

NEW



MTX 3297Ex

**TRMS digital multimeter with
intrinsic safety**



Contents

1. Reminder of the fundamentals
2. Product presentation
3. Applications & Markets
4. Competition
5. Selling tools
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MTX 3297Ex expands the ASYC IV family

The MTX 3297Ex is an intrinsically safe TRMS digital multimeter that completes the Asyc IV series of industrial multimeters.



MTX3290 et MTX3291

**INDUSTRIAL
MAINTENANCE**



MTX3292

**PROCESS
CONTROL**



MTX3293

**ELECTRONIC
MAINTENANCE**



MTX 3297Ex

" Ex"

1 – Reminder of the fundamentals



An **explosive atmosphere (ATEX)** is a mixture of air, in the atmospheric conditions, and inflammable substances in the form of gas, vapour or dust in which, after inflammation, combustion is propagated to the entire unburned mixture.

The ATEX regulations require all site managers to **control the risks linked to explosion of such atmospheres**, like any other professional risk.

The **use of suitable equipment** is part of risk control

The **MTX 3297 Ex** is a TRMS digital multimeter **designed for explosive atmospheres** as per the requirements of European directive 2014/34/UE.

2.1 – Intrinsic safety and permanent use in explosive zones



The MTX 3297 Ex is certified for **IIC (gas) zones 0, 1 and 2, IIIC (dust) zones 20, 21 and 22** and Mines (firedamp), allowing **permanent use** in the oil, chemicals, pharmaceutical and mining industries.

The **MTX 3297 Ex** has received the **Ex certification** adopted by the countries in the European Union and Norway, Iceland, Switzerland, Turkey and Liechtenstein, and the **IEC Ex certification** developed by the International Electrotechnical Commission (IEC) to harmonize and simplify the equipment certification process for hazardous zones worldwide)



L C I E

Ex Certification:

Mine: Ex I M1
 Gas: Ex II 1 G
 Dust: Ex II 1 D

IEC Ex certification:

Mine: Ex ia I Ma
 Gas: Ex ia IIC T4 Ga
 Dust: Ex ia IIIC T135° Da

2.2 – Outside Ex zones: a high-performance industrial multimeter

Complies with IEC 61010-2-033
1000V CAT III / 600V CAT IV

Double display

1 main measurement / 1 key:

- Voltage
- Current
- Resistance (continuity, semiconductor junctions)
- Capacitance
- Frequency (duty cycle/pulse width)
- Temperature

AC/DC current measurement with clamp.

- Programmable I/O ratio



TRMS AC+DC acquisition

60,000-count resolution

Resolution from 1 μ V for voltage,
0.01 μ A for current

Bargraph with central zero mode

Low-pass filter for measurements on
PWM signals

Min, MAX, Peak+, Peak- and
 Δ relative functions

V_{LowZ} low-impedance AC voltage in
the presence of disturbance or
"stray" voltages.

2.3a – An ergonomic, rugged multimeter



The MTX 3297 Ex multimeter retains the widely-appreciated features of the **ASYC IV Series**

Large backlit monochrome screen with double display

Electronic function switch with **illuminated keys**

A moulded casing ensuring **excellent handling** and **protection against shocks and falls**.

Its red colour and strengthened treatment against electrostatic phenomena distinguish it from the other models in the ASYC IV Series.

IP67 ingress protection making it **liquid and dust-proof** to maintain the instrument's performance levels and specifications.

2.3b - An ergonomic, rugged multimeter

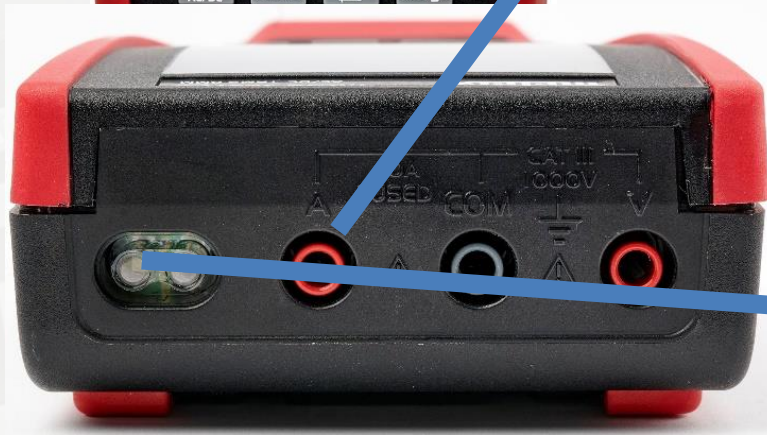


Terminal **with reminder and connection check** on the display.

Detection and indication of the **presence of a hazardous voltage** on the instrument's terminals.

Single terminal for current measurement

Automatic switching to current measurement when a connector is inserted into the A terminal



