test

Continuity testing verifies that circuit connections are intact. To perform audible continuity tests, Turn the rotary switch to the position.

Connect the black test lead to COM input terminal and the red one to v/Ω terminal, and the leads across the resistance or circuit under measurement as Figure 5-6.

Test resistance below 200 Ω (DM-311, 312, 341) or 2 Ω and 20 Ω at Lo Ω mode(DM-313) cause the meter to emit a continuous tone.

CAUTION

Turn off power on the test circuit and discharge all capacitors before attempting continuity testing.

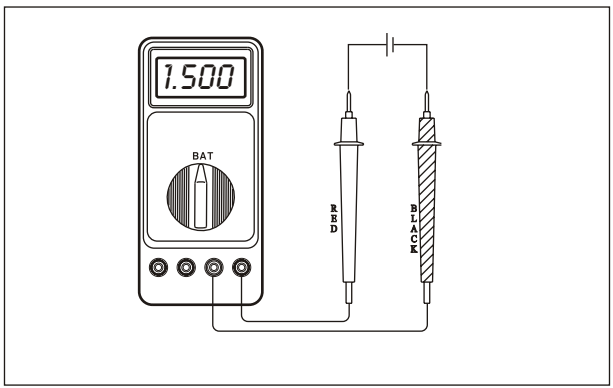


Figure 5-7. Battery Test

Battery Test (DM-311)

To measure a battery, connect the black lead to common terminal and red one to v/Ω terminal and turn the rotary switch to BAT range as Figure 5-7. Connect the test leads across the battery under measurement.

The kinds of AAM/AM/CM/DC batteries can be measured on 1.5V BAT range, and FC-1006P, or LR-44 (button type) on 9V BAT range.

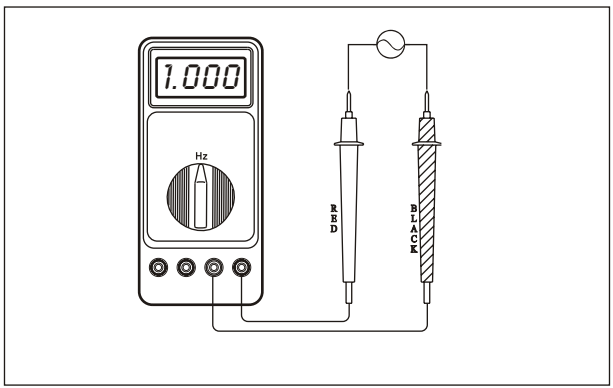


Figure 5-8. Measuring Frequency

Measuring Frequency (DM-312, 341)

In the frequency count mode, the frequency display auto-range to one of two range : 20㎑, 200㎑, for frequencies above 10㎐, the update rate slows and follows the input signal. Turn the rotary switch to the frequency range to be used and connect the test leads, across the frequency under measurement as Figure 5-8. The minimum input signal required to trigger is above 100㎷.

If the input signal is below the trigger level, frequency measurements will not be taken.

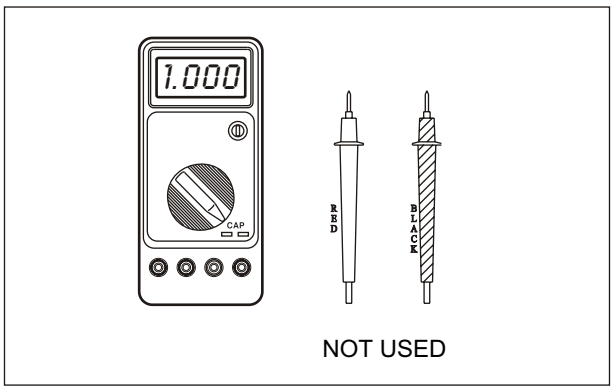


Figure 5-9. Measuring Capacitance

Measuring Capacitance (DM-312, 341)

Before connecting the test capacitor, turn off the power and note the display which should be zero, each time the range is changed.
Adjust the ZERO ADJ(⑪) Knob for this condition.

NOTE

- Capacitor should be discharged before being tested.

- When testing large capacitors, note that there will be a certain time lag before displaying final indication.

Calibration

Calibrate your meter once a year to ensure that it performs according to its specifications. Contact the nearest Distributor for calibration procedure.

