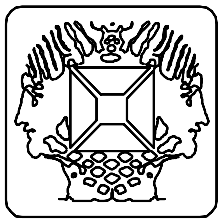

velleman components

DVM300
Digital Mini Multimeter

OPERATION MANUAL
GEBRUIKERSHANDLEIDING
MANUEL D'UTILISATEUR

velleman DVM300

Digital Mini Multimeter

1. Description

Your DVM300 is a professional digital multimeter with a 3 ½ digit LCD display. It is ideally suited for field, lab, shop, and home applications. By using the latest in IC and display technology to significantly reduce the number of discrete internal components, the multimeter gives you superb measuring capability as well as the highest possible reliability.

It is capable of performing functions :

DC Voltage	AC Voltage	DC Current
Resistance	Diode test	Audible Continuity test

1.1 Warning

Use extreme caution in the use of this device. Improper use of this device can result in injury or death. Follow all safeguards suggested in this owner's manual in addition to normal safety precautions in dealing with electrical circuits. Do not use this device if you are unfamiliar with electrical circuits and testing procedures.

1.2 A word about safety

This multimeter is designed to ensure the safest operation possible. However, safe operation depends on you, the operator. Make sure you follow these simple safety rules :

- Never apply a voltage to the multimeter that exceeds the limits given in the specifications. Never apply more than 500V DC or 500V rms AC between an input jack and ground.
- Use extreme caution when working with voltages above 60V DC or 30 V AC rms.
- Always discharge filter capacitors in the power supply circuit under test before you attach test leads.
- Never connect to a source of voltage when you select the resistance measurement.
- Always turn off power and disconnect the test leads before you replace the batteries or fuse.

- Never operate the multimeter unless the battery cover is in place and fully closed. When carrying out measurements on television or switching power circuits, always remember that there may be high amplitude voltages pulses at test points which can damage the meter.

1.3 Maintenance

Your DVM300 is an example of superior design and craftsmanship. The following suggestions will help you care for the multimeter so you can enjoy it for years :

- Keep the multimeter dry. If it gets wet, wipe it dry immediately.
- Use and store the multimeter only in normal temperature environments. Temperature extremes can shorten the life of electronic devices or damage batteries.
- Handle the multimeter gently and carefully. Dropping it can damage the circuit boards and case and can cause the multimeter to work improperly.
- Use only fresh batteries of the required size and type. Always remove old or weak batteries.
  If you do not plan to use the multimeter for a month or more, remove the batteries. This protects the multimeter from possible leakage.
- Disconnect the test probes before opening the multimeter.
- Replace blown fuse only with same size and type :
  F 200mA / 250V
- If any faults or abnormalities are observed, do not use this device and let it check by authorised personnel.
- Never use the meter unless the back cover is in place and fastened fully.
- To clean the meter, use a damp cloth and mild detergent only, do not use abrasives or solvents.

2. Description of the meter

① Range Switch : Switch for selecting measurement ranges as well as the Power Switch
② Function Switch : Switch for selecting functions
③ Display : 3 ½ digit LCD from 0 to 1999 counts
④ Test Leads : Red test lead for positive (+) polarity, Black test lead for negative (-) polarity.

3. Operating instructions

3.1 DC Voltage measurement

1. Set function switch at V⎓ position.
2. Set range switch at desired position. If the magnitude of voltage is unknown beforehand, set the switch at highest range and then reduce until satisfactory reading is obtained.
3. Connect test leads across he source or load under measurement. The polarity of RED lead connection will be indicated at the same time as the voltage.
4. When set the range switch at 500V position, a "HV" sign will appear on the display to remind you of high voltage measuring. Special attention should be paid.

3.2 AC Voltage measurement

1. Set function switch at V~ position.
2. Set range switch at desired position. Measurement reading can be obtained at 2 V and 20V positions, but the accuracy is not guaranteed.
3. Connect test leads across the source or load under measurement. Read voltage value on the display.
4. When set the range switch at 500V position, a "HV" sign will appear on the display to remind you of high voltage measuring. Special attention should be paid.

