

# GENERAL CATALOGUE 2 0 2 1











# We are designing the future. Right now.

Thanks to the experience acquired in over thirty years of presence on the market, HT has established in Italy as a leading company in the field of electric devices. HT designs and develops a wide and reliable range of devices for checking electric safety, for power quality and energy consumption analysis and for checking, testing and maintaining photovoltaic systems.

Continuously staying up to date and keeping up with the latest developing technology, the Company has always offered to the Customers cutting-edge products, carefully studied under every aspect as regards safety, quality of the materials, modern design and ease of use.

From the sector of electric safety checking, HT has extended its expertise to the photovoltaic field as well, following a path of continuous evolution which combines a proven technology with innovation and care for every detail. Its wide range of products makes up a comprehensive offer for those who want to be sure they work in full compliance with the laws, in total safety and with cutting-edge technology.

The culture of research and innovation, together with the utmost attention to safety and the products' reliability are the pillars of the corporate philosophy of HT.

The primary target is the attention to the Customer: that's the main reason why the Company decided, in 1998, to achieve quality certification according to UNI EN ISO 9001.

This certification has further enhanced the quality of the production processes of products and services: as required by the laws in force, all HT products are provided with the CE mark. Anyway, for a better protection of Customers, certification is only granted after tests are carried out by prominent and specific inspection authorities, which are totally independent from the company to be evaluated.

# Electric safety as a basic requirement of high-quality devices

Further to carrying out their function, devices for electric measurement must focus on the **operator's safety** as a basic requirement as regards **protection from instant overvoltage** which may generate because of the presence of **complex charging networks**, **short circuits**, **atmospheric charges**, **etc**...

In this respect, international standard **IEC 61010-1** harmonized in Europe with **EN 61010-1** has devised precise rules which electric devices used for measurements in LV (<1000VAC) must comply with. Four "Overvoltage Categories" were created, which define the protection level against voltage spikes of each device according to the distance from the power supply source. Devices in the highest category need a higher internal protection as they can operate near the power supply source. A short description is outlined below:

#### OVERVOLTAGE CATEGORY:



# TYPE OF MEASUREMENT Measurements carried out on

circuits not directly connected to the distribution power

#### **APPLICATION**

Protected electronic devices, measurements on circuits not derived from power



#### TYPE OF MEASUREMENT

Measurements carried out on circuits directly connected to the low-voltage installation

#### APPLICATION

Household devices, mobile devices and similar



### TYPE OF MEASUREMENT

Measurements carried out in the building installation

#### **APPLICATION**

Distribution boards, wirings, switches, sockets in fixed installations, electric motors, industrial devices



#### TYPE OF MEASUREMENT

Measurements carried out at the source of the low-voltage installation

#### **APPLICATION**

Electricity meters, measurements on primary overcurrent protection devices, ripple control units

# Why using TRMS devices

In modern domestic and industrial installations, the use of so-called "non-linear loads" (e.g. computer networks, variable speed devices, switching suppliers, etc...) is increasing. These loads contribute to the sometimes remarkable deformation of the waveform of the signals applied to it, taking it further and further from the traditional sinusoidal waveform typical of "linear" loads (consisting in resistors, inductance or capacitance). Normal measuring devices (multimeters and clamp meters) for measuring alternating voltage and current of "average-value" type allow precise measurements only on sinusoidal waveforms of signals, hence on linear loads.

To measure non-linear loads, the generation of **harmonic components** which cause the **distortion of the waveform** of the signal, makes the use of **TRMS (True Root Mean Square) devices** necessary, since the average-value devices, taking only the value of fundamental frequency of 50Hz into consideration, may bring to **even remarkable mistakes** of the value reading.

Further to the TRMS value of the fundamental frequency, **TRMS** devices also provide the **TRMS value of the whole waveform, including harmonic components,** within the bandwidth they are designed for. Therefore, when measuring the same quantity with devices of both types, the obtained values will be identical only if the waveform of the signal is purely sinusoidal. In case of distorted waveforms, instead, **TRMS devices** always provide higher values than those measured by corresponding average-value devices. Therefore, the use of **TRMS** measuring device is essential when carrying out measuring and maintenance operations on industrial electric systems in order to obtain **reliable reading values** of the measured quantities.

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# HTANALYSIS. I-V curve and much more.







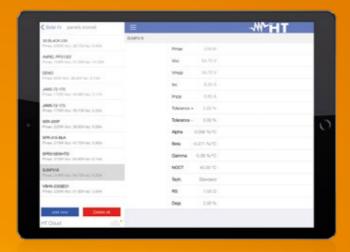






# The I-V curve is just the beginning.

With your mobile device **HTANALYSIS™** it will help you understand the nature of the problems occurring in photovoltaic installations.



# Modules' database, you'll have more than 30.000.

Organize the modules in the your device's memory. You can add new ones, delete old ones or simply see the saved ones in your device.

# Data analysis. OK or NOT OK?

Start the analysis by selecting the I-V curve just downloaded. Once you have finished the analysis, please remember to complete measurement by attaching a picture, a voice note, a text note and a video.

Ah, yes. IT takes just a minute and you've already finished.



# Your personal assistant.

HTANALYSIS™ is the only app with Interactive Solution Center. According to the nature of the I-V curve measured in the Interactive Solution Center, once you have selected the I-V curve most similar to the one obtained through your measurement, you'll have a series of indications on the possible problems and possible solutions.





# Cell deterioration. What's the truth? Function Jump™

Insert the production date of the photovoltaic modules to be tested and the app will indicate the real deterioration compared to the one declared by the manufacturer.



# HT Cloud™ Share. When, How and Where you want.

Download HTANALYSIS™ and use HTCloud™ as a personal database and **share your measurements** with your colleagues at any time and in **any place in the world**. Ah, yes: if you upload your measurements onto HTCLOUD™, you'll find them immediately in the TOPVIEW software on your PC.



# HTANALYSIS. Mains analysis.



#### Download free App **HTANALYSIS™** for iOS and Android devices





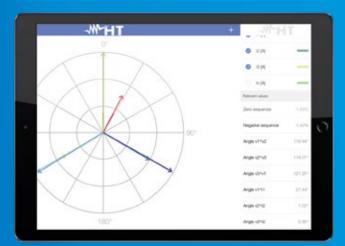




# In real time #1

ALL values you need to know, immediately.

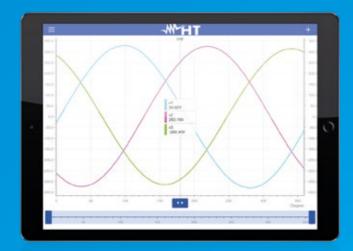
- Voltage and current
- > Power (kW kVA kVAR)
- > THD% on voltage and current
- > Power Factor and dPF (Cosphi)



# In real time #3

#### **Vector diagram**

- Voltage and current diagram
- Negative and zero sequence
- > Graphic and table indications



# In real time #2

#### Waveforms

- > Voltage waveform
- Current waveform
- > Indication of the phase angle



# In real time #4

#### Harmonics.

- Voltage and current harmonics
- Immediate display of values through cursor



# **Mains analysis #1**

Enough with reading numbers. Now you can also see them. Download your recordings and analyze them directly on site. HTANALYSIS™ makes it possible to immediately analyze all recorded quantities in a few steps.



# Mains analysis #3

Power and Energy combined with time. Select "Power" from the interactive menu on the right and move the cursor onto the date and time you are interested in. Now touch the arrow in the middle of the cursor and you'll immediately display the energetic consumption according to time. All in less than 10 seconds.



# Mains analysis #2

Voltage anomalies, Dips, Peaks and Interruptions. Immediately discover the nature of voltage anomalies with their relevant value and its duration



# HT Cloud™

Share. When, how and where you like.

Download HTANALYSIS™ and use HTCloud™ as a personal database and share your measurements with your colleagues at any time and in any place in the world. Ah yes, if you upload the measurements onto HTCLOUD™, you'll find them immediately in the TOPVIEW software on your PC.



# HTANALYSIS. HTAnalysis™ Electric safety.















# **Everything always** well organized.

Waste no more time writing down information and values of your measurements on paper. Thanks to HTANALYSIS™, the structure of saved measurements shall be similar to this one:

- > First level folder (Home, Industry)
- > Second level folder (Switchboard, Bedroom)
- > Third level folder (Socket, Switch, RCD, MCB)



# Multimedia contents on every measurement. Always.

Each measurement can be completed with an attachment, such as pictures, videos, voice notes or text notes. Please remember that all of these attachments will be automatically available on TOPVIEW (PC software) through HT Cloud.

# **List of measurements** with their result.

Every time you download a measuring campaign onto your tablet, you will get:

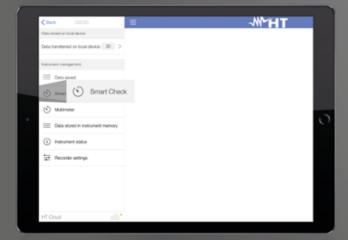
- > Result of measurement OK or NOT OK
  - > Type of measurement carried out
  - > Date and time of measurement



# No more need for paper notepads.

Adding a text note to every measurement means that it is not necessary to use paper notepads any more, which would force you to copy again in the PC software all notes made while preparing the report.





# **Function** Smart Check™

Without downloading all measurements, it is possible to attach to the last measurement carried out a picture, a video, a voice note or a text note.



# **HT Cloud™** Share. When, How and Where you want.

Download HTANALYSIS™ and use HTCloud™ as a personal database and **share your measurements** with your colleagues at any time and in any place in the world. Ah, yes: if you upload your measurements onto HTCLOUD™, you'll find them immediately in the software TOPVIEW on your PC.



**VERIFICATION PHOTOVOLTAIC FIELD** 

# PERFECTION FOR THE SUN

New HT solutions for performance optimization and troubleshooting.

Thanks to the decrease in the cost of components and the remarkable increase of performance, installing photovoltaic systems on the roof or on the ground has become increasingly common. In a photovoltaic system, problems connected to safety and to the system's performance must be checked, and maintenance of strings and single panels must be carried out.



#### **Troubleshooting**

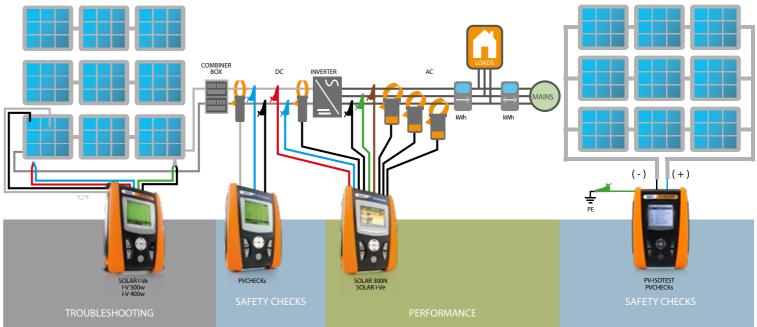
It may happen that, during the operation of a system, some modules may jeopardize the performance of the whole system. When system efficiency is lower than expected, it is necessary to detect the defective modules so that they can be replaced. This is obtained by measuring the I-V curve with devices I-V400w (for DC voltage up to 1000V) SOLAR I-Ve and I-V500w (for DC voltage up to 1500V).

#### Commissioning Tests

When operating a photovoltaic system, it is necessary to certify its safety according to IEC62446. The suitable device to carry out these verifications is PVCHECKs.

#### Performance

Performance Recording is one of the necessary requirements to make maintenance programs efficient. By monitoring system performance it is possible to certify a production loss quickly and efficiently. SOLAR300N, SOLAR I-Ve and MPP300 are the ideal solution for recording over time the production of a system and the performance check of an inverter.







I-V500w	I-V400w	SOLAR I-Ve	SOLAR300N	<b>PVCHECKs</b>	PV-ISOTEST	MPP300

MAINTENANCE AND EFFICIENCY OF THE PHOTOVOLTAIC SYSTEM	MAINTI	ENANCE		MAINTEN	IANCE AND EF	FICIENCY	
Measurement of I-V curve on PV modules and strings	•	•	•	-	-	-	-
Automatic measurement with AutoSequence $^{\text{\tiny{TM}}\star}$ mode	•	•	•	-	-	-	-
Quick IVCK test for measuring Voc and Isc on PV modules and strings	•	•	•	-	•	-	-
Single-phase/three-phase photvoltaic systems' testing	-	-	• 1MPPT (3MPPT with MPP300)	• 1MPPT (3MPPT with MPP300)	-	-	•
Continuity of protective conductors with 200mA	-	-	-	-	•	•	-
PV strings/field insulation with no service interruption with test voltage 250, 500, 1000V DC	-	-	-	-	•	• (1500VDC)	-
DC side efficiency of the photovoltaic field	-	-	-	•	•	-	-
	-	-	-	-	-	•	-
Use of remote unit SOLAR-02 with USB \ RF connection	• RF	• RF	• RF	• USB	• RF	-	• RF • USB
Measurement of irradiation with reference cell	•	•	•	•	•	-	-
Temperature measurement of cell and environment	•	•	•	•	•	-	-

#### **MAINS ANALYSIS**

AC/DC voltage in single-phase/three-phase systems	-	-	-	•	-	-	•
AC/DC current in single-phase/three-phase systems	-	-	-	•	-	-	•
Cosphi, Power Factor	-	-	-	•	-	-	-
Voltage unbalance (NEG%, ZERO%)	-	-	-	•	-	-	-
Active P, Reactive Q, Apparent S Power/Energy	-	-	Only active P	•	-	-	-
Voltage and current harmonics up to the $49^{\text{th}}$ with calculation of THD%	-	-	-	•	-	-	-
Voltage anomalies (dips, peaks) with a resolution of 10ms (@ 50Hz)	-	-	-	•	-	-	-
Voltage spikes with a resolution of 5µs (200kHz)	-	-	-	•	-	-	-
Electric motor starting current (INRUSH)	-	-	-	•			-
Voltage flickers (Pst, Plt)	-	-	-	•	-	-	-
Full analysis EN50160	-	-	-	•	-	-	-
Phase sequence	-	-	-	•	-	-	-
Neutral-Ground Voltage	-	-	-	•	-	-	-
Neutral current	-	-	-	•	-	-	-

#### MEMORY AND RECORDING

MEMORY AND RECORDING								
Max number of simultaneously selectable parameters	-	-	9	251	-	-	-	
Recording with selectable integration period	-	-	5s-60m	1s-60m	-	-	1s-60m	
Indicative memory duration (in days @ IP=10min @ max number of parameters)	-	-	8	90	-	-	8	



I-V500w I-V400w SOLAR I-Ve SOLAR300N PVCHECKS PV-ISOTEST MPP300

>>> FOLLOWS	MAINTI	ENANCE	MAINTENANCE AND EFFICIENCY					
Internal memory extension with Compact Flash card	-	-	-	•	-	-	-	
Default and custom recordings	-	-	-	•	-	-	-	
REAL-TIME DISPLAY								
Summary table of main electric parameters	•	•	•	•	•	-	-	
Voltage/current waveforms	-	-	-	•	-	-	-	
Tables or histograms of Harmonics and THD%	-	-	-	•	-	-	-	

ADDITIONAL CHARACTERISTICS							
Measuring range of curve I-V / Isc-Voc	1500V / 15A**	1000V / 15A	1500V / 15A**	-	1000V / 15A Isc-Voc only	-	-
Measuring range for photovoltaic testing	-	-	1000VDC / 265VAC	1000VAC-DC 3000A	-	-	1000VDC / 600VAC 3000AC / 1000ADC
Measurement category	CAT III 300V	CAT III 300V	CAT III 300V	CAT IV 600V	CAT III 300V	CAT III 1500V DC CAT III 1000V AC	CAT IV 300V
Touchscreen colour display	-	-	-	•	-	-	-
Backlit LCD display	•	•	•	-	•	•	-
Internal memory capacity	200 curves I-V	200 curves I-V	200 curves I-V 8 days@ IP=10 min	15MB 90 days@ IP= 10min	999 Locations	999 Locations	2MB 8 days@ IP=10 min
USB port for data download onto Pen Drive	-	-	-	•	-	-	-
Provided PC interface with software for Windows	•	•	•	•	•	•	-
Built-in WiFi communication interface	•	•	•	-	-	-	-
Custom management of internal PV module database	•	•	•	-	•	-	-
Power supply with rechargeable battery and battery charger	-	-	-	•	-	-	•
Auto power off	•	•	•	•	•	•	•
Indication of recording duration for photovoltaic testing			•	•	-	-	-
Reference standard for mains quality	-	-	-	EN50160	-	-	-
Help on line on the display	•	•	•	•	•	•	-
Size (LxWxH) (mm)	235x165x75	235x165x75	235x165x75	235x165x75	235x165x75	235x165x75	300x265x214
Weight in kg (batteries included)	1,2	1,2	1,2	1	1,2	1,2	2,3
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HV00500W	HV00400W	HV000IVE	HV00300N	HV00PVCS	HV0PVIS0	HVMPP300

<sup>\*</sup> Optional set of leads KIT KELVIN necessary.

Voltage/current vector diagram

<sup>\*\*</sup> Only I-V500w and SOLAR I-Ve (max current @1500V=10A, max current @1000V=15A).

ORDER CODE HV00500W | HV00400W | HV000IVE

# I-V500w|I-V400w|S0LAR I-Ve

MULTIFUNCTION DEVICES FOR MAINTENANCE AND TROUBLESHOOTING ON PHOTOVOLTAIC INSTALLATIONS













Measurement of the I-V curve of one or more modules or of one whole string up to 1500V/15A\*\*

- Measurement of open-circuit voltage and short-circuit voltage Voc/Isc up to 1500V/15A\*\*
- Database of 30.000 selectable photovoltaic modules
- Automatic measurement of more strings in AutoSequence<sup>™</sup> mode\*
- Compatible with the App HTAnalysis<sup>™</sup> via WiFi

I-V400w allows the on-site detection of the I-V curve and of the main characteristic parameters both of a single module and of strings of modules for PV installations up to a maximum of 1000V and 15A. For measuring the I-V curve, V400w manages an internal database of the modules, which can be updated at any time by the user, and comparison between the measured data with the rated values allows immediately evaluating whether the string or the module fulfills the efficiency parameters declared by the manufacturer.

The I-V curve can be measured also by decentralizing measurements of irradiation and temperature by using the optional remote unit SOLARO2, using the radio frequency connection (RF) to the master unit. Also for V400w, the display at the end of the test of the I-V curve is a clear indication about the compliance with the specifications declared by the panel manufacturer.

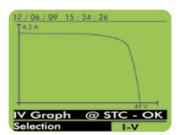
- \* Optional set of leads KIT KELVIN necessary.
- \*\* Only I-V500w and SOLAR I-Ve (max current @1500V=10A, max current @1000V=15A).







Comparison between foreseen cell deterioration and measured value.



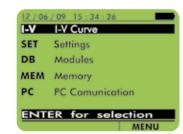
Result of I-V Curve: OK



Manual insertion of a module



Detail of the single results of I-V Curve: **OK** 



General Menu

# **Functions**

	I-V400w	<i>I-V500w</i>	SOLAR I-Ve
Maintenance of photovoltaic system			
Measurement of PV module/string output voltage	1000V	1500V**	1500V**
Measurement of PV module/string output current	15A	15A	15A
Resolution (spots) of I-V curve in Standard or Capacitive mode	128	128	128
Measurement of Voc-Isc-Pmax-Vmpp- Impp-Fill Factor	•	•	•
Measurement of cell temperature through external feeler	•	•	•
Measurement of irradiation [W/m²] through reference cell	•	•	•
Measurement of DC and rated power at module/string output	•	•	•
Detection of I-V curve through remote unit SOLAR-02	•	•	•
Measurement of resistance of series Rs of panels	Max/Min	Max/Min	Max/Min
Direct comparison with reference conditions (STC - 1000W/m², 25°C)	•	•	•
Test result OK / NO	•	•	•
Internal database for managing up to 30 PV modules (30.000 modules by	•	•	•

	I-V400w	<i>I-V500</i> w	SOLAR I-Ve
Internal memory for data saving	•	•	•
Recalling measured data on the display	•	•	•
Optical/USB interface for data transfer onto the PC	•	•	•
Built-in WiFi communication interface	•	•	•
Help on line on the display	•	•	•
Efficiency measurements of the photo	voltaic syste	em	
DC/AC TRMS single-phase voltage	-	-	•
DC/AC TRMS single-phase current	-	-	•
Single-phase DC power / AC active power	-	-	•
Solar irradiation [W/m²] with reference cell HT304N	-	-	•
Panel and environmental temperature through probes	-	-	•
Remote unit SOLAR02 with RF connection	-	-	•
Display of environmental data in real time	-	-	•
Use of compensation relationships Cells/ Environment on Pdc	-	-	•
Parameter recording of a PV system with 5s to 60min programmable IP	-	-	•

# Included accessories

I-V curve and power curve.

SOLAR02	Remote unit for Irradiation and Temperature (SOLAR I-Ve)
KITGSC4	Set of 4 cables + 4 alligator clips
KITPVMC3	Set of 2 adapters with connectors MC3
KITPVMC4	Set of 2 adapters with connectors MC4
HT4005K	Standard 200A AC clamp, diameter 40mm (3pcs) (SOLAR I-Ve)
HT4004	Standard 10-100A DC clamp, diameter 32mm (SOLAR I-Ve)
HT304N	Sensor for irradiation measurement
PT300N	PT1000 probe for PV modules temperature (SOLAR I-Ve)
M304	Mechanical inclinometer
TOPVIEW2006	Windows software + optical/USB C2006 cable
SP-5100	Sheaths to use the device with free hands (SOLAR I-Ve and I-V500w)
VA500	Rigid carrying case
	User manual on CD-ROM
	ISO9000 calibration certificate
	Quick guide

# **Optional accessories**

MPP300	Accessory for (AC) three-phase efficiency verification up to (3MPPT) (SOLAR I-Ve)
HT4005N	Standard AC 0÷5A, 0÷100A clamp, diameter 20mm (SOLAR I-Ve)
HT96U	Standard 1-100-1000A AC clamp, diameter 54mm (SOLAR I-Ve)
HT97U	Standard 10-100-1000A AC clamp, diameter 54mm (SOLAR I-Ve)
HT98U	Standard 1000A DC clamp, diameter 50mm <i>(SOLAR I-Ve)</i>
HP30C2	Standard 200-2000A AC clamp, diameter 70mm (SOLAR I-Ve)
HP30C3	Standard 3000A AC clamp, diameter 70mm (SOLAR I-Ve)
HP30D1	Standard clamp, diameter 83mm 1000A DC (SOLAR I-Ve)
SP-0400	Shoulder strap to use the device with free hands (I-V400w)
SP-0500	Sheaths to use the device with free hands (I-V400w)
KITPVEXT25M	Set of 2 banana cables 4mm, Green/Black, 25m
606-IECN	Connectors with magnetic terminal
KITKELVIN	Test leads for measurements in automatic sequence

18 software)









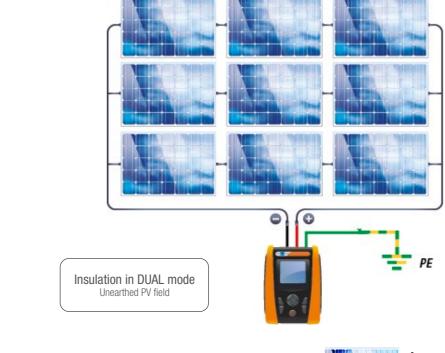
# **PV-ISOTEST**

MULTIFUNCTION INSTRUMENT FOR VERIFICATION OF ELECTRIC SAFETY AND SEARCHING FOR FAULT CONDITIONS IN A PHOTOVOLTAIC SYSTEM

**PV-ISOTEST** is a true innovation, since it is capable of measuring the insulation of a module, string or of an entire photovoltaic field **up to 1500V DC** in compliance with standard IEC/EN62446.

Thanks to the new **GFL** (**Ground Found Locator**) function, the instrument provides the precise position of a possible single fault of low insulation **found on a string** of the PV system due, for example, to water or humidity infiltrations

- Insulation measurement up to 1500VDC
- Localization of the faulty module in a string through the new GFL function
- Continuity of protective conductors with 200mA





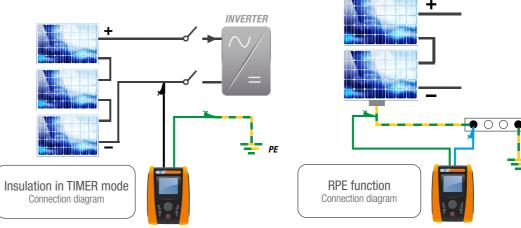
DUAL insulation verification with direct outcome: **OK** 



DUAL insulation verification with direct outcome: NOT OK



GFL (fault locator) function



# Functions

- Continuity of protective conductors with test current 200mA
- Insulation measurement with test voltage 250, 500, 1000, 1500 VDC.
- Measurement of DC voltage up to 1500V
- Measurement of AC TRMS voltage up to 1000V
- Insulation in DUAL and TIMER modes
- GFL function to localize faults on a string
- Calculation of parameters PI (Polarization Index) and DAR (Dielectric Absorption Ratio) on measurements
- Result for every measurement OK/NOT OK
- Compliance with standards IEC/EN61557-2-4
- Internal memory and USB output for PC connection
- Help on line on the display

#### **Main features**

**Display:** LCD, 128x128pxl, with backlight

**Power supply:** 6x1.5V alkaline batteries type AA LR06 or

IEC/EN62446-1

Double insulation

6x1.2V rechargeable NiMH batteries type AA

Auto power off:after 5 minutes' idlingInternal memory:Max 999 testsPC interface:optical/USBSafety:IEC/EN61010-1Safety of accessories:IEC/EN61010-031

Pollution level:

Measurements:

Insulation:

Measurement category: CAT III 1500VDC, CAT III 1000VAC Max 1500VDC, 1000VAC between inputs

235x165x75mm

Weight (batteries included): 1.2kg

### **Provided accessories**

KITGSC4	Set of 4 cables + 4 alligator clips		
KITPCMC4 Set of 2 adapters with connectors MC4			
TOPVIEW2006	Windows software + optical/USB C2006 cable		
VA507	Carrying bag		
SP-5100	Set of shoulder straps		
	ISO calibration report		
	User manual and quick guide		



# **Optional accessories**

1066-IECN	Connector for extension cables with in/out 4mm banana, black
1066-IECR	Connector for extension cables with in/out 4mm banana, Red
606-IECN	Connector with magnetic terminal, black









# SOLAR300N

MULTIFUNCTION DEVICE FOR VERIFICATION OF SINGLE-PHASE AND THREE-PHASE PV SYSTEM EFFICIENCY AND POWER QUALITY ANALYSIS IN COMPLIANCE WITH STANDARD EN50160

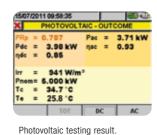
- New touchscreen interface
- > Verification of the **efficiency** of the photovoltaic system
- Analysis of power quality and energy consumption

SOLAR300N tests single-phase and three-phase photovoltaic systems. For this kind of tests, it is necessary to guarantee simultaneity between power measurements carried out at the inverter and irradiation and temperature measurements carried out on the photovoltaic panels. HT Instruments has introduced a remote measuring device SOLARO2 which acquires the values of solar Irradiation [W/m<sup>2</sup>], panel Temperature [°C] and environmental Temperature [°C] and transfers them onto SOLAR300N, which inserts them onto the same string of power measurements an then elaborates them with the simultaneity required by the law in force.

SOLAR300N is not only a device for testing PV systems, but also a powerful device for a complete analysis of power quality according to standard EN50160 (harmonic analysis, voltage anomalies, flickers, unbalance, etc.).



Photovoltaic testing result on PC application TOPVIEW.



**SOLAR300N IS ALSO AN ANALYZER FOR POWER QUALITY** AND ENERGY CONSUMPTION

- Harmonics
- Analysis of recordings
- Measurement of energy consumption
- Flicker
- Voltage anomalies and spikes
- Inrush currents
- Vectors and waveforms

**Functions** 

#### Efficiency measurements of the photovoltaic system

- DC/AC TRMS voltage (single-phase and three-phase)
- DC/AC TRMS current (single-phase and three-phase)
- DC/AC active power (single-phase and three-phase)
- Power factor cosj (single-phase and three-phase)
- Solar irradiation
- Panel and environmental temperature
- Display of testing result (OK/NOT OK)
- Remote unit SOLAR02 for measuring irradiation and temperature
- Periodic recording of power parameters with programmable PI

#### Analysis of power and energy consumption

- Recording of voltage and current harmonics (up to the 49th)
- Recording of voltage anomalies (dips, peaks) with resolution 10ms
- Flicker analysis according to EN50160
- Recording of Inrush Currents with resolution 10ms
- Recording of voltage spikes with resolution 5µs
- Complete analysis of power quality according to EN50160
- Touchscreen colour display
- Internal memory and USB output for PC connection
- Power supply with rechargeable Li-ION battery
- Rechargeable internal battery
- · Help on line on the display
- · Management of USB Pen Drive and compact flash card



#### **Main features**

Display: Colour touchscreen with adjustable brightness Rechargeable Li-ION, 3.7V battery Power supply:

Internal memory: 15MB (duration 1 month @ IP=15min,

double insulation

251 parameters) External memory: Compact Flash (CF) card

PC interface: USB 2.0 Safety: IEC/EN61010-1

Pollution level:

Measurement category: CAT IV 600V (to earth) CAT III 1000V (between inputs)

IEC/EN61000-4-7 Unbalance: Power quality: IEC/EN50160 Flicker: IEC/EN61000-4-15 Reference standard and IEC/EN61000-4-30 Class B

class: Size:

Insulation:

235x165x75mm

Weight (batteries included): 1kg



### Included accessories

S0LAR02	Remote unit for Irradiation and Temperature				
KIT800	Set of 5 cables + 5 alligator clips				
HT4005K	Standard 200A AC clamp, diameter 40mm (3pcs)				
HT4004	Standard 10-100A DC clamp, diameter 32mm				
HT304N	Sensor for irradiation measurement				
PT300N	PT1000 probe for PV modules temperature				
A0055	External AC/DC battery charger power supply 230V 50/60Hz*				
YABAT0003HT1	Rechargeable Li-ION battery				
PT400	Touch-screen pen				
TOPVIEW2007	Windows software + USB C2007 cable				
VA500	Rigid carrying case				
	User Manual				
	Quick guide				
	ISO9000 calibration certificate				
	(*) Please check accessory line to find the correct power adapter for your country				



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# **Optional accessories**

MPP300	Accessory for (AC) three-phase efficiency verification up to (3MPPT)
HT4005N	Standard AC 0÷5A, 0÷100A clamp, diameter 20mm
HT96U	Standard 1-100-1000A AC clamp, diameter 54mm
HT97U	Standard 10-100-1000A AC clamp, diameter 54mm
HT98U	Standard 1000A DC clamp, diameter 50mm
HP30C2	Standard 200-2000A AC clamp, diameter 70mm
HP30C3	Standard 3000A AC clamp, diameter 70mm
HP30D1	Standard clamp, diameter 83mm 1000A DC
HTFLEX33E*	Flex 3000A clamp, for power analysis, diameter 174mm
HTFLEX35*	Flex 3000A clamp, for power analysis, diameter 274mm
HT903	3x1-5A/1V box for TA connection
SP-0400	Shoulder strap to use the device with free hands
606-IECN	Magnetic connectors for voltage measurement
A0056	115V/50-60Hz power supply with American plug
CF800	1Gb Compact flash card
MCR800	Compact flash card reader
	(*) can be used only for power analysis

(\*) can be used only for power analysis



ORDER CODE HVOOPVCS

# **PVCHECKs**

MULTIFUNCTION DEVICE FOR COMMISSIONING TESTS OF ELECTRIC SAFETY AND PERFORMANCE OF A PHOTOVOLTAIC SYSTEM

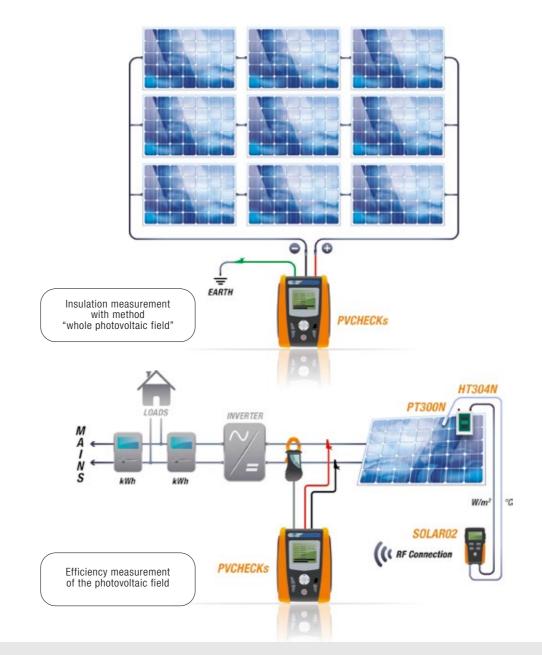
Automatic test in a sequence of:

- Measurement of insulation up to 1000V DC
- Open-circuit voltage and short-circuit current Voc/Isc
- **Continuity** of **protective conductors** with 200mA

The multifunction device PVCHECKs allows quickly and safely carrying out the commissioning tests provided for a PV system (section in DC) and the functional test of modules/strings the system consists of according to the requirements of Standard IEC/EN62446.

When testing safety, PVCHECKs is a real innovation, since it is capable of measuring insulation of a module, string or of a whole photovoltaic field (IEC/EN62446) with no need to use an external switch to short-circuit the positive and negative terminals.

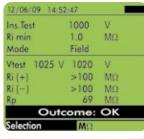
PVCHECKs also allows **checking the functionality of the connections and of the strings** in a photovoltaic field, according to the provisions of standard IEC/EN62446 by measuring the open circuit voltage and the short-circuit current at operating conditions (OPC) and referred to STC (via the optional measurement of irradiation, also with the use of optional accessories SOLAR02 and HT304N), providing an **immediate result** as regards the measurement just carried out, both in absolute terms and by comparison with the previously tested strings. Finally, PVCHECKs also allows analyzing the performance of the photovoltaic field (DC) under operating conditions (therefore connected to the inverter) with the use of optional accessories SOLAR02 and HT304N, providing an indication of the generated power and of the performance of the field itself.







Continuity test result with 200mA NOT OR



Insulation measurement result at 1000V OK



Automatic sequence test result **0K** 



### **Functions**

#### Maintenance of photovoltaic system

- Continuity of protective conductors with test current 200mA
- Insulation measurement with test voltage 250,500 and 1000VDC
- Open-circuit voltage (VOC) measurement up to 1000V DC
- Short-circuit current (ISC) measurement up to 15A DC
- DC voltage DC current DC power measurement
- Measurement of irradiation [W/m²] through reference cell HT304N
- Environmental and photovoltaic module temperature measurement through PT300N probe
- Use of compensation relationships Cells/Environment on Pdc
- Measurements always compared to the values declared by the module's manufacturer
- Internal database for managing up to 30 PV modules (30.000 modules by software)
- Test measurement of string operation
- Mechanical inclinometer for verifying the correct inclination of sun rays
- Result for every measurement OK/NO
- Internal memory and USB output for PC connection
- Help on line on the display

#### Efficiency measurements of the photovoltaic system

Efficiency measurement of the photovoltaic field (DC side)



#### **Main features**

Display: LCD, 128x128pxl, with backlight

Power supply: 6x1.5V alkaline batteries type AA LR06

Auto power off: after 5 minutes
Internal memory: 256kBytes
PC interface: optical/USB
Safety: IEC/EN61010-1
Safety of accessories: IEC/EN61010-031
Measurements: IEC/EN 62446

Pollution level: 2

Overvoltage category: CAT III 1000VDC (to earth)
Max 1000V between inputs

1.2kg

Double insulation

**Size:** 235x165x75mm

Weight (batteries included):

Insulation:



### **Included accessories**

HT4004	Standard 10-100A DC clamp, diameter 30mm				
KITGSC4	Set of 4 cables + 4 alligator clips				
KITPCMC3	Set of 2 adapters with connectors MC3				
KITPCMC4	Set of 2 adapters with connectors MC4				
TOPVIEW2006	Windows software + optical/USB C2006 cable				
B0RSA2051	Soft carrying bag				
	ISO9000 calibration certificate				
	User manual and quick guide				



# Optional accessories

PT300N	PT1000 probe for PV modules temperature
SOLAR02	Remote unit for Irradiation/Temperature measurement
HT304N	Reference cell for irradiation measurement
M304	Mechanical inclinometer
SP-0400	Shoulder strap to use the device with free hands
KITPVEXT25M	Set of 2 banana cables 4mm, Green/Black, 25m
606-IECN	Connectors with magnetic terminal









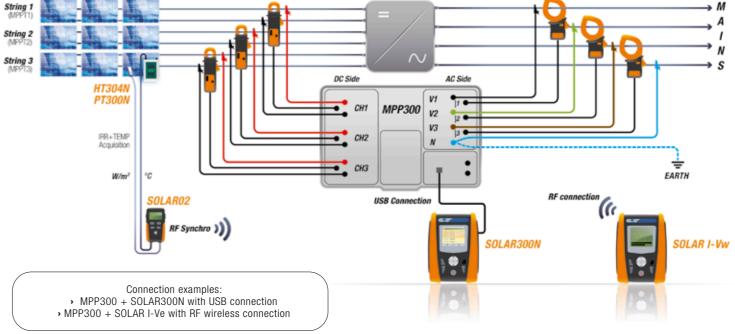
ORDER CODE HVMPP300

# MPP300

ACCESSORY FOR MEASURING AND RECORDING THE EFFICIENCY OF A SINGLE- AND THREE-PHASE, SINGLE- AND MULTI-STRING PHOTOVOLTAIC SYSTEM (UP TO THREE MPPT).

- Simultaneous analysis of 3 strings
- Compatible with SOLAR300N and SOLAR I-Ve
- Integrated rechargeable battery

MPP300 is an innovative accessory which allows measuring and recording the main parameters which characterize single and three-phase, single and multi-string photovoltaic systems (up to three MPPT). Provided with a practical rigid anti-shock case, thanks to its lightness and its reduced size is the ideal solution for on-site use. MPP300 interfaces with SOLAR300N and SOLAR I-Ve for its settings, to start/stop recording electric and environmental parameters and to allow for the download of the recorded values. The master devices SOLAR300N or SOLAR I-Ve are only used in the initial and final phase of recording, and they do not play any active role while recording electrical and environmental parameters. Remote unit SOLAR02 (synchronized with MPP300) is positioned next to the photovoltaic modules to measure environmental parameters (irradiation and temperature). Thanks to this synchronization, it is not necessary to place long connection cables between the environmental probes and the device (cables which would impair the operator's movements) nor to use a wireless connection between the environmental probes and the device, what is generally impossible due to the attenuation of the signal caused by the presence of floors, reinforced concrete or metal structures.



INVERTER

Synchronization between the two units guarantees the necessary simultaneity of measurements and the two separate and independent units make measurements comfortable and safe under any condition.

MPP300's **best partner is SOLAR I-Ve**: while MPP300 records the electrical and environmental parameters, it is possible to measure the I-V curves o strings and modules with SOLAR I-Ve, **thus saving time and money**.



- Practical rigid anti-shock case
- Small size (mm 300x265x140) for an extreme portability



- DC/AC TRMS voltage measurement (single-phase and three-phase)
- DC/AC TRMS current measurement (single-phase and three-phase)
- DC/AC power measurement (single-phase and three-phase)
- Simultaneous multi-string tests (max 3 MPPT)
- Connection with master unit SOLAR300N and SOLAR I-Ve
- Power supply with rechargeable Li-ION battery
- · LED operating indications
- USB port for connection to unit SOLAR300N
- RF connection for connection to SOLAR02 and SOLAR I-Ve
- Internal memory for saving recordings



#### **Main features**

Inputs: 3 DC voltage inputs (CH1, CH2, CH3),

3 DC current inputs (CH1, CH2, CH3), 4 AC voltage inputs (L1, L2, L3, N),

3 AC current inputs (L1, L2, L3)

Front panel: 4 two-colour LEDs (red, green)

Rechargeable Li-Ion battery
Duration >3 hours

Internal memory:2 MBytesCommunicationUSB + RF

interfaces

Power supply:

Safety: IEC/EN61010-1 Insulation: double insulation

Pollution level: 2

Measurement CAT IV 300 VAC (to earth), category:

CAT III 1000 VDC (to earth), 1000 VDC (between inputs)

300x265x140mm

2.3 kg

Weight

Size:

(batteries included):



# **Included accessories**

KITMPPDCW	Set of 2 cables, red and black banana-banana length 2m, 3 pieces				
KITMPPDCC	Set of 2 alligator clips, black and red, 3 pieces				
KITMPPACW	Set of 4 cables for AC voltage, 2m				
KITMPPACC	Set of 4 alligator clips for AC voltage				
A0055	External AC/DC battery charger power supply				
C2007	USB cable				
ACON3F4M	Adapter for the connection of clamps HT98U, HP30D1 and HT4004N, 3 pieces				
B0RSA2051	Soft carrying bag for accessories				
	User Manual				
	ISO9000 calibration certificate				



# **Optional accessories**

HT4004	Standard 10-100ADC clamp, diameter 32mm				
HT4005N	Standard AC 0÷5A, 0÷100A clamp, diameter 20mm				
HT4005K	Standard 200A AC clamp, diameter 40mm				
HT96U	Standard 1-100-1000A AC clamp, diameter 54mm				
HT97U	Standard 10-100-1000A AC clamp, diameter 54mm				
HT98U	Standard 1000A DC clamp, diameter 50mm				
HP30C2	Standard 200-2000A AC clamp, diameter 70mm				
HP30C3	Standard 3000A AC clamp, diameter 70mm				
HP30D1	Standard clamp, diameter 83mm 1000A DC				
HTFLEX33E	Flex 3000A clamp, for power analysis, diameter 174mm				
HTFLEX35	Flex 3000A clamp, for power analysis, diameter 274mm				
606-IECN	Magnetic connectors for voltage measurement				



# POWER QUALITY ANALYZERS



PQA824





PQA820

VEGA78



HT9023

MAIN MEASUREMENTS	POWER QUALITY ANALYZERS					
AC/DC voltage in single-phase/three-phase systems	•	•	•	•	•	<ul> <li>Monofase</li> </ul>
AC/DC current in single-phase/three-phase systems	•	•	•	•	•	<ul> <li>Monofase</li> </ul>
Cosphi, Power Factor	•	•	•	•	•	<ul> <li>Monofase</li> </ul>
Voltage unbalance (NEG%, ZERO%)	•	•	•	•	-	-
Active, reactive, apparent power/energy and DC power	•	•	•	•	•	•
Voltage and current harmonics up to the 49th with calculation of THD%	•	•	•	•	• Only THD	• 25 <sup>th</sup>
Voltage anomalies (dips, peaks) with a resolution of 10ms (@ 50Hz)	•	•	•	•	-	-
Voltage spikes with a resolution of 5µs (200kHz)	•	-	-	-	-	-
Electric motor starting current (INRUSH)	•	•	-	-	-	•
Voltage flickers (Pst, Plt)	•	•	-	-	-	-
Full analysis EN50160	•	•	-	-	-	-
Phase sequence	•	•	•	•	•	•
Neutral-Ground Voltage	•	•	•	-	-	•
Neutral current	•	•	•	•	-	•

#### **MEMORY AND RECORDING**

Max number of simultaneously selectable parameters	251	251	251	383	44	60
Recording with selectable integration period	1s-60m	1s-60m	1s-60m	5s-60m	5s-60m	1s-15m
Indicative memory duration (in days @ PI=10min @ max number of parameters)	90 days	90 days	90 days	30 days	153 days	50 days
Indication of recording duration	•	•	•	•*	•*	•
Internal memory capacity	15MB	15MB	15MB	8MB	8MB	2MB
External compact flash card	•	•	•	-	-	-
Default and custom recordings	•	•	•	-	-	-
Snapshot saving	•	•	•	•*	•*	•*

#### **REAL-TIME DISPLAY**

Summary table of main electric parameters	•	•	•	•*	•*	•*
Voltage/current waveforms	•	•	•	•*	•*	•*
Tables or histograms of Harmonics and THD%	•	•	•	•*	•*	•*
Voltage/current vector diagram	•	•	•	•*	•*	•*

#### **ADDITIONAL CHARACTERISTICS**

Measurement category	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 300V	CAT IV 300V	CAT IV 600V CAT III 1000V
Measurement by means of external CT and VT	•	•	•	•**	•**	-
Touchscreen colour display	•	•	•	-	-	-
Power supply and rechargeable battery recharging	•	•	•	<ul> <li>Auto power supplied</li> </ul>	<ul> <li>Auto power supplied</li> </ul>	-
Auto power off	•	•	•	•	•	•
USB port for data download onto Pen Drive	•	•	•	• Only PC	• Only PC	-
Provided PC interface with software for Windows	• USB	• USB	• USB	• Wi-Fi / USB	• Wi-Fi / USB	• Wi-Fi
Context help active on each screen	•	•	•	-	-	•
Protection password	•	•	•	-	-	-
Size (LxWxH) (mm)	235x165x75	235x165x75	235x165x75	235x165x75	235x165x75	252x88x44
Weight in kg (batteries included)	1	1	1	0,7	0,7	0,5
Reference standard for mains quality	EN50160	EN50160	-	-	-	-
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HV000824	HV000823	HV000078	HV000820	HV000819	HP009023

<sup>\*</sup> Through App HTANALYSIS and software TOPVIEW.

<sup>\*\*</sup> Adapter ACONBIN necessary.

ORDER CODE HV000824 | HV000823 | HV000078

# PQA824|PQA823|VEGA78



THREE-PHASE POWER QUALITY ANALYZERS



PQA824, PQA823 and VEGA78 are three-phase and singlephase power analyzers. They allow for the analysis of all electric parameters which can be measured nowadays, elaborating them easily and quickly.