Service

If the meter fails, check the battery and fuses and replace as needed. If the meter still does not work properly review this manual to make sure you are operation it correctly. If the meter still malfunctions, pack it securely in its original shipping container and forward it, postage paid, to the EZD's distributor.
Include a description of the malfuction. EZD assumes no responsibility for damage in transit.

A meter under warranty will be promptly repaired or replaced (at EZD'S option) and returned at no charge. If the warranty has laped, the meter will be repaired and returned for a fixed fee. Contact the nearest EZD's distributor for information and prices.

Battery Replacement (Figure 5-10)

① After disconnecting test leads and turning off the multimeter, Remove the one screw from the Battery cover.

② Disconnect battery from instrument and replace with a standard 9V battery.

③ Replace back cover and secure with one screws.

Fuse Replacement (Figure 5-11)

① After disconnecting test leads and turning off the multimeter, Remove back cover by removing three screws.

② The fuse located with PCB board, remove old fuse and replace with new fuse.

③ Replace back cover and secure with three screws.

CAUTION
For continued protection against fire, replace only with FUSE of the specified voltage and current ratings.

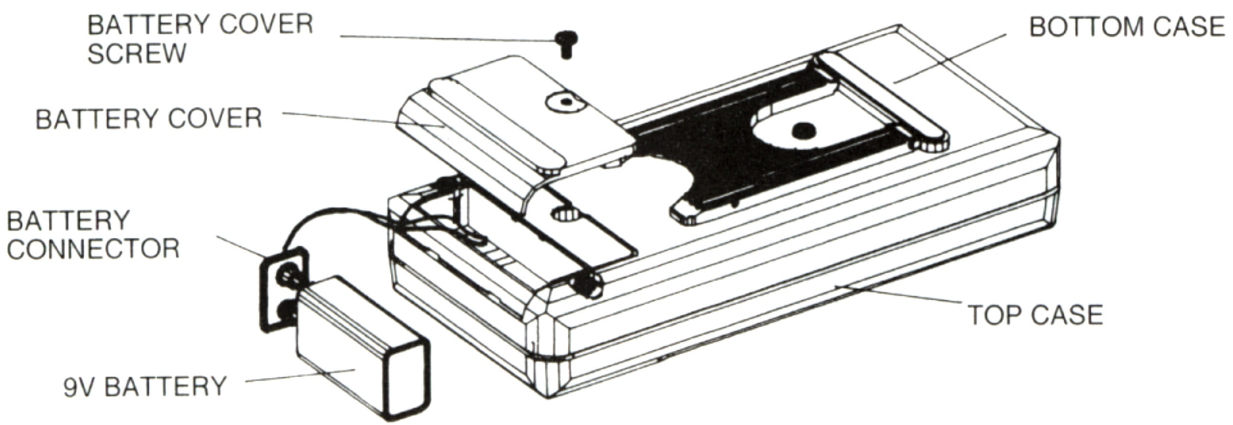


Figure 5-10. Battery Replacement

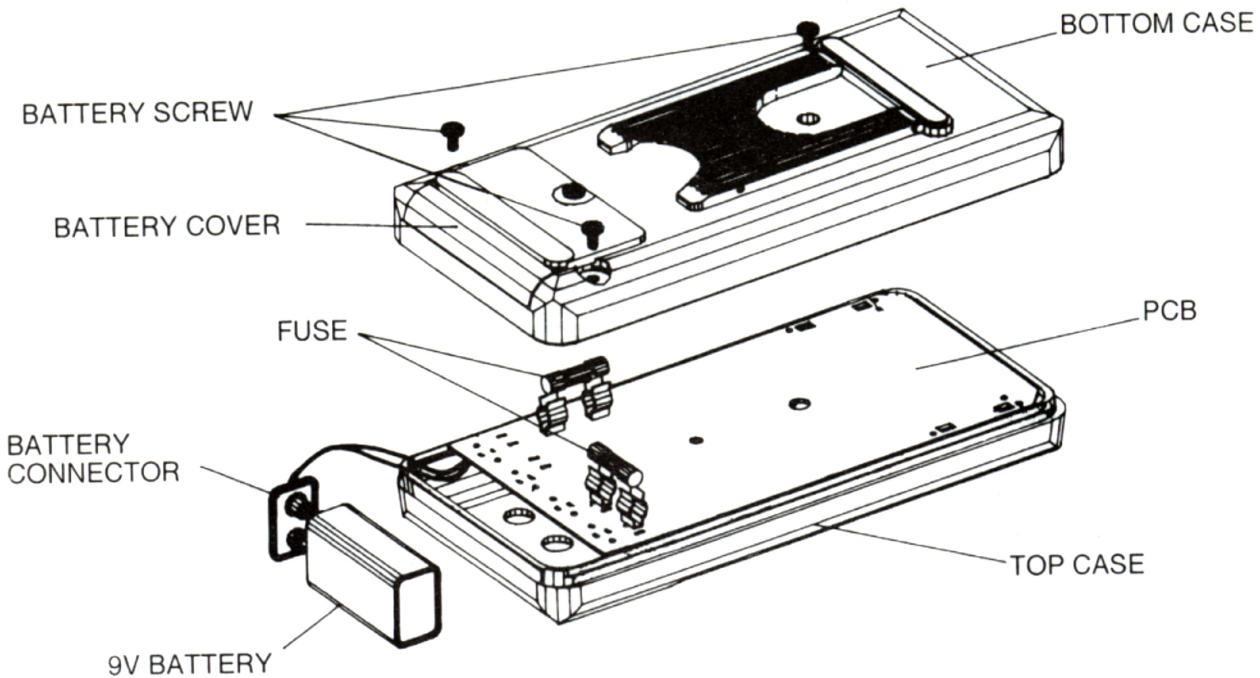


Figure 5-10. Fuse Replacement

Specifications

