METRIX - Test & Measurement Catalogue

Products and accessories

Edition
2011
2012

metrix®

Metrix

Technological Breakthroughs and Patented Discoveries

A French brand known nationwide by generations of electricians and electronic engineers, Metrix® is Chauvin Arnoux's flagship brand in electronics for multimeters, oscilloscopes, power supplies and generators. The Engineering Department and R&D teams are still based on the site at Annecy-le-Vieux, but they can now take full advantage of the high-performance industrialization tools on the Group's production sites in Normandy.

1950: launch of the MX 460...

Metrix: from the lampmeter, the electro-clamp and oscilloscopes to "the Metrix"

In 1936, Georges Friédrichs founded a small company named CARTEX. This company enjoyed considerable growth during the years of economic expansion following the Second World War.

Its main business was manufacturing ***portable "lampmeters"*** *for checking the valves used in the radioelectricity sector, which was growing fast at the time.*

With the rising demand for electrical and electronic measurement equipment, CARTEX quickly became a major player in this sector, with products such as ***the lampmeter, testers and frequency generators.*** *In* ***1946,*** *it changed its name to "Compagnie Générale de Métrologie" (General Metrology Company) and began marketing its products under the Metrix brand.*

The launch of the ***"electro-clamp"****, allowing users to check voltages without disconnecting and measure high currents with one hand, and the production of oscilloscopes from 1948 onwards helped to quickly expand the company's offering. However, the products that really made the brand's reputation were the* ***MX 460****, launched in 1950, and more particularly, the* ***MX 462*** *multimeter, which was so successful that it helped the company to grow very quickly.*

...and the MX 400 electro-clamp

MTX 3283

Metrix

Healthy Rivalry

Based in Annecy, the company continued to expand, boosting the local economy, but Metrix's success and expertise in the measurement field quickly drew the attention of large industrial companies and, in 1964, ITT International (International Telegraph and Telephone) took over the company and incorporated it into its instrumentation division to develop analogue and digital multimeters.

With the development of the instrumentation market, the spread of information technology offering new possibilities, the increasingly international competition and the changes in the technological and standardization requirements, Metrix joined the Chauvin Arnoux Group in 1997.

This was followed by several years of good-natured competition between Chauvin Arnoux's teams and the Metrix R&D Department.

This gave rise to product ranges such as the MTX Concept multimeters, Scopix oscilloscopes and the MTX Mobile generation of products

Today, Chauvin Arnoux and Metrix® have merged to offer a complete range of portable and laboratory instruments for electricians and electronic engineers, covering all our customers' needs.

MX 24B

The MX 240 universal power clamp

The MX 135 analogue ammeter

Scopix OX 7104

Ergonomics & Design

What is design? Derived from the Latin "designare", it is first and foremost a creative activity whose purpose is to present the quality of objects and processes and the systems into which they are incorporated. Nowadays, design has become a strategic development tool for companies. It's not just a question of fashion or aesthetics. Industrial design helps to make products more comfortable to use, more ergonomic and less expensive to manufacture, as well as improving many other aspects. In the Chauvin Arnoux Group, Design has proved its worth, particularly with the MTX Compact oscilloscopes and the ***MTX Mobile®*** *multimeters.*

MTX Compact: innovative design for oscilloscopes

The distinctively modern instruments in the ***MTX Compact*** *series fit perfectly into your workplace thanks to their architecture and their functional size and shape. When placed directly on a lab benchtop, their height is specially calculated so that they can be placed on or under half-shelves. Their shallow depth and standard width also mean that they can be set up on top of another instrument.*

Their built-in handle and light weight make them easy to move and transport. Their man-machine interface is specially designed to be user-friendly and clearly understandable. Even in difficult lighting conditions or from a distance, they remain easy to read thanks to their large reverse-video display and adjustable backlighting.

Ergonomics & Design

Design prize for the MTX Mobile®...

Since 1981, Metrix has integrated design into its product development process so that it can propose innovative products and win new market share. Before development of the ***MTX Mobile®*** *had even begun, the marketing study helped to analyse the existing situation, user requirements and feasibility.*
This led to several major specifications: elimination of the switch, compact casing, screen size, protection of the keyboard / screen. Using this basic framework, the designer and the industrial team then began working together, imposing new constraints on one another.

This helped them to push the envelope in terms of innovation to find new solutions. All this development work is punctuated by weekly meetings with the various people involved in-house and with the industrial product design specialists Calligo. A total of eight product models were eventually registered. The ***MTX Mobile®*** *has proved to be a great success, as the initial constraints and fixed costs defined in 2001 were respected.*
And to crown the ***MTX Mobile®*** *development process, it was awarded the "Etoile du Design" (Design Star) prize in 2006!*

The "Etoile du Design" prize awarded to the MTX Mobile in 2006






SOMMAIRE

Multimeters

A few definitions:

■ Measurement range

This represents the limits within which the digital instrument performs as specified so that the results are not subject to a rate of error which is higher than the maximum tolerated. It is defined by a minimum measurable value and a maximum measurable value

■ Rated calibre

An instrument's calibre is the value of the quantity measured which corresponds to the upper limit of the measurement range. For example, for an ammeter, if the upper limit of the range is 5 A, its calibre is 5 A.

■ Resolution

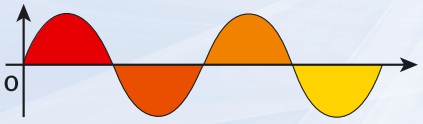
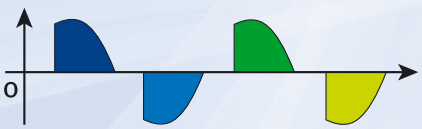
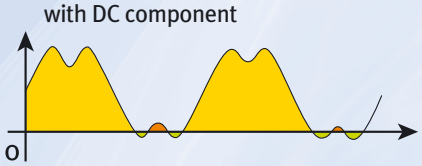
This is the smallest measurable difference in value. It is also the value of a measurement count or quantification unit, usually called the "unit".

■ Minimum measurable value (or threshold))

This is the smallest measurable value. For an instrument providing good conversion linearity, it may be equal to the resolution.

■ Root-mean-square value of a signal

This is the value of the (positive) DC signal producing the same heating when it passes through a specified resistance.
A TRMS (AC+DC) or "true root-mean-square" multimeter is capable of measuring the RMS value of signals, whatever their shape and whether they include a DC component or not.
An AVG-type instrument is only capable of giving correct results for pure sinusoidal signals.

	Multimeter U_{AVG_R} x 1.1	RMS multimeter (AC)	RMS multimeter (AC+DC)
Sinusoidal signals with no DC component 	Accurate	Accurate	Accurate
Distorted sinusoidal signals with no DC component 	Error of 30 to 50 % by default	Accurate	Accurate
Distorted AC signals with DC component 	Error of 30 to 50 % by default	Error by default (depends on U_{DC} value)	Accurate

Multimeters

Choosing a multimeter

■ Type

Choose the AVG type for measurements on sinusoidal signals. Otherwise, opt for a TRMS instrument, preferably offering selection of AC or AC+DC coupling.

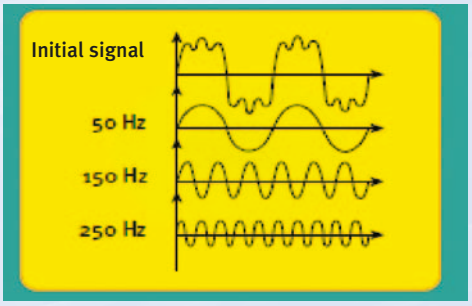
■ Number of display points

This indicates the instrument's maximum display capacity.
There is a direct relationship between the resolution, the calibre and the number of display counts:

$$\text{Resolution} = \frac{\text{Calibre}}{\text{No. of counts}}$$

■ Bandwidth

This is the frequency range within which the multimeter can measure accurately. It is crucial when the signal is distorted because, according to Fourier series development, a periodic signal of any shape can be broken down into a set of elementary sinusoidal signals whose frequencies are multiples of the fundamental. A multimeter's bandwidth indicates the instrument's ability to process these signals.



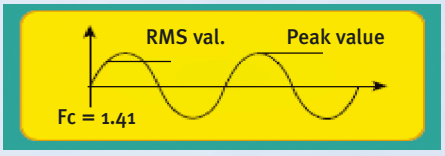
■ Accuracy

This is the difference between the signal's true value and the value displayed.
It may differ according to the calibre and is usually expressed as follows:

E = % of reading ± x counts

■ Crest factor

This is the ratio of the peak (highest) value of a signal to the RMS value. It helps to estimate the rate of distortion which the multimeter can measure correctly.



■ Other important features

The instrument must be suitable for its environment and operating constraints.
Thus, its mechanical protection, leakproofing, weight, handling and general ergonomics are crucial factors for the instrument's reliability, life span and operational effectiveness.

■ Safety rules and good practice:

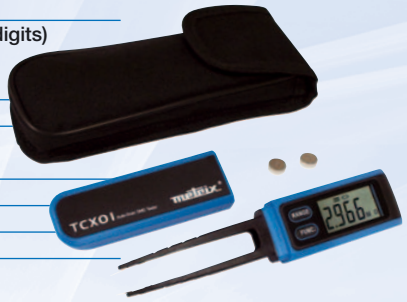
- *Use measurement instruments and accessories which are suitable for the application and measurement conditions.*
- *It is the weakest element that defines your level of protection. If you use accessories with a lower category or voltage rating than your measuring instrument, it reduces the overall safety level guaranteed by your measuring system.*
- *Only use accessories in perfect condition.Any accessory with even a slight defect must be replaced immediately as it no longer guarantees your safety.*
- *High-rupture-capacity fuses are safety elements. If you replace them with more economical models, or even worse, by pieces of metal (copper wire, aluminium foil, etc.), you will no longer be protected in the event of a fault or overvoltage.*

TCX 01 Surface Mount Device (SMD) Tester

Ergonomic, simple and fast to identify SMDs instantly

- *Automatic recognition of the device*
- *Large dynamic range for measurement (6,000 counts for accurate testing of low and high values)*
- *Immediate implementation*
- *Measurement tips protected by a rigid cap*

Specifications	TCX 01		
Display			6,000 counts
Selection of ranges	Automatic or Manual		
	Range	Resolution	Accuracy
Resistance	600 Ω	0.1 Ω	±(1.2 % of reading + 2 digits)
	6 kΩ	1 Ω	
	60 kΩ	10 Ω	
	600 kΩ	100 Ω	
	6 MΩ	1 kΩ	
	60 MΩ	10 kΩ	±(2 % of reading + 2 digits)
Capacitance	6 nF	1 pF	±(5.0 % of reading + 5 digits)
	60 nF	10 pF	±(3.0 % of reading + 3 digits)
	600 nF	100 pF	
	6 µF	1 nF	
	60 µF	10 nF	±(5.0 % of reading + 5 digits)
	600 µF	100 nF	
	6 mF	1 µF	
	60 mF	10 µF	-
Diode and semiconductor junction test	2 V	I_{test} : ~1 mA / V_{test} : ~2.8 V	
Continuity test	R < 30Ω		
Automatic shutdown	10 min		
Power supply	2 x 1.5 V AG13/LR44/357A		
Dimensions / weight	181 x 35 x 20 mm / 65 g		



Standard state at delivery:

TCX001-Z: 1 TCX delivered with soft case for storage, 2 x 1.5 V button cells and operating manual
Accessories : Set of 2 x 1.5 V LR44 batteries P01296036

TX 01 LED Voltage Tester

An essential tool for electrical testing and diagnostics

- *AC and DC voltage testing*
- *Electrical continuity testing with audible and visual indication*
- *Phase identification*
- *Autotest function to check the status of the instrument and the battery*
- *Extra-bright LEDs*
- *Removable test probe with standard Ø4 mm banana connection*
- *Built-in system for stowing the lead*

Specifications	TX 01
Voltage test	12 V to 690 V (7 diodes)
Audible alarm	U > 50 V
Phase identification	Flashing "Ph" diode for U > 100 V~
Operating frequency	DC ... 400 Hz
Audible continuity	Yes
Resistance	2 kΩ to 300 kΩ (3 diodes)
Power supply	1 x 9 V 6F22
Electrical safety	600 V CAT III
Dimensions / Weight	193 x 47 x 36 mm / 170 g
Other features	Built-in 1.2 m lead with Ø2 mm test probe + Ø2 mm removable test probe

Standard state at delivery:

TX0001-Z: delivered with a removable test probe, a 9 V battery and an operating manual

Applications/Illustrations

In housing and office buildings, there are many sources of low-frequency electric fields which contribute to the overall electromagnetic pollution of our day-to-day environment:

- *distribution of electrical energy in housing and office buildings*
- *surge-protector power bar, electrical cables, etc.*
- *computer, printer, fax*
- *lighting*
- *high-voltage line, transformer, railway track, etc.*

*Low-frequency fields between **10 Hz and 100 kHz** are harmful.*

■ Standards

- *Recommendations by WHO / ICNIRP (World Health Organization/International Commission on Non-Ionizing Radiation Protection)*
- *IEEE C95.6-2002 (international standard - public, 0 - 3 kHz range)*
- *European directive 1999/519/CE (public, 0 - 100 kHz range and above)*
- *European directive 2004/40/CE (workers, 0 - 100 kHz range and above)*
- *2010 draft standard, EN IEC 62493 (lighting systems)*
- *EN50366 standard, to be superseded by IEC 62233 in 2012 (domestic electrical appliances)*

■ The Solution = Testing / Measuring

■ Corrective action

A survey needs to be carried out to determine the necessary corrective action.

- *Connect and test the earths of the electrical installation correctly*
- *For equipment not connected to earth, you must check that the Ph/N are connected properly. If they are reversed, the emitted field level will be abnormally high.*

The intensity of the electric fields is inversely proportional to the distance.

- *Make sure that areas where people spend time immobile are at a safe distance from potential field sources..*

There are various types of equipment available for limiting electric fields:

- *sheaths prewired with H07-VU screened phase wires*
- *screened wires and cables. These cables give their full effect when the screens are hooked up to the earth networks. The electric field is drained to earth via the earth connection of the screening.*
- *equipment casings fitted with a metal screen mounted at the rear.*

This helps to reduce electrical radiation from the casing, cable and equipment.

- *automatic bipolar current cut-off devices. These are units positioned after the fuse correspond to the circuit in the room. They are designed to automatically cut off the voltage causing electric fields when the last instruments or lights are switched off.*

These are devices positioned after the fuse corresponding to the circuit in the room

VX Family

VX 0003, VX 0100

Measure your exposure to electromagnetic pollution in your home or office.

The VX0003 and VX0100 testers are easy-to-use, economical and trustworthy! They are used mainly when testing new or renovated electrical installations and in technical and vocational training.

*The **VX 0003** and **VX 0100** field testers/meters instantaneously indicate the level of the low-frequency electric field. Ideal for the residential and tertiary sectors, they can be used by both professionals and DIY enthusiasts.*

- *Test of the pollution generated by electrical power distribution (0-3 kHz) (VX0003/VX0100)*
- *Test of the pollution generated by the equipment connected (3-100 kHz) (VX0100)*
- *2 complementary methods for more effective measurements*
  -Representative method: field measurement while taking the individual's presence into account
  -Traditional method: fields referenced to earth
- *External antenna for field measurement and cable detection (VX0100)*
- *Audible alarm for immediate identification of the field levels*
- *Testing in accordance with the current and future standards and directives*

Optional specific accessories

For the VX 0100:
- rod P01102084
- rod adapter P01102034
- HX0104 bag

For the VX 0003
- HX0009 case

LF Electric Field Testers

Specifications	VX 0003	VX 0100
DISPLAY & BUZZER		
Display on 2 scales of 7 LEDs each	•	
2,000-count backlit LCD display		•
Direct display in Volt/m (compatible with standards)	•	•
Buzzer proportional to the field level	•	•
Indication of the measurement frequency range		•
"Low battery" & "Hold" indicators	•	•
COMMANDS		
On / Off (with automatic shutdown after 30 min)	•	•
Measurement Hold	•	•
Buzzer On/Off	•	•
Selection of measurement range	Manual	Automatic
Selection of 3 kHz filter (<, >, full band)		•
ANTENNA & REFERENCE		
Built-in "field" antenna	•	
Removable "field" antenna, diameter 62 mm		•
+ Cable detection function		•
"Individual" field measurement reference	•	•
"Earth" field measurement reference	•	•
+ continuity rod		Optional accessory
MEASUREMENTS		
RMS electric field intensity in V/m	•	•
Sensitivity & Accuracy		
2 sensitivity ranges (compatible with standards)	5 to 100 V/m 1.0 to 200.0 V/m	100 to 2000 V/m 200 to 2000 V/m
Measurement accuracy (in laboratory conditions)	± 10% on LED thresholds	± 3% ± 20 D @ 50/60 Hz
Frequency range		
Analysis of electrical distribution, 10 Hz to 3 KHz	•	•
Analysis of equipment connected to the mains	10 Hz to 3 kHz	10 Hz to 3 kHz (3 kHz low-pass filter) 3 kHz to 100 kHz (3 kHz low-pass filter) 10 Hz to 100 kHz (no 3 kHz filter)
GENERAL SPECIFICATIONS		
Power supply	9 V battery (supplied) – Battery life 60 to 80 hours – Automatic shutdown function (30 min)	
Mechanical specifications	IP65 leakproof casing- Dimensions 63.6 x 163 x 40 mm – Weight approx. 200 g with battery	
Warranty	2 years	

"Standard" state at delivery:

1 VX delivered with earth cable, socket tester and 9 V battery

References to order:

VX0003: VX0003 electric field tester up to 3 kHz delivered with bag
VX0100: VX0100 electric field tester up to 100 kHz delivered in a case

Available accessories:
see pages 84 to 99

To find out more...
Sales Brochure 906210176

Detailed product brochures can be downloaded from www.metrix.fr

Multimeter Families

8 multimeter families to meet your needs:

Digital multimeters / Graphic recorders:

- *Industry/Electronics: MTX 3281, MTX 3282, MTX 3283*

Digital multimeters for "difficult environments":

- *Atex / IECEx : MX 57Ex*

- *Industry/Electronics: MX 58HD, MX 59HD*

- *Electricity: MX 20HD,MX 44HD*

"General-purpose" digital multimeters:

- *Industry/Electronics: MX 26*

- *Industry: MX 23, MX 24, MX 24B*

- *Electricity: MX 21, MX 22*

Analogue multimeters for "difficult environments":

- *Electricity: MX 1, MX 2B*

Quick selection	High-performance graphic multimeter/recorder Industry, Electronics MTX 3281 MTX 3282 MTX 3283	 Atex / IECEx MX 57EX
Technology	Digital	Digital
Display resolution (counts)	100,000	50,000
TRMS / MOY measurements	TRMS AC & AC+DC	TRMS AC & AC+DC
Simultaneous display	4	1
Fast bargraph	•	•
Graphic measurement log	•	
Backlight / Auto-extinction	•/•	-/•
Basic accuracy DC	0.02% to 0.1%	0.03%
Bandwidth	50kHz to 200 kHz	50 kHz
Ranges Auto / Manual	•/•	•/•
AutoPeak for Peak Factor	•	
Waterproof capability		IP67
Explosive atmospheres (ATEX)		•
Available measurements		
Voltage AC/ DC	1000 V	600 V
Current AC/ DC	20 A (30 s)	500 mA
Single A terminal / Simultaneous U & I	•/•	•/-
Resistance / Audible Continuity / Diode test	50 MΩ /•/•	50 MΩ/•/•
Frequency / Period / duty cycle	2 MHz /•/•	500 kHz/-/•
Pulse width / pulse count	•/• (1)	•/•
Capacitance	10 mF	50 mF
Temperature Pt100/1000 / TC J/K	•/• (1)	•/-
dBm / Resistive power	•/• (1)	•/•
U & I peak / Peak factor	250 µs /•	1 ms/-
Digital speed controller filter		
Direct measurement with clamp	•	
Low impedance AC voltage measurement		
Measurement processing		
Display Hold / Auto-Hold	•/•	•/•
Min / Max / Avg survey	•/•/•	•/•/•
Relative measurements / dB ratio / %	•/•/•	•/-/-
Memory Capacity + measurement graph	4x150 or 6,500	
Timestamping (SURV & MEM)	•	
Interface RS232 / USB / Bluetooth	•/•/•	•/-/-
Safety & Reliability		
EN61010-1 CAT. IV / III	600 / 1,000	- / 600
V/A auto selection / Input alarm	•/•	
Multi-directional display / Protected	•/•	
Digital selector	•	
Protected access to batteries / Fuses	•/•	•/•
"Enclosed box" calibration soft	•	•
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(1) Depending on models

Multimeter Families

An authentic "Metrix" for each task






Digital for "difficult environments"		"General-purpose" digital			Analogue for "difficult environment"
Industry, Electronics	Electrical	Industry, Electronics	Industry	Electrical	
MX 58HD MX 59HD	MX 20HD MX 44HD	MX 26	MX 23 MX 24 MX 24B	MX 21 MX 22	MX 1 MX 2
Digital	Digital	Digital	Digital	Digital	Analogue
5,000 or 50,000	2,000 or 4,000	5,000 / 50,000	5,000 / 50,000 (1)	2,000 or 4,000	-
TRMS AC & AC+DC	AVG	TRMS AC & AC+DC	TRMS AC & AC+DC	AVG	-
1	1	1	1	1	-
•	• (1)	•	•	• (1)	
•/• (1)	-/• (1)	•/•	•/•	-/• (1)	
0.05% or 0.1%	0.3% or 0.5%	0.30%	0.30%	0.3% or 1%	class 2
50kHz ou 100kHz	500Hz ou 1 kHz	100 kHz	1kHz	500 Hz	1 kHz
•/•	•/•	•/•	•/•	•/•	-/•
IP67	IP67				IP65
600 V	750 V / 1,000 V	750 V / 1,000 V	750 V / 1,000 V	600 V	600 V
20 A (30 s)	10 A	10 A	20 A (30 s) (1)	10 A (1)	10 A (1)
50 MΩ /•/•	20 MΩ or 40 MΩ /•/•	50 MΩ/•/•	50 MΩ/•/•	20 MΩ or 40 MΩ/•/•	20 kΩ/•/•
500 kHz/-/•		500 kHz/-/-	500 kHz/-/-	40 MHz/-/- (1)	
50 mF	40 µF (1)	50 mF	50 mF		
•/- (1)					
•/- (1)					•/-
1 ms/-		1 ms/-			
			1 kHz BP	500 Hz BP	1 kHz BP
		•	•	• (1)	With 200 A clamp included (1)
		•	•		•
•/•	•/-	•/•	•/•	•/-	
•/•/• (1)			•/•/• (1)		
•/-/-	•/-/- (1)				•/-/-
•/-/-		•/-/-			
600 / 600	- / 600 or CATII 600V	- / 600	- / 600	- / 600	-/600
•/•	•/•	•/•	•/•	•/•	•/•
•		•	•		
26	25	18	18	16	14

"All-terrain" Analogue Multimeters

MX 1, MX 2B

With their needle and dial, the MX 1 and MX 2B multimeters are easy to read and quickly display the measurement results.

- *600 V CAT III*
- *IP65 shockproof and leakproof casing*
- *Audible continuity*
- *Protection of the ohmmeter function by an audible alarm*
- *Parallax mirror for precise measurements*
- *Faulty fuse indicator*
- *Measurement up to 200 A with clamp (MX 2B)*

Specifications	MX 1	MX 2B
Display	Analogue with parallax mirror / Scale length 80 mm	
DC voltage	10 mV to 600 V	0.01 V to 600 V
Calibres	150 mV / 0.5 V / 1.5 V / 5 V / 15 V / 50 V / 150 V / 500 V / 1.5 kV	0.5 V / 1.5 V / 5 V / 15 V / 50 V / 150 V / 500 V / 1.5 kV
Accuracy class	2	2
AC voltage	10 mV to 600 V	0,01 V to 600 V
Calibres	5 V / 15 V / 50 V / 150 V / 500 V / 1.5 kV	5 V / 15 V / 50 V / 150 V / 500 V / 1.5 kV
Accuracy class	2.5	2.5
DC current	2 µA to 10 A	1 µA to 50 µA / 10A
Calibres	50 µA / 500 µA / 5 mA / 150 mA / 500 mA /1.5 A / 10 A	50 µA / 10 A
Accuracy class	2	2
AC current	20 µA to 10 A	With a 1000/1 clamp
Calibres	50 µA / 500 µA / 5 mA / 150 mA / 500 mA /1.5 A / 10 A	10 A / 20 A / 100 A / 200 A
Accuracy class	2.5	3
Resistance	Audible alarm for voltage presence	
Calibres	x1 / x10 / x100	
Middle point	200 Ω / 2 Ω / 20 Ω	
Accuracy class	2.5	
Audible continuity	> 150 Ω	
Other measurement		
Diode test	Yes	
dB	Yes	
Protection rating	IP 65	
Power supply	1 x 1.5V AA / LR6	
Electrical safety	CAT III 600 V	
Dimensions / weight	40 x 98 150 mm / 420 g	

Specifications	TX 01
Voltage test	12V to 690 V (7 diodes)
Audible alarm	U > 50 V
Phase identification	"Ph" diode flashes if U > 100 V~
Operating frequency	DC ... 400 Hz
Audible continuity	Yes
Resistance	2 kΩ to 300 kΩ (3 diodes)
Power supply	9 V battery (6F22)
Electrical safety	600V CAT III
Dimensions / weight	193 x 47 x 36 mm / 170 g
Other features	Built-in 1.2 m lead with Ø2mm test probe + Ø2mm removable test probe

Specifications	MINI 01	MN09
Clamping diameter	10 mm	20 mm
Measurement range	2 A to 150 A AC	0,5 A to 200 A AC
Transformation ratio	1000/1	1000/1

Standard state at delivery:

MX 1 with 1 set of measurement leads with test probe, 1.5 V battery and operating manual in 5 languages
MX 2 with 1 set of measurement leads with test probe, 1.5 V battery and operating manual in 5 languages

References to order:

MX1: 1 MX 1
MX0001-T: 1 MX 1 delivered with a TX1 voltage tester and a hard case.
MX0002B: 1 MX 2B delivered with an MN09 current clamp
MX0002BT: 1 MX 2B delivered with an MN01 current clamp, a TX1 tester and a hard case

P01105101Z: 1 MINI01 current clamp
P01120402: 1 MN09 current clamp
TX0001-Z: 1 TX01 LED tester

Available accessories:
see pages 84 to 99

To find out more...
Sales Brochure 906210780

Detailed product brochures can be downloaded from www.metrix.fr

MX Concept AVG Family

MX 21, MX 22

Instruments for day-to-day electrical measurements

- *Extensive current range on the MX 22, with calibres from 400 µA to 10 A*
- *Innovative design with a rugged, compact casing*
- *A low-impedance VLowZ function to avoid phantom voltages*
- *A large display with digits 18 mm high (MX 21) or an analogue bargraph (MX 22)*
- *A reversible elastomer protective sheath to protect the instrument*
- *Unrivalled accessibility for the batteries and fuses with extra safety*
- *Recyclable and recoverable, in accordance with the DEEE-2002/96/CE directive*

Recyclable and recoverable, in accordance with the DEEE-2002/96/CE directive

Specific optional accessories:

C.A 1871 infrared temperature probe

MN 89 clamp

Elastomer protective sheath HX0010

On-site Digital Multimeters

Specifications	MX 21	MX 22
Quick selection		
Display	2,000 counts – 18 mm digits	2,000 counts + bargraph
Automatic shutdown	No	yes
TRMS measurements	AVG sine	
Basic accuracy for DC voltage	0.3%	
Bandwidth	500 Hz	
Available measurements		
AC+DC voltage (ranges)	200 mV to 600 V	40 mV to 600 V
DC/AC+DC current (ranges)	0.5 to 240 A AC with MN89 clamp	40 µA to 10 A
Resistance/audible continuity	200 Ω to 20 MΩ/yes	400 Ω to 40 MΩ/yes
Frequency	no	4 kHz to 4 MHz
Diode test	yes	
Measurement processing		
Min/Max/Avg monitoring	no/no/no	yes/yes/no
Safety and reliability		
EN61010-1, 2001	Cat III 600 V	
Warranty	1 year	

Standard state at delivery:

1 MX, 1 elastomer sheath, 1 set of 2 safety leads, 9 V battery already installed

References to order:

MX0021-Z: MX 21 delivered in a blister pack
MX0021-W: MX 21 delivered in a blister pack with a current clamp
MX0022-Z: MX 22 delivered in a blister pack
MX0021-L: MX 21 delivered in a carrying case
MX0021-T: MX 21 delivered in a carrying case with a current clamp
MX0022-L: MX 22 delivered in a carrying case

Available accessories:
see pages 84 to 99

To find out more...
Sales Brochure 906210210

Detailed product brochures can be downloaded from www.metrix.fr

MX Concept TRMS Family

MX 23, MX 24, MX 24B, MX 26

TRMS measurements for accurate results whatever the signal waveform

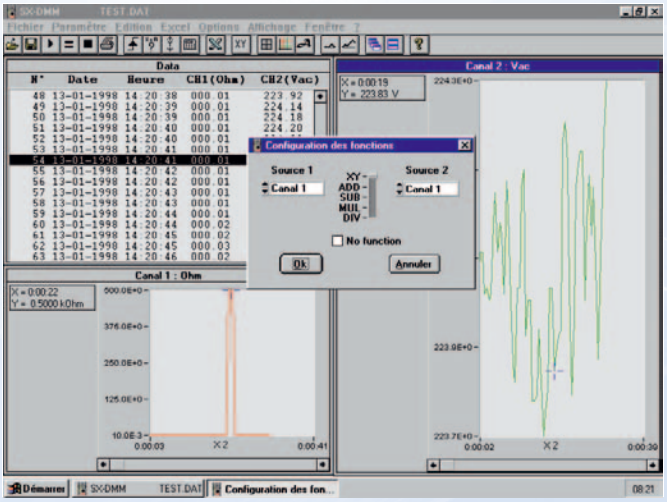
- *Bandwidth up to 100 kHz*
- *A low-impedance VlowZ function to avoid phantom voltages*
- *Innovative design with a rugged, compact casing*
- *Large display with bargraph and backlighting for excellent visibility*
- *Elastomer protective sheath*
- *Unrivalled accessibility for the batteries and fuses with extra safety*

Recyclable and recoverable, in accordance with the DEEE-2002/96/CE directive

Specific accessories:

SX-DMMK2 software kit

MX26 communication accessory



The SX-DMMK2 multilingual communication kit can be used with the MX 26 to simplify data acquisition.

On-site Digital Multimeters

Specifications	MX 23	MX 24	MX 24B	MX 26
Quick selection				
Display	5,000/50,000 counts + bargraph			
Backlighting/auto-shutdown	no/yes	yes/yes		
TRMS measurements	TRMS AC+DC			TRMS AC & AC+DC
Basic accuracy for DC voltage	0.3%			
Bandwidth	1 kHz			100 kHz
Available measurements				
AC/DC voltage (ranges)	500 mV to 750 VAC / 1,000 VDC			
AC/DC current (ranges)	with clamp as accessory	50 mA-20 A	500 mA-20 A	500 mA-10 A
Resistance/audible continuity	500 Ω to 50 MΩ / yes			
Frequency	5 Hz to 500 kHz			
Capacitance / diode test	50 nF to 50 mF / yes			
Measurement processing				
Min/Max/Avg monitoring	no/no/no	yes/yes/no		yes/yes/yes
PC communication/ backup	no			Optical serial link & software
Safety and reliability				
EN61010-1,2001	Cat III 600 V			
Warranty	3 years			

Standard state at delivery:

1 MX, 1 elsatomer sheath, 1 set of 2 safety leads, 9 V battery already installed

References to order:

MX0023-CG : MX 23
MX0023-CL : MX 23 + 1 case
MX0024-CG : MX 24
MX0024-CL : MX 24 + 1 case
MX0024B-CZ : MX 24B in blister pack
MX0024B-CL : MX 24B + 1 case
MX0026-G : MX 26
MX0026-T : MX 26 + 1 case + 1 optical interface + SX-DMMK2 software kit

Available accessories:
see pages 84 to 99

To find out more...
Sales Brochure 906210210

Detailed product brochures can be downloaded from www.metrix.fr

MTX Mobile Family

MTX 3281, MTX 3282, MTX 3283

From the lab to the field, a single instrument for comprehensive, high-performance diagnostics!

- *Innovative, ergonomic design for on-site and desktop use: "2-hands-free" On-site Kit*
  Power supply by rechargeable batteries and mains adapter
- *An extra-large graphic LCD with LED backlighting: Four 100,000-count displays, bargraph, graphic measurement log*
- *Top performance:*
  Accuracy of up to 0.02% for Vdc, bandwidth up to 200 kHz
- *Unrivalled user-friendly operation:*
  1 key / 1 function with "virtual" switch
  Automatic V/A selection according to lead connections
  Menus and help in French and English
- *Particularly versatile:*
  V, A, Ω, Hz, diode, capacitance, dB, dBm, °C, etc.
  Measurement, monitoring, recording, etc.
  Configurable favourite measurement key & math function
- *A reference for communication:*
  RS232, USB, or Bluetooth; "real-time" transfer

- Electron d'Or prize 2006
- Etoile du Design prize 2006

Optional specific accessories

HX0056-Z: optical/USB cable for MTX328X
HX0052: transport kit for MTX328X
HX0053: battery charger for MTX328X

MTX Mobile Family

MTX 3281, MTX 3282, MTX 3283

Metrological precision

When it was first launched, the ASYC2 range from Metrix® immediately established a benchmark in metrological terms due to its high-level specifications and its "closed casing" adjustment.
On the market for hand-held multimeters, the MTX Mobile models stand out because they offer a resolution of 100,000 counts, 0.02 % basic accuracy and bandwidth of up to 200 kHz.
The customer calibration software (optional) makes regular verification simpler, quicker and less expensive.

A design suitable for the lab and the field

Their multi-directional screen, "electronic switch" and power supply options make the MTX Mobile models ideal for both bench-top and hand-held use.
Their mains power supply means that long-term recordings are no longer threatened by untimely shutdown of the instrument.

Effective design and proven ergonomics

Compact and protected when closed, they are particularly easy to use when opened. The measurement functions are selected directly using the hand carrying the instrument, simply by pressing the dedicated key on the electronic switch.
A bag has also been specially designed for "hands-free" use.

Technology serving safety

Consistency between the leads and the functions is managed by the multimeter itself. As soon as it detects a lead on the Ampere or Volt terminal, the MTX Mobile automatically selects the corresponding function. The highly practical Ampere input with its single HRC fuse help to make the multimeter very compact. Connection errors leading to destruction of the small protection fuse for current measurements are avoided.