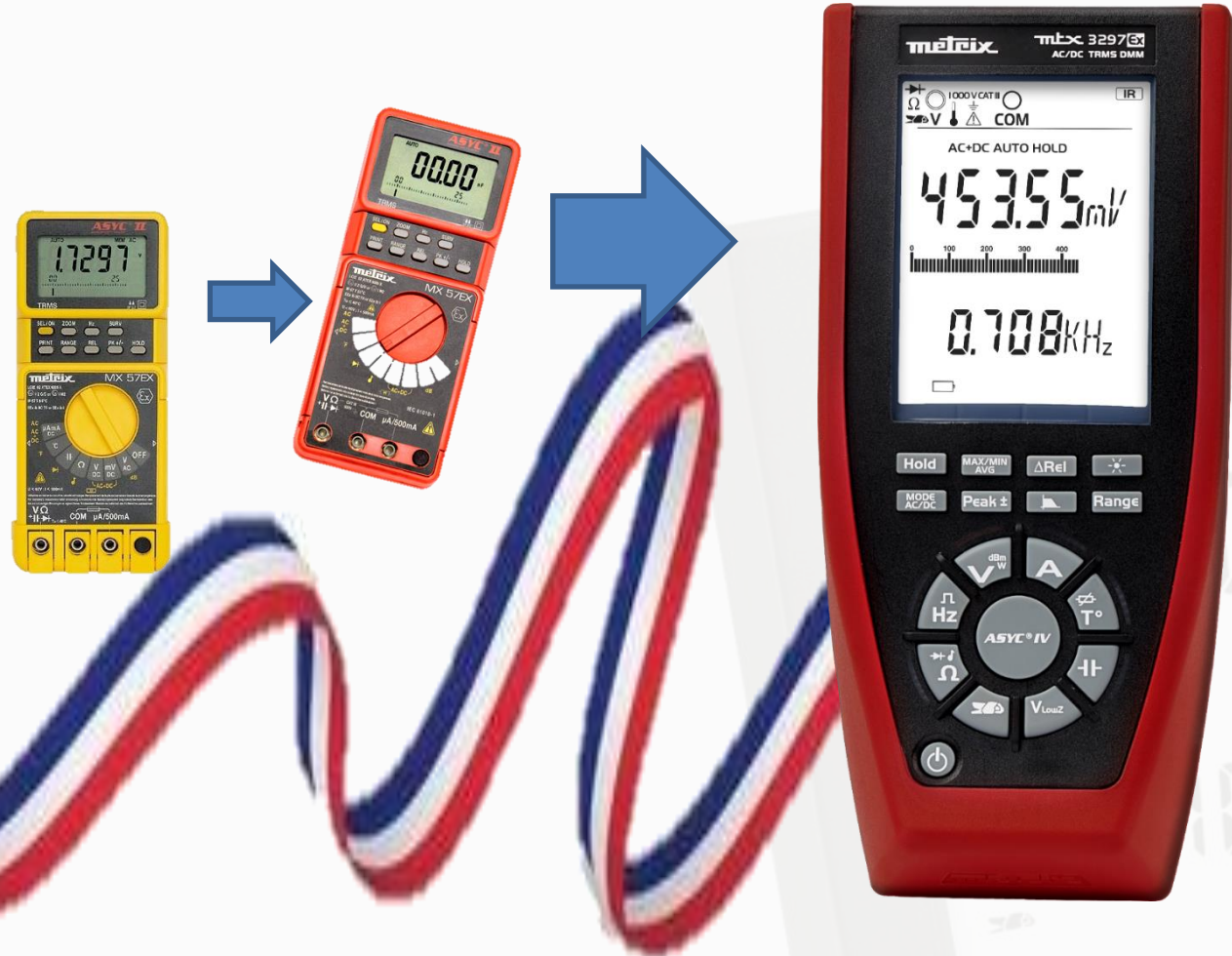
3-year warranty

Isolated optical communication

2.4 – Quality and know-how "Made in France"

Latest-generation Ex / IEC Ex multimeters

The **MTX 3297Ex** replaces the **MX57Ex** & **MX0057CX HD** models



Designed and manufactured in FRANCE

- High added-value product
- Niche market with very limited competition.
- Performance in and outside ATEX zones
- Natural complement to the “multimeter” offer for industrial maintenance.
- It is a “Trojan horse” for creating opportunities and selling a variety of other “Non ATEX” products.
- Certified” spare parts are not referenced and stocked everywhere; it’s a way of building customer loyalty.
- French design, manufacture and certification, a guarantee of reliability
- You don't have to be an ATEX expert to offer this product:
 - As the MTX 3297 is certified for the highest risks such as dust, gas and mines, there are no restrictions or cases of non-use.
 - Ex (ATEX) and IEC Ec certifications cover most countries and export zones.



To order

- 1 A multimeter
- 2 4 lithium batteries (see the document "ATEX/IECEX Instructions Manual")
- 3 2 straight-elbowed safety cables (red, black)
- 4 2 test probes (red, black)
- 5 A User's Manual on paper
- 6 A multilingual Quick Start Guide
- 7 A test report with measurement results
- 8 A document entitled "ATEX/IECEX Instructions Manual"

Reference	Description
MTX3297	DMM NUM 60KPTS TRMS EX (State at delivery below)
"Ex-certified" spares	recommended references to ensure that the instrument's compliance for use in Ex zones
AT0097	F10X38EX- _10A1000V_30X1 (single)
HX0097	PILE 1.5V AA/FR6 EX X4 (set of 4 batteries)

About the certified batteries :

These AA FR6 Li-FeS2 (lithium, iron disulphide) offer 7 times the battery life of standard alkaline batteries, they are 33% lighter, are equipped with integrated thermal protection, demonstrate minimal capacity loss at low temperature and can be stored for up to 10 years.

For transport, you must comply with the measures and constraints indicated for lithium-based technology.

In non-hazardous areas, the MTX 3297Ex can use all Asyc IV series accessories to extend its use and facilitate measurements.

3 - Applications & Markets



Underground mining operations



Oil industry: extraction, storage, transformation (refineries) and distribution



Electricity generation, coal and gas-fired power plants



Arms industry (explosives and gunpowder), festive pyrotechnics (fireworks)



Agriculture (dust and stored chemicals)



Machining and processing of metals (explosive dust during mechanical surface treatment)



Extraction, storage and transport of natural gas



Chemical industries



Pharmaceutical industries



Agri-food (dust: flour, sugar, cocoa, etc.)



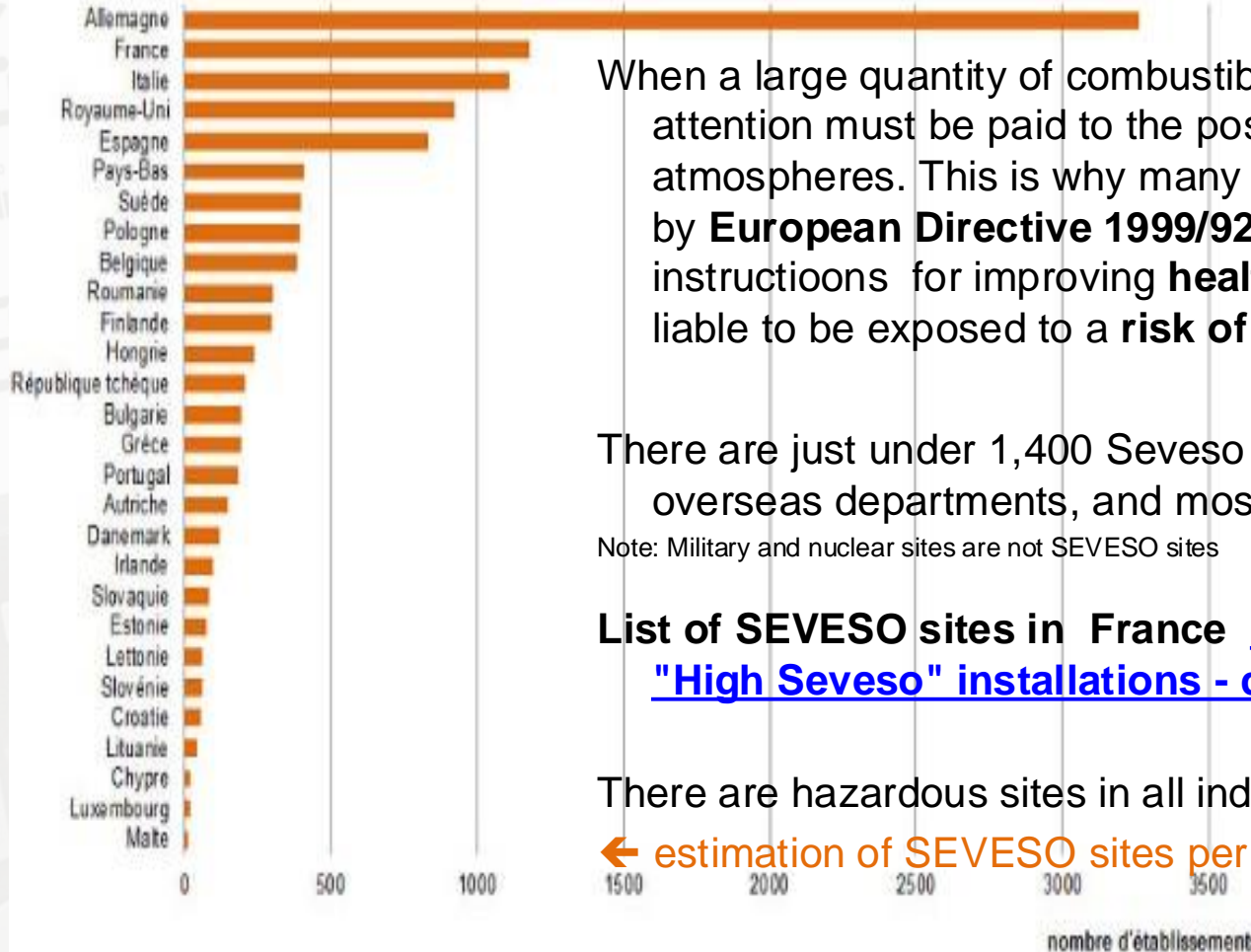
Paint shops: overspray (undeposited vapourized solvent, paint or varnish).