FUNCTION	DM-311			DM-312		
	RANGE	RESOLUTION	ACCURACY	RANGE	RESOLUTION	ACCURACY
DC VOLTAGE	200㎷	0.1㎷	±(0.5%+1dgt)	200㎷	0.1㎷	±(0.5%+1dgt)
	2V	1㎷		2V	1㎷	
	20V	10㎷		20V	10㎷	
	200V	100㎷		200V	100㎷	
	1000V	1V		1000V	1V	
AC VOLTAGE	200㎷	0.1㎷	±(0.75%+3dgt)	200㎷	0.1㎷	±(0.75%+3dgt)
	2V	1㎷		2V	1㎷	
	20V	10㎷		20V	10㎷	
	200V	100㎷		200V	100㎷	
	750V	1V		750V	1V	
DC CURRENT	200㎂	0.1㎂	±(1.0%+2dgt)	20㎃	10㎂	±(0.75%+1dgt)
	2㎃	1㎂		200㎃	100㎂	
	20㎃	10㎂				
	200㎃	100㎂				
	10A	10㎃	±(1.5%+2dgt)	10A	10㎃	±(1.2%+5dgt)

** Accuracy is ginven as ±(% of reading + number of least sanificant digits) at 18℃ to 28℃ with relative humidity up to 80% for a period of one year after calibraton.*

** Sources like small hand-held radio transceivers, fixed station radio and television transmitters, vehicle radio transmitters and cellular phones generate electromagnetic radiation that may induce voltages in the test leads of the multimeter. In such cases the accuracy of the multimeter cannot be guaranteed due to physical reasons.*

Specifications

FUNCTION	DM-311			DM-312		
	RANGE	RESOLUTION	ACCURACY	RANGE	RESOLUTION	ACCURACY
AC CURRENT	200μA 2mA 20mA 200mA	0.1μA 1μA 10μA 100μA	±(2.0%+2dgt)	20mA 200mA	10μA 100μA	±(1.0%+3dgt)
	10A	10mA	±(3.0%+2dgt)	10A	10mA	±(2.0%+5dgt)
RESISTANCE	200Ω	0.1Ω	±(0.5%+4dgt)	200Ω	0.1Ω	±(0.5%+4dgt)
	2kΩ 20kΩ 200kΩ 2MΩ	1Ω 10Ω 100Ω 1kΩ	±(0.5%+1dgt)	2kΩ 20kΩ 200kΩ 2MΩ	1Ω 10Ω 100Ω 1kΩ	±(0.5%+1dgt)
	20MΩ	10kΩ	±(1.0%+1dgt)	20MΩ	10kΩ	±(1.0%+1dgt)
CAPACITANCE	-	-	-	20000pF 200nF	1pF 0.1nF	±(2.0%+6dgt)
				20μF	0.01μF	±(5.0%+4dgt)