MTX Mobile Family

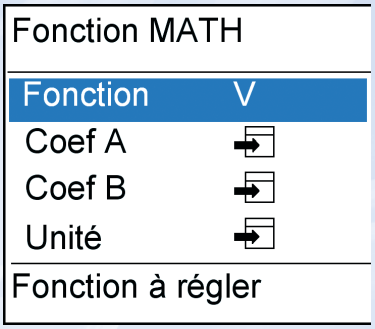
MTX 3281, MTX 3282, MTX 3283

Innovations and control of your measurements

*The **AUTOPEAK** mode allows the voltage or current range to be changed during fast peak acquisition to avoid untimely overruns of the instrument's Crest Factor, which would cause incorrect measurements without users being aware of the problem.*
The limitation of the crest factor is removed and only has to be taken into account for the 1000 V range.
*The **SPEC** function directly displays the tolerance of the measurement in progress, without forcing you to calculate it. In this way, users can control the measurement uncertainties according to the ranges or even the frequency of the AC signal.*

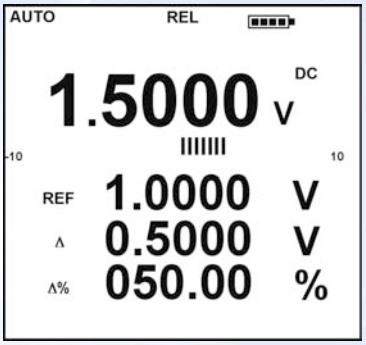
Measurement functions for everyone

*With their **MATH** function, the MTX Mobile models are ideal for measuring various physical quantities.*
This function enables users measuring a physical quantity in Volts, Amps, Hertz or Ohms to convert it and assign it the appropriate unit so that they obtain a direct reading of the original quantity on the secondary display.
A function of this type can even be assigned directly to the "Favourite Measurement" key so that it can be activated instantly.



*The **dB** mode directly displays all the useful information simultaneously: the voltage value, the frequency and the attenuation in dB in relation to the level of reference.*

*The comprehensive **REL** relative mode can be used to monitor, on all 4 digital displays, the absolute value, the absolute value of the deviation, the percentage of deviation and the reference value, which can be adjusted.*

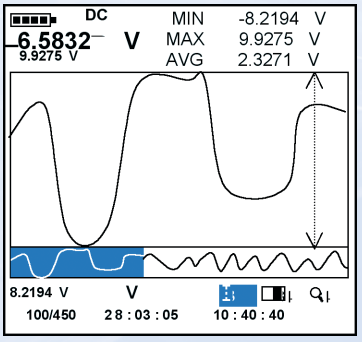


Everything you need to capture faults

Because they offer the functions of a multimeter and a logger, the MTX Mobile models are ideal for maintenance, adjustment and even development work.
The ASYC3 provides genuine advantages in situations involving electronics in process applications, production equipment or power distribution…

***The graphic recording window** provides the 3rd dimension by showing the changes in the measurement over time, giving you a a rough idea immediately.*

*The **SURV** key simultaneously displays and memorizes the minimum, maximum and average values of the measurement, with time/date-stamping of the extreme values.*
*The **MEM** key records up to 6,500 time/date-stamped measurements at intervals from 1 s to 24 hrs, allowing graphic analysis on the instrument.*



Using the PC analysis software, these measurements can be exported in real time or later on, for backup, analysis or transfer into a standard spreadsheet.
As the PEAK function can measure single or periodic peaks lasting 250 µs, it is possible to capture anomalies which are not usually detectable with a standard multimeter. It is also possible to make an initial diagnosis of the signals' nature thanks to the display of the Crest Factor.

Specifications	MTX 3281	MTX 3282	MTX 3283
Quick selection			
resolution	1 or 4 simultaneous 100,000-count displays		
Analogue display	Fast bargraph associated with graph or digital measurements		
Measurement graph over time	Automatic display of measurements from the last 60s		
Backlighting/Auto-off	Backlighting with settings from 10s delay to permanent/activated by user		
TRMS measurements	AC & AC+DC, for voltage and current		
BDC voltage basic accuracy	0.1 % + 8D	0.03 % + 8D	0.02 % + 8D
Bandwidth	50 kHz	100 kHz	200 kHz
Auto Peak for crest factor	Automatic detection and management of crest factor for signals measured		
Available measurements			
AC & DC voltage ranges	Ranges from 100.000 mV to 1,000.00 V		
AC voltage basic accuracy	0.7 % + 40D	0.3 % + 40D	0.3 % + 40D
AC & DC current	Gammes de 1000,00 µA à 20,000 A		
DC/AC current basic accuracy	0.08 % + 8D / 1 % + 30D	0.08 % + 8D / 0.3 % + 30D	0.08 % + 8D / 0.3 % + 30D
Single A terminal/ simultaneous U & I	Automatic ranges on single A terminal, single fuse/using 3 leads		
Resistance/continuity test	Ranges from 1,000.00 Ω to 50.000 MΩ / 5ms quick continuity test		
Frequency/period/ duty cycle	0.6200 Hz to 2.0000 MHz, accuracy 0.002 % + 8D / • / •		
Pulse width/ counting	-/-	100 µs to 12.5 s / 99,999	100 µs to 12.5 s / 99,999
Capacitance/diode test	Ranges from 10.00 nF to 10.00 mF / 0 to 2.6000 V		
Temperature Pt100/1000/TC J/K	-/•	•/•	•/•
dBm/resistive power	-/-	-/-	•/•
U & I peaks / crest factor	Periodic or single peaks of 250 µs min. / Signal crest factor calculation		
Measurement processing			
Display hold	Manual (Hold) or Automatic Hold (AutoHold) for stable measurements		
Min / Max / Avg monitoring	Relative Date and Time	Date/time-stamping	Date/time-stamping
Relative measurements	Absolute deviation, % deviation and reference deviation / Display of frequency and deviation in dB		
Measurement of physical quantities	"Favourite measurement key", scaling and physical unit		
Measurement storage	4 x 150 measurements + graph	6,500 measurements + graph	6,500 measurements + graph
Time stamping (SURV & MEM)	Relative Date and Time	Calendar date/time	Calendar date/time
SPEC function	Display of instrument tolerances for each type of measurement		
Interfaces (depending on model)	Isolated optical RS232 / isolated optical USB / wireless Bluetooth (100m without obstructions)		
Safety & reliability			
EMC / safety	Emission & immunity in compliance with EN61326-1 / IEC61010 CAT IV-600 V, CAT III-1,000 V		
V/A selection / input alarm	Automatic according to wire position/Audible and visual alarm for A		
Protected multidirectional display	For use on benchtop or attached to belt (hands-free) / Protected during transport		
Electronic switch	Elimination of mechanical faults / total safety management		
Protected access to batteries/fuses	Separate compartments and compulsory disconnection of leads		
"Closed Casing" calibration software	Optimization of adjustments (SX-MTX328x calibration software available as an option)		

• yes / - no

Accessories supplied:

1 MTX Mobile, 1 set of Ø 4 mm banana leads, 1 set of 3 x LR6 batteries (1) or 1 set of 3 AA NiMH rechargeable batteries (2) (3),

References to order:

MTX3281B: MTX3281
MTX3282B: MTX3282
MTX3283B: MTX3283
MTX3281B-COM: MTX3281B, kit USB
MTX3282B-COM: MTX3282B, kit USB
MTX3283B-COM: MTX3283B, kit USB
MTX3281B-BT: MTX3281B Bluetooth version
MTX3282B-BT: MTX3282B Bluetooth version
MTX3283B-BT: MTX3283B Bluetooth version
MTX3281B-P: MTX3281B delivered in a case with HX0052 "hands-free" kit, MN09 clamp, 1 set of 2 crocodile clips, 1 set of 2 hook-type wire grips, an extract from the operating manuals in 5 languages on paper and 1 CD-ROM containing the complete operating manuals in 5 languages

MTX3282B-P: delivered in a case with HX0052 "hands-free" kit, 1 adapter + K thermocouple bare probe, 1 set of 2 crocodile clips, 1 set of 2 hook-type wire grips, an extract from the operating manuals in 5 languages on paper and 1 CD-ROM containing the complete operating manuals in 5 language
MTX3283B-P: delivered in a case with HX0052 "hands-free" kit, 1 banana lead with pincer for SMDs (HX0064), 1 set of 2 hook-type wire grips, 1 optical USB lead + PC acquisition software, an extract from the operating manuals in 5 languages on paper and 1 CD-ROM containing the complete operating manuals in 5 languages

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure 906210191

Detailed product brochures can be downloaded from www.metrix.fr

Multimeters for Difficult Environments

A full range of 5 proven, ruggedized multimeters to meet even the most difficult requirements: humidity, water, dust, explosive gases, etc.

These specific multimeters can be used in a wide range of fields: extraction industries, cement works, agri-food industries, timber industry, paper and cardboard industry, chemicals, pharmaceutical industry, plastics, metallurgy, transport, automotive sector, outdoor maintenance and installation, etc.
The specific design of these instruments makes them exceptionally safe, rugged and long-lasting.

Highly resistant casing

- *Closure without screws*
- *Low-pressure leakproofing ensured by a double O-ring seal*
- *A separate compartment reserved for the batteries and fuses*
- *Can be dismantled without tools*

IP 67

Use of self-extinguishing materials

A removable protective sheath *that also functions as a stand or hook for positioning the instrument*

A very high protection rating (IP67) *which is totally dust-proof and water-proof to a depth of 1 metre*

Long battery life *of up to 500 hours*

A complete range *for a variety of requirements and budgets*

- *Resolution from 2,000 to 50,000 counts*
- *AVG or TRMS models (AC & AC+DC)*
- *Bandwidth from 500 Hz to 100 kHz*
- *Basic accuracy between 0.8% and 0.025%*
- *A wide variety of measurable quantities for electrical, electrical engineering, automation, process and electronic applications*
- *ATEX: the only multimeter on the market certified for both gas and dust*

Specific or adapted accessories

MINI05, MN08-MN09, PAC 11, Soft case




Multimeters for Difficult Environments

MX 20 and MX 44

The MX 20 is the tool of reference for electrical applications.
The more accurate and versatile MX 44, with its built-in capacitance meter, is designed for industrial use

IP 67

Specifications	MX 20	MX 44
Quick selection		
Display resolution	2,000	4,000
Bargraph	-	42 segments – 20 meas./s
Automatic shutdown	-	yes
Basic accuracy (VDC)	0.8%	0.3%
Bandwidth	500 Hz	1 kHz
Available measurements		
AC/DC voltage (ranges)	200 mV to 750 V/1,000 V	400 mV to 750 V/1,000 V
AC/DC current (ranges)	20 mA to 10 A	40 mA to 10 A
Resistance (ranges)	200 Ω to 20 MΩ	400 Ω to 40 MΩ
Audible continuity	yes	yes
Diode test	yes	yes
Capacitance (ranges)	-	4 nF to 40 µF
Variable speed-drive filter	bandwidth 500 Hz	bandwidth 1 kHz
Measurement processing		
Other measurements	DATA HOLD mode	HOLD mode, REL mode
General specifications		
Power supply / battery life	2 x 1.5V batteries / 250 hrs	9V battery / 500 hrs
Dimensions / weight	189 x 82 x 40mm / 400g (without sheath and stand)	
Safety and reliability		
EN61010-1	Cat II 600 V	Cat III 600 V
High-resistance casing	IP 67	
Warranty	3 years	

Standard state at delivery:

1 multimeter with battery or batteries and fuses installed, elastomer sheath with stand, 1 set of 2 safety leads, 1 operating manual

References to order:

MX0020HD: MX 20 delivered in blister pack
MX0044HD: MX 44 delivered in blister pack
MX0020HDL: MX 20 + 1 case + measurement accessories kit
MX0044HDL: MX 44 + 1 case + measurement accessories kit

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure 906 210 148

Detailed product brochures can be downloaded from www.metrix.fr

Difficult Environments / TRMS ASYC Family

MX 57Ex, MX 58HD, MX 59HD

A complete range to suit a variety of requirements and budgets

- *Resolution of 5,000 or 50,000 counts with fast bargraph and zoom*
- *TRMS measurements (selection of AC or AC+DC coupling)*
- *Bandwidth of 50 kHz or 100 kHz*
- *Basic accuracy between 0.1% and 0.025%*
- *A wide variety of measurable quantities for electrical, electrical engineering, automation, process and electronic applications*
- *Min/Max/Avg monitoring function*
- *Measurement of fast transients (1 ms)*
- *RS232 communication accessory and data acquisition software available*
- *"Closed casing" verification and adjustment with the SX-ASYC2/B "Customer Metrology Software"*

ATEX

IEC IECEx

IP 67

The MX 57Ex, a unique tool offering intrinsic safety, can be used in both explosive and non-explosive environments!
It is ideal both for mines affected by fire-damp and surface industries.
It is the only tool suitable for use in environments involving "gas" and "dust" hazards.

The MX 58HD and MX 59HD are high-performance multimeters specially designed for industrial applications.

Specific optional accessories:

SX-DMM2 acquisition software

K2 process clamp

Specifications	MX 57 EX	MX 58 HD	MX 59 HD
Display	50,000 counts	5,000 / 50,000 counts	50,000 counts
Bargraph	Analogue, 34 segments, 20 meas./s		
DC, AC & AC+DC voltage			
Ranges	5 calibres from 500 mV to 600 V		
VDC accuracy	0.025 %	0.1 %	0.05 %
VAC accuracy	0.3 %	1 %	0.3 %
Bandwidth	50 kHz		100 kHz
DC, AC & AC+DC current			
Ranges	500 µA, 5 mA, 50 mA & 500 mA	5 mA, 50 mA, 500 mA & 20 A (30 s)	500 µA, 5 mA, 50 mA, 500 mA & 20 A (30 s)
ADC accuracy	0.2 %	0.2 %	0.05 %
AAC accuracy	0.6 %	1 %	0.6 %
Bandwidth	5 kHz	30 kHz	
Frequency			
Ranges	0.62 Hz to 500 kHz - accuracy 0.03%		
Other measurements			
Resistance	6 ranges from 500 Ω to 50 MΩ		
Audible continuity	Detection threshold from 10 Ω to 20 Ω - response time 1 ms		
Diode test	0 to 2 V		
Capacitance	7 ranges from 50 nF to 50 mF		
Temperature	-200 °C to +800 °C / Pt100 or Pt1000 platinum probes		-200 °C to +800 °C /Pt100 or Pt1000 platinum probes
Other features	Duty cycle – dB function and U2/R resistive power – Pulse width – timer – event counting	Duty cycle	Duty cycle – dB function
General specifications			
Battery life	Certified 9V battery / 300 h	9V battery / 500 h	
Dimensions / weight	189 x 82 x 40mm / 400g (without sheath/stand))		
Safety and reliability			
Electrical safety	ATEX 94/9/CE Directive EN/IEC 60079-0 – EN/IEC 60079-11 EN/IEC 61241-11 – EN/IEC 61241-0 EN/IEC 61010-1 – 600 V CAT III CE type examination certificate number LCIE 02 ATEX 6005 X and additional clauses LCIE 02 ATEX 6005X / 01, 02, 03	IEC 61010-1 / 600 V CAT IV	
High-resistance casing	IP 67		
Warranty	3 years		

Standard state at delivery:

1 multimeter with battery and fuse(s) installed, 1 elastomer sheath with stand, 1 set of 2 safety leads* and 1 operating manual
** PVC leads for MX57 and MX58, silicone for MX59*

References to order:

MX0057CX: MX 57 delivered in specific soft case
MX0058HD: MX 58 delivered in blister pack
MX0059HD: MX 59 delivered in blister pack
MX0058HDL: MX 58 + 1 hard case + crocodile clips & hook-type wire-grip
MX0059HDL: MX 59 + 1 hard case + hook-type wire-grip & SMD Kelvin clamp

Available accessories:
see pages 84 to 97

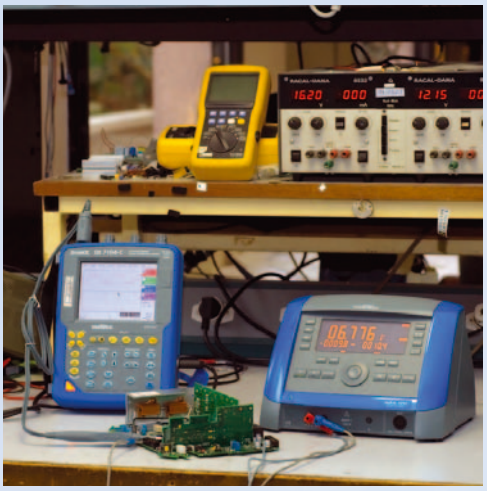
To find out more...
Sales Brochure 906210148

Detailed product brochures can be downloaded from www.metrix.fr

MTX family

MX 553, MX 556, MTX 3250

MTX 3250: reinventing laboratory instrumentation



MX 553 *and* ***MX 556*** *multimeters: metrology on your bench-top*

- *Compact lightweight casing*
- *Easy-to-read display*
- *An innovative resistive power function (depending on model)*

28

The ***MTX 3250*** *bench-top analyser-multimeter is ideal for education and industry, offering both accuracy and control!*

- *An innovative design focusing on ergonomics for unequalled comfort and effectiveness*
- *A compact, lightweight casing with a large, easy-to-read display*
- *100% digital calibration for controlled accuracy*
- *A special "data acquisition" model with time/date-stamped recording*
- *A multi-function measuring instrument: it is also a frequency meter, a thermometer and a logger*
- *Versions with the SCPI protocol programmable via an optical RS232 link*

Optional specific accessories

SX-ACQ.V2: acquisition kit (SX-DMM software + MTX3250 firmware) for MTX3250 multimeters

MTX family

MX 553, MX 556, MTX 3250

Specifications	MX 553	MX 556	MTX 3250
Resolution	50,000 counts		
Display	Supertwist LCD + bargraph		50 x 140 mm backlit LCD 3 simultaneous measurements
DC, AC and AC+DC TRMS voltages			
Ranges	500.00 mV to 1,000.0 V (750.0 Vac and AC+DC)		500.00 mV to 600.0 V
DC basic accuracy	0.1 % R + 2D	0.025 % R + 2D	0.08% R + 3D
Useful bandwidth	30 kHz	100 kHz	100 kHz
AC and AC+DC basic accuracy	1 % R + 3D	0.3 % R + 30D	0.5 % R + 30D
DC, AC and AC+DC TRMS currents			
Ranges	5.0000 mA to 10.000 A	500.00 µA to 10.000 A	500.00 µA to 20.000 A
DC basic accuracy	0.2 % R + 2D	0.05 % R + 2D	0.2 % R + 5D
Useful bandwidth	5 kHz		10 kHz
AC and AC+DC basic accuracy	1 % R + 3D	0.6 % R + 30D	0.5 % R + 30D
Frequency measurements			
Frequency ranges	5.0000 kHz to 500.00 kHz		5.0000 Hz to 1.0000 MHz
Other measurements	Duty cycle	Duty cycle event counting, pulse width	Period, duty cycle
Resistance et continuité			
Ranges	500.00 Ω to 50.00 MΩ		
Basic accuracy	0.1 % R + 3D	0.07 % R + 2D	0.1 % R + 3D
Audible continuity test	Range 500.00 Ω - Threshold 10 to 20 Ω - Response time 1ms		
Diode test	0 to 2 V		0 to 4.5 V
Capacitance	Ranges from 50.00 nF to 50.00 mF / Accuracy 1 % R + 3D		
Temperature (Pt 100 and Pt 1000 probes)	-		-200 °C to +800 C°
Digital links	-	RS232	RS232: MTX3250-P version
Other measurement	1 ms rapid peaks	1 ms rapid peaks dBm, resistive power	500 µs rapid peaks crest factor, dBm, resistive power
Additional functions	Data HOLD and AUTO HOLD REL (Offset)	Data HOLD and AUTO HOLD - REL (Offset) ZOOM on bargraph SURV = MIN/MAX/AVG PRINT = direct printing or data transfer to PC	AUTOPEAK = no limitation of crest factor SPEC = calculation and display of instrument specifications SURV = MIN/MAX dated MATH = dB, dBm, ax+b OFFSET (Offset, zero delta%) Data HOLD and AUTO HOLD
IEC 61010 safety EMC as per NF 61326-1	Cat. III, 600 V - Cat. II, 1000 V		Cat. III, 600 V
Dimensions (H x L x D) – Weight	95 x 295 x 270 mm - 1.6 kg		170 x 270 x 190 mm - 2.3 kg
Warranty	3 years		3 years

Standard state at delivery:

1 MTX or 1 MX, mains power cable, set of 2 measurement leads, operating manual

References to order:

MX553: MX553
MX556: MX556
MTX3250: MTX3250 benchtop multimeter
MTX3250-P: MTX 3250 + RS232 + programming manual + LabWindows/Labview drivers on CD-Rom
MTX3250-A: MTX 3250 + SX-DMM acquisition kit + RS232 + programming manual + LabWindows/Labview drivers on CD-Rom

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure 906210055

Detailed product brochures can be downloaded from www.metrix.fr

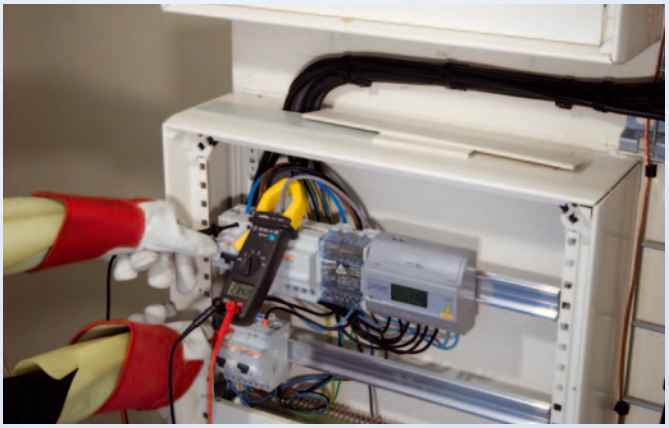
350 Series Pocket Multimeter Clamps

MX 350 & MX 355

Complete instruments that put all the functions needed by electricians in your hand.

- *Compact, ergonomic multimeter clamps*
- *Current measurement up to 400 A AC (MX 350) or AC & DC (MX 355)*
- *AC & DC voltage measurement up to 600 V*
- *Resistance, continuity and frequency measurements (MX 350)*
- *Automatic zero DC on the MX 355*
- *LCD screen with bargraph.*

Specifications	MX 350	MX 355
Display	4,000 counts	
Bargraph	42 segments	
Clamping diameter	26 mm	30 mm
Type of acquisition	AVG	
Range selection	Automatic	Automatic or Manual
AC current	0.05 A to 400.0 A	
Basic accuracy	1.9% + 5D	2% of reading + 10D
Bandwidth	50 to 500 Hz	
DC current	-	0.1 A to 400.0 A
Basic accuracy	-	2.5%of reading + 10D
AC voltage	0.5 V to 600V	
Basic accuracy	1.5% of reading + 5D	
Bandwidth	50 to 500 Hz	
DC voltage	0,2V to 600V	
Basic accuracy	1% of reading + 2D	
Resistance	0,2 to 399.9 Ω	
Basic accuracy	1% of reading + 2D	
Audible continuity	≤ 40 Ω	
Frequency	current: 20 Hz to 10.00 kHz voltage: 2 Hz to 1 MHz	- -
Basic accuracy	0.1% of reading + 1D	-
Functions	Hold	Hold Δ Zero Range
Automatic shutdown	30 min.	30 min., can be deactivated
Power supply	2 x 1.5 V (AAA)	
Electrical safety	CAT III 300V / CAT II 600V	
Dimensions / weight	193 x 50 x 28 mm / 230 g	



Standard state at delivery:

1 MX multimeter clamp delivered with 1 set of measurement leads with Ø4mm test probes, 1 soft case, 2 x 1.5 V AAA alkaline batteries and an operating manual in 5 languages

References to order:

MX0350-Z: 1 MX 350
MX0355-Z: 1 MX 355

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure 906210020

650 Series Multimeter Clamps

MX 650 & MX 655

Ideal for maintenance of electrical/electrical engineering machines.

- *Clamps for measuring high currents and voltages*
- *Current measurement up to 1,000 A AC (MX 650) and AC & DC (MX 655)*
- *AC & DC voltage measurement up to 1,000 V*
- *Resistance, continuity and frequency measurements*
- *RMS measurements (MX 655)*
- *Min-MAX and Peak 1 ms analysis functions*
- *Differential current, voltage and resistance measurement*

Specifications	MX 650	MX 655
Display	4,000 counts	
Bargraph	42 segments	
Clamping diameter	36 mm	40 mm
Type of acquisition	AVG	RMS
Range selection	Automatic or manual	Automatic
AC current	0,05 A to 1,000 A	
Basic accuracy	1.9% of reading + 5D	
Bandwidth	50 Hz à 1 kHz	
DC current	-	0,10 A to 1 000 A
Basic accuracy	-	2.5% of reading + 10D
AC voltage	0.5 V à 750 V	
Basic accuracy	2.5% of reading + 10D	
Bandwidth	50 Hz to 1 kHz	
DC voltage	0,2 V to 1 000 V	
Basic accuracy	0.75% of reading + 2D	1% of reading + 2D
Resistance	0,2 à 4 000 Ω	
Basic accuracy	1% of reading + 2D	
Audible continuity	≤ 100 Ω	
Diode test and semi-conductor junction test	I_{test} ≤ 0.6 mA / V_{test} ≤ 3.3 V DC	I_{test} ≤ 1.7 mA / V_{test} ≤ 6 V DC
Frequency	current: 20 Hz to 10 kHz voltage: 10 Hz to 10 kHz	
Basic accuracy	0.1% of reading + 1D	
Functions	Hold , Peak (1ms), Max-Min, ΔREL, Range	Hold, Peak (1ms), Max-Min, ΔREL
Automatic shutdown	30 min. , can be deactivated	
Power supply	1 x 9V 6LF22	
Electrical safety	CAT III 600V / CAT II 1 000V	
Dimensions / weight	246 x 93 x 43 mm / 400 g	

Standard state at delivery:

MX 65x clamp delivered with 1 set of measurement leads with test probes, 1 soft case, a 9V alkaline battery and an operating manual in 5 languages

References to order:

MX0650-Z: 1 MX 650
MX0655-Z: 1 MX 655

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure 906210020

Detailed product brochures can be downloaded from www.metrix.fr

670 Series Dual-display TRMS Multimeter Clamps

MX 670 & MX 675

Protection up to 8 kV for industry and electrical power distribution

- *2 simultaneous TRMS measurement channels*
- *Dual 10,000-count backlit display*
- *CAT IV 600 V*
- *Voltage up to 1400 V*
- *Temperature measurement*

Specifications	MX 670	MX 675
Clamping diameter	42 mm	40 mm
Display	2 x 10,000 counts / backlighting	
Type of acquisition	TRMS AC/DC	
Range selection	Automatic	
AC current	0.05 A to 1000 A	
Basic accuracy	1.5% of reading + 5D	
Bandwidth	50 Hz to 3 kHz	
DC current	-	0,10 A to 1,400 A
Basic accuracy	-	1.2% of reading + 5D
AC voltage	0.5 V to 1000 V	
Basic accuracy	1% of reading + 5D	
Bandwidth	50 Hz to 3 kHz	
DC voltage	0.2 V to 1,400 V	
Basic accuracy	1% of reading + 2D	
Resistance	0.2 to 9,999 Ω	
Basic accuracy	1% of reading + 2D	
Audible continuity	≤ 35 Ω	
Température	-40.0 °C to +1,200 °C / -40 °F to +2,192 °F	
Basic accuracy	1% of reading + 2°C / 1%L + 4°F	
Frequency	current: 0.2 Hz to 9,999 Hz voltage: 10 Hz to 9,999 Hz	
Basic accuracy	1% of reading + 2 pts	
Functions	Hold Peak (1ms) Min (500ms) Max (500ms)	Hold Peak (1ms) Min (500ms) Max (500ms) Δ Zero
Automatic shutdown	10 min., can be deactivated	
Power supply	1 x 9V 6LF22	
Electrical safety	CAT IV 600V / CAT III 1000V	
Dimensions / weight	272 x 80 x 43 / 480 g	257 x 80 x 43 mm / 440 g

Standard state at delivery:

MX 67x multimeter clamp delivered with 1 set of measurement leads with test probes, 1 soft case, 2 x 1.5 V AAA alkaline batteries and an operating manual in 5 languages

References to order:

MX0670: 1 MX 670
MX0675: 1 MX 675

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure 906210020

Wattmeters

Designed for general and technical education, installers and industrial maintenance teams, the PX 110 and PX 120 digital wattmeters can be used both on-site and in the laboratory

PX 120
● *Single-phase TRMS digital wattmeter*

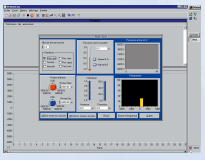
PX 110
● *Single and three-phase TRMS digital wattmeter*

Specifications	PX 110	PX 120
Network type	Single-phase	Single and three-phase
Number of display counts	3 lines of 4 digits	
Bandwidth	DC at 1 kHz	
AC/DC active power	6 kW	
Resolution	0.1 to 1 W	
AC/DC basic accuracy	2 % R ± 3D	1 % R + 2D
Apparent power (VA)	10 VA to 1 kVA	
Reactive power (var)	1 VAR to 6 kVAR	
Resolution	0.1 to 1	
AC/DC basic accuracy	2 % R ± 2D	
Power factor	1	
Resolution	0.01 / 3 % R ± 2D	
AC/DC voltage	500 mV to 600 VRMS	
Resolution	100 mV	
AC/DC basic accuracy	1 % R ± 3D	0.5 % R + 2D
Current	10 mA to 10 ARMS	
Resolution	1 to 10 mA	
AC/DC basic accuracy	1 % R ± 3D	0.5 % R + 2D
Inrush current	5 to 65 A (peak)	
Resolution/accuracy	100 mA / 10 % R ± 2D	
IEC 61010 safety	600 V, Cat. III, pol.2	
Interface and software	yes – RS232 optical link	
Auto shut-off	After 10 minutes	
Power supply	6 x 1.5 V	
Dimensions	60 x 108 x 211 mm	
Weight	835 g	
Accessories supplied	2 current cables and 2 voltage cables, 2 test probes, 6 batteries and 1 operating manual	

Accessories :

• The HX 0011 wattmeter switch makes it possible to use the two-wattmeter method with a single wattmeter. This allows measurements onunbalanced 3-wire 3-phase systems. The polarity reversal switchcontains auxiliary contacts ensuring continuity of the curren t circuits during switching operations.
The following measurements are possible for frequencies of 50 to 60 Hz:
- AC voltages from 10 to 600 V,
- AC currents from 0 to 20 A

• The HX 0012 multi-ratio transformer can be used for measurements on loads whose power consumption is higher than the specifications of the wattmeter used. The following measurements are possible for frequencies of 50 to 60 Hz:
- AC voltages from 10 to 600 V,
- AC currents from 0 to 30 A



• Wattcom: multilingual data acquisition and processing software for viewing different quantities on a PC screen, printing screenshots or transferring measurement files into a spreadsheet and storing them.

Accessories supplied: RS232 optical cable and software on CD-Rom

References to order:

PX0110: PX 110 wattmeter
PX0120: PX 120 wattmeter
HX0011: wattmeter switch
HX0012: multi-ratio transformer
HX0013: Wattcom software
HX0014: 6 batteries
HX0021: PX 110 and PX 120 mains power supply
P01330401: USB cable
P03295509: accessory for current measurement

To find out more...
Sales Brochure 906210012

Detailed product brochures can be downloaded from www.metrix.fr

Insulation Testers

MX 406B

Analogue insulation tester

- *Insulation measurement at 50, 250 and 500 VDC*
- *Voltage measurement up to 440 VAC/DC*
- *Continuity (200 mA)*
- *Quick and easy readings with the colour-scale dial*
- *Hands-free use with remote control probe*

Specifications	MX 406B
Insulation	10 kΩ to 200 MΩ at 50/250 and 500 VDC (3 ranges)
Continuity with buzzer	0 to 10 Ω (i > 200 mADC)
Voltage	0 to 440 VAC/DC
Electrical safety	IEC 1010 – Cat. III 300 V
Power supply	3 x 1.5 V batteries for charge life of 1,000 x 5s measurements
Dimensions / weight	155 x 98 x 40 mm / 410 g

Standard state at delivery:

MX406B delivered 1 remote-control probe, 1 black safety lead, 1 black crocodile clip, 3 batteries and 1 operating manual.

References to order:

MX0406B

MX 604

Lightning-arrestor tester / Analogue insulation tester

- *Lightning-arrestor support module for measurements on unmounted lightning arrestors*
- *Probe with remote-control button for in-situ measurements*
- *Measures insulation resistance at 50, 100 and 500 VDC*
- *Quick and easy readings with the colour-scale dial*

Specifications	MX 604
Lighting arrester test	0 to 600 VDC
Insulation	100 kΩ to 2,000 MΩ at 50/100 and 500 VDC (3 ranges)
Battery test	Yes
Electrical safety	IEC 1010 – Cat. III 300 V
Power supply	3 x 1.5 V batteries for charge life of 1,500 x 5s measurements
Dimensions / weight	155 x 98 x 40 mm / 350 g

Standard state at delivery:

MX 604 delivered in a carrying case with 1 removable lightning-arrestor support, 1 remote-control probe, 1 red test probe, 1 straight-straight black lead 1.5m long with built-in test probe, 1 black crocodile clip, 1 lightning-arrestor support clamp, 1 strap mounted on the instrument, 3 batteries, 1 operating manual in 5 languages.

References to order:

MX0604

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure 906110638

MX 407 Insulation Tester

MX 407

With the MX 407, you get two tools in one as it is a megohmmeter equipped with all the functions of a multimeter as well.

