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1. GENERAL INSTRUCTIONS

Thank you for purchasing a MTX 204. For best results from your instrument:

- read this user manual carefully,
- comply with the precautions for use.

1.1. Precautions and safety measures

This device is compliant with safety standard IEC 61010-2-033, the leads are compliant with IEC 61010-2-031, and the current sensors are compliant with IEC 61010-2-032, for voltages up to 600 V in category IV or 1,000 V in category III. Failure to observe the safety instructions may result in electric shock, fire, explosion, or destruction of the instrument and of the installations.

1.1.1. Symbols



WARNING, DANGER! The operator should refer to this user's manual whenever this danger symbol appears.



WARNING! Risk of electric shock. The voltage on the parts marked with this symbol may be dangerous.



Earth terminal.



Equipment protected throughout by double or reinforced insulation.











The rubbish bin with a line through it indicates that, in the European Union, the product must undergo selective disposal in compliance with Directive WEEE 2002/96/EC. This equipment must not be treated as household waste



The CE marking indicates conformity with European directives, in particular LVD and EMC.



Battery.

	Alternating current.
	Direct current.
	AC or DC
	Fuse (FUSED)
	Capacitor, capacitance
	Diode
	Resistance
	Important instruction.

1.1.2. Definitions of the measurement categories

Measurement category II corresponds to measurements taken on circuits directly connected to low-voltage installations.

Example: power supply to domestic electrical appliances and portable tools.

Measurement category III corresponds to measurements on building installations.

Example: distribution panel, circuit-breakers, machines or fixed industrial devices.

Measurement category IV corresponds to measurements taken at the source of low-voltage installations.

Example: power feeders, meters and protection devices.

2. INSTRUMENT OVERVIEW

2.1. Delivery condition

Check completeness of the delivery against your order.

- Multilingual user manual on paper
- a set of 2 batteries AA or LR6
- Test lead elbowed 1,5 m red with probe tips
- Test lead elbowed 1,5 m black with probe tips

2.2. Accessories and spares

Spares

Set of Test lead RD/BK with test probes-elbowed male banana plugs PVC

Set of Test lead RD/BK with test probes-elbowed male banana plugs silicon

Accessories

Test probes cat III/IV

Crocodiles clips

For the accessories and spares, consult our web site:

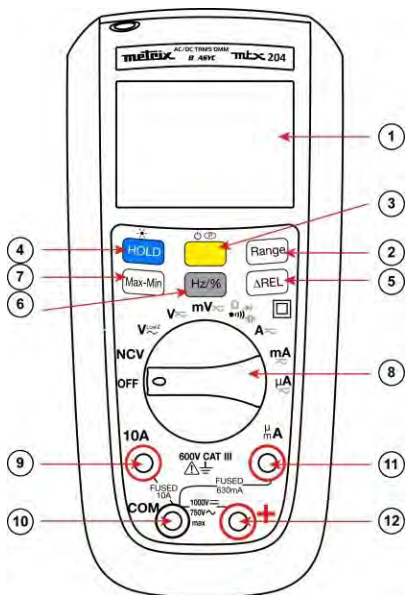
www.chauvin-arnoux.com



2.3. Functions

The MTX 204 is an instrument for measuring electrical quantities that groups the following functions:

- AC, DC, or AC+DC voltage measurement,
- AC, DC or AC+DC current measurement,
- resistance measurement,
- continuity measurement with beeper,
- diode test,
- capacitance measurement,
- non-contact voltage detection

