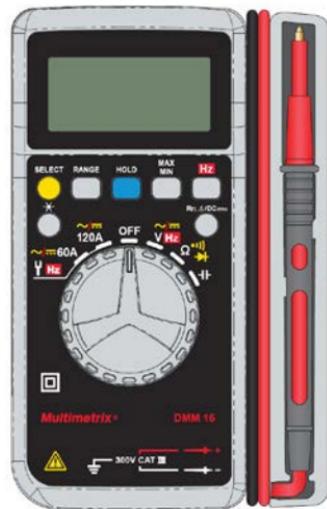


DMM 16 Multimeter

User's manual



CHAUVIN ARNOUX
190, rue Championnet
75876 PARIS Cedex 18 - FRANCE
Tel: +33 1 44 85 44 85 - Fax: +33 1 46 27 73 89
info@chauvin-arnoux.fr
Export Tel: +33 1 44 85 44 38 - Fax: +33 1 46 27 95 59
export@chauvin-arnoux.fr
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PRECAUTIONS FOR USE

This device is compliant with safety standards IEC61010-1, 61010-2-032 and 61010-2-033 for voltages up to 300V in category III at an altitude below 2,000m, indoors, with a degree of pollution of not more than 2.

These safety instructions are intended to ensure the safety of persons and proper operation of the device. If the device is used other than as specified in this data sheet, the protection provided by the device may be impaired.

- The operator and/or the responsible authority must carefully read and clearly understand the various precautions to be taken in use.
- If you use this instrument other than as specified, the protection it provides may be compromised, thereby endangering you.
- Do not use the instrument in an explosive atmosphere or in the presence of flammable gases or fumes.
- Do not use the instrument on networks of which the voltage or category exceeds those mentioned.
- Do not exceed the rated maximum voltages between terminals or with respect to earth.
- Do not use the instrument if it seems to be damaged, incomplete, or poorly closed.
- Before each use, check the condition of the insulation on the leads, housing, and accessories. Any item of which the insulation is deteriorated (even partially) must be set aside for repair or scrapping.
- Use leads and accessories rated for voltages and categories at least equal to those of the instrument. If not, an accessory of a lower category reduces the category of the combined multimeter + accessory to that of the accessory.
- Observe the environmental conditions of use.
- Do not modify the instrument and do not replace components with "equivalents". Repairs and adjustments must be done by approved qualified personnel.
- Replace the battery as soon as the symbol appears on the display unit. Disconnect all leads before opening the battery compartment cover.
- Use personal protective equipment when conditions require.
- Keep your hands away from the unused test probes of the device.
- When handling the test probes, crocodile clips, and current sensor, keep your fingers behind the physical guard.
- Disconnect the test probes from the measurement circuit to make current measurements.
- Disconnect the test probes from the measurement circuit before changing functions.

MEASUREMENT CATEGORIES

CAT II: Circuits directly connected to the low-voltage installation.
Example: power supply to electro-domestic devices and portable tools.

CAT III: Power supply circuits in the installation of the building.
Example: distribution panel, circuit-breakers, machines or fixed industrial devices.

CAT IV: Circuits supplying the low-voltage installation of the building.
Example: power feeders, counters and protection devices.

You have just acquired a **DMM16** multimeter and we thank you for your confidence.

For best results from your instrument:

- Read these operating instructions carefully;

- Comply with the precautions for use.



Risk of danger. The operator agrees to refer to these instructions whenever this danger symbol appears.



Application or withdrawal authorized on uninsulated or bare conductors at dangerous voltages.



Battery



The CE marking indicates conformity with European directives.



Double insulation or reinforced insulation.



Selective sorting of wastes for the recycling of electrical and electronic equipment within the European Union. In conformity with directive WEEE 2002/96/EC: this equipment must not be treated as household waste.