- *Insulation at 250 / 500 / 1,000 V*
- *AC or DC voltage measurement up to 600 V*
- *Insulation resistance up to 4 GΩ*
- *Continuity with 200 mA test current*
- *Dual analogue and digital display on wide backlit screen*

Specifications	MX 407
Voltage measurement	
Range	0 to 600 VAC/DC
Accuracy	±0.8 % ± 3 cts (DC)
	±1.2 % ± 10 cts (AC)
Insulation	
Test voltage 250 V	10 kΩ to 4 GΩ
500 V	10 kΩ to 4 GΩ
1000 V	10 kΩ to 4 GΩ
Accuracy Range 4 MΩ/40 MΩ	±2 % ± 10 cts
Range 400MΩ	± 2 % ± 5 cts
Range 4 GΩ	± 4 % ± 5 cts
Voltage alert indicator	Yes > 25 V
Test inhibition	Yes > 25 V
Continuity	
Range	0.0 to 400 Ω
Measurement current	> 200 mA
Lead compensation	Yes
Buzzer	Buzzer triggered if < 35 Ω ± 3 Ω < 35 Ω ± 3 Ω
Resistance	
Range	0.00 to 400 kΩ
Accuracy	±1.2 % ± 3 cts
Auto-shutdown	After 10 minutes without use
Display / Backlighting	LCD + Bargraph / Yes
Power supply	6 x 1.5 V AA batteries
Electrical safety	IEC 61010 600 V CAT IV / IEC 61557-3-4
Dimensions / weight	H 200 x W 92 x D 50 mm / 700 g (with batteries)

Standard state at delivery:

MX 407 insulation tester delivered in a hands-free bag with 1 set of 1.5 m leads (red / black), 1 black test probe, 1 red crocodile clip, 6 x 1.5 V AA batteries and 1 operating manual

References to order:

MX0407

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure

Detailed product brochures can be downloaded from www.metrix.fr

Multi-function Installation Testers

MX 435C and MX 435D

Quick, simple testing of electrical installations according to the NF C 15-100 standard

Ergonomic

- *Compact and lightweight, ideal for intensive use*
- *"Hands-free" bag delivered as standard (MX435C only)*
- *Earth measurement without stakes by measuring the earth loop*
- *3-wire lead with 2P+E plug for quick, error-free measurement on the installation*
- *Powered by rechargeable battery (batteries and charger supplied)*
- *Immediate error-free connection thanks to colour-coding of the terminals and the switch*
- *Continuity with buzzer and fuseless protection against external voltages*

All the tests in a single instrument:

Measurements stipulated by NFC 15-1000

- *Insulation*
- *Continuity*
- *Earth measurement with stakes*
- *Earth measurement without stakes by measuring the earth loop (MX 435D)*
- *RCD test*

Essential measurements

- *Voltage*
- *Current*
- *Leakage current*

Complete Earth Measurement Kit

To find out more...
Sales Brochure

Multifunction installation testers

MX 435C and MX 435D

Specifications	MX 435C	MX 435D
Voltage	0 to 600 VAC	
3P earth	0.10 to 1,999 Ω (2 calibres)	
Earth loop	-	0.10 to 1,999 Ω (2 calibres)
Continuity + buzzer	0.10 to 19.99 Ω (i > 200 mADC)	
Insulation	0.5 to 199.9 MΩ at 500 VDC	
RCD test		
test calibres	30 mA / 500 mA / 650 mA	30 mA / 100 mA / 300 mA / 500 mA / 650 mA
test type	pulse	
Current (with clamp option)	1 mA to 200 A	
Electrical safety	IEC 1010 300 V CAT III / IEC 61557 1-2-4-5-6	
Power supply	2 x 9 V batteries	Rechargeable battery (as standard) Possibility of operation with 2 x 9 V batteries
Dimensions	195 x 97 x 55 mm	
Weight	500 g	670 g

Standard state at delivery:

1 **MX435C** delivered in a "hands-free" carrying bag, 1 set of 2 measurement leads 1.5 m long (red / noir), 2 crocodile clips (red / black), 2 test probes (red / black), 2 batteries and 1 operating manual.

1 **MX435D** delivered in a "hands-free" carrying bag, 1 set of 2 measurement leads 1.5 m long (red / noir), 2 crocodile clips (red / black), 2 test probes (red / black), 1 power supply/charger, 1 measurement lead with mains plug and 1 operating manual.

References to order:

MX0435C
MX0435D

Specific accessories:

Continuity rod: P01102084A
Adapter for loop measurement with MX435D: HX0092

Earth kits:
Basic 15m earth kit P01102019
50m earth kit P01102021

Available accessories:
see pages 84 to 97

To find out more...
Sales Brochure

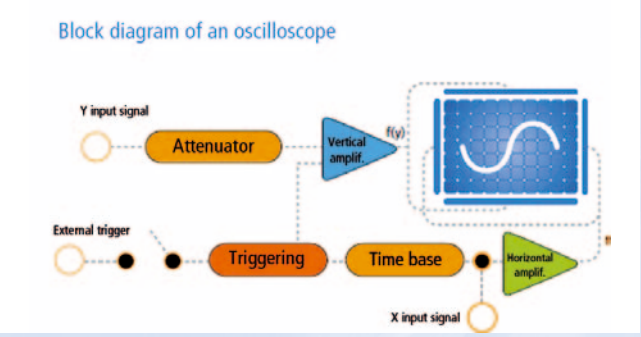
Detailed product brochures can be downloaded from www.metrix.fr

Analogue oscilloscope

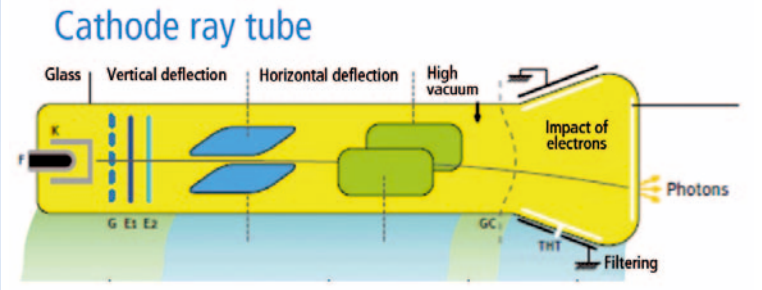
DEFINITION:

■ Analogue oscilloscope

This is an instrument for "qualitative analysis" which can be used to view the waveform of a periodic electrical signal as a function of time.



Choosing your analogue oscilloscope



VERTICAL DEFLECTION:

■ Deflection coefficient:

This is defined by the minimum amplitude (sensitivity) and maximum amplitude accepted by the Y input.

■ Bandwidth (BW):

This is the maximum frequency range accepted by the oscilloscope (in MHz).

■ Rise time (rt):

For a square signal (sheer edges), this is the time required for the rising edge to pass from 10% to 90% of the "peak-to-peak" amplitude.

HORIZONTAL DEFLECTION:

■ Time base (TB):

This involves the circuits in the oscilloscope which control the sweep on the screen.
The choice of the "time base coefficient" allows display of the signals over an appropriate duration

■ Alternate or Chop display modes

Multiplexing of the channels means that several channels (Y1, Y2, …Y4) can be displayed with a single electron beam. In Alternate Mode, each of the traces performs a full sweep of the screen, alternately. For low speeds, portions of the trace are cut up for display during a given sweep on the screen: this is called Chop Mode

■ Trigger

This is a circuit which allows horizontal sweeps and determines the starting point of the signal.
The "trigger level" is the voltage level which must be reached by the signal observed in order to perform a sweep.
In all cases, alternate triggering enables stable display of the traces.

■ XY function

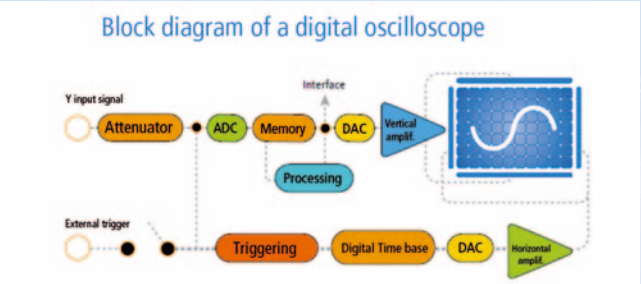
This is a function that allows display of a channel (Y1) as a function of another channel (Y2); the time base is then inoperative.

Digital oscilloscope

DEFINITION:

■ Digital oscilloscope

This is an instrument that allows you to view the waveform of a periodic electrical signal (even if it is very slow) as a function of time, or to view a single event. Because the processing is digital, signals and automatic measurements can be stored and the data can be transferred onto a computer.



Choosing your digital oscilloscope

■ Sampling:

Operation that involves measuring the instantaneous value of a signal's amplitude at regular intervals. This interval determines the "horizontal resolution".

■ Sampling frequency:

The inverse of the sampling interval, this is expressed in MegaSamples per second (MS/s). It varies as a function of the sweep speed.

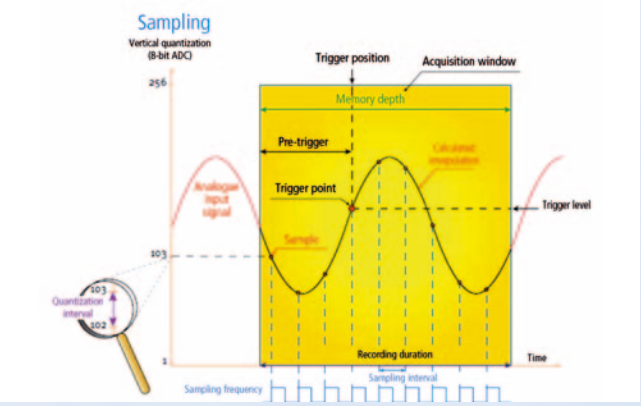
According to "Shannon's theorem", this frequency must be at least double the frequency of the signal to be observed. In practice, the oscilloscope must sample at a frequency at least 10 times higher than the presumed frequency of this signal.

The "useful bandwidth" will be one tenth of the maximum sampling rate and will be expressed in MegaHertz.

■ Sampling modes:

For "real-time" or "one-shot" sampling, all the samples are acquired in a single sweep.

"Equivalent time" sampling can be used to achieve much higher "sampling frequencies" because the samples are taken from several successive sweeps. This mode is reserved for periodic signals.



■ Memory depth:

This is expressed in kilo points (kpoints) and it determines the "recording duration" according to the sweep speed; the higher it is, the longer the "recording duration" will be. An instrument with 10 times more storage capacity allows you to sample 10 times more frequently for a given recording duration.

■ Vertical resolution:

"Quantization" involves converting a sample's value into a binary number. The vertical resolution is defined by the capacity in bits of the Analogue/Digital Converter (ADC). It is 1/256 or 0.4% for an 8-bit ADC (2^8=256)

■ Signal processing:

Particularly useful mathematical operations between signals: +,-, and even complex functions (Fast Fourier Transform (FFT), harmonic analysis, etc.)*

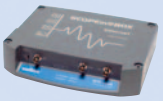
Oscilloscope Selection Guide




Selection criteria	Multi-function instruments for use in the field			Lab
	Electronics	Energy	Industrial	Multi-purpose
	OX 7202-OX 7204 OX 7102-OX 7104 OX 7062	OX 7104P OX 7042P	OX 7042	OX 6202 OX 6152 OX 6062
Bandwidth	60 to 200 MHz	40 to 100 MHz	40 MHz	60 to 200 MHz
Channels (number/types)	2 or 4 / isolated	2 or 4 / isolated	2 / isolated	2 / Class 1
IEC61010 safety	CATII 1000V/CATIII 600V	CATII 1000V/CATIII 600V	CATII 1000V/CATIII 600 V	CATII 300 V
Analogue display or equivalent	-	-	-	-
One-shot digital sampling	2.5 GS/s	2.5 GS/s	2.5 GS/s	1 GS/s
Repetitive mode	50 or 100 GS/s	50 or 100 GS/s	50 or 100 GS/s	50 GS/s
Vertical resolution	12 bits	12 bits	12 bits	10 bits
Detection transient (Glitch)	2 ns	2 ns	2 ns	2 ns
Scaling / physical units	•/•	•/•	•/•	•/•
PC communication / Centronics	•/•	•/•	•/•	•/•
10Mb Ethernet + Web server	•	•	•	•
Mains power supply/battery	•/•	•/•	•/•	•/-
Oscilloscope features				
Max. input sensitivity	156 µV/div	156 µV/div	156 µV/div	156 µV/div
Max. input amplitude	200 V/div	200 V/div	200 V/div	200 V/div
Analogue filters	15 MHz, 1.5 MHz, 5 kHz	15 MHz, 1.5 MHz, 5 kHz	15 MHz, 1.5 MHz, 5 kHz	15 MHz, 1.5 MHz, 5 kHz
Time base (per division))	1 ns-200 s	1 ns-200 s	1 ns-200 s	1 ns-200 s
Roll mode/ XY mode	•/•	•/•	•/•	•/•
Digital storage of signal	2.5 or 50k / channel up to 2 GB on SD Card	2.5 or 50k / channel up to 2 GB on SD Card	2.5 or 50k / channel up to 2 GB on SD Card	2.5k / channel up to 2 GB on SD Card
No. of reference or math curves on screen	4	4	4	4
Envelope / averaging modes	•/•	•/•	•/•	-/•
SPO (Smart Persistence Oscilloscope)	-	-	-	-
Automatic measurements / cursors	19/•	19/•	19/•	19/•
Pulse trigger on width/number	•/•	•/•	•/•	•/-
Video trigger (line counter)	•	•	•	•
Trigger on measurement & automatic backup	•	•	•	-
Hold-Off / adjustable delay	•/•	•/•	•/•	•/•
Calculation functions (+ - / x / : / advanced)	•/•/•/•	•/•/•/•	•/•/•/•	•/•/•/-
Autoset with channel selection	•	•	•	•
Other functions				
Spectral analysis, FFT Lin & Log	12 bits / 72 dB	12 bits / 72 dB	12 bits / 72 dB	10 bits / 60 dB
TRMS multimeter	200 kHz	200 kHz	200 kHz	200 kHz (1)
Harmonic analysis	61 orders	61 orders	61 orders	-
Thershold recorders (no. of channels)	2 or 4	2 or 4	2	-
Power measurement / Power harmonics	•	•	•	-
General specifications				
Colour LCD / B&W / Tube screen	•/-/-	•/-/-	•/•/-	•/•/-
100% “closed casing” software calibration	•	•	•	•
Pages	47-52-53	47-50-51	47 to 49	56 to 59

(1) Depending on model

Oscilloscope Selection Guide




Advanced Lab	Screenless		Lab	Lab	Lab	Educational Lab
Digital "SPO"	SCOPEin@BOX		Digital / Analogue	Differential	Analogue	Isolated
MTX 3354 MTX 3352 MTX 3252	MTX 1052 MTX 1054	MTX 162	OX 8100 OX 8050 OX 8040	OX 832	OX 863 OX 803 OX 530	OX 71
60 to 150 MHz	150 MHz	60 MHz	40 to 100 MHz	30 MHz	30 to 150 MHz	5 MHz
2 or 4 / Class 1	2 or 4 / Class 1	2 / Class 1	2 / Class 1	2 / differential	2 / Class 1	1 + X / isolated
CATII 300 V	CATII 300 V	CATII 300 V	CATII 300 V	CATII 600 V	CATII 300 V	CATII 400 V
MoSPO	MoSPO	MoRémanence	•	•	•	•
200 MS/s	200 MS/s	50 MS/s	50 or 100 MS/s	-	-	-
100 GS/s	100 GS/s	20 GS/s	10 or 20 GS/s	-	-	-
9 bits	9 bits	8 bits	8 bits	-	-	-
10 ns	10 ns	20 ns	20 ns	-	-	-
•/•	•/•	•/•	•/-	-	-	-
•/•	•/-	•/-	•/• (1)	-/-	•/- (1)	-
•	•	•	-	-	-	-
•/-	•/-	•/-	•/-	•/-	•/-	•/-
250 µV/div	2.5 mV/div	5 mV/div	1 to 5 mV/div	10 mV/div	1 to 5 mV/div	50 mV/div
100 V/div	100 V/div	100 V/div	5 or 20 V/div	200 V/div	5 or 20 V/div	5 V/div
15 MHz, 1.5 MHz, 5 kHz	15 MHz, 1.5 MHz, 5 kHz	15 MHz, 1.5 MHz, 5 kHz	20 MHz (1)	-	20 MHz (1)	-
1 ns-200 s	1 ns-200 s	5 ns-200 s	5 or 10 ns-200 s	20 ns-0,2 s	5 or 10 ns-0.1ou 0.2 s	500 ns-0.5 s
•/•	•/•	•/•	•/•	-/•	-/•	-/•
50 k / channel 4 Ref + 8 curves max	50 k / channel PC hard disk	50 k / channel PC hard disk	2x (1.8 or 16 k)	-	-	-
4	4	4	2	-	-	-
•/•	•/•	•/•	•/•	-	-	-
50 kWav./s max	50 kWav./s max	-	-	-	-	-
19/•	19/•	19/•	17/•	-	-/• (1)	-
•/•	•/•	-	-	-	-	-
•	•	-	•	-	•	-
-	-	-	-	-	-	-
•/•	•/•	-/•	•/• (1)	•/•	•/• (1)	-/-
•/•/•/•	•/•/•/•	•/•/•/-	•/•/-/- (1)	•/-/-/-	•/-/-/-	-
•	•	•	•	•	•	-
9 bits / 54 dB	9 bits / 54 dB	8 bits / 48 dB	8 bits / 48 dB (1)	-	-	-
-	-	-	-	-	-	-
31 orders	31 orders	-	-	-	-	-
2 or 4	2 or 4	-	-	-	-	-
-	-	-	-	-	-	-
•/-/-	PC screen	PC screen	-/-/•	-/-/•	-/-/•	-/-/•
•	•	•	-	-	-	-
60 to 63	66-67	64-65	44	43	42	82

Analogue oscilloscopes

OX 530, OX 803B, OX 863B

Analogue oscilloscopes remain ideal instruments for qualitative analysis and for viewing a signal's waveform as a function of time.
These instruments are managed by a microprocessor and offer an AUTOSET automatic adjustment function as well as alternate triggering.

OX 530
- *Simple and complete*

OX 803B
- *The ideal basic instrument*
- *Bandwidth 40 MHz 2 channels*
- *Alternate triggering to optimize display stability in all cases*

OX 863B
- *Integrated READOUT function*
- *Bandwidth 150 MHz 2 channels*
- *Alternate triggering to optimize display stability in all cases*

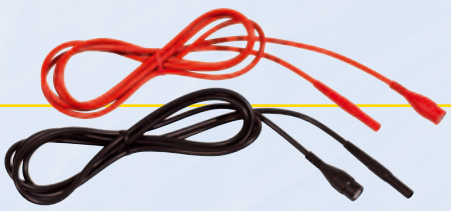
Specifications	OX 530	OX 803B	OX 863B
Quick selection			
Bandwidth	30/35 MHz	40 MHz	150 MHz
Number of channels	2		
Safety according to IEC 61010	Class 1 - Cat. II - 300 V		Class 1 - Cat. II - 400 V
Input sensitivity	5 mV to 20 V/div	1 mV to 20 V/div	2 mV to 5 V/div
Operating modes	CH1, CH2, ALT, CHOP auto, ADD, -CH2, XY	CH1, CH2, ALT, CHOP, ADD, -CH2, XY, component test	CH1, CH2, ALT, CHOP, ADD, -CH2, XY
Time base	1	1 + delay	2
Sweep speed	10 ns to 200 ms/div		5 ns to 100 ms/div
Triggering	CH1, CH2, ALT, EXT, LINE		
AUTOTEST function	SMART AUTOSET		
Special features	Saving of settings, check on user choices by microprocessor, Display of selections by LED	Component test counting	Integrated video line cursors and READOUT
Automatic and cursor measurements	–	–	ΔV, ΔT, 1/ΔΔT, φ
General specifications			
Digital link	RS232 available as an option		
Power supply	94 - 264 V (48/440 Hz)		
Dimensions	435 x 330 x 163 mm / 5.5 kg	435 x 330 x 163 mm / 6.3 kg	435 x 330 x 163 mm / 5.5 kg
Accessories supplied	1 mains power lead, 1 operating manual (S version with 2 probes also available)		2 probes, 1 mains power lead, 1 operating manual

Standard state at delivery:

1 **OX**, 1 main supply lead, 1 user manual

References to order:

OX0530: OX 530 oscilloscope
OX0530-S: OX0530 + 2 probes
OX0803B: OX 803B oscilloscope
OX0830BS: OX0803B+2 probes
OX0863B: OX 863B oscilloscope + 2 probes



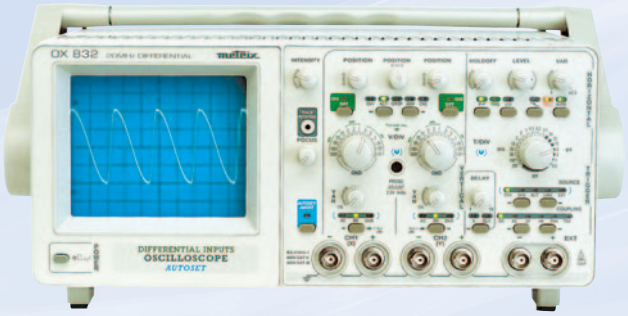
Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906110814

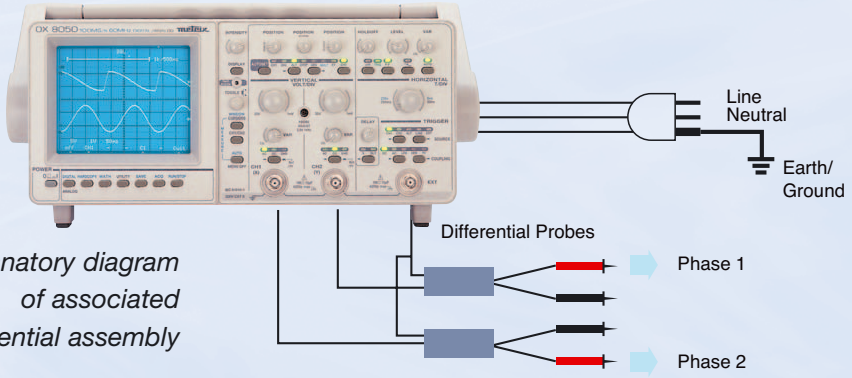
DIFFERENTIAL OSCILLOSCOPE
OX 832

With its specific technical performance features, the OX 832 differential oscilloscope can be used for totally safe measurement of signals not referenced to earth/ground.
It can be used in laboratories, on machines or on electrical engineering equipment.

- *2 in 1: operation of each channel in differential or traditional mode*
- *Global effective bandwidth of 30 MHz*
- *Unrivalled protection: IEC 61010, Cat. III, 300 V – Cat. II, 600 V*



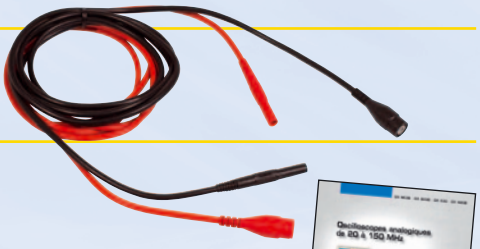
Specifications	OX 832
Bandwidth	Analogue: > 30 MHz
Number of channels	2 differential – 2 BNC/channel
Safety as per IEC 61010	Class 1 – Cat. III 300 V – Cat. II 600 V
Input sensitivity	10 mV to 200 mV/div
Operating mode	CH1, CH2, ALT, CHOP, ADD, XY
Time base	1 + delay
Sweep speed	Analogue: 50 ns to 200 ms/div
Triggering	CH1, CH2, ALT, LINE, EXT
AUTOTEST function	Yes
Special features	Allows floating channels (between channels and channels/earth) in total safety, choice of required operating mode (normal or differential) simply by pressing a key
Power supply	110 VAC or 230 VAC ± 10%
Dimensions / weight	435 x 330 x 163 mm / 6.5 kg
Warranty	2 years



Explanatory diagram of associated differential assembly

Standard state at delivery:

OX 832 oscilloscope, mains power lead, 2 sets of BNC/Banana safety leads, operating manual



References to order:

OX0832: OX 832 oscilloscope

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906110773

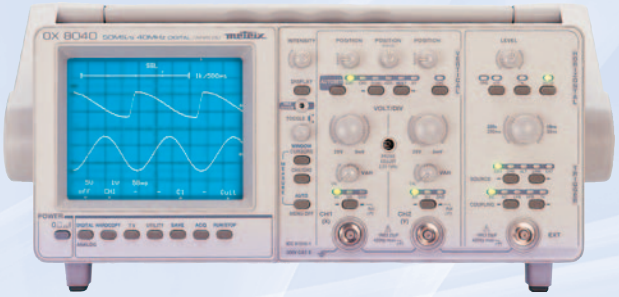
Detailed product brochures can be downloaded from www.metrix.fr

Mixed Oscilloscopes

OX 8040, OX 8050, OX 8100

Combining the advantages of analogue and digital oscilloscopes

Analogue *for displaying a signal in real time without loss or ambiguity.*
Digital *for analysing the causes of a phenomenon by viewing the events which are unique or prior to triggering. For example, there is a button on the front panel that allows users to compare display of the signals in the 2 modes, in order to overcome possible problems linked to inappropriate sampling. One special feature of these products is that* ***their memory depth can be adjusted*** *from 1K to 16K.*
In terms of ergonomics, these products follow the traditional design derived from analogue oscilloscopes.

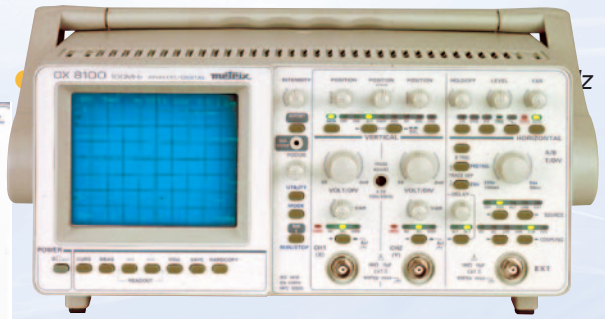


OX 8040
- *40 MHz bandwidth*
- *2 channels*

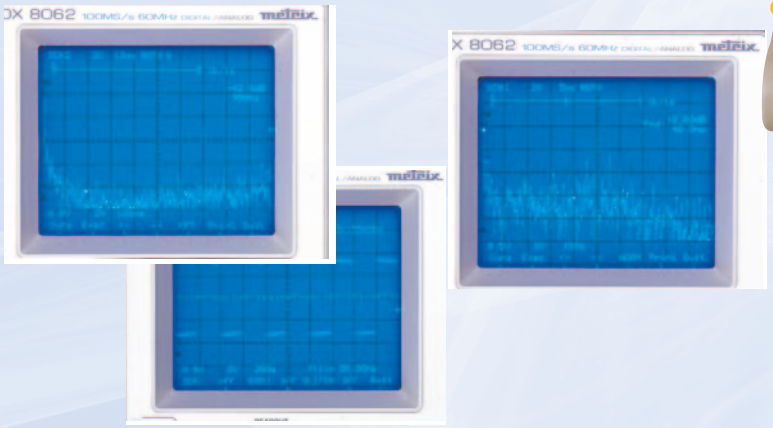
OX 8050 / OX 8100
- *2 channels*
- *IEEE communication*
- *TV triggering with line counting*
- *FFT analysis*

44

OX 8050
- *60 MHz bandwidth*
- *Broad sensitivity range from 1mV to 20V/div*



OX 8100
- *100 MHz bandwidth*



Optional specific accessories

RK0008: racks for 8000 Series oscilloscopes
HA1241R: Centronics series interface
HA1341: GPIB interface board
AG0368: GPIB lead

Available accessories:
see pages 98 to 108

Specifications	OX 8040	OX 8050	OX 8100
Quick selection			
Bandwidth	40 MHz	Analogue: 40 MHz, Digital: 60 MHz	100 MHz
Number of channels	2		
Sampling rate per channel	50 MS/s in one-shot mode, 10 GS/s in ETS mode	100 MS/s in one-shot mode, 20 GS/s in ETS mode	
Vertical resolution	8 bits		
Detection of transients	Glitch acquisition		
Display mode	Vectors, interpolation, persistence (envelope), averaging		
Digital oscilloscopes			
Input sensitivity	5 mV/div to 5 V/div	1 mV/div to 20 V/div	2 mV/div to 5 V/div
Time base	1	1 + delay	2
Sweep speed	Analogue: 50 ns to 200 ms/div Digital: 10 ns to 200 s/div	Analogue: 50 ns to 100 ms/div Digital: 5 ns to 200 s/div	
Memory	2 x (1, 8 or 16 k)		
Automatic and cursor measurements	17 automatic measurements, Vt, 1/t, phase		
Triggering	TV line and frame	TV (PAL, SECAM, NTSC), Line counting	TV (PAL, SECAM, NTSC), Line counting
Trigger types	Edge ±, TV		
Special features	2 oscilloscopes in 1: analogue and digital, built-in FFT and harmonic analysis (except OX 8040), AUTOSET function		
Automatic measurements	17 (analogue and digital)		
General specifications			
Communication with PC and printers	RS232 Centronics available as option	RS232 and Centronics, IIEEE available as option	
Dimensions	435 x 330 x 163 mm		
Weight	5.5 kg		7 kg
Warranty	2 years		

"Standard" state at delivery:

OX oscilloscope, 1 mains power cable, 2 probes*, 1 operating and programming manual, 1 fuse
* OX8050 and OX8100 only

References to order: :

OX8040: OX 8040 2x40 MHz
OX8050: OX 8050 2x60 MHz
OX8100: OX 8100 2x100 MHz
OX8050-GPIB: OX 8050-GPIB 2x60 MHz
OX8100-GPIB: OX 8100-GPIB 2x100 MHz

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906110820

Detailed product brochures can be downloaded from www.metrix.fr

The Scopix Range

9 models to cover all applications

Performance

- *5 instruments in 1! All the Scopix models are simultaneously oscilloscopes, multimeters, FFT analysers, harmonic analysers and recorders.*
- *Bandwidth: 40 to 200 MHz*
- *2 or 4 isolated channels*

Ergonomics

- *Monochrome LCD or colour TFT touch screen with LED backlighting*
- *Traditional control using 33 direct command keys*
- *Control via "Windows-like" menus or graphic objects on the touch screen*

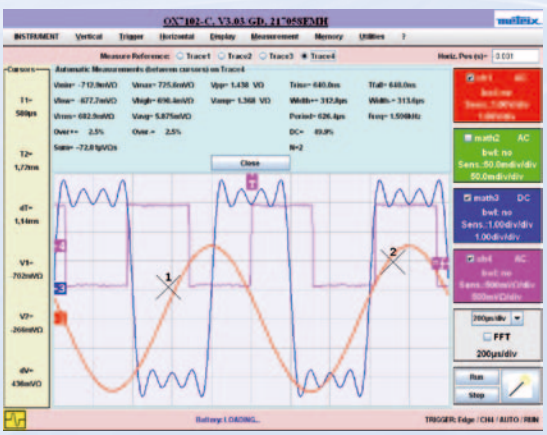
The familiar "Windows-like" environment makes these instruments easy to learn and use. On the touch screen, users can access all the functions via the drop-down menus with the stylus and can act on the graphic elements (cursors, triggers, etc.).

Safety and simplicity of the PROBIX "Plug & Play" system

- *Automatic recognition of the type of sensor and the associated measurement*
- *Accessories powered by the instrument*
- *Automatic scaling and measurement units*

Universal communication

- *Multi-interfaces: RS232, USB, Ethernet*
- *Removable SD card for large storage capacity and data transfer*
- *Built-in Web server with cursor and automatic measurements,*
- *FTP server/client and Instrument Administrator on Ethernet*



The Ethernet interface and the new SCOPENET built-in Web server enable users to control and display on PC all the SCOPIX models by means of their IP address and a simple browser.

Oscilloscopes with Isolated Channels

The extensive functions of the SCOPIX family make it ideal for the requirements in several sectors of activity:

- *In the industrial maintenance sector, the OX 7042 and OX 7104 are designed for maintenance technicians (see details of functions on pages 48-49)*
- *In the Energy sector, the OX 7042P and OX 7104P are available in "Power" versions with special accessories and application modules (see details of functions on pages 50-51)*
- *In Electronics, the OX 7062, OX 7102, OX 7104, OX 7202 and OX 7204 have all the features necessary to meet the needs of technicians and engineers involved in the design, commissioning or maintenance of equipment (see details of functions on pages 52-53*

Specifications	OX 7042	OX 7062	OX 7102	OX 7104	OX 7202	OX 7204
Quick selection						
Bandwidth	40 MHz	60 MHz	100 MHz	100 MHz	200 MHz	200 MHz
	15 MHz, 1.5 MHz or 5 kHz bandwidth limiter					
Channels IEC 61010 safety	2 isolated channels Cat. III – 600			V4 isolated channels Cat. III – 600	V 2 isolated channels Cat. III – 600	V 4 isolated channels Cat. III – 600 V
Sampling rate per channel	2.5 GS/s in one shot mode, 100 GS/s for periodic signals					
Transient detection	Glitch capture – minimum duration 2 ns					
Vertical resolution	12 bits, giving a vertical resolution of 0.025 %					
Display modes	Vector, interpolation, persistence (envelope), averaging (factors 2 to 64)					
Scaling and physical units	Definition of a factor and the corresponding unit					
Digital oscilloscope						
Input sensitivity	2.5 mV to 200 V/div (156 µV max. with zoom, thanks to the 12-bit resolution)					
Time base	1 ns to 200 s/div, 100 ms to 200 s/div Roll mode					
Memory	Up to 200 curves of 2,500 points (including universal "text" format) – memory depth up to 50 k Mass storage of up to 2 GB(1) on removable SD card					
Reference curves on screen	1 per active channel (1 to 4) / Direct storage by means of dedicated key					
Automatic measurements						
with marker	19 simultaneous measurements on a curve or deviations in relation to the reference curve – 12-bit resolution					
Triggering	Edge, pulse width, delay, counting, video with line counter, on one of the 16 automatic measurements					
Calculation functions on channels	FFT on 2,048 points, +, -, x, /, and complex function generator					
TRMS multimeter (AC, AC+DC)						
Measurement channels with 200 kHz bandwidth	2 isolated channels			4 isolated channels	2 isolated channels	4 isolated channels
Measurement functions	Voltage, current, frequency, resistance, capacitance, temperature (Pt 100, K thermocouple), Diode test and audible continuity, relative mode, min/max mode					
Graph of measurements with cursors	Duration from 5 minutes to 31 days, data storage in universal "text" format – triggering on thresholds					
Harmonic analyser*						
Multi-channel analysis	(2 or 4 depending on model) 61 orders, fundamental frequency from 40 Hz to 450 Hz					
Simultaneous measurements	Total Vrms, THD and selected order (% fundamental, phase, frequency, Vrms)					
12-bit digital recorder						
Multi-channel recording	Duration 2 s to 31 days, normal mode or capture of 510 faults with pre-trigger – sampling interval from 40 µs					
Recording conditions	On thresholds or window, simultaneous conditions on several channels – recording in memory or on PC hard disk					
Analysis of recordings	Scale and physical units, measurement using cursors, search for faults, zoom, etc.					
Power measurement*						
Measurement functions	Active power on single-phase or three-phase and PF					
Harmonics	Harmonic analysis on apparent power					
General specifications						
Windows-like operator interface	B&W or colour*	Colour				
Simultaneous display of traces	Up to 4 traces + 4 reference curves on the screen / "full screen" trace mode					
PC communication and printing	Isolated RS232*, USB* or 10 MB Ethernet / Network printers or Centronics / FTP mode to use the PC hard disk for back-up storage / LPD mode for printing on a printer connected to a PC / Web server with real-time display, remote control and automatic measurement					
Power supply by rechargeable battery	Battery life up to 4 hours, fast charging in 2 hours without removing batteries					

** Depending on model or option*

Scopix Industrial Maintenance

OX 7042, OX 7104

2 models equipped with a broad range of functions for acquiring and recording anomalies

- *Bandwidth: 40 or 100 MHz*
- *2 or 4 isolated channels, 600 V Cat III safety (1000 V with the HX0030A probe or the HX0095 adapter)*
- *Colour or monochrome screen*

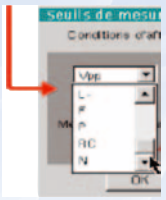
New & unique on the market!