2.4. Device description



1	Display (See §. 2.5).
2	Range key : operative in VAC, VDC, VLOWZ, Ω , C, AAC, ADC ranges..
3	<p>Yellow key : MODE AC/DC</p> <p>The AC+DC mode is selected (as default) in V and in A.</p> <ul style="list-style-type: none"> • Switch to AC or DC mode by briefly pressing this key (short beep). • The current mode is displayed on the LCD. • To disable the Sleep mode, hold down  while turning the meter on. • Sleep mode is disabled and symbol  (permanent) won't display any longer.
4	<p>Hold key :</p> <ul style="list-style-type: none"> • Holds the display on the current value and freezes it (short press). • A second short press returns the multimeter to normal mode. • This key is operative in all ranges (excepted NCV).
5	ΔREL key (relative mode)
6	Hz/% key (frequency/duty cycle)
7	Max-Min key
8	Switch.
9	Input terminal for AC and DC current measurement to 10A
10	Common (return) terminal for all measurements
11	Input terminal for voltage, resistance, continuity, diode, and capacitance measurements
12	Input terminal for AC,DC and AC+DC microamps and milliamp measurements to 600mA

The appended table sums up the functions assigned to the keys and to the switch.

2.5. Display

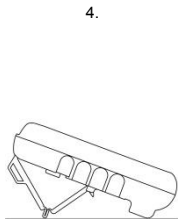
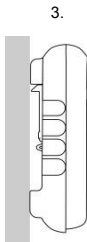


Item	Description	Item	Description
1	Display Hold is enabled.	8	F, A, V, % – Farads, Amperes, Volts, or duty cycle
2	AC, DC or AC+DC voltage or current	9	n, m, μ decimal prefix
3	Auto measurement	10	Max-Min
4	Diode test is selected.	11	Autoshutdown is enabled.
5	Continuity measurement is selected	12	Battery is low and should be changed.
6	Ω (resistance) or Hz (frequency, AC only)	13	Relative mode
7	M, k - decimal prefix		

2.6. Fixation and stand

The meter can be used in different positions for a convenient and good reading:

1. on the table
2. on a wall, or an edge with the sheath supplied or with the optional Multifix accessory,
3. on a metallic door with our magnetic sheath
4. with the stand



3. USE

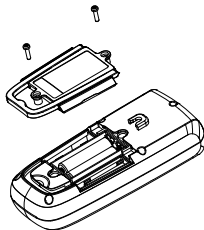
3.1. Precautions for use

- | | |
|---|---|
| <ul style="list-style-type: none">• The operator and/or the responsible authority must carefully read and clearly understand the various precautions to be taken in use.• Do not use the instrument in an explosive atmosphere or in the presence of inflammable gas or smoke.• Do not use the instrument on networks with a rated voltage or category higher than those mentioned.• Respect the maximum rated voltages and currents between terminals and in relation to the earth.• Do not use the instrument if it seems damaged, incomplete or incorrectly closed• Before each use, check the condition of the cable insulation, the unit and the accessories. | <ul style="list-style-type: none">• All elements on which the insulation is damaged (even partially) must be put out of service for repair or disposed at waste.• Use cables and accessories for voltage according to IEC 61010-2-031 and measurement 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.• Respect the environmental conditions of use.• Use personal protection equipment when conditions require it.• Keep your hands and fingers away from the unused terminals of the device. When handling sensors or test probes, do not place fingers beyond physical finger guard. |
|---|---|

3.2. First use

Place the batteries in the device as follows:

1. Use a screwdriver, unscrew all the battery cover screws on the back of the meter.
2. Place the batteries in the casing, respect polarity.
3. Screw back battery cover screws







It is recommended to follow this procedure when you use the meter for the first time, or after long time without use:

- Start the meter; make sure that all segments are displayed.
- Check that on Continuity position, and without any input the meter display **OL**.
- Take out both cords and short circuit, the beeper should sound.
- Turn the rotary switch on V and check a known voltage (for example a battery) and make sure voltage is correct.
- When all the steps above are correct, you can start to use the meter.

3.3. Backlight and Torch light

Then pressing the  key for more than 2s, both LCD backlight (blue) and torch light (white) will light up.

Press again  for more than 2s to shut down the backlight.



On NCV position the backlight will blink red if AC live voltage is detected.

As default, the multimeter is set to automatic mode (AUTO). Whatever the quantity being measured, pressing RANGE switches the instrument to manual mode to let you select the desired range.