DC- Direct current



AC- Alternating current



AC and DC- Alternating and direct current



Earth



Risk of electric shock



Instructions that must be read and understood

1. PRESENTATION

The **DMM16** is an instrument for measuring electrical quantities that groups the following functions:

- AC or DC voltage measurement;
- Frequency measurement;
- Resistance measurement, continuity measurement with buzzer, or diode test;
- Capacitance measurement;
- DC or AC current measurement;

1.1 The switch

The switch has six positions. To access the various functions, set the switch to the corresponding positions. Each active position is confirmed by an audible signal. The functions are described in the table below.

OFF	Stop	
	AC or DC voltage measurement/Frequency measurement	
	Resistance measurement, continuity measurement with buzzer, or diode test	
	Capacitance measurement	
		120A DC or AC current measurement/Frequency measurement
		66A DC or AC current measurement/Frequency measurement

1.2 The keys of the keypad

- "SEL" (SELECT) key

Press the "SEL" key repeatedly to obtain the following functions according to the setting of the rotary switch:

	DC voltage/AC voltage	
	Resistance measurement/continuity measurement/diode test	
		120A DC current measurement/120A AC current measurement
		66A DC current measurement/66A AC current measurement

- "RANGE" key

Your multimeter has a range change function that is normally automatic but can be made manual. When the instrument is switched on, the default mode is automatic range change: the "AUTO" message is then displayed.

- Briefly press the "RANGE" key to change to manual mode: the "AUTO" message is then replaced by "MANU".
- Successive brief presses are used to reach the desired range.
- Hold the "RANGE" key down for 2 seconds to return to the automatic range change mode: the "MANU" message reverts to "AUTO".

Choice of ranges (or ratings) according to function:

	660.0mV/6.600V/66.00V/600.0V
	660.0mV/6.600V/66.00V/600.0V
Ω	660.0 Ω 6.600k Ω /66.00k Ω /660.0k Ω 6.600M Ω /66.00M Ω
	6.600nF/66.00nF/660.0nF 6.600 μ F/66.00 μ F/660.0 μ F/6.600mF/66.00mF

"HOLD" key

In the "HOLD" mode, the device freezes the display of the last value measured.

- Pressing the "HOLD" key briefly during a measurement freezes the display: the message **DH** is then displayed.
- A second brief press on the "HOLD" key is used to return to the normal measured value display refresh mode: the message **DH** disappears from the display unit.

"MAX MIN" key

In the "MAX MIN" mode, the device records the maximum and minimum values of the measurements made. In this mode, the automatic range change does not change the range when this mode is entered; if the maximum values exceed the display range (indicated by the "OL" message), the appropriate higher range must be chosen manually before reactivating the "MAX MIN" mode.

- Successive brief presses on the "MAX MIN" key produce, in order, the following actions:
 - 1st press: the device records and displays the maximum value measured. The "AUTO" message is replaced by "MANU" and the "MAX" message is displayed.
 - 2nd press: the device records and displays the minimum value measured; the "MAX" message is replaced by "MIN".
 - 3rd press: the device records the maximum and minimum values measured simultaneously; it is the value currently measured that is displayed; the "MAX" and "MIN" messages blink simultaneously on the display unit.
- Additional presses serve to display the values recorded one by one by reproducing the actions of the previous successive presses.

Press the "MAX MIN" key for two seconds to exit from the mode: the "MANU", "MAX", and "MIN" messages are replaced by "AUTO", indicating that the device once again changes range automatically.

"Hz" (Hertz) key

Press the "Hz" key briefly and repeatedly to obtain the following functions according to the setting of the rotary switch:

	AC voltage measured/Frequency/Duty cycle
	DC voltage measured/Frequency/Duty cycle

		120A AC current measured/Frequency/Duty cycle
		66A AC current measured/Frequency/Duty cycle

NB: When the duty cycle measurement is activated, the automatic range change leaves the range unchanged when the mode is entered; the device changes to manual range change mode and the "MANU" message is displayed.