For the Oscilloscope, Recorder and Multimeter modes, it is possible to capture faults by setting a software trigger based on monitoring of the tolerance interval qualified by a duration.

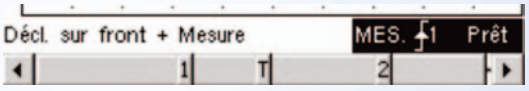
Oscilloscope mode: capture on automatic measurements

Users have access to 16 automatic measurements in this mode. Once the required measurements have been selected, all you have to do is set the trigger thresholds and activate fault capture

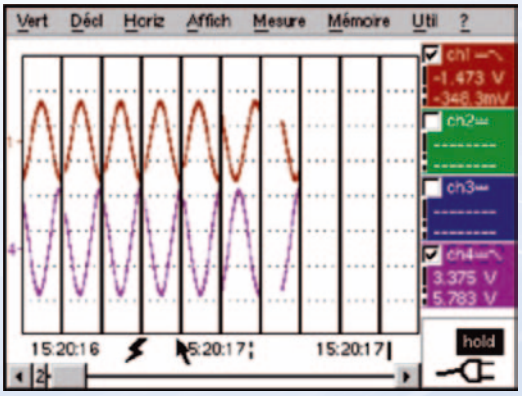
16 different automatic measurements



Storage and automatic reactivation of acquisitions on threshold overruns (AUTO, NORMAL, SINGLE or ROLL)



Recorder mode: fault capture



To monitor the variations of physical or mechanical phenomena over time, there is a software module available to integrate a genuine fast digital recorder into the instrument. It offers acquisition intervals of up to ***40 µs between 2 measurements*** *and the recordings may cover any period from 2 seconds to one month.*

Automatic fault capture *can be performed by monitoring 1 or 2 thresholds per channel. The fault duration can be set from 160 µs to approximately 8 days. This type of monitoring can also be carried out on tolerance windows. Capture triggers storage of the phenomenon observed in non-volatile memory (up to 50 kpoints) or automatic acquisition of successive time/date-stamped faults (max. 500 faults).*

The faults recorded automatically are stored either in the instrument's internal memory or on an FTP server (PC hard disk).

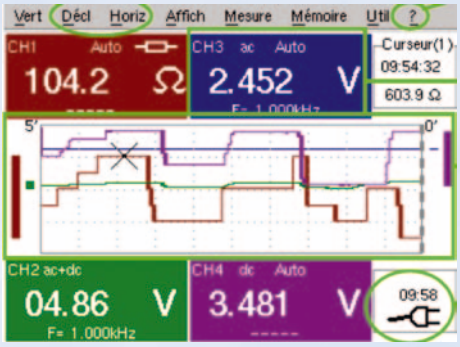
Scopix Industrial Maintenance
OX 7042, OX 7104

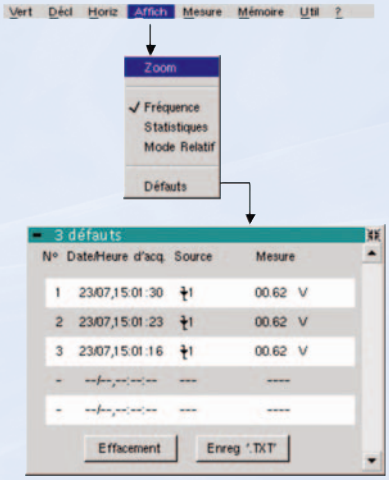
Harmonic Analyser mode

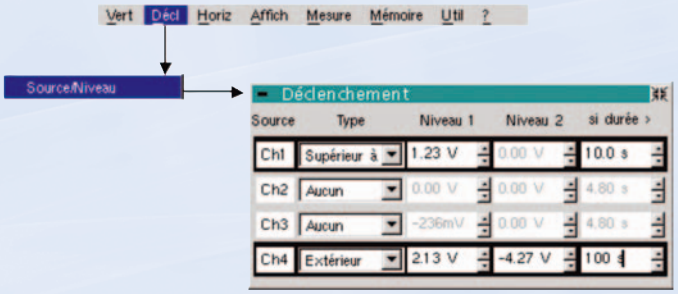
*Harmonic analysis is performed **up to the 61st order** in order to meet the requirements of the EN 50160 standard (THD on a minimum of 50 orders), with a fundamental frequency between 40 and 450 Hz. It is possible to preselect the frequency of the fundamental for the standards (50 Hz, 60 Hz and 400 Hz). This function helps to improve analytical performance and above all allows measurement when the level of a harmonic order is greater than the level of the fundamental.*
It is possible to view the harmonic analyses of two or four channels simultaneously

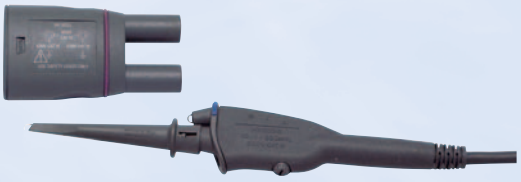
Multimeter mode: monitoring of measurements

The fault can be set from 48 ms to approximately 8 days.
All the faults captured (several thousand can be stored on the SD card) can be recalled by using the Scopix menus.
The list of time/date-stamped faults indicates the source and the result of the measurement.
This list can be saved in ".txt" format.









HX0033 Probix / banana adapter
HX0030A 1/10 voltage probe - 250 MHz

"Standard" state at delivery:

1 OX, mains adapter/charger, NiMH 9.6V-3.8 A/h battery pack, 1/10 Probix probe, banana-Probix adapter, set of banana leads, crossed Ethernet cable, USB cable, µSD-card with SD-card adapter, magnetic stylus, operating and programming manual.

References to order: :

OX7042-MSD: oscilloscope, monochrome screen, 2 x 40 MHz
OX7042-CSD: oscilloscope, colour screen, 2 x 40 MHz
OX7104-CSD: oscilloscope, colour screen, 2 x 100 MHz

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210217

Detailed product brochures can be downloaded from www.metrix.fr

SCOPIX Energy
OX 7042P, OX 7104P

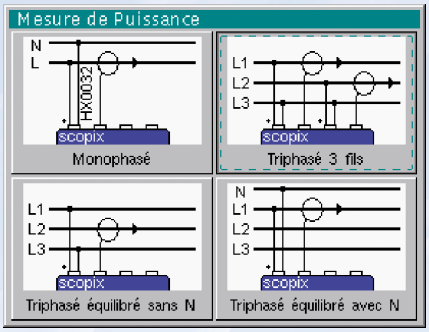
Specific versions of the OX 7042 and OX 7104 for power measurements are available with appropriate software modules and accessories

- *Measurements on networks up to 600 V CAT III or 1000 V (with the HX0030A probe or the HX0095 adapter)*
- *Power and harmonic measurements*
- *2 or 4 isolated channels*

Comprehensive HX0075 module for power measuremen

In Multimeter mode

- *single-phase power*
- *three-phase power on balanced network without neutral*
- *three-phase power on balanced network with neutral*
- *3-wire 3-phase power (method with 2 wattmeters)*



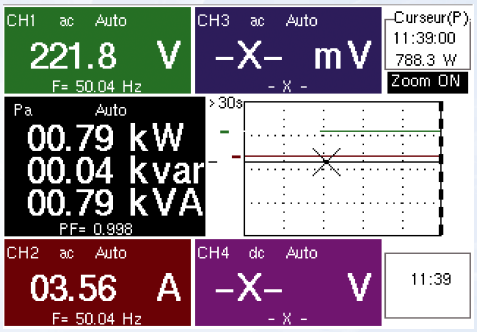
Selection of the type of network powering the load

In Harmonic Analyser mode

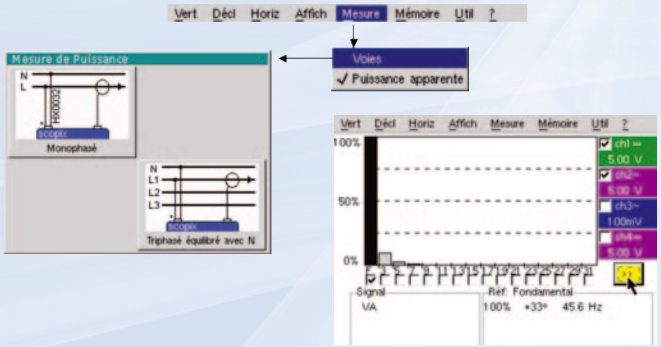
With this module, it is now possible in analyser mode to carry out harmonic analysis on the single-phase apparent power, particularly for motor diagnostics. In addition, it covers all the orders up to the 61st, thus complying with the EN 50160 standard.

Harmonic analysis of the single-phase apparent power is simple and visual because the sign of the power harmonics is indicated in the display:

- *a harmonic coloured black is a "received" harmonic (positive by convention).*
- *a light-coloured harmonic is a "transmitted" harmonic (negative by convention)*



Display of apparent, active and reactive power values and the PF



Harmonic analysis with the HX0028 module

Harmonic analysis is performed up the 61st order in order to meet the requirements of the EN 50160 standard (THD on a minimum of 50 orders), with a fundamental frequency between 40 and 450 Hz.

It is possible to preselect the frequency of the fundamental for the standards (50 Hz, 60 Hz and 400 Hz). This function helps to improve analytical performance and above all allows measurement when the level of a harmonic order is greater than the level of the fundamental.

It is possible to view the harmonic analyses of two or four channels simultaneously.

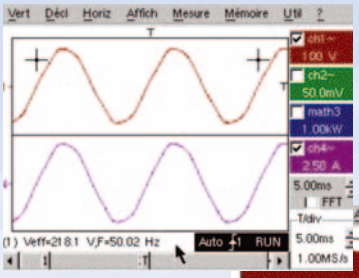
SCOPIX Energy

OX 7042P, OX 7104P

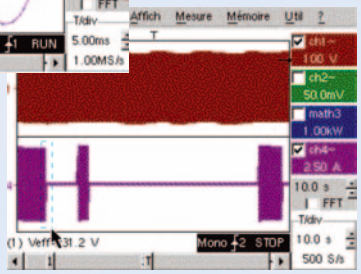
50,000-point memory extension and HX0077 module

Compared with the dedicated analysers, the Scopix Energy offers the possibility of carrying out detailed analysis of the waveforms of transients and disturbances, and allows a wide variety of trigger conditions.
With 50,000 memory points instead of 2,500 points, the resolution or recording duration can be optimized by a factor of 20 thus allowing the acquisition of additional phenomena and more effective analysis.

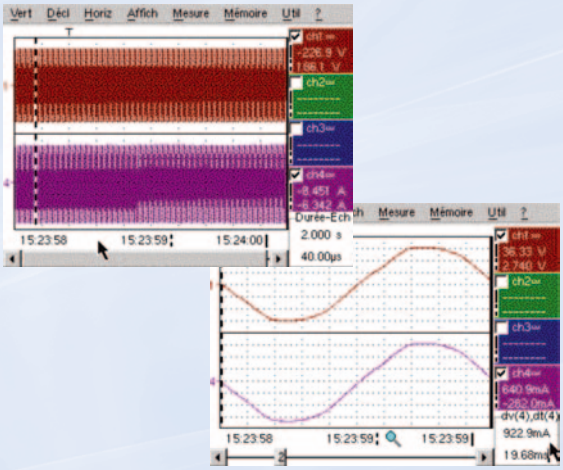
In one-shot mode for time bases from 10 ms to 200 s/div, in ETS mode for all time bases



Ex 1



Ex 2



***SCOPE :** Optimization of the compromise between duration and resolution*
Example 1: 50 ms duration for a 1 µs resolution
Example 2: 100 s duration for a 2 ms resolution

***RECORDER :** acquisition of 50,000 samples, maximum resolution 40 µs, x100 zoom (one mains cycle*

HX0072
AmpFLEX™ current sensor
5 A - 3 000 Arms / 200 kHz

HX0073

"Standard" state at delivery:

1 Scopix with all the software options installed (HX0028-HX0029-HX0075-HX0077), 1 mains adapter/charger, 1 NiMH 9.6V-3.8 A/h battery pack, 2 x 1/10 Probix probes, 2 Probix FLEX current sensors, 1 Probix banana adapter, 1 Probix BNC adapter, 2 industrial accessories kits for 1/10 Probix probes, 1 set of banana leads, 1 straight Ethernet cable, 1 crossed Ethernet cable, 1 USB cable, 1 µSD-card with SD-card adapter, 1 magnetic stylus, SX-METRO/P software, 1 carrying case, 1 operating and programming manual.

References to order: :

OX7042P-CSDK: 2 x 40 MHz oscilloscope
OX7104P-CSDK: 4 x 100 MHz oscilloscope

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210217

Detailed product brochures can be downloaded from www.metrix.fr

SCOPIX Electronics

OX 7062, OX 7102, OX 7104, OX 7202, OX 7204

The 5 models in this range are ideal for the needs of the electronics sector, from PCB design to the development of complex systems

- *156 µV / div input sensitivity for studying signals with very low amplitudes*
- *Bandwidth of 60 to 200 MHz*
- *2 to 4 isolated channels*

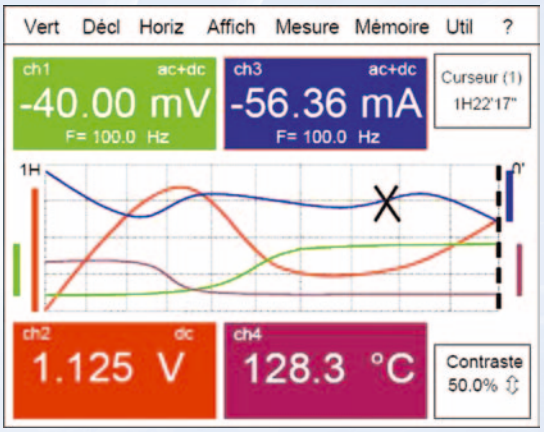
A high-performance instrument

- *Sampling rate of 2.5 GS/s per channel in one-shot mode and 100 GS/s in repetitive mode.*
- *12-bit converter providing a vertical resolution which is 16 times greater than the resolution offered by the conventional 8-bit oscilloscopes on the market.*
- *Isolated channels for simultaneous measurements without signal constraints and with different chassis-earth references for very low sensitivities and for signals up to 1000 Vdc or rms.*
- *2 MB internal memory, up to 2 GB of data on SD Card and direct storage on PC hard disk via Ethernet (FTP Server/Client)*

2 or 4 independent 200 kHz TRMS digital multimeters

Just as for the 4 "instrument" modes, a single press on the dedicated key gives access to the multimeter. These 2 or 4-channel TRMS digital multimeters can be used for the following measurements:

- *amplitude (DC or AC voltage or current, power, temperature, etc.)*
- *resistance, continuity and capacitance*
- *junction or diode tests, etc*



Pt 100 sensors or K thermocouples can be used for temperature measurement.

The associated recorder can be used to monitor and save any changes in the measurements over periods of 5 minutes to 1 month.

SCOPIX Electronics

OX 7062, OX 7102, OX 7104, OX 7202, OX 7204

Real-time FFT on 2 or 4 channels for harmonic analysis of signals

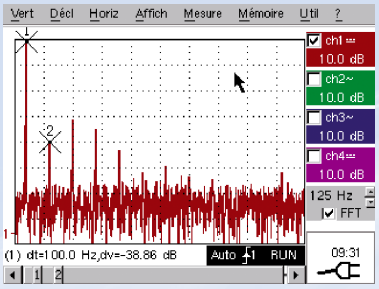
from its representation in the time domain.

It is often particularly useful for effective diagnostics during qualitative analysis of signals:

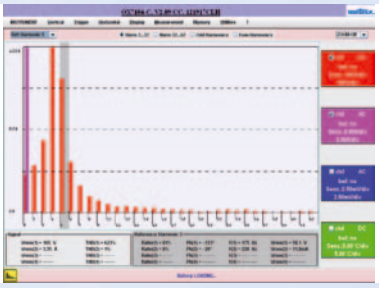
- *measurement of the harmonic orders, sub-harmonics and non-harmonics or distortion in a signal,*
- *impulse response analysis,*
- *noise source detection in logical circuits, etc.*

There are several weighting windows available, as well as 2 representation modes, linear and logarithmic (scale in dB). The 2 cursors can then be used for precise measurements of the frequency lines, levels and attenuations, while taking advantage of a 75 dB dynamic range thanks to the 12-bit / 2.5-GS/s conversion.

The autoset function helps to optimize representation of the spectrum. A graphic zoom can then be applied in order to analyse all the details of the spectrum and perform measurements using the cursors (absolute value or level/frequency difference).



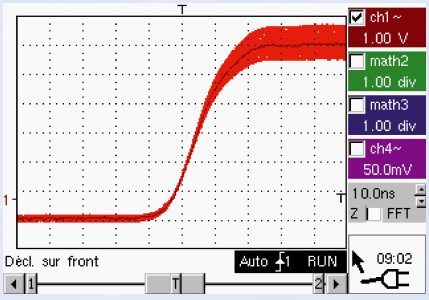
FFT with a Hanning window and a logarithmic scale



FFT with a rectangular window and a linear scale

Persistence in oscilloscope mode

In oscilloscope mode, the new cumulation function allows you to record a signal's variations over time. This is very useful for checking a signal's amplitude or frequency instabilities, modulations and jitters..

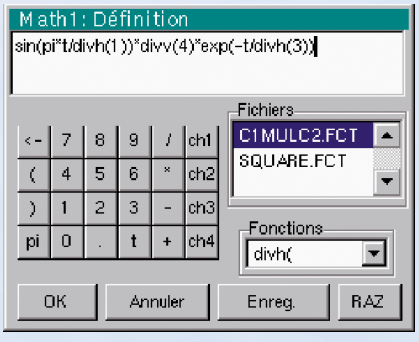


Math functions

In oscilloscope mode, the Math functions can be used to define, for each of the traces, a mathematical function and vertical scaling with the definition of the actual physical unit. The math editor screen is capable of displaying 4 calculated traces in real time, with all the cursor measurements or automatic measurements remaining available..

It is therefore possible to examine the waveforms or the instantaneous power (U x I), for example, and perform all the associated measurements.

The wide range of operators available includes +, -, x, /, as well as sine, cosine, exponential, logarithm, square root, etc., for specific or complex applications.



"Standard" state at delivery:

1 OX, 1 mains adapter/charger, 1 NiMH 9.6V-3.8 A/h battery pack, 1 Probix 1/10 probe, 1 Probix banana adapter, 1 set of banana leads, 1 crossed Ethernet cable, 1 USB cable, 1 µSD-card with SD-card adapter, 1 magnetic stylus, 1 operating and programming manual

References to order: :

OX7062-CSD: oscilloscope 2 x 60 MHz
OX7102-CSD: oscilloscope 2 x 100 MHz
OX7104-CSD: oscilloscope 4 x 100 MHz
OX7202-CSD: oscilloscope 2 x 200 MHz
OX7204-CSD: oscilloscope 4 x 200 MHz

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210217

Detailed product brochures can be downloaded from www.metrix.fr

ProbiX

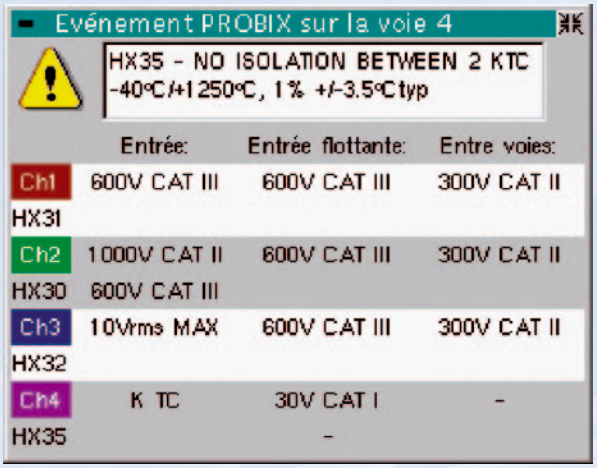
Advantages of the Patented Probix System

Scopix benefits from Probix smart accessories which offer users a host of innovative functions guaranteeing simplicity, effectiveness, versatility and safety.

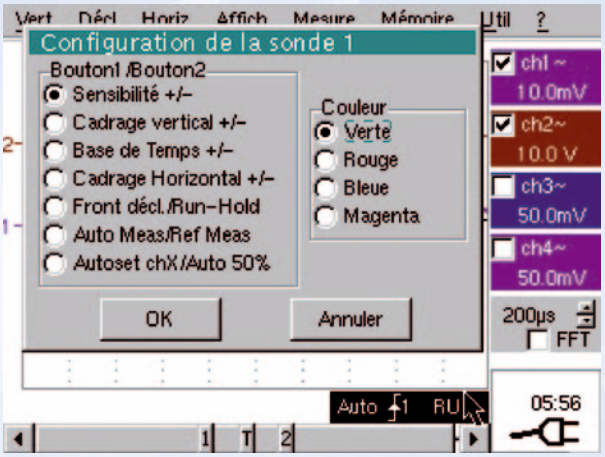
The Probix system, with its smart probes, accessories and adapters, ensures quick, error-free implementation of your instrument.

With this "plug and play" measurement system, the probes and adapters are recognized immediately as soon as they are connected. The instrument does not just identify them, however. It also gives information on their specifications.

Active safety is built-in, notably in the form of safety information and recommendations for users based on their specific configuration.



The coefficients, scales, units and channel configurations are thus managed automatically.
This system also allows users to power the accessories directly from an oscilloscope, without a battery or additional mains adapter.



Some Probix accessories include three control buttons directly accessible on the probe. For example, the first two control buttons on the probes are used for direct modification of the parameter settings for the channel to which they are connected.

Probix current measurement

HX0034: *AC/DC current clamp, 0.02 A to 60 ARMS / 1 MHz*

HX0072: *AmpFLEX™ AC current clamp, 5 A to 3000 ARMS / 200 kHz*

HX0073: *MiniAmpFLEX AC current clamp, 1 A to 300 ARMS / 3 MHz*

HX0094: *Probix 4-20 mA adapter (process)*

HX0096: *Probix BNC adapter / 100mV/A (standard probes*

HX0034

HX0094

HX0096

ProbiX

Advantages of the Patented Probix System

Probix voltage measurement

Probix voltage probe

HX0030A: *1/10 voltage probe, 1000 V CAT II, 600 V CAT III, 250 MHz*

HX0071 : *Industrial Accessories Kit for HX0030A probes (wire grip, banana plug, 50 cm earth connection)*

Probix BNC

HX0031: *Probix adapter for BNC cables*

HX0032: *Probix BNC adapter with built-in 50 Ω load*

Probix Banana

HX0033: *Probix adapter for banana leads*

HX0093: *Probix adapter with 300 Hz filter (PWM systems)*

HX0095: *Probix adapter for 1000 V banana leads*

Temperature measurement

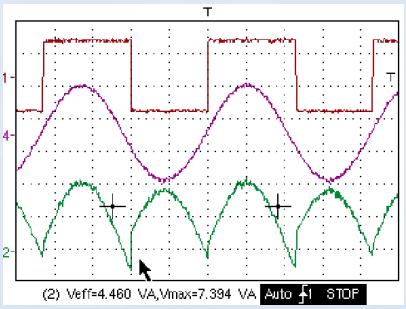
HX0035: *Probix / K Thermocouple adapter*

HX0036: *Probix / Pt100 Probe adapter*

Example of application:

With a Probix AC/DC current probe powered by the oscilloscope and a Probix 1/10 1000 V voltage probe, thanks to the automatic scaling, unit management and the appropriate Math function (multiplication), you can view the instantaneous power in real time and measure the value.

When 2 channels are multiplied, it is possible to view the scaled result, with its physical unit (e.g. W) and the original curves (in this case, the current and the voltage).



To find out more...
Sales Brochure 906210176

General-purpose Digital Oscilloscopes

OX 6062, OX 6152, OX 6202

Laboratory oscilloscopes and multi-function diagnostic tools with extra-compact design!

*The **OX6062** is the basic multi-function instrument.*
*The **OX6152** and **OX6202** are ideal for electronics applications in the laboratory.*

- ***60 to 200 MHz 3-in-1 laboratory oscilloscopes***
  The simple-to-handle OX 6000 models combine the functions of a digital oscilloscope, a recorder-multimeter and an FFT analyser.

- ***Casing designed for laboratory use***
  Extra-compact, lightweight and stable with built-in handle, storage compartment for accessories and mains power lead, dust-proof front panel and rugged silicone keyboard (for long-term reliability)

- ***Ergonomic***
  Multiple-access control, 28 direct command keys with the main functions used, "universal Windows-like" menus, touch screen for graphical control (e.g. moving the traces, adjusting the trigger, moving the cursors, Winzoom functions, etc.)

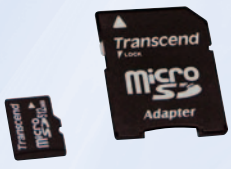
- ***Sampling rate:** 1 GS/s in one-shot mode and 50 GS/s in ETS mode*

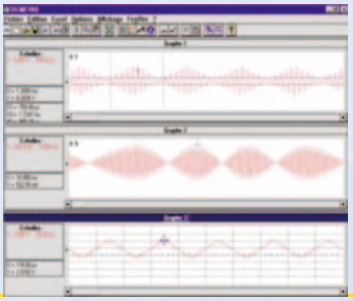
- *Modern multi-interface communication: RS232, USB and Ethernet with Web server*

- ***SD version***
  with lifetime guarantee!

Optional specific accessories

HX0079
SD card
+USB/SD adapter





General-purpose Digital Oscilloscopes

OX 6062, OX 6152, OX 6202

Direct access and intuitive navigation

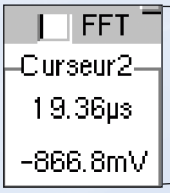
With only 28 keys for direct access to the various modes and parameters and universal "Windows-like" menus available in 5 languages, the oscilloscope is particularly simple to use. The keyboard on the front panel can be used for immediate selection or adjustment (time base, printing, etc.).

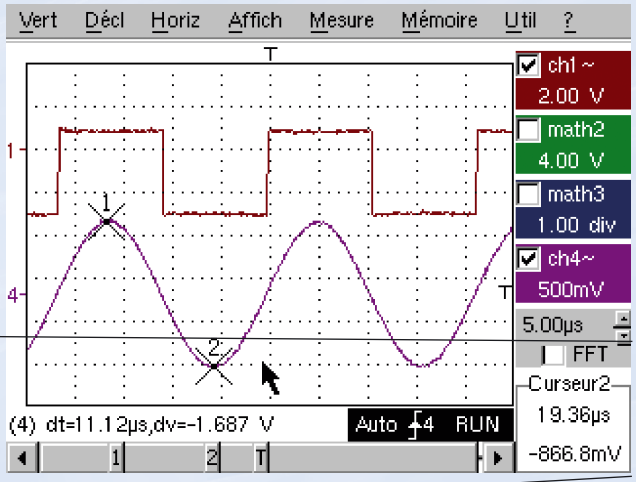
Graphic settings:

The touch screen with its magnetized stylus allow you to change your settings directly on the screen by modifying graphic elements such as the trace position, trigger level, cursors or zoom.

- *la position des traces*
- *le niveau de trigger*
- *les curseurs ou encore le zoom*

A display area in the bottom right-hand corner constantly indicates the setting of the current parameter, such as the value of cursor 2 , for example (see opposite).





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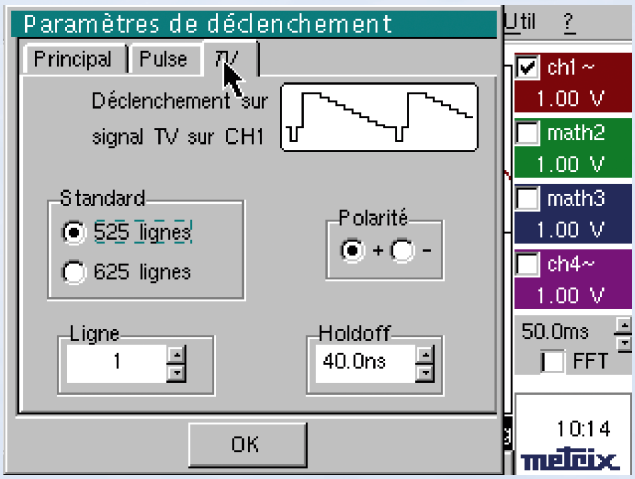
Signal acquisition:

In performance terms, the OX 6000 models offer fast sampling and high resolution with their 10-bit / 1GS/s converter, 50 GS/s on periodic signals, and 2 ns transient capture, thus avoiding under-sampling.

- *Broad dynamic range for input: 2.5 mV to 10 V/div.,*
- *Advanced trigger functions (Pulse, TV, associated signal, etc.), grouped on a single screen (see figure opposite).*
- *Filters: 15 MHz, 1.5 MHz and 5 kHz, enabling you to adapt to different applications: electrical energy, electrical engineering, automotive sector, medical applications, environmental measurements, etc.*



Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906110814

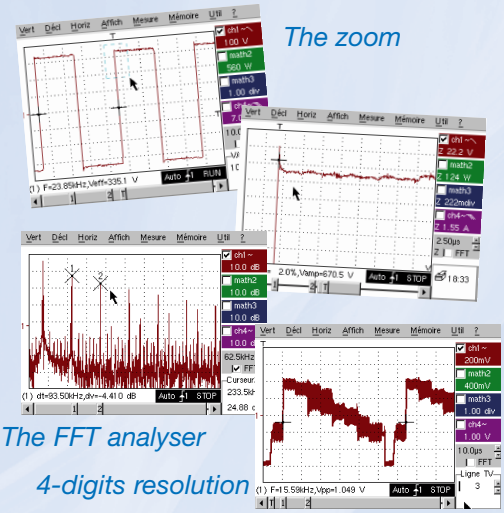
General-purpose Digital Oscilloscopes

OX 6062, OX 6152, OX 6202

Advantages of 10-bit Conversion

*With the graphic "Winzoom" function, users can take full advantage of the **vertical resolution** provided by the 10-bit converter, which is **4 times greater than with a classic 8-bit converter.***

- *The Winzoom function shows all the points acquired for more precise analysis.*
- *Calculated on **2,500 points**, the FFT analysis can be set automatically with the Autoset key.*
- *Improved **60 dB** dynamic range.*
- ***Optimum accuracy** for frequency and amplitude measurements.*
- ***4-digit resolution** for automatic and cursor measurements.*



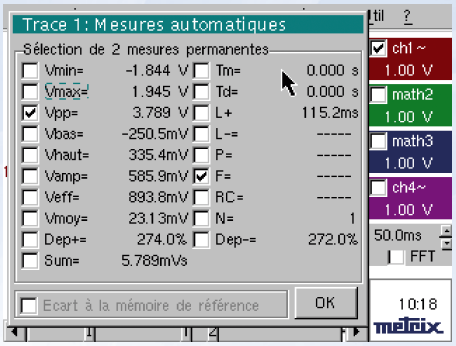
The zoom

The FFT analyser

4-digits resolution

Comprehensive automatic measurements

*For a given signal, users can select the required parameters among **19 automatic measurements.***
A specific measurement area can be selected by framing it with the manual cursors, controlled by the dedicated key, or with the stylus on the touch screen, for greater reliability and accuracy.

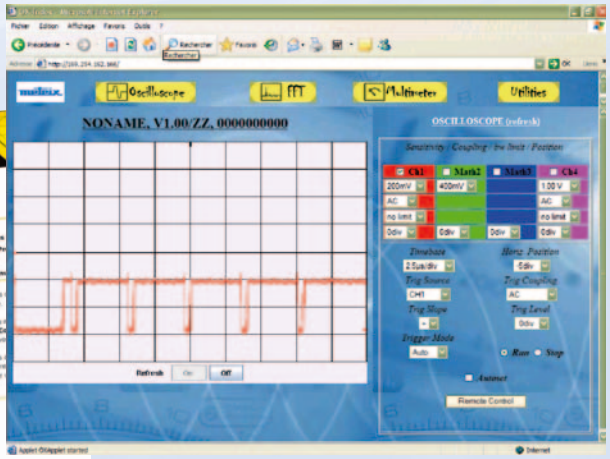


Communication

*The OX6000 models with their **ETHERNET** interface (10 MB transfer) and Web server support new working methods.*

- *Printing on **network printers***
- *Remote management*
- ***File exchange on FTP server** directly in Windows*

The OX 6000 models are upgradable, benefiting from updates with new functions available for download free of charge from our support site: www.chauvin-arnoux.com/support



Available accessories:
see pages 98 to 108

Specifications	OX 6062E-M/OX 6062E-C	OX 6152E-C	OX 6202E-C*
Man-machine interface			
Type of display	5.7" colour or B&W* LCD (115 x 86 mm) - 320 x 240 – CCFL backlighting (adjustable standby)		
Display of curves on-screen	4 curves + 4 references		
Controls	28 direct access controls & shortcuts – 1 ON/OFF key and standby key Touch screen - "Windows-like" menus and graphic controls 5 languages, online menus & help (English, French, German, Italian and Spanish)		
VERTICAL			
Bandwidth	60 MHz	150 MHz	200 MHz
	Bandwidth limiter : 15 MHz, 1.5 MHz or 5 kHz		
Number of channels	2 x Class 1 channels (referenced to earth) - 300 V/Cat. II		
Vertical sensitivity	15 calibres from 2.5 mV to 100 V/div (± 2 %)		
Vertical zoom	"One Click Winzoom" system (10-bit converter and graphical zoom directly on screen) - x 16 max		
Probe factors	1/10/100/1,000 or any scale – definition of measurement unit		
HORIZONTAL			
Time base speed	35 ranges from 1 ns/div to 200 s/div. - Roll Mode 100ms to 200s/div ± 0.1%		
Horizontal Zoom	"One Click Winzoom" system (graphical zoom direct on-screen)		
TRIGGERING			
Mode / Source type	Auto, Trigger, One-shot, Auto Level 50%/CH1, CH2, EXT, LINE Edge, Pulse width (20 ns-20 s), TV frame or TV line (525 = NTSC or 625 = PAL/SECAM) - Continuous adjustment of Trigger position		
DIGITAL MEMORY			
Maximum sampling rate	10 bits - 50 GS/s in ETS - 1 GS/s in one-shot mode (on each channel) Memory Depth : 2,500 points per channel (200 curves in memory + SD card*) GLITCH Mode Duration >= 2 ns / Envelope, Averaging (Factors 2 to 64) / XY Mode		
OTHER FUNCTIONS			
AUTOSET	Complete AUTOSET in less than 5 s, with recognition of channels - Frequency > 30 Hz FFT (Lin or Log scales) - Functions +, -, x, / with management of coefficients & units Measurements: 2 or 3 cursors & 19 automatic measurements – 10-bit resolution, 4-digit display		
MULTIMETRE (sauf OX6202E-C et OX6202E-CSD)*	2 channels – 8,000 counts + min/max bargraph - TRMS – Time-stamped graphic recording (5 min to 31 days)		
AC, DC, AC + DC voltage	400.0 mV to 300.0 VRMS or 400.0 VDC - VDC accuracy 0.5%R+5D – bandwidth 200 kHz		
Resistance	80.00 Ω to 32.00 MΩ - accuracy 0.5%R+ 5D – Fast continuity test 10 ms		
Other measurements	Capacitance from 5.000 nF to 5.000 mF / Frequency 200.0 MHz / Temperature (Pt100) / Diode test 3.3 V		
General specifications			
Screen printing via network (standard) RS232 (standard) or Centronics (optional accessory)	11 B&W or colour printers: IBM Proprinter, Epson ESC/P, Canon HP PCL, Seiko DPU411, Postscript Image files: "BMP" approx. 10 kB, "GIF" approx. 5 kB (storage in memory, transfer via RS232 or Ethernet)		
PC communication	Local Ethernet 10 MB, RS232 (115 Kbps maximum) or USB (option) / Remote Ethernet (10 MB) and Web server / PC software : Sx-Metro (option)		
Mains supply	Adjustable standby mode 98-264 V multi-voltage/47-63 Hz/< 15 W Removable cable		
Mechanical specifications	230 (h) x 185 (l) x 180 (d) mm - 1.2 kg		
Warranty/Origin	3-year warranty (standard versions) or Lifetime warranty (SD Card versions) / Made in France		

** SD Card versions only*

"Standard" state at delivery:

1 **OX**, 1 RS232 lead, 1 crossed Ethernet lead, 1 power cable and 1 operating manual, two switchable probes

References to order: :

OX6062E-M: Digital oscilloscope, 2 x 60 MHz, B&W
OX6062E-C: Digital oscilloscope, 2 x 60 MHz, Color
OX6152E-C: Digital oscilloscope, 2 x 150 MHz, Color
OX6202E-C: Digital oscilloscope, 2 x 200 MHz, Color
OX6062E-MSD: Digital oscilloscope, 2 x 60 MHz, SD, B&W
OX6062E-CSD: Digital oscilloscope, 2 x 60 MHz, SD, Color
OX6152E-CSD: Digital oscilloscope, 2 x 150 MHz, SD, Color
OX6202E-CSD: Digital oscilloscope, 2 x 200 MHz, SD, Color

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210144

Detailed product brochures can be downloaded from www.metrix.fr

SPO Digital Oscilloscopes

MTX 3252, MTX 3352, MTX 3354

So smart that you can choose them for their curves!