** Accuracy is ginven as ±(% of reading + number of least sanificant digits) at 18℃ to 28℃ with relative humidity up to 80% for a period of one year after calibraton.*

** Sources like small hand-held radio transceivers, fixed station radio and television transmitters, vehicle radio transmitters and cellular phones generate electromagnetic radiation that may induce voltages in the test leads of the multimeter. In such cases the accuracy of the multimeter cannot be guaranteed due to physical reasons.*

Specifications

FUNCTION	DM-311			DM-312		
	RAANGE	RESOLUTION	ACCURACY	RAANGE	RESOLUTION	ACCURACY
FREQUENCY	-	-	-	20㎑ 200㎑	10㎐ 100㎐	±(2.0%+3dgt)
DIODE TEST	TEST VOLTAGE : 2.5V APPROX MAXIMUM TEST CURRENT : 1㎃					
CONTINUITY TEST	THRESHOLD : 200 Ω or LESS					
BATTERY TEST	1.5V BATTERY SINK CURRENT : 1~2㎃ 9V BATTERY SINK CURRENT : 6~9㎃					
TRANSISTOR TEST				BASE CURRENT : 2.4㎂ VCE : APPROX. 3.0V		

** Accuracy is ginven as ±(% of reading + number of least sanificant digits) at 18℃ to 28℃ with relative humidity up to 80% for a period of one year after calibraton.*

** Sources like small hand-held radio transceivers, fixed station radio and television transmitters, vehicle radio transmitters and cellular phones generate electromagnetic radiation that may induce voltages in the test leads of the multimeter. In such cases the accuracy of the multimeter cannot be guaranteed due to physical reasons.*

Specifications

FUNCTION	DM-313			FUNCTION	DM-313		
	RAANGE	RESOLUTION	ACCURACY		RANGE	RESOLUTION	ACCURACY
DC VOLTAGE	200㎷ 2V 20V 200V 1000V	0.1㎷ 1㎷ 10㎷ 100㎷ 1V	±(1.0%+2dgt)	AC CURRENT	20㎃ 200㎃	10㎂ 100㎂	±(1.0%+5dgt)
					10A	10㎃	±(2.0%+7dgt)
AC VOLTAGE	200㎷ 2V 20V 200V 1000V	0.1㎷ 1㎷ 10㎷ 100㎷ 1V	±(0.75%+5dgt)	RESISTANCE	200Ω 2㏀ 20㏀ 200㏀ 2㏁	0.1Ω 1Ω 10Ω 100Ω 1㏀	±(0.75%+1dgt)
					20㏁	10㏀	±(1.0%+1dgt)
DC CURRENT	20㎃ 200㎃	10㎂ 100㎂	±(0.75%+2dgt)	DIODE TEST	TEST VOLTAGE : 2.5V APPROX MAXIMUM TEST CURRENT : 1㎃		
	10A	10㎃	±(1.5%+2dgt)	CONTINUITY TEST	RANGE : 200 Ω THRESHOLD : 2 Ω OR LESS		

** Accuracy is ginven as ±(% of reading + number of least sanificant digits) at 18℃ to 28℃ with relative humidity up to 80% for a period of one year after calibraton.*

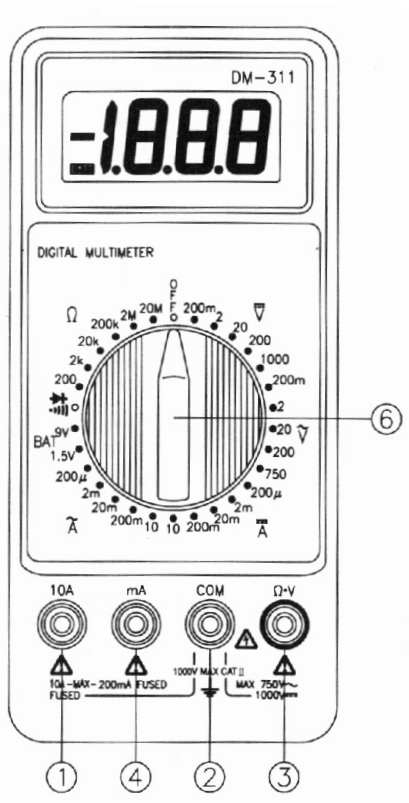
** Sources like small hand-held radio transceivers, fixed station radio and television transmitters, vehicle radio transmitters and cellular phones generate electromagnetic radiation that may induce voltages in the test leads of the multimeter. In such cases the accuracy of the multimeter cannot be guaranteed due to physical reasons.*