These devices can be easily programmed thanks to the new colour touchscreen display with icon menu, which guarantees the selection of internal parameters in a simple and intuitive way.

The Help online function available on each screen is a valid and concrete help for the operator in understanding how the devices are used. Each internal parameter is easily reached through the typical tree structure, widely known to Windows system users.

The devices allow displaying the parameters in numerical and graphic mode, both for periodical analysis and for harmonic analysis.

The graphic function "vector diagram" allows, among other things, to immediately evaluate the phase angle between input voltage and current signals, thus defining the loads' nature.

The 15MB internal memory allows saving recorded data for a remarkable number of consecutive days.

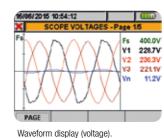
PQA824, compared to PQA823 and VEGA78, also allows detecting spikes on input voltages with a minimum resolution of 5µs (200kHz), setting different trigger thresholds which are very useful when solving typical problems on installations (monitoring atmospheric charges, commutations of switching suppliers, disturbance frequencies, etc.)



Current harmonics' display in real time.

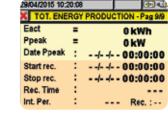


Voltage and current vector diagram.



General Menu.

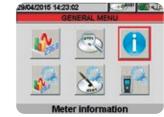




30.03/2007 11:30:00 30:03/2007 16:00:00

Display of recorded power graph.

Energy consumption display.



**Functions** 

- Simultaneous measurement of power parameters on single-phase and three-phase 3-wire and 4-wire systems
- 5 input channels for voltages and 4 input channels for currents
- · Numerical and graphic display (waveforms)
- Voltage and current vector diagram
- Voltage and current harmonic analysis up to the 49th with THD%
- Recording of voltage anomalies (dips, peaks) with 10ms resolution
- Flicker analysis in compliance with EN50160 (only PQA823 PQA824)
- Recording of fast transients (spikes) with resolution 5µs (only PQA824)
- Recording of motor starting currents with resolution 10ms (INRUSH)

#### (only PQA823 - PQA824)

- Voltage unbalance (NEG%, ZERO%)
- Integration period selectable from 1s to 60min
- Preset and custom recordings
- Touchscreen colour display
- · Power supply with rechargeable Li-ION battery
- · Memory extension with external Compact Flash card
- · Possibility of connecting an external pen drive
- PC interface with USB port

#### **Main features**

TFT, 65536 colours, (320x240pxl) Display: with high contrast, touch screen 1x3.7V rechargeable Li-ION battery, Power supply: with external adapter, duration >6h, auto power of after 5 minutes' idling Internal memory:

15Mbyes (duration approx. 3 months @ IP=15min and 251 selectable parameters)

external Compact Flash card (ca. 32Mb) Memory extension:

USB 2.0 PC interface: IEC/EN61010-1 Safety: double insulation Insulation:

CAT IV 600V (Phase - Neutral) Measurement category: CAT IV 1000V (between inputs)

Power quality and FN50160

EN61000-4-30, class B Electric energy quality: EN61000-4-7, EN50160 Unbalance: 235x165x75mm

Weight (battery included): approx 1kg



### Included accessories

HTFLEX33E	Flex clamp 3000A, diameter 174mm, 4 pieces
KIT800	Set of 5 cables + alligator clips
A0055	AC/DC battery charger power supply 230V 50/60Hz*
YABAT0003HT1	Rechargeable 3.7V Li-ION battery
PT400	Touch-screen pen
TOPVIEW2007	Windows software + USB cable
VA500	Rigid Soft carrying bag
	User manual on CD-ROM
	Quick user guide
	ISO9000 calibration certificate
	(*) Please check accessory line to find the correct power adapter for your country



# **Optional accessories**

HTFLEX35	Flex 3000A AC clamp, diameter 274mm
HT96U	Standard 1-100-1000A AC clamp, diameter 54mm
HT97U	Standard 10-100-1000A AC clamp, diameter 54mm
HT98U	Standard 1000A DC clamp, diameter 50mm
HP30C2	Standard 200-2000A AC clamp, diameter 70mm
HP30C3	Standard 3000A AC clamp, diameter 70mm
HT4005N	Standard 5-100A AC clamp, diameter 20mm
HT903	3x1-5A/1V box for external TA connection
A0056	External power supply 110VAC-60Hz /12VDC
A0030	External power supply 110VAG-00112/12VDG
CF800	1GB Compact Flash Card
CF800	1GB Compact Flash Card

ORDER CODE **HV000820** | **HV000819** 

# PQA820|PQA819

THREE-PHASE AND SINGLE-PHASE POWER QUALITY ANALYZERS





PQA820 e PQA819 are the **innovative** proposal by HT to **easily analyze** all involved components on a **three-phase** or **single-phase** electric system.

When designing them, HT has taken particular care of three aspects: **setting**, the operating or storage environment and data transfer.

- PQA820 and PQA819 do not need to be set. They simply need to be connected, started and they respectively record 383 and 44 quantities simultaneously.
- They are provided with a comfortable IP65 case, which allows working in any kind of environment.
- When recording has finished, thanks to the WI-Fi connection, the devices are capable of transferring all data onto a tablet, smart phone or PC.

Further to the Wi-Fi connection, PQA devices are provided with USB connection for transferring data via cable to the PC through **the provided TopView software**.

They do not need any batteries since they are auto power-supplied from the power they are analyzing.

The internal battery is automatically recharged by the input voltage and will provide the necessary energy to go on recording in case power supply is interrupted.

To make the most of the technology used by PQA820 and PQA819 we recommend using the **HTanalysis App** (available for free download on AppStore and Google Play) on a tablet or smart phone.

Here are some of the functions of HTanalysis:

- Display of measured data on high-definition screen.
- Possibility of "scrolling" through a determined waveform and immediately detecting its critical "moments": it will be sufficient to "touch" a certain spot of the screen in which the measured signal is proposed to immediately obtain all necessary information in order

to understand what happened in that spot and in that particular moment!

PQA820 and PQA819 respectively record 383 and 44 quantities which can be **recalled and dragged onto the screen** to be **compared between each other**; for example, if you are displaying the trend of voltages and **you want to check for the possible presence of harmonic distortion**, it will be sufficient to scroll through the list of recorded measures and **drag the one relevant to harmonics to the screen**.

The same can be done for all other quantities: **power**, **cosphi**, **current**, **energy**, etc.

Everything can then be shared on **HT Cloud**, the web database created by HT to **archive** recordings and **share them** quickly with anyone around the world. Through HTCLOUD $^{\text{TM}}$  you will be able to **share all measurements with you colleagues** and/or download them from any PC/Mobile device connected on the web.



IP65 - Waterproof and resistant to extreme conditions

# Functions

- AC TRMS voltage in single-/three-phase systems
- AC TRMS current in single-/three-phase systems
- Active, Reactive and Apparent Power/Energy
- Cosphi and Power Factor
- · Voltage, Current, DC Power
- Neutral current (only PQA820)
- Voltage dips and peaks on 10ms (only PQA820)
- Voltage unbalance (NEG%, ZERO%) (only PQA820)
- Measurements using external CT and VT
- Voltage/current waveforms
- Histograms of voltage/current harmonics and THD%
- Voltage/current vector diagram
- Periodical recording with selectable PI
- Maximum number of simultaneously recorded quantities
- **PQA820:** 383 **PQA819:** 44
- Voltage and current harmonic analysis up to the 49th
- Calculation and recording of voltage/current THD%
- Indication of recording duration



#### **Main features**

Power supply: rechargeable Li-ION battery

External power supply: 100 ÷ 415V, 50/60Hz

Recording duration > 30 days (@ PI = 10min) (PQA820)

> 230 days (@ PI =15min) (PQA819)

**Recording period:** 5, 10, 30s, 1, 2, 5, 10, 15, 60min)

PC interface: USB 2.0 and Wi-Fi

Safety: IEC/EN61010-1, double insulation

Mechanical protection: IP65 (closed case)

**Measurement category:** CAT IV 300V, max 415V between inputs

 $\begin{tabular}{lll} Reference standards: & EN50160 \\ Operating temperature: & 0 <math>\div$  40°C \\ Operating humidity: & <80%RH \\ Storage temperature: & -10  $\div$  60°C \\ Storage humidity: & <80%RH \\ Size: & 235x165x75mm \\ \hline \end{tabular}

Weight (battery included): approx 0.7 kg



### **Included accessories**

KITMPPACW	Set of 4 measuring cables
KITMPPACC	Set of 4 alligator clips
606-IECN	Adapters with magnetic terminal (4x)
HTFLEX33L	Flex 1000A AC clamp, diameter 174mm (4x)
TOPVIEW2007	PC Windows software + USB cable
B0RSA2051	Soft carrying bag for accessories
	Quick user guide
	ISO9000 calibration certificate
	User manual on CD-ROM



# Optional accessories

HT96U	AC clamp for leakage current, 1-100-1000A/1V, diameter 54mm
HT97U	Standard 10-100-1000A AC clamp, diameter 54mm
HT98U	DC clamp for leakage current, 1000A/1V, diameter 50mm
HP30C2	Standard AC 200-2000A/1V clamp, diameter 70 mm
HP30D1	Standard DC 1000A/1V clamp, diameter 83 mm
HT903	3x1-5A/1V box for connection to external CT
ACONBIN	Adapter for the connection of standard clamps

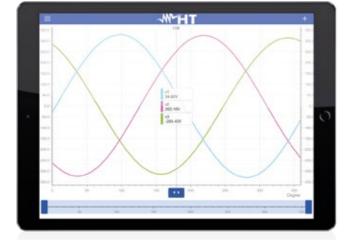
# GSC60|PQA820|PQA819|HT9023

WITH HTANALYSIS™





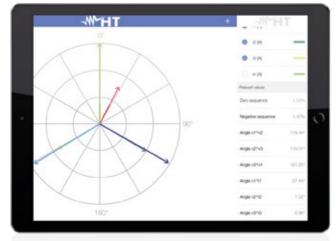




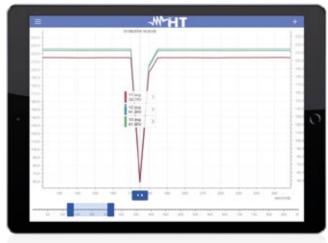
Voltage and current waveforms



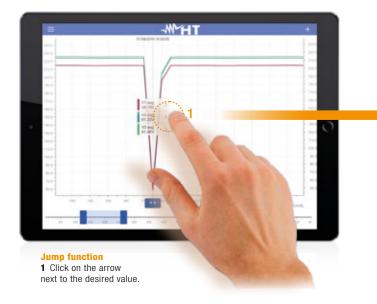
Current and voltage harmonics.



Voltage and current vector diagram.



Zoom on a voltage and current drop.















### COD. METEL HP009023

# HT9023

PROFESSIONAL CLAMP METER FOR MEASURING POWER/HARMONICS WITH WIFI CONNECTION

HT9023 has been designed to measure AC, DC AC+DC current up to 1000A in TRMS reaching CAT IV 600V and CAT III 1000V in compliance with safety standard IEC/EN61010-1. The clamp also measures DC voltage up to 1500V, AC, AC+DC voltage up to 1000V, Active, Reactive and Apparent Power, Power Factor, Energy, voltage/current harmonic analysis up to the 25th with **THD% calculation** in balanced single-phase or three-phase systems. It is also possible to carry out the phase sequence test with 1-terminal. The instrument also detects the events linked to motor starting currents (Dynamic INRUSH) and allows recording each measured electric parameter over time, with the possibility of transferring data via WiFi to Android/iOS devices through the HTAnalysis App or onto PC through the TOPVIEW software. The clamp is provided with a wide graphic dot-matrix screen (128x128pxl) with backlight, in order to allow reading data even in poorly lit environments, and it is provided with an auto power off function to preserve its internal battery.

# **Functions**

- DC, AC + DC TRMS current up to 1000A
- DC voltage up to 1500V
- AC, AC+DC TRMS voltage up to 1000V
- Resistance and Continuity test
- "Voltsense" for AC voltage detection
- Frequency with clamp jaws and leads
- Phase sequence / phase concordance with 1 terminal Measurement/recording of DC power and energy
- Active, reactive, apparent power meas./rec. in single-phase system
- Active, reactive power meas./rec. in single-phase systems
- Power factor measurement/recording in single-phase systems
- Measurement/Recording of voltage/current harmonics up to the 25th and calculation of THD%
- Motor starting current detection (Dynamic INRUSH)
- Data logger function with programmable PI
- Autorange
- Data HOLD
- MAX/MIN/AVG
- PEAK (1ms)
- ZERO
- Backlight
- WiFi for connection to PC and Android/iOS devices
- Auto Power OFF



### **Main features**

Display: dot-matrix 128x128pxl

with backlight

Conversion type: 2x1.5V batteries type AAA LR03 Power supply:

Duration: > 40 ore Internal memory: 2MBytes

(ca. 5g @IP=1min)

PC interface: WiFi

Clamp iaw internal diameter: 45mm

IEC/EN61010-1 Safety:

CAT IV 600V - CAT III 1000V Measurement category: Insulation: double insulation

Pollution level:

Size (LxWxH): 252x88x44mm

Weight (batteries included): 420g



# **Accessories provided**

Pair of test leads
Pair of alligator clips
Windows software for PC connection
Carrying bag
Batteries
ISO9000 calibration certificate
User manual on CD-ROM
Quick user guide

2 It switches to harmonic values in real-time.











XL421

XL422

XL423

XI 424

MAIN MEASUREMENTS	DATA LOGGERS					
TRMS	•	•	•	•		
AC voltage in single-phase/three-phase systems	-	-	• Single-phase	Single-phase / three-phase		
AC current in single-phase/three-phase systems	• Single-phase	Single-phase / three-phase	-	-		
MEMORY AND RECORDING						
Max number of simultaneously selectable parameters	1	3	1	3		
Recording with selectable integration period	1s, 6s, 30s, 1min, 5min	1s, 6s, 30s, 1min, 5min	1s, 6s, 30s, 1min, 5min	1s, 6s, 30s, 1min, 5min		
Indicative memory duration (single-/three-phase in days @ Pl=5min)	455	455 / 1820*	455	455 / 1820*		
Internal memory capacity	1MB	1MB	1MB	1MB		

### ADDITIONAL CHARACTERISTICS

Protection rating	IP65	IP65	IP65	IP65
Measurement category	CAT IV 600V CAT III 1000V			
Power supply	2x Batteries AA	2x Batteries AA	2x Batteries AA	2x Batteries AA
Provided PC interface with software for Windows	•	•	•	•
Size (LxWxH) (mm)	120x80x43	120x80x43	120x80x43	120x80x43
Weight (batteries included)	500g	500g	500g	500g
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HV000421	HV000422	HV000423	HV000424



\* According to battery duration.



ORDER CODE **HV000421** | **HV000422** 

# XL421|XL422

TRMS SINGLE-PHASE AND THREE-PHASE CURRENT DATA LOGGER

XL421 and XL422 are Data Loggers capable of measuring and recording the true root mean square (TRMS) value of AC current up to 2500A AC in, according to the model single-phase or three-phase, electric systems for different applications (evaluation of load currents, rated powers of transformers, etc.). The devices have a comfortable mobile structure with integrated flex clamp jaws which allow surrounding also a big-sized cable or bar. Thanks to a an advanced memory management algorithm it is possible to monitor a system even for a long time. The devices start recording with a sampling period which can be selected through software among 1, 6, 30 and 60 seconds and, when memory is almost full, the previously recorded values are "re-sampled" according to the subsequent value of the sampling period, thus freeing part of the memory; the devices then go on recording new values, using the new measuring interval. In this way, it is possible to keep the device recording up to approximately 1 year according to the model. Each recording is kept stored in the internal memory and can be downloaded and managed by PC always through a dedicated software. A special adhesive strap is also provided with the devices, which makes it possible to place them in any place in the installation where measuring is needed. The high protection rating (IP65) makes these devices fully reliable also under extreme operating conditions.



ORDER CODE **HV000423** | **HV000424** 

# XL423|XL424

TRMS SINGLE-PHASE AND THREE-PHASE VOLTAGE DATA LOGGER

XL423 and XL424 are **Data Loggers** capable of measuring and recording the true root mean square (TRMS) value of Voltage up to 600V AC or, according to the model, in single-phase or three-phase electric systems, for different applications (evaluation of mains voltage, load unbalance, etc.). The devices have a comfortable mobile structure with integrated flex clamp jaws which allow surrounding also a big-sized cable or bar. Thanks to a an advanced memory management algorithm it is possible to monitor a system even for a long time. The devices start recording with a **sampling period** which can be selected through software among 1, 6, 30 and 60 seconds and, when memory is almost full, the previously recorded values are "re-sampled" according to the subsequent value of the sampling period, thus freeing part of the memory; the devices then go on recording new values, using the new measuring interval. In this way, it is possible to keep the device recording up to approximately 1 year according to the model. Each recording is kept stored in the internal memory and can be downloaded and managed by PC always through a dedicated software. A special adhesive strap is also provided with the devices, which makes it possible to place them in any place in the installation where measuring is needed. The high protection rating (IP65) makes these devices fully reliable also under extreme operating conditions.

#### **Functions and characteristics**

- TRMS single-phase current measurement (XL421)
- TRMS three-phase current measurement (XL422)
- Measuring range: 1 ÷ 2500A AC
- Accuracy: ±(1.0%reading+1 digit)
- Resolution: 1A
- Operating frequency: 50±6Hz, 60±6Hz
- Bandwidth: 3200Hz
- Sampling frequency: 64 spots in 20ms
- Integration period: 1s. 6s. 30s. 60s. 5min
- Memory capacity: 1Mbyte
- Serial interface: RS-232
- Integration period......duration in days:

- · Front panel indication: LED diodes
- Power supply: 2x1.5V batteries type AA LR6
- Battery life: >6months (with loaded batteries)
- Safety: IEC/EN 61010-1
- Measurement category: CAT IV 600V (to earth)
- Insulation: Double insulation
- Pollution level: 2
- Mechanical protection index: IP65
- · Max height: 2000m
- · Max diameter of flex clamps: 174mm
- Size (LxWxH): 120x80x43 mm
- Weight (batteries included): approx. 0.5kg
  - \* According to battery duration



### **Included accessories**

VELCRO	Adhesive strap 50x70mm
TOPVIEW2004	Windows software for PC + serial cable C2004
BORSA 2000	Soft carrying bag (XL421)
BORSA75	Soft carrying bag (XL422)
	Batteries
	User Manual



### **Optional accessories**

C2009	RS232_LISR adanter

# 103

#### **Functions and characteristics**

- TRMS single-phase voltage measurement (XL423)
- · AC TRMS three-phase voltage measurement (XL424)
- Measuring range: 0 ÷ 600VAC
- Accuracy: ±(1.0%reading+1 digit)
- Resolution: 0,1V
- Operating frequency: 50±6Hz, 60±6Hz
- Bandwidth: 3200Hz
- Sampling frequency: 64 spots in 20ms
- Integration period: 1s. 6s. 30s. 60s. 5min
- Memory capacity: 1Mbyte
- Serial interface: RS-232
- Integration period......duration in days:

1s............5 (XL423) 1,5 (XL424) 6s........34 (XL423) 8 (XL424) 30s.......170 (XL423) 42 (XL424) 60s.......364\* (XL423) 91 (XL424) 5min ......1820\* (XL423) 455\* (XL424)

- · Front panel indication: LED diodes
- Power supply: 2x1.5V batteries type AA LR6
- Battery life: >6months (with loaded batteries)
- Safety: IEC/EN 61010-1
- · Measurement category: CAT IV 600V (to earth)
- · Insulation: Double insulation
- Pollution level: 2
- Mechanical protection index: IP65
- Max height: 2000m
- Size (LxWxH): mm 120x80x43
- Weight (batteries included): approx. 0.5kg
- \* According to battery duration



### **Included accessories**

KITXL424C	Set of 4 alligator clips
VELCR0	Adhesive strap 50x70mm
TOPVIEW2004	Windows software for PC + serial cable C2004
B0RSA2000	Soft carrying bag
	Batteries and User Manual



## Optional accessories

C2009	RS232-USB adapter
606-IECN	Connector with magnetic terminal





With the latest-generation HT devices it is possible to interface with tablets and smartphones by using the HTanalysis App. HTanalysis is a professional software which allows displaying and consulting, on your mobile devices, measured and recorded data, and then share them with the HTCloud database. HTanalysis allows generating professional reports complete with images, texts, videos and voice notes. By interfacing the device with your mobile device's display, the touch-screen interaction will allow quickly displaying a detailed report of the trend of the recorded quantities.

# GSC60, MacroTestG3, G2, G1 and CombiG2

- Generate reports complete with photos, videos, text and voice notes.
- Archive reports in the HTCloud database.

#### WITH

# SOLAR I-Ve, I-V 500w and I-V400w

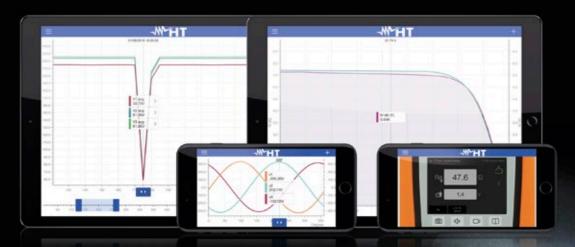
• Display and analyze the I-V curves downloaded from the instrument, attach photos, videos, text and voice notes.

# GSC60, PQA820,

- and PQA819
- Display voltage, current, power, harmonics, THD%, cosphi and frequency.
- Observe in real time all waveforms, vector diagrams and harmonics.
- Archive readings in the HTCloud database.









Install the HTanalysis App to access the HTCloud database to archive and share measured and recorded data with colleagues and partners from all around the world.





















DEVICES LAN NETWORKS









	MACROTEST G3	MACROTEST G2	MACROTEST G1	GSC60	COMBI G2	COMBI 420/421	COMBI 419	M75	M74	JUPITER	NEPTUNE	FULLTEST3
ELECTRIC SAFETY MEASUREMENTS		ELECTRIC VERIFICATI	ONS MAINS ANALYSES		ELECTRIC	VERIFICATIONS MAIN	S ANALYSES	EL	ECTRIC VERIFICATION	DNS TRMS MULTIME	TER	ELECTRIC DEVICES AND ELECTRIC PANELS
TRMS	•	•	•	•	•	•	•	•	•	•	•	•
Insulation with voltage 50, 100, 250, 500, 1000VDC	•	•	-	•	•	•	•	• 250V, 500V	• 250V, 500V	-	•	•
Continuity of protective conductors with 200mA / 10A	• 200mA	• 200mA	• 200mA	• 200mA	• 200mA	• 200mA	• 200mA	• 200mA	• 200mA	-	• 200mA	•
Tripping time of RCDs type B, A, AC Standard, Selective and Delayed up to 1A	•	-	-	•	•	Only A, AC standard and selective	Only A, AC standard and selective	• A = 30mA AC = 300mA Only standard	• A = 30mA AC = 300mA Only standard	Only A, AC standard up to 300mA	-	•
Tripping current of type B, A, AC Standard, Selective	• A, AC = 1A B = 300mA	-	-	• A, AC = 1A B = 300mA	• A, AC = 1A B = 300mA	Only A, AC standard and selective	Only A, AC standard and selective	• A = 30mA AC = 30mA Only standard	• A = 30mA AC = 30mA Only standard	Only A, AC standard 30mA	-	• 1A
Tripping time and current of earth leakage relays type B, A, AC Standard, Selective and Delayed up to 10A	●***	-	-	•***	●***	-	-	-	-	-	-	-
Non-trip earth resistance	•	-	-	⊕***	•	•	•	•	•	•	-	•
Earth resistance by voltammetric method	•	•	•	•	-	-	-	-	-	-	-	-
Earth resistance by stakeless testing method	●**	<b>●</b> **	<b>●*</b> **	<b>●</b> **	-	-	-	-	-	-	-	-
Ground resistivity by 4-wire method	•	•	•	•	-	-	-	-	-	-	-	-
Loop/Line impedance, Phase-Phase, Phase-Neutral, Phase-PE	•	-	-	•	•	•	•	-	-	•	-	•
Loop/Line impedance Phase-Phase, Phase-Neutral, Phase-PE with high resolution (0.1m $\Omega$ )	•*	-	-	•*	•*	•*	•*	-	-	-	-	•
Measurement of percentage voltage drop on the line	•	-	-	•	•	-	-	-	-	-	-	-
Contact voltage	•	-	-	•	•	•	•	•	•	•	-	-
Wire mapping of LAN cables with RJ45 plug	-	-	-	-	-	-	-	•	-	-	-	-
Phase sequence	•	-	-	•	•	•	•	•	•	•	•	-
Leakage current with optional clamp meter	•	-	-	•	•	•	•	•	•	-	•	-
Dielectric strength with test voltage up to 5100V AC	-	-	-	-	-	-	-	-	-	-	-	•
Measurement of discharge time of internal capacitances	-	-	-	-	-	-	-	-	-	-	-	•
Measurement of Polarization Index (PI) and Dielectric Absorption Ratio (DAR)	-	-	-	-	-	-	-	-	-	-	•	-
MAINS ANALYSIS												
Measurement of Voltage, Current, Active, Reactive, Apparent Power	• (1)	• (1)	-	• (3) with Recording	• (1)	• (1)	-	-	-	-	-	• (1)
Measurement of Cosphi, Power Factor	• (1)	• (1)	-	• (3) with Recording	• (1)	• (1)	-	-	-	-	-	• (1)
U/I harmonics up to the 49th +THD% + Voltage anomalies	• 25 <sup>th</sup> no Anomalies	• 25 <sup>th</sup> no Anomalies	-	• (3) with Recording	• 25ª	• 49ª	-	-	-	• 25 <sup>th</sup> no Anomalies	• 25 <sup>th</sup> no Anomalies	-
ADDITIONAL CHARACTERISTICS												
Measurement category	CAT IV 300V	CAT IV 300V	CAT IV 300V	CAT IV 300V to earth max 600 between inputs	CAT III 240V	CAT III 240V	CAT III 240V	CAT III 550V	CAT III 550V	CAT IV 600V CAT III 690V	CAT IV 600V CAT III 1000V	CAT III 300V CAT II 300V
DC/AC TRMS voltage and current, Frequency, Resistance, Continuity with buzzer	-	-	-	-	-	-	-	•	•	•	•	-
AUTOMATIC test (Ra, RCD, Insulation)	•	-	-	-	•	•	•	•	•	-	-	-
Measurement of environmental parameters (°C, °F, %RH, Lux)	•	-	-	with Recording	•	•	-	-	-	-	-	-
Test with remote lead PR400	•	•	•	•	•	•	•	-	-	_	-	-
Help on line on the display	•	•	•	•	•	•	•	-	-	-	-	-
Internal memory	•	•	•	•	•	•	•	-	-	-	_	•
Optical/USB serial port for PC connection	•	•	•	•	•	•	•	-	-	-	-	• USB
Built-in WiFi connection and compatibility with HTANALYSIS App	•	•	•	•	•	-	-	-	-	-	-	-
Size (LxWxH) (mm)	222x162x57	222x162x57	222x162x57	222x162x57	222x162x57	222x162x57	222x162x57	240x100x45	240x100x45	175x85x55	175x85x55	400x300x170
Weight (batteries included)	1.2 kg	1.2 kg	1.2 kg	1.2 kg	1.2 kg	1.2 kg	1.2 kg	450g	450g	420g	420g	15kg
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HV005036	HV005038	HV005037	HV000060	HV0000G2	HV004210 (421) HV000420 (420)	HV000419	HV000075	HV000074	HROOJUPI	HROONEPK	HV000003







ORDER CODE HVOODOO

A UNIQUE INSTRUMENT FOR MAINS ANALYSIS AND VERIFICATION OF ELECTRIC SAFETY

GSC60 is the only device in the world which can perform the verification of electric safety and the analysis of single-phase/threephase mains and electric consumption. IT has been designed to make the safety of electric system visible, understandable and assessable in a simple and quick way. Thanks to the new operating system HTOS™ 2.0, once measurement is complete, the operator receives from the device a message OK - NOT OK which communicates whether the part of the tested system is compliant and, therefore, safe. The user interface, totally renewed in HTOS™, allows setting and carrying out measurements in a few simple steps. All recorded data are saved and, for each kind of test, it is possible to create folders and subfolders and, with the virtual keyboard, add comments and notes. But, even better, through the FREE APP HTAnalysis, compatible with iOS and Android, the measurements carried out can be transferred via Wi-Fi onto smartphone or tablet and, thanks to this function, it is possible to attach a picture, a video or a voice note to every measurement. GSC60 is also a three-phase mains and electric consumption analyzer which is unique thanks to the APP HTAnalysis.





Power supply and on-board battery charger.

Flexible jaws for current measurement.

# Global Connection.

Thanks to WiFi capability you can easily transfer data and get through App HTANALYSIS™. You can check your test results, save them on **HTCloud™** or send them by email. Your working team will be always in touch.

# Full Batteries at All Times.

**GSC60** is so compact that a new power technology had to be designed to charge batteries. You just need to power the unit and it will charge the batteries. Or you can always start working by simply replacing them with standard AA batteries.

### 142/999 01.07.2016 16:34 IMPIANTO 1 IMPIANTO 2 \_ P 60 POA mi + - IMPIANTO 3

PQA REC 01.07.2016 16:34

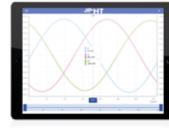
# **HTOS**<sup>™</sup> Managing the Power.

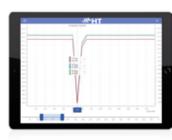
Get access through touchscWreen to your measurement. Quickly set measurement parameters and press GO. Here it is, HTOS™, designed to make your work easier. Its' result options **OK** and **NOT OK** as well as its **Help OnLine** will make it your best partner and save you time.





Real-time phasors





Example of display Recording made

# Example of display

Harmonics V-I

Example of display Waveforms V-I

# **Functions of** Electric safety

- Insulation with test voltage 50, 100, 250, 500, 1000 VDC
- Continuity of protective conductors with 200mA
- · Earth resistance by voltammetric method
- Resistance of the earth rods with clamp
- Ground resistivity by 4-wire method
- Overall earth resistance with no residual current protection tripping
- Line/Loop, Phase-Phase, Phase-Neutral, Phase-PE impedance
- Line/Loop, Phase-Phase, Phase-Neutral, Phase-PE impedance with high resolution (0.1 m $\Omega$ ) with optional accessory IMP57
- · Assumed short-circuit current
- · Contact voltage
- Tripping time of General, Selective and Delayed RCDs
- Test current A, AC max 1A and type B max 300mA
- Test on RCDs with separate clamp jaw up to 10A
- RCD tripping current (Ramp test)
- Phase sequence
- Measurement of percentage voltage drop on the lines
- Test with remote switch probe PR400
- Leakage current (with optional clamp HT96U)
- Help on line on the display
- · Internal memory for measured data saving
- Optical/USB serial port for PC connection · Built-in WiFi communication interface

- 9 types of electric systems available: 1Ф-2 wires, 1Ф-centr. socket, 3Ф-3 wires, 3Ф-Aron, 3Ф-∆ Open, 3Ф-Y Open, 3Ф-2 el. 1/2,
  - AC TRMS voltage in single-/three-phase systems up to 600V

**Functions of Mains analysis** 

- AC TRMS current in single-/three-phase systems up to 3000A
- Active, Reactive and Apparent Power/Energy
- Cosphi and Power Factor
- · Voltage, Current, DC Power
- Measurement of neutral current

3Ф-4 wires Y, 3Ф-High Leg.

- Voltage dips and peaks on 20ms @50hz
- Voltage unbalance (NEG%, ZERO%)
- Measurements using external TA and TV
- Voltage/current waveforms
- Histograms of voltage/current harmonics and THD%
- · Voltage/current vector diagram
- · Periodical recording with selectable PI
- Max number of simultaneously selectable quantities 632
- Voltage/current harmonic analysis up to the 49<sup>th</sup>
- · Calculation and recording of voltage/current THD%
- · Indication of recording duration

## Included accessories

HTFLEX33E	AC flexible clamp for currents up to 3000A, diameter 174mm, 4 pcs
C2033X	3-banana to Schuko plug cable
UNIVERSALKITG3	Set of 4 cables, 4 alligator clips and 3 test leads
KITTERRNE	Soft carrying bag containing 4 cables and 4 earth rods
PR400	Remote switch probe
PT400	Stylus
VA500	Rigid carrying case
YABAT0003000	Rechargeable NiMH battery 1.2V, AA, 6 pcs
A0060	Power Supplier\Battery Charger 100/230Vac - 15Vdc, 10W CAT IV
C7051	Power cable Shuko-Europlug ground-less 1.50mt
SP-0500	Set for slinging the instrument over one's shoulder
TOPVIEW2006	PC software and optical-to-USB connection cable C2006
	Quick user's guide
	User's manual on CD-ROM
	Calibration certificate ISO9000



# **Optional accessories**

HTFLEX35	AC flexible clamp for currents up to 3000A, diameter 274mm
HT96U	Clamp transducer AC 1-100-1000A/1V, diameter 54mm
HT98U	Clamp transducer DC 1000A/1V, diameter 50mm
HP30C2	Clamp transducer AC 200-2000A/1V, diameter 70mm
HP30C3	Clamp transducer AC 200-2000A/1V, diameter 70mm
HP30D1	Clamp transducer DC 1000A/1V, diameter 83mm
HT4003	Clamp transducer 400A AC, diameter 30mm
HT4004	Clamp transducer 100A AC/DC, diameter 32mm
HT4005N	Clamp transducer AC 0÷5A, 0÷100A diameter 20mm
HT4005K	Clamp transducer 200A AC, diameter 40mm
HT903	3x1-5A/1V box for external TA connection
IMP57	High resolution impedance measurement adapter
T2100	Earth ground clamp transducer for Stakeless measurements
606-IECN	Magnetic adapter for connection to screw heads
1066-IECN	Black connector for extensions (4mm banana)
RCDX10	Accessory for industrial RCDs up to 10A
VA504	Rigid transport case for device and clamp T2100
HT52/05	Transducer for temperature/humidity measurement
HT53/05	Transducer for illuminance measurement

















# MACROTESTG3

ADVANCED MULTIFUNCTION DEVICE FOR VERIFICATION OF ELECTRIC SAFETY OF DOMESTIC AND INDUSTRIAL ELECTRIC SYSTEMS (IEC/EN61557-1)

- > All verifications of electric safety provided for by standards IEC/EN61557-1
- > Advanced Loop Verification of magnetothermal protections, fuses and cable sizes.
- **Earth resistance** by **voltammetric method** with 2 or 3 poles in TT. TN and IT systems. non-trip earth resistance measurement and earth resistance with stakeless testing method with **clamp meter** T2100 (optional). Ground resistivity.
- Measurement of electric parameters in **single-phase** installations (V, I, W, VAR, VA, PF)
- > **Test of RCDs** type A, AC, B up to 1A, earth leakage relays with test current up to 10A (with optional accessory RCDX10).
- Measurement of insulation resistance.
- Measurement of continuity of protection conductors.
- Verification of phase sequence (SEQ) and leakage currents.

**Main features** 

Measurement of environmental parameters through external probes.

MacrotestG3 is a revolutionary device.

Its TFT colour display with touch-screen allows using this device in a completely new manner. MacrotestG3 makes available on its display all possible variables to obtain a perfect measurement; your task will only be to "touch" what you really want to measure: then simply leave the rest to Macrotest G3's micro-processor!

The device complies with all requirements as regards the safety of electric systems: test of RCDs type A, AC also up to 1000 mA and type B; insulation, continuity, earth resistance tests (this also with the aid of the optional clamp T2100).

With the appropriate programming guided by the touch-screen system, this device can test the breaking capacity, tripping current, I2t relevant to magneto-thermal switches (MCB) with curves B, C, D, K and fuses type gG and aM!

The device can be used with external probes for measuring environmental parameters such as air temperature/humidity, illuminance (Lux) further to measuring leakage currents, cosphi, power and harmonics, Loop/Line impedance and calculating the prospective short-circuit current with high resolution (0.1mOhm) in TN systems with use of optional accessory IMP57

Cutting-edge management of measurement with indication, at the end of each safety test, of compliance or non-compliance with requirements with simple symbols OK or NOT OK.





with optional clamp HT96U.

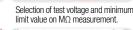


with clamp T2100.





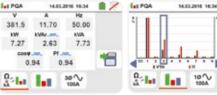
and tripping current





Zeroloon: compensation of the resistance of the test cables used for Loop impedance measurement

Autosequence: automatic sequence of measurements of Overall earth resistance, RCD test and Insulation L-PE, N-PE.



Power measurement: harmonics





STD L-PE





Earth resistance: result OK

# **Functions**

- AUTO test (overall earth resistance test, RCD tests, insulation tests) on the outlets to be tested
- Insulation with voltage 50, 100, 250, 500, 1000VDC
- Continuity of protective conductors with 200mA
- Earth resistance by voltammetric method Earth resistance with stakeless testing method
- Ground resistivity by 4-wire method
- Non-trip earth resistance with no RCD tripping
- Line/Loop impedance, Phase-Phase, Phase-Neutral, Phase-PE
- Line/Loop impedance, Phase-Phase, Phase-Neutral,
- Phase-PE with high resolution (0.1 mΩ with optional accessory IMP57) ZEROLOOP function for a compensation of the resistance of the test cables used for Loop measurement
- Prospective short-circuit current
- Tripping time of General, Selective and Delayed RCDs.
- Test current A, AC max 1A and type B max 300mA.
- Test on earth leakage relays up to 10A
- RCD tripping current (Ramp test)
- Measurement in AUTOMATIC sequence of Overall earth resistance, RCD test, Insulation (AUTOTEST)
- Phase sequence
- Measurement of percentage voltage drop on the lines
- Measurement with use of remote lead (with optional accessory PR400) Leakage current (with optional clamp HT96U
- Measurement of electric parameters (V, I, W, VAR, VA, Wh, cosphi) Harmonic analysis V, I and THD%
- Help on line on the display
- · Internal memory for measured data saving
- Optical/USB serial port for PC connection
- 46 Integrated WiFi communication interface

#### 6x1.2V rechargeable batteries type AA NiMH Power supply:

or 6x1.5 type AA alkaline

Battery life: > 550 test (alkaline)

Resistive touch screen, colour LCD, Display:

resolution 320x240 pxl

Memory: 999 locations, 3 levels of markers

PC interface: optical/USB and WiFi

IEC/EN61010-1, double insulation

Operating humidity: <80%RH Operating temperature: 0 ÷ 40°C Storage humidity: <80%RH Storage temperature: -10 ÷ 60°C

Measurement category:

CAT III 240V, max 415V between inputs

Pollution level:

2

Reference standard: IEC/EN61557-1-2-3-4-5-6-7 Size (LxWxH): 225 x 165 x 75 mm

1.2 kg

Weight (batteries included):

### Included accessories

62033X	Cable with 3-terminal Shuko plug
UNIVERSALKITG3	Set of 4 cables, 4 alligator clips, 3 leads
KITTERRNE	Bag with 4 cables + 4 metal probes
PR400	Remote lead for test activation
PT400	Touch-screen pen
VA507	Rigid transport case for device + accessories
YABAT0003000	1.2V NiMH AA rechargeable battery, 6 pieces
YABAT0004001	Battery charger for 6 AA/AAA batteries
TOPVIEW2006	Management software + optical/USB C2006 cable
ZEROLOOP	Accessory for zeroing the cable in Loop measurement
	Quick user guide
	User manual on CD-ROM
	ISO9000 calibration certificate



# **Optional accessories**

HT96U	AC clamp for leakage current, 1-100-1000A/1V, diameter 54mm
HT4005K	Clamp AC 200A/1V, diameter 40mm
IMP57	Accessory for measuring Loop impedance with high resolution
T2100	Clamp for measuring the resistance of earth rods
SP-0400	Set for slinging the instrument over one's shoulder
606-IECN	Adapter for leads with magnetic terminal
1066-IECN	Connector for cable extension banana 4mm
RCDX10	Accessory for industrial earth leakage relays up to 10A
VA500	Rigid transport case for device and accessories
VA504	Rigid carrying case for device and clamp T2100
HT52/05	Probe for measuring temperature/humidity
HT53/05	Probe for illuminance measurement

# MULTIFUNCTION INSTALLATION TESTERS











ORDER CODE **HV005037** | **HV005038** 

# MACROTESTG1 MACROTESTG2

ADVANCED MULTIFUNCTION DEVICE FOR VERIFICATION OF ELECTRIC SAFETY OF DOMESTIC AND INDUSTRIAL ELECTRIC SYSTEMS (IEC/EN61557-1)

- Earth resistance by voltammetric method with 2 or 3 spots in TT, TN and IT systems, overall earth resistance measurement and with clamp meter T2100 (optional).
- Ground resistivity.
- Measurement of electric parameters in singlephase installations (V, I, W, VAR, VA, PF)
- Measurement of insulation resistance (Macrotest G2).
- > Measurement of **continuity** of protection conductors.

MacrotestG2 and MacrotestG1 fully take advantage of the touch-screen technology developed for MacrotestG3 and, hence, of all its settings, but their application range is for measuring insulation resistance and earth resistance by voltammetric method, also with optional clamp T2100 and, finally, for continuity measurement of protective conductors. Cutting-edge management of measurement with indication, at the end of each safety test, of compliance or non-compliance with requirements with simple symbols OK o NOT OK.

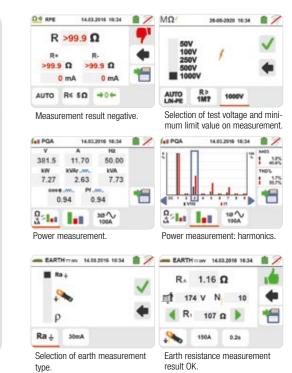




Use on tablets through the HTAnalysis™ App.









Start/stop measuring with remote lead PR400.



- Insulation with voltage 50, 100, 250, 500, 1000VDC (Macrotest G2)
- · Continuity of protective conductors with 200mA
- Earth resistance by voltammetric method
- Earth resistance with stakeless testing method
- · Ground resistivity by 4-wire method
- Measurement with use of remote lead (with optional accessory PR400)
- Measurement of electric parameters (V, I, W, VAR, VA, Wh, cosphi)
- Harmonic analysis V, I and THD%
- · Help on line on the display
- Internal memory for measured data saving
- Optical/USB serial port for PC connection
- Integrated WiFi communication interface



### **Main features**

**Power supply:** 6x1.2V rechargeable batteries type AA

NiMH or 6x1.5 type AA alkaline

**Battery life:** > 550 test (alkaline)

Display: Resistive touch screen, colour LCD,

resolution 320x240 pxl

**Memory:** 999 locations, 3 levels of markers

PC interface: optical/USB and WiFi

Safety: IEC/EN61010-1, double insulation

Measurement category: CAT III 240V, max 415V between inputs

1.2 kg

Pollution level:

Reference standard: IEC/EN61557-1-2-4-5
Size (LxWxH): 225x165x75 mm

Weight

(batteries included):



## **Included accessories**

UNIVERSALKITG3	Set of 4 cables, 4 alligator clips, 3 leads
KITTERRNE	Bag with 4 cables + 4 metal probes
PT400	Touch-screen pen
VA507	Rigid transport case for device + accessories
YABAT0003000	1.2V NiMH AA rechargeable battery, 6 pieces
YABAT0004001	Battery charger for 6 AA/AAA batteries
TOPVIEW2006	Management software + optical/USB C2006 cable
	Quick user guide and User manual on CD-ROM
	ISO9000 calibration certificate



# **Optional accessories**

T2100	Clamp for measuring the resistance of earth probes
SP-0400	Set for slinging the instrument over one's shoulder
606-IECN	Adapter for leads with magnetic terminal
1066-IECN	Connector for cable extension banana 4mm
PR400	Remote lead for test activation
HT4005K	Clamp AC 200A/1V, diameter 40mm
VA500	Rigid transport case for device + accessories
VA504	Rigid transport case for device with accessories + clamp T2100

#### **MULTIFUNCTION** INSTALLATION TESTERS



















ORDER CODE HVOODOG2

# OMBIG2

ADVANCED MULTIFUNCTION DEVICE FOR VERIFICATION OF ELECTRIC SAFETY OF DOMESTIC AND INDUSTRIAL ELECTRIC SYSTEMS (IEC/EN61557-1)

- > All verifications of electric safety provided for by standards IEC/EN61557-1.
- > Advanced Loop Verification of magnetothermal protections, fuses and cable sizes.
- Measurement of electric parameters in **single-phase** installations (V, I, W, VAR, VA, PF)
- > Test of RCDs type A, AC, B up to 1A, and earth leakage relays with test current up to 10A (with optional accessory RCDX10).
- Measurement of insulation resistance.
- Measurement of continuity of protection conductors.
- Verification of phase sequence (SEQ) and leakage currents.
- Measurement of environmental parameters through external probes.

**COMBIG2** is used for checking the safety of domestic and industrial electric systems (IEC/EN61557-1).

Thanks to its building characteristics, the type of setting and the multiple applications as regards the documentation it is capable of producing, this device can satisfy even the most demanding technician and the most rigorous verifier.

Its TFT colour display with touch-screen allows using this device in a completely new manner. COMBIG2 makes available on its display all possible variables to obtain a perfect measurement; your task will only be to "touch" what you really want to measure: then, simply leave the rest to COMBIG2's micro-processor!

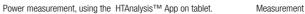
The device complies with all requirements as regards the safety of electric systems: test of RCDs type A, AC also up to 1000 mA and type B; insulation, continuity, earth resistance tests directly on the power outlet without causing the RCDs' tripping.