Versatile:

With 4 instruments in 1 for unprecedented effectiveness (oscilloscope, real-time FFT analyser, harmonic analyser and logger), these high-performance oscilloscopes are designed for laboratory applications in the electronics, power electronics and electrical engineering sectors.

When used with MTX 1032 dual differential probes, they allow safe, effective measurements on sub-assemblies not referenced to earth or equipped with differentiated chassis-earths.

High-performance:

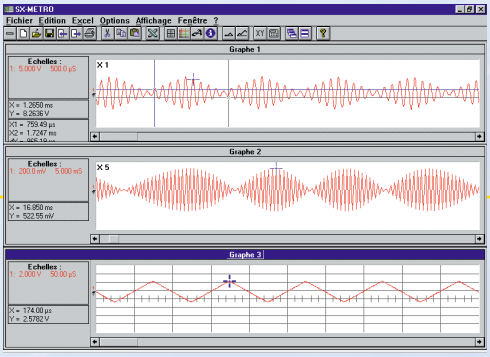
- *Oscilloscopes with 2 or 4 channels - 60, 100 or 150 MHz*
- *Smart Persistence Oscilloscope (SPO) mode for fast acquisition and intelligent display*
- *Resolution doubled by their 9-bit converter*
- *Vertical sensitivity from 250 µV/div to 100 V/div*
- *Acquisition depth of 50,000 points per channel*
- *Direct vertical and horizontal graphic "Winzoom" function*

Ergonomic:

- *Wide multi-directional colour TFT LCD screen*
- *Control by mouse or keyboard*
- *"Windows-like" menus, shortcuts and graphic access*

Communication experts:

- *Standard features include an RS232/Centronics link, USB and Ethernet with an integrated web server*
- *100%-programmable using the SCPI standard, delivered with Labwindows and Labview drivers*



SX-METRO/C software

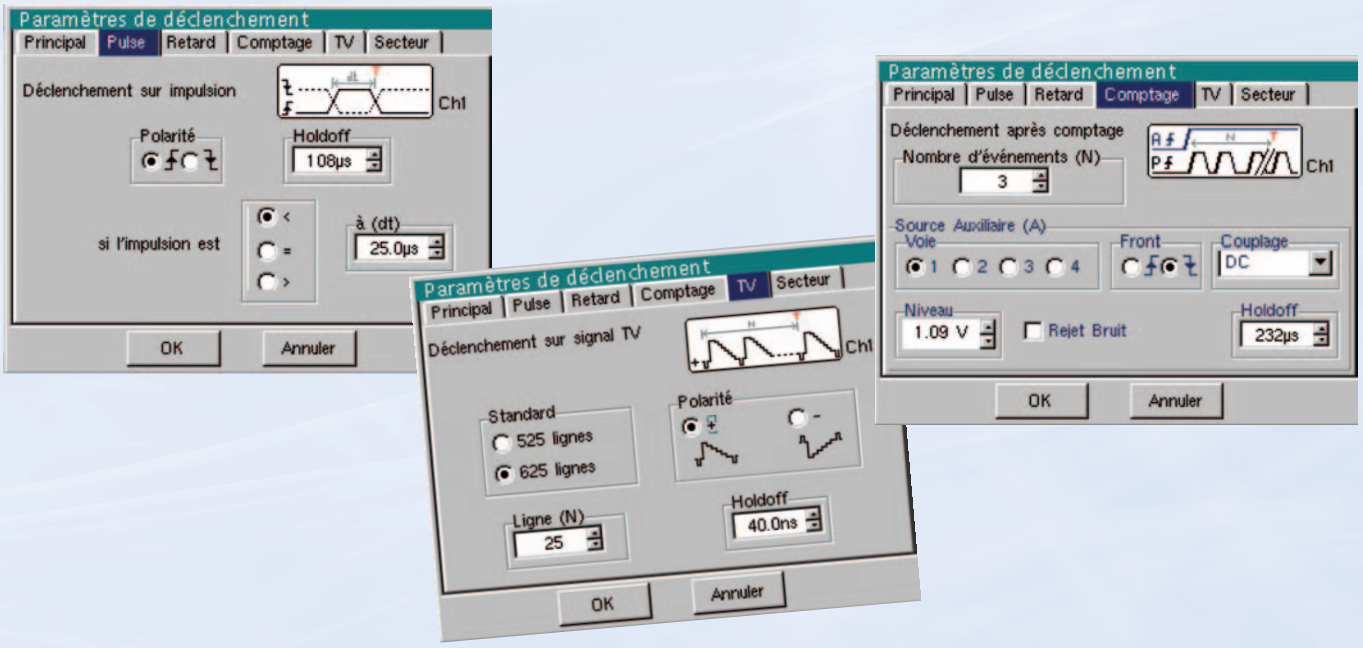
Optional specific accessories

HX0024 (field pack)
HX0028
HX0029

SPO Digital Oscilloscopes
MTX 3252, MTX 3352, MTX 3354

Ergonomics

*There are 5 different trigger modes: Pulse, for triggering according to the **pulse** width, **Delay**, for edge triggering with a delay, **TV**, for triggering on a TV signal, **Counting**, for edge triggering with event counting, and **Mains**, for triggering on the rising or falling edge of the 50/60 Hz mains voltage. In addition to these multiple parameterization modes, Holdoff is available on most of these trigger functions to provide "analogue-like" display showing changes in the signal (modulations, jitters, etc.) and unique phenomena (transients, glitches, etc.)*



Infinite memory for recording...

The 50,000-point memory depth is a reference in this category of oscilloscopes

- *The recording duration and sampling frequency are 20 times higher than on a traditional oscilloscope.*
- *The oscilloscopes in the MTX COMPACT range offer exceptional resolution of 100 GS/s in repetitive mode and 200 MS/s in one-shot mode, allowing time base calibres from 200 s/div to 1 ns/div.*
- *Recording of curves and recall on screen*
- *Possibility of saving files in the instrument and printing them or exporting them onto a PC for subsequent processing in "Windows" applications (reports, spreadsheets, printing, images, etc.)*
- *The traces and files recorded are time/date-stamped.*
- *The files are generated in standard formats: .gif, .pcl, .txt, .bmp, .eps, .prn, etc.*

SPO Digital Oscilloscopes

MTX 3252, MTX 3352, MTX 3354

Smart Persistence Oscilloscope:
The essential tool for intelligent display!

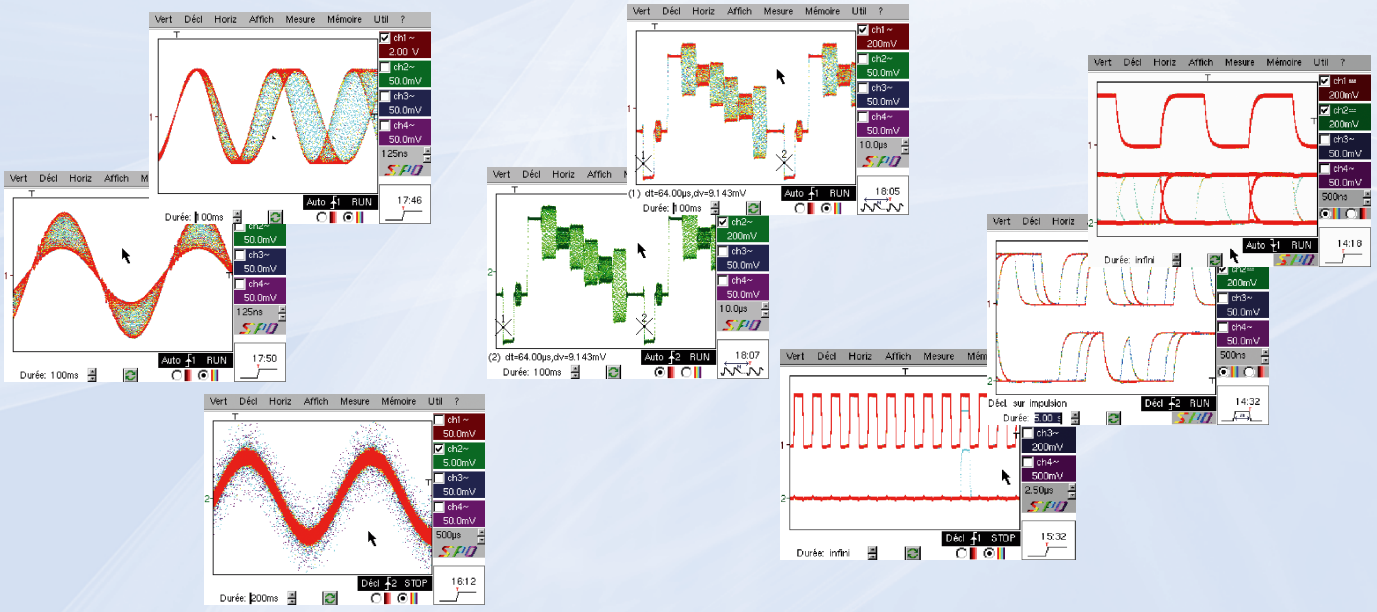
The new generation of MTX COMPACT oscilloscopes is equipped with "SPO" (Smart Persistence Oscilloscope) display, allowing it to show the changes in the signal over time, jitters, modulations and unstable phenomena just as you would expect with an analogue instrument. This display mode can also be used to show unique phenomena, such as transients and glitches.

SPO technology

With the "SPO" technology, it is possible to make the acquisitions persist on screen for a predefined time so that you can observe cumulated traces. The brightness or colour assigned to the point on screen will fade if it is not refreshed by a new acquisition

- *Acquisition therefore takes place in three dimensions:*
  - *time*
  - *amplitude*
  - *occurrence*
- *With its 50,000-point memory depth, the oscilloscope can acquire and process the data in parallel.*
- *The number of acquisitions per second can be multiplied by more than 1,000, so the time between acquisitions is significantly reduced.*
- *On-screen representation of the 50,000 points acquired by means of a smart compression system.*
- *The occurrence brings a statistical dimension to the distribution of the samples. The colour or brightness highlight any signal irregularities.*
- *Display durations for the points acquired: 100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s and infinite*

Applications



Specifications techniques	MTX 3252 SPO	MTX 3352 SPO	MTX 3354 SPO
Quick selection			
Bandwidth	60 MHz	100 MHz	150 MHz
Number and type of channels	2 channels, class 1		4 channels, class 1
Safety according to IEC61010	Cat. II / 300 V		Cat. II / 300 V
Sampling per channel	200 MS/s in one-shot mode (1 channels)		200 MS/s in one-shot mode (2 channels)
	100 MS/s in one-shot mode (2 channels)		100 MS/s in one-shot mode (4 channels)
	100 GS/s in repetitive mode		
Recording time	10 ns to 33 min 20 s		
Vertical resolution	9 bits		
Display mode	8x10 divisions Vectors, interpolation, persistence (envelope), averaging		
Probe factor	Scaling + choice of unit (“Windows” virtual keyboard)		
Digital oscilloscope			
Input sensitivity	2.5 mV to 100 V/div + “Winzoom” vertical expansion x 10 (maximum sensitivity 250 µV/div)		
Time base	1 ns to 200 s/div. Roll mode from 200 ms to 200 s/div		
Memory	Depth 50,000 points 4 references + 4 curves of 50 k (maximum)		Depth 50,000 points 4 references + 84 curves of 50 k (maximum)
Reference curves on screen	4 curves + 4 references		
Automatic measurements	2 or 19 measurements to be chosen from 19 + Automatic phase on all types of curves – Markers and limits		
Triggering	Edge, pulse width or time lag, metering, TV line counter, Hold-off		
Calculation functions on channels	FFT (calculation on 2,048 points), +, - , x , / , - “Tailor-made” functions editor		
SPO (Smart Persistence Oscilloscope)			
Duration of persistence	100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s and infinite		
Display	monochrome or colour		
Acquisition rate	50 kwaveforms/s/channel		
Number of samples acquired	19 MS/s/channel		
Harmonic analyser			
Analysis range	31 orders, simultaneously on 1 or 2 channels fundamental from 40 Hz to 5 kHz		31 orders simultaneously on 1 to 4 channels fundamental from 40 Hz to 5 kHz
Operation	Permanent display: total RMS value & THD – Order selected: %F, phase, freq., Vrms		
Digital recorder			
Acquisition rate	Sampling interval of 40 µs to 54 s		
Recording duration	2 s to 31 days		
Acquisition mode	Conditions by thresholds or window on 2 channels - “Normal” 50 k acquisition or 250 “faults”		Conditions by thresholds or window on 4 channels - “Normal” 50 k acquisition or 250 “faults”
Analysis of recordings	Time-stamped recordings, conversion and units of physical quantities, measurements using cursors and event search, file format compatible with standard spreadsheet software		
General specifications			
Operator control	“Windows- like” & on-line help – all commands available via mouse		
Front panel controls	21 controls + encoder – direct access and shortcuts – 1 “?” multilingual help key		
Communication (depending on model)	RS232 and Centronics, Ethernet, HTML server		RS232 and Centronics, USB Ethernet, HTML server
Dimensions/Weight	210 x 177 x 200 mm – 2.5 kg		

“Standard” state at delivery:

MTX 3252: 1 MTX, 1 mains lead, 2 probes 1/1-1/10 200 MHz, 1 PS2 mouse, 1 mouse mat
MTX 3352: 1 MTX, 1 mains lead, 4 probes 1/1-1/10 200 MHz, 1 RJ45 crossed lead, 1 USB cable
MTX 3354: 1 MTX, 1 mains lead, 4 probes 1/1-1/10 200 MHz, 1 PS2 mouse, 1mouse mat, 1 RJ45 straight lead, 1 RJ45 crossed lead , 1 USB cable

References to order:

MTX3354E-C: Digital oscilloscope 4x150MHz, color, Ethernet
MTX3354E-CK: MTX3354E-C + SX-METRO/P
MTX3252BE-C: Digital oscilloscope 2x60MHz, color, Ethernet
MTX3352BE-C: Digital oscilloscope 2x100MHz, color, Ethernet
MTX3252BED: MTX3252BE-C + differential probe MTX1032-B
MTX3352BED: MTX3352BE-C + differential probe MTX1032-C

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210055

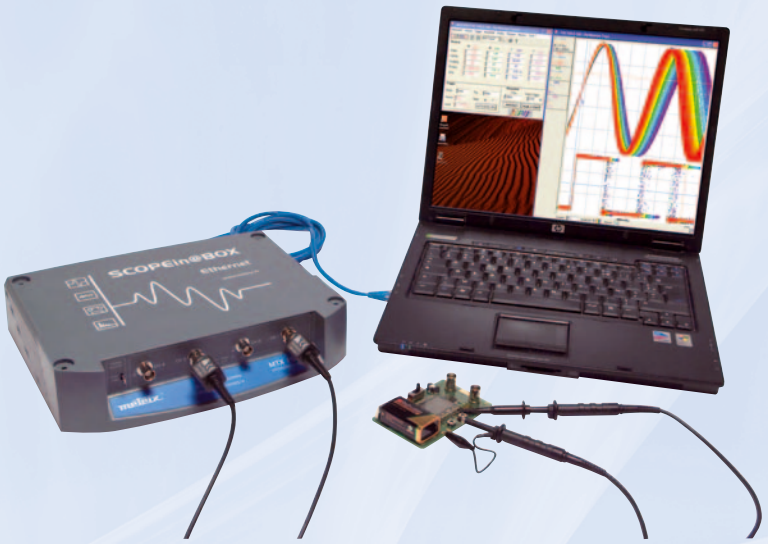
Detailed product brochures can be downloaded from www.metrix.fr

Oscilloscopes connected to a PC

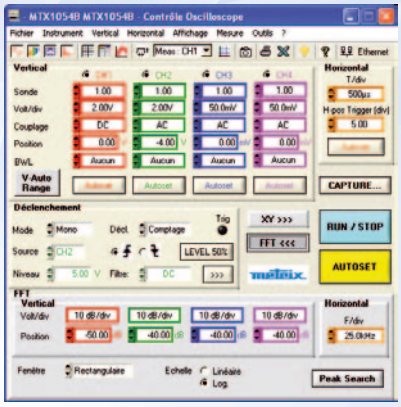
SCOPEin@BOX

PC ergonomics and environment

*The **MTX 1052-PC, MTX 1054-PC & MTX 162** are genuine **"scopes in a box"**. Compact, lightweight and stackable, these measuring instruments can be connected directly to a PC via a USB or Ethernet interface and PC software. New WiFi versions now also offer wireless Ethernet.*

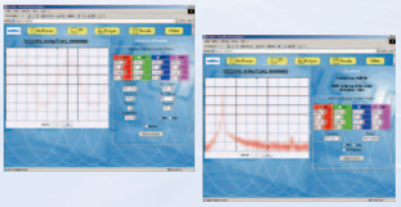


*Users benefit from all the PC's advantages in terms of **storage capacity** (PC storage capacity) and display (minimum resolution 1024x768), allowing **more precise analysis of the curves.***
*The functions are directly accessible from the menus and the Windows toolbar by means of keyboard shortcuts or the mouse. Users control the oscilloscope using the "instrument" control panel, which contains all the commands found on normal oscilloscopes. **Online help** is also available.*



SCOPEin@BOX control panel
General Commands

*Multi-windowing enables simultaneous display of the traces, the zoom, the FFT analysis and the measurements... In this way, users can obtain multiple combinations and check out all the relevant information at a glance. The **MTX 1052 & MTX 1054** offer the SPO (Smart Persistence Oscilloscope) display mode. This principle combines the advantages of analogue and digital oscilloscopes.*
It can be used to manage the display and acquisitions simultaneously, making it possible to increase the acquisition rate to several tens of thousands per second. With SPO, users can detect brief events, instabilities and untimely anomalies.



SCOPEin@BOX
Display of "X(t)" traces
in SPO mode

Universal communication

*Each oscilloscope benefits from a universal USB communication mode and a 10 Mb Ethernet interface for integration in a local or remote network. When started up in **USB or ETHERNET mode**, the software automatically detects the instruments connected to the PC or to the network. "Unlimited" storage of the traces is possible simply by saving the files. Firmware upgrades are automatic. It is also possible to export results into Excel or print in Word with just 1 or 2 clicks..*

The "W" versions of the MTX 162 and SCOPEin@BOX offer WiFi communication.

Oscilloscopes connected to a PC

MTX 162

Compact, economical and simple to use, *this screenless measuring instrument in@BOX benefits from the same high* ***performance*** *and* ***know-how*** *as all Metrix® oscilloscopes. When connected to a PC, it takes advantage of all its useful features (large screen, unlimited storage capacity, etc.).*

- *Multiple functions: Oscilloscope, FFT Analyser and Recorder*
- *Normal or remanent display (like on an analogue oscilloscope)*
- *Deactivatable vertical and horizontal autorange functions to simplify operation*
- *Communication: USB, Ethernet and WiFi (MTX 162UEW)*
- *Automatic detection of the available instruments connected to the PC via USB the Ethernet network*

Specifications	MTX 162
Quick selection	
Bandwidth	60 MHz (bandwidth limiter:15 MHz, 1,5 MHz or 5 kHz)
Number of channels	2 channels, Class 1, common chassis-earths
Sampling rate per channel	Repetitive = 20 GS/s – One-shot = 50 MS/s
Digital oscilloscope	
Vertical sensitivity	8 bits
Sweep speed	32 calibres from 5 ns to 100 s/div
Memory capacity	Depth = 50,000 points
Automatic measurements	19 measurements + Automatic phase – On any type of curve – Markers and limits
Triggering	
Mode	Auto, Triggered, One-shot ROLL, auto level at 50%
Sources	CH1, CH2, mains
Type	Rising or falling edge, pretriggering adjustable from 0 to 100%
Digital recorder	
Recording duration	2 s to 33 minutes
Acquisition mode	Dedicated ROLL mode
General specifications	
Screen commands	"Windows-like" with online help – all commands accessible with mouse
Communication	USB type B and Ethernet RJ45 (10 Mb local or remote communication), HTML server (except *) + WiFi (Mtx162UEW)
Dimensions / weight	270 x 213 x 63 mm – 1.8 kg
Warranty	3 years / France

"Standard" state at delivery:

MTX oscilloscope, 1 mains lead, 2 voltage probes, 1 USB cable, 1 CD-Rom containing the SCOPEin@BOX_LE software for PC

References to order: :

MTX162UE: MTX162 USB+Ethernet
MTX162UEW: MTX162+WIFI

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210203

Detailed product brochures can be downloaded from www.metrix.fr

Oscilloscopes Connected to a PC

MTX 1052, MTX 1054

*Offering **the same performance** as traditional oscilloscopes, the **SCOPEin@BOX** models also have the advantage of a **design as compact as their prices!***
When connected to a PC, they take full advantage of all the performance features (large screen, unlimited storage capacity, etc.), while remaining easy to set up and use.

Versatile:

With 4 instruments in 1 for unprecedented effectiveness (oscilloscope, real-time FFT analyser, harmonic analyser and logger), these high-performance oscilloscopes are designed for laboratory applications in the electronics, power electronics and electrical engineering sectors

High-performance:

- *2 or 4-channel oscilloscopes, 150 MHz*
- *Smart Persistence Oscilloscope (SPO) mode for fast acquisition and smart display*
- *Resolution doubled by its 9-bit converter*
- *Vertical sensitivity from 250µV/div to 100V/div*
- *Acquisition depth of 50,000 points per channel*
- *Advanced trigger functions (pulse, delay, counting, main/auxiliary channel, fault capture, etc.)*

Ergonomic:

- *Takes full advantage of the PC screen's size and high resolution*
- *Multi-windowing with trace, FFT, zoom and automatic measurements simultaneously*
- *"Windows" environment with familiar ergonomics*
- *Large storage capacity, direct use of files in Windows (Excel, Word, images, etc.), printing in Windows, etc*

Communication experts:

- *Equipped with a USB link and Ethernet with integrated web server*
- *100%-programmable using the SCPI standard, delivered with Labwindows and Labview drivers*
- *Products designed for integration in test benches (19" rack versions)*

Optional specific accessories

When used with MTX 1032 dual differential probes, they allow safe, effective measurements on sub-assemblies not referenced to earth or equipped with differentiated chassis-earths.

DIFFERENTIAL INPUTS 600 V / CAT III (associated with the MTX 1032-B casing)

Specifications	MTX 1052	MTX 1054
Quick selection		
Bandwidth	150 MHz (Bandwidth limiter: 15 MHz, 1.5 MHz ou 5 kHz)	
Number of channels	2 channels, class 1, common earths	4 channels, class 1, common earths
Sampling per channel	Repetitive mode = 100 GS/s – One-shot mode = 200 MS/s (2 channels), 100 MS/s (4 channels)	
Vertical resolution	9 bits	
Display mode	8 x 10 div.- Multiple windows (control panel, trace, zoom, FFT, etc.)	
Probe factors	Scaling of the complete physical signal + choice of unit (“Windows” virtual keyboard)	
Digital oscilloscope		
Vertical sensitivity	2,5 mV – 100 V/div	
Sweep speed	35 calibres from 1 ns to 200 s/div	
Memory capacity	Depth = 50,000 points – storage capacity depending on PC configuration used	
Number of curves on screen	4 curves + 4 References	
Automatic measurements	2 or 19 measurements from 19 + Automatic phase – On any type of curve - Markers and limits	
Other functions	FFT (calculation on 2,048 points), +, -, x, / - “Tailored” function editor	
SPO (Smart Persistence Oscilloscope)		
Duration of persistence	100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s and infinite	
Display	Monochrome or colour -	
Performances	Acquisition rate 50 kwaveforms/s/channel, no. of samples acquired: 19MS/s/channel -	
Harmonic analyser		
Analysis range -	Fundamental + 31 orders, on 1 to 4 channels and fundamental from 40 Hz to 1 kHz simultaneously	
Processing	Permanent display: total RMS value & THD - selected order: %F, phase, freq, Vms	
Triggering		
Mode	Auto, Triggered, One Shot	
Source	CH1, CH2, EXT, Mains	CH1, CH2, CH3, CH4, mains
Type	Edge, Pulse Width or Delay (40 ns-10.5 s), Counting (2 - 16,384 events), TV (525 = NTSC, 625=PAL/SECAM), Adjustable pretriggering from 0 to 100%, Hold-off (40 ns-10.5 s)	
Coupling	AC, DC, LFReject, HFReject	
Sensitivity	0.6 div up to 10 MHz, 1.5 div from 10 MHz to 150 MHz	
(CH1, CH2, CH3 or CH4)	Trigger level +/- 8 div.	
Digital recorder		
Sampling rate	Sampling inteval from 40 µs to 53.57 s	
Recording duration	2 s to 31 days	
Acquisition mode	Conditions by thresholds on 4 channels- Mode for capture of 100 faults in working memory.	
	Mode for capture in files according to PC capacity	
Operation	Time-stamped recordings, conversion and units of physical quantities, measurments by cursors and event search, file format compatible with standard spreadsheet software (“.txt”)	
General specifications		
Screen commands	« Windows like » & online help - 100% of commands available with mouse	
Communication	USB type B and Ethernet RJ45 (10 MB locale or remote), HTML server, Wifi	
Dimensions / weight	270 x 213 x 63 mm or 19”/3U – 1.8 kg	
Warranty	3 years / France	

“Standard” state at delivery:

1 MTX, 1 mains power lead, 2voltage probes, 1 crossed Ethernet lead, 1 straight Ethernet lead, 1 USB lead, 1 CD-Rom with SCOPE in@BOX_LE PC software

References to order:

MTX1052B-PC: MTX1052 2 channels, 150 MHz
MTX1054B-PC: MTX1054 4channels, 150 MHz
MTX1052BW-PC: MTX1052B-PC WiFi version
MTX1054BW-PC: MTX1054B-PC WiFi version
MTX1052B-RK: MTX1052B-PC RACK version
MTX1054B-RK: MTX1054B-PC RACK version

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210203

Detailed product brochures can be downloaded from www.metrix.fr

Spectrum Analyser

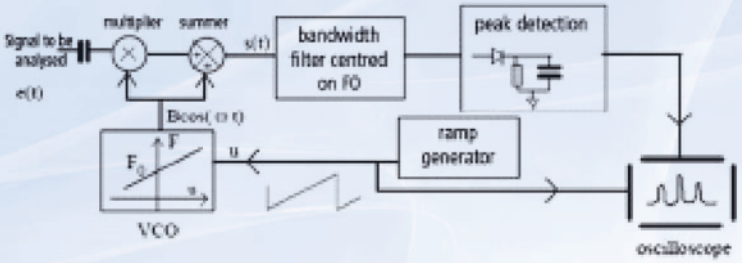
Spectrum analysis can be used to measure the band, detect disturbance lines, quantify phase jitter by direct reading, check the steps, determine the rated frequency, search for residual lines for comparison, etc.

Heterodyne spectrum analyser

Spectrum analysis involves moving a narrow bandwidth filter in front of the signal to be analysed. However, because of the difficulty of producing a narrow bandwidth filter with an adjustable mid-band frequency, the problem is avoided by "heterodyning".

With this technique, the bandwidth filter has a fixed mid-band frequency of F0 and the signal to be analysed is modified by modulation, so that the different frequency components are successively modulated to the frequency F0. To achieve this, a multiplier is used which outputs the sum and the difference of the frequencies applied to the two inputs, resulting from the trigonometric relation:

cos(a)cos(b) = (1/2)[cos(a+b) + cos(a-b)].

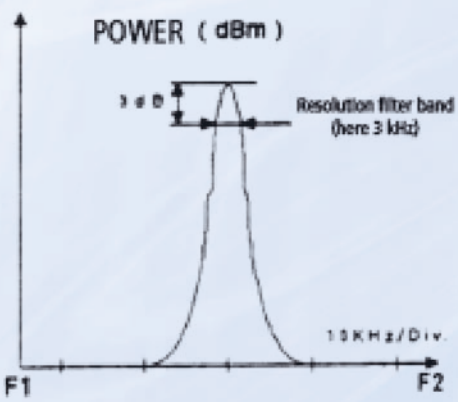


Block diagram of a heterodyne spectrum analyser

The analytical filter

The analytical filter is also called the resolution filter. The narrower the filter, the finer the analysis and the closer you get to the shape of the line analysed (because the filter itself resembles a line). Using different reasoning, it could also be said that a signal passing through an extremely narrow filter can only come out as a pure sine wave, represented by a line!

It is tempting to use a narrower filter to analyse a signal, but compromises need to be made. The narrowness of the filter limits the amount of data that it can supply per second, which means that, to obtain a large number of measurement points (i.e. better frequency resolution), more time will be necessary with a narrow filter than with a wider filter.



Width of the analytical filter

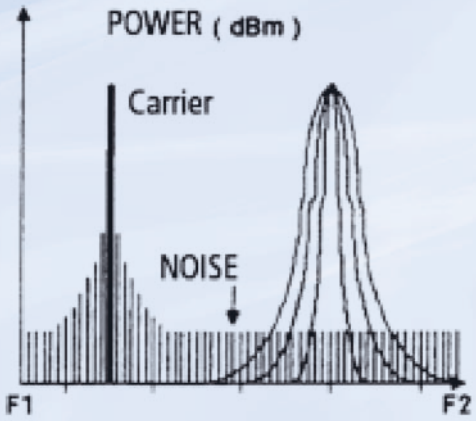
Spectrum Analyser

Noise power and power of a line

The analytical filter indicates the power of the F0 line when it is centred on it (leaving aside the filter losses which can be compensated). Whatever the width of the filter, the maximum height of the curve on screen will correspond to the power of the line.

Noise measurement depends on the width of the analytical filter

This means that phase jitter can be measured with the spectrum analyser, in dBc/Hz, which is the difference in dB between the F0 line power measurements in dBm and the noise power in dBm/Hz at a given distance from the carrier.



Noise measurement with several analytical filters

Video filter

This serves to smooth the curve on the screen, particularly at the noise level. It has no effect on the actual measurement, as it only applies to the on-screen display of the curve. However, it may affect the sweep time: a 10 Hz video filter will not deliver more than 10 data items per second, so if 1,000 points are necessary to plot the curve, it will not be possible in less than

Application to Electromagnetic Compatibility (EMC)

Electrical and electronic appliances operate thanks to the currents from the electricity supply. These currents, which are usually variable, produce electromagnetic waves that are propagated in space (radiation) or along cables (conduction).

When these emissions are not intentional, as is the case with a transmitter, for example, they are referred to as electromagnetic interference (EMI). Strict standards have been set up worldwide to define the maximum EMI levels authorized for a given appliance and frequency.

Once again, a spectrum analyser with a wide-band antenna is the ideal tool for measuring the EMI emitted by any system.

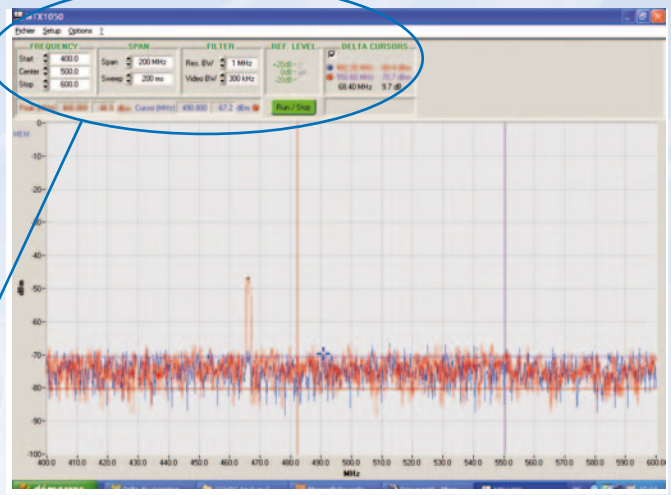
Spectrum analyser
MTX 1050

The lightweight, portable MTX1050 general-purpose spectrum analyser is particularly suitable for the needs of small businesses and technical education.

