MEASURING APPARATUS

Oscilloscopes & probes

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Power supplies

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Generators

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Multimeters

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Clamps

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Wattmeters - Volt - Amp

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Various apparatus

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Decade boxes

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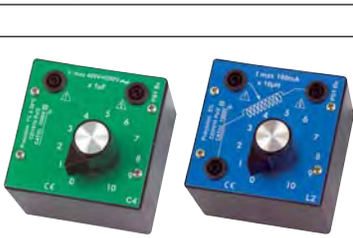
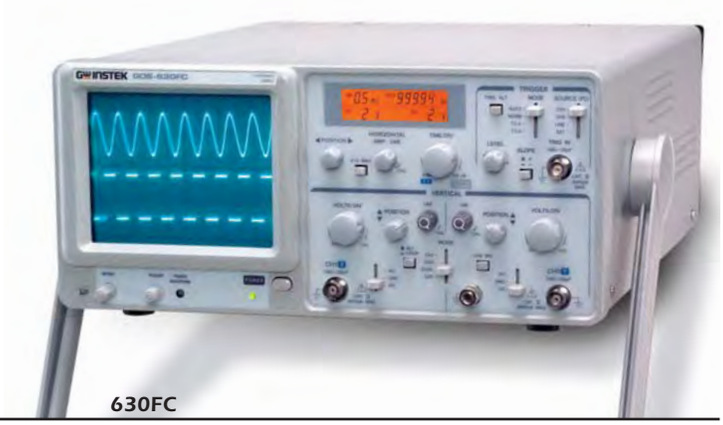


Analog oscilloscopes 20 to 30MHz

620

- Cathode tube screen 8 x 10 div (1div = 1cm)
- Magnifier: 100 – 50 – 20 ns/div non cal
- Wehnelt modulation
- XY mode
- CEI1010 CL1 CATII 300Vrms Pol2



630FC

- Cathode tube screen 8 x 10 div (1 div = 1cm)
- Magnifier: 100 – 50 – 20 ns/div non cal
- Frequency meter 5 digits
- Ranges 50Hz to 30MHz – sensitivity 2 mV
- Display Volt/div, Time/div, Frequency, XY mode
- Screen display: vertical range, Time base, Frequency
- Wehnelt modulation
- XY mode
- CEI1010 CL1 CAT II 300Vrms Pol2

REF.	620	630FC
Channels	2	2
Bandwidth -3dB	20MHz	30MHz
Rise time	17.5ns	11.7ns
Input impedance	1mΩ / 25pF	
Sensitivity	5mV to 5V/div (10 pos)	1mV to 5V/div (12 pos)
Magnifying control	x 5 up to 1mV/div	1mV/div
Coupling	AC - DC - Ground	
Max input voltage	400Vcc	
Operating modes	CH1 - CH2 - CH1 & CH2 (ALT & CHOP)	
Sum & difference / XY mode	CH1 ± CH2 / XY	
Time base / accuracy	20 steps: 200ns to 0,5s/div / 3%	
Synchronisation	Auto - Normal - TV	
Autoset	no	Time base autoset
Power source	100 - 120 - 230VAC 70VA	115 - 230VAC
Dimensions	310 x 150 x 455mm	
Weight	8.2kg	
Supplied with	2 probes 10/1 and 1/1 0 à 60MHz - User's manual	

ADDITIONAL ACCESSORIES

Differential probes - Page 216

Probes - Pages 218

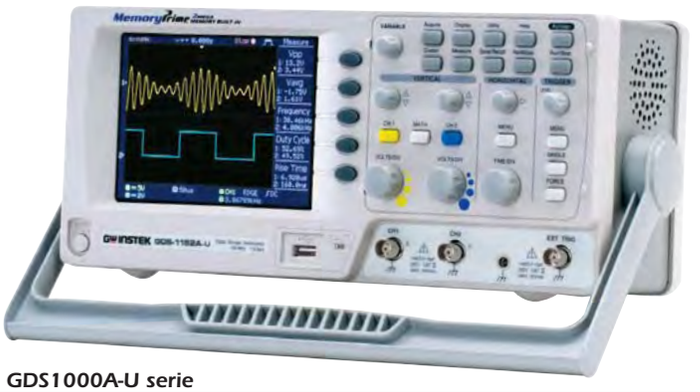
Coaxial accessories - Page 255

Digital storage oscilloscopes 50 to 150MHz

GDS1000-U serie

USB | PC software | Labview Driver

- Color screen TFT LCD - backlight - Vision 45 ° - 234 x 320 points
- save/recall: 15 waveforms and 15 setups
- GO – NO GO functions
- ΔV ΔT cursors
- Data logger
- HELP key
- Multilangage



GDS1000A-U serie

USB | PC software | Labview Driver | PictBridge

- Color screen TFT LCD - backlight - Vision 45 ° - 234 x 320 points
- save/recall: 15 waveforms and 15 setups
- GO – NO GO functions
- ΔV ΔT ΔF cursors
- Data logger
- Assistant for test probes x0.1 to x2000
- HELP key
- Multilangage

REF.	GDS1052-U	GDS1072-U	GDS1102-U	GDS1072A-U	GDS1102A-U	GDS1152A-U
Channels	2	2	2	2	2	2
Bandwidth -3dB	50MHz	70MHz	100MHz	70MHz	100MHz	150MHz
Rise time	7ns	5ns	3,5ns	5ns	3,5ns	2,3ns
Sampling rate	250MSa/s real time, 25GSa/s equivalent time			1GSa/s real time, 25GSa/s equivalent time		
Record length by channel	4.000 points			2.000.000 points		
Vertical resolution	8 bits					
Sensitivity / Accuracy	2mV/div to 10V/div increment 1 - 2 - 5 / 3%					
Time base / Accuracy	1ns/div to 50s/div increment 1 - 2 - 5 / 0,01%					
Modes	Auto - Normal - Single - Edge - Pulse - Width - TV - (↑↓ 1000A-U series only)					
Math functions - FFT	+ - FFT, XY			+ - x FFT, FFTrms, Zoom FFT, XY (dephas. 3%)		
Auto measurements	19			27		
Autoset	yes (deactivation possible)					
USB device	USB1.1 & USB2.0 full speed compatible					
Power source	100 - 240VAC					
Dimensions	310 x 142 x 140mm					
Weight	2.5kg					
Supplied with	Software on CD - User's manual					

ADDITIONAL ACCESSORIES

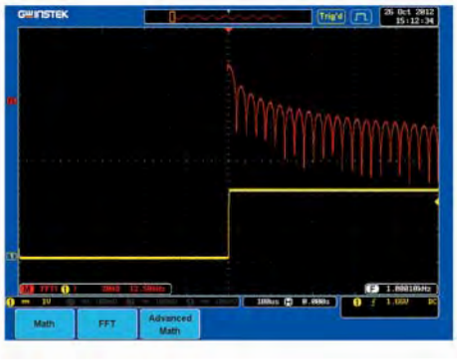
Differential probes - Pages 216

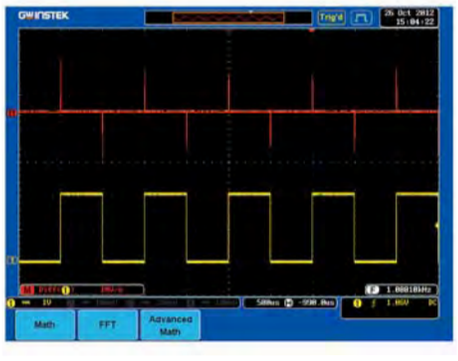
Probes - Pages 218

Clamps - Pages 228

Coaxial accessories - Page 255

Digital storage oscilloscopes 70 to 300MHz





GDS2000A serie

USB full speed | PC software | Labview Driver | PictBridge | RS-232

GPIB (option) | Ethernet (option) | LAN (option) | VGA (option)

- Colour screen 20cm TFT high resolution (800 x 600 points)
- Save/recall: 24 waveforms and 20 setups
- Fast update rate of 80,000 waveform per second
- Curve plotting: points, vectors , variable persistence
- Acquisition by segments at your choice (2048 possible observations)
- Search function of the wave form by criteria in the entire memory. Zoom.
- XY mode : 2 simultaneous displays
- 6 digits frequencymeter
- 8 or 16 logic inputs (option)
- 8 or 16 additional chanels, either 12 or 20 with time chanels (option)
- HELP touch / Multilangage

REF.	GDS2072A	GDS2102A	GDS2202A	GDS2302A	GDS2074A	GDS2104A	GDS2204A	GDS2304A
Channels	2	2	2	2	4	4	4	4
Bandwidth -3dB	70MHz	100MHz	200MHz	300MHz	70MHz	100MHz	200MHz	300MHz
Rise time	5ns	3,5ns	1,75ns	1,17ns	5ns	3,5ns	1,75ns	1,17ns
Sampling rate	2GSa/s real time, 100GSa/s equivalent time							
Record length by channel	2.000.000 points							
Vertical resolution	8 bits							
Sensitivity	1mV to 10V/div							
Time base	10ns to 10s/div							
Modes	Auto (mode ROLL) - Normal - Single - Front - TV - Pulse width - Video - Runt - Rise & Fall - Alternate							
Math functions - FFT	+ - x ÷ d/dt, ∫dt, √, FFT, FFTrms, ZOOM FFT							
Auto measurements	36							
Autoset	yes							
USB device	USB - RS232 - LAN (in option) - VGA (in option) - PictBridge (GPIB in option)							
Power source	100 to 240VAC - 48 to 63Hz							
Dimensions	380 x 220 x 145mm							
Weight	4.2kg							
Supplied with	Labview driver - Complete software - User's manual							

OPTIONS

Logic analyzer

- Sample rate : 500MSa/s
- Bandwidth : 200MHz
- Record length : 2MSa max
- Input channels 16 / 8
- Triggering on 2 fronts, pattern, pulse, width, serie BUS (I2C, SPI, UART) parallel.

Range

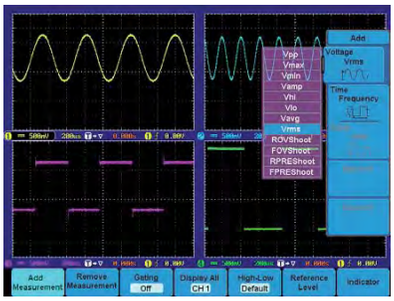
- Max input voltage : ±40V
- Mini voltage swing : ±500mV
- Input impedance : 100KΩ
- Vertical resolution : 1 bit

ref. DS2-16LA 16 channels

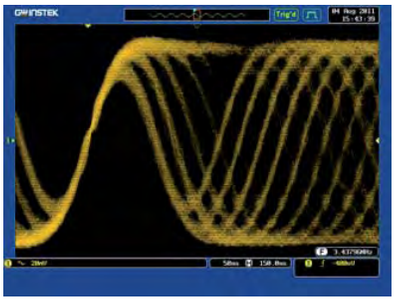
ref. DS2-8LA 8 channels

ref. DS2-GPIB

Digital storage oscilloscopes 2 & 4 channels 150 to 350MHz



Split screen



GDS3000 serie

USB high speed | **PC software** | **Labview Driver** | **PictBridge** | **VGA output** | **GPIB (option)**

- Color screen 20cm TFT high resolution 800x600pixels
- Internal memory 64Mbits - 25kpts for each input channel
- Save / Recall 24 waveforms and 20 setups
- Screen split to show both the standard signal and his zoom
- Screen split with independant setting and display for each channel
- Adjustable persistence for less frequently occurred signal
- Autoset and Autoranges, automatic measurements, cursors
- 3 input impedance selections: 50Ω - 75Ω - 1MΩ
- Online help multilanguages

REF.	GDS3152	GDS3252	GDS3352	GDS3154	GDS3254	GDS3354
Channels	2	2	2	4	4	4
Bandwidth -3dB	150MHz	250MHz	350MHz	150MHz	250MHz	350MHz
Rise time	2,3ns	1,4ns	1s	2,3ns	1,4ns	1s
Sampling rate	2,5GSa/s to 5GSa/s (100GSa/s equivalent time)					
Record length by channel	25.000 points					
Vertical resolution	8 bits					
Sensitivity	2mV to 5V/div					
Time base	1ns to 100s/div					
Modes	Auto (mode ROLL) - Normal - Single - Front - Pulse - Width - Video - Runt - Rise & fall - Alternate					
Math functions - FFT	+ - x ÷ FFT, FFTrms, FFT, amplitude spectral, RMS, dBVrms, FFt window, Hamming, Hanning,Blackman					
Auto measurements	28					
Autoset	yes					
Interfaces	USB - RS232 - LAN - VGA - PictBridge (GPIB in option)					
Power source	100 to 240VAC - 48 to 63Hz					
Dimensions	400 x 200 x 130mm					
Weight	4kg					
Supplied with	Driver LabView - Software - User's manual					

OPTIONS

Serial BUS analysis software

The serial bus analysis software has full analysis tools for triggering and decoding commonly used serial bus interfaces, including I²C, SPI and UART.

ref. DS3SBD

Electrical network analysis software

It measures: VRMS, peak Vfactor, frequency, Irms, peak Ifactor, active, reactive, apparent power, cos φ, phase angle. Harmonics: Freq., Amplit., Amplit.rms, phase, THD-F, THD-R, RMS

ref. DS3PWR

Standard Interfaces

One **GPIB USB** adapter is available as an option for interface conversion

ref. GUG001

20 to 60MHz hand-held oscilloscope multimeter

RS-232 **USB**

- Colour screen 75 x 56mm, 640 x 480 points
- Save/Recall 4 waveforms & 4 setup
- Zoom on the window. Choise of the window and zoom as far as 5ns/div
- Autoset and Autoranges, auto. measurements, cursors
- Digital multimeter TRMS

REF.	1022MN	2062MN
Channels	2	2
Bandwidth -3dB	20MHz	60MHz
Rise time	17.5ns	5.8ns
Sampling rate	100MSa/s	250MSa/s
Record length by channel	6.000 points	
Vertical resolution	8 bits	
Sensitivity	5mV to 5V/div in séquence 1 - 2 - 5	
Modes	Auto., normal, single, edge ↑↓, video	
Fonctions Math - FFT	± x ÷ FFT	
Mesures automatiques	20	
Measurement cursors	V1/zero V2/zero ΔV T1/zero T2/zero ΔT	
Fonctions Autoset	yes	
Interfaces	USB - RS232	
Multimeter	VDC - VAC - IDC - IAC - RΩ - CμF - Test diodes	
Power source	Battery Li-ion. Operate time 6 hours.	
Dimensions / Weight	180 x 113 x 40mm / 700g	
Supplied with	2 oscilloscope probesx1 & x10 / 2 test leads for multimeter / Mains adaptor / USB lead Capacitance adaptor / Shunt 20A / Software / Transport case / User's manual.	