With the appropriate programming guided by the touch-screen system, this device can test the breaking capacity, tripping current, 12t relevant to magneto-thermal switches (MCB) with curves B, C, D, K and fuses type gG and aM!

Combined with optional clamp HT96U it is capable to carry out and record measurements of leakage current, power, cosphi, harmonics, THD% and frequency. This device has been devised for use together with optional accessories which widen its operating fields: e.g. HT53/05 for measuring lux, HT52/05 for measuring temperature and humidity and RCDX10 for testing earth leakage relays up to 10A.

Cutting-edge management of measurement with indication, at the end of each safety test, of compliance or non-compliance with requirements with simple symbols **OK** o **NOT OK**. Finally, thanks to the brand new HTAnalysis App, free to download for iOS and Android systems, COMBIG2 is capable of transferring measured and recorded data onto tablets and smartphones, thus giving the operator the possibility to customize and share through HtCloud the result of their tests.

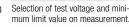






Measurement of leakage current with optional clamp HT96U.





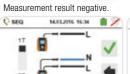


Zeroloop: compensation of the re- Autosequence: automatic sistance of the test cables used for sequence of measurements of Loop impedance measurement.

Overall earth resistance, RCD test and Insulation L-PE, N-PE.

N-PE >999 M7







Selection of measurement type of phase sequence.

1T

Measurement of leakage current with optional clamp HT96U



General screen. Advanced Loop.

Negative result of breaking capacity test

KA 30KA



- AUTO test (overall earth resistance test, RCD tests, insulation tests) on the outlets to be tested.
- Insulation with voltage 50, 100, 250, 500, 1000VDC
- Continuity of protective conductors with 200mA
- Non-trip earth resistance
- Line/Loop impedance, Phase-Phase, Phase-Neutral, Phase-PE
- · Line/Loop impedance, Phase-Phase, Phase-Neutral, Phase-PE with high resolution (0.1 m $\Omega$ )
- ZEROLOOP function for a compensation of the resistance of the test cables used for Loop measurement.
- Prospective short-circuit current
- Contact voltage
- Tripping time of General, Selective and Delayed RCDs.
- Test current A, AC max 1A and type B max 300mA.
- Test on RCDs with separate clamp jaw up to 10A
- RCD tripping current (Ramp test)
- · Measurement in AUTOMATIC sequence of Overall earth resistance, RCD test, Insulation (AUTOTEST)
- Phase sequence
- Measurement of percentage voltage drop on the lines
- Measurement with use of remote lead (with optional accessory PR400)
- · Leakage current (with optional clamp HT96U
- · Measurement of electric parameters (V, I, W, VAR, VA, Wh, cosphi)
- Harmonic analysis V, I and THD%
- · Help on line on the display
- Internal memory for measured data saving
- Optical/USB serial port for PC connection

#### PC interface: Optical/USB and WiFi Safety: IEC/EN61010-1, double insulation

Resistive touch screen, colour LCD,

999 locations, 3 levels of markers

or 6x1.5 type AA alkaline

> 550 test (alkaline)

resolution 320x240 pxl

6x1.2V rechargeable batteries type AA NiMH

Operating humidity: <80%RH 0 ÷ 40°C Operating temperature: Storage humidity: <80%RH Storage temperature: -10 ÷ 60°C

**Main features** 

Measurement CAT III 240V, max 415V between inputs category:

Pollution level:

Power supply:

Battery life:

Display:

Memory:

Reference standard: IEC/EN61557-1-2-3-4-5-6-7

1.2 kg

Size (LxWxH): 225x165x75mm

(batteries included):

Weight

# **Included accessories**

C2033X	Cable with 3-terminal Schuko plug
UNIVERSALKITCOMBI	Set of 3 cables, 3 alligator clips, 3 leads
PT400	Touch-screen pen
VA507	Rigid transport case for device + accessories
TOPVIEW2006	Management software + optical/USB C2006 cable
ZEROLOOP	Accessory for zeroing the cable in Loop measurement
	Quick user guide
	User manual on CD-ROM
	ISO9000 calibration certificate



# **Optional accessories**

HT96U	AC clamp for leakage current, 1-100-1000A/1V, diameter 54mm
IMP57	Accessory for measuring Loop impedance with high resolution
SP-0400	Set for slinging the instrument over one's shoulder
606-IECN	Adapter for leads with magnetic terminal
1066-IECN	Connector for cable extension banana 4mm
RCDX10	Accessory for industrial RCDs up to 10A
YABAT0003000	1.2V NiMH AA rechargeable battery, 6 pieces
YABAT0004001	Battery charger for 6 AA/AAA batteries
PR400	Remote lead for test activation
VA500	Rigid transport case for device and accessories
HT52/05	Probe for measuring temperature/humidity
HT53/05	Probe for illuminance measurement

50 • Integrated WiFi communication interface







ORDER CODE **HV000420** | **HV004210** 

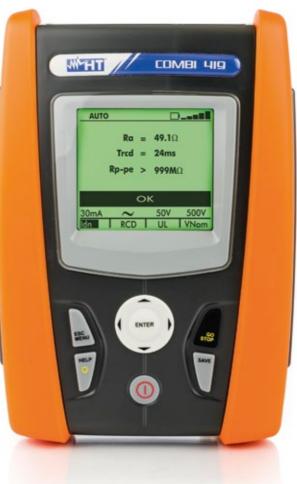
# COMBI420|421

MULTIFUNCTION DEVICES FOR TESTS ON DOMESTIC AND INDUSTRIAL SYSTEMS WITH MAINS ANALYSIS

COMBI421 and COMBI420 carries out tests of electric systems and therefore measurements of overall earth resistance, tests on RCDs type A and AC up to a rated current of 1A (up to 650mA for COMBI420), Insulation, Continuity and short-circuit currents, it also allows measuring and saving environmental parameters (illuminance, temperature), leakage current and the electric quantities active power, harmonics, power factor on single-phase systems and, last but not least, it offers the possibility of checking phase sequence only using one lead. The internal memory allows saving the measurements carried out in order to subsequently transfer them onto the PC through the serial connection.

The instruments has been provided with the innovative AUTO function: by selecting this function and only setting the value of RCD current, the models, connected to a power outlet, carries out tests of overall earth resistance, on RCDs and insulation tests in a sequence. At the end of the test, the device shows all results with the indication of compliance or non-compliance with the standards with simple symbols **OK** or **NOT OK**.





ORDER CODE HV000419

# COMBI419

MULTIFUNCTION DEVICE FOR TESTS
ON DOMESTIC AND INDUSTRIAL SYSTEMS

COMBI419 carries out tests of electric systems in compliance with IEC/EN61557-1 and therefore measurements of non-trip earth resistance, tests on RCDs type A and AC up to a rated current of 1A, Insulation, Continuity and short-circuit currents, it also allows measuring and saving leakage current and offers the possibility of checking phase sequence only using one lead.

The internal memory allows saving the measurements carried out in order to subsequently transfer them onto the PC through the USB connection.

In order to make it versatile and fully functional for any kind of end user, the device has been provided with the innovative **AUTO** function: by selecting this function and only setting the value of RCD current, COMBI 419, connected to a power outlet, carries out tests of non-trip earth resistance, on RCDs and insulation tests in a sequence. At the end of the test, the device shows all results with the indication of compliance or non-compliance with the standards with simple symbols **OK** or **NOT OK**.

### **Functions and characteristics**

- Continuity of protective conductors with 200mA
- Insulation with 50, 100, 250, 500, 1000VDC
- Tripping time of type A, AC general and Selective RCDs up to 1A (up to 650mA for COMBI420)
- Tripping current of type A, AC general up to 650mA
- Loop/Line impedance P-N, P-P, P-PE also with high resolution (0.1mΩ) with optional accessory IMP57
- Non-trip earth resistance
- Contact voltage
- Phase sequence
- AUTO test (non-trip earth resistance, RCD and insulation test) on the outlets to be tested
- Power and cosphi measurements in single-phase systems
- Voltage and current harmonics up to the 49<sup>th</sup> with THD%
- Measurement of environmental parameters (temperature, humidity, illuminance) with optional probes
- Measurement of leakage currents (with optional clamp HT96U)
- Activation of measurements with optional remote lead PR400
- Context help on the display
- Storage of results
- Optical/USB interface for PC connection
- Safety: IEC/EN61010-1, IEC/EN61557-1-2-3-4-6-7
- Measurement category: CATIII 240V (to earth), max 415V between inputs
- Power supply: 6x1.5V batteries type AA, LR6, AM3, MN 1500
- Size (LxWxH): 235x165x75mm
- Weight (batteries included): 1.2 kg



### **Included accessories**

UNIVERSALKITCOMBI	Set of 3 cables + 3 alligator clips + 3 leads		
C2033X	3-terminal cable with Schuko plug		
BORSA75	Soft carrying bag		
	User manual on CD-ROM and Quick guide for use		
	ISO9000 calibration certificate		



### **Optional accessories**

TOPVIEW2006	Windows software for PC + optical/USB cable
IMP57	Accessory for measuring Loop impedance with high resolution $(0,1m\Omega)$
HT4005K	Standard AC 200A/1V clamp, diameter 40mm
HT4005N	Standard AC 5-100A/1V clamp, diameter 20mm
HT96U	AC clamp for leakage current, 1-100-1000A/1V, diameter 54mm
SP-0400	Set for slinging the instrument over one's shoulder
PR400	Remote lead for test activation
VA500	Rigid transport case for device and accessories
HT52/05	Probe for measuring temperature/humidity
HT53/05	Probe for illuminance measurement

# **T**

## **Functions and characteristics**

- Continuity of protective conductors with 200mA
- Insulation with 50, 100, 250, 500, 1000VDC
- Tripping time of type A, AC general and Selective RCDs up to 1A
- Tripping current of type A, AC general up to 650mA
- Loop/Line impedance P-N, P-P, P-PE also with high resolution (0.1mΩ) with optional accessory IMP57
- · Non-trip earth resistance
- Contact voltage
- Phase sequence
- AUTO test (non-trip earth resistance, RCD and insulation test) on the outlets to be tested
- Measurement of leakage currents (with optional clamp HT96U)
- Activation of measurements with optional remote lead PR400
- Context help on the display
- Storage of results
- Optical/USB interface for PC connection
- Safety: IEC/EN61010-1, IEC/EN61557-1-2-3-4-6-7
- Measurement category: CATIII 240V (to earth), max 415V between inputs
- Power supply: 6x1.5V batteries type AA, LR6, AM3, MN 1500
- Size (LxWxH): 235x165x75mm
- Weight (batteries included): 1.2 kg



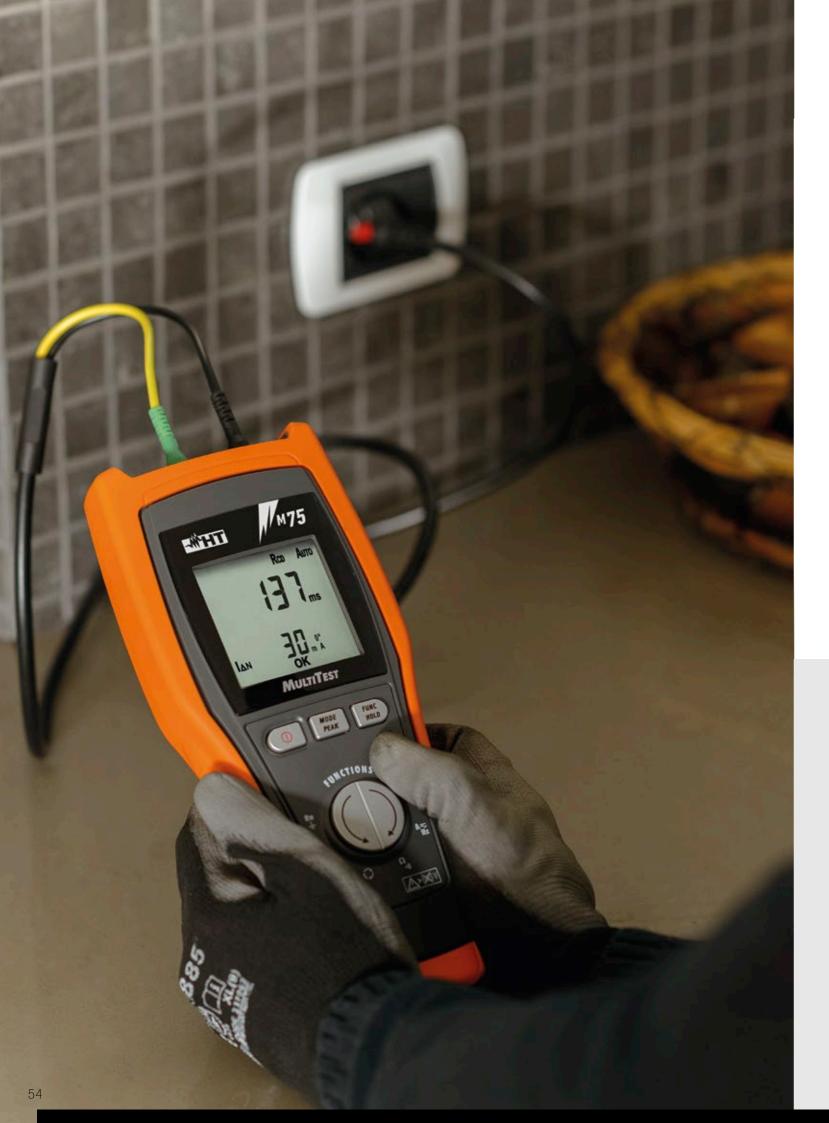
# **Accessories provided**

UNIVERSALKITCOMBI	Set of 3 cables + 3 alligator clips + 3 leads
C2033X	3-terminal cable with SHUKO plug
BORSA75	Soft carrying bag
	User manual on CD-ROM and Quick guide for use
	ISO0000 calibration certificate



# Optional accessories

TOPVIEW2006	Windows software for PC + optical/USB cable
IMP57	Accessory for measuring Loop impedance with high resolution
HT4005K	Standard AC 200A/1V clamp, diameter 54mm
HT4005N	Standard AC 5-100A/1V clamp, diameter 20mm
HT96U	AC clamp for leakage current, 1-100-1000A/1V, diameter 54mm
SP-0400	Set for slinging the instrument over one's shoulder
PR400	Remote lead for test activation
VA500	Rigid transport case for device and accessories









ORDER CODE HV000075 | HV00075L

# M75|M74

DEVICES FOR SAFETY TESTSWITH TRMS MULTIMETER FUNCTIONS AND TEST OF CABLE MAPPING (ONLY M75) ON LAN RJ-45 NETWORKS

M75 is the mobile device par excellence!

HT suggests operators who mainly work on domestic installations to **ALWAYS** have M75 at hand. Here's the reason why: it is very easy to use, very small in size and it **fully automatically** carries out all necessary tests to establish COMPLIANCE (and hence ensure SAFETY) of a domestic electric system.

**ALWAYS using it before starting** working on an already existing system the operator does not know well and **ALWAYS using it at the end of the job** will guarantee the necessary safety to both operators and users of the electric systems!

Thanks to its **small size**, this device offers many operating opportunities. M75 is used for testing the safety of electric systems, so for **measuring overall earth resistance**, **testing RCDs type A and AC**, **insulation and continuity**.

In order to make it versatile and fully functional for any kind of end user, the device has been provided with the innovative **AUTO**: function: by selecting this function and only setting the value of RCD current, M75, connected to a power outlet, carries out **tests of overall earth resistance**, **RCD tests and insulation tests in a sequence**. At the end of the test, the device shows all results with the indication of compliance or non-compliance with the standards with simple symbols **OK** or **NOT OK**.

This innovative product also offers the following functions: TRMS multimeter for AC/DC voltage, AC/DC current (with external clamp), Resistance measurement, Test on LAN network cables, Test of phase sequence with a single lead.



### **Functions and characteristics**

Continuity of protective conductors with 200mA

-#HT

MULTITEST

MODE FUNC

- Insulation with 250,500VDC
- Tripping time on General RCDs type AC (up to 300mA) and type A (30mA)
- Tripping current on General RCDs type AC and A (30mA)
- Non-trip earth resistance
- AUTO function (non-trip earth resistance test, RCD tests, insulation tests)
- Phase sequence with 1 and 2 terminals
- Full test on cable mapping of LAN networks with RJ45 (only M75)
- · DC/AC TRMS voltage
- DC/AC TRMS current
- · Resistance and Continuity test
- Data HOLD, MAX/MIN/AVG
- Measurement of voltage and current PEAK
- Measurement of leakage currents (with optional clamp HT96U)
- Safety: IEC/EN61010-1
- · Measurement category: CATIII 550V
- Power supply with AA batteries 4x1.5V
- Size (LxWxH): 240x100x45 mm
- Weight (batteries included): approx. 450 g



### Included accessories

KIT0075	Set of 2 cables with leads + 2 alligator clips
C2075	2-terminal cable with Schuko plug
HT4003	Standard 400A/1V clamp (only M75)
CH1	Remote unit LAN #1 (only M75)
CH2	Remote unit LAN #2 (only M75)
YAAMS0000000	(3x) patch LAN RJ45 cable (only M75)
BORSA75	Soft carrying bag
	User manual on CD-ROM, calibration certificate ISO9000 and Quick user guide



# **Optional accessories**

HT96U	Standard 1-100-1000A/I V clamp, diameter 54 mm
HT4005K	Standard 5-100A AC/IV clamp
HT4004N	Standard 10-100A DC/IV clamp
NOCANBA	Adapter for connecting HT96U, HT4004, HT4005N
REM 3,4,5,6,7,8	Single remote LAN unit, choose between no. 3, 4, 5, 6, 7, 8. (only M75)
REM38	Kit of 6 remote units (no. 3, 4, 5, 6, 7, 8) (only M75)













ORDER CODE HV000003

MULTIFUNCTION DEVICE FOR SAFETY TESTS ON SWITCHBOARDS AND MACHINES ACCORDING TO IEC/EN60204-1:2006 AND IEC/EN61439-1

- Verification of dielectric strength with test voltage up to 5100V in compliance with the prescriptions of new standard IEC/EN61439-1
- Verification of protection against indirect **contact** in compliance with the prescriptions of standard IEC/EN 60204-1:2006
- >Continuity of protective conductors (test current 200mA ÷ 25A)
- > Verification of RCD tripping (RCD AC, A, B) up to 1A
- >Measurement of Non-trip earth resistance
- > Verification of coordination of magneto-thermal protections (MCB curves B, C, D, K) and fuses (qG, aM)
- Insulation resistance with test voltage up to 1000V
- Verification of residual voltage on capacitive elements
- > Measurement of **leakage current** through the outlet and through optional clamp (HT96U)
- > Functional test through outlet (power, current)
- Phase sequence
- > Tests in automatic sequence: possibility to program a sequence of tests with automatic start up to a maximum of 8.

207V ÷ 253V / 50-60Hz

LCD colour "touch-screen" display

USB (PC, pen drive, printers, etc.)

IEC/EN61557-1-2-3-4-13-14

IEC/EN60204-1:2006

CAT III 300V (safety test)

CAT III 300V (functional test)

with fuses, at input

and Bluetooth™

IEC/EN61010-1

IEC/EN61439-1

IEC/EN60335-1 EN50106

400x300x170mm

15 kg

internal, 999 locations

HT offers a cutting-edge device to carry out all measurements required by the new laws as regards tests to be performed on electric switchboards and machines IEC/EN60204-1:2006 and IEC/EN61439-1

Further to measurements of protective conductors' continuity, insulation and dielectric strength, FULLTEST3 is capable of carrying out tests on RCDs type A, AC and B, General, Selective and Delayed, measurements of Line/Loop **impedance** also with high resolution  $0.1m\Omega$  (with optional accessory IMP57), measurement of non-trip earth resistance and leakage current with clamp transducer. It can also carry out test on breaking capacity, protection tripping, I2t tests relevant to magneto-thermal circuit breakers in curve B, C, D, K and fuses type qG and aM. The device is also provided with a "touchscreen" colour display and 3 USB ports for connection to PC, USB pen drive, USB printers and possible bar code readers.



FULLTEST at work

Compact USB printer

with rechargeable battery (Optional)







IMP57 (Optional)



RCDt/0.5IAN ms

2-wire continuity test



4-wire continuity test

Measurement of Loop impedance





Dielectric strength test

**HVFLASH** 

Residual voltage measurement



FT3R-GLP (Optional)

FT3RMTCT (Optional)



# Included accessories

	Integrated power supply cable
2317-IECIV-200-R	Test cable 2.5mm <sup>2</sup> , 2m, red, 2 pieces
2310-IECIV-200-B	Test cable 0.75mm <sup>2</sup> , 2m, blue
2310-IECIV-200-V	Test cable 0.75mm <sup>2</sup> , 2m, green
2310-IECIV-200-N	Test cable 0.75mm <sup>2</sup> , 2m, black, 2 pieces
C2033X	Cable with 3-terminal Shuko plug
FT3HVPRB1	1 cable banana-alligator clip + 1 cable banana-lead 2m HV
404-IECN	Measuring lead CAT III, 3 pieces
5004-IECN	Alligator clip, 4 pieces
TOPVIEW2007	Windows software + USB cable
FT3BRSN	Soft carrying bag for accessories.
	ISO9000 calibration certificate
	User Manual
	Quick user guide
	User manual on CD-ROM

# **Optional accessories**

_	IMP57	Accessory for measuring Loop impedance with high resolution
-	HT96U	Clamp for measuring leakage currents
-	FT3HVTIP	Cable banana-lead, black HV
_	FT3KBDEN	USB keyboard
_	FT3R-GLP*	Red/green control lamp for ongoing test with 7m cable
-	FT3RMTCT	Remote start/stop/save button with cable length 7 m.
	FT3SFTSW	Open door detection device for verification room
_	FT3MPT2	Thermal printer with 32 columns
-	FT3BARCR	Bar code reader with USB port
_	FT3BLACKB0X	Device for functional verification of FULLTEST3
_	C2009AD	Cable with adapter for connection to IMP57
_	FT3REDLP**	Red control lamp for ongoing test with 7m cable

# **Functions**

- Continuity of protective conductors with 200mA
- Continuity of protective conductors with I>10A, V<12V
- Continuity of protective conductors with I>25A, V<12V</li>
- Insulation with test voltages 100, 250, 500, 1000VDC
- Dielectric withstand with voltage programmable from 250V to 5100VAC
- Discharge time/residual voltage on plugs and internal circuits
- Absorbed/leaked current and power at plug of machines
- Tripping time/current of type A, AC, B General and Selective RCDs up to 1000mA
- Contact voltage
- Line/Loop impedance and lpsc calculation
- Line/Loop impedance with high resolution (with optional accessory IMP57)
- Non-trip earth resistance
- Leakage current (with optional accessory HT96U)
- Phase sequence
- Timer and limit thresholds selectable through programmable ramps

Power supply:

Protection:

Display:

Memory:

PC interface:

Pollution level:

Measurement

Size (LxWxH):

category:

Weight:

Considered standards:

Safety:

Mechanical protection: IP40

2310-IECIV-200-B	Test cable 0.75mm², 2m, blue
2310-IECIV-200-V	Test cable 0.75mm <sup>2</sup> , 2m, green
2310-IECIV-200-N	Test cable 0.75mm², 2m, black, 2 pieces
C2033X	Cable with 3-terminal Shuko plug
FT3HVPRB1	1 cable banana-alligator clip + 1 cable banana-lead 2m HV
404-IECN	Measuring lead CAT III, 3 pieces
5004-IECN	Alligator clip, 4 pieces
TOPVIEW2007	Windows software + USB cable
FT3BRSN	Soft carrying bag for accessories.
	ISO9000 calibration certificate
	User Manual
	Quick user guide
	User manual on CD-ROM

(\*) For devices with HW version 70 or higher and N/S equal or higher than 16101107. (\*\*) For devices with HW version lower than 70 56



#### VERIFICATION OF ELECTRIC VEHICLE **CHARGING STATIONS**

ORDER CODE HV5036FV

# MACROEVTEST

INSTRUMENT FOR THE VERIFICATION OF ELECTRIC VEHICLE CHARGING STATIONS AND FLECTRIC SAFETY

# EV-TEST100

ADAPTER FOR THE VERIFICATION OF ELECTRIC VEHICLE CHARGING STATIONS

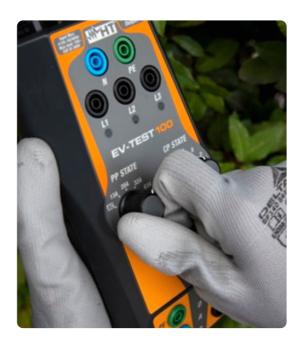


MACROEVTEST, the instrument for verification and checks on recharging stations for electric cars (EVSE) in compliance with standards IEC/EN 61851-1 and IEC/EN60364-7-722, and for safety tests in domestic and industrial environments. MACROEVTEST is connected through the provided C100EV cable to EV-TEST100, which is connected, through an in-built cable provided with type2 plug, to a charging station. EV-TEST100 can simulate the presence of a car being recharged and, at the same time, dialogues with MACROEVTEST thanks to the new display with touch screen system. To correctly perform all tests, all you need to do is following the GUIDED PROCEDURE created by HT. Before each test, MACROEVTEST indicates how the cables must precisely be connected and, at the end of measurement, further to the detected values, it provides evaluations of the tests' outcomes, if compatible or not for the recharging station's safety, indicated by a green or red thumb symbol,



#### Guided sequence of tests.

- Continuity of the protective conductor with current up to 200mA
- Verification of insulation to earth of power conductors
- Verification of charge status of the electric vehicle and simulation of PE and CP fault
- Verification of the cable's mechanical interlock during the recharging phase
- Verification of overall earth resistance of the system the EVSE is connected to
- Verification of the tripping time and current of the RCD type A and type B of the EVSE system



#### **Functions of EV-TEST100**

- Simulation of the type of cable connected: Not connected, 13A, 20A, 32A, 63A
- Control pilot (CP): A, B, C, D
- Simulation of the vehicle status:

#### Status Description

A: Vehicle not connected

B: Vehicle not connected, not ready for recharge

C: Vehicle connected, ready for recharge, ventilation not requested

D: Vehicle connected, ready for recharge, ventilation requested

- Simulation of interrupted protective conductor (fault PE)
- Simulation of short-circuited diode (fault E)
- Simulation of vehicle with Control Pilot (CP status)
- Simulation of the cable's range with Proximity Pilot (PP status)
- Simulation of the earthing's fault (fault PE)
- Simulation of error on Control pilot signal (fault E)
- Indication of phase presence via three LEDs
- Connection terminals for the connection to an external load, for the verification of the correct operation of the recharging station's energy counter
- Verification of conformity of recharging stations to standards IEC 61851-1 and IEC 60364-7-722



#### **Functions of MACROEVTEST**

- AUTO test (overall earth resistance test, RCD tests, insulation tests) on the outlets to
- Insulation with test voltage 50, 100, 250, 500, 1000 VDC
- Continuity of protective conductors with 200mA
- Earth resistance by voltammetric method
- · Resistance of the earth rods with clamp • Ground resistivity by 4-wire method
- Overall earth resistance with no residual current protection tripping
- Line/Loop, Phase-Phase, Phase-Neutral, Phase-PE impedance • Line/Loop, Phase-Phase, Phase-Neutral, Phase-PE impedance
- with high resolution (0.1  $m\Omega$ ) with optional accessory IMP57
- Assumed short-circuit current
- Tripping time of General, Selective and Delayed RCDs.
- Test current type A, AC max 1A and type B max 300mA Test on RCDs with separate clamp jaw up to 10A
- RCD tripping current (Ramp test)
- · Phase sequence
- Measurement of percentage voltage drop on the lines
- Test with use of remote switch probe (with optional accessory PR400)
- Leakage current (with optional clamp HT96U)
- Measurement of electric parameters (V, I, W, VAR, VA, Wh, cosphi) Harmonic analysis V, I and THD%
- Help on line on the display
- Internal memory for measured data saving
- Optical/USB serial port for PC connection
- · Built-in WiFi communication interface



Battery life:

#### **Characteristics of MACROEVTEST**

Power supply: 6x1.2V rechargeable batteries type AA NiMH or 6x1.5 type AA alkaline

> 550 test (alkaline)

Resistive touch screen, colour LCD, resolution Display:

Memory: 999 locations, 3 levels of markers

PC interface: optical/USB and WiFi

IEC/EN61010-1, double insulation Safety:

Operating humidity: <80%RH Operating temperature:  $0^{\circ}\text{C} \div 40^{\circ}\text{C}$ Storage humidity: <80%RH -10°C ÷ 60°C Storage temperature:

Measurement category: CAT IV 300V, max 415V between inputs

Pollution level:

Standards: IEC/EN61557-1-2-3-4-5-6-7 IFC/FN61010-1

225 x 165 x 75 mm Size (LxWxH):

Weight (batteries included): 1.2 kg



#### **Characteristics of EV-TEST100**

L1-L2-L3-N-PE: Max 415V 50/60Hz, CAT III 300V Voltage: External load: L-N-PE: 240V 50/60Hz, CAT III 300V, max 10A~

CP signal: Communication protocol PWM 12V Max 415V~ phase-phase, Input voltage: CAT III 300V, 50Hz/60Hz ±5%,

**Recharging station:** Cases A, B, C - Recharging mode 2 and 3 - Connector IEC 62196-2 Type 2 (7 three-phase poles)

External load output protection: Fuse FF 10A/250V, 5x20mm

Low voltage directive LVD 2014/35/EU and directive EMC 2014/30/EU

CAT III 300V

Safety: IFC FN 61010-1 Operating temperature interval:  $0^{\circ}\text{C} \div 40^{\circ}\text{C}$ Operating relative humidity interval: <80%RH Pollution level:

Measurement category: Double insulation

CE directive:

Maximum operating height: 2000m



EV TECT100

### **Provided accessories**

EV-1ES1100	Adapter for verification of EVSE stations
C2033X	Cable with 3-terminal Shuko plug
UNIVERSALKITG3	Set of 4 cables, 4 alligator clips, 3 leads
KITTERRNE	Bag with 4 cables + 4 metal probes
PR400	Remote lead for test activation
PT400	Touch-screen pen
RCDX10	Accessory for RCD tests with separate clamp jaws
YABAT0003000	1.2V NiMH AA rechargeable battery, 6 pieces
YABAT0004001	Battery charger for 6 batteries type AA/AAA
TOPVIEW2006	Management software + optical/USB C2006 cable
ZER0L00P	Accessory for zeroing the cable in Loop measurement
C100EV	Connection cable to the verification instrument
VA507	Rigid transport bag
SP-5100	Set of straps for slinging the instrument over one's shoulder
	Quick user guide, User manual
	ISO calibration report

Adapter for varification of FVCF stations

#### **VERIFICATION OF ELECTRIC VEHICLE CHARGING STATIONS**



# EV-TEST100

ADAPTER FOR THE VERIFICATION ON THE RECHARGING STATION FOR ELECTRIC VEHICLES

- > Suitable for recharging stations with recharging mode 2 and 3
- Simulation of vehicle with Control Pilot (CP status)
- Simulation of the cable's range with Proximity Pilot (PP status)
- > Simulation of the earthing's fault (fault PE)
- > Simulation of error on Control pilot signal (Fault E)
- Indication of phase presence via three LEDs
- > Connection terminals for connection to external load
- Measuring leads L1-L2-L3-N-PE to connect HT instruments
- > Verification of conformity of recharging stations to standards IEC 61851-1 and IEC 60364-7-722.

#### Compatible instruments:

- **MACROEVTEST**
- COMBIG<sup>3</sup>
- COMBIG<sup>2</sup>
- COMBIG<sup>2</sup> PLUS



- Simulation of the type of cable connected: Not connected, 13A, 20A, 32A, 63A
- Control pilot (CP): A, B, C, D
- Simulation of the vehicle status:

#### Status Description

A: Vehicle not connected

B : Vehicle not connected, not ready for recharge C : Vehicle connected, ready for recharge, ventilation not requested D: Vehicle connected, ready for recharge, ventilation requested

- Simulation of interrupted protective conductor (fault PE)
- Simulation of short-circuited diode (fault E)
- Simulation of vehicle with Control Pilot (CP status)
- Simulation of the cable's range with Proximity Pilot (PP status)
- Simulation of the earthing's fault (fault PE)
- Simulation of error on Control pilot signal (fault E)
- Indication of phase presence via three LEDs
- Connection terminals for the connection to an external load, for the verification of the correct operation of the recharging station's energy
- Verification of conformity of recharging stations to standards IEC 61851-1 and IEC 60364-7-722



### **Main features**

L1-L2-L3-N-PE: Max 415V 50/60Hz, CAT III 300V Voltage: L-N-PE: 240V 50/60Hz, CAT III 300V, max 10A~ External load:

CP signal: Communication protocol PWM 12V

Input voltage: Max 415V~ phase-phase, CAT III 300V, (50Hz, 60Hz)

Cases A, B, C-Charging modes 2 and 3-

Connector IEC 62196-2 Type 2 (7 three-phase poles) External load output protection: Fuse FF 10A/250V, 5x20mm

Low voltage directive LVD 2014/35/EU

IEC EN 61010-

2014/35/EU (LVD) and EMC

2014/30/EU

Operating temperature interval:  $0^{\circ}\text{C} \div 40^{\circ}\text{C}$ 

Operating relative humidity interval: <80%RH Pollution level:

CAT III 300V Measurement category:

Double insulation

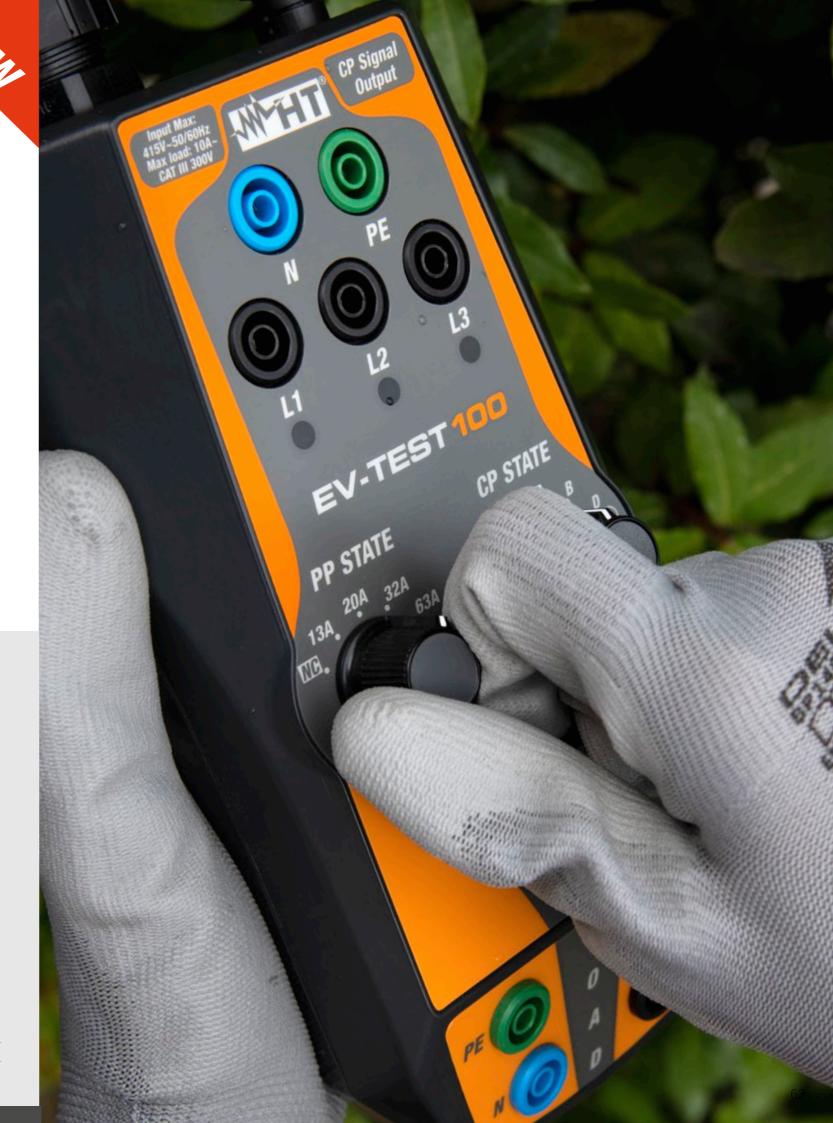
Maximum operating height: 2000m

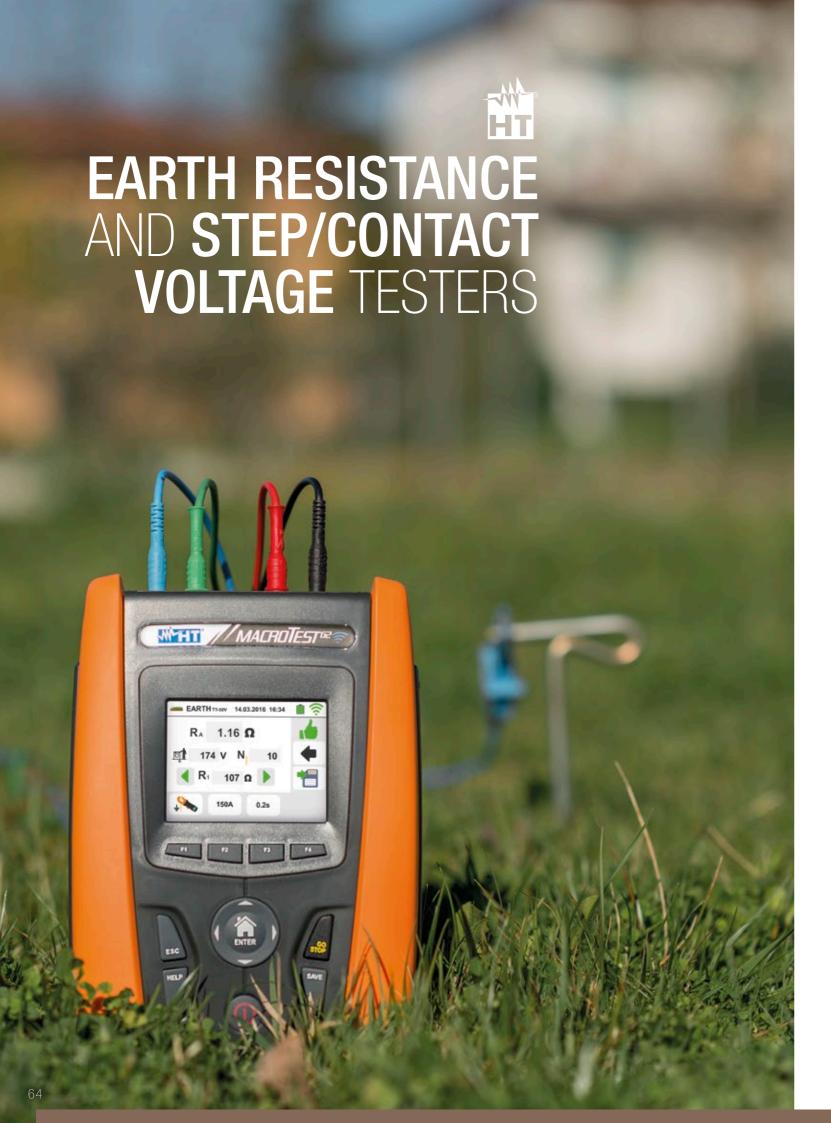


#### **Provided accessories**

VA508 Rigid transport bag C100EV Connection cable to the verification instrument

User Manual





#### EARTH RESISTANCE AND STEP/CONTACT VOLTAGE MEASURING DEVICES









GE0416

171

T2000 - T2100 HT2055

MAIN MEASUREMENTS	EARTH RESISTANCE			STEP/CONTACT Voltage
TRMS	•	•	•	•
Measuring range	50ΚΩ	50ΚΩ	1ΚΩ	200Ω
Insulation with voltage 50, 100, 250, 500, 1000VDC	-	-	-	-
Earth resistance by 2 and 3-wire method	•	•	-	•
Ground resistivity by 4-wire method	•	-	-	•
Compensation of disturbance voltages	•	•	-	•
Compensation of test cables	•	•	-	•
Direct measurement on earth probes without any cable interruption	-	-	•	-
Measurement of leakage current on earth systems	-	-	• Only for T2000	-
Measurement of step/contact voltage	-	-	-	•

#### ADDITIONAL CHARACTERISTICS

Order code	HV000416	HV000071	HP002000 (T2000) HP002100 (T2100)	HN002055
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Weight in kg (batteries included)	1,0	0,6	1,3	30,8
Size (LxWxH) (mm)	225x165x75	240x100x45	293x90x66	230x115x103
USB port for device data download	-	-	• Only for T2100*	-
Optical/USB serial port for PC connection	•	-	-	• RS-232/USB
Internal memory	•	-	•	•
Help on line on the display	•	-	-	•
AutoPowerOFF	•	•	•	•
Backlight	•	-	•	•
LCD display	•	•	•	•
Detection of disturbance currents on measurement	•	•	-	•
Measurement category	CAT III 240V	CAT III 240V	CAT III 150V	CAT IV 50V

<sup>\*</sup> Compatible with Macrotest G1, G2 and G3.





ORDER CODE HV000416

GEO416

DEVICE FOR MEASURING EARTH RESISTANCE AND GROUND RESISTIVITY

GEO416 has been developed to measure earth resistance with 2 wires, 3 wires and 4 wires by voltammetric method and ground resistivity. These values are extremely important while designing earth systems. The 2-wire method, by taking advantage of appropriate external masses as a reference (metal surfaces, tubes, neutral conductor, etc.), is particularly useful in domestic environments where, because of logistic problems, it is not possible to use the 3-wire method.

The device allows carrying out measurements with a wide measuring range (up to 50k0hm) with an efficient internal compensation of the disturbance effects found on the installations. GEO416 is provided with an internal memory for saving measurements and with an optical/USB interface for transferring measured data onto the PC.





IVI / I
DEVICE FOR MEASURING

You Tube EARTH RESISTANCE

ORDER CODE HV000071

M71 has been developed to measure earth resistance with 2 wires and 3 wires by voltammetric method in compliance with standard IEC/EN61557-1.

This device allows carrying out measurements with a **wide measuring range (50k\Omega)** and an efficient internal automatic compensation of the disturbance effects found on the installations, and it is provided with an **ergonomic design** with electronic function selector for **quickly** carrying out the tests.

The 2-wire method allows carrying out earth measurement by taking advantage of appropriate external masses as a reference (metal surfaces, tubes, neutral conductor, etc.), which is particularly useful in domestic environments where, because of logistic problems, it is not possible to use the 3-wire method.



### **Functions and characteristics**

- Earth measurement with 2 and 3 terminals
- Ground resistivity by 4-wire method
- Measuring range:  $0.01\Omega 50k\Omega$
- Compensation of disturbance voltages
- Compensation of test cables
- Context help on the display
- Storage of results
- Interface: optical/USB for PC connection
- Safety: IEC/EN61010-1
- Measurement category: CAT III 265V
- Power supply with batteries type AA: 4x1.5V
- Size (LxWxH): 222x162x57mm
- · Weight (batteries included): 1 kg



### **Included accessories**

KITTERRNE	Set of 4 cables + 4 metal probes
COC4-UK	Set of 4 alligator clips
B0RSA2000	Soft carrying bag
	User Manual
	ISO9000 calibration certificate



## **Optional accessories**

TOPVIEW2006	Windows software for PC + optical/USB cable
1066-IECN	Connector for cable extension 4mm
SP-0400	Set of straps for slinging the instrument over one's shoulder
VA500	Rigid transport case for device and accessories
YABAT0003000	1.2V NiMH AA rechargeable battery, 6 pieces
YABAT0004001	Battery charger for 6 AA/AAA batteries



### **Functions**

- Earth measurement with 2 terminals
- Earth measurement with 3 terminals
- Measuring range:  $0.01\Omega$  - $50k\Omega$
- Compensation of disturbance voltages
- Compensation of test cables



#### Main features

**Power supply:** batteries type AA 4x1.5V

Display: LCD display

Pollution level: 2

Safety: IEC/EN61010-1

Measurement category: CAT III 240V

Size (LxWxH): 240x100x45mm

Weight (batteries included): 630g



### **Included accessories**

KIT0071	Set of 3 cables + 3 alligator clips + 2 metal probes
SP-6085	Soft carrying bag
	User manual on CD-ROM
	Quick user guide
	ISO9000 calibration certificate



## Optional accessories

1066-IECN Connector for cable extension 4mm

#### EARTH RESISTANCE AND STEP/CONTACT VOLTAGE MEASURING DEVICES



ORDER CODE HP002000 | HP002100

# T2000|T2100

CLAMP METERS FOR MEASURING EARTH RESISTANCE WITH STAKELESS TESTING METHOD AND LEAKAGE CURRENT UP TO 20A AC

T2000 e T2100 are professional voltammetric clamps specially developed to evaluate resistance of earth rods with no need to disconnect any part of the system. The inner part of the device is made of 2 jaws, one for current reading and the other for voltage generation. The voltage jaws generate a potential (E) on the loop during resistance (R) measurement. A current (I) is consequently generated on the loop and is measured by the current jaws. Based on the value of parameters E and I, the instrument displays the resistance R value calculated as their ratio. The value measured by the device can be used in case the single rods do not influence each other. T2000 also measures AC current up to 20A and leakage current with resolution 0.1mA.

This devices comply with standard IEC/EN61010-1 in CAT III 600V, CAT IV 300V and they are the ideal solution for measurements to be carried out both in domestic and in industrial environments.