*When coupled with the H-field probes, the **MTX1050-PC** analyser can be used to carry out EMC prequalification tests.*

- *Particularly compact and economical "screenless" instrument*
- *User interface via PC: "Plug & Play" USB connection, large high-resolution colour display*
- *4 simultaneous measurements*

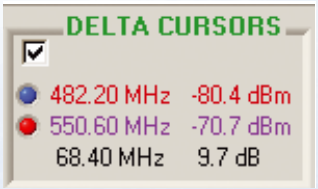
(Peak auto, Marker, 2 difference cursors)



Delta cursor

Peak cursor

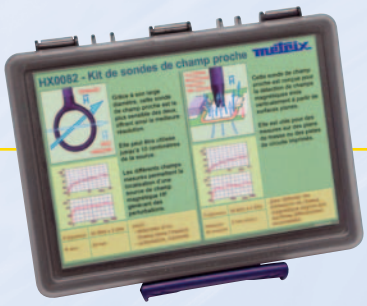
Free cursor



- *Frequency range from 400 kHz to 1 GHz*
- *High stability with frequency drift limited to ±5 ppm/year*
- *Wide dynamic range for measurement, from -90 dBm to +20 dBm*
- *6 sweep speeds, 3 analytical filters and 3 video filters, built-in FM demodulation*
- *Ideal for EMC testing.*

Optional specific accessories

HX0082: H-field probes kit, 3 GHz
HX0083: 20dB amplifier for HX0082 probes



Spectrum analyser
MTX 1050

Specifications	MTX 1050
Frequency	
Display	Colour display, high resolution, large dimensions, on PC screen Up to 5,000-point sweep in horizontal resolution (depending on speed)
Bandwidth	400 kHz to 1 GHz
Resolution on central frequency value	4 1/2 digits - 10 kHz max.
Internal frequency	Accuracy ± 0.625 10-6
Frequency stability	±5 ppm/1 year
Frequency span	Zero Span, 1 MHz to 100 MHz/div - 1-2-5 sequence
Resolution	
Filters	12 kHz, 120 kHz and 1 MHz
Video filters	1 kHz, 10 kHz and 300 kHz
Level	
Input dynamics	3 ranges, from -90 dBm to +20 dBm
Noise floor level) (measurement dynamics	Without amp: -80 dBm With amp: -95 dBm
Display dynamics	50 dB and 100 dB
Harmonic response	<-40 dBc for a level of -20 dBm input
Non-harmonic response	<-70 dBc (<-60 dBc on identified frequencies)
Input	
Max. admissible power	+ 25 dBm permanent, ±30 VDC
Impedance	50 Ω rated
Input attenuation	One 20 dB rated attenuator, one 20 dB ratedl amp
Connector	"BNC" Type
Markers/modes	4 simultaneous cursors /1 automatic peak detection marker, "magnetised" trace cursor and 2 delta cursors
Functions	
Memories	On PC, unlimited number, with explicit names Storage and comparison of reference spans 100 to 5,000 samples per sweep (depending on sweep speed)
Traces	Averaging (factors 2 to 64 / noise suppression and improvement of dynamics – Comparison to a reference and measurement of deviations (frequency & amplitude) – Calculation of difference (Spectrum – Reference) and associated measurements – Screen shot with all settings Transfer to Excel
PC communication	"Plug and Play" USB as standard
Mains power supply	230 VAC, ± 10 %, 50/60 Hz, approx. 4 W
Safety / Standards	IEC 61010-1 - Cat. II / NF EN 61326-1: 98
Dimensions / weight	270 (L) x 63 (H) x 215 (D) mm / 1.7 kg

"Standard" state at delivery:

1 MTX,1 cordon secteur,1 CD Rom contenant le logiciel d'application PC,
1 antenne FM connexion BNC,1 notice de fonctionnement

References to order:

MTX1050-PC : MTX1050

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210203

Detailed product brochures can be downloaded from www.metrix.fr

Spectrum Analyser and Near-field Probes

MTX 1050 , HX0082, HX0083

A set of instruments specially designed for EMC prequalification tests

These tests may take place throughout the design and development of a product. Prequalification tests help to save time and make sure that the finished product will comply with the applicable standards.

These tests take into account all aspects that help to limit disturbances:

- *Choice of components and floorplan on printed circuit boards*
- *Reduction of cable lengths and use of screened cables when possible*
- *Separation of circuits/cables of different types (e.g. analogue or digital)*
- *Checking of electrical continuity (e.g. connections, welds, etc.)*
- *Verification of the floorplan and screening…*

This is not an exhaustive list. Any measurements that may reduce electromagnetic fields should be envisaged to ensure that the product operates correctly.
The tests are divided into 2 main categories: ***immunity tests*** *and* ***emission tests****. They are also performed in 2 distinct modes:* ***"conducted mode"****, covering disturbances in the cables or printed-circuit traces, and* ***"radiated mode"*** *for the electromagnetic field in the air.*

HX0082 near-field probes & HX0083 amplifier

The ***HX0082*** *kit comprises 2 near-field probes (30 MHz – 3 GHz). The proximity probe can be used to measure radio-frequency magnetic fields. It can be positioned up to 10 cm from the target. The contact probe is designed for precise measurements on chip floorplans or traces.*

The ***HX0083*** *kit is a 20 dB preamplifier for HX0082 near-field probes. It helps to improve accuracy by amplifying the signals close to the noise level.*

	HX0083
Power supply voltage	7.5 to 18 V
Current consumption	50 mA
Max. input voltage	25 VDC
Gain	20 dB
Noise	4.5 dB

Spectrum Analyser and Near-field Probes

Use of near-field probes

The different fields measured by this type of probe can be used to locate a source of high-frequency electromagnetic fields which can cause disturbances.

Active H-field probes operate by observing the disturbance currents. Insensitive to external disturbances, these probes measure the intensity of the field directly associated with the current flowing in the conductors. They can be used with a spectrum analyser equipped with ***Peak & Q-Peak detection modes.***

These modes allow measurements in the context of EMC prequalification tests.

In "conducted mode", ***a contact probe*** *will be used to detect magnetic fields emitted vertically from flat surfaces (example 1). It can be used for precise measurements on clearly-defined areas (floorplan, trace, screening, etc.). It is ideal for detecting disturbances originating from surfaces which are difficult to access.*

In "radiated mode", ***a proximity probe*** *can be used to measure all the electromagnetic fields present in the air (example 2). For greater accuracy, these* ***HX0082*** *probes can be coupled with an* ***HX0083*** *amplifier (dB) to reduce the noise floor level. It is also possible to observe very slight disturbances.*

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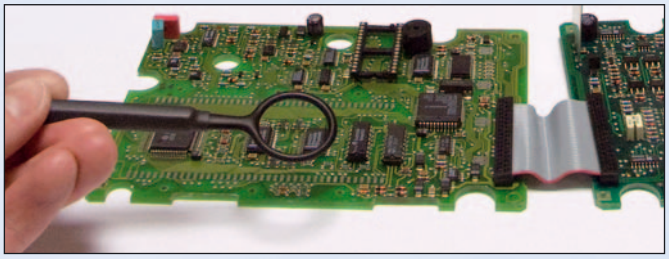
Below: use of the contact probe and use of the amplifier connected directly to the MTX 1050.



Above: use of the proximity probe.
Inspection of a printed circuit board to identify emission frequencies and levels in relation to the EMC standards

References to order:

HX0082: Kit containing 2 near-field probes (3 GHz)
HX0083: 20 dB wide-band amplifier

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210203

Detailed product brochures can be downloaded from www.metrix.fr

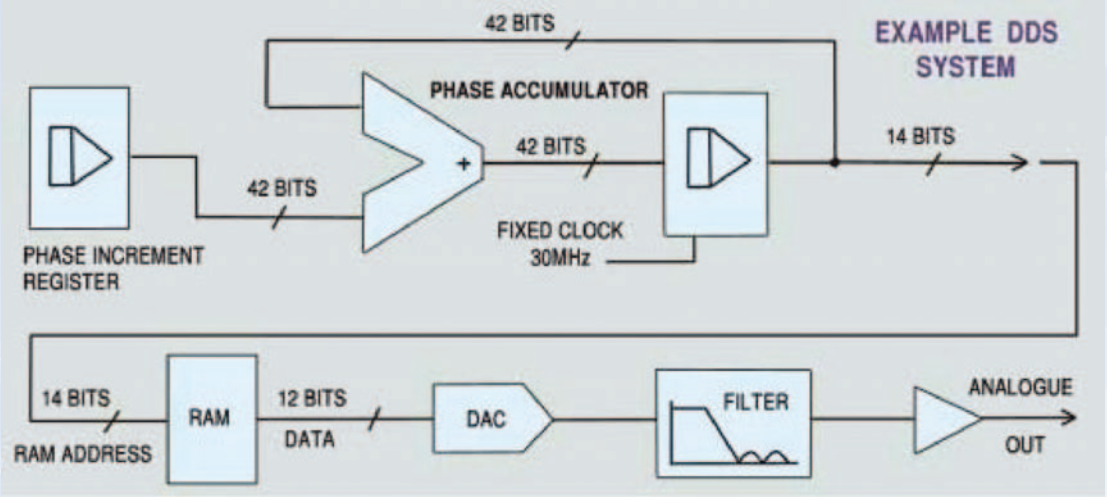
Introduction domaine Generator

Function generators are among the most widely-used test and measurement instruments. It can generate varied characteristic waveforms in order to test the operation of electronic systems, from very low frequencies of just a few mHz up to 20 MHz or more.
It allows users to adjust the amplitude of these signals up to 20 V or more, possibly with the presence of a DC component.
In addition, they may also provide modulations or specific functions.

DDS (Direct Digital Synthesis) generators

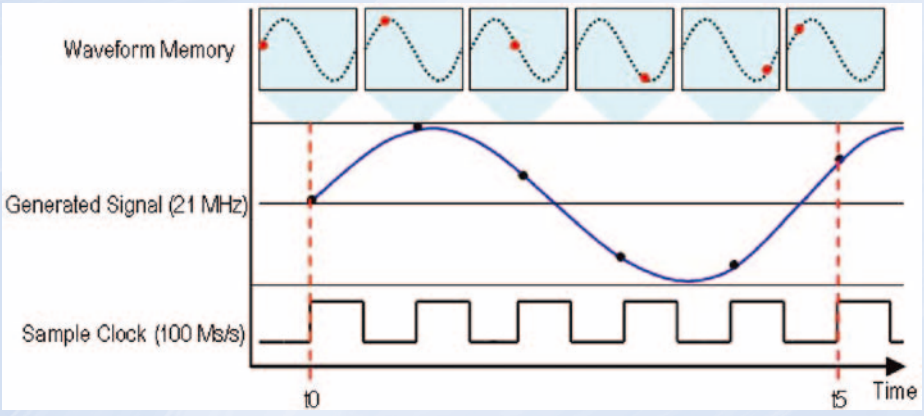
Basic principle:

DDS function generators generate periodic signals at precise frequencies by choosing samples in the memory rather than producing all the samples of a signal. This technique offers exceptional accuracy and stability, high spectral purity, low noise and excellent frequency agility. It is possible to modify the frequency without phase discontinuity.



Architecture of a DDS function generator

It is important to note that signal generation with the DDS method differs significantly from the method used by an arbitrary signal generator.
For arbitrary signal generation, each sample of the signal period built and stored in the memory is generated sequentially.
For signals generated with DDS technology, a single signal period is stored in the memory, but only certain samples are generated to create the waveform and the required frequency, as shown in the illustration below:



Generation of a 21 MHz signal by Direct Digital Synthesis (DDS)

Introduction domaine Generator

Definitions:

Signal waveforms

The generator can typically generate sine, triangle and square waveforms, as well as their usual derivatives.

Frequency range (expressed in Hertz (Hz):

This is the difference between the minimum frequency and maximum frequency that the generator is capable of producing.
This frequency range is defined for a sinusoidal waveform.
Note: for triangular or square waveforms, a smaller frequency range is usually specified.
The minimum frequency, which may be just a few mHz, is used to simulate slow phenomena (mechanical or physical) or to control slaving (for example, a triangular step profile).

Resolution:

This is the smallest measurable value difference.
It is expressed in digits and its absolute value depends on the frequency range used.
For the GX320, for example: 5-digit resolution at 20 MHz corresponds to a 1 kHz increment.

Frequency accuracy:

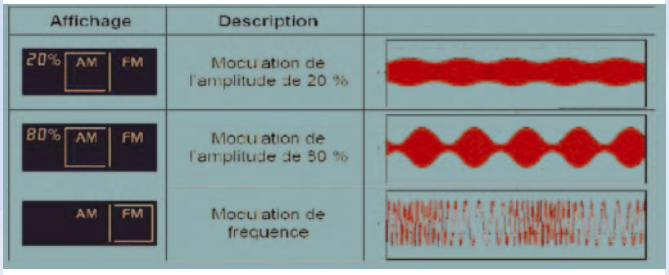
This corresponds to the difference between the true value of the signal's frequency and the value displayed. It mainly depends on the quality of the oscillator used, for which short-term and long-term stabilities are defined, expressed in ppm (parts per million). For example, for the GX320: +/- 20ppm when F>10 kHz

SWEEP function:

The "SWEEP" function can be used to generate a frequency sweep in rising or falling mode. This sweep can be controlled by the generator according to a linear or logarithmic law or on the basis of an external sawtooth or triangular signal applied via a dedicated BNC connection.

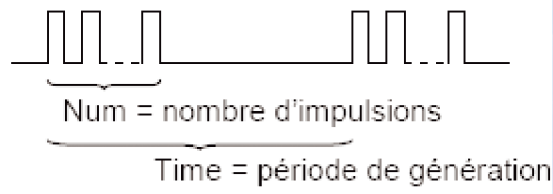
Types of modulation:

AM: Amplitude Modulation
FM: Frequency Modulation
FSK function: Frequency SKip controlled internally or externally.
PSK function: Value "Phase SKip" controlled by an internal or external command signal.



BURST function

The BURST function can be used to generate pulse trains: users define the train generation period and the number of pulses in the train.
It also provides a means of generating a signal with a very large duty cycle (1 brief pulse with a long repetition period).

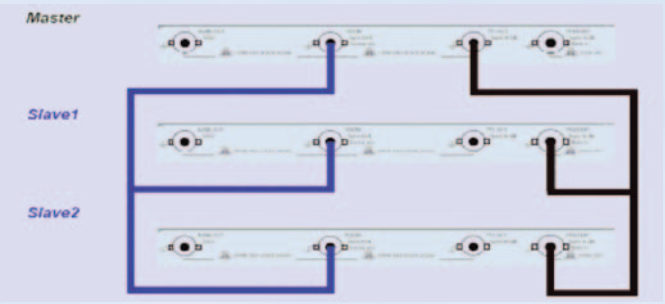


GATE function:

This superimposes over the current function a start/stop command for the AC component of the MAIN OUT signal. This function can be controlled internally or by a TTL signal injected on a dedicated BNC connection

MASTER/SLAVE function:

This can be used to synchronize several GX 320s set up in a "cascade" arrangement. The generator used as the "Master" supplies the other "Slave" instruments with the clock (Clk) and a synchronization signal (Ctrl). This enables all the generators to start up at the same time and allows users to control their phase offset.



DDS Function Generators

GX 310, GX 320

Multi-function, stand-alone, innovative laboratory generators-testers!

Ergonomics: uniquely easy to read!

The GX generators have a large LCD screen (125 x 45 mm) offering exceptionally easy reading thanks to the main display's 5 digits 20 mm high. In addition, the GX generators can simultaneously display all the parameter settings (VDC, VRMS or VPP, waveform, etc.).

- *Frequency range from 0.001 Hz to 10 MHz (GX310) or 20 MHz (GX320)*
- *DDS technology with a frequency accuracy of +/-20 ppm*
- *Adjustment of stable frequency to the nearest digit*
- *"Logical signal" function for direct adjustment of the high and low levels (TTL, CMOS, etc.)*
- *100 MHz frequency meter, 300V CAT 1*
- *Versions programmable via USB link with the standard SCPI protocol*
- *AM/FM modulation (GX320)*
- *GATE, BURST, FSK and PSK functions (GX320)*
- *Storage of 15 complete instrument configurations (GX320)*

A specific innovative function:

Adjustable-phase synchronisation of several generators in a cascade arrangement (GX320)

If necessary, it is possible to set up several GX 320 generators in a cascade arrangement.

GX 320 Master

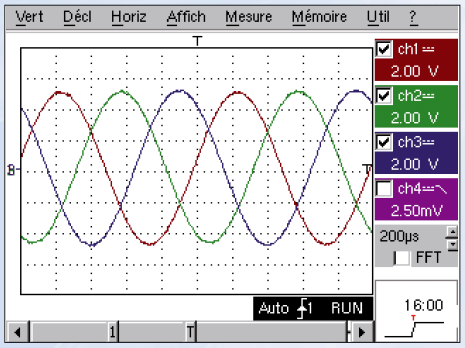
GX 320 Slave 1

GX 320 EsclaveSlave 2

Synchronization of several generators in a cascade arrangement

The "SYNC" function on the GX 320 allows several generators to be set up in a cascade arrangement to make a variable-phase multiple-signal generator.

A first GX 320, used as the "Master", provides the other "Slave" instruments with the clock used to generate the signals. It also supplies the synchronizing pulse to start all the instruments simultaneously. In this way, the phase shift of each signal is controlled.

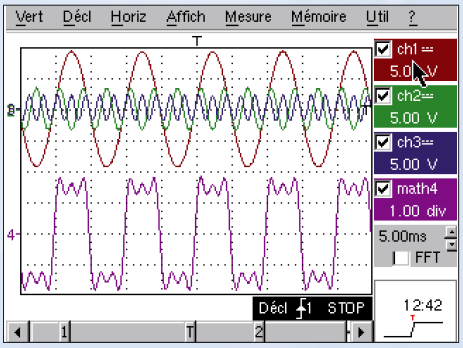


Example 1: simulation of a three-phase signal

Channel 1: master (0 °)

Channel 2 : slave1 (120°)

Channel 3 : slave2 (-120°)



Example 2: simulated Fourier synthesis

Synchronization of the generators (3 in this example) allows simulated synthesis of a square signal from its primary harmonics.

DDS Function Generators

	GX 310	GX 320
Man-machine interface		
Display	LCD (125 x 45 mm) – Adjustable brightness – Frequency display with 5 digits 20 mm high	
Adjustment of signal parameters	Continuous by encoder, auto-ranging for Frequency and Level, selection of increment digit (F, P, N, etc.)	
BNC output terminals on front panel	TTL & Sweep Out outputs	TTL, Sweep, Clock and Synchro outputs
BNC input terminals on front panel	VCF in input	VCG, Gate; Clock and Synchro inputs
Continuous signal generation		
Frequency	0.001 Hz to 10.000 MHz (10 ranges)	0.001 Hz to 20.000 MHz (11 ranges)
Resolution / Accuracy	5-digit display – resolution from 1 mHz to 1 kHz depending on range / 10 kHz, ± 30 ppm for F < 10 kHz	
Amplitude	1 mV to 20.0 Vpp with open circuit in 3 automatic ranges –3-digit display Vpp or Vrms – Max. resolution 1 mV	
Flatness	< 5 % for 1 mHz < F < 10 MHz , and ± 0.5 dB typ. up to 20 MHz (GX 320) (specs for a level from 0.1 Vpp to 20 Vpp)	
Signal form	Sine / Triangle (max. frequency 2 MHz) / Square & "LOGIC" / TTL output	
Frequency sweep		
Modes	LIN (linear) or LOG (logarithmic)	
INT internal sweep	"Sawtooth" or "Triangle" mode – Unlimited excursion between "F Start" & "F Stop" - Sweep time adjustable from 10 ms to 100 s	
EXT external sweep	Sweep by signal < 15 kHz, amplitude ± 10 V	
Modulations		
Internal AM modulation		Modulation by a 1 kHz sine signal Modulation rate 20 % or 80 %
External AM modulation		Modulation by a signal < 5 kHz, with amplitude ± 10 V for 0 to 100 % modulation (VCG IN)
Internal FM modulation		Modulation by a 1 kHz sine signal Unlimited excursion between "F Start" & "F Stop"
External FM modulation		Modulation by a signal < 15 kHz Amplitude ± 10 V (VCG IN)
SHIFT K function		Frequency hop, internal or external phase jump
Burst function		
Internal BURST		D1 to 65,535 pulses – Period of pulse trains 10 ms to 100 s
External BURST		1 to 65,535 pulses – Synchro/Period by a TTL signal with frequency < 1 MHz (VCG IN)
Gate function		Validation of AC component from "Main Out" by a TTL signal with frequency < 2 MHz (GATE IN)
Synchro function		
Cascade configuration of several GX 320s		Maximum frequency of generated signals 100 kHz Adjustment of phase shift to ± 180° (resolution 1°)
External frequencymeter		
Measurement range / accuracy	5 Hz to 100 MHz / ± 0.05 % + 1 digit	
Safety / max. admissible voltage	CAT I, 300 V / 300 Vrms	
General specifications		
Configuration memories		Storage/Recall of 15 complete instrument configurations
Communication interface	"USB A/B" link for the programmable versions	
Mains power supply	230 V ± 10 % (or 115 V ± 10 %) – 50/60 Hz – 20 VA max. – Removable lead	
Safety / EMC	Safety as per IEC 61010-1 (2001) – EMC as per EN 61326-1 (2004)	
Mechanical specifications	227 (L) x 116 (H) x 180 (D) mm – Weight 2.8 kg	
Warranty / origin	3 years - France	

Standard state at delivery:

1 GX, 1 power cable, 1 operating manual

References to order:

GX310: GX310
GX310-P: GX310 +1 USB cable+1 CD-Rom containing the Labwindows/labview drivers
GX320: GX320
GX320-P: GX320 +1 USB cable+1 CD-Rom containing the Labwindows/labview drivers

Available accessories:
see page 110

To find out more...
Sales Brochure 906210183

Detailed product brochures can be downloaded from www.metrix.fr

Variable Power Supplies
AX 501, AX 502, AX 503

*As well as being particularly **rugged**, these power supplies are also **lightweight, economical and based on the latest technology!***
*The AX 501, AX 502 and AX 503 **laboratory power supplies** with 1, 2 or 3 outputs offer **electronic limitation of the current in the event of short-circuit** and **temperature control in the event of overload or overheating.***
Their linear technology is based on a toroidal transformer which halves their weight and improves their efficiency.

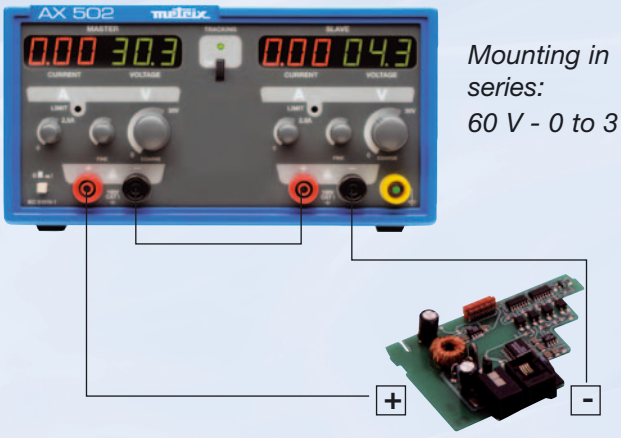
- *Linear technology: stability, low noise, good response to current demand*
- *Active protection against short-circuits, overloads and overheating*
- *Outputs with double insulation in relation to the mains*
- *Series or parallel output coupling for generating up to 60 V / 2.5 A or 30 V / 5 A*
- *Coupling of the two 30 V outputs in "tracking" mode in order to adjust them simultaneously (master/slave)*
- *Adjustable current limitation on the 30V outputs*
- *A third adjustable 2.7 V-5.5 V/5 A output on the AX 503 can be used to power logic circuits (TTL/CMOS)*
- *Compact and lightweight*
- *Dual-well safety terminals*
- *An earth terminal with reversed polarity to avoid connection errors*

Optional specific accessories

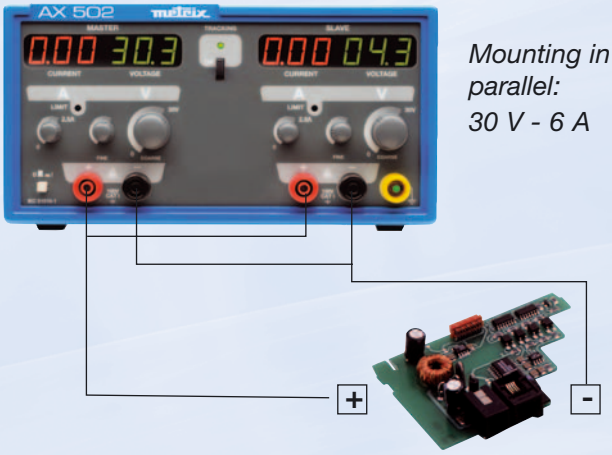
AG1041 reverse-polarity earth lead (green/yellow)

Variable Power Supplies
AX 501, AX 502, AX 503

Specifications	AX 501	AX 502	AX 503
Technology	Linear		
Display	Green and red LEDs - 3 digits		
Outputs	1 x (30 V / 2.5 A)	2 x (30 V/2.5 A)	2 x (30 V / 2.5 A) 1 x (2.7 to 5.5 V / 5 A)
Output coupling	Series or parallel		
Output tracking	Yes ("track" mode)		
Special features	Electronic protection against short-circuits, overloads and overheating. Output double insulated from mains. Toroidal transformers (no forced ventilation and low emissions). Two-pin safety terminals		
IEC 61010 -1 safety	Cat. I, 100 V		
Power supply	110 or 230 V		
Dimensions (H x L x D)	120 x 225 x 270 mm		
Weight	4 kg	4.5kg	6 kg
Warranty	3 years		



Mounting in series:
60 V - 0 to 3 A

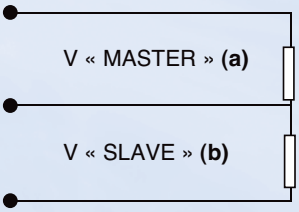


Mounting in parallel:
30 V - 6 A

Tracking mode (AX 502 and AX 503)

Use of 2 power supplies mounted in series with the "TRACKING" function (symmetrical sources ± 30 V) at 2.5 A max.

- *Press the "TRACKING" pushbutton ("ON": LED lit).*
  The pushbutton establishes an internal connection between the "-" terminal of the "MASTER" power supply and the "+" terminal of the "SLAVE" power supply.
- *The symmetrical SLAVE source (b) reacts to the variations in the voltage from the MASTER power source (a) by proportional absolute-value "tracking" variations.*
- *To use symmetrical voltages (e.g. ± 15 V), one of the 2 terminals (MASTER "-" or SLAVE "+") must be connected to the circuit to be supplied("0" point).*



Action Δ V « MASTER » (a)	↑	↓
Réaction Δ V « SLAVE » (b) (valeur absolue)	↑	↓

Standard state at delivery:

1 AX, 1 power supply cable, 1 operating manual

References to order:

AX0501A: AX501
AX0502A: AX502
AX0503A: AX503

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906110803

Detailed product brochures can be downloaded from www.metrix.fr

Multi-function Calibrator

C.X 1651

Designed for measuring instrument manufacturers seeking to calibrate their instruments, the C.X 1651 is particularly accurate and stable.
Based on a new concept, the C.X 1651 generates:

- *standard electrical parameters for temperature or energy applications*
- *non-harmonic signals for testing equipment when the distortion on the input signals is non-null.*

It can be used to calibrate a wide variety of instruments :

- *multimeters*
- *analogue instruments*
- *switchboard equipment*
- *current clamps*
- *portable calibrators*
- *wattmeters*
- *electrometers*
- *oscilloscopes*
- *thermometers*
- *recorders, etc.*

Specifications		C.X 1651	
Voltage	DC	6 ranges from 0 µV to 1,000 V	
	AC	6 ranges from 1 mV to 1,000 V	
Current	DC	6 ranges from 1µA to 20 A	
	AC	6 ranges from 1µA to 20 A	
Resistance	(4-wire set-up)	10 ranges from 0 Ω to 50 MΩ	
Capacitance	(4-wire set-up)	9 ranges from 900 pF to 50 µF	Maximum voltage supported by the load: 8 Vpk
Frequency	PWM (pos, neg, sym)	de 0,1 Hz à 100 kHz	
	HF (rise time < 5 ns)	0.1 Hz to 100 kHz	
Power Energy	DC	Voltage from 200 mV to 240 V Current from 2 mA to 10 A	
	AC	Voltage from 200 mV to 240 V Current from 2 mA to 10 A Frequency from 40 Hz to 400 Hz Power factor –1 or +1 Phase from 0 to 360°	Acquisition time in energy mode 10 s to 1,999 s
Temperature sensor	Thermocouple	R, S, B, J, T, E, K, N Ranges from –250 °C to +1,820 °C	
	CRTD sensor	Pt 1385, Pt 1392, Ni Ranges from –200 °C to + 850 °C	

Multimeter

Function	Range	Accuracy
VDC (DC voltage)	0 - ± 12 V	0.01 % + 100 µV
mVDC (DC voltage)	0 - ± 2,000 mV	0.01 % + 10 µV
mADC (DC current)	0 - ± 25 mA	0.02 % + 1 µA
FREQ (Frequency)	1 Hz – 15 kHz	0.005 %
R4W (Resistance)	0 - 2 kΩ	0.02 % + 100 mΩ
TRTD (RTD sensors)	-150 °C – +600 °C	0.1 °C
TTC (TC sensors)	-250 °C – +1,820 °C	0.4 - 4 °C
SGS (sensor calibre deformation)*	depending on sensor	0.01 % + 10 µV + sensor accuracy

* Voltage 2 to 10 VDC, max. current 40 mA, input resistance > 100 MΩ, sensitivity 0.5 - 100 mV/V

Standard state at delivery:

1 multi-function calibrator delivered with 1,000 V / 20 A test cables (x2), 1 Option 40 cable adapter (Canon 25/2 x BANANA cable adapter, 1 m), 1 Option 60 cable adapter (Canon 25/4 x BANANA cable adapter, 1 m), 1 Option 70 cable adapter (adapter for resistance on 4 terminals), RS 232 cable, power cable, 2 spare fuses, 1 test report and 1 operating manual.

References to order:

CX1651 : 1 C.X 1651 multi-function calibrator

Available accessories:
see pages 98 to 108

To find out more...
Sales Brochure 906210146

Detailed product brochures can be downloaded from www.metrix.fr

Training oscilloscope, Voltmeter, Ammeter

OX 71, MX 25, MX 125, MX 35, MX 135

OX 71 isolated single-channel training oscilloscope

The design of the OX 71 with its coloured buttons and banana plugs make it the product of reference for training people how to use an oscilloscope. In terms of safety, their double isolation prevents risks due to connection errors, thus protecting both your students and your equipment.

In addition, the SX-OXMTX interactive software on CD-Rom is also available to help them learn how to operate and adjust oscilloscopes by simulating the principles involved.

- *5 MHz bandwidth*
- *50 mV/div to 5 V/div sensitivity in 1-2-5 sequence*
- *Sweep rate from 500 ns/div to 500 ms/div*
- *AC, DC and earth coupling*
- *IEC 61010-1 safety, class 2, 400 V CAT II*
- *Delivered with training software in 5 languages*

MX 25 / MX 35

Voltmeter and ammeter for learning in total safety.

MX 125 / MX 135

Designed to resist mechanical shocks, protected by high-rupture-capacity fuses.

Specifications	MX 25	MX 35	MX 125	MX 135
Scale length	120 mm	120 mm	83 mm	83 mm
Bandwidth	50 to 1 kHz	50 to 1 kHz	16 to 1 kHz	16 to 1 kHz
Voltage	7 calibres (1 to 1000 V)		9 DC calibres (1 to 1,000 V) (150 mV to 1,500 V) 6 calibres AC (5 mV à 1,500 V)	
Current		8 calibres DC (100 µA to 10 A) 8 calibres AC (100 mA to 10 A)		7 calibres DC (50 µA to 10 A) 6 calibres AC (500 µA to 10 A)
Internal resistance	20 kΩ		20 kΩ	
Dimensions / weight	215 x 145 x 65 mm / 300 g		155 x 99 x 40 mm / 350 g	

"Standard" state at delivery:

OX71: 1 OX, 1 mains lead, 1 user manual and software
MX25: 1 MX voltmeter, 1 user manual
MX125: 1 MX voltmeter, 1 user manual

MX35: 1 MX ammeter, 1 user manual
MX135: 1 MX, 1 user manual

References to order:

OX71: 1 5 MHz single-channel OX 71 oscilloscope
MX0025D: MX25 voltmeter
MX125: MX125 voltme ter

MX0035D: MX35 ammeter
MX135: MX135 ammeter

Cos-phimeter

MX 98

MX 98 Cos-phimeter

Designed for measuring the power factor of single-phase installations, this instrument can be used for quick, accurate measurements.

