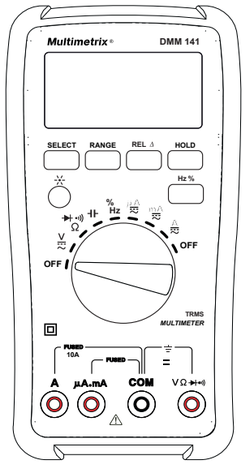
Multimetrix® GB

DMM141

True RMS Multimeter



You have just purchased a **DMM141 digital 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.

⚠	WARNING, risk of DANGER! The operator must refer to this user's manual whenever this danger symbol appears.
⧈	Equipment protected by double insulation.
⏚	Earth.
❗	Instruction that must be read and understood.
~	AC - Alternating current.
⎓	DC - Direct current.
+−	Battery.
CE	The CE marking indicates conformity with European directives.
	The rubbish bin with a line through it means that in the European Union, the product must undergo selective disposal for the recycling of electric and electronic material, in compliance with Directive WEEE 2002/96/EC. This equipment must not be treated as household waste.

Definition of measurement categories
- Measurement category IV corresponds to measurements taken at the source of low-voltage installations.
- Measurement category III corresponds to measurements on building installations.
- Measurement category II corresponds to measurements taken on circuits directly connected to low-voltage installations.

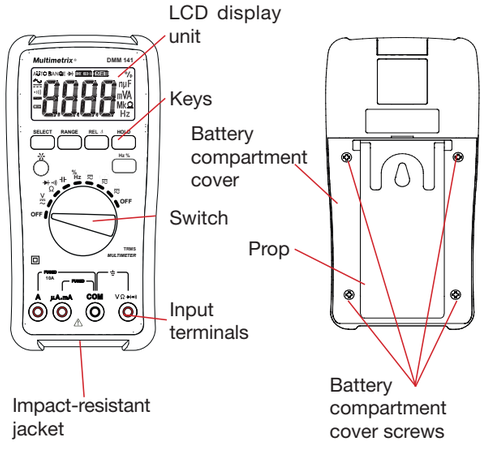
PRECAUTIONS FOR USE

This instrument and accessories are compliant with safety standards IEC 61010-1, IEC 61010-031 and IEC 61010-2-033 for voltages up to 600V in category III. Failure to observe the precautions for use and safety instructions may cause an electric shock, fire, explosion, or destruction of the instrument and of the installations.

- 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 on networks of which the voltage or category exceeds those mentioned.
- Observe the environmental conditions of use.
- Do not exceed the rated maximum voltages and currents 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 only the leads and accessories supplied. Using leads (or accessories) of a lower voltage or category reduces the voltage or category of the combined instrument + leads (or accessories) to that of the leads (or accessories).
- Use personal protective equipment when conditions require.
- When handling the leads, test probes, and crocodile clips, keep your fingers behind the physical guard.
- Keep your hands away from the terminals of the instrument.
- Replace the battery as soon as the +− symbol appears on the display unit. Disconnect all leads before opening the battery compartment cover.

PRESENTATION

The DMM141 is a device for measuring electrical quantities:
- AC or DC voltage measurement;
- DC and AC current measurement;
- Frequency measurement;
- Capacitance measurement;
- Resistance measurement, continuity measurement with buzzer or diode test.

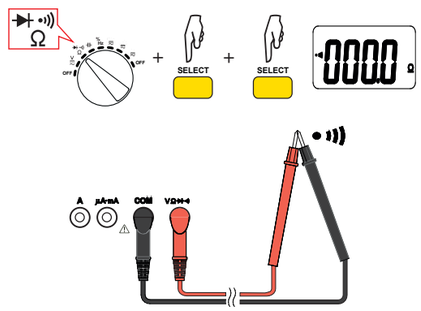


USE

INSERTING THE BATTERIES

See § Maintenance.

TEST OF OPERATION

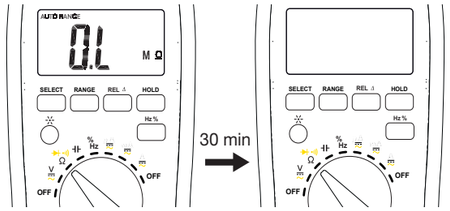


SWITCHING OFF THE MULTIMETER

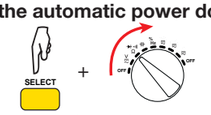
Manual switching off

Set the switch to **OFF.**

Automatic power down



De-activating the automatic power down

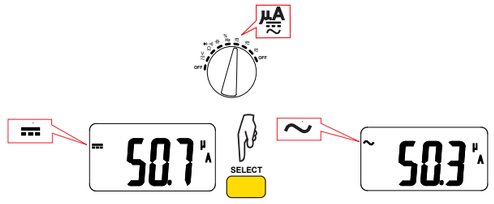


The automatic power down function of the device is reactivated when the device is switched back on.