ADDITIONAL ACCESSORIES

Differential probes - Pages 216

probes - Pages 218

Coaxial accessories - Page 255

Differentials probes

OPTIONS

Mains adapter for ISOL probes

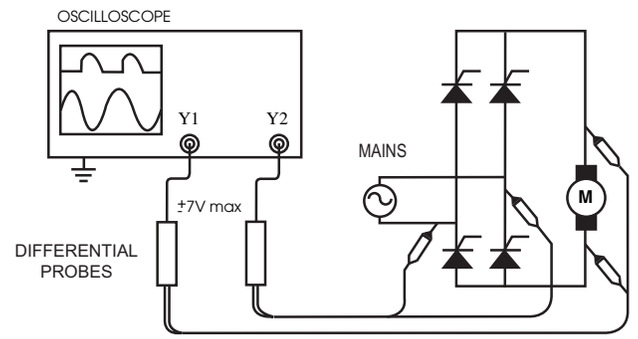
ref. ADA6

Safety connectors

ISOL-710

DP25

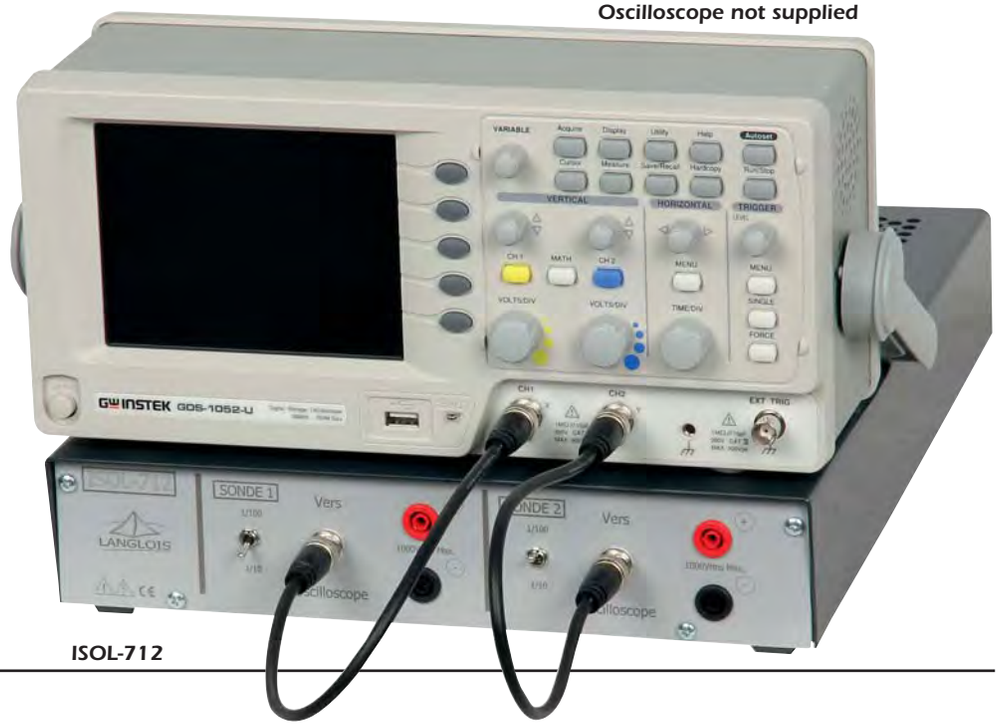
These probes are used for displaying and measuring of dangerous voltages with a Class I oscilloscope, in accordance with the user safety standards. In fact, the image voltage applied to the oscilloscope is no more than a few volts. On the other hand, by using two probes the voltages applied to the oscilloscope inputs are isolated from one another. So, differential probes can measure high voltages (DP50) and/or voltages which relate to different potentials, without any risk of short-circuiting through the base of the oscilloscope.



REF.	ISOL-710	ISOL-720	DP25
Channel	1	1	1
Bandwidth to -3dB	DC to 25MHz		
Attenuation ratio	1/10 and 1/100	1/20 and 1/200	1/20 1/50 1/200
Measurable input voltage DC + AC	140Vpp on 1/10 1400Vpp on 1/100	280Vpp on 1/20 2000Vpp on 1/200	respect. 200Vpp / 500Vpp / 1400Vpp
Output voltage to oscilloscope	+/- 7V		+/- 5V
Max. differential input voltage	1000Vrms		
Max common mode voltage (1)	500Vrms	1000Vrms	600Vrms
Input impedance	4 MΩ / 5pF		4 MΩ / 1,2pF
Rise time	14 ns		
Accuracy	2%		
CEI1010 cat III Pol 2	1000Vrms		600Vrms
Power source	Battery (4 x LR6) and mains adapter		Mains adapter 230V 50/60Hz
Dimensions / Weight	158 x 62 x 20mm / 290g		210 x 58 x 35mm / 200g
Supplied accessories	Rubber jacket + test clip		Holster + test clips + mains adapter

(1) Common mode voltage: voltage between, on one hand, the interconnected inputs and on the other hand the ground or the BNC terminal on the oscilloscope

Oscilloscope not supplied



ISOL-712

COMPACT DIFFERENTIALS PROBES

Ergonomic solutions of differential probes, supplied from mains, with 2 or 4 channels according the models. The housing is strong enough to put an oscilloscope on top.

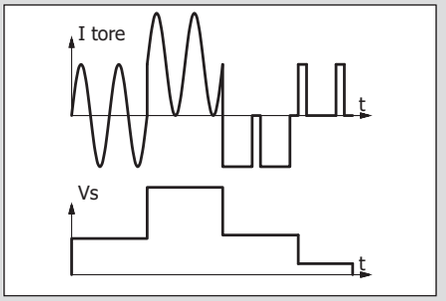
RMS CONVERTER
FOR CURRENT PROBES

ref. ADA-SONDE

ADA-SONDE converts any complex signal, even with superimposed continuous component, into a continuous signal image of the RMS value of the input signal. Connects between a current or voltage probe and an oscilloscope.

Accuracy*	Bandwidth
1%	DC to 30KHz
10%	DC to 100KHz

* For input sine-wave signal 100mV



Gain is 1
Thus if Ve = 1Vrms , Vs = 1VDC
Max input voltage: ± 1V

Supplied with mains adapter and 2 BNC cables

REF.	ISOL712	ISOL714	ISOL722	ISOL724
Channel	2	4	2	4
Bandwidth to -3dB	DC to 25MHz			
Attenuation ratio	1/10 and 1/100		1/20 and 1/200	
Measurable input voltage DC + AC	140Vpp on 1/10 1400Vpp on 1/100		280Vpp on 1/20 2000Vpp on 1/200	
Output voltage to oscilloscope	+/- 7V			
Max. differential input voltage	1000Vrms			
Max common mode voltage (1)	500Vrms		1000Vrms	
Input impedance	4 MΩ / 5pF			
Rise time	14 ns			
Accuracy	2%			
CEI1010 cat III Pol 2	1000Vrms			
Power source	Mains 230V			
Dimensions / Weight	300 X 65 X 350mm			
Supplied accessories	2 or 4 BNC leads (25cm)			

(1) Common mode voltage: voltage between, on the one hand, the interconnected inputs and on the other hand the ground or the BNC terminal on the oscilloscope

True RMS DC and AC low current probes

VA15

DCA60

PSY500

PSY510

These probes are used with an oscilloscope, a multimeter or a recording instrument. They deliver a secondary image voltage of the primary current (a few dozen millivolts), thereby allowing the user to take measurements in complete safety and without having to switch off the power to the circuit. The Hall sensor fitted in them can detect a DC component overlaid onto the AC component. When used with a true RMS multimeter, these probes will provide a true RMS current measurement.

REF.	VA15	DCA60	PSY500	PSY510
Output voltage / Input current	100mV/A range 4A 10mV/A range 30A 1000mV/A range 400mA AC only.	100mV/A range 20A 10mV/A range 60A	200mV/A range 5A 20mV/A range 50A	1 V / A range 4A 0,1V / A range 40A
Ranges DC + AC	4A & 30A	20A & 60A	5A & 50A	4 & 40 A
Range AC only	400mA AC	-		
Accuracy	1% DC ~ 1kHz	2% 40Hz ~ 2kHz 4% 2kHz ~ 10kHz 6% 10kHz ~ 40kHz	2% DC ~ 50Hz 3% 50Hz ~ 100kHz 5% 100kHz ~ 120kHz	2% DC to 80Hz 3% 80Hz to 180kHz 5% 180kHz to 270kHz 6% 270kHz to 350khz
Diameter of the jaws	21mm	8mm	9mm	
Power source	battery : 2 x LR6	battery : 1 x 6LR61	Mains or battery 1LR61 (9V)	
CEI100	CATIII 300Veff pol2			
Supplied with	2 safety leads 1 BNC adapter	1 BNC adapter	1 BNC lead 1 BNC adapter 1 mains adapter	1 BNC lead 1 BNC adapter 1 mains adapter

Multi-outputs power supplies

AL841B

ALF1501D

AM061205

AL890NX

AL843A

AM061210

Complete range of DC or AC&DC power supplies, fixed or variable, fully protected for various type of use in laboratory.

Ref	DC OUTPUTS	AC OUTPUTS	Power	Informations
AL841B	3V / 4,5V / 6V / 7,5V / 9V / 12V - 1A	-	12 W	6 selectable voltage
AL890NX	±15v / 0,5mA	-	15 W	symmetric
ALF1501D	±15V 1A or 24V 1 A or 12V 2,5A	-	30 W	±15V (Aj. ±10 à ±15V)
AL843A	6V, 12V / 10A or 24V / 5A	6V, 12V / 10A or 24V / 5A	120 W	AC & DC simultaneous
AM061205	6V , 12V / 5A	6V , 12V / 5A	120 W	AC & DC simultaneous
AM061210	6V / 20A , 12V / 10A	6V / 20A , 12V / 10A	120 W	AC & DC simultaneous

STABILIZED POWER SUPPLY, RS232, LABVIEW, USB*

Réf. AL991S

- ± 0-15V / 1A or 0-30V / 1A and 2-5,5V / 3A and -15 - 0 - +15V / 200mA
- Power : 48 Watts
- Display: Digital
- Interface: RS-232
- Software: Windows95 minium, LabVIEW

***USB OPTION**
Set comprising an USB/RS232 adapter + null modem lead

Réf. USBRS232

CURRENT GENERATOR AC/DC POWER SUPPLY

Réf. ALR3002M

- 0 to 5V, 6V, 12V or 30V / 0 - 25 mA, 250 mA or 2,5A DC
- 6V or 12V or 24V / 5 A AC
- Power : 120 Watts

Reading of voltages and currents on separate displays.
AC & DC voltages available at the same time.

Single output DC power supplies (with safety terminals Ø4mm)

GPS3030A

GPS3030D

GPS3030DD

GPR3510HD

GPR30H10A

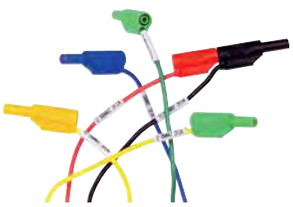
REF.	GPS3030A	GPS3030D	GPS1850D	GPS3030DD	GPR3060D	GPR3510HD	GPR6030D	GPR30H10A
Display type	TYPE A	TYPE D		TYPE DD				TYPE A
Power	90VA				180VA à 1000VA			
Voltage	0 to 30V	0 to 30V	0 to 18V	0 to 30V	0 to 30V	0 to 35V	0 to 60V	0 to 300V
Adjustable	by 2 knobs coarse and fine from 0 to Vmax							
Current	0 à 3A	0 à 3A	0 à 5A	0 à 3A	0 à 6A	0 à 10A	0 à 3A	0 à 1A
Adjustable	by 2 knobs coarse and fine from 0 to I max or 0 to Imax/2							
Regulation	Output voltage variation : < 0,01% + 3mV - Output current variation < 0,2% + 3mA by mains variation of 15% or load variation 0 ~ 100%							
Ripple & noise	0.5mVrms							
Protection	Electronic by current limitation against overload and short circuit							
Power source	Mains 120-240V - 50/60Hz							
Supplied with	Power lead and user's manual							

DISPLAY TYPE

A : analogue type (with voltmeter & ammeter) Class 2,5%
D : digital type. (1 switchable display for Voltage/current)
DD : 2 digital type (1 display for voltage + 1 display for current)

ADDITIONAL ACCESSORIES

Safety leads - Page 254



OPTION

GREEN/YELLOW male earthing socket
Put a «-M» at the end of the references

Multi output power supplies (with safety terminals Ø4mm)

SPD3606

GPS3303

GPD3303 - WITH USB CONNECTOR

High resolution 1mV – 1mA,
can be remotely controlled via the USB connection.
Adjustable by numeric keypad or encoder

- Accuracy of programming: voltage 0.03%+10dgt, current 0.3%+10dgt
- Accuracy of reading: voltage 0.03%+10dgt, current 0.3%+10dgt

Saving of 4 different configurations
High-resolution display: 30,000V – 3,000 A.
Labview driver.