Wood processing industry (dust)

3 - Applications & Markets

SEVESO Sites



When a large quantity of combustible products is handled or stored, attention must be paid to the possibility of a risk of explosive atmospheres. This is why many sectors and companies are concerned by **European Directive 1999/92/CE dated 16/12/99** on the minimum instructions for improving **health and safety protection** of workers liable to be exposed to a **risk of explosive atmospheres**

There are just under 1,400 Seveso sites in France, when you add in the overseas departments, and most of them include one or more Ex zones.

Note: Military and nuclear sites are not SEVESO sites

List of SEVESO sites in France <https://www.seveso.site> and [Maps of "High Seveso" installations - data.gouv.fr](https://data.gouv.fr)

There are hazardous sites in all industrialized countries :

← estimation of SEVESO sites per country in Europe

3 – Targets & Markets

Actors to contact



The maintenance team responsible for **maintenance in Ex zones and outside Ex zones**

The department responsible for electricity, energy and utilities

The Health & Safety officer is an essential actor for preventing workplace risks in companies.

The Ex referend liable to perform or supervise risk assessment and zone classification.

The site manager

The purchaser

The manufacturers or integrators of Ex equipment and installations



4 - Competition

Only 2 players on the market



FLUKE 28 II Ex
 Rec. Ex-VAT unit price
€1959,00



METRIX MTX 3297Ex
 Rec. Ex-VAT unit price
€1610,00

Competition

Outside Ex areas:

METRIX MTX 3297Ex :

- AC+DC
- Better resolution(s)
- Double display
- 60,000 counts as native
- Current with clamp (programmable ratio)
- Communication

FLUKE 28 II Ex

- Battery life (may depend on batteries, brands/models referenced).
- Number of batteries

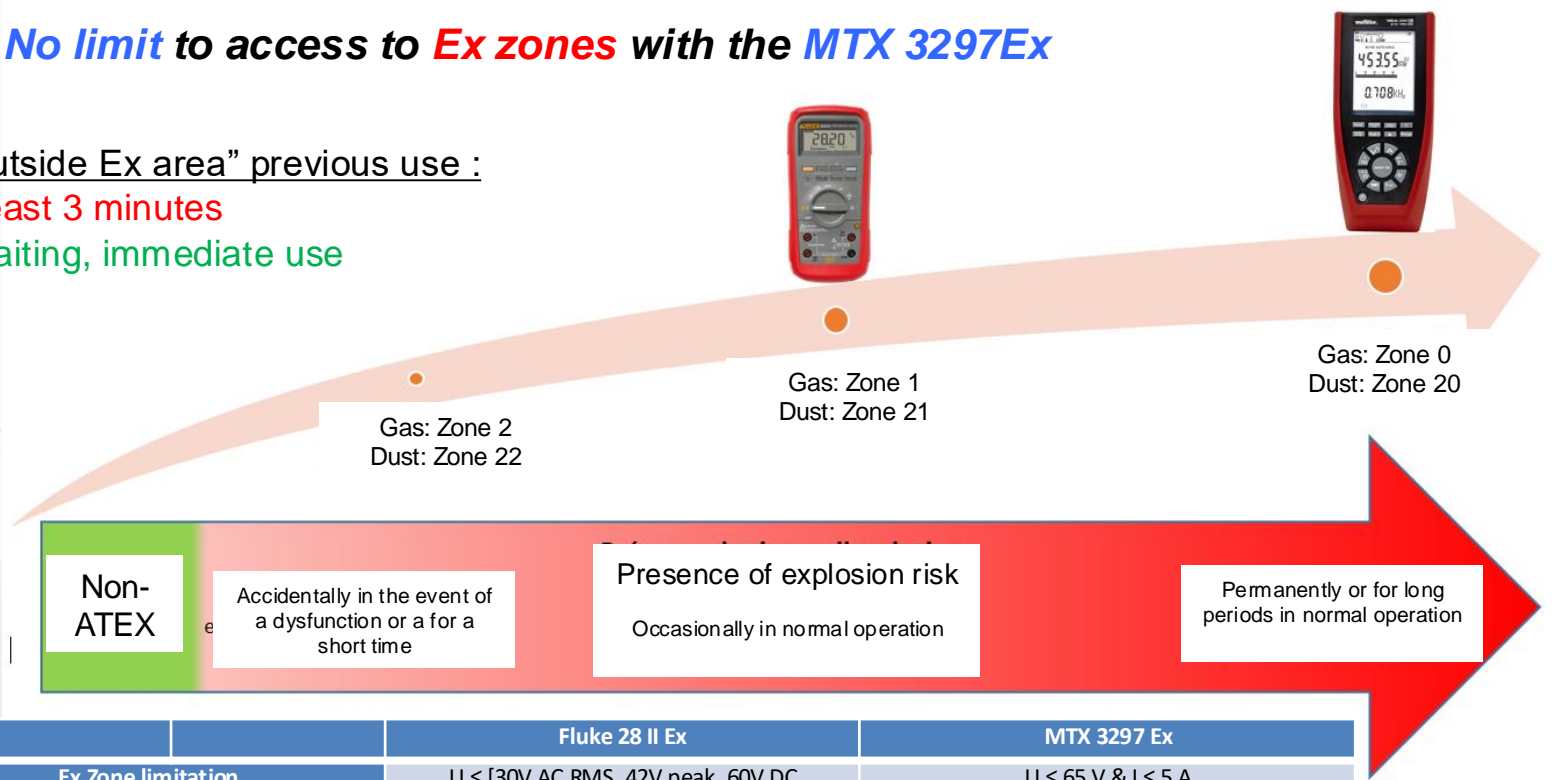
		Fluke 28 II Ex	MTX 3297Ex
Acquisition		AC TRMS / DC	AC+DC TRMS / AC TRMS / DC
Display		6,000 cts, backlit 20,000 cts (HR mode)	2 x 60,000 ct, backlit Bargraph with central zero mode
AC & AC+DC voltage	Max. calibre	1,000 V AC	1,000 V AC
	Best resolution	0.1 mV	0.001 mV
	Uncertainty	0.7% + 4 cts	0.5% + 0.3 pts
Vlowz		YES	YES
DC voltage	Max. calibre	1,000 V DC	1,000 V DC
	Best resolution	0.1 mV	0.001 mV
	Uncertainty	0.05% + 1 ct	0.05% + 25 cts
AC & AC+DC current	Max. calibre	10 A	10 A (20 A)
	Best resolution	0.1 µA	0.01 µA
	Uncertainty	1% + 2 cts	1% + 25 cts
DC current	Max. calibre	10 A	10 A (20 A)
	Best resolution	0.1 µA	0.01 µA
	Uncertainty	0.2% + 4 cts	0.8% + 20 cts
Current with clamp		-	YES
Resistance	Max. calibre	50 MΩ	60 MΩ
	Best resolution	0.1 Ω	0.01 Ω
	Uncertainty	0.2% + 1 ct	0.2% + 20 cts
Conductance		YES	OUI
Diode test	Range	2 V	3 V
	Uncertainty	2% + 1 ct	1% + 30 cts
Duty cycle / Pulse width		Y / N	Y / Y
Capacitance	Range	10 nF.. 9 999 µF (≈ 10 mF)	0,100 nF .. 60,00 mF
	Uncertainty	1% + 2 cts	3% + 5 pts
Frequency	Range	0.5 Hz .. 199.99 kHz	10,00 Hz .. 200 kHz
	Uncertainty	0.005% + 1 ct	0,1% + 1 pt
Temperature	Range	-200.0°C .. + 1090.0°C	-200°C .. + 800°C
	Uncertainty	1% + 10 cts	1% + 1,5 °C
Min/MAX/Peak+/Peak-		Y / Y / Y / N	Y / Y / Y / Y
dBm		-	YES
Resistive power (U ² /R)		-	YES
Communication		-	Optical/USB
Power supply /Battery life		3 x 1.5V AAA / 400 h	4 x 1.5V AAA / 350 h
Warranty		3 years	
Electrical safety		1000V CAT III / 600V CAT IV	
Ingress protection		IP67	