"Backlight" key

A brief press on the "Backlight" key lights or switches off the display unit backlighting. If not reactivated, the backlighting switches itself off automatically after approximately 60 seconds.

"REL (ZERO)" key

The "REL (ZERO)" key is used to subtract the value displayed when the key is pressed from all subsequent measurement values and display the result of the subtraction. This mode can be activated by a brief press on the key for all functions except the frequency and duty cycle measurements.

When display in relative mode is activated, the automatic range change leaves the range unchanged when the mode is entered: the device changes to manual range change

mode and the "MANU" and messages are displayed.

For DC current measurements, this mode is used to set the display to zero before the current sensor is placed on the conductor in which the current is to be measured; the message displayed for this function, in this mode, is "ZERO".

Another brief press on the key effects the return to the normal display mode; the device

returns to the automatic range change mode and the "MANU" and messages are replaced by the "AUTO" message.

Any change of function by the rotary switch terminates display in the relative mode.

1.3 The display unit



Symbol	Description
	Automatic range change
	Manual range change
	(Data Hold) Freezes the display
	Value displayed in relative mode
	Display of the maximum and minimum values
	Reset for DC current measurements
	Diode test function
	Continuity test function
	Unit and function Duty cycle
	(Auto Power Off) automatic switching off activated
	DC measurement and display
	AC measurement and display
	Display of a negative value
	Low battery indicator (battery must be replaced)
	(Volt) unit of voltage
	(Ampere) unit of current
	(milliFarad, nanoFarad, microFarad) units of capacitance
	(ohm, kilo-ohm, Megohm) unit of resistance
	(Hertz) unit of frequency

The "OL" message (OverLoad) indicates an overshoot of the measurement or display capacity.

1.4 The leads and test probes

The multimeter is equipped with two leads (red and black), each terminated by a test probe of the same colour.

The leads and test probes are not detachable (they are permanently connected) and, when not in use, can be stowed in the compartments provided for them on the right side of the device.

The tips of the test probes (once taken out of their compartments by pressing on them with a finger), allow voltage, resistance, continuity, diode test, and capacitance measurements.

The test probes have physical guards that show the operator where the hand grip part ends, beyond which the fingers must not be placed.

1.5 The current sensor

The multimeter has a current sensor that makes it possible to measure a current without having to open the circuit.

The current sensor and its lead cannot be detached (they are permanently connected); when not in use, they can be stowed in compartments provided for them on the back of the device.

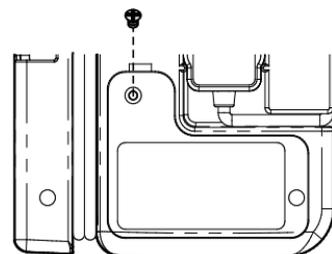
The current sensor has a physical guard that shows the operator where the hand grip part ends, beyond which the fingers must not be placed.

2. USE

2.1 Commissioning

Place the batteries supplied with the device as follows:

- Using a cross-headed screwdriver, unscrew the screw of the compartment cover on the back of the housing and open the cover;
- Place the 2 batteries in their compartment, with the correct polarities;
- Close the cover and screw it back to the housing.



2.2 Starting up and check of operation

We recommend performing this procedure at the time of commissioning and, if the device is used only occasionally, each time it is used.

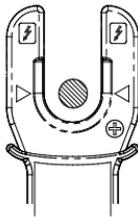
- Hold the "HOLD" key down and switch the instrument on by turning the switch from "OFF" to "ON".
- Release the "Hold" key and check that the various symbols and segments are correctly displayed.
- A brief press on the "HOLD" key restores the normal display of the selected function;
- If the device is set to the resistance measurement function (" Ω "), check that the display indicates "A.P.O" (for auto power off), "AUTO" (for automatic range change), "O.L" (for OverLoad), and "M Ω " (for Megohm);
- Withdraw the two leads from their compartment and establish a good contact between the metallic parts of the two test probes; the value measured and displayed must change from "O.LM Ω " to "0.0 Ω "; (the value displayed may not be exactly zero, but must remain very close to zero).
- The instrument is operational when the various states described above have been checked and are correct. The rotary switch can then be set to the desired function or to "OFF" to switch the instrument off.