REF.	SPD3606	GPS2303	GPS3303	GPD3303
INDEPENDENT 1	2 x 0 to 30V - 2 x 0 to 6A	2 x 0 to 30V - 2 x 0 to 3A		
INDEPENDENT 2	2 x 0 to 60V - 2 x 0 to 3A	-		
SERIAL 1	0 to 60V - 0 to 6A	0 to 60V - 0 to 3A		
SERIAL 2	0 to 120V - 0 to 3A	-		
PARALLELE	0 to 30V - 0 to 12A	0 to 30V - 0 to 6A		
AUXILIARY	0,1 to 5V - 3A	-	5V - 3A	2,5 - 3,3 - 5V - 3A
Dims	255 x 145 x 265mm	255 x 145 x 265mm		210 x 130 x 265mm
Weight	6kg	8kg		
Power source	Mains 120-240V - 50/60Hz			

Multiple power supplies consist of two or three power sources which are galvanically isolated from each other.

- 2 adjustable power supplies with rectangular features

AC POWER SOURCES

- Voltage can be adjusted progressively from 0 to Vmax.
- Voltage variation: <0.01% + 3mV or <0.02% + 3mA for 100% load variation or 15% mains variation.
- Current can be adjusted progressively from 0 to Imax.
- Regulation: background noise <1mVrms.
- Slave repeater error: <0.5% of the master voltage.
- Response time: 0 to Vmax. = 0.1ms.

AUXILIARY SOURCE (except for GPS2303)

- Auxiliary fixed voltage: 5V, 3A rating
- Voltage regulation:
  <10mV for 100% charge variation
  <5mV for 15% mains variation
- Background noise <2mVrms

PROTECTIVE DEVICES

All of the outputs are protected against short-circuits, even those lasting a long time.
In this case, the power supply will automatically switch to a current source.

DISPLAYS

Digital: 3 digits 1/2 LED 13mm. 0.5%

THREE OPERATING MODES	
Independent mode	*Both power supplies are completely independent from each other.*
Tracking Series mode	*Allow the two power supplies to be used as a 0 to double rating voltage supply.*
Tracking Parallel mode	*Allow the two power supplies to be used as a 0 to double rating current supply.*

Function generators 2 & 3MHz with or without frequency counter


GFG8219 - 3MHz - AM - FM


GFG8215 - 3MHz


GFG8020G - 2,2MHz


SFG1013 - 3MHz - DDS

REF.	GFG8219	GFG8215	GFG8020G	SFG1013
Waveforms	sine - square - triangle - pulse - TTL - CMOS - (GFG8219 only : AM - FM)			sine - square - pulse - TTL
Frequency	0,01Hz to 3,3 MHz - 7 ranges		0,01Hz to 2,2 MHz - 7 ranges	0,1Hz to 3 MHz - 7 ranges
Output voltage	20 Vpp on 600Ω 10Vpp on 50Ω			
Attenuators	2 : -20dB ±1dB		1 : -20dB ±1dB	1 : -40dB
Offset	Continuously variable from -10V to +10V into 600Ω			
Duty	variable from 20% to 80% Calibrate to 50%		variable from 10% to 90% Calibrate to 50%	variable from 25% to 75% Calibrate to 50%
TTL output	≥ 3Vpp . Rise time ≤25ns. Load : 20 TTL gates			
CMOS output	Adjust 4Vcc to 14,5Vpp. Rise time < 120ns			no
Sinus	1% from 0,3Hz to 200kHz.		1% from 0,2Hz to 200kHz.	>-55dBc 0,1Hz to 200kHz.
Triangle	Linear and symetry > 98% from 0.1Hz to 100kHz >95% after			
Square	Rise time < 100ns (120ns for GFG8020G) - Symétry : 2% from 0,2Hz to 100kHz (5% for SFG1013)			
VCF	Input impedance 10kΩ - Δf/f = 1/10 for a voltage step of 10VDC			no
Internal sweep	Δf/f variable from 1/1 to 1/100	no	no	no
Amplitude modulation	Depth of modulation 0 to 100 %	no	no	no
Frequency modulation	yes	no	no	no
Frequency ranges	Internal 0,01 Hz to 3,3 MHz External 0,01 Hz to 150 MHz / 6digits	no	internal : 0,01 Hz to 2,2MHz / 4digits	internal : 0,1 Hz o 3MHz / 6digits
Protection	against overload			
CEI1010	CATII 250Vrms pol2		CATII 300Vrms pol2	
Power source	115 - 230 VAC 50/60Hz		120 - 230 VAC 50/60Hz	115 - 230 VAC 50/60Hz
Dimensions	251 x 91 mm. Depth 291mm		230 x 95 mm. Depth 280mm	251 x 91 mm. Depth 291mm
Weight	2kg		2kg	2,1kg

ADDITIONAL ACCESSORIES

Coaxial accessories - Page 255

Arbitrary function generators 5 to 25MHz

USB

PC software

11cm TFT LCD resolution 480x272
Frequency + voltage and settings.
Programming of an arbitrary signal with the keyboard.
Sample rate 20MSa/s and 10 bits amplitude resolution.
4000 points memory.
AM FM FSK SWEEP Modulation (série 2100).
Frequencymeter (2100 serie).

REF.	AFG2105	AFG2112	AFG2125	AFG2005	AFG2012	AFG2025
Frequency range	0,1Hz à 5MHz	0,1Hz à 12MHz	0,1Hz à 25MHz	0,1Hz à 5MHz	0,1Hz à 12MHz	0,1Hz à 25MHz
Waveforms	Sinus, Carré, Triangle, Rampe, Bruit et arbitraire					
Arbitrary functions - Sample rate - Repetition rate - Waveform lenght - Amplitude resolution	20 Mech/s 10 MHz 4 kpoints 10 bits					
Amplitude	2mV à 20Vcc (à vide) - 10Vcc sur 50Ω					
Rise / Fall time	< 25ns avec l'amplitude maximale sur 50Ω					
Offset ranges	± 10V (à vide) / ± 5V sur 50Ω					
Rise time	< 25ns (50Ω)					
AM / FM Modulation	oui			non		
FSK Modulation	oui			non		
Frequency	5Hz à 150MHz			non		
Sweeping	yes					
Memory	10 storage memory					
TTL output	yes					
Interface	USB					
Power source	100 - 240VAC - 50/60Hz - 25VA					
Dimensions	266 x 107mm. Depth 293mm.					
Weight	3.2kg					
Supplied with	Arbitrary waves editing software and user's manual					

Follower amplifier

REF. AS150

- The output of a low frequency generator applied to the AS150 input, amplifies the voltage until 80V peak to peak, and the current up to 7A with an impedance ≥ 4Ω.
- Bandwidth at 0.1dB: 20Hz-20kHz. (at 0.7dB: 10Hz - 50kHz)
- The output level of the low frequency generator adjusts the AS150 output amplitude from 0 to 80Vpp.
- The AS150 output is protected against overloads.

OTHER FEATURES

- Input on BNC terminal Two parallel outputs: on 2 ∅4mm terminals and on BNC
- AS150 does not amplify the low frequency generator DC component
- 100 – 240VAC 50-60Hz power supply. Dimensions/weight: 500 x 300 x 65mm 4.7kg

Auto ranging multimeters

ST9929

ST9919

ST9927T

ST9915

Range of reliable and robust automatic multimeters.
Sturdy ABS housing, protected by a shock resistant soft moulded holster, waterproof (IP67)

- Peak hold function. Min et Max (exept ST9915)
- Relative measurements
- Bargraph (exept ST9915)
- Hold (ST9929)
- Data recording, max 200s (ST9929)
- Auto power-off after 15min

REF.	ST9929	ST9919	ST9927T	ST9915
Display	40.000 points		6.000 points	4.000 points
Converter	TRMS AC+DC	TRMS AC	TRMS AC	-
Bandwidth	40Hz to 10kHz	40Hz to 1kHz	40Hz to 1kHz	-
VDC accuracy	400mV to 1000V 0,06% + 4dgt		600mV to 1000V 0,09% + 2dgt	400mV to 1000V 1,2% + 2dgt
VAC accuracy	400mV to 1000V RMS 1% + 30dgt - 5% + 30dgt from 1kHz to 10kHz		6 to 1000V TRMS 1 to 2% +3dgt	400mV to 1000V 1,5% + 3dgt
IDC accuracy	400µA to 10A 1% + 3dgt		600µA to 10A 1% + 3dgt	400µA to 10A 1,5% + 3dgt
IAC accuracy	400µA to 10A RMS 1,5% + 30dgt - 5% + 30dgt from 1kHz to 10kHz		600µA to 10A TRMS 1,5% +3dgt	400µA to 10A 1,8% + 5dgt
OHM accuracy	400Ω to 40MΩ 0,3% +4 to 9dgt		600Ω to 60MΩ 0,3% + 4dgt	400Ω to 40MΩ 1,2% + 2dgt
Farad accuracy	40nF to 40mF 3,5% +10 to 40dgt		60nF to 1000µF 3,5% + 4dgt	4nF to 200µF 3% + 5dgt
Frequency accuracy	40Hz to 10MHz 0,50%		10Hz to 40MHz 0,1% + 1dgt	10Hz to 40MHz 1,2% + 3dgt
Diode test	Test 0,9mA - 2,8V			Test 0,3mA - 1,5V
·)))	Ring for R < 35Ω		Ring for < 100Ω	Ring for < 150Ω
Duty accuracy	0,1% to 99,9% 1,2% + 2dgt		0,1% to 99,9% 1,2% + 2dgt	0,1% to 99,9% 1,2% + 2dgt
°C (type K) accuracy	-50 to 1000°C 1% + 2,5°C		-45 to 750°C 3% + 5°C	-
4 - 20mA	4mA~0% ; 20mA~100%		-	-
Ranging	Auto & Manual			
Protection				
Power source	1 battery 9V type 6LR61			
Dimensions / Weight	182 x 82 x 55mm / 430g		182 x 82 x 55mm / 375g	
Supplied with	Test leads, thermocouple, carrying case, battery, user's manual.			

Input impedance as voltmeter: 10MΩ

Manual ranging multimeters

ST9905

2005DMM

TRG2106

UM2010

Range of reliable and robust manual multimeters.
Sturdy ABS housing, protected by a shock resistant soft moulded holster, waterproof (IP65)

ST9905 - 2005DMM - TRG2106
- Auto power-off after 15min

UM2010
- Length of the scale: 90mm
- Safety sockets 4mm

REF.	ST9905	2005DMM	TRG2106	UM2010
Display	2.000 points	2.000 points	20.000 points	Analogical
VDC Accuracy	200mV to 1000V 0,5% + 2dgt	200mV to 1000V 0,5% + 3dgt	200mV to 1000V 0,05% + 3dgt	100mV to 1000V 1,5 %
VAC Accuracy	200mV to 700V 1,2% + 3dgt from 50Hz to 400Hz	200mV to 200V from 40Hz to 400Hz 750V from 40Hz to 100Hz 1,2% + 3dgt	200mV to 700V 0,8% + 10dgt from 50Hz to 400Hz	10 to 1000V 2,5 %
IDC Accuracy	2mA to 10A (20A during 30s) 1,5% + 3 dgt (3% +10dgt/20A)	2mA to 10A (20A during 10s) 1,2% + 3 dgt (20A ±2%)	2mA to 20A 0,8% + 5dgt	50µA to 10A 1,5 %
IAC Accuracy	2mA to 10A (20A during 30s) 2% + 3dgt (3% +10dgt/20A)	2mA to 10A (20A during 10s) 1 to 2% + 5dgt from 40Hz to 200Hz 3% à 20A	2mA to 20A 2% + 10dgt	2,5mA to 10A 2,5 %
OHM Accuracy	200Ω to 200MΩ 1,2% + 1dgt up to 20MΩ	200Ω to 2GΩ 0,8% + 3dgt up to 2MΩ	200Ω to 200MΩ 0,2% + 3dgt up to 20MΩ	1 to 1000 kΩ 2 %
Farad Accuracy	2nF to 200µF 4% + 3dgt to 2µF	20nF to 200µF 2,5% + 20dgt up to 20µF	2nF to 200µF 4% + 10dgt	-
Henry Accuracy	-	2mH to 20H 2,5% + 20dgt	-	-
Frequency Accuracy	-	2kHz to 10MHz 1% + 10dgt	20kHz 1,5% + 5dgt	-
Diode test	1mADC under 2,8VDC max			
·)))	Ring for R< 50Ω	Ring for R< 90Ω	Ring for R< 70Ω	Ring for R< 50Ω
°C (type K) Accuracy	-	-20 to 1000°C 1% thermocouple K	-	-
Ranging	Manual			
Protection	CAT III 1000V Pol 2	CAT III 1000V Pol 2	CAT III 300V Pol 2	CAT III 600V Pol 2
Power source	1 battery 9V type 6LR61			3 batteries LR6
Dimensions	182 x 82 x 55mm / 360g	190 x 95 x 45mm / 400g	200 x 90 x 40mm / 600g	170 x 110 x 53mm / 500g
Fuses	0,2A/250V - 5x20mm - fast 20A/250V - 6,3x25mm - fast	200mA - 5 x 20 fast 20A - 5 x 20 fast	0,5A/250V - 6,3x25mm - fast	HPC 600V 1A HPC 600V 10A
Supplied with	Housing, user's manual, test lead	User's manual, test lead		