4 - Competition

2 – No limit to access to Ex zones with the MTX 3297Ex

Waiting time after an “outside Ex area” previous use :

- **Fluke 28 II Ex** : at least 3 minutes
- **MTX 3297Ex** : no waiting, immediate use



		Fluke 28 II Ex	MTX 3297 Ex
Ex Zone limitation		U ≤ [30V AC RMS, 42V peak, 60V DC	U ≤ 65 V & I ≤ 5 A
Ex certification	Mines:	Ex I M1	Ex I M1
	Gas:	Ex II 2 G	Ex II 1 G
	Dust:	Ex II 2 D	Ex II 1 D
IEC Ex certification	Mines:	Ex ia I Ma	Ex ia I Ma
	Gas:	Ex ia IIC T4 Gb / Zones 1 and 2	Ex ia IIC T4 Ga / Zones 0, 1 and 2
	Dust:	Ex ia IIIC T 130 °C / Zones 21 and 22	Ex ia IIIC T 135 °C / Zones 20, 21 and 22

The Fluke 28 II Ex in hand

Difficult to hold as much wider and thicker than MTX 3297Ex.
Firm shock-absorbing sheath, difficult to remove. Easier to reassemble.

Don't forget the kickstand when reassembling.

Battery door with 4 TORX screws: impossible to open without a specialized tool.

Dusty, uneven backlighting.

2 current terminals and 2 fuses.

In use, it's a multimeter with a more classic philosophy than the MTX 3297Ex :

The classic rotator vs. the electronic keyboard.

The obvious difference:

The quality and comfort of the MTX 3297Ex display.



MTX 3297Ex : marketing package / sales tools



Sales documentation



Advertising



Launch presentations :

- Internal
- External Distribution
- External End customer



Video



Roll-Up



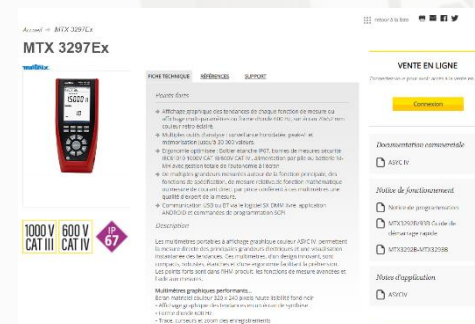
Social networks



Banner



Press release



Web page



Emailing

APPENDICES

Regulations

Explosion: the ingredients of a bad recipe...
The MTX 3297Ex in detail

1 – What is an Ex atmosphere – Regulations



An **explosive atmosphere** (Ex) is a mixture of air (in the prevailing atmospheric conditions), inflammable substances in the form of gas, vapour or dust in which, after inflammation, combustion is propagated to the entire unburnt mixture.

The Ex regulations require all site managers to control the risks related to the explosion of such atmospheres, just like for other risks in the workplace.

It is therefore crucial to assess the explosion risk in a company to identify all the places where explosive atmospheres may form.

In accordance with the European directives and the French Labour Code, Ex locations must be subdivided into zones and the equipment used must be suitable for those zones.

Depending on the time of exposure in the zone

An explosive atmosphere is present...	Gas / Vapour zone	Dust zone	Instrument categories
...permanently or for long periods in normal operation	0	20	1
...occasionally in normal operation	1	21	1 or 2
...accidentally, in the event of dysfunction or for a short time	2	22	1, 2 or 3

2 – The ATEX 2014/34/UE (Ex) directive in the field

The prevention of explosion risks in the workplace is the subject of a specific regulation.

The French regulation concerning explosive atmospheres, commonly referred to as the "ATEX« regulation, aims to improve protection of the health and safety workers liable to be exposed to the risk of an explosive atmosphere (**1999/92/CE directive dated 16th December 1999**), as well as improving **the instruments and protective systems intended for use in explosive atmospheres (2014/34/UE directive dated 26th February 2014)**.