3.4. Measuring AC, DC or AC+DC voltages




The meter measures AC or DC voltage. To minimize risk when measuring an unknown voltage, make sure to measure both AC and DC voltage

1. Turn the rotary switch to  (10 M Ω),  (500 k Ω).






2. Toggle between AC or DC voltage measurement by pressing the yellow button (in VlowZ : only AC measurement available).
3. Connect the red test lead to the + terminal and the black test lead to the **COM** terminal.
4. Measure the voltage by touching the probes to the desired test points of the circuit:



To avoid to measure ghost voltage, choose , impedance of the DMM is lower in Low Z (500 k Ω).

There are two ranges in the mV setting. As default, the 600 mV range is selected. Pressing RANGE switches the instrument to 60 mV to measure weak voltages.

3.5. Measuring AC, DC or AC+DC current

1. Turn the switch to   or .
2. Toggle between AC or DC current measurement by pressing the yellow key.
3. Connect the red test lead to either A, or mA/ μ A terminal and black test lead to the **COM** terminal.
4. Break the circuit path to be measured. Then connect the test leads across the break and apply power.
5. Read the measured current on the display.

Do not exceed the current limits: 10A in the 10A range and 630mA in the μ A and mA range.

MTX 204, 10A range




MTX 204, μ A range



3.6. Measuring continuity

To avoid measurement errors and the risk of an electric shock, before making continuity measurements on a circuit, check that there is no voltage in the circuit.

1. Turn the rotary switch to  make sure power is disconnected from the circuit to be measured.
2. Connect the red test lead to the + terminal and the black test lead to the COM terminal
3. Detect the continuity by touching the probes to the desired point of the circuit, if the resistance is under 50Ω , the beeper will sound, designating a short circuit. If the resistance is above 600Ω , the meter displays **OL**, designating an open circuit.



3.7. Measuring resistance




To avoid measurement errors and the risk of an electric shock, before making resistance measurements on a circuit, check that there is no voltage in the circuit.

With the continuity mode selected, press the yellow button once to activate the resistance measurement. Touch with the test probes the desired point of the circuit and read the measured resistance on the display. If resistance is above $60\text{M}\Omega$ the meter will display **OL**.

3.8. Testing Diodes



To avoid measurement errors and the risk of an electric shock, check, before testing diodes, that there is no voltage in the circuit.

1. Turn the rotary switch to  make sure power is disconnected from the circuit to be measured.
2. Press the **yellow** button twice.
3. Connect the red test probe to the anode side and black test lead to the cathode side of the diode being tested.
4. Read the forward bias voltage value on the display.
5. If the polarity of the test leads is reversed with diode polarity or forward bias voltage is above 3V, the display reading shows **OL**.

This can be used to distinguish the anode and cathode sides of the diode.




3.9. Measuring capacitance



To avoid measurement errors and the risk of an electric shock, before making capacitance measurements on a circuit, check that there is no voltage in the circuit.

Only Autorange is available in this mode.

1. Turn the rotary switch to  make sure power is disconnected from the circuit to be measured.
2. Connect the red test lead to the **+** terminal and the black test lead to the **COM** terminal.
3. Press the **yellow** button three times.
4. Touch the probes to the capacitor leads.
5. After allowing reading to stabilize, read the capacitance value on the display.

In the capacitance range 100mF the measure can be



long and exceed 15s.

3.10. Non Contact Voltage Detection (NCV)



The NCV mode detects only AC voltages connected to the network with respect to ground. Always check for the presence of a voltage with a voltage measurement. To measure the absence of a voltage, use a VAT (www.chauvin-arnoux.com)

Network : 230V only, 50 Hz (sensitivity : 10 mV)

The meter can detect AC live voltage without contact.
The NCV detection zone is displayed on the sheath.