CHANGING MODES

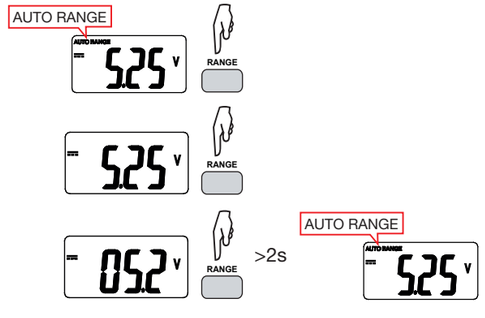
SELECT

Several modes may be available for a given function (existence of additional modes indicated by a yellow symbol). Press the SELECT key to change which mode is active.



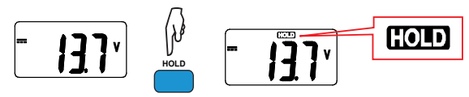
CHANGING RANGES

RANGE



HOLD OF THE DISPLAY

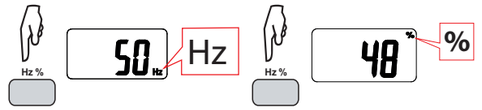
HOLD



HZ AND % FUNCTIONS

Hz %

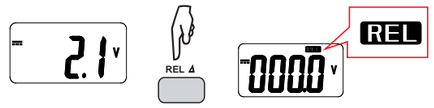
For AC voltage and current measurements, they are used to display the frequency and the duty cycle of the signal measured, respectively.



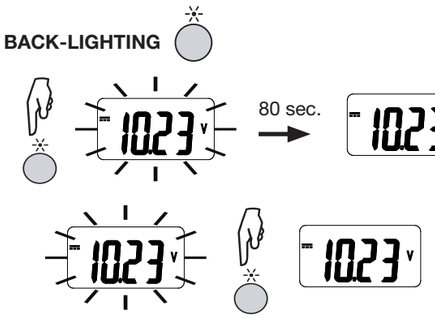
REL Δ FUNCTION

REL Δ

The REL Δ key is used to subtract the value displayed at the time the key is pressed from all subsequent measurements values and to display the result of the subtraction. This function is not available when "OL" is displayed.



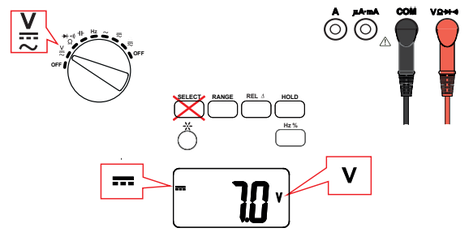
BACK-LIGHTING



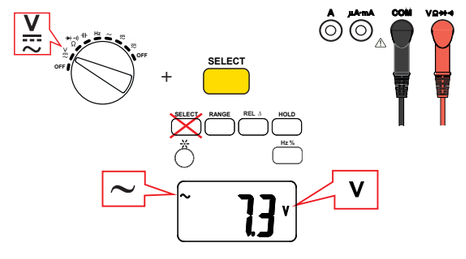
MEASUREMENTS

⚠ The input voltage must not exceed 600V.

DC voltage measurement ⎓

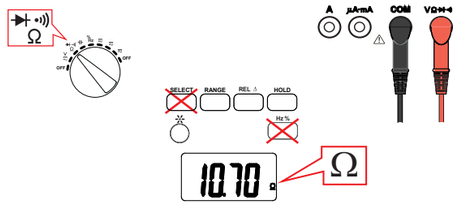


AC voltage measurement ~

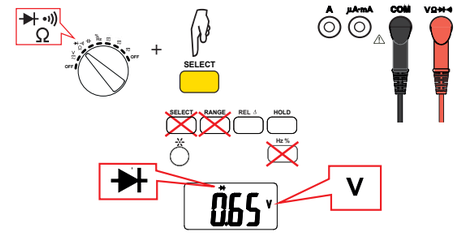


Resistance measurement Ω

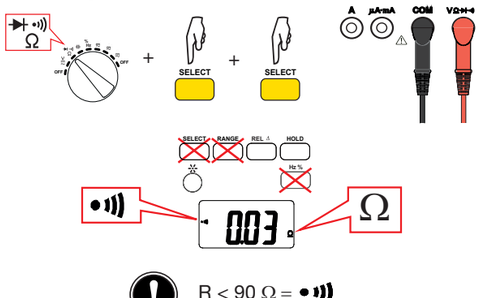
❗ Resistance and capacitance measurements and diode and continuity tests must be performed on voltage-free circuits.