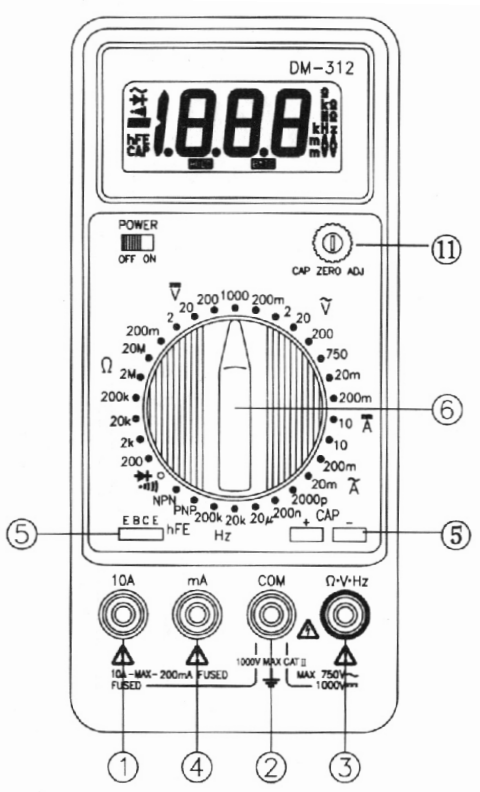
Specifications

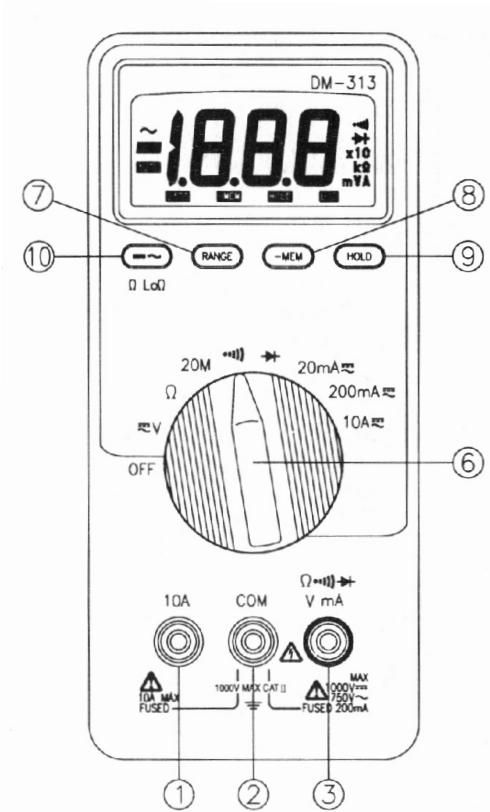
FUNCTION	DM-313			FUNCTION	DM-313		
	RAANGE	RESOLUTION	ACCURACY		RANGE	RESOLUTION	ACCURACY
DC VOLTAGE	200mV	0.01mV	±(0.05%+4dgt)	RESISTANCE	200Ω	0.01MΩ	±(2.0%+5dgt)
	2V	0.1mV			2kΩ	0.1Ω	±(0.2%+2dgt)
	20V	1mV			20kΩ	1Ω	
	200V	10mV			200kΩ	10Ω	
	1000V	100mV	±(0.15%+4dgt)		2MΩ	100Ω	±(0.5%+2dgt)
AC VOLTAGE	200mV	0.01mV	±(0.5%+10dgt)		20MΩ	1kΩ	
	2V	0.1mV		CAPACITANCE	2000pF	0.1pF	±(2.0%+6dgt)
	20V	1mV			200nF	1pF	
	200V	10mV			20μF	0.1nF	±(5.0%+6dgt)
	750V	100mV		FREQUENCY	20kHz	1Hz	±(2.0%+3dgt)
DC CURRENT	20mA	1μA	±(0.5%+1dgt)		200kHz	10Hz	
	200mA	10μA		DIODE	TEST VOLTAGE : 3V APPROX MAXIMUM TEST CURRENT : 1mA		
	10A	1mA	±(0.75%+3dgt)	CONTINUITY	THRESHOLD : 200Ω OR LESS		
AC CURRENT	20mA	1μA	±(0.75%+10dgt)	TRANSISTOR	BASE CURRENT : 2.4μA VCE : APPROX3.0V		
	200mA	10μA					
	10A	1mA	±(1.5%+10dgt)				