1. Remove all test leads from the Meter
 2. Turn the rotary switch to **NCV**
 3. Approach live conductor from LCD (position of the Meter may affect measurement)
- If no AC live voltage is detected the Meter will display EF and product will be silent.
 - If AC live voltage is detected product will show 4 different levels:
 - from - to ----, at – buzzer will sound discontinuously, at ---- buzzer will sound continuously, and backlight will blink red. Basic detection voltage is for 220/230V.
 - NCV is only for indication purpose and shouldn't be used for measurement, or to detect the absence of voltage.



The NCV mode has an indicative meaning only and must not be used either for measuring nor detect the absence of voltage.

An engraved marking on the sheath indicates the position of the antenna for NCV indication.

3.11. VlowZ

The Vlow Z position measures AC voltage with lower impedance (500k Ω) than normal voltage measurement, this function is used to avoid measuring ghost voltages.

3.12. Other measurements

- **Δ REL (relative mode)**

Measures the relative difference. The relative mode is available for the VLowZ, V, mV, Ω , C, A, mA, and μ A functions.

- **Hz/% (frequency/duty cycle)**

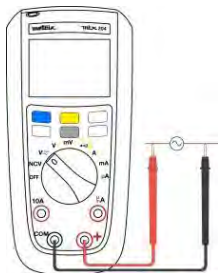
Selects measurement of the frequency or duty cycle.

In the AC voltage or current mode, press the **Hz/%** key repeatedly to display the frequency or duty cycle mode or return to the normal mode.

Frequency measurement in Voltmeter and Ammeter operation is available up to 1kHz.

- **Max-Min**

In measurement mode, press **Max-Min** repeatedly to display Max, Min, or Max-Min. A long press on Max-Min restores the normal mode.



4. TECHNICAL SPECIFICATIONS

Reference conditions

Temperature	+23°C \pm 3°C.
Humidity	45% to 75% RH Supply Full battery (no low bat signal display) or accu. 1.5 VAA Ni-MH
Freq. for AC signal	45-65 Hz
Pure AC signal	
Electric field	<1 V/m
Magnetic field	<40A/m

Function	MTX 204 TRMS AC+DC			Accuracy		
	Range	Measurement range	Resolution	AC	DC	AC+DC
Voltage ADP	60 mV	10.00 mV – 59.99mV	0.01 mV	1% + 6D	1% + 6D	1% + 6D
	600 mV	60.0 mV – 599.9 mV	0.1 mV			
Tension BP / BW 1 kHz Volts (10 M Ω) VlowZ (400 k Ω – AC only)	6 V	0.600 V – 5.999 V	0.001 V	0.5% + 4D	0.2% + 2D	1.5% + 4D
	60 V	6.00 V – 59.99 V	0.01 V			1% + 4D
	600 V	60.0 V – 599.9 V	0.1 V			
	750 V	600 V – 750 V	1 V			
	1000 V	600 V – 1000 V	1 V		0.2% + 2D	
Current μ A input 100 Ω	600 μ A	10.0 μ A – 599.9 μ A	0.1 μ A	1% + 5D	0.5% + 3D	1% + 5D
	6000 μ A	600 μ A – 5999 μ A	1 μ A	0.5 % + 5D		0.5 % + 5D
Current mA input 1 Ω	60 mA	6.00 mA – 59.99 mA	0.01 mA	0.5 % + 5D	0.5% + 3D	0.5 % + 5D
	600 mA	60.0 mA – 599.9 mA	0.1 mA			
Current A input 0.01 Ω	6 A	0.002 A – 5.999 A	0.001 A	1% + 5D	1% + 5D	1% + 5D
	10 A	6.00 A – 10.00 A	0.01 A	0.5 % + 5D	0.5 % + 5D	0.5 % + 5D
Frequency	10 Hz	2.000 Hz – 9.999 Hz	0.001 Hz	0.1 % + 3D		
	100 Hz	10.00 Hz – 99.99 Hz	0.01 Hz			
	1 kHz	100.0 Hz – 999.9 Hz	0.1 Hz			