The provisions of the French Labour Code impose several obligations for employers with regard to the risk of explosive atmospheres:

- ✓ application of the **general principles of risk prevention**,
- ✓ **assessment of the risks** including the **risk of explosion**,
- ✓ **classification of the work areas** (zoning),
- ✓ drafting of the **document concerning protection against explosions (DRPCE)**.

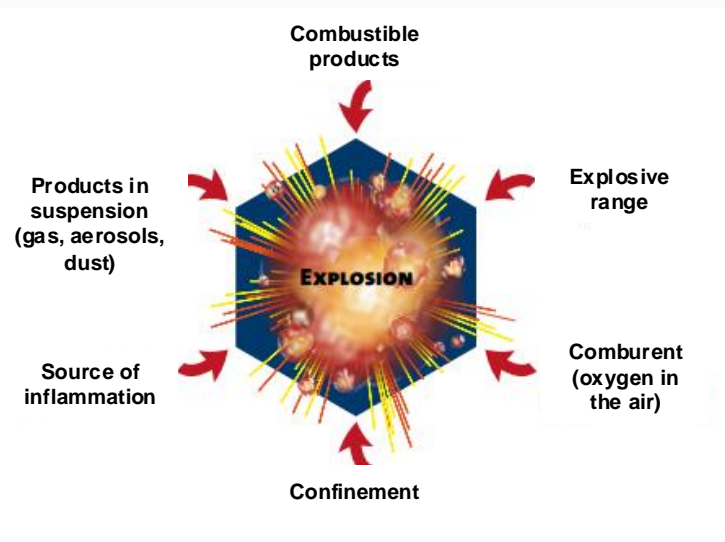
In particular, they specify:

- ✓ the **definition** of the **ATEX zones**,
- ✓ the **conditions of installation for the electrical and non-electrical equipment** in locations where explosive atmospheres may occur,
- ✓ the **implementation of organization measures** (sufficient, appropriate training, execution of the work on the basis of written instructions, formalization of an authorization system for the execution of hazardous work, in the event of interference),
- ✓ the **indication** of the locations where an explosive atmosphere may occur,
- ✓ the **drafting and updating of the DRPCE**, appended to the "single document"

Explosion: the ingredients of a bad recipe...

1 - The 6 conditions which must be present simultaneously for an explosion to occur

1. **Presence of a comburent:** usually the oxygen in the air.
2. **Presence of a combustible.**
3. **Presence of a source of inflammation.**
4. **Specific state of the combustible:** which must be in gaseous form, an aerosol or dust in suspension.
5. **Achievement of an explosive range:** range of concentration of the combustible in the air within which explosions are possible.
6. **Sufficient confinement.**

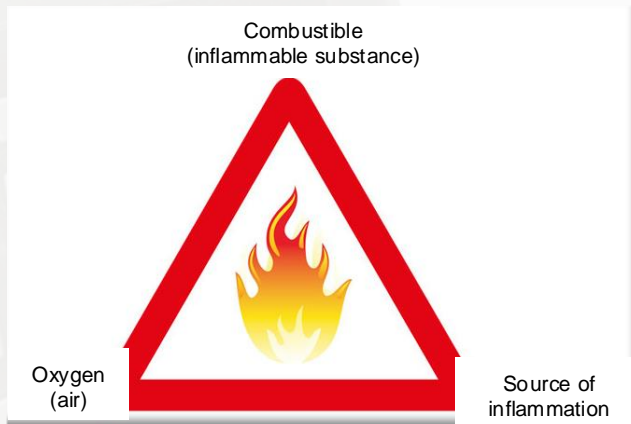


Explosion: the ingredients of a bad recipe...

2 - The combustibles and inflammable materials

Gas	Vapour	Dust
Methane	Petrol	Wood
Acetylene	Ethyl alcohol	Sugar
Butane	Solvent	Grain
Propane	Acetone	Starch
Hydrogen	...	Aluminium
...		...

Examples of inflammable substances which may form an explosive atmosphere when mixed with air:



Sectors	Explosive materials
Agricultural	Starch (wheat), bulk wheat, soft wheat flour, cornstarch, cocoa, malt, rice, soya flour, sugar, cellulose, wood flour, gas, explosive vapour
Metal	Milled, flaked or powdered aluminium, en paillettes, pulvérisé, copper, tin, silicon and zinc
Chemical	Soap, sulphur, vitamin C, bisphenol A
High-carbon materials	Asphalt, charcoal, graphite, lignite
Plastics, rubber	Raw and chlorinated rubber, polyethylene, polyester, polypropylene, polyurethane foam, viscose
Oil industries	Gas, explosive vapour
Mines	Explosive materials, carbon, coal, methane (firedamp)

Explosion: the ingredients of a bad recipe...

3 – The 13 types of sources of inflammation according to EN 1127-1

Substance	Flashpoint temperature	Autogenous ignition temperature
Ethylene	-136 °C (-276.8 °F)	490 °C (143.6 °F)
Propane	-104 °C (-152.2 °F)	470 °C (878 °F)
Butane	-60 °C (-76 °F)	288 °C (550.4 °F)
Diethyl ether	-45 °C (-113 °F)	160 °C (320 °F)
Ethanol	16.6 °C (61.9 °F)	363 °C (685.4 °F)
Gasoline	-43 °C (-45.4 °F)	280 °C (536 °F)
Diesel	62 °C (143.6 °F)	210 °C (410 °F)
Kerosene	60 °C (140 °F)	210 °C (410 °F)
Kerosene	38 to 72 °C (100 to 162 °F)	220 °C (428 °F)

- Hot surfaces
- Flames and hot gases
- Mechanically-generated sparks
- Electrical installations
- Transient currents, cathodic protection against corrosion (*metal structures, hulls of ships....anodes more negative than the metal to protect*)
- Static electricity
- Lightning
- Electromagnetic waves in the 9 kHz to 300 GHz frequency range.
- Electromagnetic waves in the 300 GHz to 3×10^6 GHz range or with a wavelength of 1,000 μm to 0.1 μm (spectral range)
- Ionizing radiation: *X rays, gamma rays*
- Ultrasound at frequencies higher than 20,000 Hz
- Adiabatic compression, shock waves,
- Chemical reactions
(NOTE: *in this last case, Ex is not applicable*)

The MTX 3297Ex in detail

Front / rear



Security labels

ON/OFF

Large SCREEN with 2 quantities for comfortable reading:

- Total dimensions: 78 x 55mm
- Height of main display: 12.7 mm
- Height of secondary display: 9.7 mm
- 61-segment bargraph with scale (indication of measurement range)

DIRECT-ACCESS SWITCH

- Concept of « 1 Quantity / 1 Key »
- Coloured LEDs indicating the measurement function selected.