2.3 Deactivating Auto Power Off

- In order to extend the life of the batteries, the device switches itself off automatically approximately 15 minutes after it is switched on if no key or change of function has been activated. The device warns that it is about to switch off by emitting 3 series of 2 audible beeps and, if no action is taken, then emits a long beep and switches itself off.
- When the multimeter switches itself off automatically, it can be restarted in the same configuration by pressing the "HOLD" key twice. Any other action restarts the device, but changes its configuration.
- Automatic switching off can be deactivated by holding down the "Hz", "REL", "MAX MIN", "RANGE" or "Backlight" key while switching on. Reminder: automatic switching off is deactivated when the instrument is in the "MAX MIN" mode.
- To eliminate the slight residual drain of the batteries in the sleep mode, it is always best to switch the device "OFF".

2.4 DC current measurement (A)

- For optimum safety, current measurements on circuits at voltages between 300V and 600V must be made only on category III installations or on circuits of which the possible overvoltage levels are known to be less than those of category III. The current sensor must not be used at the same time as the test probes. The instrument has 2 measurement ranges, selected using the rotary switch (60A and 120A).
- Remove the current sensor from its compartment on the back of the device (the test probes are stowed in their own compartment).
- Switch the instrument on in the 60A or 120A setting.
- Let the value displayed stabilize and briefly press the "REL (ZERO)" key to set the value displayed to zero. It is often necessary to repeat this operation after measuring strong currents.
- Place the sensor on the cable as indicated by the locating marks (the sensor must be perpendicular to the cable on which it is placed), see the figure below.
- Read the measurement result (after stabilization).
- Display of the "-" sign in front of the numerical value indicates that the value measured is negative: the current is flowing in the direction opposite the polarities indicated on the sensor.



Note: best results are obtained when the cable is carefully centred and any nearby cables are held away from it.

2.5 AC current measurement (A)

- For optimum safety, current measurements on circuits at voltages between 300V and 600V must be made only on category III installations or on circuits of which the possible overvoltage levels are known to be less than those of category III. The current sensor must not be used at the same time as the test probes. The instrument has 2 measurement ranges, selected using the rotary switch (60A and 120A).
- Remove the current sensor from its compartment on the back of the device (the test probes are stowed in their own compartment).
- Switch the instrument on in the 60A or 120A setting.
- Press the "SEL" key briefly to switch to AC current measurement; the  symbol is displayed instead of .
- Place the sensor on the cable as indicated by the locating marks (the sensor must be perpendicular to the cable on which it is placed), see the figure above.
- Read the measurement result (after stabilization).

Note: best results are obtained when the cable is carefully centred and any nearby cables are held away from it.

2.6 DC voltage measurement (V)

- For optimum safety, current measurements on circuits at voltages between 300V and 600V must be made only on category III installations or on circuits of which the possible overvoltage levels are known to be less than those of category III. The instrument has 4 measurement ranges: 660mV, 6.6V, 66V, 600V. The 600mV range can be used only in the manual range change mode, by repeated presses on the "RANGE" key. The other ranges can be used in either the manual or the automatic range change mode.
- Withdraw the test probes and leads from their compartment.
- Switch the instrument on in the "V" setting.
- Apply the metallic part of the black test probe on the (assumed) negative part of the circuit to be tested.
- Apply the metallic part of the red test probe on the (assumed) positive part of the circuit to be tested.
- Read the measurement result (after stabilization).
- Display of the "-" sign in front of the numerical value indicates that the value measured is negative (the test probes are reversed with respect to the polarity of the voltage).