Function	Range	Measurement range	Resolution	Accuracy	
Diode test	3 V	3.000 V	0.001 V	10 %	
Resistance	600 Ω	1.0 Ω – 599.9 Ω	0.1 Ω	0.5 % + 5D	
	6 k Ω	0.600 k Ω – 5.999 k Ω	0.001 k Ω		
	60 k Ω	6.00 k Ω – 59.99 k Ω	0.01 k Ω	1 % + 5D	
	600 k Ω	60.0 k Ω – 599.9 k Ω	0.1 k Ω		
	6 M Ω	0.600 M Ω – 5.999 M Ω	0.001 M Ω		
	60 M Ω	6.00 M Ω – 59.99 M Ω	0.01 M Ω	3% + 5D	
Capacitance	10 nF	1.000 nF – 9.999 nF	0.001 nF	10% + 10D	
	100 nF	10.00 nF – 99.99 nF	0.01 nF	5% + 5D	
	1000 nF	100.0 nF – 999.9 nF	0.1 nF	2% + 5D	
	10 μ F	1.000 μ F – 9.999 μ F	0.001 μ F		
	100 μ F	10.00 μ F – 99.99 μ F	0.01 μ F		
	1000 μ F	100.0 μ F – 999.9 μ F	0.1 μ F		
		10 mF	1.000 mF – 9.999 mF	0.001 mF	5% + 5D
		100 mF	10.00 mF – 99.99 mF	0.01 mF	
Continuity	600 Ω	Beep < 50 Ω			
NVC	Non contact voltage detector 230 V – 50 Hz				

5. SPECIFICATIONS

Environmental conditions

Reference temp.	23°C ± 3°C
Use temperature	- 20°C to 55°C
Storage temp.	- 40°C to 60°C
Relative humidity	< 90 % RH (up to 45°C) without condensation

Power supply

Batteries	2 x 1.5V AA/LR6/NEDA15A
Battery life	approx. 500 hours in VLowZ / VAC without backlight

Mechanical features

Dimensions (with sheath)	170 x 80 x 50 mm
Weight	320g (with batteries)
Packing blister	266 x 132 x 70 mm
Protection rating	IP 54

Compliance with international standards

Safety	IEC 61010-1 / IEC 61010-2-031 / IEC 61010-2-033
EMC	complies IEC 61326-1

Safety

Double insulation - class 2 insulation	
Degree of pollution	2
Indoor use	
Altitude	<2000m
	Category CAT-III, 600V max. with respect to ground

6. 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.


6.1. Cleaning

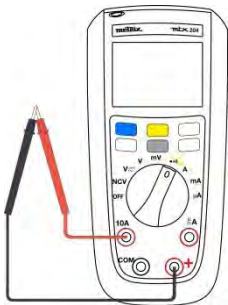
Disconnect the instrument completely and turn the rotary switch to **OFF**. Use a soft cloth, dampened with soapy water. Rinse with a damp cloth and dry rapidly with a dry cloth or forced air. Do not use alcohol, solvents, or hydrocarbons.

6.2. Testing the 10A Fuse



To avoid electrical shock, disconnect everything connected to the instrument and set the switch to OFF before replacing the fuses.


1. Turn the rotary switch to  position and toggle the yellow key.
2. Plug a test lead into the **+** terminal and touch the probe to the A or mA/ μ A according to the fuse to be tested.
3. A good A terminal fuse is indicated 000.0 Ω to 000.2 Ω .
4. If the display reads **OL**, replace the fuse and test again
5. If the display shows any other value, have the meter serviced.



6.3. Replacement of the battery and fuse



To avoid false readings, which could lead to possible electric shock, or personal injury, replace the batteries with LR6 batteries as soon as the

battery indicator  appears

For safety reasons the fuse must always be replaced by an identical model.

Disconnect test leads before opening the battery door.

F1: Fast Fuse 630mA 1000V 10kA size : 6.3 x 32, UK standard

F2: Fuse 10A 1000V 30kA size : 10 x 38, UK standard

7. WARRANTY

Except as otherwise stated, our warranty is valid for **24 months** starting from the date on which the equipment was sold. Extract from our General Conditions of Sale provided on request.

- 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.