### **Functions**

- Earth resistance with stakeless testing method
- Measurement of leakage current on earth systems (only T2000)
- Setting of alarm thresholds on measurements
- Storage of measurement results
- Detection of disturbance currents on measurement
- Data HOLD, Backlight, Auto Power OFF
- Maximum diameter for clamp 31mm (bars 48x31mm)
- Serial interface RS-232 for connection to devices of *MacrotestG series* (only T2100)



#### **Main features**

**Power supply:** batteries type AA 4x1.5V

Memory: 99 locations

Display: LCD 4-digit display + decimal point, backlight

Pollution level: 2

Safety: IEC/EN61010-1, IEC/EN61010-2-032

Measurement category: CAT III 600V, CAT IV 300V to earth

**Size (LxWxH):** 293x105x54mm

Weight (batteries included): 1120g



# **Technical Specifications**

#### Resistance measurement

- Measuring range  $\Omega$ : 0.010  $\div$  1200
- Resolution  $\Omega$ : 0.001  $\div$  1
- Basic accuracy  $\Omega$ :  $\pm$  (1.5%reading + 0.01)

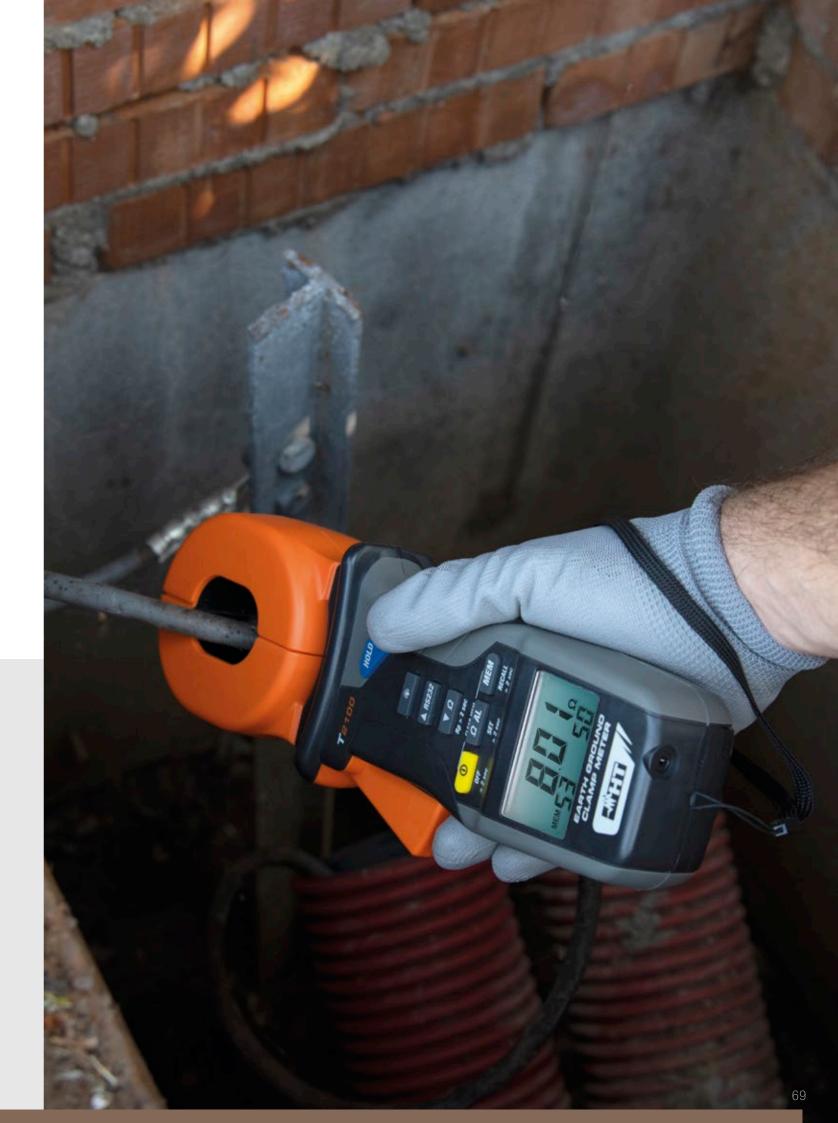
#### TRMS current measurement (only T2000)

- Measuring range: 0.00mA ÷ 20A
- Resolution: 0.01mA ÷ 0.01A
- Basic accuracy:  $\pm$  (2.5%reading + 1mA)



### **Included accessories**

	Resistive test loop (1 $\Omega$ , 5 $\Omega$ , 10 $\Omega$ )
	Batteries
	User Manual
	ISO9000 calibration certificate
C2100	Connection cable Hypertac / Jack 3,5mm RS-232 <i>(only T2100)</i>
	Rigid Carrying case







#### ORDER CODE HN002055

# HT2055

METER FOR STEP/CONTACT VOLTAGE UP TO 50A

HT2055 consists in a power unit and a voltmetric unit, necessary for carrying out step and contact voltage measurements in industrial installations (such as TN systems, transformer cabinets) with a rated test current up to 50A. The two units, synchronized in time and current are capable of providing the correct value of step and contact voltages consistently with the real current values measured by the power unit, also taking into consideration the disturbance effects found on the measured circuit. It is also capable of measuring earth resistance and ground resistivity by the classical voltammetric method.

These measurements can be saved in the **internal memory** of the voltmetric unit and downloaded onto the PC through the provided Windows software.



- · Measurement of step/contact voltage with separate units
- · Synchronization of units for correct measurements
- · Test current selectable up to 50A
- · LCD display on both units

- · Earth resistance measurement
- Compensation function of disturbance effects
- · Internal memory for measured data saving
- USB and RS-232 ports for communication between unit and PC

# 10

### Characteristics

#### Power unit

- Power supply: 110/230V AC, 50/60Hz
- Output power: 900VA
- Output current: max 55A
- Test frequency: 55Hz
- Voltage measurement: 0.1÷999V
- Resolution: 0.1÷1V
- Basic accuracy: ±2%reading
- Display: LCD 240x128 dots + backlight
- Memory: 2000 locations
- Communication interface: RS-232
- Measurement category: CAT III 300V
- Protection: fuse T 6.3A/250V
- Pollution level: 2
- Mechanical protection: IP40 (closed case)
- Size (LxWxH): 335x335x160mm
- · Weight: 28kg

#### Voltmetric unit

- Voltage measurement: 0.1÷999V
- Resolution: 0.1÷1V
- Resistance measurement: 0.001÷99.99Ω
- Resolution: 0.01Ω
- Basic accuracy: ±2%reading
- Input impedance: Selectable  $1k\Omega/1M\Omega$
- Display: LCD 240x128 dots + backlight
- Memory: 2000 locations
- Communication interface: RS-232/USB
- Power supply: 6x1.2V rechargeable batteries type AA
- Pollution level: 2
- Mechanical protection: IP40
- Size (LxWxH): 230x115x103mm
- Weight: 1.3kg



### **Included accessories**

	Power supply cable of power unit
PC55SND	Metal plate (200x100mm), 2 pieces
	Current metal probe
	Voltage metal probe
PC55REL	Cable 10mm <sup>2</sup> with winder and alligator clip, 50m
	Cable 10mm <sup>2</sup> with alligator clip, 10m
PC55MBK	Black measuring cable, 3m, with industrial plugs, 2 pcs.
PC55GRE	Green measuring cable, 10m
PC55BLK	Black measuring cable, 1.5m
PC55RED	Red measuring cable, 50m
PC55MRE	Red connection cable with alligator clip, 1m
5004-IECN	Alligator clip, 4 pieces
	Cable RS-232
C2007	USB cable
	Soft transport bag, 2 pieces
	Strap for slinging the device over one's shoulder
	6 x 1.2V rechargeable batteries NiMH type AA
	External power supply
TERAVIEW	Windows software on CD-ROM
	User manual and ISO9000 calibration certificate



### **Optional accessories**

### PC55MBK

Black measuring cable, 3m, with industrial plugs, 2 pcs. For further information on optional accessories, please contact HT.



INSULATION AND CONTINUITY MEASURING DEVICES







IS0410





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HT7051

NEPTUNE

M72

M70

MAIN MEASUREMENTS	INSULATION/CONTINUITY					
TRMS	-	-	•	-	•	-
DC test voltage measuring range	500V ÷ 10kV	100V ÷ 5kV	50,100,250, 500,1000V	50,100,250, 500,1000V	250 / 500V	250, 500,1000V
Insulation resistance measuring range	120kΩ ÷ 10TΩ	0.01MΩ ÷ 9.99TΩ	0.01MΩ ÷ 1999MΩ	0.01MΩ ÷ 1999MΩ	0.00MΩ ÷ 999MΩ	0.001MΩ ÷ 4000MΩ
Dielectric strength in DC	•	-	-	-	-	-
Continuity of protective conductors with 200mA	-	-	•	•	•	•
Continuity 10A	-	-	-	-	-	-

#### **ADDITIONAL FUNCTIONS**

Test with programmable ramp	• steps of 25VDC	• steps of 25VDC	-	-	-	-
Programmable test timer	• 1s ÷ 30min	• 5s ÷ 100min	• 15s ÷ 10min	• 10s ÷ 16,6min	-	• 2s ÷ 1min
Setting of measurement limit value	•	•	•	•	-	-
Measurement of polarization index P.I.	•	•	•	-	-	-
Measurement of dielectric absorption ratio D.A.R.	•	•	•	-	-	-
Measurement of dielectric discharge ratio D.D.	•	•	•	-	-	-
Measurement of discharge capacity	•	•	-	-	-	-
Automatic discharge of target	•	•	•	•	•	•
Measurement of DC/AC voltage up to 600V	• 600V	• 600V	• 1000V	-	• 600V	• 600V
Measurement of resistance and continuity with buzzer	-	-	•	-	•	•
Measurement of phase sequence	-	-	•	-	•	-

#### ADDITIONAL CHARACTERISTICS

Measurement category	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT III 265V	CAT III 550V	CAT III 550V
Backlight	•	•	•	•	-	•
Autocalibration of measuring leads	-	-	•	•	•	•
Guard terminal	•	•	-	-	-	-
Measurements with remote terminal	-	-	-	•	-	-
Internal memory	•	•	-	•	-	-
Recalling on the display the saved results	•	•	-	•	-	·
RS232/optical/USB interface for transferring data onto the PC	•	•	-	•	-	-
Power supply with rechargeable battery from mains	•	•	-	-	-	-
AutoPowerOFF	-	•	•	•	•	•
Power supply	6x 1.2V NiMH LR20	Rechargeable NiMH	4x 1.5V AAA	6x 1.5V type AA	4x 1.5V AA	4x 1.5V AA
Size in mm (LxWxH)	360 x 330 x 160	360 x 310 x 195	175 x 85x 55	222 x 162 x 57	240 x 100 x 45	240 x 100 x 45
Weight (batteries included)	5.5kg	3.5kg	4.20 kg	1kg	450g	450g
Safety	IEC/EN61010-1 IEC/EN61557-2	IEC/EN61010-1 IEC/EN61557-1-2	IEC/EN61010-1 IEC/EN61557-1-2	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HV007052	HV007051	HROONEPK	HV000410	HV000072	HV000070





and safe for "on-site" use.

# HT7052

PROFESSIONAL INSULATION METER WITH TEST VOLTAGE UP TO 10KV DC

HT7052 has been developed to measure **insulation resistance** with test voltage programmable up to 10kVDC and measuring range up to  $10T\Omega$  which makes it very useful in any industrial application (tests on electric machines, power transformers, electric cables, electric boards, generic devices, etc.). The device allows measuring parameters such as Polarization Index (PI) and Dielectric Absorption Ratio (DAR) and Dielectric Discharge (DD), diagnostic tests which allow determining the quality of an insulating material. It carries out "ramp" insulation tests and dielectric strength test in DC. HT7052 is supplied with NiMH rechargeable battery with integrated battery charger, which allows for a remarkable duration when carrying out measurements, it is provided with internal memory for saving measurements and it is also possible to connect it to the PC to download the measured results. The device has been inserted into a comfortable and resistant transport case, solid





ORDER CODE HV007051

PROFESSIONAL INSULATION METER WITH PROGRAMMABLE TEST VOLTAGE UP TO 5KV

HT7051 has been developed to measure insulation resistance with test voltage programmable up to 5kVDC and measuring range up to  $10T\Omega$  which makes it very useful in any industrial application (tests on electric machines, power transformers, electric cables, electric boards, generic devices, etc.). The device allows carrying out tests in FIX (with fixed test voltages), ADJUST (programmable test voltage) and RAMP mode (programmable test voltage and application time with selection of 3 available ramp types) which define a kind of operation suitable for any situation.

Measurement of parameters such as Polarization Index (PI) and Dielectric Absorption Ratio (DAR), are duration tests which allow defining the quality of insulation. HT7051 is supplied with NiMH rechargeable battery with integrated battery charger, which allows for a remarkable duration when carrying out measurements, it is provided with internal memory for saving measurements and it

is also possible to connect it to the PC to download the measured results. The whole structure has been inserted into a comfortable and resistant transport case, solid and safe for "on-site" use.



#### **Functions and characteristics**

- Insulation with test voltage from 500 to 10kVDC in steps of 25VDC
- Measuring range up to 10TΩ
- · Timer programmable from 1s to 30min
- · Diagnostic tests on materials (PI, DAR, DD)
- Insulation resistance with programmable "ramp"
- Dielectric strength up to 10kVDC
- Measurement of DC/AC voltage up to 600V
- · Measurement of capacity of the target
- GUARD terminal for surface current compensation
- · Automatic discharge of test object
- · Backlight display
- Internal memory for saving results
- · Recalling on the display the saved results
- RS-232 and USB serial interface for transferring data onto the PC
- · Power supply with rechargeable battery from power
- · Display: Custom LCD with backlight and bargraph
- External power supply: 90-260V AC, 45-65Hz, 70VA · Internal power supply: rechargeable batteries
- Duration: 4 hours (test with 10kV)
- Internal memory: 1000 locations
- PC interface: RS232 and USB • Insulation: double insulation
- Pollution level: 2
- Mechanical protection: IP53 (closed case)
- · Measurement category: CAT IV 600V
- Size (LxWxH) and weight: 330x360x160mm, 5.5kg



#### Included accessories

	Red terminal, protection 10kV, 2m
	Terminals (red/black), protection 10kV, 2m, 2 pieces
	Terminals (red/black), protection 10kV, 2 pieces
	Green guard terminal
5004-IECV	Green alligator clip
	Power supply cable
	USB cable
	Cable RS-232
	Software "TeraView" on CD-ROM
	6 x 1.2V rechargeable batteries NiMH IEC LR20
	User Manual
	ISO9000 calibration certificate



### **Optional accessories**

For further information on optional accessories, please contact HT.

#### **Functions and characteristics**

- Insulation with test voltage from 100V to 5kVDC
- Measuring range up to 10TΩ
- · Measurement with fixed test voltages
- 3 test ramps, programmable in time and voltage
- SMOOTH function for steady measurement results Measurement of dielectric discharge current
- Measurement of polarization index (P.I.)
- Measurement of dielectric absorption ratio (D.A.R.)
- · Measurement of discharge capacity
- DC/AC TRMS voltage up to 600V
- Rechargeable internal NiMH battery
- GUARD terminal
- Automatic discharge of the test object
- · Display: Custom LCD with backlight and bargraph
- External supply: power 220-240V, 50/60Hz, 20VA
- · Internal supply: rechargeable internal NiMH battery
- · Protection fuse: T 200mA H 250V
- Battery life: >1000 tests (@ 5kV on 5M $\Omega$ )
- · AutoPowerOFF: after 5 minutes' idling
- · Internal memory: 700 locations
- · Serial interface: RS-232 optically insulated
- Safety: IEC/EN61010-1, IEC/EN61557-1
- · Insulation: double insulation
- Pollution level: 2
- Mechanical protection: IP53 (closed case)
- · Measurement category: CAT IV 600 (to earth),
- · Size (LxWxH) and weight: 360x310x195 mm, approx. 3.5kg



#### Included accessories

KIT14000	Set of 3 cables with alligator clips + 2 cables with leads
C7051	Power supply cable Europlug-Schuko with no earthing
B0RSA2000	Transport bag for accessories
TOPVIEW	Windows software for PC + cable RS-232
	ISO9000 calibration certificate
	User Manual



### **Optional accessories**

C2009 RS232-USB adapter





LoZ

**≯TRMS** 

auto Range

**1000**V

# NEPTUNE

ORDER CODE HROONEP

PROFESSIONAL DEVICE FOR ELECTRIC SAFETY TESTS AND ADVANCED MUTLIMETER FUNCTIONS

NEPTUNE is an innovative device which, further to being used as powerful multimeter for TRMS measurements, allows performing electric safety tests (Insulation and continuity). It belongs to CAT IV at 600V, with autorange function and backlit display. The design is extremely modern and attractive but, at the same time, ergonomic, to offer the best possible ease of use.





#### ORDER CODE HV000410

MULTIFUNCTION DEVICE FOR MEASURING INSULATION AND CONTINUITY OF PROTECTIVE CONDUCTORS

ISO410 has been developed to measure Insulation up to 1000VDC and Continuity of protective and equipotential conductors with 200mA. This device is very easy to use and has an innovative structure with no mechanical commuters, which makes it extremely solid and resistant. It allows activating measurements by means of a remote switch probe (optional accessory PR400), very comfortable when carrying out measurements in a sequence. The context help on line, selectable by the user and active for any function, is a useful aid when connecting the device to the system to be tested.

The internal memory allows saving the measurements carried out in order to subsequently transfer them onto the PC through the serial connection. Each measurement is saved together with all its sub-results and test parameters, as well as with two identifiers (which can be set by the user) in order to better identify the spot in which measurement was carried out.



#### **Functions and characteristics**

#### **Multimeter section**

- DC / AC, AC+DC TRMS voltage
- Input of low-impedance voltage
- DC / AC / AC+DC TRMS current with optional standard clamp transducer
- AC TRMS current up to 3000A with flexible clamp transducer F3000U
- Automatic recognition of AC and DC quantities
- · Resistance and continuity test with buzzer
- · Current and voltage frequency
- MAX/MIN/PEAK/HOLD functions
- 9999 measuring spots
- · Auto-Power-Off function
- Bargraph function

#### **Electric verification section**

- Phase sequence with 1 terminal
- Insulation with test voltage 50, 100, 250, 500, 1000V with PI and DAR calculation
- · Continuity of protective conductors with 200mA

#### **Section Mains analysis**

- Inrush current (Dynamic INRUSH DIRC)
- Current/voltage harmonics up to the 25th and THD% calculation



#### Included accessories

4324-2	Pair of test tips Red/Black 2/4mm straight banana
YABAT0001HT0	Alkaline battery 1.5V, type AAA, IEC LR03, 4 pcs
YABRS0002HT0	Carrying bag
YAMUM0066HT0	User manual on CD-ROM
YAMUM0065HT0	Quick reference guide
	Calibration certificate ISO9000



### **Optional accessories**

606-IECN	Connector with magnetic terminal
F3000U	AC flexible clamp with 30/300/3000A full scales
HT96U*	AC current clamp with 1/100/1000A full scales
HT97U*	AC current clamp with 10/100/1000A AC full scales
HT98U*	DC current clamp with 1000A full scale
HT4006	AC/DC current clamp with 40/400A full scales
NOCANBA	Hypertac-to-banana adapter
5004-IECR	Red alligator clip
5004-IECN	Black alligator clip
C2065	3-wire cable Red, Black and Green with Schuko plug



#### **Functions and characteristics**

- · Continuity of protective conductors with 200mA
- Insulation with 50, 100, 250, 500, 1000VDC
- Insulation measuring range  $0.01M\Omega$ - $2G\Omega$
- · Automatic discharge of measured object
- · Autocalibration of measuring leads
- · Setting the limit on measurement
- Activation of measurements with optional remote lead PR400
- · Context help on the display
- · Storage of results
- Optical/USB interface for PC connection
- Safety: IEC/EN61010-1
- · Measurement category CAT III 265V
- · Power supply 6 x 1.5V batt. type AA
- Size (LxWxH): 222x162x57mm
- · Weight (batteries included): 1kg



#### Included accessories

UNIVERSALKITCOMBI	Set of 3 cables + 3 alligator clips + 3 leads
BORSA75	Soft carrying bag
	ISO9000 calibration certificate
	User manual on CD-ROM
	Quick user guide



### **Optional accessories**

TOPVIEW2006	Windows software for PC + optical/USB C2006 cable
VA500	Rigid transport case for device and accessories
PR400	Remote lead for test activation
SP-0400	Set of straps for slinging the instrument over one's shoulder

The standard accessories can be different depend on countries

Adapter NOCANBA required.





M72

COMBINED DEVICE FOR INSULATION
MEASUREMENT, CONTINUITY OF PROTECTIVE
CONDUCTORS AND MULTIMETER FUNCTION

M72 is mainly dedicated to measuring Insulation resistance and Continuity of protective and equipotential conductors with 200mA in electric installations, typically domestic. Further to these measurements, M72 has many additional functions such as measurement of phase sequence with 1 terminal, measurement of leakage currents with optional clamp transducer and a powerful multimeter function for measuring voltage and current in true root mean square value (TRMS).





ORDER CODE **HV000070** 

M70

COMBINED DEVICE FOR MEASURING INSULATION AND CONTINUITY OF PROTECTIVE AND EQUIPOTENTIAL CONDUCTORS

M70 is a mobile device dedicated to measuring Insulation resistance with test voltage up to 1000VDC and Continuity of protective and equipotential conductors with current of 200mA in domestic and industrial electric installations.

Thanks to the **LOCK function**, insulation measurement can be carried out in a **continuous manner over time**, thus testing the insulation of the target with a **duration test**. It carries out measurement with a timer, **programmable from 2 to 60s**.

# io:

#### **Functions and characteristics**

- · Continuity of protective conductors with 200mA
- Insulation with 250,500VDC
- Insulation measuring range  $0.01M\Omega$ -2G $\Omega$
- Automatic discharge of measured object
- Autocalibration of measuring leads
- Phase sequence
- DC/AC TRMS voltage
- DC/AC TRMS current
- Resistance and Continuity test
- Data HOLD, MAX/MIN/AVG
- Measurement of voltage and current PEAK
- Measurement of leakage currents (with optional clamp HT96U)
- Safety: IEC/EN61010-1
- · Measurement category: CAT III 550V
- Power supply: 4x1.5V batt. type AA
- Size (LxWxH): 240x100x45 mm
- Weight (batteries included): 450g



#### **Included accessories**

KIT0075	Set of 2 cables with leads + 2 alligator clips
BORSA2000	Soft Soft carrying bag
	ISO9000 calibration certificate
	User manual on CD-ROM
	Quick user quide



### Optional accessories

HT96U	Standard 1-100-1000A/1V clamp, diameter 54mm
HT4003	Standard 400A AC clamp
HT4004N	Standard 10-100A DC/1V clamp
HT4005N	Standard 5-100A AC/1V clamp
NOCANBA	Adapter for connect. HT96U, HT4004N, HT4005N



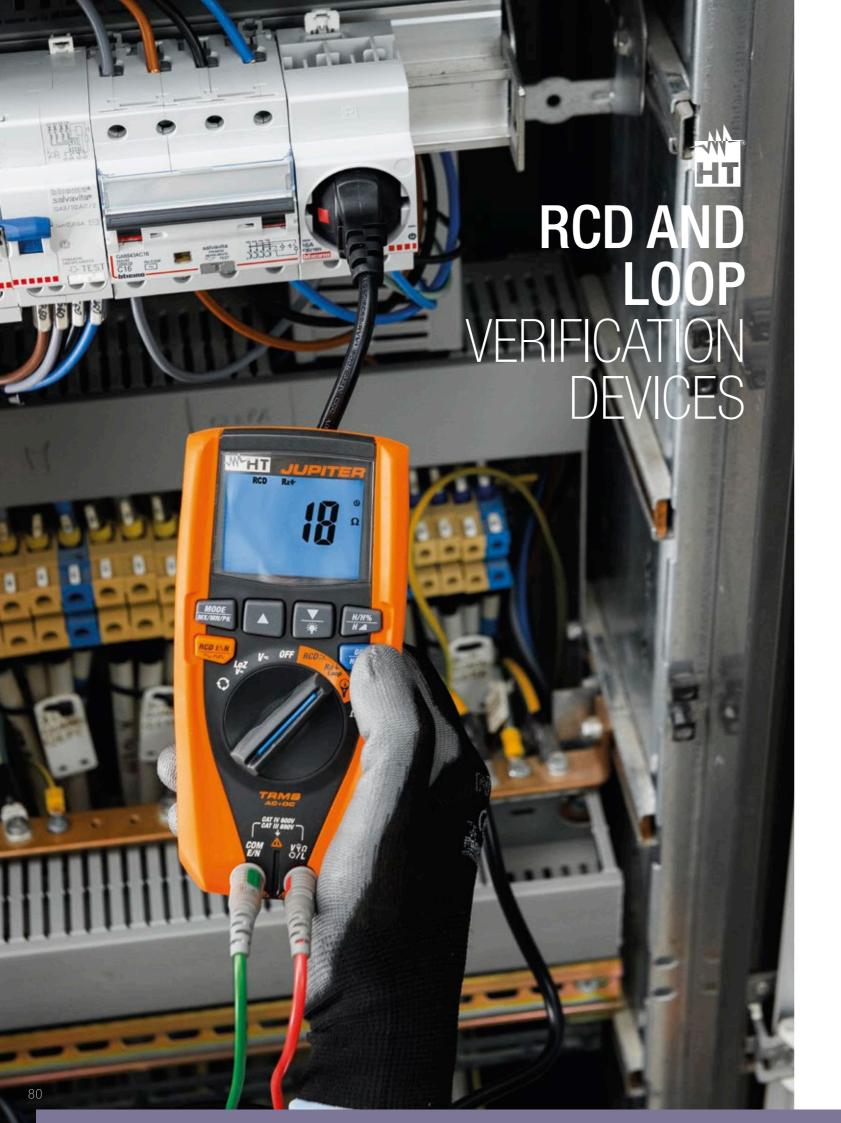
#### **Functions and characteristics**

- Insulation with test voltage 250, 500, 1000VDC
- Measuring range up to 4GΩ
- Automatic discharge of measured object
- LOCK function for measurements in a continuous mode
- Insulation with timer programmable from 2 to 60s
- · Continuity of protective conductors with 200mA
- Autocalibration of measuring leads
- AC/DC voltage up to 600V
- · Resistance and continuity test with buzzer
- · Wide display with backlight
- AutoPowerOFF
- · Display with backlight: LCD, 4 digits, 10000 dots
- · Power supply: 4x1.5V batteries type AA
- · AutoPowerOFF: after 15 minutes' idling
- Safety: IEC/EN61010-1
- Measurement category: CAT III 550V
- Size (LxWxH): 240x100x45 mm
- · Weight (batteries included): 450g



#### **Included accessories**

KIT0070	Set of 2 cables + 2 alligator clips + 1 lead
B0RSA2000	Soft carrying bag
	Batteries
	CE declaration of conformity
	User Manual



#### RCD AND LOOP VERIFICATION DEVICES







JUPITER

M73

MAIN MEASUREMENTS	LOOP/RCD		
TRMS	•	•	•
Measuring range of verifiable RCD rated currents	30,100,300mA	10,30,100,300,500,650,1000mA	30,30x5,100,300mA
Tripping time of type A, AC General and Selective RCDs	Only general	• Up to 1A	A = 30mA AC = 300mA Only general
Ramp test for tipping current of RCDs type A, AC Standard	Only 30mA only Standard	● Up to 650mA	A = 30mA AC = 30mA Only general
Overall earth resistance with no residual current protection tripping	•	•	•
Loop/Line impedance, Phase-Phase, Phase-Neutral, Phase-PE	•	•	-
Loop/Line impedance Phase-Phase Phase-Neutral, Phase-PE with high resolution (0.1m $\Omega$ )	-	•*	-
Contact voltage	•	•	•
Leakage current with optional clamp	•	-	•
ADDITIONAL FUNCTIONS			
DC/AC TRMS voltage and current	• AC+DC, LoZ function	-	•
Phase sequence	•	•	•

### ADDITIONAL CHARACTERISTICS

Measurement of voltage and current PEAK

Frequency Resistance

Continuity with buzzer

Data HOLD, MAX/MIN/AVG

Measurement category	CAT IV 600V CAT III 690V	CAT III 265V	CAT III 550V
AUTOMATIC Test	-	•	-
Test with remote lead	-	•	-
Help on line on the display	-	•	-
Internal memory	-	•	-
Optical/USB serial port for PC connection	-	•	-
Size (LxWxH) (mm)	175x85x55	222x162x57	240x100x45
Weight (batteries included)	420g	1kg	450g
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HR00JUPI	HV000418	HV000073

MAX/MIN

#### RCD AND LOOP **VERIFICATION DEVICES**













#### ORDER CODE **HROOJUPI**

# **JUPITER**

PROFESSIONAL DEVICE FOR ELECTRIC SAFETY TESTS AND ADVANCED MUTLIMETER FUNCTIONS

The new JUPITER is an innovative device which, further to being used as powerful multimeter for TRMS measurements, allows performing electric safety tests (RCD, Ra, Loop).

The device belongs to CAT IV at 600V, with autorange function available on all models and possibility of backlit display. The design is extremely modern and attractive but, at the same time, ergonomic, to offer the best possible ease of use









#### **Functions and characteristics**

#### Multimeter section

- DC / AC, AC+DC TRMS voltage
- DC / AC / AC+DC TRMS voltage with low impedance (LoZ)
- DC / AC / AC+DC TRMS current with with standard clamp transducer
- AC TRMS current up to 3000A with flexible clamp transducer F3000U
- · Automatic recognition of AC and DC quantities
- · Resistance and continuity test with buzzer
- · Current and voltage frequency
- MAX/MIN/PEAK/HOLD functions
- 9999 measuring spots
- Auto-Power-Off function
- Bargraph function

#### **Electric verification section**

- Overall earth resistance L-PE without RCD tripping
- Loop impedance L-L, L-N and calculation of assumed short-circuit current
- Measurement of tripping time on General RCDs type A and AC (30mA, 100mA, 300mA)
- Measurement of tripping current on General RCDs type A and AC (30mA)
- Phase sequence with 1 terminal

#### **Section Mains analysis**

- Inrush current (Dynamic INRUSH DIRC)
- Current/voltage harmonics up to the 25th and THD% calculation



### **Included accessories**

C2065	Three-wire cable Red, Black, Green with Schuko plug
4324-2	Pair of test tips Red/Black 2/4mm straight banana
YABAT0001HT0	Alkaline battery 1.5V, type AAA, IEC LR03, 4 pcs
YABRS0002HT0	Carrying bag
YAMUM0066HT0	User manual on CD-ROM
YAMUM0065HT0	Quick reference guide
	Calibration certificate ISO9000



### **Optional accessories**

C2009	RS232-USB adapter
606-IECN	Connector with magnetic terminal
F3000U	AC flexible clamp with 30/300/3000A full scales
HT96U*	AC current clamp with 1/100/1000A full scales
HT97U*	AC current clamp with 10/100/1000A AC full scales
HT98U*	DC current clamp with 1000A full scale
HT4006	AC/DC current clamp with 40/400A full scales
NOCANBA	Hypertac-to-banana adapter
5004-IECR	Red alligator clip
5004-IECN	Black alligator clip

Standard accessories can be different depending on the country. \* Adapter NOCANBA required.







# SPEED418

MULTIFUNCTION DEVICE FOR NON-TRIP EARTH RESISTANCE MEASUREMENT AND RCD TESTS

SPEED418 has been specifically developed to measure Non-trip earth resistance directly at the outlets to be measured and for operating tests of RCDs type A, AC General and Selective with tests both in manual and automatic mode in domestic electric installations.

Extremely simple to use, with setting of parameters via scroll-through menu. It has no mechanical commuters and it is therefore more solid in structure.

The device is provided with an internal memory for saving measurements and with an optical/USB interface for transferring measured data onto the PC.

At the end of the test, the device shows all results with the indication of compliance or non-compliance with the standards with simple symbols OK or NOT OK.







MULTIFUNCTION DEVICE FOR NON-TRIP EARTH RESISTANCE MEASUREMENT AND RCD TESTS

ORDER CODE HV000073

M73 has been developed for operators who mainly work on domestic installations.

M73 is very easy to use, it is very small in size and it carries out all necessary tests to establish COMPLIANCE (and hence ensure SAFETY) of a domestic electric system.

By always using it before starting working on an already existing system (which the operator therefore does not know well) and at the end of the job, this device will guarantee the necessary safety to both operators and users of the electric systems! Thanks to its small size, this device offers many operating

opportunities. M73 is also used to test the safety of electric system; it s therefore capable of measuring Non-trip earth resistance, carrying out tests on RCDs type A and AC and measuring

At the end of the test, the device shows all results with the indication of compliance or non-compliance with the standards with simple symbols OK or NOT OK.

Insulation and Continuity.

#### **Functions and characteristics**

- Tripping time of type A, AC General and Selective RCDs with test currents 10,30,100,300,500,650,1000mA
- Tripping current of type A, AC General RCDs 10,30,100,300,500,650mA
- · Non-trip earth resistance
- Line/Loop impedance also with high resolution  $(0.1 \text{m}\Omega)$ with optional accessory IMP57
- · Prospective short-circuit current
- Phase sequence
- Activation of measurements with (optional remote lead PR400)
- · Context help on the display
- · Storage of results
- Optical/USB interface for PC connection
- Safety: IEC/EN61010-1
- · Measurement category: CAT III 265V
- Power supply with batteries type AA: 6x1.5V
- Size (LxWxH): 222x162x57mm
- · Weight (batteries included): 1kg



#### Included accessories

C2033X 3-wire cable with Shuko plug	
BORSA75	Soft carrying bag
	ISO9000 calibration certificate
	User manual on CD-ROM and Quick quide for use



### **Optional accessories**

TOPVIEW2006	Windows software for PC + optical/USB cable
UNIVERSALKITCOMBI	Set of 3 cables + 3 alligator clips + 3 leads
IMP57	Accessory for measuring Loop impedance with high resolution
PR400	Remote lead for test activation
SP-0400	Set of straps for slinging the instrument over one's shoulder
VA500	Rigid transport case for device and accessories



#### **Functions and characteristics**

• Tripping time of type A, AC General RCDs with currents 30,30x5,100,300mA

-WHT

MULTITEST

MODE FUNC

- · Tripping current of type A, AC General RCDs with 30mA test current
- · Non-trip earth resistance
- · Prospective short-circuit current
- · Phase sequence
- · DC/AC TRMS voltage
- DC/AC TRMS current
- · Resistance and Continuity test
- Data HOLD, MAX/MIN/AVG
- Measurement of voltage and current PEAK
- Measurement of leakage currents (with optional clamp HT96U)
- Safety: IEC/EN61010-1
- · Measurement category: CAT III 550V
- · Power supply with batteries type AA: 4x1.5V
- Size (LxWxH): 240x100x45mm
- · Weight (batteries included): 450g



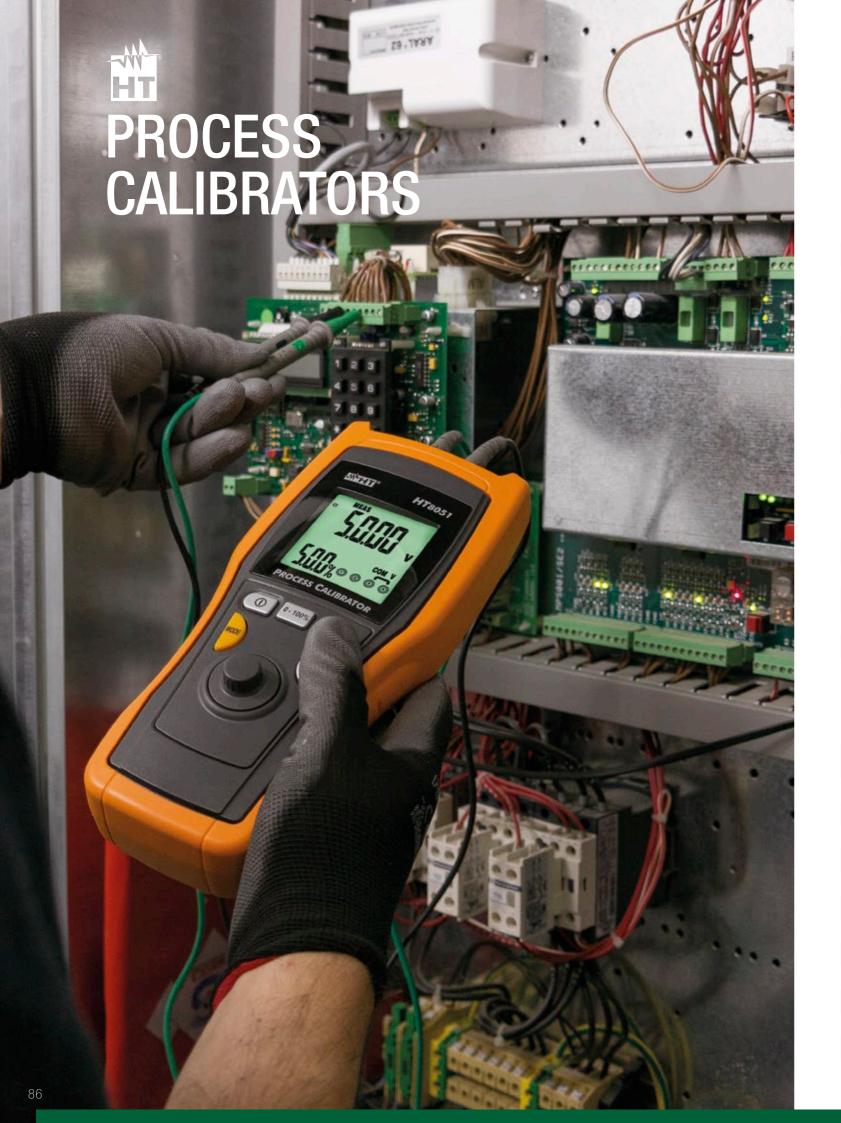
#### Included accessories

KIT0075 Set of 2 cables with leads + 2 alligator clips	
C2075	2-wire cable with Shuko plug
BORSA2000	Soft carrying bag
	ISO9000 calibration certificate
	User manual on CD-ROM
	Quick user guide



### **Optional accessories**

HT96U	Standard 1-100-1000A/1V clamp, diameter 54mm
HT4003	Standard 400A AC clamp
HT4004N	Standard 10-100A DC/1V clamp
HT4005N	Standard 5-100A AC/1V clamp
NOCANBA	Adapter for connect. HT96U, HT4004N, HT4005N



#### PROCESS CALIBRATORS









HT8041

HT8051

• MAX 24mADC

HT810

• 1A

CALIBRATION MEASUREMENTS	PROCESS CALIBRATORS		
TRMS	-	•	•
DC 4-20mA current measurement	•	•	•
DC 0-10V voltage measurement	-	•	•
DC 4-20mA current generation	-	•	•
DC 0-10V voltage generation	-	•	-
Measurement of output current of transducers	• without disconnection	•	•
Simulation of an external transducer	-	•	•
Loop supply with minimum voltage 24V	-	•	•
Generation of selectable ramp	-	•	•
Load of $250\Omega$ for testing HART transducers	-	-	•
MULTIMETER MEASUREMENTS			
AC/DC voltage	-	• MAX 10VDC	•
AC+DC voltage	-	-	•

• MAX 20mADC

#### ADDITIONAL CHARACTERISTICS

Resistance and buzzer continuity

AC/DC current

AC+DC current

Frequency

Measurement category	CAT II 300V	CAT IV 600V	CAT IV 600V
Measuring counts	9999 (main display) 1999 (secondary display)	-	50.000
Backlight	•	•	•
Autorange	•	-	•
Auto power off	•	•	•
Data HOLD function	•	-	•
MIN/MAX function	-	-	•
AVG function	-	-	•
Relative measurement	-	-	•
Internal memory	-	-	•
Power supply	2x1.5V AA	1x7.4/8.4V 600mAh Li-ION	4x1.5V AA
Size (LxWxH) (mm)	210x55x30	195x92x55	207x95x52
Weight (batteries included)	265g	400g	630g
Safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HP008041	HV080510	HV008100





# HT8041

CLAMP METER FOR MEASURING 4-20mA CURRENTS ON INDUSTRIAL PROCESS CONTROLLERS

HT8041 is a special clamp meter for measuring 4-20mA DC currents on industrial process controllers with no need for interrupting the power supply circuit. As opposed to conventional clamps, this instrument allows removing the jaws from the main body, remaining connected via the cable, in order to perform measurements in an extremely comfortable way.



• 4-20mA DC current measurement through clamp with connection cable

• Indication of percentage of the measured value ZERO function for zeroing the displayed value

Data HOLD function

· Display backlight

· Built-in white LED torch

Auto power OFF

#### Measured DC current

• Measuring range: 0.01mA ÷ 20.99mA • Percentage value: -25% ÷ 100%

Resolution: 0.01mA

• Basic accuracy: ±(0.3%rdg +9digits)

• Protection: 120mADC-



#### **Main features**

4 LCD 9999 dots + secondary display 1999 dots +

decimal point and backlight

2x1.5V alkaline batteries type AA LR06 Power supply:

**Duration:** approx. 40 hours

Auto Power OFF: after 10 minutes' idling (may be disabled)

4mm

Length of clamp jaws' connection cable

Max. cable diameter for

Safety:

IEC/EN61010-1, IEC/EN61010-2-032

double insulation

CAT III 300V Measurement category: 210x55x30mm

400g



### Display:

clamp:

Insulation:

Pollution level:

Size (LxWxH):

Weight (battery included):



### **Provided accessories**

Batteries

User Manual

Carrying bag





# HT8051

PROFESSIONAL PROCESS CALIBRATOR

HT8051 is a professional process calibrator capable of generating and measuring DC voltage and current signals up to 10V and 24mA respectively, with a very simple setting of values thanks to the innovative adjuster. In measuring and generating current, it is also possible to define a display, also in percentage format, corresponding to the set values (0% = 4mA, 100% = 20mA). The generation of voltage and current signals is also possible by using up to 3 selectable ramps. This model also allows measuring the current absorbed by external transducers directly supplied by them and simulating the presence of a transducer with adjustable current in its whole measuring range. The device has been designed in compliance with safety standard IEC/EN61010-1 with double protective insulation, and each function can be selected through the appropriate buttons found on the front panel. HT8051 is the ideal solution for typical industrial automation applications and for laboratory activities.





**TRMS** 

# ORDER CODE HV008100

PROFESSIONAL PROCESS CALIBRATOR/MULTIMETER

HT8100 is a professional device which groups measurements such as TRMS multimeter and function of process calibrator capable of generating current signals DC 0-20mA and 4-20mA. As a digital multimeter, the device mainly carries out AC/DC voltage and AC/ DC current measurements. In its function as a current generator (values can be displayed also in a percentage format) options 0-20mA and 4-20mA are available, with manual and automatic settings of thresholds on the output signal. This model also allows measuring the current absorbed by external transducers directly powering them and simulating the presence of a transducer with adjustable current in its whole measuring range. HT8100 is capable of saving the results of measurements in its internal memory and has been designed in compliance with safety standard IEC/EN61010-1 in CAT III 1000V and CAT IV 600V with double protective insulation. Each function can be selected through the appropriate buttons found on the front panel. This device is the ideal solution for typical industrial automation applications.