Multimètres de table

TRG803

- Mesures efficaces vraies RMS
  - composante alternative seule
  - signal composite DC + AC efficace vrai
- Mesure des valeurs min et max
- Logiciel
- Capacimètre et fréquencemètre
- Températures . Test de transistor
- Automatique et manuel

GDM8251

- Mesures efficaces vraies:
  - composante continue seule
  - composante alternative efficace seule
  - signal composite DC + AC eff. vrai
- Contrôle à distance
- Ohmmètre 2 et 4 fils
- dBm, dB, Max Min, compare, mémorise,
- Fonctions math : ax + b, 1/x, %
- Deuxième afficheur pour Hz, dB, bruit
- Option: carte scanner 16 canaux

GDM8145G

- Mesures efficaces vraies
  - composante continue seule
  - composante alternative efficace seule
  - signal composite DC + AC efficace vrai

REF.	GDM8251	GDM8145G	TRG803
Affichage	120.000 points	20.000 points	6.000 points
Convertisseur	TRMS AC+DC		
Largeur de bande	100kHz	50kHz	100kHz
VDC	100mV à 1000V	200mV à 1200 V	600mV à 1000V
VAC	100mV à 750V	200mV à 1000 V	600mV à 1000V
IDC	10mA - 10A	200µA à 20A	600µA à 10A
IAC	10mA - 10A	200µA à 20A	600µA à 10A
OHM	100Ω à 100MΩ	200Ω à 20MΩ	600Ω à 60MΩ
Farad	-	-	6nF à 6mF
Fréquencemètre	10Hz à 800kHz	-	10 Hz - 60MHz
Test diodes ·)))	Tension max : 2V Beeper	affiche la chute de tension	
Température °C (type K)	0 à 300°C type J, K, T	-	- 40°C - 1000°C
Changement gamme	Automatique et Manuel		
Interface	RS232 - USB	-	RS232 - USB
Protection	CEI1010 CATIII 300Veff pol2		
Alimentation	115- 230VAC 50/60Hz	230VAC 50/60Hz	Secteur ou piles
Dimensions / Poids	267 x 107 x 350mm / 2,6kg	245 x 95 x 280mm / 2,6kg	240 x 105 x 310mm / 2,4kg
Livré avec	Logiciel PC et Driver Labview Notice	Notice	Logiciel, Notice

High sensitivity RMS test clamp

REF. VA21 | **Batteries : 2 x LR6**

MEASUREMENTS

ACTIVE POWER	AC VOLTAGE	HARMONICS AC VOLTAGE	POWER FACTOR	• Auto ranging
REACTIVE POWER	AC CURRENT	HARMONICS AC CURRENT	PHASE ANGLE	• Auto power-off after 30min.
ENERGY	LEAKAGE CURRENT	TOTAL HARMONIC DISTORTION	CREST FACTOR	• Dim: 210 x 62 x 36mm. Weight: 500g
				• Supplied with test leads and carrying case

SINGLE & BALANCED THREE PHASES POWER

	W or VA or VAR			KW or kVA or kVAR	
RANGES	0.050 ~ 9.999	10.00 ~ 99.99	100.0 ~ 999.9	1.000 ~ 9.999	10.00 ~ 99.99
RESOLUTION	0,001	0,01	0,1	0,001	0,01
ACCURACY★	1%	1%	1%	1%	1%

AC CURRENT RMS

	in mA		in A		
RANGES	0.30 ~ 60.00	60.00 ~ 600.0	0.030 ~ 3.000	3.00 ~ 30.00	30.00 ~ 50.00
RESOLUTION	0,01	0,1	0,001	0,01	0,01
ACCURACY★	0,5%	0,5%	0,5%	0,5%	1%

AC VOLTAGE RMS

RANGES	3,0 to 250,0VAC	250 to 600VAC	Accuracy : 0,5% ★

★Bandwith 50Hz ~ 5kHz Accuracy 5% from 50Hz to 10kHz

HARMONICS of AC VOLTAGE in % or in VAC order 1 to 99

ORDER	RESOLUTION in %	RESOLUTION in VAC	Accuracy
1 to 99	0,1%	0,1 VAC	1 to 35% as per order

HARMONICS of AC INTENSITY in % or in IAC order 1 to 99

	in mA		in A		
RANGES	0.10 ~ 60.00	60.00 ~ 600.0	0.600 ~ 3.000	3.00 ~ 30.00	30.00 ~ 50.00
RESOLUTION in mA - A	0,01	0,1	0,001	0,01	0,01
RESOLUTION in %	0,1%	0,1%	0,1%	0,1%	0,1%
ACCURACY as per order	1-10: 1% + 7dgt	11-20: 5% + 7dgt	21-50: 15% + 7dgt	51-99: 35% + 7dgt	

OTHER FUNCTIONS

	RANGES	RESOLUTION	ACCURACY
POWER FACTOR	0.000 ~ 1.000	0.001	± 0.04
PHASE ANGLE	-180 ~ 180°	0.1°	± 2°
THD * 1 to 99 order	0.0 ~ 999.9%	0.10%	2 ~ 20% **
CREST FACTOR	1.00 ~ 99.99	0.01	5% + 30 dgt
ENERGY	mWh Wh et kWh SINGLE & BALANCED 3-PHASE		

*THD total harmonics distortion ** according the rate

AC, DC, AC&DC clamps

MS330 - AC

- Peak hold function Max
- Auto power off after 15mn

MS332 - AC & DC

- Duty 0,5 ~ 99%
- Auto power off after 10mn

MS3347 - DC & TRMS AC

- Peak hold function Min & Max
- Auto power off after 20mn
- Bargraph

MS337

- Auto power off after 25mn
- Recopy output 10mV/A 20kHz
- Back lighting of the screen

MS223

- Peak hold function Min & Max
- Auto power off after 10mn
- Recopy output 10mV/A 20kHz

PWM *The clamps with the PWM logo are compatible with PWM variator.*

REF.	MS330	MS332	MS3347	MS337	MS223
Display	2.000 points	4.000 points			10.000 points
Converter	AC	AC & DC	DC & TRMS AC	AC & DC	AC & DC
Bandwidth	50 to 100Hz			50Hz to 500Hz	50Hz to 20kHz
Opening of the jaws	25mm	29mm	35mm	12mm	
VDC / VAC	2 to 600V	4 to 600VDC / 400mV to 600VAC	400mV to 600V		600V
IDC / IAC	2 to 400A AC only	40 to 400A	40 to 1000A	4 to 80A	9,999 to 99,99 A
OHM	200Ω to 20MΩ	400Ω to 40MΩ		4Ω to 40MΩ	9,999 kΩ
Farad	-	40nF to 100µF	4nF to 40mF	40nF to 100µF	-
Frequencymeter	-	5Hz to 150kHz	0 to 4,000 kHz	5Hz to 10MHz	-
Diode test	0,4mA - 1,5VDC test	0,3mA - 1,5VDC test		-	-
·)))	Ring for R< 50 Ω	Ring for R< 150 Ω	Ring for R< 35 Ω	Ring for R< 150Ω	Ring for R< 100Ω
°C	-	-	-40°C to 1000°C	-	-
Ranging	Auto & Manual	Auto		Auto & Manual	Auto
Protection	CATIII 600Vrms pol2				
Power source	2 batteries LR03		1 battery 6LR61	2 batteries LR03	
Dimensions / Weight	205 x 70 x 37 mm / 200g	200 x 50 x 35 mm / 200g	230 x 80 x 50 mm / 300g	210 x 70 x 37mm / 200g	202 x 70 x 34 mm / 180g
Supplied with	Test lead, soft carry case, batteries				

ADDITIONAL ACCESSORIES

Oscilloscopes - Pages 221 - 215

Coaxial leads - Pages 255

High sensitivity clamps

UT251A

ULTRA SENSITIVE CLAMP

- Allows to measure AC current of some µA (50/60Hz)
- A memory function: storage of 99 measurements
- PEAK measurement
- Autoranging: 0,001mA to 60,00A
- Resolution 1 µA, accuracy ± 1,5% +5dgt
- Allows to measure a current difference between two conductors (differential).

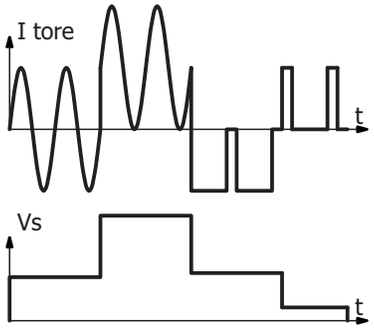
ST9809

LEACKAGE CURRENT CLAMP

- Allows to measure AC currents of some hundred µA
- Peak hold function: max & min
- Auto power off after 30min
- Bargraph

REF.	UT251A	ST9809
Display	10.000 points	4.000 points
IAC (accuracy)	0,001mA to 60A, automatic ±1,5%	40mA to 100A (2,5% + 15dgt)
VAC (accuracy)	-	400V (2% + 4dgt)
OHM (accuracy)	-	400Ω (1% + 2dgt)
Protection	CEI1010 CAT III 600Vrms Pol2	CEI1010 CAT III 300V
Power source	1 battery 6LR61	
Dimensions / Weight	175 x 70 x 38mm / 120g	210 x 62 x 35mm / 200g
Supplied with	Acquisition software, specific USB cable, briefcase.	Test leads, soft carry case

RMS converter for MS223 clamp



ADA-RMS plugs on clamp MS223 (see page 228).
The ADA-RMS output supplies DC voltage image of the rms current flowing in the clamp core, even for current with superimposed continuous component.
The output voltage is viewed with the oscilloscope.

- Output voltage: 10mV/A
- Accuracy of the MS223+ADA-RMS system: 5% of DC at 20kHz
- Automatic shutdown
- Power supply: 9V pressure battery.
- Supplied with BNC cable

ref. ADA-RMS	only the converter

Pinces multifonctions

MS232

- Puissance active RMS AC + DC
- Capture de la valeur Max
- Arrêt automatique à 30mn

ST3348

- Puissance active RMS AC + DC
- Fréquence
- V et I TRMS en AC
- Arrêt automatique à 30mn
- Rétroéclairage

ST3353

- Double affichage (W & VA, W & φ etc…)
- Vrms – Irms - W - VA - VAR - cosφ - kWh
- Mono et triphasé (3 & 4 fils)
- TRMS en IAC & VAC
- Mesure de crêtes Min et Max
- Interface USB + logiciel fourni
- Mémoire (99 mesures)
- Arrêt automatique à 30mn
- Ecran LCD 4 digits et bargraph (éclairé)

VA6600

- RMS AC + DC
- double afficheur
- U et I , U et Hz , I et Hz , W et cosφ , VA et VAR.
- Puissances actives, réactives, apparentes
- Mémoire : stockage de 4 mesures

MLI *Les pinces marquées de ce logo sont compatibles avec un variateur MLI*

REF.	MS232	ST3348	ST3353	VA6600
Affichage	10.000 points	4.000 points	10.000 points	2 x 4 chiffres
Convertisseur	DC + TRMS AC		RMS AC	RMS AC+DC
Largeur de bande	50 à 500Hz	50 à 60Hz	50 à 200Hz	DC à 400Hz
Diamètre des mâchoires	Ø 30mm		Ø 53mm	Ø 55mm
VDC	600V (1% + 5dgt)	400mV à 600V (1,5% + 3dgt)	-	-
VAC	600V (1% + 5dgt de 50 à 500Hz)	400mV à 600V (1,5% + 3dgt)	15 à 750V (1,2% + 5dgt)	VAC+VDC 200 à 600V 2%+5dgt
IDC	600A (1,5% + 5dgt)	1000 A (1,8% + 5dgt)	-	-
IAC	600A (1,5% + 5dgt de 50 à 500Hz)	1000 A (1,8% + 5dgt)	40 à 1000A (2% + 5dgt)	IAC+IDC 200 à 2000A 2%+5dgt
WDC	100 à 360kW	40 à 240kW	-	-
WAC	100 à 360kW RMS	40 à 240kW RMS	0,6 à 750kW	99,99 à 1200kW 2%+5dgt
VA	-	-	0,6 à 750kVA (3% + 5dgt)	99,99 à 1200kVA 2%+5dgt
VAR	-	-	0,6 à 750kVAR (4% + 5dgt)	99,99 à 1200kVAR 2%+5dgt
OHM	10 000Ω (1% + 5dgt)	400Ω à 40MΩ (1,5% + 2dgt)	-	-
Fréquencemètre	-	5Hz à 100kHz	20 à 200Hz	-
Energie kWh	-	-	1 à 9999kWh (3% + 2dgt)	-
Test diodes	-	Test sous 0,3mA	-	-
·)))	sonne pour R< 100Ω		-	-
Cosφ	-	-	0,3 à 1Capacitif ou inductif (0,02 + 2 dgt)	0,999 2%+5dgt
Changement gamme	Automatique	Automatique et Manuel	Automatique	Automatique
Protection	CATIII 600Veff pol2		CATIV 600Veff pol2	CATIII 600Veff pol2
Alimentation	2 piles LR03	1 pile 6LR61	4 piles LR6	1 pile 6LR61
Dimensions / Poids	218 x 84 x 30 mm / 270g	229 x 80 x 49 mm / 300g	295 x 100 x 46 mm / 540g	270 x 100 x 45mm / 800g
Livré avec	Cordons, housse, piles et notice.		Cordon, housse, notice, piles, câble USB, logiciel.	Sacoche , pile et notice