- *40 to 60 Hz bandwidth*
- *5 A current calibre*
- *Voltage calibres: 100, 240, 400, 500 V*
- *Inductive and capacitive cos φ (1 to 0.4)*
- *Accuracy: 2.5 %*

References to order:

MX098: 1 MX 98 cos-phimeter + 1 battery

Training modules and shunts

Simple resistance boxes	
P03197521A	0.1 to 1 Ω
P03197522A	1 to 10 Ω
P03197523A	10 to 100 Ω
P03197524A	100 to 1000 Ω
P03197525A	1 to 10 kΩ
P03197526A	10 to 100 kΩ
P03197527A	100 to 1,000 kΩ
P03197528A	1 to 10 MΩ
Resistance boxes with 4, 5, 6 and 7 decades	
P01197401	BR 04, 4 decades, 1 Ω to 10 kΩ
P01197402	BR 05, 5 decades, 1 Ω to 10 kΩ
P01197403	BR 06, 6 decades, 1 Ω to 10 kΩ
P01197404	BR 07, 7 decades, 1 Ω to 10 kΩ
Coupling jumpers	
P01101892A	19 mm spacing - Ø 4 mm - 36 A

Decade capacitance boxes	
P01199613A	0.01 to 0.1 mF
P01199612A	0,1 to 1 mF
P03199611A	1 to 10 mF
P01197421	BC 05, 5 decades, 1 nF to 10 µF
Zero galvanometer	
P03197611A	BP: 60 to 100 MHz, ? accuracy ±2.5 % ?
Ratio boxes	
P03197531A	7 ratios from 1/1,000 to x1,000 précision ±0,2 % pour application pont de Wheastone
Double switch box	
P03197529A	2 switches with make/break/non-locking make Simple changeover switch box
Boîte simple inverseur	
P03197530 A	1 switch with make/break/reverse make
Inductance box	
P01197451	BL07, 7 decades, 1 µH to 10 H

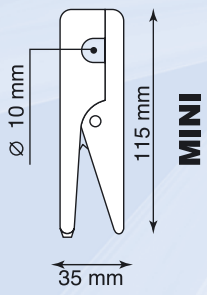
Mesurement shunts compliant with IEC 61010-1 600 V CAT III (Class 0.5)		
	Max. current	**Voltage drop**
HA030-1	30 A	300 mV
HA050	50 A	100 mV
HA050-1	50 A	50 mV

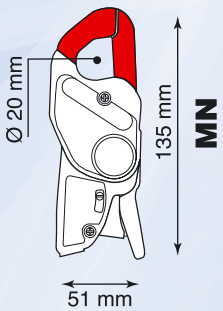
AC current clamps

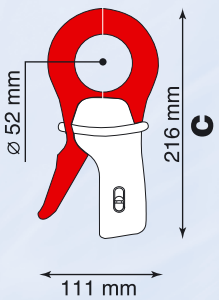
	Input – Etendue de mesure						Output / Connection					Specific features						
	Very low current	Low current	Medium current	High current	AC	DC	Current	Voltage	Lead + safety plug Ø 4 mm	Female sockets Ø 4 mm	Connecteur BNC (coaxial)	Transformation ratio (input/output)	Output protected against overvoltage	Automatic DC zero	Power measurement (low phase shift)	Bandwidth (frequency in Hz)	Typical accuracy	To order
MINI 01		2 to 150 A			•		0.15 A_{AC}		•			1,000/1	•			48 Hz ... 500 Hz	≤ 2.5%	P01105101Z
MINI 02	50 mA to 100 A				•		0.15 A_{AC}		•			1,000/1	•		•	48 Hz ... 10 Hz	≤ 1%	P01105102Z
MINI 05	5 mA to 10 A 1A to 100 A				•			10 V_{AC} 0.1 V_{AC}	•			1 mA / 1 mV 1 A / 1 mV				48 Hz ... 500 Hz	≤3% ≤ 2%	P01105105Z
MN12		0.5 A to 240 A			•			2V_{AC}		•		1 A / 10 mV				40 Hz ... 10 kHz	≤ 1%	P01120405
MN08		0.5 A to 240 A			•					•		1,000/1				40 Hz ... 10 kHz	≤ 1%	P01120401
MN09		0.5 A to 240 A			•				•			1,000/1				40 Hz ... 10 kHz	≤ 1%	P01120402
MN14		0.5 A to 240 A			•					•		1 A / 1 mV				40 Hz ... 10 kHz	≤ 1%	P01120416
MN89		0.5 A to 240 A			•				•			1 A / 100 mV				40 Hz ... 10 kHz	≤ 2%	P01120415
C100	0.1 A to 1,200 A				•					•		1,000/1				30 Hz ... 10 kHz	≤ 0.5%	P01120301
C103	0.1 A to 1,200 A				•				•			1,000/1	•			30 Hz ... 10 kHz	≤ 0.5%	P01120303
C106	0.1 A to 1,200 A				•					•		1 A / 1 mV				30 Hz ... 10 kHz	≤ 0.5%	P01120304
C107	0.1 A to 1,200 A				•				•			1 A / 1 mV				30 Hz ... 10 kHz	≤ 0.5%	P01120305

Standard state at delivery:

1 clamp with 1 user manual








MINI 05


C103


MN89


MN09

Flexible probes for AC current

		input – Etendue de mesure						Output / Connection					Specific features						
Série	Model	Very low current	Low current	Medium current	High current	AC	DC	Current	Voltage	Lead + safety plug Ø 4 mm	Female sockets Ø 4 mm	Connecteur BNC (coaxial)	Transformation ratio (input/output)	Output protected against overvoltage	Automatic DC zero	Power measurement (low phase shift)	Bandwidth (frequency in Hz)	Typical accuracy	To order
MA 100	MA100 30-300/3 - 17 cm		0.5 A...30 A 0.5 A...300 A			•			3 V_{AC}	•			100 mV/A 10 mV/A			•		≤ 1 %	P01120560
	MA100 30-300 /3 - 17 cm		0.5 A...30 A 0.5 A...300 A			•			3 V_{AC}			•	100 mV/A 10 mV/A			•		≤ 1 %	P01120563
	MA100 300-3000/3 - 25 cm		0.5 A...300 A 0.5 A...3000 A			•			3 V_{AC}	•			10 mV/A 1 mV/A			•	5 kHz	≤ 1 %	P01120561
	MA100 300-3000/3 - 25 cm		0.5 A...300 A 0.5 A...3000 A			•			3 V_{AC}			•	10 mV/A 1 mV/A			•	... 20 kHz	≤ 1 %	P01120564
	MA100 300-3000 /3 - 35 cm		0.5 A...300 A 0.5 A...3000 A			•			3 V_{AC}	•			10 mV/A 1 mV/A			•		≤ 1 %	P01120562
	MA100 300-3000/3 - 35 cm		0.5 A...300 A 0.5 A...3000 A			•			3 V_{AC}			•	10 mV/A 1 mV/A			•		≤ 1 %	P01120565
A 100	A100 20-200/2 - 45 cm		0.5 A...20 A 0.5 A...200 A			•			2 V_{AC}	•			1 A / 100 mV 1 A / 10 mV			•		≤ 1 %	P01120503
	A100 2000/2 - 45 cm		0.5 A...2000 A			•			2 V_{AC}	•			1 A / 1 mV			•		≤ 1 %	P01120501
	A100 2000/2 - 80 cm		0.5 A...2000 A			•			2 V_{AC}	•			1 A / 1 mV			•		≤ 1 %	P01120502
	A100 0.2-2 k/2 - 45 cm		0.5 A...200 A 0.5 A...2000 A			•			2 V_{AC}	•			1 A / 10 mV 1 A / 1 mV			•		≤ 1 %	P01120504
	A100 0.2-2 k/2 - 80 cm		0.5 A...200 A 0.5 A...2000 A			•			2 V_{AC}	•			1 A / 10 mV 1 A / 1 mV			•	10 kHz	≤ 1 %	P01120505
	A100 0.3-3 k/3 - 45 cm		0.5 A...300 A 0.5 A...3000 A			•			3 V_{AC}	•			1 A / 10 mV 1 A / 1 mV			•	... 20 kHz	≤ 1 %	P01120506
	A100 0.3-3 k/3 - 80 cm		0.5 A...300 A 0.5 A...3000 A			•			3 V_{AC}	•			1 A / 10 mV 1 A / 1 mV			•		≤ 1 %	P01120507
	A100 0.3-3 k/3 - 120 cm		0.5 A...300 A 0.5 A...3000 A			•			3 V_{AC}	•			1 A / 10 mV 1 A / 1 mV			•		≤ 1 %	P01120508
	A100 1-10 k/1 -120 cm		0.5 A...1000 A 0.5 A...10000 A			•			1 V_{AC}	•			1 A / 1 mV 1 A / 0,1 mV			•		≤ 1 %	P01120509

Lead + electronic unit with Æ4 mm safety connectors, centre distance 19 mm, for K and AmpFLEX**™ series*

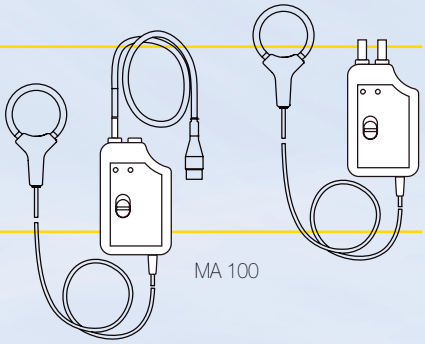
Standard state at delivery:

Models with output via "lead + electronic unit with Æ4 mm safety connectors, centre distance 19 mm":
Delivered with 9 V battery and 1 user manual

Models with output via "lead + electronic unit + BNC connector"
Delivered with 9V battery, BNC-Ø 4 mm isolated banana plug adapter with 19 mm spacing and operating manual

Accessories:

Mains adapter for MA100: P01102086
Mains adapter for A100: P01101968

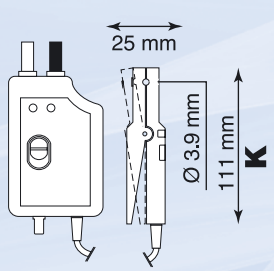


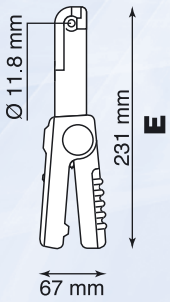
MA 100

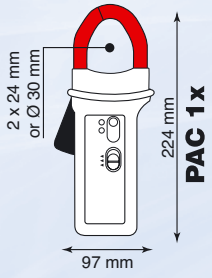
AC/DC current clamps

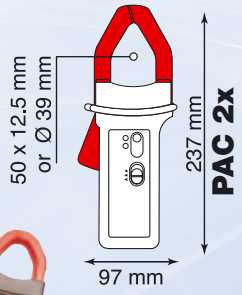
	Input – Etendue de mesure						Output / Connection			Specific features				
	Very low current	Low current	Medium current	High current	AC	DC	Current	Voltage	Lead + safety plug Ø 4 mm	Transformation ratio (input/output)	Automatic DC zero	Bandwidth (frequency in Hz)	Typical accuracy	To order
K2	0.1 to 450 mA_{DC} 0.1 to 300 mA_{RMS} 0.1 to 450 mA peak				•	•		4.5 V_{DC} 3 V_{RMS} 2 V peak	•	1 mA / 10 mV		DC at 1.5 kHz	≤ 1%	P01120074A
E6N	5 mA to 2 A_{DC} 5 mA to 1.5 A_{RMS} 20 mA to 80 $A_{AC/DC}$				•	•		2 V_{DC} 1.5 V_{AC} 0.8 $V_{AC/DC}$	•	1 A / 1 V 1 A / 10 mV		DC at 2 kHz DC at 8 kHz	≤ 2% ≤ 4%	P01120040A
PAC 11	0.2 to 40 A_{AC} 0.4 to 60 A_{DC} 0.5 to 600 A_{DC} 0.5 to 600 A_{AC}				•	•		600 $mV_{AC/DC}$	•	1 A / 1 V 1 A / 10 mV	•	DC at 10 kHz	≤ 1.5% ≤ 2.5%	P01120068
PAC 20	0.5 to 1000 A_{AC} 0.5 to 1400 A_{DC}				•	•		1.4 $V_{AC/DC}$	•	1 A / 1 mV		DC at 5 kHz	≤ 2%	P01120071
PAC 21	0.2 to 100 A_{AC} 0.4 to 150 A_{DC} 0.5 to 1000 A_{AC} 0.5 to 1400 A_{DC}				•	•		1.4 $V_{AC/DC}$	•	1 A / 10 mV 1 A / 1 mV	•	DC at 10 kHz	≤ 1.5% ≤ 2.5%	P01120069

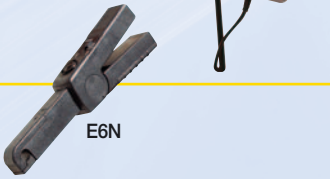
** Lead + electronic unit with Ø4 mm safety connectors, centre distance 19 mm, for K and Amp**FLEX**™ series.*











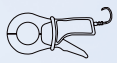
Standard state at delivery:

delivered with 9 V battery and 1 user manual

Accessories:

Mains adapter for K: P01101966
Mains adapter for E: P01101965
Mains adapter for PAC: P01101967

Clamp-on ammeter
meet a specific need

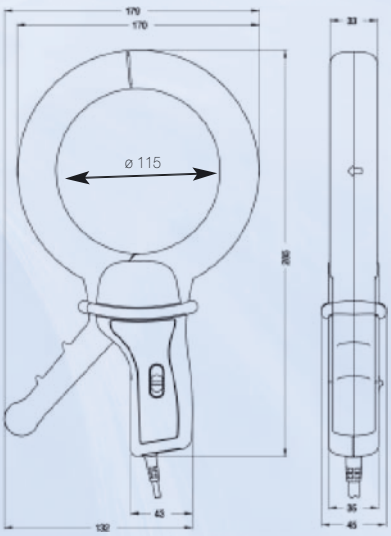
		Input Etendue de mesure						Output / Connection					Specific features							
Serie	Model	CVery low current	Low current	Medium current	High current	AC	DC	Current	Voltage	Lead + safety plug Ø 4 mm	Female sockets Ø 4 mm	Power measurement (low phase shift)	Transformation ratio (input/output)	Output protected against overvoltage	Automatic DC zero	Power measurement (low phase shift)	Bandwidth (frequency in Hz)	Typical accuracy	To order
Leakage current measurement																			
	MN73	10 mA to 2,4 A 100 mA to 240 A				•			2 V AC 2 V AC	•			1 A / 1000 mV 1 A / 10 mV				40 Hz at 10 kHz	≤ 1% ≤ 2%	P01120421
	C173	1 mA to 1,2 A 0.01 A to 12 A 0.1 A to 120 A 1 A to 1200 A				•			1 V AC	•			1 A / 1 V 10 A / 1 V 100 A / 1 V 1,000 A / 1 V				10 Hz at 3 kHz	≤ 0,7% ≤ 0,3% ≤ 0.5% ≤ 0,2%	P01120309
	B102	500 µA to 4 A 0.5 A to 400 A				•			4 V AC 0.4 V AC	•			1 mA / 1 mV 1 A / 1 mV	•			10 Hz at 1 kHz	≤ 0.5% ≤ 0,35%	P01120083

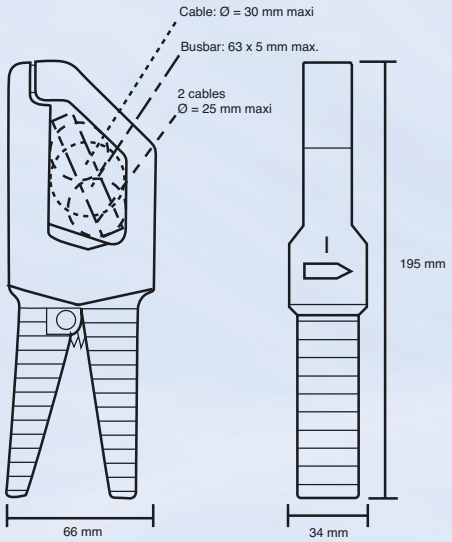
Delivered with 9 V battery and 1 user manual

Measurement of process current																			
	K1	1 mA to 4.5 A DC 1 mA to 3 A RMS 1 mA to 4.5 A peak				•	•		4,5 V DC 3 V RMS 4,5 V peak	•			1 mA / 1 mV				DC at 2 kHz	≤ 1%	P01120067A

Delivered with 9 V battery and 1 user manual

Lead + electronic unit with Ø4 mm safety connectors, centre distance 19 mm, for K and AmpFLEX**™ series.*





Environmental Measurement

Pt100 Platinum Probes & K Thermocouple Sensors

Pt100 Ω technology

The relation between the resistance and the temperature, like the tolerances, is defined in the IEC 751 European standards.

2 different technologies are used:

- *platinum-wire resistors wound around an insulating support*
- *ceramic substrate coated with a platinum film*

IEC 751 correspondence table (extracts): temperature and resistance

°C EIT 90	Ω	°C EIT 90	Ω	°C EIT 90	Ω
200	18.52	50	119.4	400	247.09
100	60.26	100	138.51	600	313.71
0	100	200	175.40	850	390.48

Tolerance class

The IEC 751 standard defines the interchangeability tolerances as follows:

Tolerance class	Tolerance
A	0.15 + 0.0025 x [t]
B	0.3 + 0.005 x [t]

[t] is the absolute value of the temperature in °C

Thermocouple technology

The sensor is formed by the thermocouple measurement junction at its hot point. The reading is taken at its cold junction, which requires compensation to simulate the point at 0 °C.

Various materials are used to manufacture these thermocouples.

The thermo-electric forces and tolerances are defined in the IEC 584 standard.

IEC 584 correspondence table (extracts): temperature and voltage

°C EIT 584	mV	°C EIT 584	mV	°C EIT 584	mV
-40	1.527	50	2.023	600	24.905
0	0	100	4.096	1000	41.276
		200	8.138	1200	48.838

Interchangeability tolerance according to NF EN 60584-2

Class 1	Class 2
-40 °C to +375 °C : ±1.5 °C	-40 °C to +333 °C : ±2.5 °C
+375 °C to +1000 °C : ±0.004 x t °C	+333 °C to +1200 °C : ±0.0075 x t °C

where t is the temperature in °C

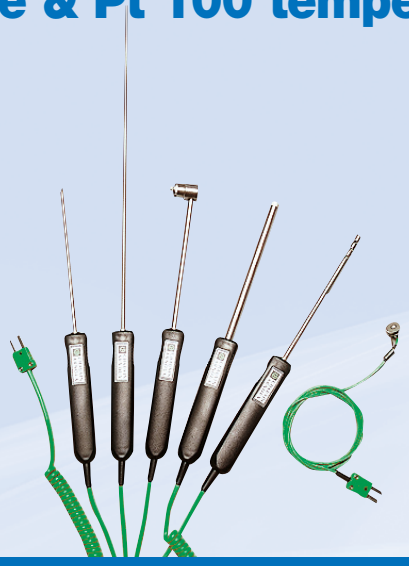
Model	Measurement range	Response time	Diameter	Length	Description
PT 100 TEMPERATURE SENSORS					
SP 10	-50 to +200 °C	6 s	5 mm	Needle 13 cm	For flat surfaces. The spring ensures optimum contact, even if the sensor is not set up perpendicularly.
SP 11	-100 to +600 °C	7 s	3 mm	Needle 13 cm	For penetration (20 mm minimum) in pasty and viscous products.
SP 12	-100 to +600°C	5 s	5 mm	Needle 13 cm	Suitable for all ambient air measurements (moving air). If the air is “stationary”, agitate the sensor.
SP 13	-100 to +600 °C	7 s	3 mm	Needle 13 cm	Specially designed for liquids

References to order:

P03652712: SP 10
P03652713: SP 11
P03652714: SP 12
P03652715: SP 13
HX0091: Banana plug / Pt 100 connector adapter

Environmental Measurement

K thermocouple & Pt 100 temperature sensors



Model	Measurement range	Response time	Diameter	Length	Description
K THERMOCOUPLE SENSORS					
SK1 needle	-50 °C to +800 °C	1 S	3 mm	15 cm	For penetration into pasty, viscous products
SK2 bendable	50 °C to +1,000 °C	2 s	2 mm	1 m	Can be bent as required
SK3 semi-rigid	-50 °C to +1,000 °C	6 s	4 mm	50 cm	Can be bent slightly
SK4 surface	0 to +250 °C	1 s	5 mm	15 cm	Adapted for measurements on small surfaces
SK5 surface	-50 °C to +500 °C	1 s	5 mm	15 cm	8 mm Ø spring tip ensuring optimum contact even if the sensor is not placed at right angles
SK6 flexible	-50 °C to +285 °C	1 s by contact 3 s in ambient air	1 mm	1 m	Recommended for points where access is difficult
SK7 air	-50 °C to +250 °C	5 s	5 mm	15 cm	For measurements of ambient air. Thermocouple protected by a metal sheath Ø 8.5 mm
SK8 auto-grip	-50 °C to +140 °C	10 s on stainless steel pipe (Ø 12 mm)	For pipes 10 mm ≤ Ø ≤ 90 mm		The couple placed on a sheet of copper, at the end of a double sided Velcro ribbon, is held in contact by winding the ribbon round the pipe
SK11 needle	-50 °C to +600 °C	12 s	3 mm	13 cm	For penetration into pasty, viscous products
SK13 general use	-50 °C to +1,100 °C	12 s	3 mm	30 cm	All uses
SK14 surface-elbowed	-50 to +450 °C	8 s	6 mm	13 cm	Surface temperature for difficult access. Tip Ø 15 x 30 mm
SK15 surface	-50 to +900 °C	2 s	8 mm	13 cm	Tip Ø 8 mm with spring, ensuring optimum contact even if the sensor is not placed at right angles
SK17 air	-50 °C to +600 °C	3 s	6 mm	13 cm	For ambient air measurements
SK19 surface with magnet	-50 to +200 °C	7 s	14 mm	12 mm	Fixed by magnet

	Description	Diameter	Length
CK 1	Terminated by male/female plug	4 mm	1 m
CK 2	Terminated by male plug/2 bare wires	4 mm	1 m
CK 3	Terminated by 5-pin DIN plug / female socket	4 mm	1 m
CK 4	Terminated by 2 banana plugs / female socket	4 mm	1 m

References to order:

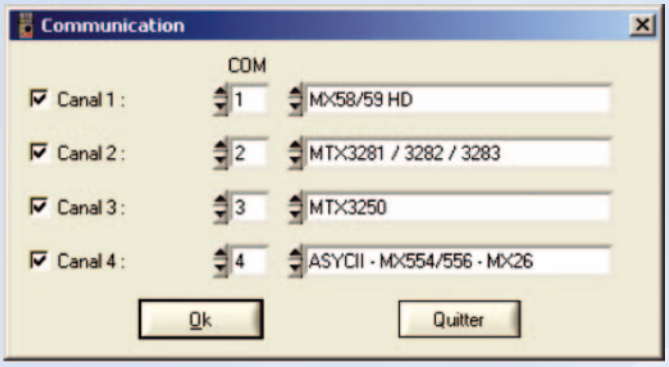
P03652901: SK 1
P03652902: SK 2
P03652903: SK 3
P03652904: SK 4
P03652905: SK 5
P03652906: SK 6
P03652907: SK 7
P03652908: SK 8
P03652917: SK 11
P03652918: SK 13
P03652919: SK 14
P03652920: SK 15
P03652921: SK 17
P03652922: SK 19
P03652909: CK 1
P03652910: CK 2
P03652913: CK 3
P03652914: CK 4

SOFTWARE

SX-DMM

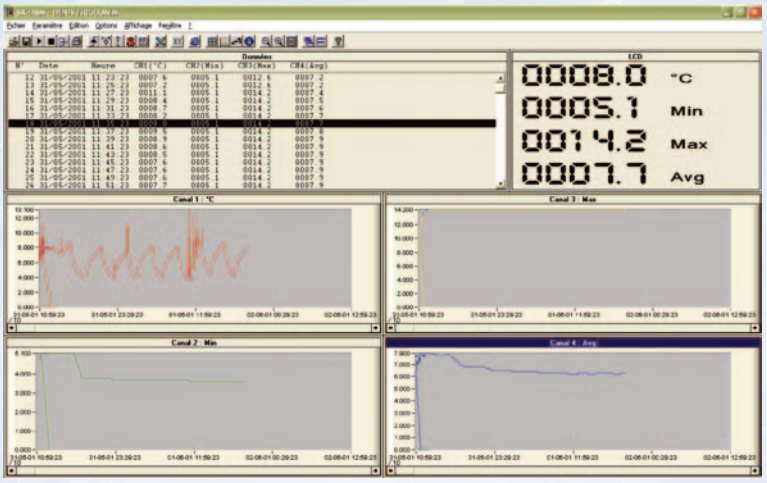
The data acquisition software for Metrix multimeters

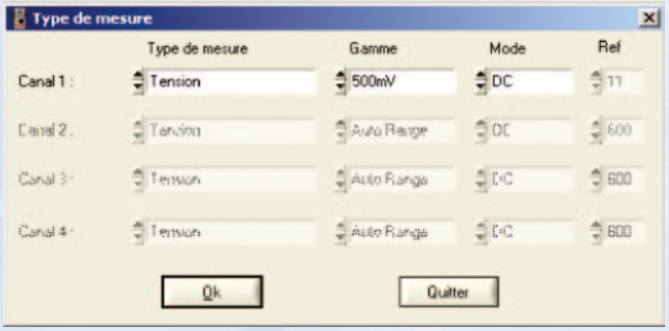
This software can be used to build a data acquisition system by coupling up to 4 remote-controllable Metrix multimeters (on-site or benchtop multimeters).



Each channel is assigned to an instrument and a series port.
It is possible to mix multimeter types within an application.

This software can be used to acquire, view in real time, record and process measurements from 1 to 4 multimeters simultaneously. Different types of measurements can also be mixed according to the multimeter used.





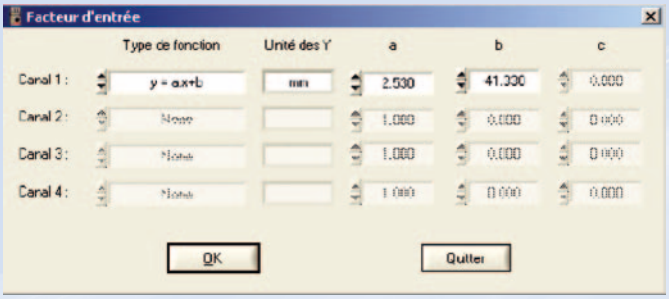
List of remote-controllable multimeters:

- *MX26*
- *MX53, MX54, MX55, MX56, MX57, MX58, MX59*
- *MTX3281, MTX3282, MTX3283*
- *MX554, MX556*
- *MTX3250*

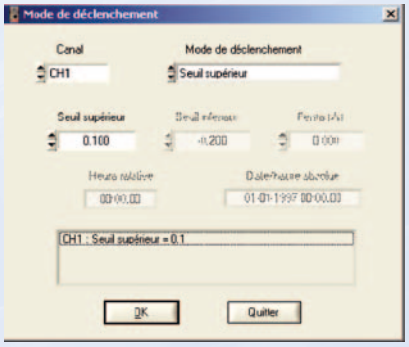
SOFTWARE

SX-DMM

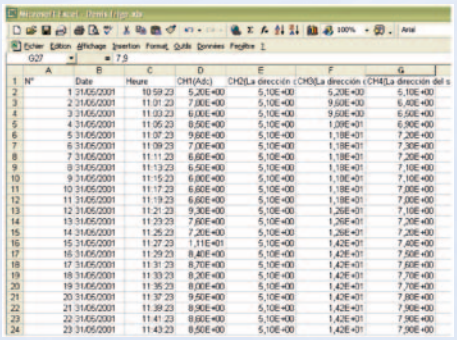
- *the quantities measured can be assigned mathematical functions (y=ax+b, y=aLog(x)+b, etc.)*

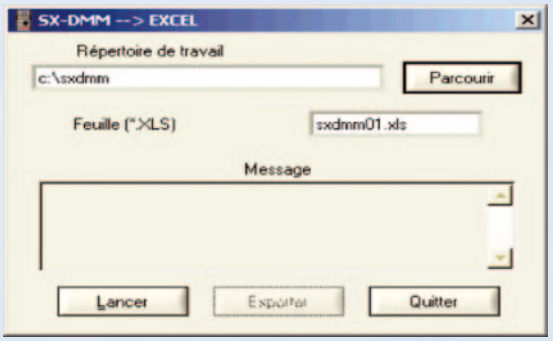


- *numerous parameters concerning acquisition (normal interval and fast speed according to events), triggering (on thresholds, windows, times, etc.) or data sorting are available to optimize recording and storage of the measurements*



- *simple, automated data export into EXCEL is provided by an integrated macro-function allowing various types of processing, calculations and specific graphic formatting, as required by the user according to the current application*



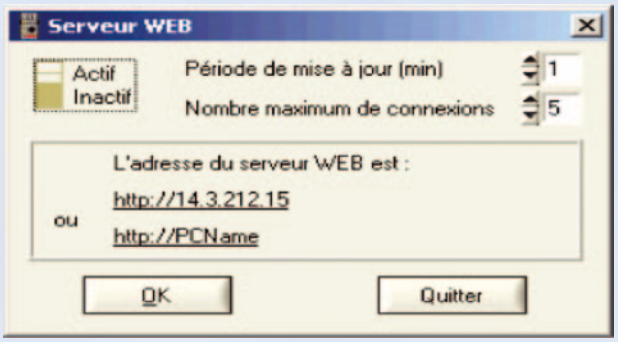


- *by transforming the SX-DMM application into a Web server, you can control and monitor acquisition from a remote PC via an Ethernet network. It is then possible to view the SX-DMM window via the local network with the browser of your choice.*

  You can also choose:

  -the page refresh rate

  -the maximum number of simultaneous connections.



METROLOGY SOFTWARE

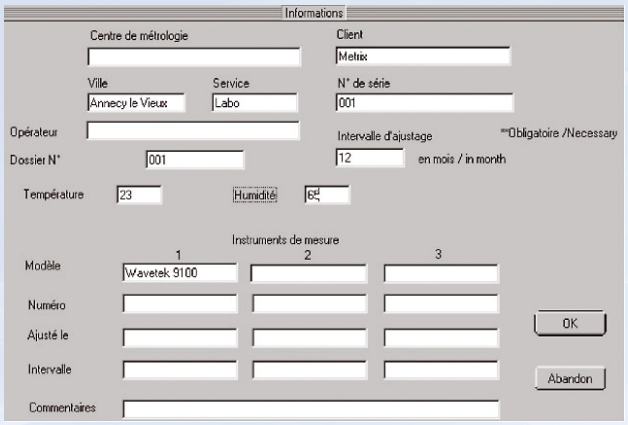
SX-ASYC2C/B, MX57EX-CAL, HX0059

The various versions of this software can be used for periodic verification and/or adjustment of your instruments "without opening the casing" via their series or USB port (depending on the model), simply and effectively.

Without needing detailed technical knowledge of the instrument, users can perform the procedures recommended by the manufacturer or develop their own procedures, in compliance with the Quality monitoring standards and, in particular, while ensuring reverse traceability of their processes. They can also back up their data and print out reports.

List of multimeters supported:

- *MX53, MX54, MX55, MX56, MX58, MX59 (SX-ASYC2C/B)*
- *MX57 (MX57EX-CAL)*
- *MTX3281, MTX3282, MTX3283 (HX0059)*



Regulatory information & connection

Procedure creation/modification

Execution of the procedure and instructions for the operator

Back-up and/or printing of reports

SOFTWARE

Accessories Communication & Soft

	Désignation	References to order:
MULTIMETERS		
MX 58HD, MX 59HD, MX 57Ex	Series link kit for ASYC2 HD version	SX-ASYC2HD
	Acquisition software for ASYC2	SX-DMM2
MX 58HD, MX 59HD	ASYC2 family calibration software	SX-ASYC2C/B
MX 57Ex	Calibration software for MX 57Ex	MX57EX-CAL
MX 26	MX26 SX-DMMK2 software kit	SX-DMMK2
MTX 3281, MTX 3282, MTX 3283	Soft Calibration MTX 328X V1.0	HX0059
	Optical / USB cable	HX0056-Z
	Bluetooth / USB adapter for PC	P01637301
	Communication kit with software	HX0050
MX 553, MX 556	Calibration software for MX 553 & MX 556	SX-ASYC2C/B
	Software for MX 553 & MX 556	SX-DMMBT/B
MTX 3250	Acquisition kit (SX-DMM software + MTX 3250 firmware)	SX-ACQ.V2
	Programming kit (MTX 3250 firmware upgrade)	SX-PROG.1
All models	USB/RS232 adapter for PC	HX0055

Leads and accessories

Banana measurement leads Ø 4 mm

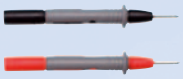
Removable test probes

For CAT IV & CAT III installations

Set of 2 moulded test probes (red/black) *> P01295454Z*
Female plug Ø 4 mm- CAT IV / CAT III 1,000 V

For CAT II installations and below

Set of 2 moulded test probes Ø 4 mm *> P01295458Z*
Female plug Ø 4 mm - CAT II 300 V



Set of 2 moulded test probes Ø 2 mm *> P01295460Z*
Female plug Ø 4 mm - CAT II 300 V

Measurement leads

Moulded

Set of 2 PVC moulded leads (red/black) *> P01295450Z*
Insulated straight male plug Ø 4 mm – Insulated straight male plug Ø 4 mm 15 A, 1.5 m – 1000 V CAT IV

Set of 2 PVC moulded leads (red/black) *> P01295451Z*
Insulated straight male plug Ø 4 mm – Insulated elbowed male plug Ø 4 mm 15 A 1.5 m 1000 V CAT IV

Set of 2 Silicone moulded leads (red/black) *> P01295452Z*
Insulated straight male plug Ø 4 mm – Insulated straight male plug Ø 4 mm 15 A 1.5 m 1000 V CAT IV

Set of 2 Silicone moulded leads (red/black) *> P01295453Z*
Insulated straight male plug Ø 4 mm – Insulated elbowed male plug Ø 4 mm 15 A 1.5 m 1000 V CAT IV

Standard leads

Set of 2 PVC leads (red/black) *> P01295288Z*
Insulated straight male plug Ø 4 mm – Insulated straight male plug Ø 4 mm 15 A 1.5 m 600 V CAT IV / 1000 V CAT III

Set of 2 PVC leads (red/black) *> P01295289Z*
Insulated straight male plug Ø 4 mm – Insulated elbowed male plug Ø 4 mm 15 A 1.5 m 600 V CAT IV / 1000 V CAT III

Set of 2 PVC leads (red/black) *> P01295290Z*
Insulated straight male plug Ø 4 mm with rear connection – Insulated straight male plug Ø 4 mm with rear connection 20 A 2 m 600 V CAT III

Leads with built-in test probes

Set of 2 PVC leads with test probes (red/black) *> P01295455Z*
Insulated straight male plug Ø 4 mm 15 A 1.5 m 1000 V CAT IV

Set of 2 PVC leads with test probes (red/black) *> P01295456Z*
Insulated elbowed male plug Ø 4 mm 15 A 1.5 m 1000 V CAT IV

Others accessories

For CAT IV & CAT III installations

Set of 2 crocodile clips (red/black) 15 A, *> P01295457Z*
1000 V CAT IV

Set of 2 crocodile wire grips (red/black) 20 A, *> P01102053Z*
1000 V CAT III

PVC lead *> AG-1066Z*
Insulated male BNC – Insulated red/black straight male plugs Ø 4 mm with rear connection 1 m 500 V CAT III

Leads and accessories

Measurement leads and accessories kit > P01295459Z
for electricians :
- 2 x moulded test probes 1000 V CAT IV
- 2 x red/black moulded PVC leads with straight male plugelbowed male plug, 1.5 m, 1000 V CAT IV
- 2 x red/black crocodile clips 1000 V CAT IV
- 2 x moulded test probes Ø 4 mm, 300 V CAT II

Set of 2 adapters > P01102101Z
Insulated female BNC – Red/black insulated male plugs Ø 4 mm with 19 mm spacing - 600 V CAT III

For CAT II installations and below
Set of 2 insulation-piercing clips (red/black) 30 VAC, 60 VDC > P01102055Z

Current lead equipped with a French 2P+E socket > P03295509
- To allow safe insertion of an ammeter in series
- To allow current measurement with a current clamp without removing the external sheath of the power cable

Measurement lead for French and German 2P+E mains sockets > P06239307
- For direct measurement on power sockets
- Quick implementation and reliable connections

Set of 2 adapters > P01101846
Male BNC adapters – Insulated female sockets Ø 4 mm with 19 mm spacing, 500 V CAT I, 150 V CAT III

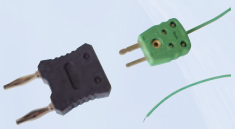
SMD clip > HX0064
Gold-plated copper-beryllium contacts - Output: male plugs Ø 4 mm, 1.2 m TBTS

Temperature measurements

Adapters
Set of 2 thermocouple safety adapters for multimeter > P01102106Z
Female thermocouple plug – Red/black insulated male plugs Ø 4 mm with 19 mm spacing

Pt100/Pt1000 probe adapter for multimeter > HX0091
Female Pt100/Pt1000 plug – Red/black insulated male plugs Ø 4 mm

Sensors



K sensor adapter and temperature probe > P06239306
- For multimeters and multimeter clamps equipped with a temperature measurement range and banana inputs with 19 mm spacing
- Measurement range from -50 °C to +200 °C
- Sensor length: 100 cm approx.