3.3 DC Current measurement

1. Set function switch at A position.
2. Set range switch at 200mA position. Measurement reading can be obtained at other positions, but the decimal point is at incorrect place.
3. Open the circuit to be measured and connect test leads in series with the load in which current is to be measured.
4. Read current value on the display along with the polarity.

3.4 Resistance measurement

1. Set function switch at Ω position.
2. Set range switch at desired position.
3. If the resistor to be measured is connected to a circuit, turn off all power and discharge all capacitors before applying test leads.
4. Connect test leads across the resistor under measurement and read resistance value on the display.

3.5 Diode & Continuity test

1. Set range switch at ⏚/•))) position.
2. Connect the red lead to the anode of the diode to be tested and black lead to the cathode. Read the forward voltage drop on the display in mV. If the connection is reversed, only figure "1" will be displayed.
3. Connect test leads to two points of a circuit, buzzer will sound if the resistance is lower than 50Ω.

4. Specifications

4.1 General

Measuring Method	: Dual integration mode
Display	: 3.5 digit LCD
Polarity	: Automatic negative polarity indicated
Sampling rate	: 2 - 3 times per second
Low battery indication	: displayed on the left of LCD
Operating Temperature	: 0°C - 40°C, less than 80% RH
Dimensions	: 70 (W) x 120 (H) x 18 (D) mm
Weight	: Approx. 110g (including batteries)
Battery	: 9-12V GP23A or equivalent batteries

4.2 DC Voltage

Range	Resolution	Accuracy (1year) 18°C to 28°C
2V	1mV	± 0.5% of rdg ± 1D
20V	10mV	± 0.8% of rdg ± 1D
200V	0.1V	± 0.8% of rdg ± 1D
500V	1V	± 0.8% of rdg ± 1D

Maximum Allowable Input : 500V DC

4.3 AC Voltage

Range	Resolution	Accuracy (1year) 18°C to 28°C
200V	0.1V	± 1.2% of rdg ± 10D
500V	1V	± 1.2% of rdg ± 10D

Frequency Range : 45 to 1000Hz
Maximum Allowable Input : 500Vrms AC
Response : Average responding, calibrated in rms of a wave

4.4 DC Current

Range	Resolution	Accuracy (1year) 18°C to 28°C
200mA	0.1mA	± 2% of rdg ± 2D

Overload Protection : 200mA/250V fuse

4.5 Resistance

Range	Resolution	Accuracy (1year) 18°C to 28°C
2kΩ	1Ω	± 1.0% of rdg ± 2D
20kΩ	10Ω	± 1.0% of rdg ± 2D
200kΩ	100Ω	± 1.0% of rdg ± 2D
2000kΩ	1kΩ	± 1.0% of rdg ± 2D

Maximum Open Circuit Voltage : 0.65V
Overload Protection : 250 Vrms AC

4.6 Diode

Range	Test current	Max. Open Circuit Voltage
1mV	0.8mA	3.2V

Overload Protection : 250Vrms AC

4.7 Audible continuity test

Resolution	Description
1Ω	Built-in buzzer sounds when resistance is less than 50Ω

Overload Protection : 250Vrms AC

5. Accessories

Test leads
Battery
Operating manual

6. Battery and fuse replacement

6.1 Replacement of batteries

1. When batteries become exhausted or drop below the operation voltage. Sign will appear on the left of the LCD.
2. Turn off the meter and remove test leads from all test circuit prior to replacing batteries.
3. Remove the screw on the back cover and open the case. Replace batteries, making sure the proper polarity of batteries is observed.

CAUTION :
Do not operate this instrument unless the back cover is in place and fastened.

6.2 Replacement of fuse

1. Fuse rarely need to be replaced and blow almost always as a result of operator's error.
2. To replace fuse, remove the screw on the back cover same as in replacement of batteries. Replace fuse with one of the same size and electrical rating.

CAUTION :

1. Make sure that test leads are disconnect from test circuit and the range switch is set at OFF position bevμfore opening the case.
2. To prevent fire, install fuse only with AMP/VOLTAGE same as the original (200mA/250V).