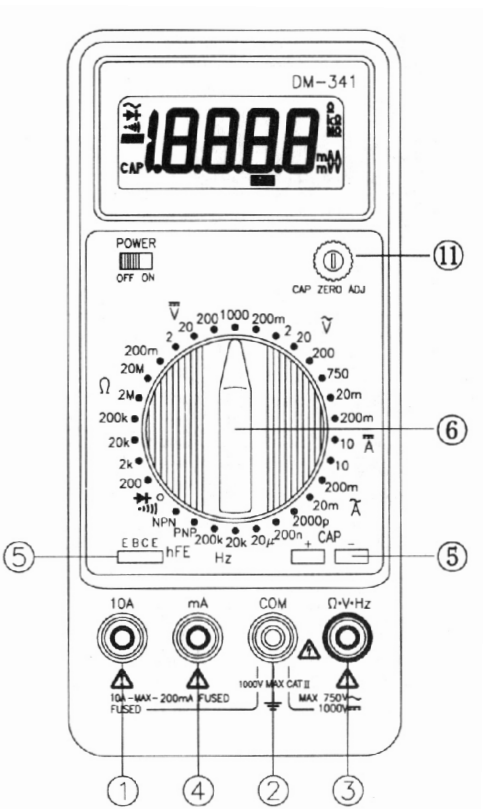
** Accuracy is ginven as ±(% of reading + number of least sanificant digits) at 18℃ to 28℃ with relative humidity up to 80% for a period of one year after calibraton.*

** Sources like small hand-held radio transceivers, fixed station radio and television transmitters, vehicle radio transmitters and cellular phones generate electromagnetic radiation that may induce voltages in the test leads of the multimeter. In such cases the accuracy of the multimeter cannot be guaranteed due to physical reasons.*


DM-311
DIGITAL MULTIMETER
OFF
Ω
200k
2M
20M
200m
2
20
200
1000
2k
20k
200
200m
2
20
200
750
200μ
2m
20m
200m
10
10
200m
20m
2m
200μ
BAT
9V
1.5V
10A
mA
COM
Ω·V
10A-MAX-200mA FUSED
1000V MAX CAT II
MAX 750V
1000V
⑥
①
④
②
③


DM-312
POWER
OFF ON
CAP ZERO ADJ
⑪
200
1000
200m
2
20
200
750
20m
200m
10
10
200m
20m
2000p
200n
20μ
20k
200k
2M
20M
200m
2
20
200
2k
20k
200k
2M
200m
NPN
PNP
E B C E
hFE
Hz
CAP
⑤
⑥
10A
mA
COM
Ω·V·Hz
10A-MAX-200mA FUSED
1000V MAX CAT II
MAX 750V
1000V
①
④
②
③


DM-313
RANGE
-MEM
HOLD
Ω LoΩ
20M
20mA
200mA
10A
V
OFF
10A
COM
V mA
10A MAX FUSED
1000V MAX CAT II
MAX 1000V 750V FUSED 200mA
⑦
⑧
⑩
⑨
⑥
①
②
③


DM-341
POWER
OFF ON
CAP ZERO ADJ
⑪
⑥
⑤
⑤
EBCE
hFE
Hz
CAP
10A
mA
COM
Ω·V·Hz
10A MAX FUSED
200mA FUSED
1000V MAX CAT II
MAX 750V 1000V
①
④
②
③

EZ Digital Co.,Ltd.

The specifications are subjected to change without notice.