The MTX 3297Ex in detail

In the field

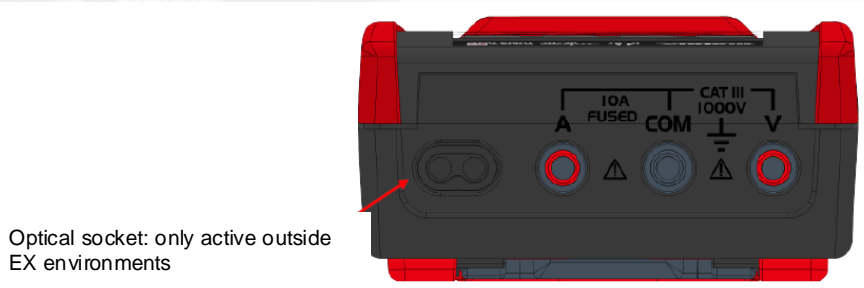
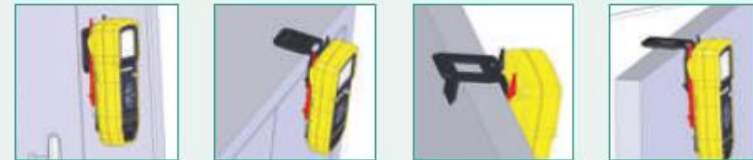


- Placed flat
- With the stand
- With the Multifix accessory

The MTX 3297 Ex facilitates measurement and reading while leaving your hands free.

MULTIFIX MOUNTING
ACCESSORY REF.: P01102100Z

When used with the compatible soft cases and bags, it facilitates transport and mounting of measuring instruments for more comfortable use



Optical socket: only active outside EX environments

The MTX 3297Ex in detail

Sequential functions of the switch's keys

	Press 1	Press 2	Press 3	Press 4	Press 5	Press 6	Shortpress
	V	dBm	W	V	dBm	W	... 0
	I	I	I	I	I	I	... 0
	Pt100	Pt1000	Pt100	Pt1000	Pt100	Pt1000	... 0
	Capa	Capa	Capa	Capa	Capa	Capa	... 0
	VLowZ	VLowZ	VLowZ	VLowZ	VLowZ	VLowZ	... 0
	R = 1	R = 10	R = 100	R = 1000	R = 1	R = 10	... 0
	Ω	Continuité	Diode	Ω	Continuité	Diode	... 0
	Frequency	Pos. duty cycle	Neg. duty cycle	Pos. pulse width	Neg. pulse width	Frequency	... 0

V_{LowZ}: 300 kΩ impedance
 Clamp ratio: in milli V / A

W= Display of the resistive power in relation to a reference resistance measured on the installation and saved to memory using the HOLD key (600 Ω by default)
 The function executed is $(\text{measured AC + DC voltage})^2 / R_{ref}$

dBm = Display of the measurement in **dBm** in relation to a reference resistance chosen by the user among 50 Ω, 75 Ω, 90 Ω and 600 Ω

DC duty cycle
 Display of the measurement of a logic signal in % (TTL, CMOS ...) in AC+DC mode

DC+ duty cycle
DC- duty cycle
PW Pulse width



VOLTAGE MEASUREMENT MAIN QUANTITY V

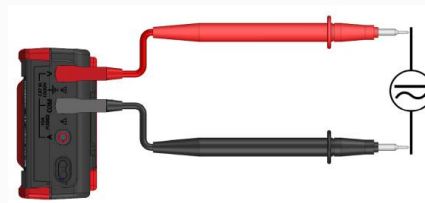
(U ≤ 65 V in Ex)



With this setting, users can measure the true root mean square of an AC voltage with its DC component (no capacitive coupling): this measurement is called **TRMS**.
AC voltage measurement or measurement of an AC voltage superimposed on a DC voltage, or high-impedance DC measurement.
AC, DC or AC+DC coupling



Measurement in electrical installations. The input impedance < 1 MΩ (**300 kΩ**) helps to avoid measuring "stray" voltages due to coupling between the lines



In all cases, "O.L." is displayed above 1,050 V and a beep sounds when the measurement exceeds 1,000 V

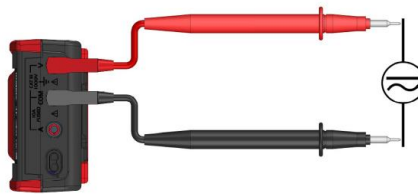
The MTX 3297Ex in detail

VOLTAGE MEASUREMENT SECONDARY V MEASUREMENTS

(U ≤ 65 V for Ex)



Power W



Display of the relative power measurement in relation to a resistance reference chosen by the user between 1 and 10 kΩ

Press . The display indicates the resistance value la valeur de la résistance.

Press **Hold**

Then save the resistance value which will be used to calculate the power.

- The main display indicates the value in W (U^2/R)
- The secondary display indicates the value of the resistance measurement on the installation (600 Ω by default).

Power in dBm



dBm = Display of the measurement in **dBm** in relation to a reference resistance chosen by the user among 50 Ω, 75 Ω, 90 Ω and 600 Ω (default value)

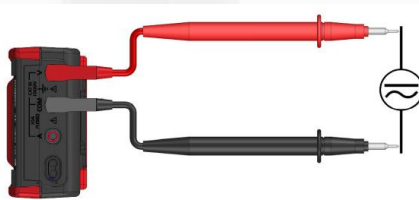
Press MODE AC/DC to select the reference resistance. Connect the black lead to the COM terminal and the red lead to the V terminal.

- The main display indicates the value in dBm
- The secondary display shows the value of the resistance measured on the installation (50 Ω by default)

The MTX 3297Ex in detail

Hz MEASUREMENT MAIN QUANTITY Hz OF THE VOLTAGE V

($U \leq 65$ V for Ex)



With this setting, users can measure the frequency of an AC voltage:

1. Press Hz
2. Connect the black lead to the "COM" and the red lead to "V"
3. Place the test probes on the terminals of the circuit to be measured
Hook up the instrument as you would to measure a resistance.
4. Read off the measurement value on the display. The second display indicates the period of the signal 1/F in ms

Hz MEASUREMENT SECONDARY QUANTITY Hz/PERIOD OF THE VOLTAGE V

Press Hz **successively** to obtain:

- The positive duty cycle (DC+)
- The negative duty cycle (DC-)
- The positive pulse duration (Pw+)
- The negative pulse duration (Pw-)

- **The frequency is available on the secondary display for V, A and VLowZ**

The MTX 3297Ex in detail

RESISTANCE MEASUREMENT



Press 1 on



Read the value of the measurement shown on the display.
If the circuit is open, **O.L** is displayed.