A138 : 25 functions

- Manual or auto measurements
- RMS measurements in AC and AC+DC
- 10mV to 1000V in DC, ACrms, DC+ACrms
- 10mA to 1000A in DC, ACrms, DC+ACrms
- Measurement of the call current up to 1400A AC
- Max and Min peaks in voltage and current
- Active power from 1W to 1000kW
- Power factor cosφ from -1.00 to +1.00
- Measurement of the THD and harmonics to row 25
- Resistance from 0.1ohm to 100kohms
- Sound continuity R< 30ohms and LED test
- Frequencemeter 0.01Hz to 10kHz
- Measurement of capacitances from 1nF to 4000µF
- Measurement of temperatures from -50°C to 1000°C
- Indication of the direction of rotation of the phases
- Contactless voltage detector
- Low-pass filter (removes noise)
- Reset button
- Bar graph
- Illumination of the cable to be tested when jaws open
- Display blocking. Backlit display
- Automatic shutdown after 15 minutes
- Low battery indicator

REF.	A138	
Display	10.000 points - digital height 12mm	
Converter	RMS AC AC+DC	
Bandwidth	50 to 400Hz (500Hz VAC)	
Opening of the jaws	Ø 42mm	
VDC*	100,00 - 1000,0V	Best accuracy 0.7% + 2dgt
VACrms* & VDC+VACrms	100,00-1000,0V	Best accuracy 1% + 5dgt
MAX & MIN (VAC only)	140,0 - 1400V	Best accuracy 3% + 15dgt
IDC	100,00 - 1000,0A	Best accuracy 1,5% + 5dgt
IACrms & IDC+ IACrms	100,00-1000,0A	Best accuracy 1,5% + 5dgt
MAX & MIN (IAC only)	140,0 - 1400,0A	Best accuracy 3% + 15dgt
Frequency	100,00-1000,0Hz-10,000kHz	Best accuracy 0.5% + 3dgt
THD total harmonic distorsion	100,0 %	Best accuracy 3% + 10dgt
Harmonic distorsion 1 to 12	100,0 %	Best accuracy 5% + 10dgt
Harmonic distorsion 13 to 25	100,0 %	Best accuracy 10% + 10dgt
Inrush current	100,00-1000,0A	Best accuracy 2,5% + 5dgt
Active power WAC+WDC	10,000-100,00-1000,0 kW	Best accuracy V x A +10dgt
Power factor cos φ	-1,00 to +1,00	Best accuracy 3% + 1dgt
Resistance	1000,0Ω-10,000-100,00 kΩ	Best accuracy 1% + 3dgt
·))) —▷—	Ring for R< 30Ω / Max voltage 1,8V	
Capacitance	4,000-40,000-400,0-4000µF	Best accuracy 1,9% + 8dgt
Temperature °C	-50°C to 1000°C	Best accuracy 1% + 1°C
Overload protection	1000Vrms 1000Arms	
Ranging	Auto & Manual	
Protection	CATIV 600Vrms pol2 / CATIII 1000Vrms pol2	
Power source	1 battery 6LR61	
Dimensions / Weight	257 x 87 x 50mm / 470g	
Supplied with	Soft carry case, test leads, probe, battery, user's manual.	

*Impedance : 3.5MΩ //100pF AC & DC

VA6200 : Mains analysis clamp RMS AC

The screen on this clamp can be used either as a numeric display or as a graphical screen like an oscilloscope, or as a logging instrument. The clamp measures the true RMS voltage and current, apparent, reactive, active, balanced three-phase and single-phase power, cosφ, peak factor, total distortion, power consumption and max power demand. In graphics mode, it displays and quantifies the first 50 harmonics of the signal, the form of the U and I signals, the single-phase and three-phase diagram. In logging mode, the clamp stores information in its memory.
The sampling frequency and the start/stop cues can be programmed. Long acquisitions at high frequencies, with several simultaneous quantities, are possible by using an RS232 output to a PC and special software.

- Measurement of the maximum demand in kW and kVA
- Programmable threshold for transient capture (128 events)
- 32 to 256 points/cycle can be saved on the internal memory
- Memory size: 50,000 logs can be programmed.
- Real time output of: oscillograms, power, settings and harmonics
- Autopower off automatically if not used
- Opto insulated interface (RS232)

REF.	VA6200
Display	128 x 64 pts
Converter	TRMS AC
Bandwidth	50/60Hz
Opening of the jaws	Ø 55mm
VAC	4 to 600Vac (0,5% + 5 dgt)
IAC	4 to 1500Aac (0,5% + 5 dgt)
Power W - VA - VAR	1000W to 1000kW (1% + 20 dgt)
Energy Wh kWh	0 Wh to 999 999 kWh (resp VAh &VARh) (1% + 20dgt)
Crest factor CF	1,00 - 99,99 (5% + 30 dgt)
THD total harmonic distortion	0,0 to 1000,0 % (2% - 6% - 10% as per range)
Power factor	0,000 - 1,000 Accuracy 0,4
Phase angle	- 180° à +180° Accuracy 0,1°
Harmonics of AC voltage in V and in %	0,0 to 100,0% (2% Rang 1 to 20 / 4% Rang 20 to 50)
Harmonics of AC current in V and in %	0,0 to 100,0% (2% Rang 1 to 20 / 4% Rang 20 to 50)
Peak IAC and VAC	Capture of transient events (32000)
Ranging	Auto
Interface	RS232
Protection	CATIII 600Vrms pol2
Power source	2 batteries LR06
Dimensions / Weight	270 x 100 x 45mm / 800g
Supplied with	RS232 Interface & software, probes soft carry case. User's manual.

Moving-iron voltmeters & ammeters (true RMS)

Used for measuring TRMS values in DC, AC, DC with alternative component, rectified single and double alternation, square wave currents, hatched currents. This ammeter has one semi-linear scale with a precision of 0.5% from 0 to 500Hz (except PSY122B : 1,5%), and of 2% up to 2kHz. Its resistance to surges is excellent as it has a single coil wound with high-capacity copper wire.

- Safety terminals
- Lenght of scale 110mm.
- Dim. 154 x 210 x 86mm.
- Weight 1.5kg.

DC & AC			AC ONLY*
REF. P7478	**REF. P7480**	**REF. PSY122B****	**REF. P7481**
750mA	75mA	1,2A	600mA-1,2A
1,5A	150mA	3A	3A-6A
info fuse : 5x20mm 3,15AT	info fuse : 5x20mm 2,5AT	6A	12A-30A
		12A	

**Special case of the P7481 : this ammeter uses a current transformer. As a result, it only measures in AC current.*
*** Special case of the PSY122B : accuracy of 1,5% from 0 to 500Hz and 2% up to 2kHz.*

Used for measuring TRMS voltages in DC, AC, AC with offset, rectified currents, chopped currents, squares....
This voltmeter is particulary good for electro-mechanical measurements, such as rotary machines, thyristors, rectifiers. It has a very good surge suppression and can withstand prolonged overvoltages.

- Safety terminals.
- Lenght of scale 110mm.
- Dim. 154 x 210 x 86mm.
- Weight 1.5kg.

Ref.	P7475	P7476
RANGES	7,5-15-30-60V	75-150-300-600V
ACCURACY DC to 500Hz	0,5%	0,5%
ACCURACY 500Hz to 2kHz	2%	2%

Varmeters

- VAR varmeters measure the reactive power absorbed by a 50Hz sinusoidal curve.
- Varmeters VAR01 to VAR05 are protected against any overloads in their current and voltage circuits, by fuses.
- Scale length: 110mm graduated from 0 to 100.
- Dimensions: 154 x 210 x 86mm.
- Weight: 1.5kg.

CEI1010 CATIII 1000Veff pol2

Ref	I (Imax=1,5 x I)	V (Vmax=1,5 x V)
VAR01	500 mA - 1 A	100 - 200 - 400 V
VAR02	1 A - 2 A	100 - 200 - 400 V
VAR03	2,5 A - 5 A	100 - 200 - 400 V
VAR04	5 A - 10 A	100 - 200 - 400 V
VAR05	10 A - 20 A	100 - 200 - 400 V

Magnetoelectric Ammeter & Voltmeter (easy to read)

PSY600V

PSY30UA

V1001

A11

Shock absorbers

PSY600V - PSY30UA

- Anti-flash switch with silver contacts
- The 2mm space between contacts protects the switch from arcing due to voltage overload.
- Taut band mechanism

V1001 - A11

- Sturdy ABS housing, protected by a shock resistant soft moulded holster, waterproof (IP65)
- The four salient corners act as shock absorbers.
- All ranges are selected by one rotary switch.

RANGES 10A and 20A OF THE PSY30UA**

Designed for tests on rotary machines, these ranges support permanent nominal currents of 10 and 20A. They are unprotected, but take the following overloads without being destroyed:

- 10A range: 20A for 5 minutes, 40A for 5 seconds
- 20A range: 40A for 5 minutes, 80A for 5 seconds

REF.	PSY600V	V1001	PSY30UA	A11
	Voltmeter		Ammeter	
VDC	30mV to 600V (1,5%)	100mV to 1000V (1,5%)	-	-
VAC	1V to 600V (1,5%)	3 to 1000V (2%)	-	-
IDC	-	-	30µA to 20A (1,5%)**	100µA to 10A (1,5%)
IAC	-	-	1mA to 20A (2,5%)**	10mA to 10A (2%)
mV	-	-	100mV for the use of external shunts	
Scale length	125mm with antiparallax mirror	90mm	125mm with antiparallax mirror	90mm
Protection	CAT III 600V Pol 2			
Safety terminals	yes	yes	yes	yes
Fuses	5 x 20mm 0,05A/250V	HPC 500V 500mA	Gas tube and diodes protection	HPC 500V 3A + HPC 500V 10A
Impedances	VDC : 30kΩ/V - VAC : 5kΩ/V	VDC : 20kΩ/V - VAC : 6,3kΩ/V	-	-
Dimensions / Weight	196 x 147 x 70mm / 1,4kg	170 x 110 x 53mm / 500g	196 x 147 x 70mm / 1,4kg	170 x 110 x 53mm / 500g
Supplied with	Notice			

RMS AC+DC Wattmeters

REF. PSY12

The PSY wattmeters measure true RMS and instantaneous power, DC, single phase, balanced three-phase, alternating signal with or without DC offset in the frequency range DC up to 2kHz.

ACCURACY : 0.5 %

PROTECTION
- All PSY wattmeters are guaranteed within their accuracy limits for 5 years.
- A fuse to protect the voltage circuit and another for the current.
- The fuses can be accessed from the outside of the meter.

EASY TO READ
- A single scale graduated from 0 to 100.
- The reading on the scale shows the maximum values:
  I max = 1.5 x I V max = 1.5 x V
- A lookup table for three phase power can be found on the back of the unit.

EXAMPLE READING
- For instance we wish to measure the power dissapated in a load with 0.6A at 125V.
- Put the selector knobs to 1A and 100V.
- The needle moves to the marking corresponding to 75W.
- The reading is direct.
- The 100V scale is not overloaded. (V max = 1.5 x V therefore 150V).

GENERAL SPECIFICATIONS
- Voltage circuit resistance: 150Ω/V
- Length of scale: 110 mm
- Dimensions 154 x 210 x 86mm.
- Weight: 1.5kg
- CEI1010 CATIII 1000Vrms pol2

REF. P7401

REF. PSY13

UF30 FUSES OPTION

Spare voltage fuse

ref. UF30

Safety wattmeter switch

ref. COWAT11

The COWAT11 is a wattmeter switch enabling the measurement of power on an unbalanced network, with a single wattmeter.
3 positions on the unit:
1 - Measure the current on phase R with voltage between R & T
2 - Wattmeter out of work.
3 - Measure the current on phase S with voltage between S & T.