Diode test

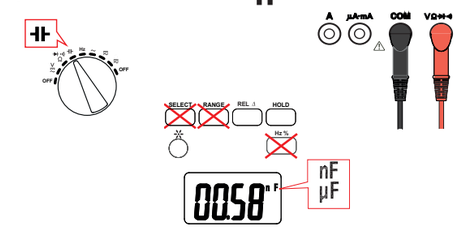


Continuity test

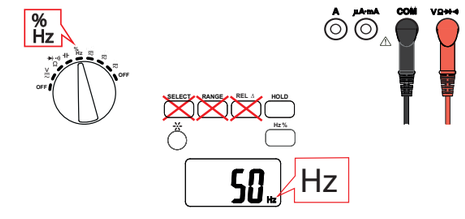


❗ R < 90 Ω = •))

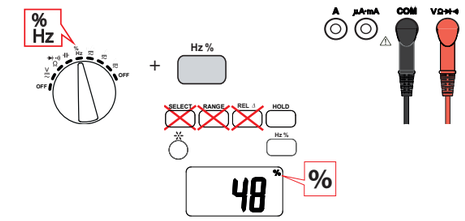
Capacitance measurement



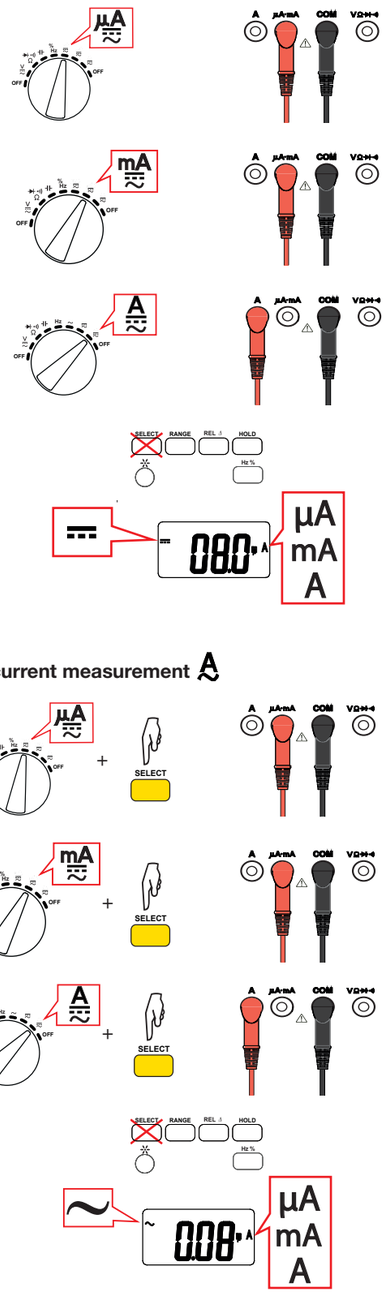
Measurement of the frequency of the signal (V~)



Measurement of the duty cycle (V~)



DC current measurement



AC current measurement

CHARACTERISTICS

ELECTRICAL CHARACTERISTIC

Reference conditions

Quantity of influence	Reference value
Temperature	23 ± 2°C
Relative humidity	45 to 75% RH
DC measurement	Without AC component
AC measurement	Sine wave without DC
Frequency measurement	Square wave without DC

The intrinsic uncertainties are stated in
± (x % of reading + Y points) from 10 to 100% of the range

AC voltage measurement

Range	Frequency	Intrinsic uncertainty	Input resistance
400.0 mV	40 Hz - 500 Hz	1 % + 10 ct	~ 11 MΩ
4.000 V		1 % + 5 ct	~ 10 MΩ
40.00 V			
400.0 V			
600 V			

DC voltage measurement

Range	Intrinsic uncertainty	Input resistance
400.0 mV	0.5 % + 3 ct	≥ 100 MΩ
4.000 V		~ 11 MΩ
40.00 V		~ 10 MΩ
400.0 V		
600 V		

DC current measurement
Intrinsic uncertainty: 1.5% + 3 ct

Range	Protection
400.0 µA	Fuse 0.63 A /600 V
4000 µA	
40.00 mA	
400.0 mA	
10.00 A*	Fusible 10 A /600 V

* 20 A for 30 s.