CONTINUITY MEASUREMENT

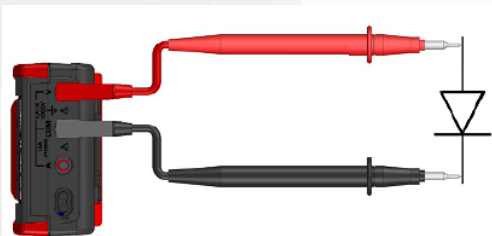


Press 2 on



the "♪" is displayed.
The continuity buzzer sounds when $R < 30 \Omega \pm 5 \Omega$.
O.L is displayed if the circuit is open.

DIODE MEASUREMENT



Press 3 on



Read off the measured value of the threshold voltage of the junction indicated on the display.
If the value is $< 40 \text{ mV} \pm 10 \text{ mV}$, a buzzer sounds.
O.L is displayed if the circuit is open or if the diode threshold is $> 3 \text{ V}$.

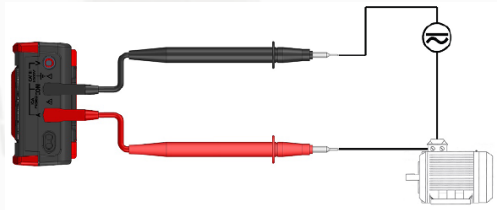
The MTX 3297Ex in detail

CURRENT MEASUREMENT MAIN QUANTITY A

(I ≤ 5 A for Ex)



■ DIRECT



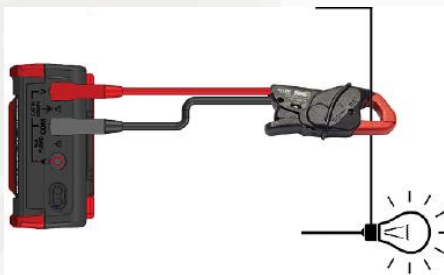
Press:

Depending on the mode selected, the screen displays AC, DC or AC+DC. Connect the black lead to the **COM** terminal and the red lead to "A".

If the connection is not correct, a buzzer sounds and a visual alert (LEADS) is activated.

O.L is displayed if $I > 20$ A.

■ via clamp




Select the type of signal (AC+DC, AC or DC) by pressing Choose the transformation ratio (identical to the clamp's): 1 mV/A, 10 mV/A, 100 mV/A or 1000 mV/A, by pressing "clamp" To obtain a direct reading of the current value.

The MTX 3297Ex in detail



TEMPERATURE MEASUREMENT with Pt100/Pt1000 probe

■ Main quantity: ° C and ° F

Press  to select the type of 2-wire probe: Pt100 or Pt1000

to switch the temperature units (° C or ° F) between the two displays, press




If **O.L** is displayed, the probe is cut off or short-circuited or the value to be measured exceeds the range's capabilities.



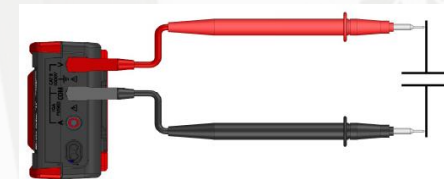
CAPACITANCE MEASUREMENTS

■ Main quantity F

• Press: 

O.L is displayed if the value to be measured exceeds the range's capabilities or if the capacitor is short-circuited.

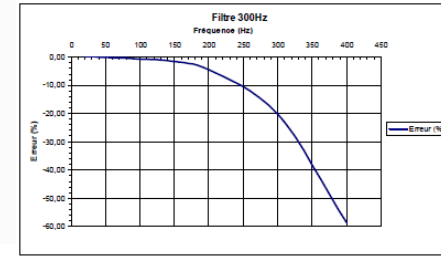
- For high values, the measurement cycle includes display of "run" with moving dots.
- This means that acquisition is in progress; wait for display of the digital result.
- **"run" is displayed immediately if the previous measurement was on a small range.**
- The measurement times can be reduced by discharging very high-rated capacitors beforehand.



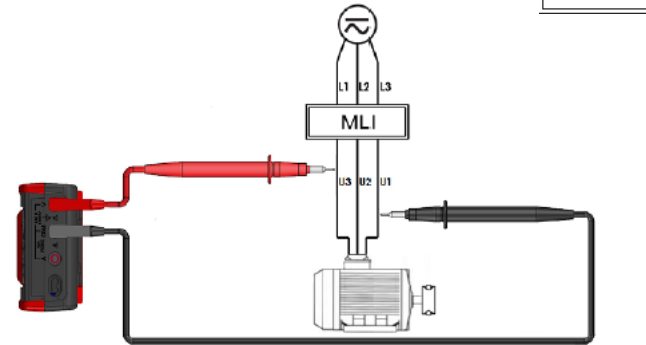
The MTX 3297Ex in detail

PWM VOLTAGE MEASUREMENT

Choose the filter by pressing  to filter >300 Hz



AC coupling ONLY

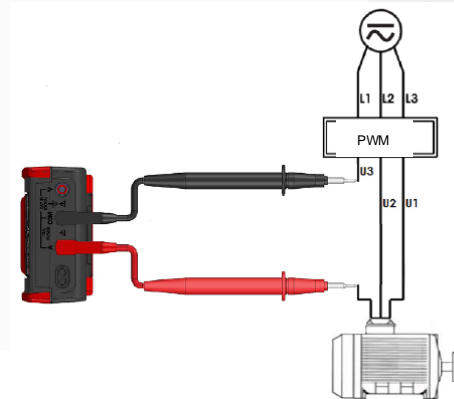


(U ≤ 65 V for Ex)

In all cases, O.L is displayed above 1,050 V and a beep sounds when the measurement exceeds 1,000 V

OR PWM CURRENT MEASUREMENT

(I ≤ 5 A for Ex)



The MTX 3297Ex in detail

ΔRel

"REL" MODE

ΔRel

Activation relative value or percentage % mode by pressing
 - Display and storage of the reference and differential values in the unit of the quantity measured.

$$\Delta\text{REL} (\%) = \frac{\text{Present value} - \text{reference value}}{\text{Reference value}} \times 100$$

1st press: activates the ΔREL relative mode
 (present value – reference value)
 and stores the measured value which will be used as the reference.

- "REF" indicates storage of the reference in memory.
- Subsequent presses: switches the display between the measured value and the ΔREL relative measurement.