# **Functions**

- · Generation of voltage signal with amplitude up to 10VDC
- Measurement of voltage up to 10VDC
- Generation of current signal with amplitude up to 24mA DC
- Measurement of current up to 24mA DC
- Generation of voltage and current signals by means of 3 selectable ramps
- · High-sensitivity adjustment selector
- Display of current as a percentage (4-20mA)
- Measurement of transducers output current (Loop)
- · Simulation of an external transducer
- Shortcut function keys
- Powering with rechargeable Li-ION battery

#### DC voltage (generated and measured)

- Reading range: 0.01mV ÷ 10V
- Resolution: 0.01mV ÷ 0.001V
- Standard accuracy: ± (0.02% reading + 4digits)
- Protection: 30VDC

#### DC voltage (generated and measured)

- Reading range: 0.001mA ÷ 24mA
- Percentage: -25% ÷ 125%
- · Resolution: 0.001mA
- Standard accuracy: ± (0.02% reading + 4digits)
- · Protection: 30mADC

#### Output voltage and current ramps

- $\Lambda$  (slow linear ramp): Goes from  $0\% \rightarrow 100\% \rightarrow 0\%$  in 40s
- M (quick linear ramp): Goes from  $0\% \rightarrow 100\% \rightarrow 0\%$  in 15s
- $\checkmark$  (step ramp): Goes  $0\% \rightarrow 100\% \rightarrow 0\%$  through steps of 25% with ramps of 5s



#### **Main features**

Display: 5 LCD + secondary display 1x7.4V rechargeable Li-ION battery Power supply:

External battery

charger: Autonomy: about 8 hours in generation (@ 12mA,  $500\Omega$ )

230VAC/50Hz - 12VDC

Auto Power OFF: Safety:

after 20 minutes (adjustable) of non-use IFC/FN61010-1

195x92x55mm

400g

**Included accessories** 

Protective cover

User manual

Hard case for transport

Couple of leads, two crocodile clip terminals

Rechargeable battery, External battery charger

double insulation Insulation:

Level of pollution:

Measurement category:

CAT I 30V

Dimensions (LxWxH):

Weight (battery included):

KIT0075



#### **Functions**

- DC/AC TRMS voltage and current
- AC+DC measurements
- Automatic recognition of AC/DC signals
- Resistance, continuity test, diode test
- Frequency
- DC current generation up to 20mA DC
- Percentage display (0-20mA, 4-20mA)
   Measurement of output current of transducers (Loop)
- · Simulation of an external transducer
- · Input protective fuses
- Memory for measured data saving
- MAX/MIN/AVG, Data HOLD
- Relative measurement Automatic/Manual Range
- · Auto Backlight, Auto Power OFF



#### **Main features**

Display: LCD, 5 digits, 50000 dots Power supply: 4x1.5V alkaline batteries type AA LR6

Battery life: 120 hours

Auto Power OFF: after 20 minutes' idling IEC/EN61010-1 Safety:

CAT III 1000V, CAT IV 600V Measurement category: double insulation

Insulation: Pollution level:

2000m Max height: Size (LxWxH): 207x95x52mm Weight (batteries included): 630g



#### **Included accessories**

YAAMK0000HT0	Pair of 4mm test leads
YAAMK0001HT0	Pair of alligator clips
	Belt with magnetic terminal
	Protective case, battery and user manual



### **Technical Specifications**

#### DC voltage

- Measuring range: 0.001mV ÷ 1000V
- Resolution: 0.001mV ÷ 1.V
- Basic accuracy: ±(0.05%reading + 5 digits)
- Protection: 1000V DC/ACrms

#### AC TRMS voltage

- Measuring range: 0,001mV ÷ 1000V
- Resolution: 0.001mV ÷ 1.V
- Basic accuracy: ±(0.5%reading + 20 digits)
- Protection: 1000V DC/ACrms

#### DC current (measured)

- Measuring range: 0.001mA ÷ 1A
- Resolution: 0,001mA
- Basic accuracy:  $\pm (0.05\%$  reading + 5 digits)
- Protection: Fuse F440mA/1000V

#### DC current (generated)

- Measuring range: 0.000mA ÷ 20,000mA
- Resolution: 0.001mA
- Basic accuracy: ±0.002mA
- Protection: Fuse F440mA/1000V AC TRMS current (measured)

#### • Measuring range: 0,001mA ÷ 1A

- Resolution: 0.001mA
- Basic accuracy: ±(1%reading + 20 digits)
- Protection: Fuse F440mA/1000V

#### **Resistance and Continuity test** • Measuring range: $0.1\Omega \div 50M\Omega$

- Resolution:  $0.01\Omega \div 1k\Omega$
- Basic accuracy: ±(0.2%reading + 10 digits)
- Continuity test:<30Ω</li>
- Protection: 1000V DC/ACrms

#### Frequency

- Measuring range: 5Hz ÷ 100kHz
- Resolution: 0.01Hz ÷ 10Hz
- Basic accuracy: ±(3 digits)
- · Protection: 1000V DC/ACrms



















NEW

















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	HT65	HT64	HT63	HT62	HT61	JUPITER	NEPTUNE	MERCURY	FLASHMETER	IRONMETER	HT39	HT701	HT401	HT712
MAIN MEASUREMENTS		F	PROFESSIONAL TR	RMS MULTIMETER	RS					PROFESSIONAL TR	RMS MULTIMETERS			
TRMS	•	•	•	•	•	•	•	•	•	•	•	•	•	•
AC/DC voltage	• 1500VDC	• AC+DC	•	•	•	• AC+DC	• AC+DC	• AC+DC	•	•	•	•	• AC+DC	•
AC/DC voltage with low impedance (LoZ)	•	•	•	•	•	•	•	-	-	-	-	-	• AC	-
AC/DC current with external transducer	•	•	•	-	-	• Inrush	• Inrush	• AC+DC	-	-	-	-	-	-
AC/DC current with leads	-	• AC+DC	• AC+DC	•	•	-	-	•	-	•	•	•	• AC+DC	-
4-20mA% reading	-	•	•	-	-	-	-	-	-	-	-	-	-	-
Frequency	•	•	•	•	•	•	•	•	-	•	•	•	•	•
Resistance	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Continuity with buzzer	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Capacitance	•	•	•	•	-	-	-	•	-	•	•	•	•	-
Diode test	•	•	•	•	•	-	-	•	-	•	•	•	•	-
Duty Cycle (%)	•	•	•	•	•	-	-	•	-	•	•	-	-	-
Temperature with K-type probe	•	•	•	•	-	-	-	•	-	-	-	•	•	-
Insulation measurement (50,100,250,500,1000VDC)	-	-	-	-	-	-	•	-	-	-	-	•	-	-
Phase sequence and concordance	-	-	-	-	-	•	•	-	-	-	-	-	-	• + Conformity
Built-in LED torch	-	-	-	-	-	-	-	•		•	-	-	-	-
Test on A and AC general RCDs	-	-	-	-	-	•	-	-	-	-	-	-	-	-
L-L, L-N, L-PE, RA loop impedance	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Voltage/Current harmonics + THD%	-	-	-	-	-	•	-	-	-	-	-	-	-	-
Continuity of protective conductors with 200mA	-	-	-	-	-	-	•	-	-	-	-	-	-	-

#### ADDITIONAL CHARACTERISTICS

Measurement category	CAT IV 600V CAT III 1000V	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V CAT III 690V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT IV 600V	CAT III 600V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT IV 600V
Measuring counts	4000	6000	60.000	6000	6000	9999	9999	6000	4000	4000	4000	10000	6000	4000
Backlight	•	•	•	•	•	•	•	•	•	•	•	•	•	-
IR sensor resolution	-	-	-	-	-	-	-	• 80 x 80 pxl	-	-	-	-	-	-
Bluetooth	-	-	-	-	-	-	-	with APP HTMercury	-	-	-	-	-	-
Bargraph	-	•	•	•	•	•	•	•	-	-	•	•	•	-
Autorange	•	•	•	•	•	•	•	•	-	•	•	•	•	•
Auto power off	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Detection of AC voltage without contact	-	-	-	-	-	-	-	•	•	-	-	-	•	-
Data HOLD function	•	•	•	•	•	•	•	•	•	•	•	•	•	•
MIN/MAX/AVG functions	-	•	MIN/MAX	<ul> <li>MIN/MAX</li> </ul>	MIN/MAX	MIN/MAX	• MIN/MAX	• MIN/MAX	-	<ul> <li>MIN/MAX</li> </ul>	• MIN/MAX	•	• MIN/MAX	-
PEAK function	-	• (1 ms)	• (1ms)	-	-	• (1ms)	• (1ms)	•	-	-	•	-	•	-
Automatic recognition of AC/DC	-	-	-	-	-	•	•	-	•	-	-	-	-	•
Automatic recognition of internal functions	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Relative measurement	•	•	•	•	•	-	-	•	-	-	•	•	-	-
Data logger and graph	-	•	-	-	-	-	-	•	-	-	• (through SW)	-	-	-
Memory for data saving	-	•	-	-	-	-	-	(micro SD card)	-	-	-	•	-	-
Power supply	1x 9V 6F22	1x7.4V rechargeable Li-ION battery	4x 1.5V AAA	1x 9V 6F22	1x 9V 6F22	4x 1.5V AAA	4x 1.5V AAA	1x7.4V rechargeable Li-ION battery	2x 1.5V AAA	2x 1.5V AAA	1x 9V 6F22	4x 1.5V AA	1x 9V 6F22	2x 1.5V AAA
Size in mm (L x W x H)	175x85x55	175x85x55	175x85x55	175x85x55	175x85x55	175x85x55	175x85x55	190x75x55	135x75x40	120x85x45	164x82x44	207x95x52	190x94x48	250x51x30
Weight in grams	360	400	400	400	400	420	420	555	220	200	400	630	460	150
Safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order code	HR000065	HR000010	HR000001	HR000002	HR000003	HR00JUPI	HR00NEP	HR000MER	HR000011	HR000005	HR000039	HR000701	HR000401	HR000712

# DIGITAL MULTIMETERS

NEW

HT211

NEW

NEW











HT10







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MAIN MEASUREMENTS		DIGITAL MULTIMETERS				DIGITAL MU	JLTIMETERS		
TRMS	•	-	-	-	-	-	-	-	-
AC/DC Voltage	•	•	•	•	•	•	•	•	•
AC/DC Current	•	-	• DC	• DC	•	-	-	-	-
Frequency	•	•	-	-	•	-	-	-	-
Resistance	•	•	•	•	•	•	-	-	-
Continuity with buzzer	•	•	•	-	•	•	•	•	•
Capacitance	•	•	-	-	-	-	-	-	-
Diode test	•	•	•	•	-	-	•	-	•
Duty Cycle (%)	•	•	-	-	-	-	-	-	-
Temperature with K-type probe	•	-	-	-	-	-	-	-	-
AC Voltage with low impedance input (LoZ)	-	-	-	-	-	•	-	•	-
AC Voltage with 1 terminal	-	-	-	-	-	•	•	•	•
Phase sequence and phase concordance	-	-	-	-	-	•	•	•	•
Built-in LED torch	-	-	-	-	-	•	•	•	•

#### ADDITIONAL CHARACTERISTICS

ADDITIONAL GIIANAGI ENIGTIGG									
Measurement category	CAT III 600V	CAT III 600V	CAT III 600V	CAT III 300V CAT II 600V	CAT III 300V CAT II 600V	CAT III 1000V CAT IV 600V	CAT IV 600V CAT III 690V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 690V
Measuring counts	4000	4000	2000	2000	3400	1999	6900	1999	LED indications
Backlight	•	•	•	-	-	•	-	•	-
Bargraph	-	-	-	-	•	-	-	•	-
Autorange	•	•	-	-	•	•	-	•	-
Auto power off	•	•	-	-	•	•	•	•	•
Data HOLD function	•	•	•	•	•	•	•	-	•
MIN/MAX function	•	-	-	-	-	-	-	-	-
PEAK function	-	-	-	-	-	-	-	-	-
Relative measurement	-	•	-	-	-	-	-	-	-
Power supply	2x 1.5V AAA	1x 9V 6F22	1x 9V 6F22	1x 12V MS21/MN21	2x 1.5V AAA	2x 1.5V AAA	2x 1.5V AA	2x 1.5V AAA	2x 1.5V AA
Size in mm (L x W x H)	138x68x37	138x68x37	150x70x48	105x50x25	128x87x24	270x70x30	255x60x35	240x78x40	255x60x35
Weight in grams	235	210	255	100	210	290	170	240	170
Safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1 IEC/EN61243-3:2014	IEC/EN61010-1
Order code	HR000211	HR000021	HR00025N	HR00014D	HR000012	HR000100	HR000008	HR000007	HR000006











**→TRMS** 1500∨DC

# HT65|HT64|HT63|HT62|HT61





SERIES OF TRMS / CAT IV PROFESSIONAL DIGITAL MULTIMETERS WITH DATA LOGGER FUNCTIONS (HT64)

The new series of HT professional multimeters is the result of an important research conducted at the most demanding users of this kind of equipment, namely laboratories where the choice of a measuring instrument is subject to strict tests concerning precision, reliability and safety of measurements even in extreme conditions.

Therefore, a complete range multimeters, all able to measure in TRMS, all within CAT IV 600V, autorange function available on all models, with backlight display. The design is extremely modern and attractive, but also ergonomic, to ensure maximum ease of use. Display with high resolution, even in color version, for the premium model HT64. HT65 stands out among these, unique thanks to its ability to measure DC voltage up to 1500V.

In the summary table you can find all the features that make this innovative set of professional instruments unique and valuable.







#### **Main features**

4 digit LCD, 4000 pixels (HT65) Display: 4½ digit LCD, 6000 pixels (HT61, HT62)

4½ digit LCD, 60000 pixels (HT63) Color 4 41/2 digit TFT, 6000 pixels (HT64)

1x9v battery type 6F22 (HT65, HT61, HT62) Power supply: 4x1.5 V batteries type AAA LR03 (HT63)

1x7.4V rechargeable Li-ION battery (HT64)

after 15 minutes of non-use Auto Power OFF: (HT65, HT61, HT62, HT63)

5min ÷ 60 min of non-use (HT64)

Safety: IEC/EN61010-1

category: CAT IV 600V - CAT III 1000V

Level of pollution: Max operating altitude: 2000m Dimensions (LxWxH): 175x85x55mm Weight (batteries included): about 400 g



#### Included accessories

4324-2	Pair of test leads with 2/4mm tip
TK101	Type K wire probe
T10	Type K Probe adapter
A64	Power supply + adapter (HT64)
	Calibration certificate ISO 9000
	Ratteries user manual and transport had



### **Technical specifications**

	HT65	HT64	HT63	HT62	HT61
DC Voltage					
Reading range:	0.1mV ÷ 1500V	0.1mV ÷ 1000V	0.1mV ÷ 1000V	0.1mV ÷ 1000V	0.1mV ÷ 1000V
Standard accuracy:	±(1.2%reading+4digits)	±(0.1%reading+5digits)	±(0.9%reading+5digits)	±(1.0%reading+2digits)	±(1.0%reading+2digits)
AC Voltage					
Reading range:	1mV ÷ 1000V	0.1mV ÷ 1000V	0.1mV ÷ 1000V	1mV ÷ 1000V	1mV ÷ 1000V
Standard accuracy:	±(1.2%reading+10digits)	±(0.9%reading+5digits)	±(1.0%reading+5digits)	±(1.0%reading+8digits)	±(1.0%reading+8digits)
DC Current					
Reading range:	1A ÷ 1000A (with clamp)	0.1μA ÷ 10A	0.1μA ÷ 10A	0.1μA ÷ 10A	0.1µA ÷ 10A
Standard accuracy:	±(1.5%reading+6digits)	±(0.9%reading+5digits)	±(1.5%reading+5digits)	±(1.0%reading+3digits)	±(1.0%reading+3digits)
AC Current					
Reading range:	0.30A ÷ 3000A (with clamp)	0.1μA ÷ 10A	0.1μA ÷ 10A	0.1μA ÷ 10A	0.1μA ÷ 10A
Standard accuracy:	±(2.5%reading+10digits)	±(1.2%reading+5digits)	±(2.5%reading+5digits)	±(1.5%reading+3digits)	±(1.5%reading+3digits)
Resistance and continuit	ty test				
Reading range:	$0.1\Omega \div 40M\Omega$	$0.1\Omega \div 60M\Omega$	$0.1\Omega \div 60M\Omega$	$0.1\Omega \div 60M\Omega$	$0.1\Omega \div 60M\Omega$
Standard accuracy:	±(1.0%reading+2digits)	±(0.8%reading+5digits)	±(1.2%reading+5digits)	±(1.0%reading+4digits)	±(1.0%reading+4digits)
Buzzer:	<50Ω	<25Ω	<35Ω	<100Ω	<100Ω
Frequency					
Reading range:	0.001Hz ÷ 10MHz	0.001Hz ÷ 1MHz	0.001Hz ÷ 1MHz	0.001Hz ÷ 1MHz	0.001Hz ÷ 1MHz
Standard accuracy:	±(1.2%reading+3digits)	±(0.09%reading+5digits)	±(1.0%reading+2digits)	$\pm$ (0.1%reading+1digit)	±(0.1%reading+2digits)
Capacity					
Reading range:	0.01nF ÷ 40mF	0.01nF ÷ 6mF	0.01nF ÷ 6mF	$0.01nF \div 1000 \mu F$	-
Standard accuracy:	±(3.0%reading+5digits)	±(1.2%reading+8digits)	±(2.5%reading+10digits)	±(3.5%reading+4digits)	-
Duty Cycle					
Reading range:	0.5% ÷ 99.9%	0.1% ÷ 99.9%	20% ÷ 80%	0.1% ÷ 99.9%	0.1% ÷ 99.9%
Standard accuracy:	±(1.2%reading+2digits)	±(1.2%reading+2digits)	±(1.0%reading+5digits)	±(1.2%reading+2digits)	±(1.2%reading+2digits)
Temperature probe type	K				
Reading range:	-20°C ÷ 760°C	-40°C ÷ 1350°C	-40°C ÷ 760°C	-45°C ÷ 750°C	-
Standard accuracy:	±(3.0%reading + 5°C)	±(1.0%reading + 3°C)	±(2.0%reading + 3°C)	±(3.5%reading + 5°C)	-















THD%

# JUPITER

PROFESSIONAL DEVICE FOR ELECTRIC SAFETY VERIFICATIONS WITH ADVANCED MULTIMETER FUNCTIONS

The new JUPITER and NEPTUNE are innovative devices which, further to being used as powerful multimeters for TRMS measurements, allow performing electric safety tests (RCD, Ra, Loop, Insulation and Continuity). The belong to CAT IV 600V, with autorange function available in all models, as well as the backlit display. The design is extremely modern and attractive but, at the same time, ergonomic, to offer the best possible ease of











ORDER CODE HROOOMER

PROFESSIONAL MULTIMETER WITH IN-BUILT THERMAL CAMERA

MERCURY is a digital TRMS multimeter which mainly measures AC/ DC voltage up to 1000V and AC/DC current up to 10A. Among its important functions, this device features mode AC+DC, which is used to also detect direct components possibly overlapping the alternate signal, and measurement of currents with the use of standard and flexible clamp transducers\* (accessory F3000U) directly connected to it. A thermal camera with resolution 80x80pxl is also built in the device in order to allow for a possible simultaneous reading of electric and thermal values of the item to be tested. MERCURY is also provided with a **Data Logger function** which allows it to perform and save recordings of every parameter which can be measured by the device and graphically display the trend of the values. The device allows saving pictures in BMP format on a micro SD card (provided), and also has a **Bluetooth** function to connect to mobile devices (tablets/smartphones) through the dedicated APP HTMercury, to create reports to share measured results.

\* Standard HT96U and flexible F3000U.



#### **Functions and characteristics**

	JUPITER	NEPTUNE
Multimeter section		
DC / AC, AC+DC TRMS voltage	•	•
DC / AC / AC+DC TRMS voltage with low impedance (LoZ)	•	•
AC TRMS current up to 3000A with optional flexible clamp transducer F3000U	•	•
Automatic recognition of AC and DC quantities	•	•
Inrush current (Dynamic INRUSH - DIRC)	•	•
Current/voltage harmonics up to the 25 <sup>th</sup> and THD% calculation	•	•
Resistance and continuity with buzzer	•	•
Current and voltage frequency	•	•
MAX/MIN/PEAK/HOLD functions	•	•
9999 measuring spots	•	•
Auto-Power-Off function	•	•
Bargraph function	•	•
Funzione bargraph	•	•
Electric verification section		
Overall earth resistance L-PE without RCD tripping	•	-
Loop impedance L-L, L-N and calculation of assumed short-circuit current	•	-
Measurement of tripping time on General RCDs type A and AC (30mA,100mA, 300mA)	•	-
Measurement of tripping current on General RCDs type A and AC (30mA)	•	-
Phase sequence with 1 terminal	•	•
Insulation with test voltage 50, 100, 250, 500, 1000V with PI and DAR calculation	-	•
Continuity of protective conductors with 200mA	-	•



#### **Included accessories**

C2065	Three wire cable Red, Black, Green with Schuko plug <i>(JUPITER)</i>
4324-2	Pair of test tips Red/Black 2/4mm straight banana
YABAT0001HT0	Alkaline battery 1.5V, type AAA, IEC LR03, 4 pcs
YABRS0002HT0	Carrying bag
YAMUM0066HT0	User manual on CD-ROM
YAMUM0065HT0	Quick reference guide
	Calibration certificate ISO9000



### **Optional accessories**

606-IECN	Connector with magnetic terminal
F3000U	AC flexible clamp with 30/300/3000A full scales
HT96U*	AC current clamp with 1/100/1000A full scales
HT97U*	AC current clamp with 10/100/1000A AC full scales
HT98U*	DC current clamp with 1000A full scale
HT4006	AC/DC current clamp with 40/400A full scales
NOCANBA	Hypertac-to-banana adapter
5004-IECR	Red alligator clip
5004-IECN	Black alligator clip

The standard accessories can be different depend on countries

Adapter NOCANBA required.



#### **Functions and characteristics**

- DC voltage
- AC and AC+DC TRMS voltage
- DC current
- AC and AC+DC TRMS current
- AC and AC+DC TRMS current with standard clamp transducers.
- AC TRMS current with flexible clamp transducer F3000U
- "Voltsense" for AC voltage detection without contact
- Resistance and Continuity test
- · Diode, Capacitance and Frequency tests
- Temperature with K-type probe
- · Infrared temperature with in-built thermal camera
- In-built datalogger
- Data HOLD
- MIN/MAX/PEAK
- · Relative measurement
- Bargraph
- Backlight
- · Input protective fuses
- Auto Power OFF



#### Main features

Power supply: 1x7.4V rechargeable Li-ION battery, 1200mAh

Safety: IEC/EN61010-1

CAT IV 600V, CAT III 1000V Measurement category:

Insulation: double insulation

Pollution level: Mechanical protection IP65

index:

Max operating altitude: 2000m

Size (LxWxH): 190x75x55mm Weight (batteries approx 555g

included):

#### Included accessories

F3000U	Flexible clamp with full scale 30/300/3000A AC and banana connectors
4324-2	Pair of Red/Black banana connectors with 2/4mm tip
BATMCY	Spare battery Li-ION 7,4V 1500mAh
AOMCY	Multiplug power supply for MERCURY with recharging base
	Micro SD card 8GB,10x
BOMCY	Carrying bag
	Alkaline battery type AAA IEC LR03, 2 pieces <i>(for F3000U)</i>
	Type K bead probe + adapter
	User Manual
	Calibration certificate ISO9000



#### **Optional accessories**

HT96U**	Standard clamp with full scale 1/100/1000A AC and Hypertac connector
HT97U**	Standard clamp with full scale 10/100/1000A AC and Hypertac connector
HT98U**	Standard clamp with full scale 1000A DC and Hypertac connector
HT4006	Standard clamp with full scale 40/400A AC/DC and banana connectors

The standard accessories can be different depend on countries

\* Adapter NOCANBA required.







ORDER CODE HR000005 | HR000011

# IRONMETER **FLASHMETER**

TRMS MULTIMETERS WITH BUILT-IN LED TORCH AND TOTAL AUTORANGE (FLASHMETER)

IRONMETER is the true tester for construction sites, realized with a very sturdy structure capable of resisting every shock, ready to rise again after any fall (even from 3 m high) and keep working with the very same precision and reliability. It is provided with all of the typical functions of everyday use, but also features an in-built LED torch to illuminate poorly lit environments, when necessary. FLASHMETER, according to the quantity present at the input, automatically switches between voltage and resistance measurement.





ORDER CODE HR000039

TRMS MULTIMETER 4000 DOTS WITH SERIAL INTERFACE RS-232

HT39 is a professional TRMS multimeter which mainly measures AC/DC voltage and AC/DC current in total Autorange, further to **Peak values**, useful in **industrial verifications**. The device is also provided with serial interface RS-232 for PC connection and real-time display of the quantities to be measured. Under these conditions it is possible (through optional dedicated software) to activate and save recordings of the parameters, with programmable sampling period. HT39 is designed to reach category CAT III 1000V and CAT IV 600V and is provided with a fuse with high breaking capacity on the current input.

# **Functions**

	IRONMETER	FLASHMETER
TRMS Measurements	•	•
Automatic selection of measurements	-	•
AC/DC Voltage	• (600V)	• (600V)
AC/DC Current	• (10A)	-
Resistance/Continuity Test	•	•
Detection of AC voltage without contact	•	•
Frequency	•	-
Capacitance, Diode test	•	-
Duty cycle	•	-
Built-in flashlight	•	•
Auto HOLD function	-	•
Autorange	•	•
Backlight	•	•
Auto Power OFF	•	•



#### **Main features**

2x1.5V batteries type AAA IEC LR03 Power supply:

Safety: IEC/EN61010-1 CAT III 600V Measurement

category: Insulation:

double insulation

Pollution level: 2 Max operating altitude: 2000m

Display: 4 LCD, 4000 dots, decimal sign and point

Yes (IRONMETER) Protection fuses:

120x65x45mm (IRONMETER) Dimensions (LxWxH): 140x75x40mm (FLASHMETÉR)

200g (IRONMETER) Weight (batteries 220g (FLASHMETER) included):



#### **Included accessories**

4324-2	Pair of test leads with tip 2/4mm
	Batteries
	Transport bag
	User Manual



# **Functions**

· TRMS Measurements

 DC Voltage: 1000V AC Voltage: 750V

AC/DC Current: 10A

· Resistance/Continuity Test

Frequency

· Capacitance and Diode test

· Data HOLD, MAX/MIN/PEAK

Relative measurement

• RS-232 interface

Backlight

Bargraph

· Auto Power OFF



#### **Included accessories**

Pair of test leads
Batteries
Protective case with support
User Manual



#### **Main features**

1x9V batteries type 6F22 Power supply:

Safety: IEC/EN61010-1

CAT IV 600V, CAT III 1000V Measurement

category: Insulation:

double insulation

Pollution level: 2 2000m

Max operating altitude:

Display:

400g

4 LCD, 4000 dots, decimal sign and point Protection fuses:

164x82x44mm Dimensions (LxWxH):

Weight (batteries included):



#### **Optional accessories**

I	B80	Soft carrying bag
9	SW39	Windows software + BS-232 cable









PROFESSIONAL MULTIMETER FOR INSULATION MEASUREMENT UP TO 1000V

Professional TRMS multimeter with 10.000 measuring spots and measurement of insulation resistance with selectable test voltage between 50, 100, 250, 500, 1000VDC. HT701 is capable of saving the results of measurements in its internal memory and has been designed in compliance with safety standard IEC/EN61010-1 in CAT III 1000V and CAT IV 600V with double protective insulation.



emote switch probe for insulation









#### ORDER CODE HR000401

PROFESSIONAL MULTIMETER FOR AC+DC TRMS MEASUREMENT AND LoZ INPUT

Professional digital multimeter in TRMS with 6000 measuring spots which mainly carries out measurements of AC/DC voltage and AC/DC current. Among the many functions of the device there are the AC+DC mode, used to consider also continuous components possibly overlapping the alternate signal and AC voltage measurements in conditions of **low impedance (LoZ)** in order to reduce the influences when measuring between adjacent conductors.



#### **Functions**

- DC/AC TRMS voltage
- DC/AC TRMS current
- Insulation with test voltage up to 1000VDC
- Resistance and Continuity test
- Frequency
- Diode test
- Capacity
- Temperature with K-type probe
- Internal memory for measured data saving
- Data HOLD, MAX/MIN, Relative measurement
- Automatic/Manual Range
- · Backlight, Bargraph Auto Power OFF



#### Main features

Display: LCD, 10000 dots

4x1.5V alkaline batteries type AA LR6 Power supply: after 20 minutes' idling Auto Power OFF:

IEC/EN61010-1. IEC/EN61557-1-2 Safety: CAT III 1000V, CAT IV 600V Measurement category:

double insulation

Insulation:

Pollution level: 2000m Max height: 207x95x52mm Size (LxWxH): Weight (batteries included):



#### **Included accessories**

4413-2	Pair of test leads
YAAMK0001HT0	Pair of alligator clips
PR701	Probe for insulation measurement
TK101	K-type wire probe
T10	Adapter for K-type probes
	Belt with magnetic terminal
	Protective case, battery and user manual



#### **Technical Specifications**

- Measuring range: 0.01mV ÷ 1000V
  Resolution: 0.01mV ÷ 0.1V
  Basic accuracy: ±(0.08%reading + 2 digits)
  Protection: 1000V DC/ACrms

  ACTIME release
  Protection: 1000V DC/ACrms

- AC TRMS voltage

  Measuring range: 0.01mV ÷ 1000V

  Resolution: 0.01mV ÷ 0.1V

  Basic accuracy: ±(0.9%reading + 3 digits)

  Protection: 1000V DC/ACrms

#### DC current

- Measuring range: 0.01mA ÷ 400mA
  Resolution: 0.01mA ÷ 0.1A
- Basic accuracy: ±(0.2%reading + 2 digits)
   Protection: Fuse F440mA/1000V

#### **AC TRMS current**

- Measuring range: 0.01mA ÷ 400mA
   Resolution: 0.01mA ÷ 0.1mA
   Basic accuracy: ±(1.5%reading + 2 digits)
   Protection: Fuse F440mA/1000V

#### **Resistance and Continuity test**

- Measuring range: 0.1Ω ÷ 40MΩ
   Resolution: 0.1Ω ÷ 0.01MΩ
- Resolution: 0.112 = 0.01MΩ
  Basic accuracy: ±(0.5%reading + 2 digits)
  Continuity test:<30Ω</li>
  Protection: 1000V DC/ACrms

#### Frequency

- Measuring range: 0.01Hz ÷ 100kHz
- Resolution: 0.01Hz ÷ 0.01kHz
   Basic accuracy: ±(0.1%reading + 5 digits)
   Protection: 1000V DC/ACrms

#### Capacity

- Measuring range: 0.001µF ÷ 40mF
  Resolution: 0.001µF ÷ 0.01mF
  Basic accuracy: ±(1.2%reading + 2 digits)
  Protection: 1000V DC/ACrms

#### Temperature with K-type probe

- Measuring range: -200°C ÷ 1200°C
  Resolution: 0.1°C
  Basic accuracy: ±(1.0%reading + 1°C)

#### • Protection: 1000V DC/ACrms Insulation measurement

- Test voltage: 50,100,250,500,1000VDC
- Measuring range: 2MΩ ÷ 22GΩ
   Resolution: 0.001MΩ ÷ 0.1GΩ
- Basic accuracy: ±(1.5%reading + 5 digits)
   Protection: 600V DC/ACrms

#### **Functions**

- DC/AC TRMS voltage
- DC/AC TRMS current
- AC+DC measurements
- AC voltage measurement with low impedance "LoZ"
- "VoltSense" for AC voltage detection without contact
- · Resistance and Continuity test
- Frequency
- Diode test
- Capacity
- Temperature with K-type probe
   Data HOLD, MAX/MIN/PEAK
- Relative measurement
- Automatic/Manual Range
- · Backlight, Bargraph



### Main features

LCD, 4 digits, 6000 dots Display: 1x9V alkaline battery type 6F22 Power supply: 150 hours Battery life:

Auto Power OFF: after 20 minutes' idling IEC/EN61010-1 Safety: CAT III 1000V, CAT IV 600V Measurement category:

Insulation: Double insulation Pollution level: Max height: 2000m

Size (LxWxH): 190x94x48mm Weight (batteries included):



#### Included accessories

4413-2	Pair of test leads	
TK101	K-type wire probe	
T10	Adapter for K-type probes	
	Protective case, battery and user manual	



#### **Technical Specifications**

- Measuring range: 0.01mV ÷ 1000V
- Resolution: 0.01mV ÷ 0.1V
- Basic accuracy: ±(0.08%reading + 2 digits)
- Protection: 1000V DC/ACrms

#### AC TRMS voltage

- Measuring range: 0.01mV ÷ 1000V
- Resolution: 0.01mV ÷ 0.1V
- Basic accuracy: ±(0.8%reading + 5 digits)
- Protection: 1000V DC/ACrms

#### DC current

- Measuring range: 0.01mA ÷ 10A
- Resolution: 0.01mA ÷ 0.01A
- Basic accuracy: ±(0.8%reading + 3 digits)
- Protection: Fuse F440mA/1000V Fuse F11A/1000V

#### **AC TRMS current**

- Measuring range: 0.01mA ÷ 10A
- Resolution: 0.01mA ÷ 10A
- Basic accuracy: ±(1.2%reading + 3 digits) Protection: Fuse F440mA/1000V - Fuse F11A/1000V

#### Resistance and Continuity test

- Measuring range:  $0.1\Omega \div 40M\Omega$
- Resolution:  $0.1\Omega \div 0.01M\Omega$
- Basic accuracy: ±(0.8%reading + 2 digits)
- Continuity test:<30Ω</li>
- Protection: 1000V DC/ACrms

#### Frequency

- Measuring range: 0.01Hz ÷ 100kHz
- Resolution: 0.01Hz ÷ 0.01kHz
- Basic accuracy: ±(0.1%reading + 2 digits)
- Protection: 1000V DC/ACrms

#### Capacity

- Measuring range: 0.001µF ÷ 10mF
- Resolution:  $0.001\mu\text{F} \div 0.01\text{mF}$
- Basic accuracy: ±(1.2%reading + 2 digits)
- Protection: 1000V DC/ACrms

#### Temperature with K-type probe

- Measuring range: -40°C ÷ 400°C
- Resolution: 0.1°C
- Basic accuracy: ±(1.0%reading + 10 digits)
- Protection: 1000V DC/ACrms

#### PROFESSIONAL TRMS MULTIMETERS







ORDER CODE HR000712

HT712

DIGITAL MULTIMETER WITH MEASUREMENT OF VOLTAGE AND PHASE SEQUENCE WITH 1 LEAD

HT712 has been designed to practically and functionally perform the basic functions of a common digital tester in an extremely easy and quick way, thanks to its narrow and long structure. The device measures AC/DC voltage, Frequency, Resistance, and performs Continuity tests. Thanks to the innovative and patented 1-terminal method, it is possible to measure Voltage and Frequency, while the Phase sequence can also be measured directly on the isolating sheaths of the cables

### Functions

- TRMS measurement
- DC/AC voltage
- AC voltage with 1 terminal
- Automatic recognition of AC/DC
- Resistance and Continuity test
- Frequency
- Frequency with 1 terminal
- Phase sequence with 1 terminal
- Data HOLD
- LED indications OK/FAIL
- Autorange
- Measurement category (@ 600V)
- AutoPowerOFF



#### **Main features**

Display: LCD, 3¾ digits, 4000 dots
Power supply: 2x1.5V batteries type AAA
Auto Power OFF: after 5 minutes' idling
Safety: IEC/EN 61010-1
Insulation: double insulation

Pollution level: 2

Size (LxWxH): 250x51x30mm Weight (batteries included): 150g



### **Technical Specifications**

#### DC voltage

- Measuring range: 0.5V ÷ 600V
- Resolution: 0.1V
- Basic accuracy: ±(0.8%rdg + 1digit)

#### AC voltage with 2 terminals

- Measuring range: 1.5V ÷ 600V
- Resolution: 0.1V
- Basic accuracy: ±(1.5%rdg + 5digits)

#### Resist. and Continuity test

- Measuring range:  $1\Omega \div 1500\Omega$
- Resolution: 1Ω
- Basic accuracy: ±(1.0%rdg + 5digits)
- Continuity:  $<100\Omega$

#### Frequency with 2 terminals

- Measuring range: 40Hz ÷69Hz
- Resolution: 0.1Hz
- Basic accuracy:  $\pm (0.5\% \text{rdg} + 1 \text{digit})$

#### Phase sequence with 1 terminal

- Measuring range: 100V ÷ 600V
- Resolution: 1V



#### **Included accessories**

P711EU	Red measuring lead
P710EU	Black measuring lead
B700	Holster
	ISO9000 calibration certificate
	Batteries and user manual



# ORDER CODE **HR00021** | **HR000021** | **HR000025N**HT211 | HT21 | HT25N

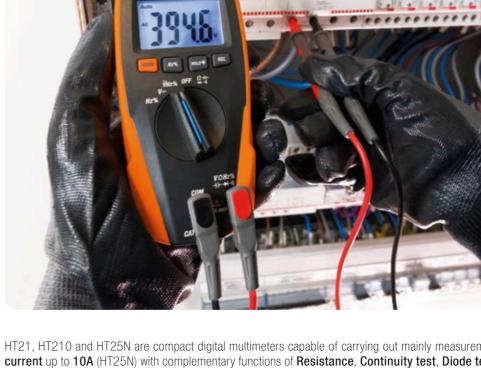


COMPACT DIGITAL MULTIMETERS IN CAT III









HT21, HT210 and HT25N are compact digital multimeters capable of carrying out mainly measurements of AC/DC voltage up to 600V and DC current up to 10A (HT25N) with complementary functions of Resistance, Continuity test, Diode test and 9V and 1.5V alkaline battery tests. These devices have been designed in compliance with safety standard IEC/EN61010-1 with double protective insulation in CAT III 600V. They are provided with a wide LCD display with backlight and each function can be selected through its relevant switch. A further function of this device is Data HOLD to freeze data on the display and REL for relative measurements. HT210 also offers the possibility of measuring **temperature with** the provided K-type probe, but also with the optional TK1xx probes.

# **Functions**

	HT211	HT21	HT25N
TRMS	•	-	-
AC / DC voltage	•	•	•
AC / DC current	•	-	• DC
Resistance / Continuity test	•	•	•
Frequency	•	•	-
Capacity	•	•	-
Diode test	•	•	•
Duty Cycle	•	•	-
Temperature with K-type probe	•	-	-
Battery test 1.5V/9V	-	-	•
Data HOLD	•	•	•
Relative measurement	•	•	-
Backlight	•	•	•
Auto Power OFF	•	•	•



#### **Main features**

LCD 31/2 digits, 2000 dots (HT25N) Display:

4 digits LCD display, 4000 dots, decimal sign

and point (HT21)

3¾ digits LCD display, 4000 dots plus decimal

sign and point (HT211)

1x9V batteries type IEC 6F22 (HT21, HT25N) Power supply:

2x1.5V batteries type AAA IEC LR03 (HT211)

after 15 minutes' idling (HT211) Auto Power OFF: after 30 minutes' idling (HT21)

Safety: IEC/EN 61010-1

Measurement CAT III 600V

category:

Pollution level:

Insulation: double insulation Size (LxWxH): 145x70x60mm

Weight 210g **(HT21, HT211)**, 255g **(HT25N)** 

(batteries included):



#### **Included accessories**

4324-2	Pair of test leads with tip 2/4mm
	Adapter T10 + K-type wire probe (HT211)
	Soft carrying bag for (HT21, HT211)
	Batteries and user manual

# **Technical Specifications**

HT21 - HT211		HT25N	
DC voltage			
Measuring range:	20mV ÷ 600V	1mV ÷ 600V	
Resolution:	0.001V÷1V	0.1mV÷1V	
Basic accuracy:	±(1.2%reading + 2digits)	±(1%reading+ 3digits)	
Protection:	600VDC	200Vrms for scale 200.0mV 600V AC/DC	
AC voltage			
Measuring range:	20mV ÷ 600V	1V ÷ 600V	
Resolution:	0.001V÷1V	0.1V ÷ 1V	
Basic accuracy:	±(1.2%reading + 4digits)	±(1.5%reading+12digits)	
Protection:	600VAC	600VAC	
DC current			
Measuring range:	400.0μA ÷ 10A AC/DC ( <b>HT211</b> )	2mA ÷ 10A DC	
Resolution:	0.1μA ÷ 0.01A <b>(HT211)</b>	1μA ÷ 0.01A	
Basic accuracy:	±(1%reading+3digits) (HT211)	±(1.5%reading+3digits)	
Protection:	Rapid fuse 500mA / 600V Quick fuse 10A / 600V for scale 10A (HT211)	Rapid fuse 200mA / 600V Quick fuse 10A / 600V for scale 10A	
Battery test			
Measuring range:	-	1.5 / 9V	
Resolution:	-	1.5V=1mV / 9V=10mV	
Basic accuracy:	-	±(1.5%reading+3digits)	
Protection:	-	1.5V=100mA / 9V=6mA	

	HT21 - HT211	HT25N						
Resistance and Continuity test								
Measuring range:	2Ω ÷ 40MΩ	$1\Omega \div 2M\Omega$						
Resolution:	$0.1\Omega \div 0.01M\Omega$	0.1Ω ÷ 1KΩ						
Basic accuracy:	±(1%reading + 2digits)	±(1.2%reading + 4digits)						
Continuity test	<150Ω	<60Ω						
Protection:	250Vrms	250Vrms < 15sec						
Frequency								
Measuring range:	25mHz ÷10MHz	-						
Resolution:	0.001Hz ÷10KHz	-						
Basic accuracy:	$\pm$ (1.2%reading + 3digits)	-						
Protection:	250Vrms	-						
Capacity								
Measuring range:	0.2nF ÷ 100μF	-						
Resolution:	0.01nF ÷ 0.1μF	-						
Diode test								
Resolution:	1mV	1mA						
MAX Open-circuit voltage:	1.5VDC	2.8VDC						
Basic accuracy:	±(10%reading+5digits)	ND						
Duty Cicle								
Measuring range:	0.5% ÷ 99%	-						
Resolution:	0.1%	-						
Basic accuracy:	$\pm$ (1.2%reading + 2digits)	-						
Protection:	250Vrms	-						
Temperature with K prol	oe (only HT211)							
Measuring range:	-20°C ÷ 760°C	-						
Resolution:	0.1°C ÷ 1°C	-						
Basic accuracy:	±(3%reading + 5°C)	-						





ORDER CODE **HROOO14D**HT14D

POCKET DIGITAL MULTIMETER

HT14D is a **compact** digital multimeter capable of carrying out mainly measurements of **AC/DC voltage** up to **500V** and **DC current** up to **200mA** with complementary functions of **Resistance**, **Diode test** and **9V alkaline battery test**. This device has been designed in compliance with **safety standard IEC/EN61010-1** with double protective insulation in **CAT III 300V**. HT14D is provided with a wide **LCD display** and each function may be selected through its relevant switch. A further function of this device is **Data HOLD** to freeze data on the display.



- DC/AC voltage
- AC/DC current integrated clamp sensor
- Resistance and continuity test with buzzer
- Current and voltage frequency
- Data HOLD
- Automatic / manual selection of measuring range
- Auto Power OFF



#### Main features

Display: LCD, 3¾ digits, 3400 dots
Power supply: 2x1.5V battery type AAA LR03
Auto Power OFF: after 10 minutes' idling
Safety: IEC/EN 61010-1

Measurement category: CAT III 300V, CAT II 600V

Pollution level: 2

Insulation: double insulation
Size (LxWxH): 128x87x24mm

Weight (batteries included): 210g



#### **Included accessories**

Anti-shock protection shell

Integrated measuring leads and clamp meter

Batteries and user manual



#### **Technical Specifications**

#### DC voltage

- Measuring range: 0mV ÷ 600V
- Resolution: 0.001mV ÷ 0.1V
- Basic accuracy: ±(1.5%reading + 4digits)
- · Protection against overcharge: 720VDC/AC for 10 seconds

#### AC voltage

- Measuring range: 0V ÷ 600V
- Frequency band: 50Hz ÷ 400Hz
- Resolution: 0,001V ÷ 1V
- Basic accuracy: ±(1.5%reading + 5 digits)
- Protection against overcharge: 720VDC/AC for 10 seconds

#### AC/DC current integrated clamp sensor

- Measuring range: 0A ÷ 60A
- Resolution: 0.1A
- Frequency range: 50Hz ÷ 60Hz
- Basic accuracy: ±(2%reading + 5digits)
- Protection against overcharge: 72A DC/AC for 10 seconds

#### Resistance and Continuity test

- Measuring range:  $0\Omega \div 34M\Omega$
- Resolution:  $0.1\Omega \div 0.01M\Omega$
- Basic accuracy: ±(1%reading + 3digits)
- Protection against overcharge: 720VDC/AC for 10 seconds
- Continuity buzzer: R<30 $\Omega$  ± 10 $\Omega$

#### Frequency

- Current measuring range: OHz ÷ 10kHz
- Voltage measuring range: OHz ÷ 300kHz
- Basic accuracy: ±(0.1%reading + 1digit)
- Resolution: 0,001kHz ÷ 0.01MHz
- Protection against current overcharge: 72A DC/AC for 10 seconds
- Protection against voltage overcharge: 720VDC/AC for 10 seconds

### Functions

- DC/AC voltage
- DC current
- · Resistance and Continuity test
- Diode test
- · Battery test 9V
- Data HOLD

#### Main features

Display: LCD, 3½ digits, 2000 dots
Power supply: 1x12V batteries type MS21/MN21

Safety: IEC/EN61010-1
Insulation: double insulation

Pollution level:

Size (LxWxH): 105x50x25mm Weight (batteries 100g

included):

### Included accessories

KIT4000A

Measuring leads with tip 2mm

Batteries and user manual



#### **Technical Specifications**

#### DC voltage

- Measuring range: 200mV ÷ 500V
- Resolution: 0.1mV ÷ 1V
- Basic accuracy: ±(0.5%rdg + 2digits)

#### AC voltage

- Range: 1V ÷ 500V
- Resolution: 0.1V ÷ 1V
- Basic accuracy:  $\pm (1.2\% rdg + 10 digits)$

#### **Resistance and Continuity test**

- Measuring range:  $1\Omega \div 2000\Omega$
- Resolution:  $0.1\Omega \div 1k\Omega$
- Basic accuracy:  $\pm (0.8\% \text{rdg} + 4 \text{digits})$

#### DC current

- Measuring range:  $2000\mu\text{A} \div 200\text{mA}$
- Resolution:  $1\mu A \div 0.1 mA$
- Basic accuracy:  $\pm (1.2\% \text{rdg} + 2 \text{digits})$

ORDER CODE HR000100 | HR000008 | HR000007 | HR000006

# HT10|HT8|HT7|HT6





TWO-POLE MULTIFUNCTION TESTERS WITH BUILT-IN LED TORCH













 $\label{eq:multimeter} \mbox{Multimeter function with display and LED indication.}$ 



Measurement of phase sequence.