- Operating voltage: 400V 3-phase + N
- Cutting power at power factor 0.3=10A at power factor 1=16A
- Plastic case: 145x185x100mm
- Weight 1kg.
- CEI1010 CATIII 1000Vrms pol2

Ref.	CONTINUOUS - SINGLE PHASE		3-PHASE	INTENSITY FUSE 5 x 20 mm	VOLTAGE FUSE
	I (I max = 1,5 x I)	V (V max = 1,5 x V)	V (V max = 1,5 x V)		
PSY10	100 - 200mA	10 - 20 - 50 - 100 - 200 - 400V	380 - 220 - 100 - 50 - 20V	315mA temp.	UF30
PSY11	500mA - 1A	10 - 20 - 50 - 100 - 200 - 400V	380 - 220 - 100 - 50 - 20V	2A temp.	UF30
PSY12	1 - 2A	10 - 20 - 50 - 100 - 200 - 400V	380 - 220 - 100 - 50 - 20V	3,15A temp.	UF30
PSY13	2,5 - 5A	10 - 20 - 50 - 100 - 200 - 400V	380 - 220 - 100 - 50 - 20V	8A temp.	UF30
PSY14	5 - 10A	10 - 20 - 50 - 100 - 200 - 400V	380 - 220 - 100 - 50 - 20V	16A temp.	UF30
PSY15	10 - 20A	10 - 20 - 50 - 100 - 200 - 400V	380 - 220 - 100 - 50 - 20V	/	UF30
PSY16*	500mA-1-2,5-5-10-25A	10 - 20 - 50 - 100 - 200 - 400V	380 - 220 - 100 - 50 - 20V	/	UF30

* only measures in AC current

Ref.	CONTINUOUS - SINGLE PHASE		INTENSITY FUSE 5 x 20 mm	OPTION BOX OD41 for 3-phase
	I (I max = 1,5 x I)	V (V max = 1,5 x V)		
P7401	500mA - 1A	100 - 200 - 400V	2A temp.	400 - 200 - 100V
P7402	1 - 2A	100 - 200 - 400V	3,15A temp.	400 - 200 - 100V
P7403	2,5 - 5A	100 - 200 - 400V	8A temp.	400 - 200 - 100V
P7404	5 - 10A	100 - 200 - 400V	16A temp.	400 - 200 - 100V
P7405	10 - 20A	100 - 200 - 400V	/	400 - 200 - 100V

Electrodynamic wattmeter

ref. PSY44

PSY44 measures the true RMS active power of single phase AC, balanced three phase alternating current signal with or without DC offset.
PSY44 has 44 ranges to measure from 1.2W full scale to 6kW.

RANGES	
INTENSITY	200mA - 1A - 5A - 10A
VOLTAGE	6 - 12 - 24 - 36 - 48 - 60 - 120 - 240 - 360 - 480 - 600V
ACTIVE POWER	1,2W to 6kW in 44 ranges

- Frequency range: DC and 15Hz ~ 500Hz
- Accuracy 1%
- Protection : one fuse on each intensity input

READING

- A single scale graduated from 0 to 120 and a lookup table shows the factor to apply to the reading according to the selected intensity and voltage ranges.

GENERAL CHARACTERISTICS

- Voltage circuit resistance: 333Ω/V
- Length of scale: 120mm
- Dimensions: 150 x 200 x 72mm
- Weigh: 1,2kg
- CEI1010 Pol2 CATIII 600Vrms

Power factor meter

ref. PSYPHI

PSYPHI measures the power factor of single phase and three phase circuits.
No source of energy (battery or mains) is needed for it to operate.

- Spread of power factor measurement: -0.4 - 1 - 0.4
- Current ranges: 1A 5A 10A
- Single phase voltage ranges: 30 - 100 - 240 - 380V
- Three phase voltage ranges: 120 - 240 - 380V
- Accuracy: 2.5%

Protection by 2 current circuit fuses.

- Safety terminals
- Dimensions: 200 x 150 x 70mm.
- Weight: 1.7kg
- CEI1010 CATII 300Vrms pol2

1MHz AC Millivoltmeter

GVT417 is a millivoltmeter for the measuring of sinusoidal voltages from 10µV to 100V, in the 10 Hz to 1MHz band. The dial is graduated in volts and dB for the direct measurement of amplifier increases.

RANGES V	300 µV - 1 - 3 - 10 - 30 - 100 - 300mV 1 - 3 - 10 - 30 - 100V
RANGES dB	-70 -60 -50 -40 -30 -20 -10 0 +10 +20 +30 +40 dB
ACCURACY	3 % from 20 Hz to 200kHz - 10% from 10 Hz to 1MHz
IMPEDANCE	1 MΩ - 40 pF
OVERLOAD	from 300µV to 0,3V: 150VAC / from 1 to 100 VAC: 300 VAC

OUTPUT

A 100mVrms copy output for the full deviation allows the GVT417 to be used as an attenuator/ amplifier at a constant signal input level.

OTHER FEATURES

Power supply: 115–230VAC 50Hz.
Dim. 142 x 210mm. Depth: 235mm
Weight: 3kg
CEI1010 CATII CL1 300Vrms pol2

ref. GVT417

Single-phase digital wattmeter

ref. WECO

The WECO wattmeter is a multimeter able to measure the following values:

- Active power
- Apparent power
- Power factor
- DC and AC voltage or intensity
- Resistance
- Frequency
- Energy

MEASURING CHARACTERISTICS

WECO displays up to 4 values at the same time, e.g.
U – I – W - PF or U – I – VA – Hz
The WECO energy meter displays the energy consumed in the load in real time in Wh – kWh and elapsed time in hours, minutes, and 1/10 min.

FUNCTION	RANGES	RESOLUTION	ACCURACY
WATT	6000W	1W	1,5% + 1dgt
VA	99,99 VA 999,9 VA 9999 VA	0,01 VA 0,1 VA 1 VA	1,5% + 1dgt 1,5% + 1dgt 1,5% + 1dgt
cosφ	1,00	0,01	1,5% + 2dgt
VDC	299,9 V 600 V	0,1 V 1 V	1% + 1dgt 1% + 1dgt
VAC	299,9 V 600 V	0,1 V 1 V	1% + 1dgt 1% + 1dgt
IDC	10,00 A	0,01 A	1% + 1dgt
IAC	10,00 A	0,01 A	1% + 1dgt
OHM	9999 ohms 19,99 kohms	1 ohm 10 ohms	1% + 1dgt 1% + 1dgt
Hz	10,0 to 99,9 Hz 999 Hz	0,1 Hz 1 Hz	1% + 1dgt 1% + 1dgt
Wh	10Wh to 10MWh	as per range	1% + 1dgt

- Auto ranging mode
- Accuracy specified in the 40 Hz – 400 Hz frequency range for sine wave signals.
- It has an alarm with adjustable upper and lower set points.
- Voltmeter input impedance: 10 MΩ
- Circuit intensity resistance: 10 mΩ
- 4 mm safety connector terminals
- Dimensions: 240 x 100 x 280 mm. LCD display: 93 x 52 mm
- CEI1010 CATIII 300Vrms pol2
- Supply: 6x 1.5V AA Batteries (mains adapter ref. ADAX in option)

MAINS ADAPTER OPTION

The wattmeter WECO works with 6x1.5V batteries in standard, but it has a 9V DC input. It can be supplied from mains 230VAC 50/60Hz

ref. ADAX

TRMS AC+DC - wattmeter 70kHz

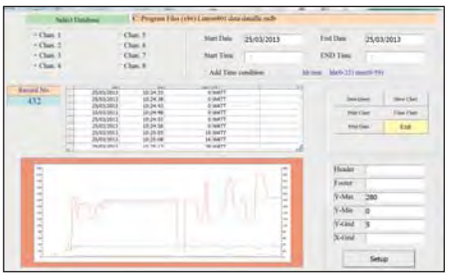
ref. DIGIWATT

CEI1010 CATIII 600Veff pol2 / CEI1010 CATII 1000Veff pol2

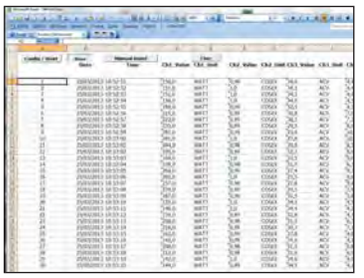
Function	U	I	W
Ranges	400Vrms single-phase 700Vrms 3-phase	20Arms	0,2 - 2 - 20kW
Accuracy in % of reading	1% from 0 to 70kHz	2% from 0 to 20kHz 3% from 20 to 70kHz	2% from 0 to 20kHz 3% from 20 to 30kHz 5% from 30 to 70kHz
Protection	Electronic breaker	20A delayed fuse	
Impedance	1,5MΩ	<5mΩ	
Recopy output	10VDC/1000Vrms	10VDC/20Arms	10VDC / 0,2kW - 2kW - 20kW

DIGIWATT is a digital multimeter with floating inputs simultaneously displaying the 3 electric values: voltage, current and power. DIGIWATT measures the TRMS effective values of the U I W measurements, possibly with direct component superimposed. The wide bandwidth of the apparatus allows measurements to be made from DC to 70kHz or on chopped signals (frequency converters, industrial choppers, rectified supplies etc.). The apparatus voltage and current inputs are insulated between each other and relative to earth. DIGIWATT measures single phase and balanced three phase powers.

Low ranges AC wattmeters



Data acquisition program



Data acquisition program for Excel®

These single-phase wattmeters are very easy to connect and use. Double display, clear marking, low ratings and accuracy are among the advantages of these wattmeters. Also, two free acquisition programs, very simple to use, make the product complete and very accessible.
All measurements are AC RMS between 40 and 400 Hz.

- RMS power
- Automatic rating change (PSY6063)
- Integrated phase-meter 0.01 to 1.00
- Voltage measurement
- Current measurement
- Double display: W & cosφ or by simple press U & I
- Automatic reset
- Memory: Min. / Max. / Hold
- Backlit display
- Voltage impedance: 10 Mohms
- Data acquisition program giving characteristic plots in Windows® with PC USB connection cable.
- Data acquisition program for Excel® type spreadsheets in Windows® with PC USB connection cable.

Ref	PSY6063	PSY6163
U	260 VAC x 0,1V	600 VAC x 0,1V
I	1A x 0,1mA / 2A x 1mA	10A x 0,01A
W	0 to 99,99W x 0,01 W / 0 to 520W x 0,1 W	0 to 6000W x 1W
Accuracy	+/- 1% + 0,5W / 50Hz	+/- 1% + 5W / 50Hz

DISPLAY:
By two 3 1/2 and one 4 1/2 digits displays, height of digits 15mm.
Power ranges are switched automatically.

INPUTS
Voltage inputs: Three floating potential voltage terminals, situated at the rear of the apparatus allowing either the application of an alternating, continuous or composite voltage, or a balanced three phase voltage. These inputs are electronically protected against over voltages.
Max. voltage: 400Vrms single phase, 700Vrms three phase

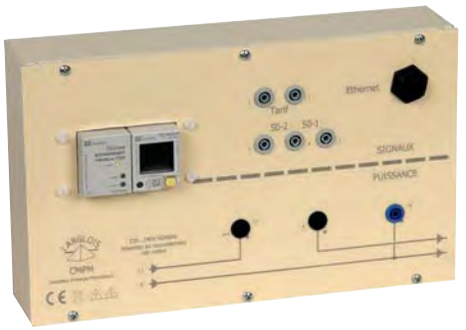
Current inputs: Two floating potential current terminals, situated at the rear of the apparatus allowing the application of an alternating, continuous or composite current. Imax = 20A. The current input is protected by a delay fuse, allowing measurements on starting up a motor

RECOPY OUTPUTS
Voltage output: 0 to 10V DC signal for 0 to 1000Vrms entering.
Current output: 0 to 10V DC signal for 0 to 20Arms entering.
Power output: 0 to 10V DC for 0 to 0.2kW - 0 to 2kW - 0 to 20kW; these three ratings are switched automatically.
Important: these three outputs are insulated from the voltage and currents applied to the input terminals of the apparatus.

OTHER CHARACTERISTICS
A switch on the front panel selects the mode single or three-phase.
A diode informs the user that an overvoltage has been applied to the voltage input; he must remove it and reset the voltage circuit.
Input and outputs through 4mm safety terminals
Dims: 375 x 80 x 275 mm - 5kg
Supply: 220-240V 50/60Hz 30VA.

Single phase and three phase multifunctional counters

CMPT



CMPM

UL37

Ref.	CONNECTION	ELECTRICAL NETWORK	SPAN RANGE 1	COMMUNICATION	DIMENSIONS
CMPT	3-phase	230/400VAC 50/60Hz	20mA...30A	Ethernet	330 x 200 x 80mm
CMPM	Single-phase	230...240VAC 50/60Hz	20mA...30A	Ethernet	330 x 200 x 80mm
UL37	3-phase	230/400VAC 50/60Hz	20mA...30A	-	250 x 150 x 110mm

Energy counters (ULYS type) for the counting and the measuring of consumed powers.
For the communicating versions, the direct reading of values is possible on embedded web pages thanks to the Ethernet module.
The connection is done on safety terminal 4mm.