Safety adapter and K sensor temperature probe > P01102107Z
- For multimeters and multimeter clamps equipped with a temperature measurement range and banana inputs with 19 mm spacing
- Measurement range from -50 °C to +450 °C

General-purpose Transport and Protection Accessories

MC 0160B

MC 0160B + MC 0159B

AE 0237

HX0052

For MX Concept series : MX 21, MX 22, MX23, MX 24, MX 24B, MX 26	
Sheath(not MX 26)	AE0237
Sheath for MX 26	HX0010
Soft case	AE0190
Hard case	HX0009
Transport soft case	HX0018
For ASYX II series : MX 20, MX 44, MX 5x	
Sheath	MC0160B
Handle	MC0159B
Hard case	AE0227
Soft case	AE0193
For MTX series : MTX 3281, MYX 3282, MTX 3283	
Soft case	HX0052
For analogue multimeters	
Soft case	AE0216
Hard case	AE0228

General-purpose Transport and Protection Accessories

Metal cases

Equipped with foam inserts and delivered with a strap and keys

P01298072

Dimensions	References
270x195x65 mm	P01298071
320x255x75 mm	P01298004
440x310x135 mm	P01298072

P01298071

P01298004

All-terrain leak-proof and site-proof cases

Equipped with foam inserts

Dimensions	References
272x248x130 mm	P01298068
272x248x182 mm	P01298069

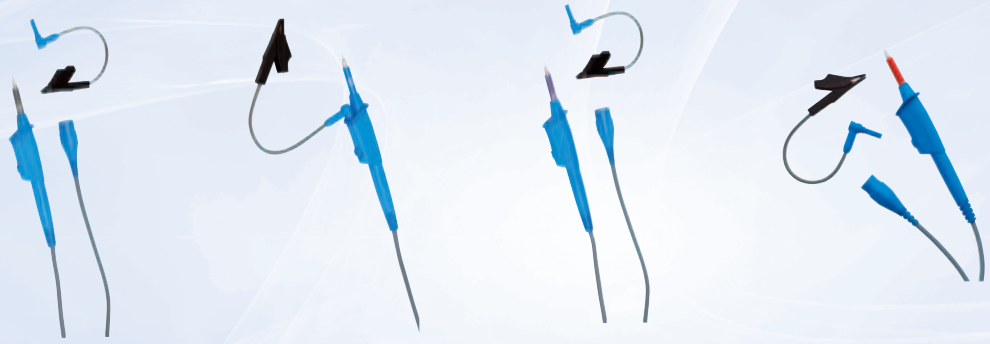
P01298069

P01298068

Voltage Probes

HX0003, HX0004, HX0005, HX0006

- *A family of 4 products for all types of requirements*
- *Attenuation ratio of 10 or 100 (depending on the model)*
- *Bandwidth from 150 MHz to 300 MHz*
- *EN61010 safety from 400 V CAT II to 1000 V CAT III (depending on the model)*
- *Compensation range from 12 to 22 pF or from 12 to 25 pF (depending on the model)*
- *Connection accessories are available for these probes:*
  - *HX0007 : Hook-type wire-grip termination*
  - *HX0008 : Crocodile-type wire-grip termination*



Specifications	HX0003	HX0004	HX0005	HX0006
Attenuation	1:10	1:10	1:10	1:100
Bandwidth	150	250	450	300
Input impedance (MΩ)	10±1%	10±1%	10±1%	100±1%
Capacitance (pF)	14	14	<14	≤6
Rise time (ns)	1.2	≤1.2	≤1	<1
EN61010-2-031 safety	400 V Cat. II / 600 V Cat. III	1000 V Cat. II / 600 V Cat. III	1000 V Cat. II / 600 V Cat. III	1000 V Cat. II max., 5kV peak
Compensation range (pF)	12 to 25	12 to 25	12 to 25	12 to 22
Retractable safety sleeve	grey	blue	violet	red

Standard state at delivery:

HXxxxx: 1 probe, 1 reference lead, 1 operating manual

References to order: :

HX0003: Compact 10:1 probe, 150 MHz
HX0004: Compact 10:1 probe, 250 MHz
HX0005: Compact 10:1 probe, 450 MHz
HX0006: Compact 100:1 probe, 300 MHz

High-Voltage High-frequency Probe

HX0027

- *Design mounted on a patented ceramic support, with the elements adjusted by laser*
- *Interchangeable spring-mounted tip*
- *1/1000 probe with 30 MHz bandwidth*
- *This 14kV high-voltage probe can be used in various sectors:*
  - *automotive inrush*
  - *radar pulse measurement*
  - *motor control*
  - *transformers*
  - *switching systems in electrical engineering and power electronics*
  - *pulsed discharge lighting equipment (Xenon lamps)*
  - *drilling systems in the oil industry*
  - *railway sector*

General-purpose Probes

HX0206, HX0210, HX0220

- *A family of 3 products for general-purpose requirements*
- *Attenuation with a switchable ratio of 1:1 or 10:1*
- *60 MHz, 100 MHz or 200 MHz depending on the model*

Specifications	HX0027	HX0206		HX0210		HX0220	
Attenuation	1:1000	1:1	1:10	1:1	1:10	1:1	1:10
Bandwidth	30	15	60	15	100	15	200
Input impedance (MΩ)	100+-1%	1	10	1	10	1	10
Capacitance (pF)	<2.5	45	15	46	15	45	11
Rise time (ns)	<12	23	6	23	3.5	35	1.7
EN61010-2-031 safety	14 kV max 40 kV peak	300 V CAT II	300 V CAT II	300 V CAT II	300 V CAT II	300 V CAT II	300 V CAT II
Compensation range (pF)	10 to 50	-	10 to 50	-	10 to 50	-	10 to 35

State at delivery:

HX0027: 1 probe, 1 "hook" measurement termination, 1 crocodile clip, 1 screwdriver for adjustment, 1 operating manual, 1 hard case

HX0206-HX0210-HX0220: 1 probe, 1 "hook" measurement termination, 1 "crocodile" measurement earth, screwdriver for adjustment, 1 operating manual

Insulated Current Probes

AC/DC current probes



Specifications	E3N	PAC 12	PAC 22
Measurement range	50 mA to 100 A AC/DC	200 mA to 600 A AC/DC	200 mA to 1400 A AC/DC
Transformation ratio	100 mV - 10 mV/A	10 mV - 1 mV/A	10 mV - 1 mV/A
Bandwidth	DC to 100 kHz	DC to 10 kHz	DC to 10 kHz
Accuracy	< 3 %	< 105 %	≤. 1.5 % and ≤ 2 %
Clamping diameter	11.8 mm	30 mm	42 mm
Output connector	BNC	BNC	BNC
Cable length	2 m	2m	2 m
Dimensions	231 x 67 x 36 mm	224 x 97 x 44 mm	236.5 x 97 x 44 mm
Weight	330 g	440 g	520 g
Power supply	1 x 9 V	1 x 9 V	1 x 9 V
IEC 61010-2-32 safety	600 V CAT III	600 V CAT III	300 V CAT IV / 600 V CAT III
Accessories supplied	9 V battery and operating manual		
To order	P01120043A P01120047*	P01120072	P01120073

*E3N + mains adapter

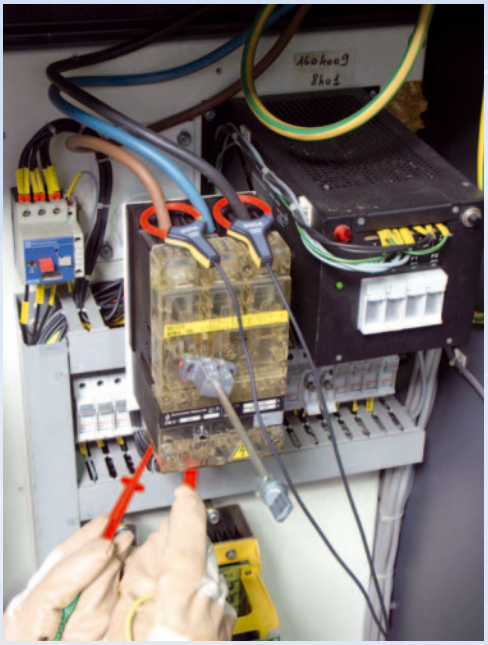
AC current probes




Specifications	MN 60	Y7N	C160	D38N
Measurement range	0.1 to 60 A peak AC and 0.5 to 600 A peak AC	1 A to 1200 A peak	0.1 to 2000 A peak	
Transformation ratio	100 mV - 10 mV/A	1 mV / A	100 mV/A – 10 mV/A – 1 mV/A	10 mV/A – 1 mV/A – 0.1 mV/A
Bandwidth	40 Hz to 40 kHz	5 Hz to 10 kHz	10 Hz to 100 kHz	30 Hz to 50 kHz
Accuracy	≤ 2 % and ≤ 1.5 %	≤. 2 %	≤. 3%, ≤. 2%, ≤. 1%	≤. 2%
Clamping diameter	20 mm	30 mm	52 mm	64 mm
Output connector	BNC	BNC	BNC	BNC
Cable length	2 m	2 m	2 m	2 m
Dimensions	135 x 51 x 30 mm	195 x 66 x 34 mm	216 x 111 x 45 mm	305 x 120 x 48 mm
Weight	180 g	420 g	550 g	1200 g
Power supply				
IEC 61010-2-32 safety	300 V CAT IV / 600 V CAT III			
Accessories supplied	1 operating manual			
To order	P01120409	P01120075	P01120308	P01120057A

Insulated Current Probes

Flexible current sensors



Specifications	MA200 30-300/3 – (17 cm)	MA200 30-300/3 – (25 cm)	MA200 3000/3 – (35 cm)
Measurement range	0.5 to 45 Apeak AC 0.5 to 450 Apeak AC	0.5 to 45 Apeak AC 0.5 to 450 Apeak AC	5 A to 4500 A
Transformation ratio	100 mV/A – 10 mV/A	100 mV/A – 10 mV/A	1 mV/A
Bandwidth	5 Hz to 1 MHz	5 Hz to 1 MHz	5 Hz to 1 MHz
Accuracy	≤ 1 % + 0.3 A	≤ 1 % + 0.3 A	≤ 1 % + 0.3 A
Clamping diameter	45 mm	70 mm	100 mm
Output connector	BNC	BNC	BNC
Cable length	2.40 m	2.40 m	2.40 m
Dimensions	140x64x28 mm	140x64x28 mm	140x64x28 mm
Weight	200 g	200 g	200 g
Power supply	1 x 9 V	1 x 9 V	1 x 9 V
IEC 61010-2-32 safety	CAT IV - 600 V CAT III - 1000 V	CAT IV - 600 V CAT III - 1000 V	CAT IV - 600 V CAT III - 1000 V
Accessories supplied	9 V battery and operating manual		
To order	P01120570	P01120571	P01120572

Optional accessories:

Mains adapter for MA 200: P01102087
Mains adapter for E: P01101965
Mains adapter for PAC: P01101967

To find out more...
Sales Brochure 906110803

Insulated current probes

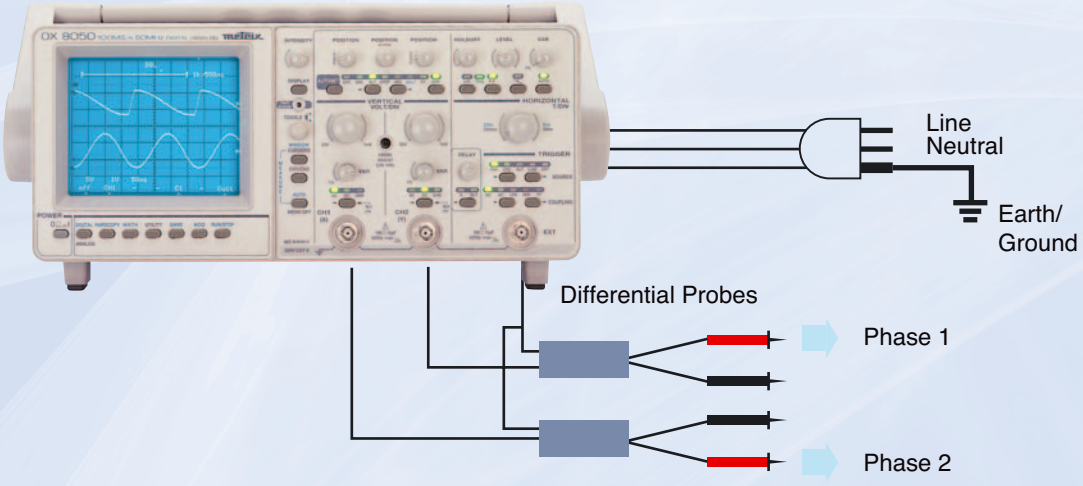
MX 9030, MTX 1032-B, MTX 1032-C

Ideal accessories for analogue or digital oscilloscopes for viewing signals not referenced to the earth, the MTX 1032-B and MTX 1032-C are equipped with 2 differential channels.

Powered by the mains supply, these probes can be used separately or hooked up to MTX Compact oscilloscopes. The MX 9030 probe is supplied in a stand-alone handheld casing and is powered by a battery.

- *A family of 3 products to meet the various requirements*
- *1 or 2 input channels, 30 MHz or 50 MHz bandwidth*
- *Extra-long banana or coaxial/banana measurement leads*
- *Supplied in a laboratory casing or handheld casing with wrist-strap*

Use of differential probes with a Class-1 oscilloscope protected by the earth.



Insulated current probes

MX 9030, MTX 1032-B, MTX 1032-C

Specifications	MX 9030-Z	MTX 1032-B	MTX 1032-C
Diff. input voltage	± 60 V or ± 600 V	± 40 V or ± 400 V	
Max. Voltage in common mode	± 600 V		
Attenuation / Accuracy	1/20 and 1/200 - ± 3 %	1/10 and 1/100 - ± 3 %	
Bandwidth	30 MHz	30 MHz	50 MHz
Rise time	11.7 ns	11.7 ns	7 ns
Output impedance	50 Ω		
Coaxial output voltage (max.)	± 3 V with 1 MΩ load	± 4 V with 1 MΩ load	
Noise level	< 10 mVpp		
General specifications			
Power supply	9 V battery	Mains : 230 VAC ±10 % 50/60 Hz	
Safety	IEC 61010-1 – Cat. IV, 600 V	IEC 61010-1 – Cat. III, 600 V	IEC 61010-1 – Cat. II, 600 V
Dimensions / Weight	163 x 62 x 40 mm / 195 g (with battery)	270 x 250 x 63 mm / 1.2 kg	

Standard state at delivery:

MX9030-Z: 1 single-channel probe with output on BNC cable, 1 standard battery installed, 1 set of PVC banana leads 1.10 m long, 1 set of 2 industrial crocodile clips, 1 operating manual
MTX1032-B: 1 two-channel probe in "MTX Pack" case, 2 BNC cables 20 cm long, 2 sets of PVC banana leads 1.10 m long, 1 European mains power lead, 1 set of accessories for fixing the diff. probe to the MTX oscilloscope, 1 operating manual in 5 languages
MTX1032-C: 1 two-channel probe in "MTX Pack" case, 2 BNC cables 20 cm long, 1 set of 2 BNC-banana cables 2 m long, 2 crocodile wire grips for probes, 1 European mains power lead, 1 set of accessories for fixing the diff. probe to the oscilloscope, 1 operating manual in 5 languages

References to order: :

MX9030-Z: Autonomous 1x30MHz differential probe
MTX1032-B: 2x30 MHz differential probe with banana inputs
MTX1032-BRK: MTX1032-B in 19'' Rack version
MTX1032-C: 2x50 MHz differential probe with coaxial inputs
MTX1032-CRK: MTX1032-C in 19'' Rack version

Available accessories:
see pages 100 à 111

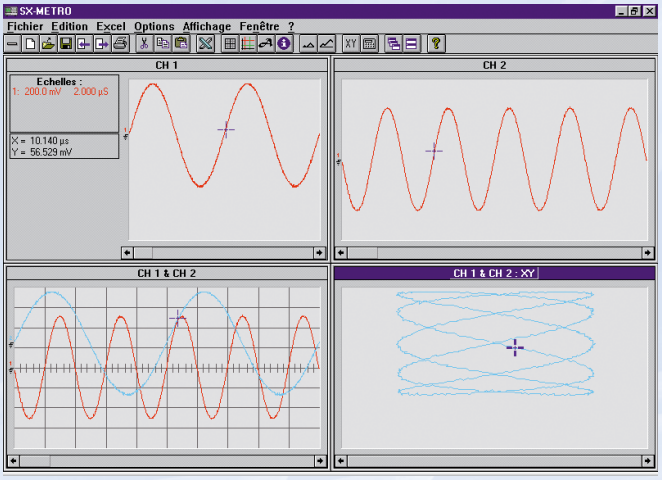
To find out more...
Sales Brochure 906210203

Detailed product brochures can be downloaded from www.metrix.fr

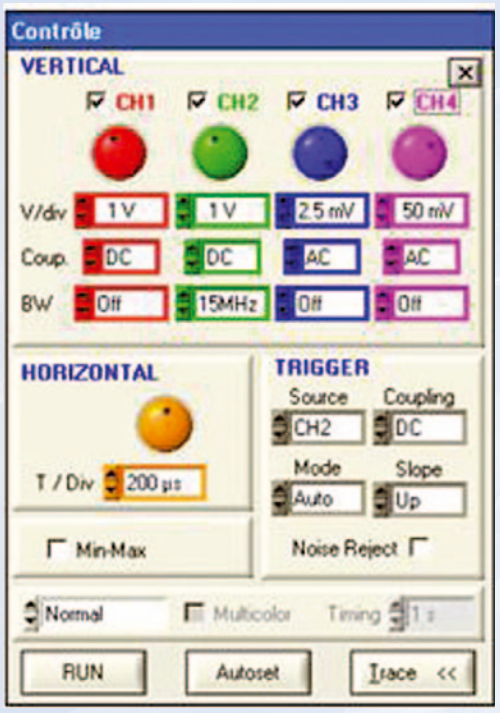
Software

SX METRO

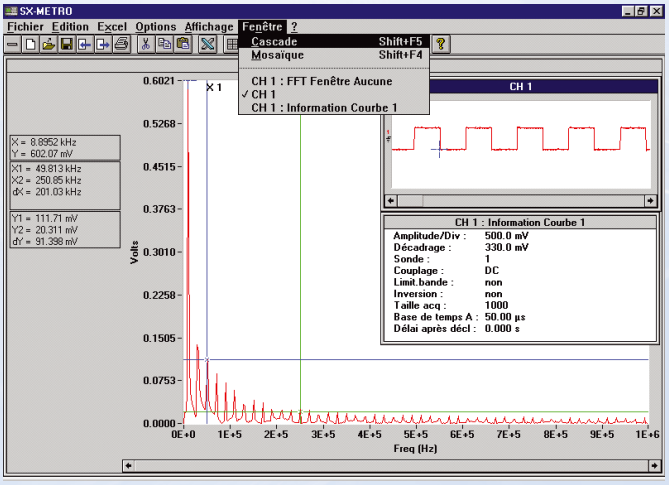
Data processing software for all the Metrix oscilloscopes.



Display of traces in "multi-window" mode.



Oscilloscope control panel.



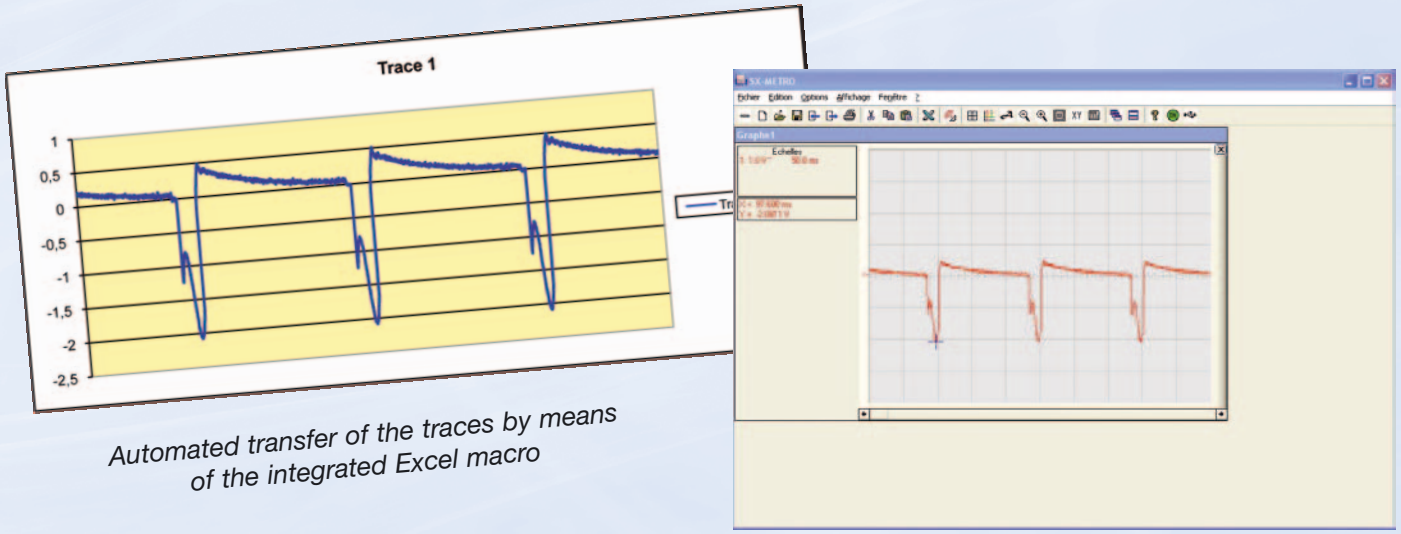
Simultaneous display of traces and FFT.

Software

SX METRO

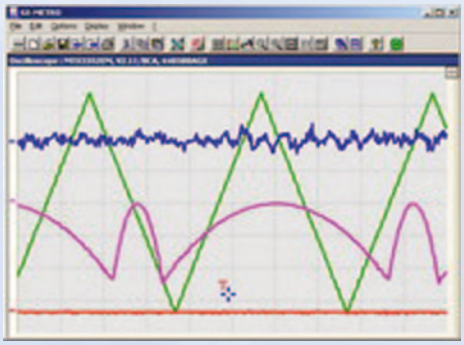
This software can be used to :

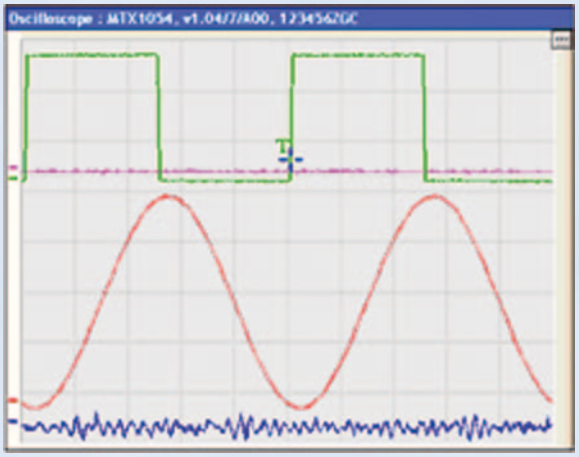
- *view the curves from stored files*
- *display curves on the PC in real time with MTX Compact and Scopix oscilloscopes*
- *control the oscilloscope from the PC*
- *load a configuration on the oscilloscope via the RS232 interface*
- *import curves stored in the oscilloscope's memory or "image" files*
- *store curves in text format on the PC*
- *perform mathematical processing such as FFT of the signal displayed*
- *communicate via Ethernet*
- *transfer the data (curves or FTT) into Excel. Users can insert a graph of data from the signal into a report written in Word (e.g. test report). They can also use Excel's functions to perform additional calculations on the samples in the curve.*



Automated transfer of the traces by means of the integrated Excel macro

- *The SX-Metro application can function as a Web server. It is possible to consult the PC where SX-Metro is running from one or more PCs connected to the network. All SX-Metro functions are then available and accessible from all the PCs connected.*



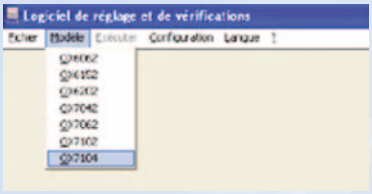


Software

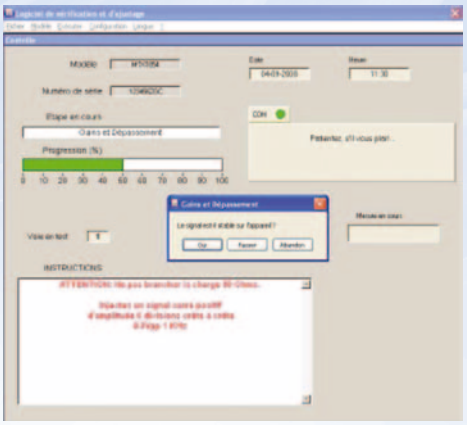
SX METROLOGY-HX0078

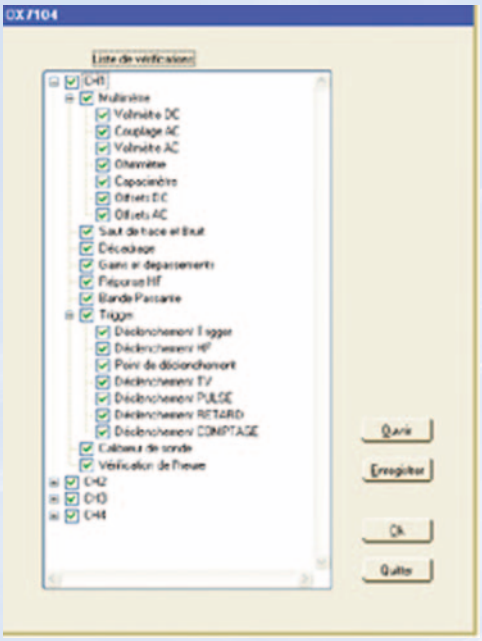
This metrological software can be used to check and adjust Metrix OX6xxx and OX7xxx oscilloscopes quickly and effectively "without opening the casing" via their series, USB or Ethernet connection.
It ensures traceability in compliance with the quality standards and makes it easy to archive the test log, produce reports and print out standardized verification certificates.

Selection of the oscilloscope that you wish to adjust



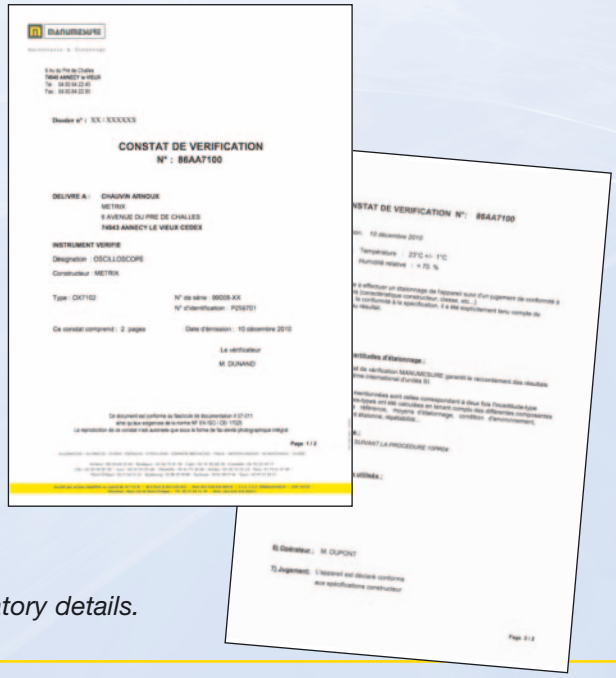
When you activate the Adjustment or Verification procedure, the following window is displayed:





Users can execute procedures whose extent may vary (choice of channel, multimeter, trigger functions, etc.)

Execution of the procedure and instructions for the operator



***A verification certificate** - in html format – is proposed at the end of the procedure,*

showing the various aspects checked:

- *configuration of the oscilloscope*
- *measurement value injected*
- *function tested*
- *value measured and tolerance*
- *indication of compliance or non-compliance*

There is also a header:

- *containing information on the measurement campaign, the person who checked the instrument and the other regulatory details.*

Coaxial Accessories

Coaxial cables

Safety leads with 50 Ω impedance, length 1 m
- IEC 61010-2-031 Cat. III 500 V, black:
insulated male BNC / banana plugs with rear connection > AG1066-Z (2 pcs)

Safety leads with 50 Ω impedance, length 1 m
IEC61010-2-031 Cat III 600 V, black > HX0106 (2 pcs)

Earth safety leads, length 2 m, Ø 4 mm banana connection
- IEC 61010-2-031 Cat. III 1000 V:
Female banana plug / female, yellow/green (earth) > P01295073A (5 pcs)

Accessories

Insulated safety adapter, IEC 61010-2-031 Cat. III 600 V,
with Ø 4 mm safety sockets:

Insulated male BNC / female sockets > HX0107
Load adapter

50 Ω BNC additional load > PA4119-50 (1 pc)

Rack for safety leads (1 piece)
Rack for hanging 60 leads > P01101914 (1 pc)

Insulated tee-joint, IEC 61010-2-031 Cat. I - 500 V
1 insulated male BNC / 2 female BNC > HA2004-Z (3 pcs)

Insulated extension, IEC 61010-2-031 Cat. I - 500 V
Female BNC / female BNC > HA2005 (1 pc)

Safety coupling jumper with 19mm spacing - Ø 4mm - 36 A
- IEC 61010-2-031:
Set of 10 black coupling jumpers > P01101892A

Protection and Transport Accessories and Mechanical Adaptations for Oscilloscopes

for oscilloscopes

HX0024: *MTX bag for the MTX 3240, MTX 3250, MTX 3252, MTX 3352 and MTX 3354 models.*
It is equipped with a side pocket for stowing the mouse.

HX0038: *Bare carrying case for Scopix equipped with foam inserts for storing documents and accessories (power supply, Probix accessories, communication cables)*

HX0057 : *Scopix fitted case with HX0030(A) Probix 1/10 probe, HX0031 Probix BNC adapter, HX0039 straight Ethernet cable, SX-METRO/P processing software*

RACK 19 :
The instructions in the MTX1052, MTX1054 and MTX1032 series are available in versions equipped with a standard 19" rack

Fuse Selection Table

Product concerned	Standardized dimensions	Amperage	Sales reference
AX 501	5 x 20	3.15 A	AT0069
AX 502	5 x 20	3.15 A	AT0069
AX 503	5 x 20	3.15 A	AT0069
MTX 3240	5 x 20	0.315 A	P01297074
MTX 3250	6 x 32	10 A	AT0095
MTX 3281	10 x 38	11 A	P01297092
MTX 3282	10 x 38	11 A	P01297092
MTX 3283	10 x 38	11 A	P01297092
MX 1	6 x 32	10 A	AT0070
MX 1	6 x 32	1.6 A	AT0071
MX 20	8 x 32	10 A	AT0055
MX 20	5 x 20	0.63 A	AT0094
MX 20HD	6 x 32	10 A	AT0095
MX 20HD	5 x 20	0.63 A	AT0094
MX 22	6 x 32	10 A	AT0095
MX 22	6 x 32	0.63 A	AT0519
MX 23	6 x 32	10 A	AT0095
MX 24B	6 x 32	10 A	AT0095
MX 24B	6 x 32	0.63 A	AT0519
MX 26	6 x 32	10 A	AT0095
MX 26	6 x 32	0.63 A	AT0519
MX 35D	6 x 32	10 A	AT0070
MX 35D	5 x 20	3.15 A	AT0053
MX 430	10 x 38	10 A	P01100731
MX 430	5 x 20	0,16 A	P03297508
MX 44	6 x 32	10 A	AT0095
MX 44	5 x 22	0.63 A	AT0518
MX 44HD	6 x 32	10 A	AT0095
MX 44HD	5 x 20	0.63 A	AT0518
MX 51	8 x 32	10 A	AT0055
MX 51	5 x 20	0.63 A	AT0094
MX 52	8 x 32	10 A	AT0055
MX 52	5 x 20	0.63 A	AT0094
MX 53	6 x 32	10 A	AT0095
MX 53	5 x 20	0.63 A	AT0518
MX 54C	6 x 32	10 A	AT0095
MX 54C	5 x 20	0.63 A	AT0518
MX 553	6 x 32	10 A	AT0095
MX 556	6 x 32	10 A	AT0095
MX 55C	6 x 32	10 A	AT0095
MX 55C	5 x 20	0.63 A	AT0518
MX 56C	6 x 32	10 A	AT0095
MX 56C	5 x 20	0.63 A	AT0518
MX 573	5 x 20	2 A	AA0921
MX 573	10 x 38	10 A	P01100731
MX 57EX		1 A	AT0064
MX 57EX		0.5 A	AT0057
MX 58HD	10 x 38	11 A	P01297092
MX 58HD	5 x 20	0.63 A	AT0518
MX 59HD	10 x 38	11 A	P01297092
MX 59HD	5 x 20	0.63 A	AT0518
OX 530	5 x 20	2.5 A	AT0090
OX 803B	5 x 20	2.5 A	AT0090
OX 8040	5 x 20	2.5 A	AT0090
OX 8050	5 x 20	2.5 A	AT0090
OX 8100	5 x 20	2.5 A	AT0090
OX 832	5 x 20	0.315 A	P01297074
OX 836B	5 x 20	2.5 A	AT0090

Index

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Index by Function

Index by Reference

Index by Reference

Metrix throughout the world:

CHINA	Tel: (021) 65 21 51 96 Fax: (021) 65 21 61 07 e-mail: info@chauvin-arnoux.com.cn
DEUTSCHLAND	Tel: (07851) 99 26-0 Fax: (07851) 99 26-60 e-mail: info@chauvin-arnoux.de
ESPAÑA	Tel: (902) 20 22 26 Fax: (93) 459 14 43 e-mail: comercial@chauvin-arnoux.es
ITALIA	Tel: (039) 245 75 45 Fax: (039) 481 561 e-mail: info@amra-chauvin-arnoux.it
MIDDLE EAST	Tel: (961) 1 890 425 Fax: (961) 1 890 424 e-mail: camie@chauvin-arnoux.com
ÖSTERREICH	Tel: (1) 61 61 9 61-0 Fax: (1) 61 61 9 61-61 e-mail: vie-office@chauvin-arnoux.at
SCANDINAVIA	Tel: (46) 8 50 52 68 00 Fax: (46) 8 50 52 68 10 e-mail: info@camatsystem.com
SCHWEIZ	Tel: (41) 44 727 75 55 Fax: (41) 44 727 55 56 e-mail: info@chauvin-arnoux.ch
UNITED KINGDOM	Tel: (01924) 460 494 Fax: (01924) 455 328 e-mail: info@chauvin-arnoux.co.uk
USA	Tel: (508) 698-2115 Fax: (508) 698-2118 e-mail: sales@aemc.com

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