# Functions

	HT10	НТ8	HT7	НТ6
AC/DC Voltage	(1000V)	(690V)	(690V)	(690V)
AC Voltage with 1 terminal	•	•	•	•
AC Voltage with low impedance input	•	-	•	-
Phase sequence	•	•	•	•
Continuity test with buzzer	•	•	•	•
Resistance measurement	•	-	-	-
Diode test	-	•	-	•
LED indications and sound notifications	•	•	•	•
LCD display	•	•	•	-
Integrated torch	•	•	•	•



Weight

(batteries included):

#### **Main features**

Display: LCD, 4digits, 6900 dots (HT8) LCD, 31/2 digits, 1999 dots (HTT, HT10) Power supply: 2x1.5V battery type AAA LR03 IEC/EN61010-1, Safety: IEC/EN61010-2-030 (HT8), IIEC/EN61243-3:2014 CAT IV 600V - CAT III 690V (HT7, HT8) Measurement CAT IV 600V - CAT III 1000V (HT10) category: Pollution level: double insulation Insulation: 255x60x35mm (HT6, HT8) Size (LxWxH): 240x78x40mm (HT7) 270x70x30mm (HT10)

270x70x30mm (HT10) 170g (HT6, HT8) 240g (HT7) 290g (HT10)



### **Technical Specifications**

	HT10	HT8	HT7	HT6		
DC/AC voltage						
Measuring range:	6V ÷ 1000V	10V ÷ 690V	6V ÷ 690V	12V ÷ 690V		
Frequency band:	40Hz ÷ 400Hz	16Hz ÷ 400Hz	50Hz ÷ 60Hz	16Hz ÷ 400Hz		
Resolution:	1V	0.1V	1V	1V		
Basic accuracy:	±(3%reading + 5digits)	±(3%reading + 5digits)	±(1%rdg+3dgt) (DC) ±(1.5%rdg+5dgt) (AC)	In compliance with EN61243-3		
Protection against overcharge:	1000VDC/AC	690VDC/AC	690VDC/AC	690VDC/AC		
AC voltage with 1 terminal						
Measuring range:	100V ÷ 1000V	100V ÷ 690V	100V ÷ 690V	100V ÷ 690V		
Frequency band:	50Hz ÷ 400Hz	50Hz ÷ 60Hz	50Hz ÷ 60Hz	50Hz ÷ 60Hz		
Protection against overcharge:	1000VDC/AC	690VAC	690VAC	690VAC		
Phase sequence						
Measuring range:	100V ÷ 1000V	120V ÷ 400V (Phase-Earth)	100V ÷ 690V	120V ÷ 400V (Phase-Earth)		
Frequency band:	50Hz ÷ 60Hz	50Hz ÷ 60Hz	50Hz ÷ 60Hz	50Hz ÷ 60Hz		
Protection against overcharge:	1000VDC/AC	690VAC	690VAC	690VAC		
Continuity test with LED and	d buzzer					
Measuring range:	0Ω ÷ 400kΩ	0Ω ÷ 500kΩ	0Ω ÷ 200kΩ	0Ω ÷ 500kΩ		
Test current:	<5μA	<7μΑ	<1µA	<7μΑ		



### Included accessories

	Protection cap for lead, 2 pieces
	Adapter 4mm for lead, 2 pieces
PR9	Mobile lead (HT6, HT8)
	Batteries and user manual



#### **Optional accessories**

	PR9	Mobile lead (HT6, HT8)
_	B71	Carrying bag (HT7)









### Power clamps

#### Who?

- Technicians and maintenance operators in the industry sector
- Power Quality Professionals
- Energy managers
- Maintenance operator in the photovoltaic field

#### Where?

- Transformer cabinets
- Electric switchboars
- Electric motors
- Measurements near inverters
- Photovoltaic installations

### AC/DC clamps

#### Who?

- Installers and electricians of industrial and domestic electric systems
- Maintenance operators in the electric sector in general, and in the photovoltaic field

### Leakage clamps

#### Who?

- Installers and maintenance operators in the domestic and industrial sector
- > Safety verification authorities of domestic and industrial electric systems

- Domestic and industrial electric systems
  - Electric panels
- Electric motors

Where?

Photovoltaic installations

#### Where?

- Electric panels
- Electric motors
- Earthing systems

#### Why?

**CLAMP** 

**METERS** 

They carry out the main function of mobile equipment and, in this case, offer the possibility of quickly displaying quantities such as Power, Cosphi, Harmonics, Inrush Currents (INRUSH) which are functions generally carried out by proper power analyzers.

#### Why?

Ordinary and preventive maintenance of distribution (also photovoltaic) systems is mainly based on ammetric absorption; in industrial systems it is good practice to use TRMS equipment.

#### Why?

A correct mapping of all leakage currents to earth can only be carried out with clamps like HT77N, capable of detecting currents as small as **µA**, and HT78 which, due to the exceptional size of its jaws, is suitable for tests on very big loads.

	LA	M	IP
M	ET	$\exists$	25

	-								NE	W	NE	W					NEW		_	_		NEW
LAMP IETERS	HT9019	HT9014	HT9012	HT4011	HT4010	F3000	HT100	HT7004	HT3010	HT3013		228.5									Ö	
AAIN BAFACUDFBAFNTO	1119019	1113014	1113012			1 3000	111100	1117004	1113010	1113013	ECLIPSE	HT9025	HT9021	HT9015	HT4013	HT7005	HT9023	HT9020	HT4022	HT4020	HT79	HT77(
MAIN MEASUREMENTS TRMS	•	•	_	_ A	.C	•	•	•	•	•	•	•	• AU	JDC •	_	•	H/	ARMUNIGS A	ND/OR POW	<b>е</b> к	LEAK •	KAGE
			-		0004										4004	4004						
urrent measuring range	1000A	600A	600A	400A	600A	3000A	200A	300A	400A	400A	1000A	1000A	1000A	600A	400A	400A	1000A	1000A	400A	400A	10A (DC) 20A (AC)	60A
.C/DC current	• AC	• AC	• AC	• AC	• AC	• AC	• AC	• AC	• AC	•	• (4500 /P.0)	(4500) (50)	•	•	•	•	• AC+DC	• AC+DC	• AC	• AC	•	• AC
.C/DC voltage	•	•	•	•	•	-	•	-	•	•	•(1500VDC)	•(1500VDC)	•	•	•	-	•(1500VDC)	•	•	•	•	-
eakage current	-	-	-	-	-	-	-	-	-	-	(external transducer)	(external transducer)	-	-	-	-	-	-	-	-	• AC/DC	• AC
requency	-	•	-	•	-	-	-	-	•	•	•	•	•	•	•	-	•	•	•	•	-	-
esistance and continuity test with buzzer	•	•	•	•	•	-	•	-	•	•	•	•	•	•	•	-	•	•	•	•	•	-
apacitance	-	•	-	•	-	-	-	-	-	•	•	•	•	•	•	-	-	-	-	-	-	-
iode test	-	•	•	•	•	-	•	-	•	•	•	•	•	•	•	-	-	-	-	-	-	-
uty Cycle (%)	-	•	-	•	-	-	-	-	-	•	•	•	•	•	•	-	-	-	-	-	-	-
emperature with K-type probe hase sequence and phase concordance	-	-	-	_	-	-	-	-	-	-	•	-	_	-	-	-	•	•	•	•	-	-
utomatic recognition of internal functions	-	_	-	_	_	_	•	_	_	_	_	_	_	_	-	-	_	-	-	_	_	_
C/DC Current with external transducers	-	-	-	-	-	-	-	-	-	-	• AC+DC	• AC+DC	-	-	-	-	-	-	-	-	-	-
C Voltage with low impedance (LoZ)	-	-	-	-	-	-	-	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-
C/DC voltage, current measurement/ cording	_	-	-	_	_	-	-	_	-	-	-	-	_	-	-	-	•	•*	•*	•*	-	• Currer HTLeal APF
C/DC power measurement/recording	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	•*	•*	•*	-	-
C/DC energy measurement/recording	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	•*	•*	•*	-	-
osphi, PF measurement/recording	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	•*	•*	•*	-	-
VI + THD% harmonics measurement/recording	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	•*	•*	-	-	-
nrush current measurement (INRUSH)	-	-	-	-	-	-	-	-	-	-	•	•	-	-	-	•	Dynamic     INRUSH	Dynamic INRUSH	-	-	-	-
ADDITIONAL CHARACTERISTICS																						
leasurement category	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V			CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT III 300V	CAT III 600V		CAT IV 600V CAT III 1000V	CAT III 600V		CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT III 600V	CAT III 600V	CAT IV 300V	CAT III 6			
laximum cable diameter	45mm	30mm	30mm	30mm	30mm	110mm	16mm	20mm	30mm	30mm	40mm	40mm	45mm	30mm	30mm	20mm	45mm	45mm	30mm	30mm	23mm	40m
leasuring counts	6000	6000	2000	4000	2000	3000	10000	4000	2000	6000	6000	6000	6000	6000	4000	4000	9999	9999	10000	10000	5000	600
acklight	•	•	•	-	•	•	•	•	•	•	•	•	•	•	-	•	•	•	•	•	•	•
argraph utorange	•	•	•	•	-	•	•	•	•	•		•	•	•	-	•	•	•	•	•	-	-
uto power off	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ontactless AC voltage detection	•	•	•	•	•	-	•	•	•	•	•	•	•	•	•	•	•	•	-	-	-	-
ata HOLD function	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
IIN/MAX function	•	•	• MAX	-	• MAX	-	-	-	•	•	•	•	•	•	-	-	•	•	•	•	•	•
VG function (AVERAGE)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•	•	-	-
EAK function	•	•	-	-	-	-	-	-	-	-	•	•	•	•	-	-	•	•	•	•	-	-
elative measurement (ZERO)	-	•	-	•	-	-	-	-	-	•	•	•	•	•	•	-	-	-	-	-	•	-
ow-pass filter for harmonic reduction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
frarad camara	-	-	-	-	-	-	-	-	-	-	•	•	-	-	-	-	-	-	-	-	-	-
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olour display	_			-	-	-	-	-	-	-	•	•	-	-	-	-	•	•	-	-	-	-
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olour display lectrical parameter logging lemory for data saving	- - -	-	-	-	-	-	-															
olour display lectrical parameter logging lemory for data saving C / Smartphone or Tablet interface	-								3x 1.5V AAA	3x 1.5V AAA	Li-ION hattery	Li-ION hattery	1x 9V 6F22	1x 9V 6F22	2x 1.5V AAA	2x 1.5V AAA	2x 1.5V AAA	2x 1.5V AAA	2x 1.5V AAA	2x 1.5V AAA	2x 1.5V AAA	2x 1.5\
olour display ectrical parameter logging lemory for data saving C / Smartphone or Tablet interface ower supply	- - 1x 9V 6F22	1x 9V 6F22	1x 9V 6F22	2x 1.5V AAA	1x 9V 6F22	2x 1.5V AAA	2x 1.5V AAA	2x 1.5V AAA				Li-ION battery			2x 1.5V AAA					2x 1.5V AAA		
olour display lectrical parameter logging femory for data saving C / Smartphone or Tablet interface ower supply ize in mm (L x W x H)	- 1x 9V 6F22 252x88x44	1x 9V 6F22 215x74x43	1x 9V 6F22 215x74x43	2x 1.5V AAA 200x66x37	1x 9V 6F22 197x70x40	2x 1.5V AAA 280x120x25	2x 1.5V AAA 193x54x31	2x 1.5V AAA 160x55x30	220x81x42	220x81x42	280x100x50	280x100x50	252x88x44	215x74x43	200x66x37	160x55x30	252x88x44	252x88x44	205x64x39	205x64x39	206x76x34	230x10
offared camera colour display lectrical parameter logging Memory for data saving C / Smartphone or Tablet interface rower supply lize in mm (L x W x H) Veight in grams (batteries included)	- 1x 9V 6F22 252x88x44 402 IEC/	1x 9V 6F22 215x74x43 285 IEC/	1x 9V 6F22	2x 1.5V AAA	1x 9V 6F22	2x 1.5V AAA 280x120x25 170 IEC/	2x 1.5V AAA	2x 1.5V AAA 160x55x30 140 IEC/		220x81x42 320 IEC/		,									206x76x34 262 IEC/	2x 1.5V 230x100 500 EN61010 EN61557-1



ORDER CODE HP003010 | HP003013

# HT3010 HT3013

TRMS 400A CLAMP METERS WITH AC VOLTAGE DETECTOR WITHOUT CONTACT

The professional clamp meters HT3010 and HT3013 perform TRMS measurements of AC current up to 400A (HT3010), AC/DC current up to 400A (HT30103), AC/DC voltage up to 600V, Frequency, Resistance, Continuity tests, Diode tests, and measurements of Capacitance (HT3013), Temperature with K-type probe (HT3013) and Duty Cycle (HT3013). Each instrument complies with standard IEC/EN61010-1 in CAT III 600V and is provided with display backlight and auto power off function in order to spare the charge of the internal batteries.

# **Functions**

	HT3010	HT3013
TRMS measurements	•	•
DC/AC voltage	•	•
AC current	•	•
DC current	-	•
Frequency with test leads and clamp jaws	•	•
Duty cycle (%)	-	•
Resistance / Continuity test	•	•
Diode test	•	•
Capacitance	-	•
Temperature with K-type probe	-	•
Data HOLD	•	•
MAX/MIN	•	•
Relative measurement (ZERO)	-	•
Autorange	•	•
Backlight	•	•
Auto Power OFF	•	•



Conversion type:

#### Main features

Display: LCD 4 digits, 6000 dots (HT3013) LCD 31/2 digits, 2000 dots (HT3010)

IRIV

Power supply: 3x1.5V batteries type AAA LR03
Auto Power OFF: after 15 minutes' idling

Safety: IEC/EN 61010-1

Measurement category: CAT III 600V

Pollution level:

Insulation: double insulation

Max height: 2000m

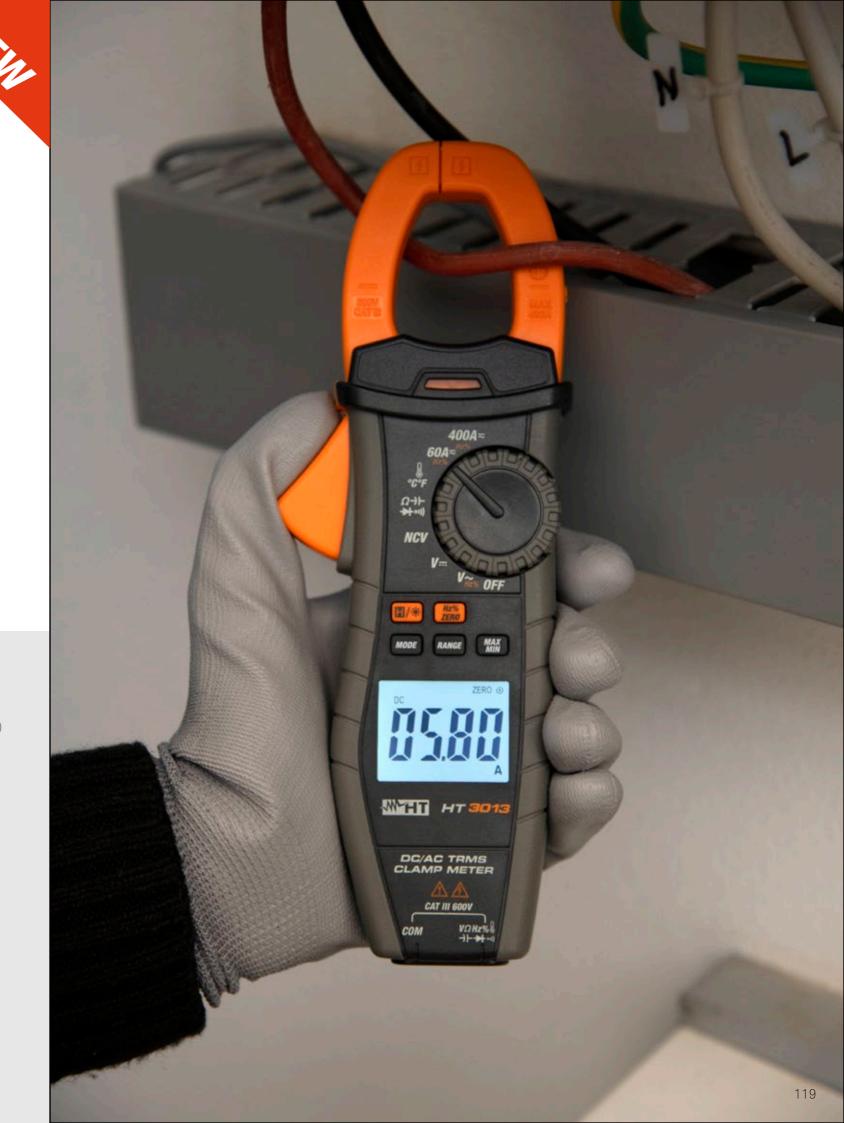
Jaw internal diameter: 30mm Weight (batteries included): 320g

Size (LxWxH): 220x81x42mm Weight (batteries included): approx 280g



#### **Provided accessories**

	Pair of test leads	
TK101	K-type wire probe (HT3013)	
T10	Adapter for K-type probe (HT3013)	
	Carrying bag	
	Batteries	
	User Manual	







COD. METEL **HP000ECL** 

AC/DC TRMS 1000A CAT IV CLAMP METER WITH INFRARED TEMPERATURE MEASUREMENT AND MEASUREMENT OF DC VOLTAGE UP TO 1500V

ECLIPSE has been designed to measure AC/DC current up to 1000A, DC voltage up to 1500V and AC voltage up to 1000V in TRMS reaching CAT IV 600V and CAT III 1000V in compliance with safety standard IEC/EN61010-1. The clamp is provided with a display with 6000 measuring spots with backlight and bargraph to allow for a simple reading even in poorly lit environments. ECLIPSE also measures Resistance, Frequency, Capacitance and Temperature with K-type probe and infrared temperature with built-in thermal camera. The Bluetooth connection allows for the transfer of the saved snapshots by means of the dedicated App HTMercury.





#### COD. METEL HP009025

AC/DC TRMS 1000A CAT IV CLAMP METER WITH MEASURE-MENT OF DC VOLTAGE UP TO 1500V

HT9025 has been designed to measure AC/DC current up to 1000A, DC voltage up to 1500V and AC voltage up to 1000V in TRMS reaching CAT IV 600V and CAT III 1000V in compliance with safety standard IEC/ EN61010-1. The clamp is provided with a display with 6000 measuring spots with backlight and bargraph to allow for a simple reading even in poorly lit environments. HT9025 also measures Resistance, Frequency, Capacity and Temperature with K-type probe. The Bluetooth connection allows for the transfer of the saved snapshots by means of the dedicated App HTMercury.

### **Functions**

- TRMS measurements
- DC voltage up to 1500V
- AC voltage up to 1000V
- AC+DC voltage
- AC voltage with low impedance (LoZ)
- DC/AC current up to 1000A
- · Inrush current (INRUSH)
- DC/AC current with external clamp transducers
- Resistance and Continuity test
- "Voltsense" for AC voltage detection
- · Frequency with clamp jaws and leads · Capacity / Duty cycle / Diode test
- Temperature with K-type probe
- Built-in infrared thermal camera (80x80pxl)
- Autorange / Data HOLD / MAX/MIN / PEAK (<1ms)</li>
- Relative measurements
- DataLogger function
- Backlight and Bargraph
- Auto Power OFF

### **Main features**

colour TFT 6000 dots

1x7.4V rechargeable Li-ION battery,

max 128 snapshots/16 recordings

after 15÷60 minutes' idling

CAT IV 600V - CAT III 1000V

TRMS

40mm

BLE 4.0

505g

IEC/EN61010-1

double insulation

280x100x50mm

Display: Conversion type: Power supply: Auto Power OFF: Clamp iaw internal diameter: Internal memory:

Bluetooth connection Safety:

Measurement category: Insulation:

Pollution level: Size (LxWxH):

Weight (batteries included):

#### **Basic technical specifications**

#### DC voltage

- Measuring range: 1mV ÷ 1500V
- Resolution: 0.1mV ÷ 1V
- Basic accuracy: ±(0.5%reading + 5digits)
- Protection against overcharge: 1500VDC

#### **AC TRMS voltage**

- Measuring range: 1mV ÷ 1000V
- Frequency bandwidth: 50Hz ÷ 1kHz
- Resolution: 0.001V ÷ 1V
- Basic accuracy: ±(1.2%reading + 5digits)
- Protection against overcharge: 1000VDC/ACrms

#### DC current

- Measuring range: 0.3A ÷ 1000A
- Resolution: 0.01A ÷ 1A
- Basic accuracy: ±(2.0%reading +8digits) • Protection against overcharge: 1000Arms

#### AC TRMS current

- Measuring range: 0.3A ÷ 1000A
- Frequency bandwidth: 50Hz ÷ 60Hz
- Resolution: 0.01A ÷ 1A
- Basic accuracy: ±(2.5%reading+5digits)
- Protection against overcharge: 1000Arms

#### Resistance and Continuity test

- Measuring range:  $0.1\Omega \div 60M\Omega$
- Resolution:  $0.1\Omega \div 0.01M\Omega$
- Basic accuracy: ±(0.8%reading + 5digits)
- Continuity buzzer: <50 $\Omega$



### **Accessories provided**

4324-2	Pair of leads with 2/4mm tip
T10	Adapter for K-type wire probe
TK101	K-type wire probe
BATEC95	Li-ION rechargeable battery, 2 pieces
A0EC95	Battery charger power supply + recharging base
B0EC95	Carrying bag
	User manual, ISO9000 calibration certificate

### **Functions**

- · TRMS measurements
- DC voltage up to 1500V
- AC voltage up to 1000V
- AC+DC voltage
- AC voltage with low impedance (LoZ)
- DC/AC current up to 1000A
- · Inrush current (INRUSH)
- DC/AC current with external clamp transducers
- Resistance and Continuity test
- "Voltsense" for AC voltage detection
- · Frequency with clamp jaws and leads
- Capacity / Duty cycle / Diode test
- Temperature with K-type probe
- Autorange / Data HOLD / MAX/MIN / PEAK (<1ms) Relative measurements
- DataLogger function
- Backlight and Bargraph
- Auto Power OFF

#### Main features

Display: Conversion type: Power supply: Auto Power OFF: Clamp iaw internal diameter: Internal memory: Bluetooth connection Safety: Measurement category:

Insulation:

Pollution level:

Size (LxWxH): Weight (batteries included): colour TFT 6000 dots

TRMS

1x7.4V rechargeable Li-ION battery, after 15÷60 minutes' idling

40mm

max 128 snapshots/16 recordings

BLE 4.0

IEC/EN61010-1 CAT IV 600V - CAT III 1000V double insulation

280x100x50mm 505g

# DC voltage

#### **Basic technical specifications**

- Measuring range: 1mV ÷ 1500V
- Resolution: 0.1mV ÷ 1V
- Basic accuracy: ±(0.5%reading + 5digits)
- Protection against overcharge: 1500VDC

#### AC TRMS voltage

- Measuring range: 1mV ÷ 1000V
- Frequency bandwidth: 50Hz ÷ 1kHz
- Resolution: 0.001V ÷ 1V
- Basic accuracy: ±(1.2%reading + 5digits)
- Protection against overcharge: 1000VDC/ACrms

#### DC current

- Measuring range: 0.3A ÷ 1000A
- Resolution: 0.01A ÷ 1A
- Basic accuracy: ±(2.0%reading +8digits)
- Protection against overcharge: 1000Arms

#### **AC TRMS current**

- Measuring range: 0.3A ÷ 1000A
- Frequency bandwidth: 50Hz ÷ 60Hz
- Resolution: 0.01A ÷ 1A • Basic accuracy: ±(2.5%reading+5digits)
- · Protection against overcharge: 1000Arms

#### Resistance and Continuity test

- Measuring range: 0.1Ω ÷ 60MΩ
- Resolution:  $0.1\Omega \div 0.01M\Omega$
- Basic accuracy: ±(0.8%reading + 5digits)
- Continuity buzzer: <50Ω</li>



### **Accessories provided**

4324-2	Pair of leads with 2/4mm tip
T10	Adapter for K-type wire probe
TK101	K-type wire probe
BATEC95	Rechargeable Li-ION battery
A0EC95	Battery charger power supply + recharging base
B0EC95	Carrying bag
	User manual, ISO9000 calibration certificate



















#### COD. METEL HP009023

PROFESSIONAL CLAMP METER FOR MEASURING POWER/HARMONICS WITH WIFI CONNECTION

HT9023 has been designed to measure AC, DC AC+DC current up to 1000A in TRMS reaching CAT IV 600V and CAT III 1000V in compliance with safety standard IEC/EN61010-1. The clamp also measures DC voltage up to 1500V. AC. AC+DC voltage up to 1000V. Active. Reactive and Apparent Power. Power Factor. Energy, voltage/current harmonic analysis up to the 25th with THD% calculation in balanced single-phase or three-phase systems. It is also possible to carry out the phase sequence test with 1-terminal. The instrument also detects the events linked to motor starting currents (Dynamic INRUSH) and allows recording each measured electric parameter over time, with the possibility of transferring data via WiFi to Android/iOS devices through the HTAnalysis App or onto PC through the TOPVIEW software. The clamp is provided with a wide graphic dot-matrix screen (128x128pxl) with backlight, in order to allow reading data even in poorly lit environments, and it is provided with an auto power off function to preserve its internal battery.





#### ORDER CODE HP009021

AC/DC TRMS CAT IV 600V CLAMP METER WITH TEMPERATURE MEASUREMENT

HT9021 has been designed to measure AC/DC current up to 1000A in TRMS reaching CAT IV 600V and CAT III 1000V in compliance with safety standard IEC/ EN61010-1. The clamp is provided with a display with 6000 measuring spots with backlight and bargraph to allow for a simple reading even in poorly lit environments. HT9021 also carries out measurements of voltage up to 1000V, Resistance, Frequency, Capacity and Temperature with K-type probe.



- DC, AC + DC TRMS current up to 1000A
- DC voltage up to 1500V
- AC, AC+DC TRMS voltage up to 1000V
- · Resistance and Continuity test
- "Voltsense" for AC voltage detection
- Frequency with clamp jaws and leads • Phase sequence / phase concordance with 1 terminal
- Measurement/recording of DC power and energy
- Active, reactive, apparent power meas./rec. in single-phase system
- Active, reactive power meas./rec. in single-phase systems
- Power factor measurement/recording in single-phase systems
- Measurement/Recording of voltage/current harmonics up to the 25th and calculation of THD%
- Motor starting current detection (Dynamic INRUSH)
- Data logger function with programmable PI
- Autorange
- Data HOLD
- MAX/MIN/AVG
- PEAK (1ms)
- ZERO Backlight
- WiFi for connection to PC and Android/iOS devices
- Auto Power OFF



#### **Main features**

dot-matrix 128x128pxl Display: with backlight

Conversion type:

2x1.5V batteries type AAA LR03 Power supply: > 40ore Duration:

2MBytes Internal memory: (ca. 5g @IP=1min)

PC interface: WiFi

Clamp jaw internal diameter: 45mm Safety: IEC/EN61010-1

Measurement category: CAT IV 600V - CAT III 1000V

Insulation: double insulation Pollution level: 2

Size (LxWxH): 252x88x44mm Weight (batteries included): 420g

### **Accessories provided**

YAAMK0000HT0	Pair of test leads
YAAMK0001HT0	Pair of alligator clips
TOPVIEWS	Windows software for PC connection
YABRS0000NN0	Carrying bag
	Batteries
	ISO9000 calibration certificate
	User manual on CD-ROM
	Quick user guide



#### **Functions**

- · TRMS measurements
- · AC/DC voltage up to 1000V
- AC/DC current up to 1000A
- · Resistance and Continuity test
- "Voltsense" for AC voltage recognition · Frequency with clamp jaws and leads
- · Capacity, Duty cycle, Diode test
- Temperature with K-type probe
- Autorange, Data HOLD
- MAX/MIN. PEAK (<10ms)</li>
- · Relative measurements
- · Backlight, Bargraph
- Auto Power OFF



#### **Main features**

Display: LCD, 4 digits, 6000 dots Conversion type: TRMS Power supply: 1x9V battery type IEC6F22 Auto Power OFF: after 15 minutes' idling Max diameter of clamp: 45mm

IEC/EN61010-1 Safety: Measurement category: CAT IV 600V - CAT III 1000V

Insulation: double insulation Pollution level:

Size (LxWxH): 252x88x42mm

Weight (batteries included): 420g



### **Technical Specifications**

#### DC voltage (Autorange)

Measuring range: 3mV ÷ 1000V
 Basic accuracy: ±(1.0%reading + 3digits)
 AC TRMS voltage (Autorange)

- Measuring range: 0.03V ÷ 1000V
- Frequency range: 50Hz ÷ 400Hz
- Basic accuracy: ±(1.0%reading + 4digits)

#### DC current

- Measuring range: 0.3A ÷ 1000A
- Basic accuracy:  $\pm (2.0\% \text{ reading} + 8 \text{ digits})$

#### **AC TRMS current**

- Measuring range: 0.3A ÷ 1000A
- Frequency range: 50Hz ÷ 400Hz
   Basic accuracy: ±(2.8%reading + 8digits)

  Resistance and Continuity test

#### • Measuring range: $3\Omega \div 60M\Omega$

- Basic accuracy: ±(1.0%reading + 5 digits)
- Buzzer: <50Ω Frequency with clamp jaws and leads

#### Measuring range: 0.5Hz÷ 60kHz

Basic accuracy: ±(1.0%reading + 5digits)

### Capacity Measuring range: 0.2nF ÷ 4mF Basic accuracy: ±(2.5%reading + 5digits)

Temperature with K-type probe

 Measuring range: -20°C ÷ 760°C; Basic accuracy: ±(2.0%reading + 3°C)



#### **Included accessories**

YAAMK0000HT0	Pair of test leads
T10	Adapter for K-type wire probe
TK101	K-type wire probe
YABRS0000NN0	Soft carrying bag
	Ratteries and user manual









PROFESSIONAL CLAMP METERS WITH POWER/HARMONIC AND INRUSH MEASUREMENT

HT9020 have been designed for measuring DC, AC+DC TRMS current up to 1000A to obtain CAT IV 600V in compliance with standard IEC/EN61010-1. It also measures Active, Reactive and Apparent Power, Energy, voltage/current harmonic analysis up to the 25th with THD% calculation in single-phase or balanced three-phase systems. It allows testing phase sequence and concordance with the 1-terminal measuring method. It is also possible to detect the events linked to motor starting (INRUSH) currents. HT9020 is provided with a wide graphic dot-matrix screen (128x128pxl) with backlight, in order to allow reading data even in poorly lit environments. Auto power off function preserves internal battery.





ORDER CODE HP009019

PROFESSIONAL CLAMP METERS AC 1000A TRMS, CAT IV 600V

Professional clamp meter HT9019 has been designed to measure AC current up to 1000A and AC/DC voltage up to 1000V in TRMS to reach CAT IV 600V according to standard IEC/EN61010-1. The clamp is provided with a wide display with 6000 measuring spots, backlight and analogue bargraph to allow for a simple reading even in poorly lit environments. Clamp HT9019 is also provided with the auto power off function to preserve its own battery.

# **Functions**

- DC, AC + DC TRMS current up to 1000A
- DC, AC + DC TRMS voltage up to 1000V
- · Frequency with test leads and clamp jaws
- Phase sequence / phase concordance
- · Resistance and Continuity test
- Measurement of DC power and energy
- Active, reactive, apparent power measurement on single-phase systems
- Power factor measurement on single-phase systems
- Voltage/current harmonic measurement up to the 25<sup>th</sup> and THD%
- Motor starting (INRUSH) current detection
- Autorange
- Backlight
- Auto Power OFF
- Data HOLD, MAX/MIN/CREST



#### **Main features**

dot-matrix 128x128pxl with backlight Display: Power supply: 2x1.5V batteries type AAA

**Duration:** > 150 hours IEC/EN61010-1 Safety: Insulation: Double insulation

Pollution level:

YAAMK0000HT0 Pair of test leads

YABRS0000NN0

YAAMK0001HT0 Pair of alligator clips

Measurement category: CAT IV 600V to earth, max 1000V between inputs

Max diameter of cable: Size (LxWxH): 252x88x44mm Weight (batteries included):

0.42kg

Included accessories

Soft carrying bag

Quick user guide

User manual on CD-ROM

ISO9000 calibration certificate

Batteries



# Main features

**Functions** 

TRMS measurements

Autorange

Data HOLD

MAX/MIN

Bargraph

Backlight

AutoPowerOFF

· AC current up to 1000A

• AC/DC voltage up to 1000V

• PEAK CURRENT (<10ms)

· Resistance and Continuity test

· "Voltsense" for AC voltage detection

LCD, 4 digits, 6000 dots Display: Conversion type: TRMS

Power supply: 1x9V batteries type IEC 6F22 Auto Power OFF: after 15 minutes' idling

Clamp jaw internal diameter 45mm

IEC/EN61010-1 Safety:

Measurement category: CAT IV 600V - CAT III 1000V Insulation: double insulation

Pollution level:

Size (LxWxH): 252x88x44mm Weight (batteries included): 420g

### **Technical Specifications**

#### DC voltage (Autorange)

- Measuring range: 3mV ÷ 1000V
- Resolution: 0.01mV ÷ 1V
- Basic accuracy: ±(1.0%reading + 3digits)
- Protection against overcharge: 1000VDC/ACrms

#### AC TRMS voltage (Autorange)

- Measuring range: 0.03V ÷ 1000V
- Frequency band: 50Hz ÷ 400Hz
- Resolution: 0.001V ÷ 1V
- Basic accuracy: ±(1.0%reading + 4digits)
- Protection against overcharge: 1000VDC/ACrms

#### AC TRMS current

- Measuring range: 0.3A ÷ 1000A
- Frequency band: 50Hz ÷ 400Hz
- Resolution: 0.01A ÷ 1A
- Basic accuracy: ±(2.8%reading +8digits)
- Protection against overcharge: 1000Arms

#### **Resistance and Continuity test**

- Measuring range:  $3\Omega \div 60M\Omega$
- Resolution:  $0.1\Omega \div 0.01M\Omega$
- Basic accuracy: ±(1.0%reading + 5digits)
- Continuity buzzer: <50 $\Omega$



#### **Included accessories**

YAAMK0000HT0	Pair of test leads with tip 2/4mm
YABRS0000NN0	Soft carrying bag
	Ratteries and user manual





AC/DC TRMS 600A CAT IV CLAMP METER WITH TEMPERATURE MEASUREMENT

HT9015 has been designed to measure AC/DC current up to 600A and AC/DC voltage up to 1000V in TRMS reaching CAT IV 600V and CAT III 1000V in compliance with safety standard IEC/EN61010-1. The clamp is provided with a display with 6000 measuring spots with backlight and bargraph to allow for a simple reading even in poorly lit environments. HT9015 also measures Resistance, Frequency, Capacity and Temperature with K-type probe.





#### ORDER CODE HP009014

PROFESSIONAL CLAMP METER AC 600A TRMS, CAT IV 600V

Professional clamp meter HT9014 has been designed to measure AC current up to 600A and AC/DC voltage up to 1000V TRMS to reach CAT IV 600V and CAT III 1000V in compliance with standard IEC/EN61010-1. The clamp is provided with a wide backlight display with 6000 measuring spots and an auto power off function to preserve its battery.

# **Functions**

- TRMS measurements
- AC/DC voltage up to 1000V
- AC/DC current up to 600A
- · Resistance and Continuity test
- "Voltsense" for AC voltage recognition
- Frequency with clamp jaws and leads
- Capacity
- Duty cycle
- · Diode test
- Temperature with K-type probe
- Autorange
- Data HOLD
- MAX/MIN
- PEAK (<10ms)
- Relative measurements
- Backlight and Bargraph
- Auto Power OFF

#### Main features

Display: LCD, 4 digits, 6000 dots Conversion type: TRMS Power supply: 1x9V battery type IEC6F22 after 15 minutes' idling Auto Power OFF: Max diameter of clamp: IEC/EN61010-1 Safety: CAT IV 600V - CAT III 1000V

Measurement category: double insulation Insulation:

Pollution level:

Size (LxWxH): 210x75x45mm Weight (batteries included): 400g



#### **Technical Specifications**

#### DC voltage (Autorange)

- Measuring range: 3mV ÷ 1000V
  Basic accuracy: ±(1.0%reading + 3digits)

#### AC TRMS voltage (Autorange)

- Measuring range: 0.03V ÷ 1000V
- Frequency range: 50Hz ÷ 400Hz
- Basic accuracy: ±(1.0%reading + 4digits)

#### DC current

- Measuring range: 0.3A ÷ 600A
- Basic accuracy: ±(2.0%reading + 8digits)

#### **AC TRMS current**

- Measuring range: 0.3A ÷ 600A
- Frequency range: 50Hz ÷ 400Hz

#### Basic accuracy: ±(2.8%reading + 8digits) **Resistance and Continuity test**

- Measuring range: 3Ω ÷ 60MΩ
- Basic accuracy: ±(1.0%reading + 5 digits)
- Buzzer: <50Ω</li>

#### Frequency with clamp jaws and leads

- Measuring range: 0.5Hz÷ 60kHz
  Basic accuracy: ±(1.0%reading + 5digits)

#### Capacity

- Measuring range: 0.2nF ÷ 4mF
  Basic accuracy: ±(2.5%reading + 5digits)

#### Temperature with K-type probe

- Measuring range: -20°C ÷ 760°C; -4°F ÷ 1400°F
- Basic accuracy: ±(2.0%reading + 6°F)



#### **Included accessories**

YAAMK0000HT0	Pair of test leads
T10	Adapter for K-type wire probe
TK101	K-type wire probe
	Battery, User manual and Soft carrying bag



#### **Functions**

- Measurements in TRMS, DC/AC voltage, AC current
- Resistance / Continuity test, Frequency
- "Voltsense" sensor
- · Diode test, Temperature with K-type probe
- · Capacity, Duty Cycle
- Autorange, Data HOLD, MAX/MIN
- PEAK CURRENT (<10ms)
- · Relative measurement, Bargraph, Backlight, AutoPowerOFF



#### Main features

Display: LCD, 4 digits, 6000 dots Conversion type: TRMS

Power supply: 1x9V battery type IEC 622 after 30 minutes' idling Auto Power OFF:

Clamp jaw internal diameter 30mm Safety: IEC/EN61010-1

CAT IV 600V - CAT III 1000V Measurement category:

210x75x45mm Size (LxWxH): Weight (batteries included): 400g



#### **Included accessories**

YAAMK0000HT0	Pair of test leads
T10	Adapter for K-type wire probe
TK101	K-type wire probe
	Battery, User manual and Soft carrying bag

### **Technical Specifications**

#### DC voltage

- Measuring range: 3mV ÷ 1000V
  Resolution: 0.1V ÷ 1V
- Basic accuracy: ±(1.0%reading + 3digits)
- Protection: 1000VDC/AC

#### AC voltage

- Measuring range: 0.03V ÷ 1000V
- Frequency band: 50 ÷ 400Hz
- Resolution: 0.01V ÷ 1V
- Basic accuracy: ±(1.0%reading + 10digits)
- Protection: 600Vrms

#### AC current

- Measuring range: 0.3A ÷ 600A
- Frequency band: 50 ÷ 400Hz • Resolution: 0.1A ÷ 1A
- Basic accuracy: ±(2.8%reading + 8digits)
- Protection: 600Arms

#### **Resistance and Continuity test** Measuring range: 3Ω ÷ 60kΩ

- Resolution:  $0.1\Omega \div 0.01k\Omega$
- Basic accuracy: ±(1.0%reading + 5digits) Continuity test: <60Ω</li>

#### Capacity

- Measuring range: 0.2nF ÷ 4mF
- Resolution: 0.01μF ÷ 1μF
- Basic accuracy: ±(2.5%reading + 5digits)

#### Temperature with K-type probe

- Measuring range: -20°C ÷ 760°C
- Resolution: 0.1°C
- Basic accuracy: ±(2.0%reading + 3°C)

#### Frequency with test leads and clamp jaws

- Measuring range: 0.5Hz ÷ 60kHz
- Resolution: 0.01Hz ÷ 0.01kHz
- Basic accuracy: ±(1.0%reading + 5digits)
- Protection: 600A/600V





PROFESSIONAL CLAMP METER AC 600A, CAT IV 600V

Professional clamp meter HT9012 has been designed to measure AC current up to 600A and AC/DC voltage up to 1000V to reach CAT IV 600V and CAT III 1000V in compliance with standard IEC/EN61010-1. The clamp is provided with a wide backlight display with 6000 measuring spots and an auto power off function to preserve its battery.



**Functions** 

• "Voltsense" for AC voltage detection

• Temperature with K-type probe

· Resistance and continuity test with buzzer

· Frequency with leads, Capacity, Diode test

Main features

Autorange, Data HOLD, MAX/MIN/Relative measurement

· AC/DC current up to 400A

· AC/DC voltage up to 600V

• Duty Cycle (%)

Display:

Safety:

Insulation:

Pollution level:

Size (LxWxH):

Conversion type:

Auto Power OFF:

Max diameter of clamp:

Measurement category:

Weight (batteries included): 205g

Power supply:



#### ORDER CODE HP004013

CLAMP METER AC/DC 400A

Clamp meter HT4013 has been designed to measure AC/DC current up to 400A and AC/DC voltage up to 600V to reach CAT III 600V in compliance with standard IEC/EN61010-1. The clamp is provided with an internal sensor to detect AC voltage also without contact, through a red LED turning on. This model also carries out measurements of Resistance, Continuity tests, Frequency, Capacity, Diode test, Duty Cycle and Temperature with K-type probe, among others. The clamp is also provided with the auto power off function to preserve its own battery.

# **Functions**

- · DC/AC voltage
- AC current
- · Resistance / Continuity test
- "Voltsense" sensor
- · Diode test
- Data HOLD
- MAX function
- Backlight
- AutoPowerOFF



#### Main features

LCD, 31/2 digits, 2000 dots Display: Conversion type: average value Power supply: 1x9V battery type IEC 622 AutoPowerOFF: after 30 minutes' idling

Clamp jaw internal diameter 30mm Safety:

IEC/EN61010-1 Measurement category: CAT IV 600V - CAT III 1000V

Size (LxWxH): 210x75x45mm

Weight (batteries included): 400g

### **Technical Specifications**

#### DC voltage

- Measuring range: 1mV ÷ 1000V
- Resolution: 0.1mV ÷ 1V
- Basic accuracy: ±(1%reading + 3digits)
- Protection: 1000V DC/AC

#### AC voltage

- Measuring range: 1mV ÷ 1000V
- Frequency band: 50 ÷ 60Hz
- Resolution: 0.1mV ÷ 1V
- Basic accuracy: ±(1%reading + 4digits)
- Protection: 1000V DC/AC

#### AC current

- Measuring range: 0.01A ÷ 600A
- Frequency band: 50 ÷ 60Hz
- Resolution: 1mA ÷ 1A
- Basic accuracy: ±(2.5%reading + 4digits)
- · Protection: 600Arms

#### **Resistance and Continuity test**

- Measuring range:  $1\Omega \div 20M\Omega$ • Resolution:  $0.1\Omega \div 0.01M\Omega$
- Basic accuracy: ±(1.0%reading + 5digits)
- Continuity buzzer: <100Ω</li>



#### Included accessories

User manual and Soft carrying bag

YAAMK0000HT0	Pair of test leads
	Battery



#### Included accessories

4324-2	Pair of leads with 2/4mm tip
T10	Adapter for K-type wire probe
TK101	K-type wire probe
	Battery, User manual and Soft carrying bag

LCD, 4 digits, 4000 dots

after 30 minutes' idling

IEC/EN61010-1

double insulation

200x66x37mm

CAT III 600V

2x1.5V alkaline batteries type AAA LR03

RMS

30mm

### **Technical Specifications**

#### DC voltage (Autorange)

- Measuring range: 2mV ÷ 600V
  Resolution: 0.1mV ÷ 1V
- Basic accuracy: ±(0.8%reading + 2digits)
- Protection against overcharge: 600VDC/ACrms

#### AC voltage (Autorange)

- Measuring range: 0.02V ÷ 600V
  Frequency band: 50Hz ÷ 400Hz
- Resolution: 0,001V ÷ 1V
- Basic accuracy: ±(1.5%reading + 5digits)
- Protection against overcharge: 600VDC/ACrms

#### AC/DC current

- Measuring range: 0.2A ÷ 400A
  Resolution: 0.01A ÷ 1A
- Frequency range: 50Hz ÷ 60Hz
- Basic accuracy: ±(2.5%reading + 5digits)
  Protection against overcharge: 400Arms

#### **Resistance and Continuity test**

- Measuring range: 2Ω ÷ 40MΩ
- Resolution:  $0.1\Omega \div 0.01M\Omega$
- Basic accuracy: ±(1.0%reading + 4digits)
   Protection against overcharge: 600VDC/ACrms
- Continuity buzzer: <30Ω</li>

#### Capacity

- Measuring range: 0.2nF ÷ 100μF
- Resolution: 0.01nF ÷ 0.1µF
  Basic accuracy: ±(3.0%reading + 5digits)
- Protection against overcharge: 600VDC/ACrms

#### Frequency and Duty Cycle

- Measuring range: 10Hz ÷ 10kHz
  Resolution: 0.01Hz ÷ 0.01kHz
  Basic accuracy: ±(1.5%reading + 2digits)
- Protection against overcharge: 600VDC/ACrms
- Duty Cycle: Measuring range 0.5% ÷ 99%;

#### Temperature with K-type probe

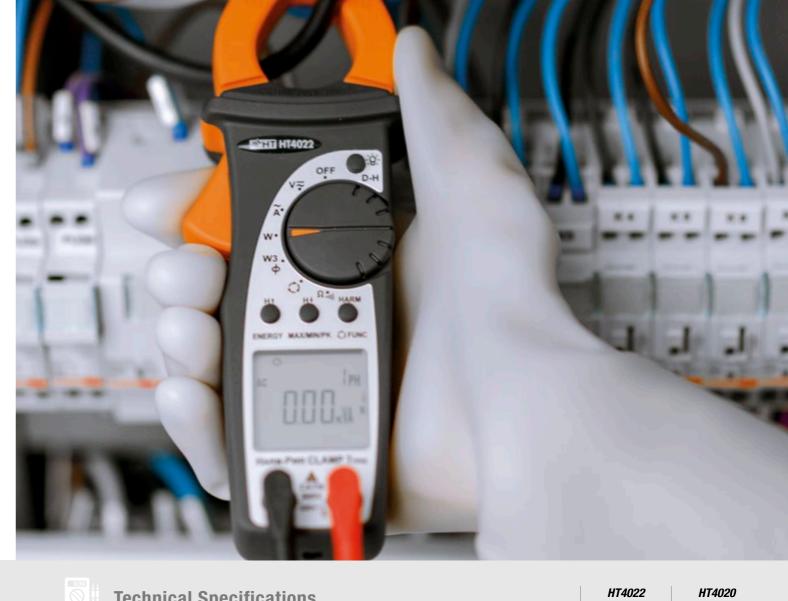
- Measuring range: -20°C ÷ 760°C
  Resolution: 0.1°C ÷ 1°C
- Basic accuracy: ±(3%reading + 5°C)



ORDER CODE **HP004022** | **HP004020** 

AC TRMS 400A CLAMP METERS WITH POWER/HARMONICS MEASUREMENT

Professional clamp meters HT4020 and HT4022 carry out measurements in TRMS of AC current up to 400A, AC/DC voltage up to 600V, Frequency, Resistance, Continuity test, Active, Reactive, Apparent Power, Cosφ, Energy for balanced single-phase and/or three-phase systems, further to the detection of phase sequence by 1-terminal method. HT4022 also carries out the absolute/percentage measurement of voltage and current harmonic components with calculation of THD%. Each device complies with IEC/EN61010-1 in CAT III 600V and is the ideal solution or troubleshooting typical problems in industrial environments such as non-linear loads, frequency-controlled motors.