2.7 AC voltage measurement (V)

- For optimum safety, current measurements on circuits at voltages between 300V and 600V must be made only on category III installations or on circuits of which the possible overvoltage levels are known to be less than those of cat. III. The DMM16 has 4 measurement ranges: 660mV, 6.6V, 66V, 600V. The 600mV range can be used only in the manual range change mode, by repeated presses on the "RANGE" key. The other ranges can be used in either the manual or the automatic range change mode.
- Withdraw the test probes and leads from their compartment.
- Switch the instrument on in the "V" setting.
- Press the "SEL" key briefly to switch to AC voltage measurement (the  symbol is displayed instead of .
- Apply the metallic part of the black test probe on the part of the circuit to be tested (assumed) closest to the earth potential.
- Apply the metallic part of the red test probe on the part of the circuit to be tested (assumed) farthest from the earth potential.
- Read the measurement result (after stabilization).

2.8 Frequency measurement (Hz)

- For optimum safety, current measurements on circuits at voltages between 300V and 600V must be made only on category III installations or on circuits of which the possible overvoltage levels are known to be less than those of category III.

The instrument has 3 measurement ranges: 660,0Hz, 6,600kHz and 66,00kHz.

- Measurement of the frequency of the voltage measured: start the AC voltage measurement method, then press the "Hz" key (display of the "Hz" symbol instead of "V").
- Measurement of the frequency of the current being measured: start the AC current measurement method, then press the "Hz" key (the "Hz" symbol is displayed instead of "A").
- Read the measurement result after stabilization.

2.9 Duty cycle measurement (%)

- For optimum safety, current measurements on circuits at voltages between 300V and 600V must be made only on category III installations or on circuits of which the possible overvoltage levels are known to be less than those of category III. The measurement range is from 10% to 94.9% (50-60Hz). If there is no usable signal or if the duty cycle is less than 10%, the display indicates "UL", and if the duty cycle is greater than 94.9%, the display indicates "OL".

For voltage duty cycle measurements, the device switches itself to the manual range change mode.

- Measurement of the duty cycle of the voltage being measured: start the AC voltage measurement method, then press the "Hz" key twice (the "%" symbol is displayed instead of "V" and "MANU" instead of "AUTO").
- Measurement of the duty cycle of the current being measured: start the AC current measurement method, then press "Hz" twice ("% is displayed instead of "A").
- Read the measurement result after stabilization.

2.10 Resistance measurement (Ω)

- Resistance, continuity, diode test, and capacitance measurements must be made only on circuits completely disconnected from any power supply, and after any capacitors have been discharged.

The instrument has 6 measurement ranges: 660,0 Ω , 6,600k Ω , 66,00k Ω , 660,0k Ω , 6,600M Ω and 66,00M Ω .

All of the ranges can be used with either automatic or manual range change.

- Withdraw the test probes and leads from their compartment.
- Switch the instrument on in the " Ω " setting.
- Apply the metallic tips of the test probes to the terminals of the resistance or of the circuit to be tested
- Read the measurement result (after stabilization).

NB: Touching the elements or circuit during the measurement may lead to erroneous results. For resistance measurements on nonlinear circuits, it may be necessary to select the measurement mode and the range to be used manually.

2.11 Continuity measurement (Ω)

- Resistance, continuity, diode test, and capacitance measurements must be made only on circuits completely disconnected from any power supply, and after any capacitors have been discharged.

The instrument indicates continuity by emitting a steady sound when the resistance measured is less than 50 Ω .

The value displayed is the value measured in ohms.

- Withdraw the test probes and leads from their compartment.
- Switch the instrument on in the " Ω " setting.
- Press the "SEL" key briefly until "" appears.
- Apply the metallic tips of the test probes to the terminals of the resistance or of the circuit to be tested.
- Read (if necessary) the measurement result (after stabilization).