AC current measurement
Intrinsic uncertainty: 1,5% + 5 ct

Range	Frequency	Protection
400.0 µA	40 Hz - 500 Hz	Fuse 0.63 A /600 V
4000 µA		
40.00 mA		
400.0 mA		
4.000 /10.00 A*		Fuse 10 A /600 V

* 20 A for 30 s.

Diode test

Range	Intrinsic uncertainty	No-load voltage
4.000 V	10 %	~ 1.5 V

Resistance measurement

Range	Intrinsic uncertainty	Observation
400.0 Ω	0.5 % + 3 ct	No-load voltage: approx. 0.4V
4.000 kΩ	0.5 % + 2 ct	
40.00 kΩ		
400.0 kΩ		
4.000 MΩ		
40.00 MΩ	1.5 % + 3 ct	

Continuity measurement

Range	Observations
400.0 Ω	- No-load voltage: approx. 0.4V - •)) : R < 90 Ω ± 40 Ω

Capacitance measurement

Gamme	Incertitude intrinsèque	Remarque
50.00 nF	1.5 % + 15 ct	The response time may be long at high values
500.0 nF	2 % + 5 ct	
5.000 µF	5 % + 5 ct	
50.00 µF		
100.0 µF		

Measurement of frequency and duty cycle (Hz% key) in voltage and current
Function limited to industrial frequencies.
Minimum input level: 10% of the range in voltage and 55% of the range in current.
The values of the duty cycle are indicative.

Frequency measurement (input V)
The “Hz” setting eliminates the constraint of the limited pass band in voltage measurements.

Range	Minimum input voltage	Intrinsic uncertainty	Observa-tion
5.000 Hz	2 Vpp	0.1 % + 3 ct	Given for a square wave
50.00 Hz			
500.0 Hz			
5.000 kHz			
50.00 kHz			
500.0 kHz			
5.000 MHz			

ENVIRONMENTAL CONDITIONS

Indoor use
Altitude < 2.000 m
Degree of pollution: 2

	In use	In storage
Temperature	-10 °C ... +50 °C	-20 °C ... +60 °C
Relative humidity	≤ 80 %RH (without condensation)	≤ 70 %RH (without condensation)

CONSTRUCTIVE CHARACTERISTICS

Dimensions L x W x H: 181 x 92 x 57 mm
Weight: approx. 400 g

POWER SUPPLY

Battery: 2x1.5V AA/LR6
Mean battery life: ~400 hours
Auto power off delay: After 30 minutes without action on the keys and/or on the switch.

COMPLIANCE WITH INTERNATIONAL STANDARDS

Compliant with standards IEC 61010-1 and IEC 61010-2-033 for 600V CAT III installations.
Maximum input voltage: 600V between terminals.

ELECTROMAGNETIC COMPATIBILITY

Emissions and immunity in an industrial environment per EN 61326-1.

MAINTENANCE

Except for the fuse and the batteries, the instrument contains no parts that can be replaced by personnel who have not been specially trained and accredited. Any unauthorized repair or replacement of a part by an “equivalent” may gravely impair safety.

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. Do not use alcohol, solvents, or hydrocarbons.

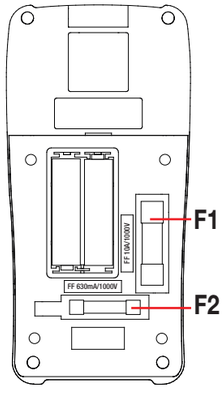
REPLACEMENT OF THE BATTERIES

The ⊟ symbol indicates that the batteries are dead and must be replaced.
To replace the batteries, proceed as follows:
- Disconnect the unit completely and turn the rotary switch to OFF;
- Remove the jacket;
- Unscrew and remove the 4 battery compartment cover screws;
- Remove the old batteries and insert the new ones, with the polarities as indicated.

Spent batteries must not be treated as ordinary household waste. Take them to the appropriate recycling collection point.

REPLACING THE FUSE

When the measurement current exceeds the current rating of the fuse, the protection fuse may blow.



For safety reasons this fuse must always be replaced by an identical model:
F1: 10x38, type FF, 10A/600V
F2: 6.3x32, type FF, 630mA/600V

When the current measured exceeds the rating of the fuse, the fuse may blow.

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.

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

TO ORDER

DMM 141 ..... P06231422Z

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