#### **Functions**

	HT4022	HT4020
DC/AC TRMS voltage	•	•
AC TRMS current	•	•
Resistance and Continuity test	•	•
Frequency with test leads and clamp jaws	•	•
Active, Reactive, Apparent power	•	•
Active, Reactive, Apparent energy	•	•
Power factor and Cosφ	•	•
V/ I harmonics up to the 25th and THD%	•	-
Phase sequence with 1 terminal	•	•
Autorange	•	•
Data HOLD	•	•
MAX/MIN/AVG/PEAK	•	•
Backlight	•	•
AutoPowerOFF	•	•



#### Main features

LCD, 4 digits, 10000 dots Display: TRMS, 64 samples in 20ms Conversion type: 2x1.5V batteries type AAA LR03 Power supply: Auto Power OFF: after 5 minutes' idling Safety: IEC/EN 61010-1 CAT III 600V Measurement category: Pollution level:

Insulation: double insulation Max height: 2000m Clamp jaw internal diameter 30mm Size (LxWxH): 205x64x39mm Weight (batteries included): approx 280g



#### **Included accessories**

4413-2	Pair of test leads
YAAMK0001HT0	Pair of alligator clips
B80	Soft carrying bag
	Rubber cap for test lead
	ISO9000 calibration certificate
	Batteries and user manual



### **Technical Specifications**

	HT4022	HT4020
DC voltage	'	
Measuring range:	0.1V ÷ 600V	0.1V ÷ 600V
Resolution:	0.1V	0.1V
Basic accuracy:	±(1.0%read. + 3digits)	±(1.0%read. + 3digits)
Protection:	600Vrms	600Vrms
AC TRMS voltage		
Measuring range:	1.6V ÷ 600V	1.6V ÷ 600V
Resolution:	0.1V	0.1V
Basic accuracy:	±(1.0%read. + 3digits)	±(1.0%read. + 3digits)
Protection:	600Vrms	600Vrms
AC TRMS current		
Measuring range:	0.1A ÷ 400A	0.1A ÷ 400A
Resolution:	0.1A	0.1A
Basic accuracy:	±(1.0%read. + 3digits)	±(1.0%read. + 3digits)
Protection:	600Arms	600Arms
Active, Reactive, Apparent A	C power [kW, kVAR, kVA]	
Measuring range:	0.01 ÷ 1000	0.01 ÷ 1000
Resolution:	0.01 ÷ 0.1	0.01 ÷ 0.1
Basic accuracy:	±(3.5%read. + 3digits)	±(3.5%read. + 3digits)
Protection:	600V/600Arms	600V/600Arms

	HT4022	HT4020
Power factor and Cosφ		
Measuring range:	0.20 ÷ 1.00	0.20 ÷ 1.00
Resolution:	0.01	0.01
Basic accuracy:	±3°	±3°
voltage and current harmonics		
Harmonic order:	1 ÷ 25	-
Resolution [V, A]:	0.1	-
Basic accuracy:	±(10%read. + 5digits)	-
Resistance and Continuity test		
Measuring range:	0.1Ω ÷ 2kΩ	0.1Ω ÷ 2kΩ
Resolution:	0.1Ω ÷ 3Ω	0.1Ω ÷ 3Ω
Basic accuracy:	±(1.0%read. + 5digits)	±(1.0%read. + 5digits)
Continuity test	<40Ω	<40Ω
Protection:	600Vrms	600Vrms
Frequency with test leads and clam	p jaws	
Measuring range:	40Hz ÷ 400Hz	40Hz ÷ 400Hz
Resolution:	0.1Hz	0.1Hz
Basic accuracy:	±(0.5%read.+ 1digit)	±(0.5%read.+ 1digit)
Protection:	600Vrms/600Arms	600Vrms/600Arms
Phase sequence with 1 terminal		
Measuring range:	50V ÷ 600V	50V ÷ 600V
Frequency range:	40Hz ÷ 69Hz	40Hz ÷ 69Hz
Protection:	600Vrms	600Vrms





CLAMP METER AC 400A

Clamp meter HT4011 has been designed to measure AC current up to 400A and AC/DC voltage up to 600V to reach CAT III 600V in compliance with standard IEC/EN61010-1. The clamp is provided with an internal sensor to detect AC voltage also without contact, through a red LED turning on. HT4011 also carries out measurements of Resistance, Continuity tests, Frequency, Capacity, Diode test, Duty Cycle and Temperature with K-type probe, among others. The clamp is also provided with the auto power off function to preserve its own battery.





#### ORDER CODE HP004010

CLAMP METER AC 600A

Clamp meter HT4010 can carry out measurements of AC current up to 600A and AC/DC voltage, Resistance, Continuity and Diode test. The device is provided with an internal sensor capable o detecting, through a LED turning on and a buzzer sounding, the presence of AC voltage in a spot without contact. This device complies with standard IEC/EN61010-1 in CAT III 600V and it is the ideal solution for measurements to be carried out both in domestic and in industrial environments.

**Technical Specifications** 

# **Functions**

- · AC current up to 400A
- AC/DC voltage up to 600V
- "Voltsense" for AC voltage detection
- · Resistance and continuity test with buzzer
- · Frequency with leads, Capacity, Diode test
- Duty Cycle (%)
- Temperature with K-type probe
- Autorange, Data HOLD, MAX/MIN/Relative measurement



#### Main features

LCD, 4 digits, 4000 dots Display: Conversion type:

average value

2x1.5V batteries type AAA LR03 Power supply: Auto Power OFF: after 30 minutes' idling

Max diameter of clamp: 30mm

Safety: IEC/EN61010-1 CAT III 600V

Measurement category: Insulation: double insulation

Pollution level: 2

Size (LxWxH): 200x66x37mm

Weight (batteries included): 205q



#### Included accessories

4324-2	Pair of leads with 2/4mm tip
T10	Adapter for K-type wire probe
TK101	K-type wire probe
	Battery, User manual and Soft carrying bag



### **Technical Specifications**

#### DC voltage (Autorange)

- Measuring range: 400mV ÷ 600V
  Resolution: 0.1mV ÷ 0.1V
- Basic accuracy: ±(0.8%reading + 2digits)
- Protection against overcharge: 600VDC/ACrms

#### AC voltage (Autorange)

- Measuring range: 4V ÷ 600V
   Frequency band: 50Hz ÷ 400Hz
- Resolution: 0,001V ÷ 1V
- Basic accuracy: ±(1.8%reading + 8digits)
- Protection against overcharge: 600VDC/ACrms

#### AC current

- Measuring range: 0.2A ÷ 400A
  Resolution: 0.01A ÷ 1A
- Frequency range: 50Hz ÷ 60Hz
- Basic accuracy: ±(2.5%reading + 8digits) Protection against overcharge: 400Arms

#### Resistance and Continuity test

- Measuring range: 2Ω ÷ 40MΩ
  Resolution: 0.1Ω ÷ 0.01MΩ
- Basic accuracy: ±(1.0%reading + 5digits)
- Protection against overcharge: 600VDC/ACrms

#### Continuity buzzer: <60Ω</li> Capacity

- Measuring range: 0.2nF ÷ 400µF
- Resolution: 0.01nF ÷ 0.1µF
- Basic accuracy: ±(3.0%reading + 5digits)
   Protection against overcharge: 600VDC/ACrms
   Frequency and Duty Cycle

- Measuring range: 10Hz ÷ 10kHz
  Resolution: 0.01Hz ÷ 0.01kHz
- Basic accuracy: ±(1.5%reading + 2digits)
- Protection against overcharge: 600VDC/ACrms
- Duty Cycle: Measuring range 0.5% ÷ 99%;

#### Temperature with K-type probe

- Measuring range: -20°C ÷ 760°C
- Resolution: 0.1°C ÷ 1°C
- Basic accuracy: ±(3%reading + 5°C)

# **Functions**

- · AC current up to 600A
- AC/DC voltage up to 600V
- · Detection of AC voltage without contact
- · Resistance / Continuity test
- · Diode test
- Data HOLD • MAX
- Backlight
- · Auto Power OFF



#### **Main features**

LCD, 31/2 digits, 2000 dots Display: Conversion type: average value Power supply: 1x9V battery type 6F22 Auto Power OFF: after 15 minutes' idling Clamp jaw internal diameter: 30mm Safety: EC/EN 61010-1 Measurement category: CAT III 600V

Insulation: double insulation Pollution level: Max height: 2000m

Size (LxWxH): 197x70x40mm Weight (batteries included): 180g

DC voltage

AC voltage

AC current

Measuring range: 1mV ÷ 600V

• Measuring range: 1mV ÷ 600V

• Frequency band: 50Hz ÷ 60Hz

• Measuring range: 0.01A ÷ 600A

• Frequency band: 50Hz ÷ 60Hz

• Measuring range:  $1\Omega \div 20M\Omega$ 

• Resolution:  $0.1\Omega \div 0.01M\Omega$ 

• Continuity buzzer:  $<150\Omega$ 

• Basic accuracy: ±(0.8%reading + 2 digits)

• Protection against overcharge: 600Vrms

• Basic accuracy: ±(1.5%reading+ 3.5mV)

• Basic accuracy: ±(2.5%reading + 4digits)

• Basic accuracy: ±(1.0%reading + 4digits)

Resistance and continuity test with buzzer

• Protection against overcharge: 600Arms

• Protection against overcharge: 600Vrms

• Resolution: 0.1mV÷1V

• Resolution: 0.1mV÷1V

• Resolution: 1mA ÷ 0.1A

#### Included accessories

4324-2

Pair of test leads with 2/4mm tip

Soft carrying bag, battery and user manual



CLAMP METER WITH FLEXIBLE CLAMP JAWS AC 3000A

Professional clamp meter F3000 has been designed to measure AC current up to 3000A in TRMS in total autorange to reach CAT IV 600V, CAT III 1000V according to standard IEC/EN61010-1. The clamp is provided with innovative flexible jaws capable of reaching a maximum diameter of 110mm and allowing for an easy reading in any condition. The clamp is provided with a wide display with 3000 measuring spots, Data HOLD function and Backlight to allow for a simple reading even in poorly lit environments. The clamp is also provided with the auto power off function to preserve its own battery.





ORDER CODE HP000100

FORK CLAMP METER AC 200A TRMS

Professional clamp meter HT100 is provided with automatic recognition of functions. The measurement of AC current up to 200A and AC/DC voltage up to 1000V in TRMS reacheas CAT IV 600V and CAT III 1000V in compliance with standard IEC/EN61010-1. The clamp is provided with "open" jaws, with a wide display with 9999 measuring spots, "Voltsense" phase detector function, Data HOLD and backlight to allow for a simple reading even in poorly lit environments. HT100 also carries out measurements of Resistance, Continuity test and Diode test. The clamp is also provided with the auto power off function to preserve its own battery.



- · TRMS measurements
- · AC TRMS current up to 3000A
- · Flexible jaws with big diameter
- Autorange
- Data HOLD
- MAX/MIN
- Backlight
- · Auto Power OFF



### **Technical Specifications**

#### **AC TRMS current**

- Measuring range: 0.1A ÷ 3000A
- Resolution: 0.01 ÷ 1A
- Frequency range: 45Hz ÷ 500Hz
- Basic accuracy: ±(3%reading + 5digits)



#### **Main features**

LCD, 4 digits, 3000 dots Display:

Conversion type:

2x1.5V alkaline batteries type AAA LR03 Power supply:

Auto Power OFF: after 20 minutes' idling

Max diameter of clamp:

IEC/EN61010-1 Safety:

CAT IV 600V - CAT III 1000V Measurement category:

Insulation: double insulation

Pollution level:

Size (LxWxH): 280x120x25mm

Weight (batteries included): 170g



#### Included accessories

#### Batteries

Soft carrying bag User Manual



#### **Functions**

- TRMS measurements
- · AC TRMS current up to 200A
- DC/AC TRMS voltage up to 1000V
- · "Voltsense" for AC voltage detection
- Resistance
- · Continuity test with buzzer
- Diode test
- Autorange
- · Autorecognition function
- Data HOLD
- Backlight
- · Auto Power OFF



#### Main features

Display: LCD, 4 digits, 10000 dots, backlight

Conversion type: TRMS

2x1.5V alkaline batteries type AAA LR03 Power supply:

Auto Power OFF: after 20 minutes' idling

Max diameter of clamp: 16mm

IEC/EN61010-1 Safety:

Measurement category: CAT IV 600V, CAT III 600V

Insulation: double insulation

Pollution level:

193x54x31mm Size (LxWxH):

Weight (batteries included): 280g



### **Technical Specifications**

#### DC voltage (Autorange)

- Measuring range: 2.2V ÷ 1000VResolution: 0.1V
- Basic accuracy: ±(0.3%reading + 2digits)
- Protection against overcharge: 1000VDC/ACrms

#### AC TRMS voltage (Autorange)

- Measuring range: 1.3V ÷ 1000V
  Frequency band: 50Hz ÷ 500Hz
- Resolution: 0.1V

- Basic accuracy: ±(0.9%reading + 3digits)
   Protection against overcharge: 1000VDC/ACrms
   AC TRMS current (Autorange)

- Measuring range: 1.5A ÷ 200A
  Resolution: 0.1A
- Frequency range: 50Hz ÷ 60Hz
  Basic accuracy: ±(3%reading + 5digits)
- Protection against overcharge: 200Arms
- Resistance and Continuity test

#### Measuring range: 0Ω ÷ 9999Ω

- Resolution: 1Ω
- Basic accuracy: ±(0.9%reading + 2digits)
- Protection against overcharge: 1000VDC/ACrms Continuity buzzer: <25Ω</li>

#### Diode test

- Measuring range: 0.4V ÷ 0.8V
  Resolution: 0.1V
- Basic accuracy: ±(1%reading + 3digits)
- Protection against overcharge: 1000VDC/ACrms



#### Included accessories

4413-2

Pair of test leads

Batteries and user manual



ORDER CODE **HP007004** | **HP007005** 

# HT7004 HT7005

POCKET CLAMP METERS
FOR TRMS AC CURRENT UP TO 400A
WITH MEASUREMENT OF INRUSH CURRENT

Clamp meter HT7005 can measure DC and AC TRMS current up to 400A in Autorange, in compliance with standard IEC/EN61010-1, CAT III 300V, further to measuring the inrush current of electric motors with a response time of 100ms. HT 7004 can measure only AC TRMS current up to 300A. Both devices are provided with Data HOLD function and Auto Power Off function, in order to preserve the internal battery when not in use. Thanks to its extremely small size, these models are very practical and they are the ideal solution for simple measurements in the most common domestic and industrial environments.



ORDER CODE HP000079 | HP00077C

# HT79|HT77C

CLAMP METERS FOR MEASURING LEAKAGE CURRENT

HT77C and HT79 are clamp meters designed for an accurate measurement of very low values of AC and DC currents (DC only for HT79) and, therefore, they are mainly employed in detecting and defining leakage currents in domestic and industrial electric systems, which typically cause the RCDs' tripping. HT77C, in particular, complies with standards IEC/EN61557-13 and IEC/EN61557-16, which provide for a measurement protected against external disturbances. It is also provided with a built-in low-pass filter to eliminate harmonic components.

HT79 also allows measuring AC/DC voltage and performing Resistance/Continuity tests. HT77C is also provided with Bluetooth connection for managing a datalogger function in combination with the APP HTLeakage

# Functions

	HT7004	HT7005
AC TRMS current	300A •	400A •
DC current	-	400A •
Inrush current (INRUSH)	-	•
AC voltage detection without contact	•	•
Autorange	•	•
Data HOLD	•	•
ZERO function (zeroing)	-	•
Backlight	•	•
Auto Power OFF	•	•



#### **Main features**

**Power supply:** 2x1.5V batteries type AAA LR03

decimal sign and point

Safety: IEC/EN61010-1
Measurement category: CAT III 300V
Insulation: double insulation

Pollution level: 2
Max operating altitude: 2000m

**Display:** 3¾ LCD, 4000 dots,

Max cable diameter: 20mm

**Size (LxWxH):** 155x60x25mm

Batteries

User Manual

Weight (batteries included): 140g





#### **Functions**

	HT77C	HT79
TRMS measurements	•	•
DC/AC voltage	-	• (300V)
DC current	-	• (10A)
AC current	• (60A)	• (20A)
Resistance / Continuity test	-	•
Low-pass filter	• (50Hz / 60Hz / 1kHz)	-
Data HOLD	•	•
Auto HOLD	•	-
Peak HOLD	•	-
Relative measurement (ZERO)	-	•
Autorange	•	•
Backlight	•	•
MAX/MIN	-	•
Auto Power OFF	•	•



### **Technical Specifications**

	HT77C	HT79		
AC TRMS current				
Measuring range:	0.001mA ÷ 60A	0.1mA ÷ 20A		
Resolution:	0.001mA ÷ 0.01A	0.1mA ÷ 0.01A		
Basic accuracy:	±(1.0%rdg.+ 8digits)	$\pm$ (1.0%rdg. + 5digits)		
Protection:	max 60Arms	max 20Arms		
DC current				
Measuring range:	-	0.1mA ÷ 10A		
Resolution:	-	0.1mA ÷ 0.01A		
Basic accuracy:	-	$\pm$ (1.0%rdg. + 10digits)		
Protection:	_	may 10ADC		



CLASS

### **Main features**

Display: LCD 4 digits, 6000 dots (HT77C)

LCD 4 digits, 5000 dots (HT79)

Conversion type TRMS

**Power supply:** 2x1.5V batteries type AAA LR03 (*HT79*)

2x1.5V batteries type AA LR06 (HT77C)

Safety: IEC/EN 61010-1

Measurement CAT III 600V (HT77C)

category: CAT IV 300V (HT79)

Insulation: double insulation

Pollution level:

Max operating altitude: 2000m

Max cable diameter: 40mm (HT77C)

23mm *(HT79)* 

**Auto Power OFF:** after 20 minutes' idling **(HT77C)** 

after 30 minutes' idling (HT79) 230x30x24mm (HT77C)

Size (LxWxH): 230x30x24mm (*HT77C*)

206x76x34mm *(HT79)*Weight (batteries 500g *(HT77C)* 

included): 262g (HT79)



#### **Provided accessories**

Pair of test leads <i>(HT79)</i>
Soft transport bag
Batteries
User Manual









	HT-5000	HT2234N	HT36	
	CABLE LOCALIZER	REVOLUTION COUNTER	STUD FINDER	
Localization of buried cables and metal tubes	•	-	•(max depth 30mm)	
Inductive pairing with 33kHz signal via antenna	•	-	-	
Direct 33kHz pairing with external accessories	•	-	-	
Selectable transmission power	•	-	-	
Intermittent or continuous signal	•	-	•	
Passive search mode without transmitter	•	-	-	
Automatic depth measurement	•	-	-	
Manual or automatic setting of sensitivity	•	-	-	
Headset socket for noisy environments	•	-	-	
Localization of wooden beams and metal objects	-	-	•(min. dimensions 30mmx30mm)	
Localization of AC voltage cables in walls	•	-	•(max depth 50mm)	
Measurement of speed of rotating parts in RPMs (rev/min) with and without contact	-	•	-	
Events counter	-	•	-	
Laser pointer	-	•	-	
MAX / MIN / HOLD	-	•	-	
AutoPowerOFF	-	•	•	
Order code	HN500000	HA02234N	HR000036	

#### BURIED CABLE LOCALIZER AND REVOLUTION COUNTER



COD. METEL HR000036

# HT36

#### PORTABLE ITEM DETECTOR

HT36 is capable of detecting the presence of wood beams and conductive items, metal items and AC cables hidden inside walls and roofs, and other common materials. The instrument gives out a sound and shows a signal on the display after identifying the border of the item, in order to easily detect its central position.



# Functions

- · Detection of presence of hidden wood beams
- Detection of presence of hidden metal and conductive items
- Detection of presence of hidden cables with AC voltage
- · Sound and analog bargraph
- AutoPowerOFF



#### **Accessories provided**

Battery

User Manual



#### **Main features**

Size of conductive items: min 30x30mm

Depth of conductive items: max 18mm

Diameter of metal items: max 25mm

Depth of metal items: max 30mm

Cables with AC voltage:  $90V \div 250V / 50-60$ 

Depth of cables with AC voltage:max 50mmAutoPower0FF:after 30s

Power supply: Size (LxWxH):

Weight (batteries included):

90V ÷ 250V / 50-60Hz

after 30s 1x9V battery type IEC6F22

155x72x28 mm

approx 203g

**BURIED CABLE LOCALIZER** AND REVOLUTION COUNTER



ORDER CODE HN500000

# 1-5()

PROFESSIONAL METAL TUBE AND BURIED CABLES TRACER

Civil engineering work is accelerated, earth-moving machines are used efficiently and the risk of accidents is minimised thanks to the HT-5000. This unit is especially designed to know the position and the depth of underground pipes and cables or cabling plans in a very quick and easy way. The model is composed by a Transmitter and a Receiver and the principle used is the propagation of a electromagnetic field inside a object crossed by a signal generated with a direct coupling (finding energized or not energized objects with accessible parts) and inductive coupling (signal spread by transmitter by integrated antenna) for finding of not accessible parts (e.g. earthmoving areas). The tracing can be performed also in passive mode by the use of receiver only in order to locate cable or pipes crossed by 50/60Hz electrical current or radiofrequency signals. Both transmitter and receiver are designed with IP56 (protection by dust and water) for typical external "in field" environment and a wide number of optional accessories are available also for finding of non metal objects. Most of the times that device is used to locate buried cables and iron pipelines.



ORDER CODE HA02234N

# HT2234N

PORTABLE REVOLUTION COUNTER

HT2234N is a digital revolution counter for measuring the speed of rotating mechanical parts (discs, drive shafts, etc...) both with and without contact, making use of a light beam transmitted and reflected by the target.



KITHT2234N Set of rubber spare parts + reflecting band

#### **Functions**

- Inductive pairing with 33kHz signal via antenna
- Direct 33kHz pairing with external accessories
- Selectable transmission power
- Intermittent or continuous signal
- · Passive search mode without transmitter
- · Automatic depth measurement
- Manual or automatic setting of sensitivity
- Headset socket for noisy environments



#### Included accessories

Transmitter TX5000 and receiver RX5000 Set of measuring cables with alligator clips

Metal probe

Batteries for transmitter and receiver, Soft carrying bag and user manual



### **Optional accessories**

820005314	Clamp 100mm diameter for inductive pairing
GOK50-R	Kit of flexible probes for non-metallic objects
890008852	Set of cables (Schuko plug + cable with R.I11 + coax cable)



#### **Main features**

#### **Transmitter TX5000**

Transmission power: 0.1W / 0.5W 33kHz Signal frequency:

Mechanical protection: IP56 (dust and water)

6x1.5V batteries type IEC LR20 Power supply:

260 x 140 x 255mm Size (LxWxH):

Weight (batteries included): 1.7 kg

Receiver RX5000

Frequency range: 15kHz ÷ 23kHz,

50/60Hz (electric power)

Depth range:  $0.3m \div 7m$ Mechanical protection: IP56 (dust and water)

10x1.5V batteries type AA IEC LR6 Power supply:

Size (LxWxH): 600 x 252 x 99mm

Weight (batteries included): 2.5 kg



#### **Functions**

- Measurement of speed of rotating parts in RPMs (rev/min) with and without contact
- · Events counter
- · Laser pointer
- MAX / MIN / HOLD
- AutoPowerOFF



#### Included accessories

Mechanical adapter + fastening screw

Rubber protection ring

Rubber terminals in different shapes

Reflecting band

Soft carrying bag

Batteries

User manual



### **Main features**

Meas. range of speed without contact:

Meas. range of speed without contact: 20.00 ÷ 29999 rev/min

10.00 ÷ 99999 rev/min

 $\pm$ (0.04%reading + 2digits)

0.01 ÷ 1rev/min

Resolution: Accuracy:

Meas. range of events counter:

 $0 \div 99999$ Response time: 0.7s (>60 rev/min) Distance from target: 50 ÷ 300mm

LCD, 5 digits, 99999 dots Display:

AutoPowerOFF: after 30min Power supply: 4x1.5V batteries A Size (LxWxH): 172x63x36 mm

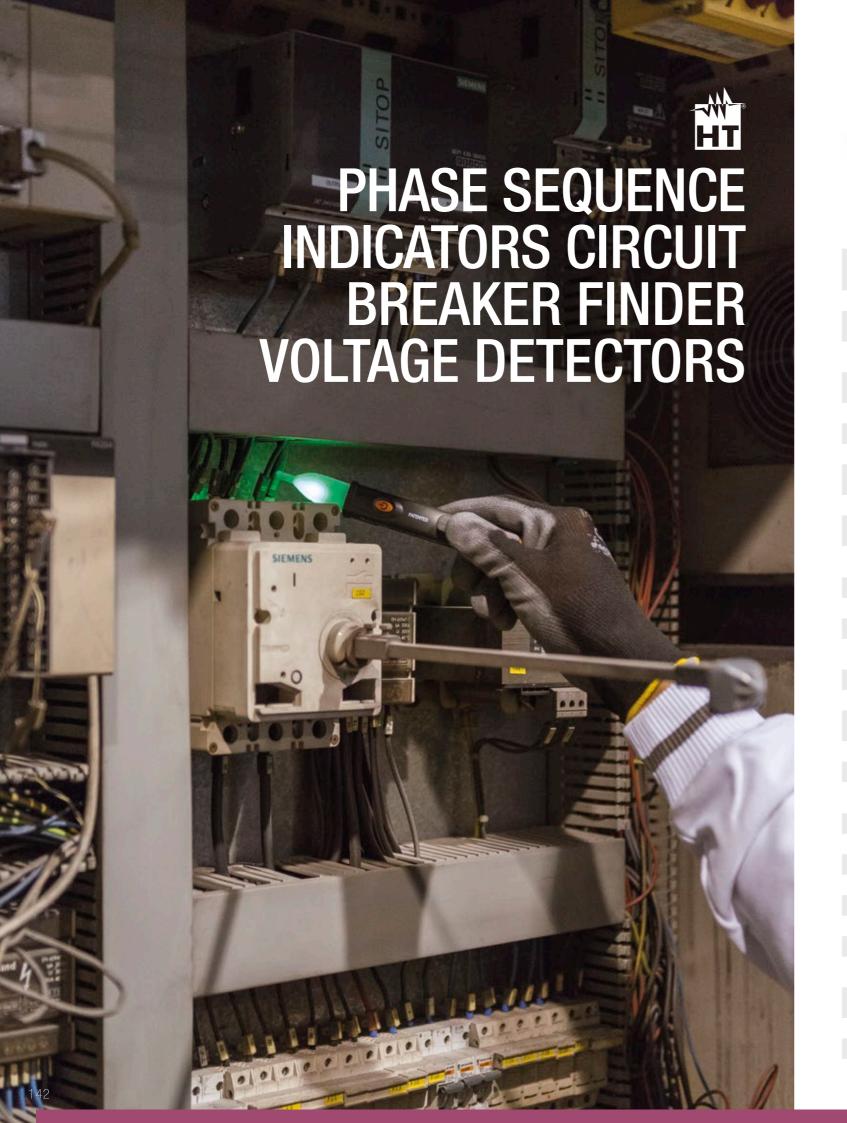
Weight (batteries included): approx 190g



### **Optional accessories**

KITHT2234N

Set of rubber spare parts + reflecting band + fastening screw



PHASE DETECTORS, SWITCH DETECTORS AND PHASE SEQUENCE INDICATORS

Order code













			T.	Y		.36.
MAIN MEASUREMENTS	LINESPLITTER	HT82	HT70	HT20S	HT38	HT5
Measuring range	0÷240VAC 0÷16A 50÷60Hz	40÷600VAC 15÷400Hz	100÷1000VAC 50÷60Hz	100÷1000VAC 50÷60Hz	200÷250VAC 50Hz	60÷250VAC 50÷60Hz
Localization of protection devices	-	-	-	-	•	-
Detection of AC voltage without contact also on insulating sheaths	-	-	•	•	-	-
Indications "R" and "L" on the display to measure phase sequence	-	•	-	-	-	-
Phase sequence and phase concordance without contact also on insulating sheaths	-	-	•	-	-	-
LED and sound indications	-	-	•	•	•	•
Network voltage (L-N, L-PE, N-PE)	•	-	-	-	-	-
Absorbed phase current	•	-	-	-	-	-
Absorbed phase current multiplied by 10 (for low-power users)	•	-	-	-	-	-
Leakage current on protection conductor	•	-	-	-	-	-
Leakage current measured in differential mode (L-N)	•	-	-	-	-	-
ADDITIONAL MEASUREMENTS						
Test of neon-filled lamps	-	-	-	-	-	•
Test of internal gas of compact fluorescent lamps	-	-	-	-	-	•
Test of internal gas of energy-saving lamps	-	-	-	-	-	•
Test of internal gas of high and low-pressure sodium-vapor lamps	-	-	-	-	-	•
Test of internal gas of halogen lamps	-	-	-	-	-	•
Test of internal gas of mercury-vapor lamps	-	-	-	-	-	•
Phase detection function with contact for AC voltage 60-250V 50/60Hz	-	-	-	-	-	•
Continuity test on non-electronic starters/reactors	-	-	-	-	-	•
Diode test	-	-	-	-	-	•
ADDITIONAL CHARACTERISTICS						
LCD display	-	•	-	-	-	-
Sound indications with buzzer	-	-	•	•	•	•
Practical breast pocket holder	-	-	•	•	-	-
Anti-shock protection sheath	-	•	-	-	-	-
Integrated torch	-	-	-	•	-	•
Schuko plug	•	-	-	-	•	-
Measurement category	CAT II 240V	CAT III 600V	CAT IV 1000V	CAT IV 1000V	CAT III 250V	CAT II 300V
Reference standard for safety	IEC/EN61010-1, IEC/EN61010-02-030	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Power supply	240VAC (±10%) 50/60Hz	From mains	2x 1,5V AAA	2x 1,5V AAA	From mains (HT38T) 1x 9V (HT38R)	1x 9V
Size (LxWxH) (mm)	210x60x35mm	130x69x22	160x26x20	160x26x20	95x60x30	255x60x40
Weight in grams	385g	130g	48g	48g	140g	170g
Order code	HANNINGS1	HA000156	HB000070	HBUUUSUE	HDUUUU30	UA000120

HA000138

HR000038



ORDER CODE HA00095

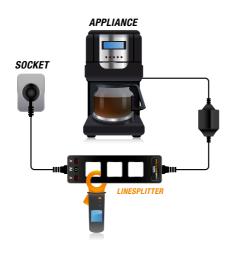
## LINESPLITTER

CONDUCTORS SPLITTER

LINESPLITTER is an indispensable accessory every time you need to measure the current/power absorption or leakage current of a single-phase load supplied from socket (max 16A). This accessory separates the active conductors and the protective conductor, thus making the following measuring spots directly accessible to suitable instruments (clamp meters, clamps for measuring leakage currents, wattmetric clamps, mains analyzers):

- Mains voltage (L-N, L-PE, N-PE)
- Absorbed phase current
- Absorbed phase current multiplied by 10 (for low-power users)
- Leakage current on protection conductor
- Leakage current measured in differential mode (L-N)

In particular, the comparison between the readings obtained in the two last measuring spots, also allows evaluating whether the leakage current flows to alternative paths to the protective conductor (e.g.: current leaked in water or in the metal tubes of a boiler, immersion pump, etc.).





## **Functions**

- Separation of phase conductor L from conductors N and PE on 2-pole and 3-pole cables
- Simple AC voltage measurement (L-N, L-PE, N-PE) through clamps/multimeters
- Simple AC current measurement through external clamps
- Current loop x1 for a direct measurement of AC current
- Current loop x10 for a direct measurement of low AC currents
- Direct measurement of leakage current on PE cable
- Indirect measurement of leakage current on L and N cables
- Use for loads with maximum current absorption 16A



## Main features

Power supply: 240VAC (±10%) 50/60Hz
Connection to mains: In-built Schuko plug,

length 50cm

Connection to user: In-built Schuko socket

Output current: max 16A

IEC/EN61010-1, IEC/EN61010-02-030

Measurement category: CAT III 240V
Size (LxWxH): 210x60x35mm

Weight (batteries included): 385g



Safety:

**Accessories provided** 

User Manual





ORDER CODE **HA000156** 

PHASE SEQUENCE

HT82 is a mobile device to display the phase sequence with 3 terminals in a generic three-phase system. The device provides an "R" indication in case of correct phase sequence or "L" indication in case of incorrect phase sequence.



KIT82 Kit of 3 cables + 3 alligator clips.



You Tube

## ORDER CODE HR000070 | HR000296 HT70|HT20s

**VOLTAGE DETECTOR WITH MEASUREMENT** OF PHASE SEQUENCE (HT70)

HT70 is a practical innovative device capable of carrying out, further to the phase detection function, a phase sequence and phase conformity test with LED indications and buzzer, also on the insulating sheath of the conductors. The result of the test is indicated by the red LED (incorrect phase sequence) or the green LED (correct phase sequence) turning on, by simply moving the sensor first on the L1 and then on the L2 phase. HT20s is instead the model dedicated only to searching live cables. Also carries out measurements on insulating sheath of cables and therefore without direct contact with live parts.



Step1 - Take HT70 and rest it on the Step2 - Now rest and keep HT70 on the Step3 - If the green LED turns on with at least 5s and wait for the red LED to for the LED to flash together with the sequence is incorrect. flash together with the buzzer sounding. buzzer sounding.





assumed phase L1 of the three-phase assumed phase L2 (on the conductor or steady light, phase sequence is correct. system (on the conductor or sheath) for sheath) for at least another 5s and wait If, however, the red LED flashes, phase



## **Functions**

• Indications "R" and "L" on the display to measure phase sequence

WHT/

L1 L2 L3

PHASE ROTATION INDICATOR

HT82





#### Main features

from power  $40V \div 600V / 15-400Hz$ Power supply:

LCD display Display:

Pollution level: 2

IEC/EN61010-1 Safety: CAT III 600V Measurement category: 130x69x22mm Size (LxWxH): Weight (batteries included): 130 g



## **Included accessories**

KIT82 Set of 3 cables + 3 alligator clips Bag and user manual



## **Optional accessories**

404-IEC#	Measuring lead with safety cap, diameter 4mm
5004-IEC#	Insulated alligator clip (20A) for 4mm banana cables
5001-#	Cable with 4mm banana-banana connector,



## **Functions**

	HT70	HT20s
AC voltage detection	•	•
Led and buzzer indication	•	•
Battery check with LED indication	•	•
Phase sequence detection	•	-
Pocket clin	•	•



### **Main features**

AC reference voltage: 100V ÷ 1000V to earth

50/60Hz Frequency:

2x1.5V alkaline batteries Power supply: type AAA NEDA24A LR03

Pollution level:

IEC/EN61010-1 Safety: **CAT IV 1000V** Measurement category: 160x26x20mm Size (LxWxH):

Weight (batteries included): 48 g



#### **Included accessories**

Battery

User manual

PHASE DETECTORS, SWITCH DETECTORS AND PHASE SEQUENCE INDICATORS







## You Tube

# ORDER CODE HA000138 HT5 VOLTAGE DETECTOR WITH TEST OF GAS-FILLED LAMPS

HT5 is a practical mobile device for quickly carrying out tests on the operation of low-pressure, sodium-vapor -pressure and high-pressure internal gas lamps, by simply touching the lamp's surface. Other available characteristics are the phase detector function, Continuity test and Diode test.

## Functions

- LED visual indication and sound signalling with variable tone
- Location of security devices
- Use in circuits with voltage up to 250VAC to ground
- · low battery level LED signalling
- Auto Power OFF



### **Included accessories**

HT38T Transmitter
HT38R Receiver
Battery (receiver)
Transport bag
User manual



## **Main features of HT38T**

Power supply: 230VAC, 50Hz
Max signal output current: <20mA

External connection: integrated Schuko Europlug plug Operating temperature:  $0^{\circ}\text{C} \div 40^{\circ}\text{C} (32^{\circ}\text{F} \div 104^{\circ}\text{F})$ 

Operating humidity: <80%RH

Storage temperature:  $0^{\circ}\text{C} \div 50^{\circ}\text{C} (32^{\circ}\text{F} \div 122^{\circ}\text{F})$ 

Storage humidity: <95%RH Dimensions (L x P x H): 95x60x30mm Weight: 140 g



## **Main features of HT38R**

Safety: IEC/EN61010-1
EMC: IEC/EN61326-1
Insulation: double insulation

Pollution Level: 2

Measurement category: CAT III 250V Max operating altitude: 2000m



## **Functions and characteristics**

- Operation test of neon and fluorescent tubes
- · Operation test of neon lamps with E27 coupling
- Operation test of sodium-vapor lamps
- Operation test of halogen lamps
- Phase detector function for AC voltage 60-250V 50/60Hz
- · Continuity test with buzzer
- Diode test
- LED indications and sound notifications
- Integrated torch



Power supply: 1x9V batteries type IEC 6F22
Safety: IEC/EN61010-1
Measurement category: CAT III 300V

Measurement category: CAT III 300V Size (LxWxH): 255x60x40mm

**Main features** 

Weight (batteries included): 170g



### Included accessories

Batteries

User manual



## DEVICES FOR LAN NETWORK VERIFICATION





	QUICKLAN6055	QUICKLAN6050N
MAIN MEASUREMENTS		
Wire mapping of LAN cables	•	•
Test on twisted pair cables RJ45 type UTP, STP and FTP	•	•
Test on telephone cables with RJ11 connector	-	•
Verification on COAX cables	-	•
Errors of open pairs	•	•
Errors of shorted pairs	•	•
Errors of reversed pairs	•	•
Errors of crossed pairs	•	•
Errors of split pairs	•	•
Generic errors (MISWIRE)	•	•
Measurement of cable length	-	•
Cable length measuring range	-	1÷255m
ADDITIONAL CHARACTERISTICS		
Display indication of error type	•	•
Test indication OK - NOT OK	•	•

Display indication of error type	•	•
Test indication OK - NOT OK	•	•
Remote unit recognition	•	•
AutoPowerOFF	•	•
Backlight	•	•
Low battery indication	•	•
Power supply	1x 9V	6x 1.5V AAA
Size (LxWxH) (mm)	128x67x39	156x73x35
Weight in grams (batteries included)	165	170
Order code	HV006055	HV006050



ORDER CODE HV006055

## QUICKLAN6055

MOBILE DEVICE FOR CABLE TESTS IN LAN NETWORKS

QUICKLAN6055 is capable of detecting and indicating on the display the presence of incorrect connections on LAN network cables (exchanged, split, inverted, open, short-circuited pairs, etc., both of type UTP (unshielded) and of type STP (shielded). This device is provided with more remote units and is capable of recognizing further ones (optional) in order to create an efficient localization action on different spots within a patch panel, carrying out tests very quickly with the aid of a single operator. QUICKLAN6055 is the ideal solution for any installer who needs a simple and efficient device to carry out preliminary checks and verifications on installations of LAN networks (also of PoE type) with connectors of type RJ45.







ORDER CODE HV006050

## QUICKLAN6050N

PORTABLE DEVICE FOR VERIFICATION OF LAN NETWORK CABLES AND LENGTH MEASUREMENT

QUICKLAN6050N is capable of detecting and indicating on the display the presence of incorrect connections on LAN network cables (exchanged, split, inverted, open, short-circuited, pairs, etc.) both of type UTP (unshielded) and of type STP (shielded) with connector RJ45, RJ11 and Coax F. The device is provided with more remote units and is capable of recognizing further ones (of type RJ45) in order to create an efficient localization action on different spots inside a patch panel, carrying out tests very quickly with the aid of a single operator. QUICKLAN6050N also measures the length of the single pairs of the cable



## **Functions**

- Cable mapping in LAN networks
- Test on twisted pair cables RJ45 type UTP, and STP
- Errors of open pairs
- · Errors of short-circuited pairs
- Errors of exchanged pairs
- Errors of inverted pairs
- Errors of split pairs
- Generic errors (MISWIRE)
- Display indication of error type
- Indication of test passed/failedRemote unit recognition: 8
- AutoPowerOFF
- Low battery indication



### **Included accessories**

CH1, CH2	Remote units #1 and #2
YAAMS0000000	Patch cable STP RJ45-RJ45, 20cm, 3 pieces
	Carrying bag
	User Manual
	Battery



## **Main features**

Protection against voltage (PoE): max 24V
Size (LxWxH): 190x65x45mm
Weight (battery excluded): 235g
Size of remote unit (LxLaxH): 30x25x27mm
Remote unit weight: 13g
Considered standard: TIA/EIA 568B



## **Optional accessories**

REM3	Remote unit #3 + patch cable RJ45-RJ45 STP
REM4	Remote unit #4 + patch cable RJ45-RJ45 STP
REM5	Remote unit #5 + patch cable RJ45-RJ45 STP
REM6	Remote unit #6 + patch cable RJ45-RJ45 STP
REM7	Remote unit #7 + patch cable RJ45-RJ45 STP
REM8	Remote unit #8 + patch cable RJ45-RJ45 STP
REM38	Remote unit #3 - #8 + 6 patch cables RJ45-RJ45



## **Functions**

- Test of wiring errors on LAN network cables with RJ45 connector in CAT5 and CAT6
- Test of wiring errors on telephone network cables with RJ11 connector
- Test of wiring errors on COAX cables with F connector
- Detection of wiring errors on UTP (unshielded) and STP (shielded) cables
- Detection of up to 4 remote units for multiple tests.
- Measurement of cable length from 10m to 250m
- Backlight
- Auto Power OFF



#### Included accessories

RT-01	Remote unit RJ45 #1 + 2 patch cables RJ45 STP, 20cm
RT-RJX1	Remote unit RJ11/COAX + patch cable RJ11 + patch cable COAXF
	Carrying bag
	Batteries
	Hear Manual



## **Main features**

Input connectors: RJ45, RJ11, COAX F
Power supply: 6x1.5V batteries type AAA

LR03

Size (LxWxH): 156x73x35mm
Weight (battery included): 170g
Size of rem. unit (LxLaxH): 72x20x23mm

Remote unit weight: 25g



### **Optional accessories**

RT-0204 Set of remote units RJ45 #2, #3, #4 + 3 patch cables RJ45 STP 20cm













Laser pointer Optional equipment



Optical thermal camera in visible range



Integrated Up to 3 independent Flash LED



Preset selection properties of materials



Multi-areas with independent pointers

Temperature

range  $-20 \rightarrow +400$  °C



Fluid image also on moving targets

adiustment

of SPAN



High resolution for sharp images



P.i.P. fusion Overlapping visual + thermographic image



PC USB 2.0 connection HDMI video output Data saving on MicroSD card Android™ systems







thermal

sensitivity



Rechargeable

batteries

and battery chargers

Recording of of IR videos



Voice notes



Text notes

## Industrial, electrical or construction. Excellent in any sector.

The new THT range makes use of a highly innovative technology to deliver performance at affordable prices. The use of IR technology today applies to many sectors, from industry to construction, from systems to installation. Thanks to the innovative icon display, the wide capacitive touch screen display and the very high infrared resolution with 384x288 pixels and 160x120 pixels (80x80 pixels for THT45W), identifying those problems which are not visible to the naked eye becomes simpler and more intuitive.

The new THT thermal cameras are provided with Flash Led\*, Laser pointer\*, photo-camera for visual images and PiP\* and optional interchangeable optics\*\*. With the provided 4GB memory card, with which you will be able to take hundreds of pictures, it will be possible to prepare reports complete with images, audio and text comments. With the new THT thermal cameras, thermographic analysis will be simple and quick.

<sup>\*</sup> THT70, THT60 and THT45W. 
\*\* Only THT60 and THT70. 
\*\*\* The THTview App is available for free download in the Apple Store™ and Google Play™ store.