2.12 Diode measurement (Ω)

- Resistance, continuity, diode test, and capacitance measurements must be made only on circuits completely disconnected from any power supply, and after any capacitors have been discharged.

The instrument indicates the voltage across the terminals of the semiconducting junction.

- Take out the test probes and leads.
- Switch the instrument on in the " Ω " setting.
- Press the "SEL" key briefly until the "" symbol appears
- Apply the metallic tips of the test probes to the terminals of the diode or of the junction to be tested, according to the following polarities:
 - forward direction (conducting): apply the black probe to the cathode and the red probe to the anode. Read the measurement result (after stabilization), see figure A (the threshold voltage of a silicon diode is between 0.5V and 0.7V; it is between 0.2 and 0.3V for a germanium diode. High-voltage diodes, some Zener diodes, and LEDs cannot be tested by this method).
 - reverse direction (non-conducting): apply the black probe to the anode and the red probe to the cathode. Read the measurement result (after stabilization), see figure B (a diode or junction in good condition causes the display of "OL").
- With some types of diode, a measured value outside the stated voltage ranges does not necessarily mean that the diode or junction is defective.

3. CHARACTERISTICS

3.1 General conditions

Temperature	23°C \pm 2°C
Relative humidity	45% to 75%
Supply voltage	2.8V \pm 0.3V
Frequency range of the applied signal	45-65Hz
Sine wave	pure
Peak factor of the applied AC signal	$\sqrt{2}$
Position of the conductor in the sensor	centred
Adjacent conductors	none
AC magnetic field	none
Electric field	none

3.2 Characteristics under the conditions of use

Display rate: approximately 3 measurements per second
The uncertainties are expressed in ± (x% L+y digit)

DC current measurement

Range	Resolution	Measurement uncertainties	Input resistance
66.00A	0.01A	2.0% +10	—
120.0A	0.1A	2.0% +5	

AC current measurement

Range	Resolution	Measurement uncertainties	Input resistance
		45–400Hz	
66.00A	0.01A	2.0% +5	—
120.0A	0.1A		

DC voltage measurement

Range	Resolution	Measurement uncertainties	Input resistance
660.0mV	0.1mV	1.0% +3	approx. 10MΩ
6.600V	0.001V		
66.00V	0.01V		
600.0V	0.1V		

AC voltage measurement

Range	Resolution	Measurement uncertainties		Input resistance
		45–60Hz	60–400Hz	
660.0mV	0.1mV	1.5% +5	-	approx. 10MΩ
6.600V	0.001V	1.5% +5		
66.00V	0.01V			
600.0V	0.1V			

Resistance measurement

Range	Resolution	Measurement uncertainties	Voltage maximum applicable
660.0Ω	0.1Ω	1.0% +5	600V
6.600kΩ	0.001kΩ		
66.00kΩ	0.01kΩ		
660.0kΩ	0.1kΩ		
6.600MΩ	0.001MΩ	2.0% +5	
66.00MΩ	0.01MΩ	3.0% +5	

Continuity measurement

Range	Resolution	Observation	No-load voltage
660.0Ω	0.1Ω	The buzzer is actuated at values less than approximately 50Ω	approx. 0.8V

Diode test

Range	Resolution	Measurement uncertainties	No-load voltage
2.000V	0.001V	1.0%+5	approx. 2.0V

Capacitance measurement

Range	Resolution	Measurement uncertainties	Remarks
6.600nF	0.001nF	2.5% +5	after adjustment of the zero for the ranges from 6.6nF to 6.6μF
66.00nF	0.01nF		
660.0nF	0.1nF		
6.600μF	0.001μF		
66.00μF	0.01μF		
660.0μF	0.1μF	3.0% +5	
6.600mF	0.001mF		
66.00mF	0.01mF		

Frequency measurement

Range	Resolution	Measurement uncertainties	Remarks
10.0–660.0Hz	0.1Hz	0.1% +5	At values <10.0Hz, the display indicates 00.0Hz
6.600kHz	0.001kHz	0.1% +3	
66.00kHz	0.01kHz		