Common features
- Works by direct measuring without current transformer
- Backlit LCD display
- Measuring range: from 0 to 9 999 999.9 kWh
- Programming and simple use thanks to navigation keys.
- Indicator of capacitive or inductive values

- Energy balance between consumed energy and produced energy
- Phases rotation direction indicator
- One All-or-Nothing input - tariff change
- Two All-or-Nothing output – assignable à P, Q and S
- The apparatus is protected up to 80A

Record values	Direct screen reading	Via communication
Active energy receptor and generator (L1, L2, L3, total)	▪	▪
Reactive energy (L1, L2,L3, total)	▪	▪
Apparent energy (L1, L2, L3, total)	▪	▪
Zero reset partial energy counter (kWh, kVarh, kVah)	▪	▪
4 quadrants energy balance (kWh, kVarh, kVah)	▪	▪

Instant values	Direct screen reading	Via communication
V1, V2, V3, V		▪
U12, U23, U31		▪
I1, I2, I3, In, I		▪
FP1, FP2, FP3, FP		▪
S1, S2, S3, S	▪	▪
P1, P2, P3, P	▪	▪
Q1, Q2, Q3, Q	▪	▪
Frequency		▪

Energy meter

Energy counter (ME type) commonly encountered in housing buildings.
Easy to use thanks to 3 intuitive navigation keys
Works by direct measuring without current transformer
- LCD display
- Current up to 63A
- Totalizer counter
- Partial counter with zero reset
- Autonomous supply

Ref	ME66 single-phase	ME71 3-phase + N
Voltage and frequency of use	230/400V – 50/60Hz	230V – 50/60Hz
Measuring range	0 to 99 999 999,99 kWh	0 to 99999 kWh
Display of date and hour of zero-reset	No	Yes
Impersonal output	-	Adjustment from 1Wh to 1 kWh
Counter indicator light	1000 lightnings by kWh	500 lightnings by kWh

Mains analyser

ref. 6830

Supplied accessories
- 3 multiple-rating hook-on ammeters: 1 - 10 - 100A
- 4 measurement leads + crocodile clips
- 1 RS232/USB cable + software + handbook
- 1 mains adapter
- 1 carry case

V A W VAR VA POWER FACTOR THD HARMONICS

The 6830 analyser is well suited to taking measurements in both living and educational spaces due to low current ratings (999.9mA) and low power ratings (999.9 W – 999.9VAR – 999.9VA). It is also suitable for industry due to its high ratings, the analysis of 3-wire and 4-wire unbalanced three-phase and single phase networks, the detection of transience, a comprehensive current and voltage analysis, and harmonic distortion. 4 display modes: electrical quantities (35 simultaneous parameters), dual-trace oscilloscope, harmonic analysis and Fresnel diagram.

FUNCTIONS	RANGES	Band-width	ACCURACY
ACTIVE POWER	999,9 W - 9,999 - 99,99 - 999,9 - 9999 kW	6kHz	1% + 8dgt
REACTIVE POWER	999,9 VAR - 9,999 - 99,99 - 999,9 - 9999 KVAR	6kHz	1% + 8dgt
APPARENT POWER	999,9 VA - 9,999 - 99,99 - 999,9 - 9999 kVA	6kHz	1% + 8dgt
INTENSITY TRMS	999,9 mA - 9,999 - 99,99 A	12kHz	0,5% + 5 dgt
VOLTAGE TRMS	600,0 V	12kHz	0,5% + 5 dgt
POWER FACTOR	0,00 à 1,00		0,04
PHASE ANGLE	-180° to 180°		1°
Capture of pics V	600,0 V		5%
Capture of pics A	999,9 mA - 9,999 - 99,99 A		5%
CREST FACTOR	1,00 to 99,99		5%
THD-F	0,0 to 20,0 %		1%
	20,0 to 100,0 %		3%
	100,0 to 999,9 %		10%

HARMONICS order 1 ~ 100	RANGES	ACCURACY
measured in / expressed in		as per order
VOLTAGE / in VOLT	600.0 V	2 ~ 6%
VOLTAGE / % of the fundamental	0.0 ~ 100.0%	2 ~ 6%
CURRENT / in mA or A	999.9 mA - 9.999 - 99.99 A	0.2 ~ 35%
CURRENT / % of the fundamental	0.0 ~ 100.0%	0.2 ~ 35%

Networks
- 2- and 3-wire single-phase
- 3- and 4-wire three-phase Balanced or otherwise.

Displayed measurements
- phase-to-ground and composite RMS voltages
- RMS voltage of the neutral/earth
- RMS currents in phases and neutral
- RMS voltages and current peaks
- average current, average voltage
- Power, W, VAR and VA in each phase
- total power W, VAR and VA in the charge
- average power W, VAR and VA
- power peaks W, VAR and VA
- Power factor and average Power factor
- phase shift of the phase-to-ground and composite voltages
- phase shift of currents in the phases
- consumption WH, VARH and VAH

Harmonics 1 to 99
- RMS currents and voltages of harmonics
- harmonic currents and voltages as a % of the fundamental component
- frequency and distortion of harmonics
- THD-F (total harmonic distortion)
- Imbalance ratio between voltages
- Fluctuation ratio between voltages
- Imbalance ratio between currents
- Fluctuation ratio of currents

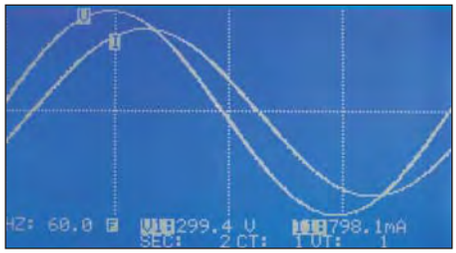
Capture of transients
- overvoltages – undervoltages – lack of a phase

Memory capacity
- up to 28 files of transients (from all of the measurements)
- 2.4 MB

Data transfer
- screen files (measurements, harmonics, Fresnel diagrams and transients)
- RS232 – USB optical link.
- Supplied software.

Screen hard copy
- table of measurements, oscillograms, harmonics and Fresnel diagrams

Miscellaneous
- Internal calendar: year-month-day-hour-min-sec
- Power supply 230VAC 50/60Hz
- 106 x 60mm backlit LCD screen
- Dim: 25 x 155 x 57mm Weight: 1.2kg



Residual Current Circuit Breaker Tester

- Measurement & check possible under voltage
- Rechargeable apparatus (batteries supplied)
- LCD display
- TRMS converter
- Automatic test sequences
- Programmable delay lines
- Loop impedance and line impedance
- Good / bad indicators
- Test lock
- Tests on single and three phase systems
- Magnetic back for hands free
- On the screen edge, green light for test OK, and red light for all errors.
- Direct help on the screen
- Protection: 300V CAT IV / 600V CAT III
- Test of residual current circuit breakers according the norm EN 61557-6
- RS232 / USB Interfaces

Inspection, maintenance and periodic testing of electrical installations. Evaluation of measures of protection low voltage installation. Troubleshooting on under voltage installations. Field device with rechargeable batteries.

ref. SMARTEC-22 (with accessories)

ref. SMARTEC-LOG data mining software option

FUNCTIONS	RANGES	RESOLUTION	ACCURACY
Nominal trip out current IΔn	IΔN: 10 mA, 30 mA, 100 mA, 300 mA, 500 mA, 1 A		
Contact voltage in V	0.0 V … 19.9 V 20.0 V … 99.9 V	0.1 V 0.1V	-0+15% reading ± 10 dgt
Trip out current	(0.2 … 1.1) x IΔN (AC Type) (0.2 … 1.5) x IΔN (A type, IΔN ≥ 30 mA) (0.2 … 2.2) x IΔN (A type, IΔN < 30 mA)	0.05 x IΔN 0.05 x IΔN 0.05 x IΔN	± 0.1x IΔN ± 0.1x IΔN ± 0.1x IΔN
RCD trip out time (ms)	0.0 ms … 40.0 ms 0.0 ms … at maximum time	0.1 ms 0.1 ms	± 1 ms ± 3 ms
Loop impedance	0.0 Ω … 9.99 10.0 Ω … 99.9 100.0 Ω … 999 1.00 kΩ … 9.99 kΩ	0.01 Ω 0.1 Ω 1 Ω 10 Ω	± 5 % reading + 5 dgt ±5 % reading + 5 dgt ±10 % reading ±10 % reading
Line impedance	0.0 Ω … 9.99 10.0 Ω … 99.9 100.0 Ω … 999 1.00 kΩ … 9.99 kΩ	0.01 Ω 0.1 Ω 1 Ω 10 Ω	± 5 % reading + 5 dgt ±5 % reading + 5 dgt ±10 % reading ±10 % reading
Operating voltages	0 V … 550V	1V	± 2 % reading + 2 dgt
Operating frequency	15.0 … 449.9 Hz	0.1 Hz	± 0.2 % reading +15 dgt

Delivered with a set of test leads with alligator clips, probes, batteries, an AC adapter / charger, CD-ROM and a user guide

Earth tester

EARTH is a tester which can perform three types of earth measurements in accordance with standard NCF15-100.

- 4-wires measurement (the most reliable because it avoids contact problems).
- Selective measurement of an earth connection in parallel with others, using a clamp.
- Selective measurement of an earth connection, without an auxiliary earth connection, using two clamps.
- Measurement of ground resistance
- Measurement of the effective intensity of stray currents in a multiple earth network

EARTH is equipped with a memory that can store up to 250 measurements.
The data is transferred to a PC via the RS232 output. The optional SMART software can be used: to compile a sheet of results and export this data to a spreadsheet.

ref. EARTH (with accessories)

ref. EARTH-PA set of 2 clamps

ref. EARTH-SMART option software

Option EARTH-PA

MEASURE / METHOD	IN	RANGES					ACCURACY
RESISTANCE / 4 WIRE	Ω	0,00 to 19,99	20,0 to 199,9	200 to 999	1,000 to 1,999k	2,00 to 19,99k	2% reading +3dgt
RESISTANCE / 1 CLAMP	Ω	0,00 to 19,99	20,0 to 199,9	200 to 999	1,000 to 1,999k		2% reading +3dgt
RESISTANCE / 2 CLAMPS	Ω	0,0 to 19,9					10% reading +3dgt
RESISTIVITY	Ωm	0,01	0,1				-
CURRENT	mA	0,0 to 99,9	100 to 999	1,00 to 9,99A	10,0 to 19,9A		5% reading

Electrical installation tester

The XE electrical installation tester brings together in a single piece of equipment the majority of the functions which are necessary for checking domestic and business premises in accordance with standard NFC15-100. In particular: current, voltage, earth measurement, earth continuity, trigger current and time of differentials, insulation resistance, calculation of short-circuit and fault currents, resistance of the mains and earth loop, calculation of fuses and phase rotation, etc.
The graphical screen displays the results and the measurement settings numerically. By simply pressing the HELP key, the connection diagram(s) corresponding to the position of the switch will appear on the screen.
XE has 2 ports: RRS232 and USB to be connected to a PC. The software, which is supplied as standard, can be used to export data from the memory of the XE to a spreadsheet, or to edit a measurement report.
The unit is supplied with a storage case and all of the accessories required to undertake all measurements, except for a blind clamp ammeter and the luxmeter unit (available as an option).
CEI1010 CAT III 600V POL2

ref. XE (with accessories)

ref. LUX1172 Luxmeter unit

CLAMP OPTION

This precision clamp is used either for measuring a leakage current (in the PE conductor for instance), or for measuring the current in a phase. It can be used in the 40Hz to 5kHz band.

ref. P1018

Supplied accessories

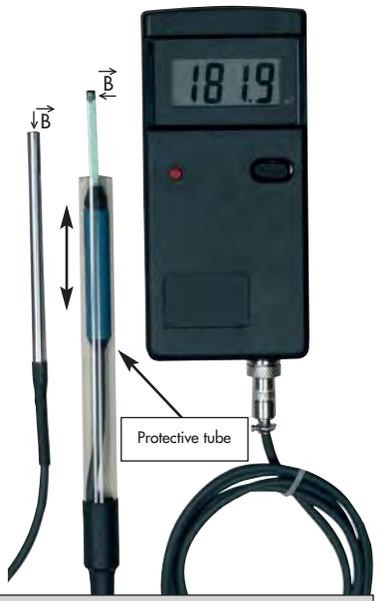
FUNCTIONS	RANGES					ACCURACY
INSULATION RESISTANCE in MΩ Test voltages: 250-500-1000VDC	0.000 ~ 1.999	2.00 ~ 99.99	100.0 ~ 199.9	200.0 ~ 999.9		5% reading + 3dgt
AC VOLTAGE in VAC	0 ~ 1200					3% reading + 3dgt
CONTINUITY (low impedance source) in Ω I >200mA for 2Ω. Vmax = 9VDC	0.00 ~ 19.99	20.00 ~ 99.9	100 ~ 1999			3% reading + 3dgt
CONTINUITY in Ω Imax = 8mA Vmax = 9VDC	0.0 ~ 99.9	100 ~ 1999				5% reading + 3dgt
RCD test in mA	10 - 30 - 100 - 300 - 500 - 1000 mA					
CONTACT VOLTAGE in VAC	0.0 ~ 9.9	10.0 ~ 99.9				10% reading + 2dgt
RCD trip out time in ms	0 ~ 300(IΔn)	0 ~ 150(2xIΔn)	0 ~ 40(2xIΔn)			3ms
Delayed RCD trip out time in ms	0 ~ 500(IΔn)	0 ~ 200(2xIΔn)	0 ~ 150(2xIΔn)			3ms
RCD trip out current in IΔn	0.2 ~ 1.1	0.2 ~ 2.2				0.1 x IΔN
Earth loop resistance in Ω	0.00 ~ 19.99	20.0 ~ 99.9	100 ~ 1999			5% reading + 3dgt
Earth loop defective current estimated A	0.00 ~ 19.99	20.0 ~ 99.9	100 ~ 999	1.00 ~ 9.99 kA	10.0 ~ 24.4kA	
EARTH MEASUREMENT in Ω	0.00 ~ 19.99	20.0 ~ 99.9	100 ~ 1999			2% reading + 3dgt
AC RMS CURRENT in mA and A	0.0 ~ 99.99mA	1.00 ~ 999mA	1.00 ~ 19.99A			5% reading + 3dgt
Resistance of mains line in Ω	0.00 ~ 19.99	20.0 ~ 99.9	100 ~ 1999			5% reading + 3dgt
Short circuit current estimated in A	0.00 ~ 19.99	20.0 ~ 99.9	100 ~ 999	1.00 ~ 9.99 kA	10.0 ~ 24.4kA	
LUXMETER (optional probe) in lux	0.01 ~ 19.99	20.0 ~ 199.9	200 ~ 1999	2.00 ~ 19.99klux		5% reading + 2dgt

TESLAMÈTRE GAUSSMÈTRE

This portable teslameter measures the magnetic field intensity of few hundred micro teslas until 2 teslas. The meter is supplied with two probes. The axial probe measures the field in the axis of a solenoid, the side probe in a gap, or more generally next to a magnet.