Measured value: 1 V, 100 Hz :

ΔRel

The signal rises to 1.5 V: (ΔREL = 1.5 V – 1 V = 0.5 V)



ΔREL = (present value – reference value)

Reference value



The MTX 3297Ex in detail

MAX/MIN
AVG

"MAX/MIN/AVG": time/date-stamped monitoring

Activation of the **MAX, MIN, AVG** measurements:

- **MAX** and **MIN** give the highest and lowest measurement of the RMS measurement
- **AVG**: indicates the mean value of the signal since the key was pressed



Time/date-stamped value for the MIN and MAX: temporary display on the main screen for 4 seconds, After which it returns to the present value]

If the time (h:min:sec) exceeds (9:59:59), the display shows

- 1st press: recording of MAX, MIN, AVG (on the 2nd display).

The max. value is displayed by default.

-Subsequent presses: display of the stored values (volatile).

-**Capture time for the extreme values 100 ms**

The MTX 3297Ex in detail

Peak ±

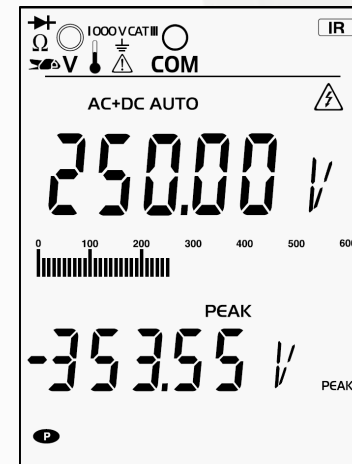
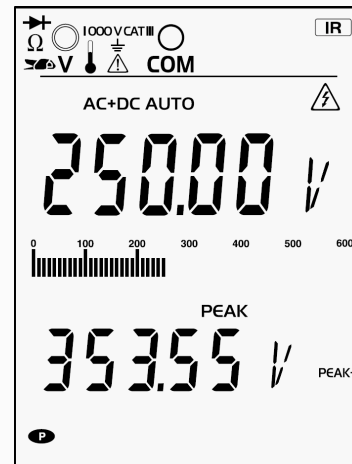
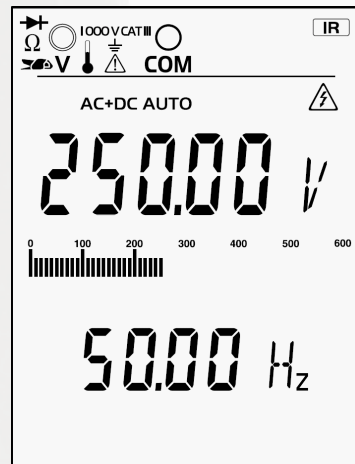
PEAK MODE

Activation of the **Peak+ Peak-** measurements:

- **Peak+**: displays the instantaneous maximum peak value of the measurement.
- **Peak-**: displays the instantaneous minimum peak value of the measurement.
- 1st press: recording of the PEAK+, PEAK- (on the 2nd display).
The PEAK+ value is displayed by default.

-A beep indicates when the quantity is changed or overloaded

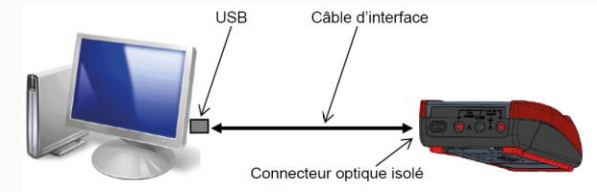
-Fmax = 1 kHz (1ms)



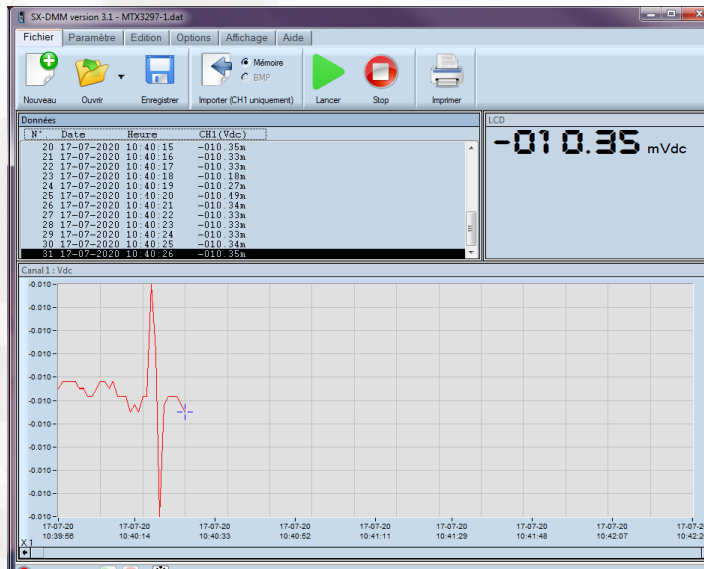
The MTX 3297Ex in detail

Communication outside Ex zones

This multimeter can be interfaced directly with a PC via an IR optical link/USB using the **SX-DMM acquisition software**: choose MTX 3297.



The symbol on the display is shown when the instrument is controlled from the PC (REMOTE mode). From V3.4, the SX-DMM software offers data recovery on PC and acquisition on the fly. The transmission parameters are fixed (8 data bits, 1 stop bit, no parity).



REMOTE PROGRAMMING GUIDE

This manual, available from our website, describes the SCPI commands needed to program the multimeter

Reference to order

HX0056-Z: USB optical cable

SX-DMM2: PC software for multimeters


P01196770 CALIBRATION KIT

Uses the USB link for "closed casing" calibration.

The MTX 3297Ex in detail

Configurable and parameterizable to simplify your measurements

General configuration:

- The **bargraph with central 0** is managed automatically for IDC and VDC
The multimeter shuts down automatically after 30 minutes with no action on the multimeter's front panel.
- Activation / deactivation of the **automatic power-off** function by a long press on 

Deactivation in **MAX, MIN, AVG, PEAK** mode and communication when the measured values (voltage, current) on the input exceeds the hazard thresholds to safeguard user safety.

➤ **USER / BASIC mode:**

When the instrument is powered up, it is in **BASIC** mode (default setup Volt AC+DC).

When your multimeter starts up, if you want to activate **Range-IR mode** to return to your configuration after powering down the multimeter using the **ON/OFF** button, press , keeping it pressed down, and then press **ON/OFF**.

After an automatic shutdown, the instrument will restart in **USER** mode.

The main display indicates the switch to **USER** or **BASIC** mode for 3 seconds



Basic: the instrument restarts with its basic configuration (default values) in the VAC+DC function



USER: the instrument restarts with the configuration and function selected when it was last shut down

Backlighting: 3 levels, 1 button



The ASYC IV family is growing: please welcome the **MTX 3297Ex**

Check out the full offering at

<https://www.metrix.fr/>



MTX3290 & MTX3291

**INDUSTRIAL
MAINTENANCE**



MTX3292

**PROCESS
CONTROL**



MTX3293

**ELECTRONIC
MAINTENANCE**



MTX 3297Ex

Ex



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