Sensitivity		
Range	Minimum input signal (sine wave)	
	10Hz–400Hz	400.1Hz–10.00kHz
660mV	200mV	400mV
6.6V	0.3V	0.7V
66V	1V	3V
660V	10V	20V
66A	1A	6A
120A	10A	50A

Duty cycle measurement

Range	Resolution	Measurement uncertainties	Remarks
10% – 94.9%	0.1%	0.5% +5	no signal or a cycle less than 10% causes the display of "UL" ; A cycle greater than 94.9%, causes the display of "OL". For a square wave at 50/60Hz

3.3 Environmental conditions

Environmental conditions	in use	in storage
Temperature	0°C to +50°C 32°F – 122°F	-10°C to +60°C 14°F–140°F
Relative humidity (RH)	≤80% without condensation	≤70% without condensation
Altitude	<2.000m	up to 10.000m

3.4 Constructive characteristics

Housing	Rigid polycarbonate shell with moulded elastomer covering	
Sensor	Polycarbonate	Clamping diameter: 12mm
Screen	LCD display unit with blue backlighting Dimensions: 141xH 18mm	
Dimensions	H 130xL 81xP 24mm	
Weight	160 g (without battery)	

3.5 Supply

Batteries	2x1.5V (AAA)
Mean battery life	>250 hours (without backlighting)
Auto power off delay	After ≈15 min without action on the switch and/or on the keys

3.6 Compliance with international standards

Electric safety: Protection class	Compliant with standards IEC61010-1, IEC61010-2-32 and IEC61010-2-33 300V CAT III. Class 2, double insulation
Electromagnetic compatibility	Compliant with standard EN 61326-1
Level of protection of the housing	Housing: IP40 (according to the standard IEC60529)

4. MAINTENANCE

The instrument has no parts that can be replaced by personnel who are not trained and approved. Any non-approved repair or other work, or replacement of a part by an "equivalent", may severely compromise safety.

4.1 Cleaning

- Disconnect the unit completely and turn the rotary switch to OFF.
- Use a soft cloth, dampened with soapy water. Rinse with a damp cloth and dry rapidly with a dry cloth or forced air.
- Dry perfectly before putting back into use.

4.2 Replacement of the batteries

The  symbol indicates that the batteries are spent. When this symbol appears on the display unit, the batteries must be replaced. The measurements and specifications are no longer guaranteed.

To replace the batteries, proceed as follows:

1. Disconnect everything connected to the device;
2. Set the switch to OFF;
3. using a cross-headed screwdriver, unscrew the screw of the battery compartment cover on the back of the housing and open the cover;
4. Always replace both batteries;
5. Close the cover and screw it back down.

4.3 Repair

Return the instrument to your distributor for any work to be done, whether under the warranty or not. If you have to ship the instrument, it is best to use its original packaging and to state as clearly as possible, in a note attached to the equipment, the reasons for the transfer.

5. WARRANTY

The equipment is warranted against defects of materials or workmanship, in accordance with the general terms of sale. During the warranty period (1 year), the instrument must be repaired only by the manufacturer, who reserves the right to choose between repairing it or replacing it, entirely or partially. If the equipment is sent back to the manufacturer, carriage is paid by the customer.

The warranty does not apply in the following cases:

1. Inappropriate use of the equipment or use with incompatible equipment;
2. Modifications made to the equipment without the explicit permission of the manufacturer's technical staff;
3. Work done on the device by a person not approved by the manufacturer;
4. Adaptation to a particular application not anticipated in the definition of the equipment or not indicated in the user's manual;
5. Damage caused by shocks, falls, or floods;

6. DELIVERY CONDITION

The DMM16 multimeter is delivered in a blister pack with:

- 2 1.5V batteries
- a user manual in several languages