- Accuracy: 0,5%
- Display: 2000 counts LCD screen
- Polarity indicator
- One 9V batery (6LR61 type)
- Dim : 150x70x25mm / 170g

2 probes included (length of the cable: 1.5m). Axial probe Ø6.5mm . Side probe, 4mm large, 1mm thick. Delivered with a protective tube



Info battery : 1 x 6LR61

ref. ST640

PYRANOMETER

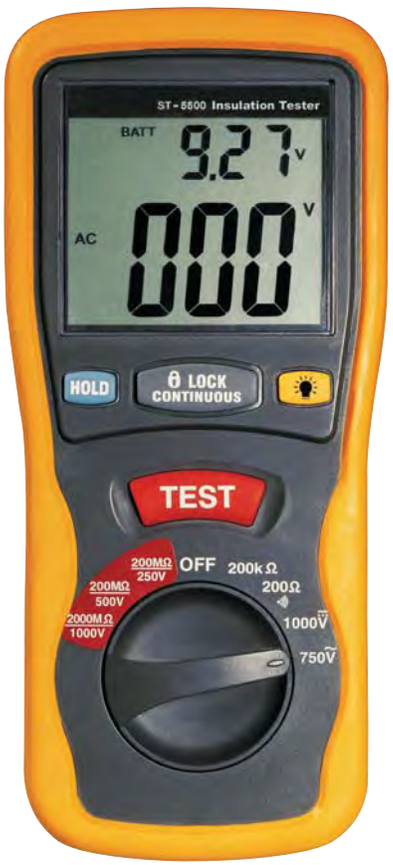
The PYR1307 pyranometer measures the power of solar radiation in watts per m2: W/m2

- Ratings: 199.9 W/m2 and 1,999 W/m2
- Measuring error: < 10W/m2 or 5% of the reading
- Display: 2,000 pixel LCD
- Captures min. and max. values
- "Hold" key allows one to freeze the display
- Backlighting
- Supplied with a carry case
- Dimensions: 162 x 63 x 28mm
- Weight: 250g

Info battery : 1 x 6LR61

ref. PYR1307

INSULATION TESTER



ref. ST5500

Info battery : 6 x LR14

The ST5500 megohmmeter has 4 measuring functions: insulation resistances with 3 test voltages (250V, 500V, 1000V), resistors, DC voltage and AC voltage.

FUNCTION	RANGES	RESOLUTION	Withstanding voltage /current	ACCURACY
MΩ	200 - 2000MΩ	100kΩ - 1MΩ	250 – 500 – 1000V/1mA	3,5% + 5dgt
Ω	200Ω - 200kΩ	0,1Ω - 100Ω	< 8V	1% + 2dgt
.)))	Ring for R< 40Ω		200 mA when R < 40Ω	
VDC	1000V	1V		0,8% + 3 dgt
VAC	750V	1V		1,2% + 10 dgt

TECHNICAL CHARACTERISTICS

- Insulation tests: 1mA rated current using the rated test voltage for fast-charging of the capacitors.
- .))) in the ohmmeter position, the unit will make a sound if the tested resistance is less than 40Ω. In this case, the 200mA current is used to detect a poor connection.
- The HOLD key locks the display, and the LOCK key maintains the test voltage in the high-capacity wires which take longer to charge.
- Batteries: 6 x 1.5V (AA type)
- Dimensions: 200 x 92 x 50mm. Weight: 700g.
- Supplied accessories: test leads and case
- CEI1010 cat III 1000V pol2

CONTACT AND NON-CONTACT TACHOMETER

The DT2236 and AT8 tachometers combine in one case a light-sensing detector and a sensor for measurement by contact. A microprocessor switches between ranges automatically, eliminates non-significant zeroes and controls a memory which records the maximum, minimum and average value. Both references are delivered with one rubber cone for direct measuring by contact on shafts, and one disk for the scrolling measuring (band in movement).

REF	DT2236	AT8
Info Battery	4 x LR6	1 x 6LR61
DISPLAY : 5 DIGITS	LCD 10mm	LCD 11mm
LIGHT SENSOR MEASUREMENT	5 ~ 100 000 rpm	2 ~ 100 000 rpm
CONTACT MEASUREMENT	0,5 ~ 20 000 rpm	2 ~ 20 000 rpm
ACCURACY	0,05% lecture + 1dgt	0,05% lecture + 1dgt
MEASUREMENT UNITS	rpm m/min	rpm m/min Hz m
SAMPLE TIME	< 1s	0,5s
DETECTION DISTANCE	50 ~ 300mm	50 ~ 500mm
TIME BASE	Quartz	Quartz
MEMORY	1 measurement	10 measurements
MIN MAX AVERAGE VALUE	For the measurement	For each measurement
DIMENSIONS	215x65x28mm 700g	210x58x36mm 180g

STROBOSCOPES

STA10K and STA269 are both stroboscopes with the same flash lighting circuits.

COMMON FEATURES

- Stroboscopes with xenon lamp, a flash duration of approximately 60µs and a power of 40W.
- LED digital display indicating the rotation speed in revolutions/minute (RPM)
- 230V AC mains power supply.
- Ventilated focussing lens to protect the flash tube. Parabolic mirror.
- Power supply 230VAC 50/Hz
- Dimensions: 210 x 120 x 120mm. Weight: 1kg.
- ABS housing

ref. STA10K

External synchro

ref. STA269

Réf	Rotation speed *	Accuracy	Functions	Nb dgts	Ext trigger	Memory	RS232 output
STA10K	100 to 10000 rpm	0,05%	rpm	4	/	/	/
STA269	5 to 12500 rpm	0,01%	rpm & Hz	5	pulse 5V	10 memories	yes

3-PHASE TESTER

ST850 is a simple and robust tester allowing the detection of a voltage on a line and the order of the phases.

- Voltage sensing: 3 lamps indicate the presense/absense of a voltage on each of the three 3 phases
- Phase order: The circle turns clockwise, if the phases are connected in the right order
- Maximum voltage 1600 VAC for 1 min
- Box fully isolated 130x80x43mm. Weight. 550g.
- CEI1010 CATII 600Vrms pol2
- CEI1010 CATIII 300Vrms pol2

ref. ST850

DECADE BOXES

Decade resistance boxes


R80

R4

- Safety terminals
- Double insulation
- Frequency range:
  0 to 500 kHz at an accuracy 0.5%.

RESISTANCES
Power : 0.5 W permanent
Type : 0.1 et 1Ω coils / 10Ω to 1MΩ
metal film to 50 ppM.

Ref.	Nb of decades	Resistances	Dims.
R0	1	10x0,1Ω	82x82x60
R1	1	10x1Ω	82x82x60
R2	1	10x10Ω	82x82x60
R3	1	10x100Ω	82x82x60
R4	1	10x1kΩ	82x82x60
R5	1	10x10kΩ	82x82x60
R6	1	10x100kΩ	82x82x60
R7	1	10x1MΩ	82x82x60
R40	4	from 10x1Ω to 10x1kΩ	290x80x60
R50	5	from 10x1Ω to 10x10kΩ	420x80x60
R60	6	from 10x1Ω to 10x100kΩ	490x80x60
R70	7	from 10x1Ω to 10x1MΩ	490x80x60
R80	8	from 10x0,1Ω to 10x1MΩ	490x80x60

CEI1010 CATIII 1000Vrms pol2

Decade inductor boxes


L70

L2

- Safety terminals
- Double insulation

TYPE OF COILS
Coils-wound on ferrite cores, with a central core, which ensures a high Q factor. L70-AR coils without core hence best accuracy & inductance independent of the frequency

Ref.	Nb of decades	Accuracy	Inductance	Dims.
L1	1	10%	10x1µH	82x82x60
L2	1	10%	10x10µH	82x82x60
L3	1	10%	10x100µH	82x82x60
L4	1	10%	10x1mH	82x82x60
L5	1	10%	10x10mH	82x82x60
L6	1	10%	10x100mH	82x82x60
L7	1	10%	10x1H	82x82x60
L40	4	10%	10x1mH to 10x1H	290x80x60
L50	5	10%	10x100µH to 10x1H	420x80x60
L70	7	10%	10x1µH to 10x1H	490x80x60
L70-AR	7	5%	10x1µH to 10x1H	490x80x60

CEI1010 CATIII 1000Vrms pol2

Ref	Decade	10x1µH	10x10µH	10x100µH	10x1mH	10x10mH	10x100mH	10x1H
L70 **10%**	I R in Ω	250mA 10 x 0,003	180mA 10 x 0,05	150mA 10 x 0,02	100mA 10 x 1,5	70mA 10 x 12	50mA 10 x 100	30mA 10 x1k
L70-AR **5%**	I R in Ω	1A 10 x 0,005	1A 10 x 0,05	1A 10 x 0,5	400mA 10 x 5	125mA 10 x 50	40mA 10 x 500	12mA 10 x 5k

Laboratory inductors

These inductors, without magnetic core, are wound on insulating material chucks, giving them a good stability on a wide frequency range.
- Shock-proof plastic box with safety terminals.
- Dimensions : 82 x 82 x 64 mm

Ref.	Inductance	Accuracy*	Current	Resistance at 20°C
LA01	0,1H	5%	400mA	36,0 ohms
LA1	1H	5%	125mA	380,0 ohms
LA5	5H	5%	50mA	2100 ohms

* 1% to 1kHz

CEI1010 CATIII 1000Vrms pol2

CE PRODUCTS 2 YEARS GUARANTEE

Decades capacitor boxes

C50

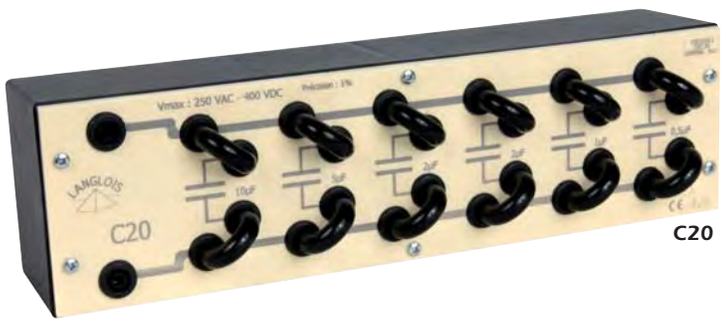
C4

Ref.	Nb of decade	Accuracy. at 20°C	Capacitance	Dims.
C50	5	1%	from 10x100pF to 10x1µF	420x80x60
C1	1	1%	10x1nF	82x82x60
C2	1	1%	10x10nF	82x82x60
C3	1	1%	10x100nF	82x82x60
C4	1	1%	10x1µF	82x82x60

CEI1010 CATIII 1000Vrms pol2

- Capacitors are plastic film, non polarisated.
- Operating voltage : 400 VDC or 250 VAC
- Temperature drift : 80 ppM / °C
- Safety terminals
- Double insulation

Capacitor link boxes



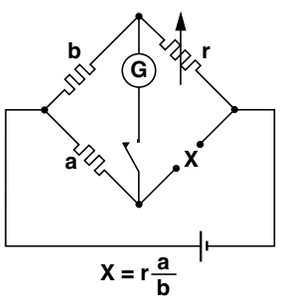
C20

Ref.	Nb of link	Accuracy. at 20°C	Capacitance	Dimensions. (mm)
C30	5	5%	from 5µF to 105µF	170x135x110
C20	6	1%	from 0,5µF to 20,5µF	190x110x60
C10	6	1%	from 0,05µF to 2,05µF	190x110x60

CEI1010 CATIII 1000Vrms pol2

- Capacitors are plastic film, non polarisated.
- Operating voltage : 400 VDC or 250 VAC
- Temperature drift : 80 ppM / °C
- Safety terminals
- Double insulation

Box with 7 positions of ratio



The K7 box is made up of two arms « a » and « b » of a Wheatstone Bridge. The two other arms form the resistance
« X » to be measured and the calibrated variable resistor « r ».

- At balance X = r a / b
- Number of scales k = a / b: 7 positions
  0.001 - 0.01 - 0.1 - 1 - 10 - 100 - 1000
- Dimensions: 82 x 82 x 60mm.
- Double insulation

ref. K7

CEI1010 CATIII 1000Vrms pol2

Zeroing galvanometer

- Suitable for assembling in Wheatstone or Thomson bridge.
- Length of the scale: 90mm
- Safety sockets 4mm
- Protection at all ranges
- 1 fuse HBC 500V / 500mA
- Double insulation

CEI1010 CATIII 600Vrms pol2

FUNCTIONS	RANGES	INTERNAL RESISTANCE	ACCURACY
VDC	- 100mV 0 + 100mV	4 kΩ	1,5 %
IDC	- 30µA 0 + 30µA	1,7 kΩ	1,5 %
IDC	- 3 mA 0 + 3 mA	40 Ω	1,5 %

ref. GAL