INFRARED

**CAMERAS** 

## **INFRARED** THERMAL CAMERAS

















		2000					
CHARACTERISTICS OF IR IMAGE	THT70	THT60	THT46	THT45W	MERCURY	ECLIPSE	THT33
IR sensor resolution	384 x 288	160 x 120	160 x 120	80 x 80	80 x 80	80 x 80	80 x 80
Temperature range	-20 ÷ 650°C -4 ÷ 1202°F	-20 ÷ 650°C -4 ÷ 1202°F	-20 ÷ 350°C -4 ÷ 662°F	-20 ÷ 350°C -4 ÷ 662°F	- 20 ÷ 260°C - 4 ÷ 500°F	- 20 ÷ 260°C - 4 ÷ 500°F	- 20 ÷ 380°C - 4 ÷ 716°F
Thermal sensitivity	< 0.05°C @ 30°C	< 0.05°C @ 30°C	< 0.1°C @ 30°C	< 0.1°C @ 30°C	< 0.1°C @ 30°C	< 0.1°C @ 30°C	< 0.1°C @ 30°C
NETD	< 50mK	< 50mK	< 100mK	< 100mK	< 100mK	< 100mK	< 100mK
Spectrum range	8 ÷ 14μm	8 ÷ 14μm	8 ÷ 14μm	8 ÷ 14μm	8 ÷ 14μm	8 ÷ 14μm	8 ÷ 14μm
IFOV (@1m)	0.77mrad	0.77mrad	2.78mrad	3.78mrad	4.53mrad	4.53mrad	4.53mrad
Type of IR sensor	UFPA	UFPA	UFPA	UFPA	UFPA	UFPA	UFPA
Frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz

## CHARACTERISTICS OF IR OPTICS AND BUILT-IN PHOTO CAMERA

Field of view (FOV)	17° X 12.7°	17° X 12.7°	25° X 19°	17° X 17°	21° X 21°	21° X 21°	21° X 21°
Focus width of standard lens	22mm	22mm	9mm	9mm	7,5mm	7,5mm	7,5mm
Focusing of IR optics	Manual	Manual	Manual	Manual	Fixed	Fixed	Fixed
Resolution and FOV of visual camera	5Mpxl, FOV 59°	5Mpxl, FOV 59°	1.3Mpxl, FOV 59°	1.3Mpxl, FOV 59°	-	-	-
Interchangeable optics	•	•	-	-	-	-	-

#### FUNCTIONS

FUNCTIONS							
Fusion PiP function for combination of thermal and visual images	•	•	•	•	-	-	-
Screening function for frontal temperature measurement	•	•	•	•	-	-	•
3 cursors: Central, Min, Max.	•	•	•	•	•	•	•
Advanced analysis: Spots, Lines, Areas on images and Isotherm line function	•	•	-	-	-	-	-
Correction according to distance, reflected temperature and relative humidity	•	•	Only reflected temperature	Only reflected temperature	-	-	-
Colour palettes	• 8 standard	• 8 standard	• 4 standard	• 4 standard	• 5 standard	• 5 standard	• 5 standard
Integrated table with emissivity values of common materials	•	•	•	•	-	-	-
Alarm thresholds on temperature measurement	•	•	-	-	-	-	-
Readings in °C, °F, K	•	•	•	•	•	•	•
Class 2 laser pointer	•	•	•	•	•	•	-
Integrated white light illuminator	•	•	•	•	•	•	•
Digital zoom	1x ÷ 32x	1x ÷ 32x	1x ÷ 32x	1x ÷ 32x	-	-	-
Manual and automatic span	•	•	•	•	Auto only	Auto only	•
Vertical and horizontal lines	•	•	-	-	-	-	-















DATA SAVING	THT70	THT60	THT46	THT45W	MERCURY	ECLIPSE	THT33
Standard format of saved images JPEG	•	•	•	•	• (BMP)	• (BMP)	• (BMP)
Saving of IR videos and audio comments in MPEG4 format	•	•	•	•	-	-	-
Voice and text annotation	•	•	-	-	-	-	-

### ADDITIONAL CHARACTERISTICS

Capacitive touch-screen colour display	•	•	-	-	-	-	-
Power supply with rechargeable battery	•	•	•	•	•	•	•
USB interface to PC and THTLink software	•	•	•	•	-	-	-
PAL/NTSC video output	• HDMI	• HDMI	• HDMI	• HDMI	-	-	-
WiFi function for connection to mobile devices	• with APP HTProCamera	• with APP HTProCamera	-	• with APP THTview	-	-	-
Bluetooth function for connection to mobile devices	-	-	-	-	• with APP HTMercury	• with APP HTMercury	• with APP HTMercury

### **POWER SUPPLY**

Battery type	Li-I0N	Li-ION	rechargeable	rechargeable	rechargeable	rechargeable	rechargeable
	rechargeable	rechargeable	Li-ION	Li-ION	Li-ION	Li-ION	Li-ION
	3,7V 5200mAh	3,7V 5200mAh	3,7V 2000mAh	3,7V 2000mAh	7,4V 2300mAh	7,4V 1200mAh	3,7V 1300mAh
Recharging system	On thermal camera or external recharging base	On thermal camera or external recharging base	On thermal camera	On thermal camera	External recharging base	External recharging base	On thermal camera (USB/ power supply)
Duration	3 hours	3 hours	4 hours	4 hours	2 hours	8 hours	5 hours
External power supply	External	External	External	External	External	External	External
	power supply	power supply	power supply	power supply	power supply	power supply	power supply
	100/240VAC	100/240VAC	100/240VAC	100/240VAC	100/240VAC	100/240VAC	100/240VAC
	(50/60Hz)/5VDC	(50/60Hz)/5VDC	(50/60Hz)/5VDC	(50/60Hz)/5VDC	(50/60Hz)/10VDC	(50/60Hz)/10VDC	(50/60Hz)/5VDC

#### **GENERAL CHARACTERISTICS**

Operating temperature	-15°C ÷ 50°C	-15°C ÷ 50°C	-15°C ÷ 50°C	-15°C ÷ 50°C	5°C ÷ 40°C	5°C ÷ 40°C	-10°C ÷ 45°C
Operating humidity	10% ÷ 90%HR	10% ÷ 90%HR	10% ÷ 90%HR	10% ÷ 90%HR	<80%RH	<80%RH	<80%RH
Storage temperature	-40°C ÷ 70°C	-40°C ÷ 70°C	-40°C ÷ 70°C	-40°C ÷ 70°C	-20°C ÷ 60°C	-20°C ÷ 60°C	-20°C ÷ 60°C
Storage humidity	10% ÷ 90%HR	10% ÷ 90%HR	10% ÷ 90%HR	10% ÷ 90%HR	<80%RH	<80%RH	<80%RH
Ingress protection	IP54 in compliance with IEC529	IP54 in compliance with IEC529	IP50 in compliance with IEC529	IP50 in compliance with IEC529	IP65 in compliance with IEC529	IP40 in compliance with IEC529	IP54 in compliance with IEC529
Shock	25G, in compliance with IEC60068-2-29	25G, in compliance with IEC60068-2-29	25G, in compliance with IEC60068-2-29	25G, in compliance with IEC60068-2-29	-	-	-
Vibrations	2G, in compliance with IEC60068-2-6	2G, in compliance with IEC60068-2-6	2G, in compliance with IEC60068-2-6	2G, in compliance with IEC60068-2-6	-	-	-
Falling test	2m	2m	2m	2m	-	-	2m
Size (L x W x H)	260x101x120mm	260x101x120mm	224x77x96mm	224x77x96mm	190x75x55mm	280x100x50mm	180x60x75mm
Weight (battery included)	0.85kg	0.85kg	0.5kg	0.5kg	0.55kg	0.50kg	0.26kg
Order code	HN000070	HN000600	HN000046	HN000045	HR000MER	HP000ECL	HN000033



ORDER CODE HN000070

## THT7(

ADVANCED INFRARED THERMAL IMAGING CAMERA WITH TOUCH SCREEN WITH RESOLUTION 384x288pxl

THT70 is the new professional thermal imaging camera provided with an IR sensor with high resolution 384x288pxl which makes it suitable for use both in industrial environments and in the construction sector, further to human temperature screening. It is provided with two specific measuring ranges, a standard one: -20°C  $\div$  650.0°C, and one for the screening mode: 32.0°C  $\div$  42.0°C. It produces infrared images and videos with high resolution. The thermal imaging camera has a wide range of tools for an advanced analysis of thermographic images.

THT70 is provided with a modern internal icon structure and a capacitive colour touch-screen display with high brightness. It is also provided with Wi-Fi connection, which can be used via the dedicated APP HT Pro Camera.



THT70 384x288px

## **Functions and characteristics**

### Characteristics of IR image

 IR sensor resolution: 384x288pxl /17µm Temperature range: -20°C ÷ 650°C • Screening mode temperature range: 32°C ÷ 42°C <0.05° @ 30°C Thermal sensitivity: NETD: <50mK • Spectrum range: 8÷14µm • IFOV (@1m): 0.77mrad UFPA Type of IR sensor: Frequency:

#### Characteristics of IR and integrated optics

Field of view (FOV): 17° x 12.7°
 Focus width of standard lens: 22mm
 Focusing of IR optics: manual
 Integrated photo-camera resolution: 5Mpxl, FOV 59°

#### **Functions**

- Fusion PiP function for combination of thermal and visual images
- 3 cursors: Central, Min, Max.
- Advanced analysis: Spots, Lines, Areas on images and Isotherm line
- Correction according to distance, reflected temperature and relative burnidity.
- 8 standard + 4 isotherm line colour palettes
- Integrated table with emissivity values of common materials
- Alarm thresholds on temperature measurement
- Measurement of the distance from target with laser pointer
- Readings in °C, °F, °K
- Class 2 laser pointer
- Integrated white light illuminator

### Data saving

- Saved image format: JPEG/HIR
- Saving of IR videos in MPEG4 format
- Voice and text annotation

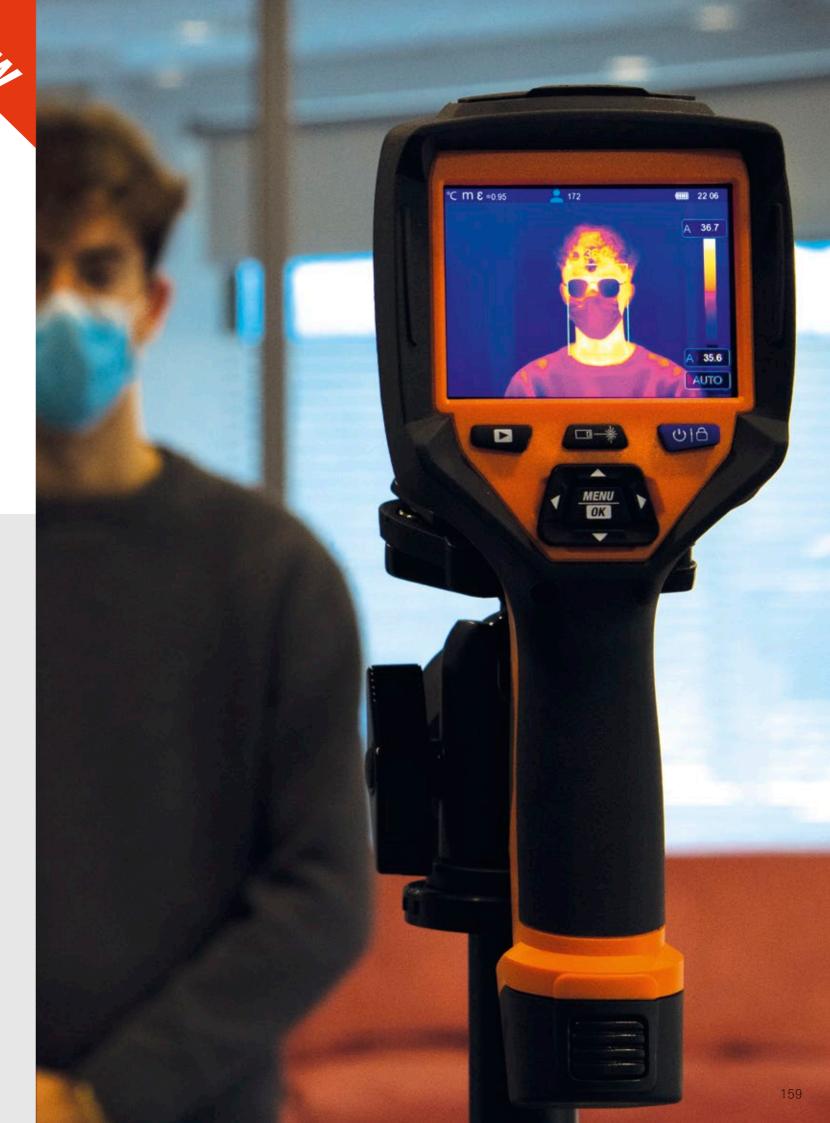
### Additional characteristics

- Capacitive colour touch-screen display
- Power supply with rechargeable battery
- USB interface to PC
- HDMI video output



## **Provided accessories**

	22mm optic lens with protection cover
	Micro SD Card 8GB + adapter
BAT8X	Rechargeable Li-ION battery (2pcs)
	Battery recharging base
	USB cable for PC connection
	HDMI video cable
	AC/DC power supply + universal plugs
	Headset with microphone
	User manual on CD-ROM + Quick guide
	Windows software THTLink
	Hard carrying case
	Non-slip strap
	ISO calibration report







ORDER CODE HN000060

## THT60

ADVANCED INFRARED THERMAL IMAGING CAMERA WITH TOUCH SCREEN WITH RESOLUTION 160X120pxl

THT60 is the new professional thermal imaging camera provided with an IR sensor with high resolution 160x120pxl which makes it suitable for use both in industrial environments and in the construction sector, further to human temperature screening. It is provided with two specific measuring ranges, a standard one: -20°C  $\div$  650.0°C, and one for the screening mode: 32.0°C  $\div$  42.0°C. It produces infrared images and videos with high resolution. The thermal imaging camera has a wide range of tools for an advanced analysis of thermographic images.

THT60 is provided with a modern internal icon structure and a capacitive colour touch-screen display with high brightness. It is also provided with Wi-Fi connection, which can be used via the dedicated APP HT Pro Camera.



ORDER CODE HN000046 | HN000045

## THT46|THT45W

COMPACT INFRARED THERMAL CAMERAS WITH FUNCTION PIP

THT45W and THT46 are an absolute innovation in the sector of thermal cameras, both for the advanced performance typical of a highlevel thermal camera and for their reduced size. THT45W is provided with IR sensor with resolution 80x80pxl which makes it the ideal device for maintenance operations and everyday analysis. THT46, which a resolution of 160x120pxl, has an even more advanced performance which allows a **better definition of the infrared image**. They are provided with an LCD colour display with high brightness and by a drop-down menu very easy to use, which allow for a simple programming by means of a keypad. The temperature range is very wide (-20°C at 350°C) and it is possible to save both thermal images and visual images in a standard JPG format on a micro SD card. IT is also possible to transfer data onto the PC via USB. Recording of IR videos is also available. Thermal cameras THT45W and THT46 are the ideal partner for detecting electric problems, checking mechanical parts, analyzing hydraulic systems, forced ventilation, etc. These thermal cameras are completed by the SPAN function (creation of a temperature range of interest) and the automatic setting of emissivity with a preset table of materials.



THT60 160x120pxl

## **Functions and characteristics**

### Characteristics of IR image

 IR sensor resolution: 160x120pxl /17µm Temperature range: -20°C ÷ 650°C 32°C ÷ 42°C Screening mode temperature range: Thermal sensitivity: <0.05° @ 30°C NETD: <50mK 8÷14µm Spectrum range: 0.77mrad • IFOV (@1m): UFPA Type of IR sensor: Frequency:

#### Characteristics of IR and integrated optics

Field of view (FOV): 17° x 12.7°
 Focus width of standard lens: 22mm
 Focusing of IR optics: manual
 Integrated photo-camera resolution: 5Mpxl, FOV 59°

#### **Functions**

- Fusion PiP function for combination of thermal and visual images
- 3 cursors: Central, Min, Max.
- Advanced analysis: Spots, Lines, Areas on images and Isotherm line
- Correction according to distance, reflected temperature and relative humidity
- 8 standard + 4 isotherm line colour palettes
- Integrated table with emissivity values of common materials
- Alarm thresholds on temperature measurement
- Measurement of the distance from target with laser pointer
- Readings in °C, °F, °K
- Class 2 laser pointer
- Integrated white light illuminator

### Data saving

- Saved image format: JPEG/HIR
- Saving of IR videos in MPEG4 format
- Voice and text annotation

### **Additional characteristics**

- Capacitive colour touch-screen display
- Power supply with rechargeable battery
- USB interface to PC
- HDMI video output



## **Provided accessories**

	22mm optic lens with protection cover
	Micro SD Card 8GB + adapter
BAT8X	Rechargeable Li-ION battery (2pcs)
	Battery recharging base
	USB cable for PC connection
	HDMI video cable
	AC/DC power supply + universal plugs
	Headset with microphone
	User manual on CD-ROM + Quick guide
	Windows software THTLink
	Hard carrying case
	Non-slip strap
	ISO calibration report

## F

## **Functions and characteristics**

THT46 THT45W

	IH146	1H145W
IR image features		
IR sensor resolution	160x120pxl/25µm	80x80pxl/34µm
Temperature range -20°C a 350°C	•	•
Thermal sensitivity < 0,1° @ 30°C	•	•
NETD: < 100mK	•	•
Spectral range 8÷14µm	•	•
IFOV (@1m)	2.78mrad	3.78mrad
Sensor type IR UFPA	•	•
Frequency 50Hz	•	•
IR and integrated optical system	features	
Field of view	25° x 19°	17° x 17°
Standard lens focal length 9 mm	•	•
Manual IR optical system focus	•	•
Functions		
PiP Fusion function to mix thermal images with visual images	•	•
3 cursors: Central, Min, Max.	•	•
Reflected temperature correction	•	•
4 color palettes	•	•
Integrated emissivity table of common materials	•	•
Readout in °C, °F, °K	•	•
Laser pointer Class 2	•	•
Built-in white light lamp	•	•
Data saving		
Images saved in standard JPEG format	•	•
Saving IR video and audio in MPEG4 format	•	•

	THT46	THT45W
Additional features		
Powering with rechargeable battery	•	•
USB port for PC connection	•	•
HDMI output	•	•
WiFi connection for communication with mobile devices	-	• through THTview



#### Included accessories

Micro SD Card 8GB
Rechargeable Li-ION battery
USB cable for PC connection
HDMI Video Cable
Universal Mini USB adapter + AC/DC plug
Headset with microphone
User manual on CD-ROM + quick guide
Soft bag for transport
Windows software
Calibration certificate ISO9000
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COD. METEL HN000033

## THT33

INFRARED THERMAL CAMERA WITH RESOLUTION 80x80 AND BLUETOOTH CONNECTION

THT33 is a thermal camera with reduced size provided with IR sensor with resolution 80x80pxl, which makes it the ideal device for maintenance operations and everyday analysis. THT33 has an LCD colour display and a very simple menu which allows for a simple programming. The temperature range is very wide (-20°C to 380°C) and it is possible to save thermal images in a BMP format in the internal memory, or to transfer the captured snapshots to mobile devices through the dedicated APP HTMercury using the Bluetooth connection. Within

the APP, it is possible to carry out advanced analyses and create PDF reports which can be shared by mail and/or via social networks. Thermal camera THT33 is the ideal solution for detecting electric problems, checking mechanical parts, analyzing hydraulic systems and forced ventilation systems.



App HT Mercury33

### **Functions and features**

### Characteristics of IR and integrated optics

- Field of view (FOV): 21°x 21°
- Automatic focusing

## Functions

- 3 cursors: Central, Max, Min
- Emissivity adjustable from 0.10 to 1.00
- 5 colour palettes
- Reading in °C, °F
- HOLD function

#### Data saving

- BMP format of saved images
- Saving in the internal memory (max 20 images)
- Download of images to mobile devices via Bluetooth and APP HTMercury

#### Additional characteristics

- Power supply with rechargeable Li-ION battery
- USB interface for battery recharge
- Built-in white-light torch
- Automatic/Manual temperature span
- D/S ratio: 74:1

#### Characteristics of IR image

- Resolution of IR sensor: 80x80pxl
- Temperature range: -20°C ÷ 380°C
- Thermal sensitivity: <0.1°C @ 30°C
- NETD: <100mK</li>
- Spectrum range: 8 ÷ 14µm
- Type of IR sensor: UFPA
- Frequency: 50Hz



## **Included accessories**

Built-in rechargeable Li-ION battery

Battery charger power supply

USB cable for battery recharge

Carrying bag

Non-slip strap

User Manual

ISO9000 calibration certificate







COD. METEL HN000108

## HTB500

PROFESSIONAL BORESCOPE WITH BUILT-IN HIGH-RESOLUTION PHOTO CAMERA

HTB500 is a portable digital borescope which allows carrying out inspections inside parts of objects not physically accessible (typically rotating equipment) and not visible to the naked eye. The instrument uses a waterproof external feeler with 4 LEDs with high brightness and a photo camera, in order to obtain a high-resolution image on the display.





## **Functions and characteristics**

- Real-time display of the itemWaterproof flexible external feeler (IP67)
- Built-in white-light LEDs for operations in poorly lit environments
- Image rotation (0° 180°) on the display
- Li-ION battery rechargeable through USB
- Analog video output (PAL/NTSC)
- Electronic image zoom
- Resolution of the internal photo camera: 640x480pxl
- Display: 3.5", TFT colour, 320 x240pxl
- Automatic focusing: 5cm ÷ 15cm
- External feeler length: 1m
- External feeler diameter: 6mm
- Adjustment of white light brightness: 10 levels
- Size (L x W x H): 250x100x95mm
- Weight (without probe): 345g



## **Accessories provided**

Flexible external feeler

Rechargeable Li-ION battery

USB cable for battery recharge

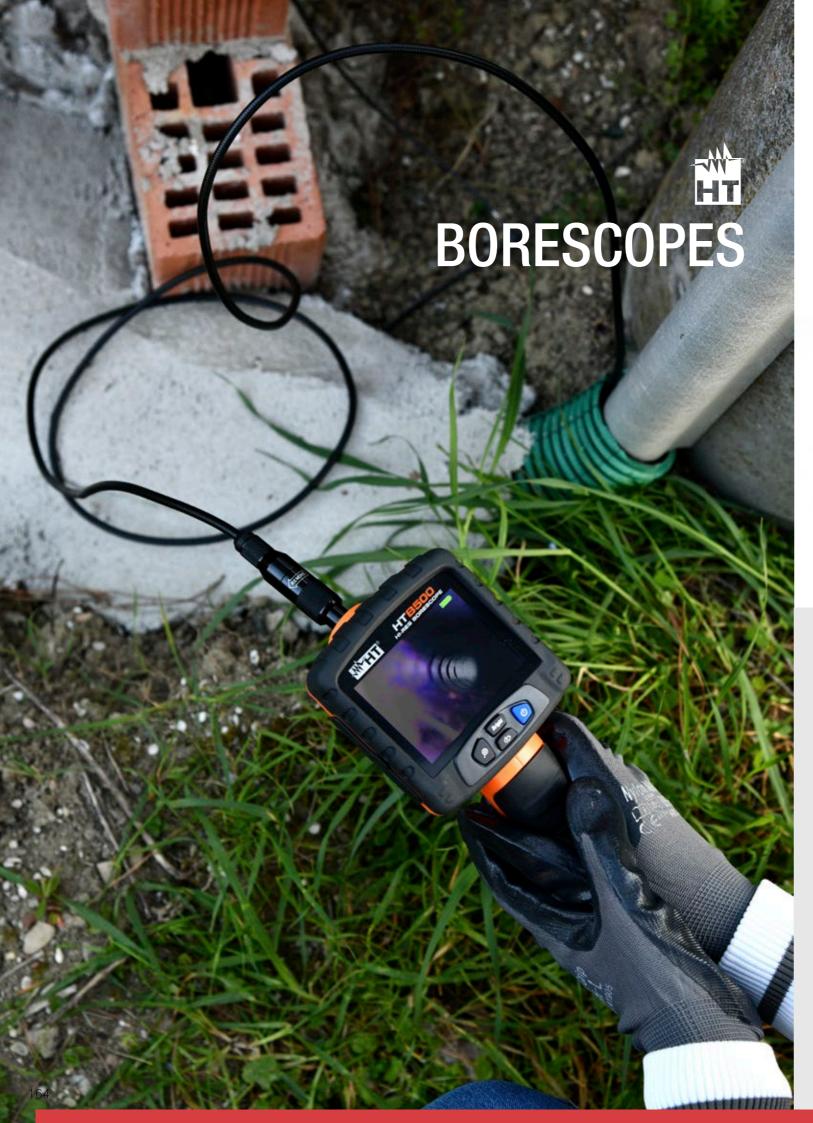
Carrying bag

User Manual



## **Optional accessories**

IP67 probe for inspections up to 3 meters deep.





## THERMOMETERS AND THERMO-ANEMOMETERS









	1/	1.1	W	1			385	
MAIN MEASUREMENTS	HTA103	HTA105	HTA106	HTA107	HT3300	DT8806H	DT103S	HT3305
Distance / infrared spot ratio	-	-	-	8:1	12:1	6:1	-	20:1
Infrared temperature measuring range	-	-	-	-50 ÷ 200°C -58 ÷ 392°F	-50 ÷ 380°C -58 ÷ 716°F	32 ÷42.5°(Body) 0÷60°C (Surface)	0 ÷ 50°C 32 ÷ 122°F	-50°C ÷ 1000°C -58°F ÷ 1832°F
Temperature measuring range with K-type probe	-250 ÷ 1372°C -418 ÷ 2502°F	-	-	-	-	-	-	-50°C ÷ 1370°C -58°F ÷ 2498°F
Temperature measurement with K-type probes	• (*)	-	-	-	-	-	-	• (*)
Measurement of volumetric capacity (m3/s) and enthalpy (kW)	-	•	-	-	-	-	-	-
Measurement of air relative humidity in %RH	-	•	•	(and materials)	-	-	-	-
Measurement of wind speed in m/s	-	• (hot-wire sensor)	-	-		-	-	-
Integrated photo-camera (640x480pxl)	-	-	-	-	-	-	-	-
Image saving in JPG format	-	-	-	-	-	-	-	-
Video saving in 3GP format	-	-	-	-	-	-	-	-
Measurement of air temperature/humidity with built-in sensor	-	•	•	•	-	-	-	-
Temperature measurement of dew point and of wet bulb	-	-	•	•	-	-	-	-
Datalogger function for temperature measure recording	-	-	-	-	-	-	-	-
ADDITIONAL CHARACTERISTICS								
Emissivity adjustment of target	-	-	-	Fixed >0.95	Fixed >0.95	Fixed 0.95	Fixed 0.95	0.01 ÷ 1.00
Setting of alarm thresholds on measurements	-	-	-	•	•	•	• (predefined thresholds)	•
Continuous measurement	-	-	-	-	-	-	-	-
Class 2 integrated laser pointer	-	-	-	•	•	-	-	•
Blue LED built-in illuminators for UV function	-	-	-	-	-	-	• LED alarm	-
Internal memory	-	-	-	•	-	•	-	-
SD Card slot for measure saving	-	-	-	-	-	-	-	-
PC connection through USB cable	-	-	-	-	-	-	-	-
Backlight	•	•	•	•	•	•	-	•
Autorange	•	•	•	•	•	•	•	•
Data HOLD	•	•	•	•	•	•	-	•
MAX/MIN/AVG	• (MAX/MIN)	• (MAX/MIN)	• (MAX/MIN)	• (MAX/MIN)	• (MAX/MIN)	-	-	•
Selection of measuring unit	•	•	•	•	°C \ °F	•	°C \ °F	°C\°F
Low battery indication	•	•	•	•	•	•	•	•
Auto Power OFF	•	•	•	•	•	•	•	•
Power supply	1x9V 6F22	1x9V 6F22	1x9V 6F22	1x9V 6F22	1x9V 6F22	2x1.5V AA	3x1.5V AA	2x1.5V AAA
Size in mm (LxWxH)	185x60x40	185x60x40	185x60x40	185x60x40	136x75x40	149x77x43	107x75x57	180x105x55
Maintain and Arthuring in the Arthuring	100	100	100	100	140	105	100	0.40

\* With optional TK probes (TK101 is provided).

Weight in grams (batteries included)

HA003305



## Functions

	HTA107	HTA106	HTA105	HTA103
IR temperature	•	-	-	-
Temperature with KJT probes	-	-	-	•
Air temperature/humidity with in-built probe	•	•	•	-
Contact humidity	•	-	-	-
Air speed with hot-wire sensor	-	-	•	-
Air volumetric flow rate (CMM, CFM)	-	-	•	-
Dew point temperature	•	•	-	-
Wet bulb temperature	-	•	-	-
Data HOLD	-	•	•	•
MAX/MIN	•	•	•	•
Average value	-	-	•	
Autorange	•	•	•	•
Backlight	•	•	•	•
Internal memory	•	-	-	-
Auto Power OFF	•	•	•	•

## **Main features**

Display:LCD, 4 digits (double display)Power supply:1x9V battery type 6F22Auto Power OFF:after 15 minutes' idlingInternal memory:Max 20 locations (HTA107)

Max operating altitude: 2000m

ORDER CODE HN000107 | HN000106 | HN000105 | HN000103

## HTA107|HTA106|HTA105|HTA103

MULTIFUNCTION DEVICES FOR MEASURING ENVIRONMENTAL PARAMETERS

The family of devices HTA10x including HTA103, HTA105, HTA106 and HTA107 has been designed for measuring environmental parameters such as temperature, humidity and air speed. HTA103 (thermometer) allows measuring temperature with the use of JKT thermocouples in the air, in contact and within liquids (with optional probes TK1xx). HTA105 (thermo-anemometer) measures air speed with an in-built hot-wire telescopic probe, further to temperature/humidity and air volumetric flow rate. HTA106 (thermohygrometer) measures air temperature/humidity with the in-built sensor. HTA107 (multifunction thermohygrometer) allows measuring air humidity and contact measurement on materials with internal sensors and with the provided penetration probe. This device also allows the infrared measurement of temperature and the calculation of the temperature difference in order to establish condensation conditions on surfaces. Each model is provided with display backlight in order to make readings in poorly lit environments easier.











## **Technical Specifications**

	HTA107	HTA106	HTA105	HTA103
Temperature with K-type probe		'		'
Measuring range:	-	-	-	-250°C ÷ 1372°C -418°F ÷ 2502°F
Basic accuracy:	-	-	-	±(1%reading + 0.5°C) ±(1%reading + 0.9°F)
Air temperature / humidity				
Measuring range:	-28°C ÷ 77°C -20°F ÷ 170°F 0%RH ÷ 100%RH	-20°C ÷ 60°C -4°F ÷ 144°F 0%RH ÷ 100%RH	0°C ÷ 50°C 32°F ÷ 122°F 0%RH ÷ 100%RH	-
	6%RH ÷ 100%RH (contatto)	-	-	-
Basic accuracy:	±2°C / ±3.6°F / ±3%RH	±1°C / ±1.8°F / ±3%RH	±1°C/±1.8°F	-
Infrared temperature (IR)				
Measuring range:	-50°C ÷ 200°C -58°F ÷ 392°F	-	-	-
Basic precision (@ 0 ÷ 50°C):	±1%rdg or 0.6°C	-	-	-
Emissivity:	0.95 (fixed)	-	-	-
Optical resolution:	D:S = 8:1	-	-	-
Air speed				
Measuring range:	-	-	0.10m/s ÷ 20.00m/s	-
Basic accuracy:	-	-	±(5%rdg + 0.03)	-
Resolution:	-	-	0.01m/s	-



#### ORDER CODE **DT103S**

## DT103S

INFRARED THERMOMETER FOR MEASURING FOREHEAD TEMPERATURE WITHOUT CONTACT

DT103S is an automatic infrared thermometer without contact, with a measuring distance between 5 and 15 cm.

It is provided with a convenient wall mounting system and a tripod, a display for reading measured temperatures and flashing LEDs to signal possible high temperatures.





## **Functions**

- Automatic measurement of forehead temperature without contact
- Selectable units °C or °F
- Body, Surface and Counter modes available
- Alarm LEDs and sounds when measuring
- Auto power OFF
- Autorange



## **Technical Specifications**

Measuring range:  $0^{\circ}\text{C} \div 50^{\circ}\text{C} (32^{\circ}\text{F} \div 122^{\circ}\text{F})$ 

Accuracy:  $\pm 0.2$ °C Response time: 0.5s

Measuring modes: Body, Surface, Counter
Allowable measuring distance: 5cm ÷ 15cm

Alarm conditions: visual (LED) and acoustic (buzzer)

Alarm thresholds: automatic

Display: LCD, 999 dots

Power supply: 3x1.5V alkaline batteries type AA LR06 External power supply: 100-240V, 50/60Hz / 5V DC, 2A

Auto Power OFF: after 12 hours' idling Operating temperature:  $10^{\circ}\text{C} \div 40^{\circ}\text{C}$  Size (L x W x H):  $107 \times 75 \times 57 \text{mm}$ 

Weight (batteries included): 120g



## **Provided accessories**

#### Batteries

Power supply with USB cable for mains connection

Screws for wall mounting

User Manual



## **Optional accessories**

TRIPOD

Adjustable tripod





COD. METEL DT8806H

## DT8806H

INFRARED THERMOMETER FOR NON-CONTACT **BODY TEMPERATURE MEASUREMENT** 

Non-Contact Forehead IR Thermometer is specially designed to take the body temperature measurement of a person regardless of room temperature.





ORDER CODE **HA003305** | **HA003300** 

#### ULTRA-COMPACT INFRARED THERMOMETERS

Handy and extremely practical systems for reading infrared temperature with a laser system, providing visual and audio indications every time the measured value changes. HT3305 also allows performing temperature measurements with a K-type probe. These models were thought for very quick measurements to detect, with no loss of time, temperature variations.



## **Functions**

- Accurated non-contact forehead temperature measurements
- Selectable °C or °F units
- · Selectable Body and Surface modes
- · Audible alarm condition on measurements
- Memorization of the last 32 measures
- · Automatic Data Hold & Auto power off
- Autorange



### Included accessories

## Batteries

Transport bag

User manual



## **Safety conformance**

- ASTM E1965-1998
- EN 980: Graphical symbols for use in the labeling of medical devices
- · EN 1041: Information supplied by the manufacturer with medical devices
- EN 60601-1: Medical electrical equipment Part 1: General requirements for safety (IEC: 60601-1:1998)
- EN 60601-1-2: Medical electrical equipment Part 1-2: General requirements for safety Collateral standard Electromagnetic compatibility Requirements and test (IEC 60601-1-2:2001)



## **Main features**

Auto Power Off

Display: LCD, backlight Resolution 0.1°C (0.1°F) Auto Power OFF: after 5 minutes idling Dimensions (L x W x H): 149 x 77 x 43 mm

Weight (included batteries) 195g



## **Technical specifications**

#### Infrared temperature measurement

- Range (Body mode): 32.0°C ÷ 42.5°C / 90.0°F ÷ 108.0°F
- Range (Surface mode): 0°C ÷ 60.0°C / 32.0°F ÷ 140.0°F
- Resolution: 0.1°C/0.1°F
- Basic accuracy Body mode ASTM E1965-1998 (2003): 32 to 35.9°C/93.2 to 96.6°F (±0.3°C/±0.5°F) 36 to 39°C/96.8 to 102.2°F (±0.2°C/±0.4°F) 39 to 42.5°C/102.2 to 108.5°F (±0.3°C/±0.5°F)
- Measuring distance: 5-15cm (2 5.9in)
- Response time: 0.5s



## **Functions**

	H13300	H13305
Infrared temperature measurement	-50°C÷380°C	-50°C÷1000°C
Built-in laser pointer	•	•
Laser pointer area for an immediate localization of distance/spot	•	•
Automatic reading lock (HOLD)	•	•
Auto Power OFF	•	•
Distance / Spot ratio D:S	12:1	20:1
Temperature measurement with K-type probe	-	•
Adjustment of emissivity	- (>0.95)	•
Measures in °C/°F	•	•
Data HOLD	•	•
MAX, MIN, AVG functions	•	•
Acoustic alarm for values higher than MAX and lower than MIN	•	•
Backlight	•	•
Auto Power OFF	•	•
Ergonomic and ultra-compact design	•	•



### **Included accessories**

Batteries
K-type wire probe (HT3305)
Transport bag
User manual



## **Main features**

Laser pointer: Class 2 LCD with backlight Display:

Power supply: 1x9V battery type 6F22 (HT3300)

2x1.5V batteries type AAA LR03 (HT3305)

Auto Power OFF: after 10 seconds' idling

Size (L x W x H): 136×75×40mm (HT3300),

180×105×55mm (HT3305)

140g **(HT3300)**, Weight (batteries 240g (HT3305) included):



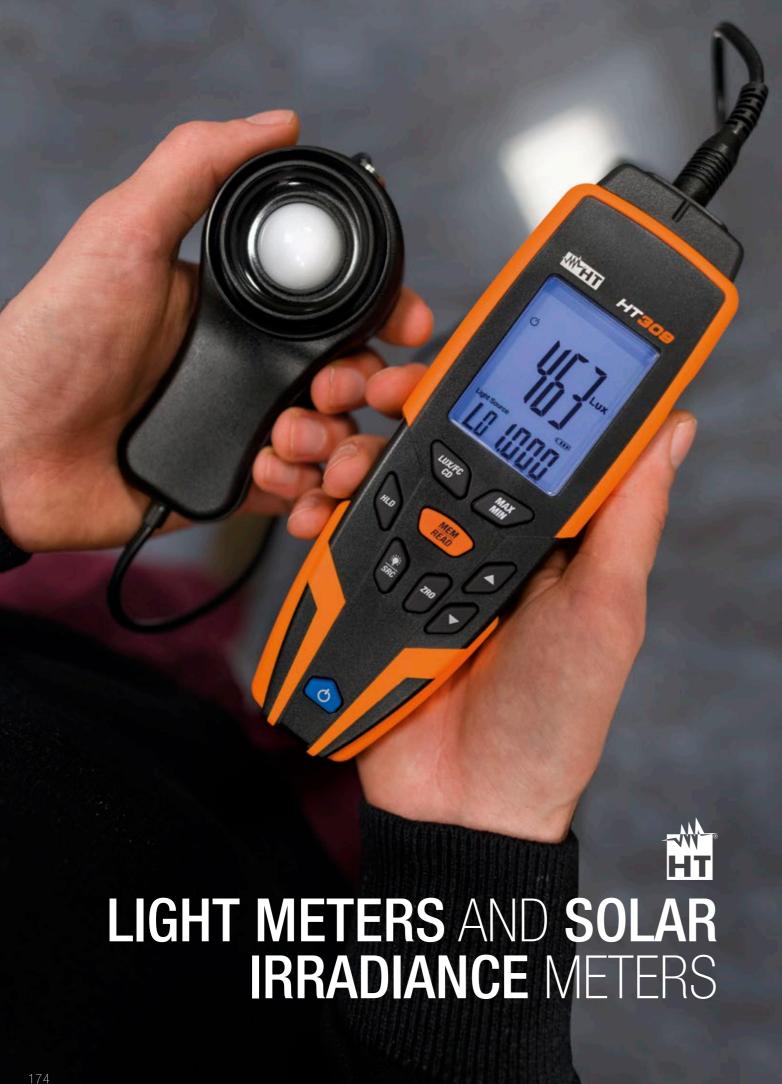
## **Technical specifications**

## Infrared temperature measurement

- Measuring range °C: -50°C ÷ 380°C (HT3300); -50°C ÷ 1000°C *(HT3305)*
- Measuring range °F: -58°F ÷ 716°F (HT3300); -58°F ÷ 1832°F (HT3305)
- Resolution: 0.1 °C 0.1 °F
- Basic accuracy: ±1°C or ±1%reading
- Response time: <150ms
- Spectrum response: 8 ÷ 14μm
- D/S ratio: 12:1 (HT3300); 20:1 (HT3305)
- Emissivity range: 0.95 fixed (HT3300); 0.01 ÷ 1.00 (HT3305)

## Temperature measurement with K-type probe (HT3305)

- Measuring range °C: -50°C ÷ 1370°C
- Measuring range °F: -58°F ÷ 2498°F
- Resolution: 0.1 °C 0.1 °F
- Basic accuracy: ±0.5% rdg (only device without probes)
- Response time: <150ms



## LIGHT METERS AND SOLAR METERS





HT309

11204

MAIN MEASUREMENTS	LIGHT METERS	SOLAR METERS
Measuring range	0.01÷400klux 0.01÷40kFc	1÷1999W/m² 1÷634 BTU/(ft2*h)
Measurement of illuminance in Lux/Fc	•	-
Measurement of LED sources' illuminance	•	-
Luminous intensity measurement (Cd)	•	-
Solar irradiation measurement W/m² and BTU/(ft2*h)	-	•

#### **ADDITIONAL CHARACTERISTICS**

Internal memory for measured data saving	• (Max 99 locations)	-	
Zeroing	•	•	
Manual measuring range	-	•	
Autorange	•	-	
Data HOLD	•	•	
MAX/MIN/AVG	•	• No AVG	
Selection of measuring unit	•	W/m² - BTU/(ft2*h)	
Auto Power OFF	•	-	
Reference standard	Class A JIS C 1609:1993, CNS 5519	-	
Power supply	1x 9V	1x 9V	
Size (LxWxH) (mm)	185x60x40	130x55x38	
Weight (batteries included):	180g	150g	
Order code	HA003090	HA000157	





## Functions and characteristics

- Measuring range of Illuminance (Lux/Fc): 0.01÷400kLux; 0.01 ÷ 40kFc
- Luminous intensity measurement (Cd)
- Measurement of LED sources' illuminance
- Basic accuracy: ±3%reading
- · Zeroing: Digital
- Autorange
- Spectrum response correction
- Data HOLD, MAX/MIN: also AVG
- Internal memory
- Auto Power OFF
- Reference standard: Classe A JIS C 1609:1993 + CNS 5119



## **Included accessories**

Soft carrying bag

Test certification

Battery

User Manual



## **Functions and characteristics**

- Measuring range: 1÷1999W/m² 1÷634 BTU/(ft2\*h)
- Resolution: 1W/m² 1BTU/(ft2\*h)
- Accuracy: > between 10 W/m² and 5% reading
- > between 1BTU/(ft2\*h) and 5%reading
- Selection of the measuring unit: W/m² and BTU/(ft2\*h)
- Zeroing: Manual with trimmer
- Manual change of scale
- Data HOLD / MAX/MIN



## Included accessories

Transport case

ORDER CODE HA000157

HT204 is a digital solar irradiance meter

for measurements of solar irradiation up to

2000W/m², which can be used as an inspection

CE declaration of conformity

Battery

User Manual

## SOUND LEVEL METERS







	UT167	UT166	HTA100
	HT157	HT155	HTA102
	CLAS	SS 1	CLASS 2
Noise measuring range	25 ÷ 140dB	25 ÷ 140dB	30 ÷ 130dB
Noise measurement resolution	0.1 ÷ 0.01dB	0.1dB	0.1dB
Frequency range	10kHz ÷ 20kHz	10kHz ÷ 20kHz	31.5kHz ÷ 8kHz
Dynamic range	90dB	90dB	50dB
Measurement of sound pressure level (SPL)	•	•	•
Measurement of equivalent noise levels (Leq)	•	•	-
Frequency weighting	A/C/Z	A/C/Z	A/C
Integration over time	Fast/Slow/Impulse	Fast/Slow/Impulse	Fast/Slow
Integration with programmable period	•	•	•
Peak measurements (Peak-, Peak+)	•	•	-
Display of MAX/MIN values of SPL	•	•	•
Statistic analysis of noise with "A" weighting	•	•	-
SPL analysis in 24H	•	•	-
Spectrum analysis with octave-band filter (1/1)	• 19Hz ÷ 16kHz	-	-
Spectrum analysis with 1/3 octave-band filter	•	-	-
Mobile calibrator provided	Class 1	• Class 1	• Class 2
Manual calibration with trimmer	•	•	•
Precise calibration with internal procedure	•	•	-
Pre-polarized "1/2" condenser microphone	•	•	•
AC and DC analogue outputs with 3.5mm jack	• AC only	• AC only	•
Internal memory for data saving	128	128	•
Recalling of results on the display	•	•	-
Mini-USB interface for PC connection	•	•	•
Transfer of saved data onto USB Pen Drive	•	•	-
Windows software for saved data analysis	•	•	•
Display	LCD 240 x 160	LCD 240 x 160	LCD 4 digits
Display backlight	•	•	•
Power supply	4x 1.5V AA	4x 1.5V AA	1x 9V
Provided external power supply	•	•	•
Reference standards	IEC61672 Class 1 IEC61620 Class 1	IEC61672 Class 1	IEC61672 Class 2
Size (LxWxH) (mm)	285x90x39	285x90x39	255x60x40
Weight in grams (batteries included)	500	500	265
Order code	HN000157	HN000155	HN000102

	SOUND LEVEL METERS
FAST HIT ATTER  INSTITUTE  INSTIT	
ALD REG AJC) SET LEV F/S	



ORDER CODE HN000155 | HN000157

## HT155|HT157

DIGITAL INTEGRATING SOUND LEVEL METERS TYPE 1

HT157 and HT155 are mobile integrating sound level meters

Type 1 (Class 1) which can be used to monitor the equivalent level of nose (Leq), measure Peak values, check soundproofing levels, acoustic pollution, etc. they are also indicated for certification according to the laws currently in force as regards environmental noise measurements and in working environments. These devices have a wide measuring range (from 25 to 140dB) and multiple functions such as statistic analysis, 24H analysis, integration of Leq over time, which are indispensable elements when measuring. These models also allows carrying out detailed analyses of spectrum components of noise using integrated octave-band filters and 1/3 octave-band filters (only HT157) and they are provided with an internal memory to save data and with a USB interface for transferring data to the PC through dedicated software in a Windows environment with possibility of numerical, graphic and statistic display.

Sound level meters are provided with a practical and **resistant case** with a mobile calibrator for preliminary checks before each measurement is carried out.





ORDER CODE HN000102

## HTA102

PROFESSIONAL SOUND LEVEL METER TYPE 2 WITH RECORDING FUNCTION

HTA102 is a professional digital precision sound level meter, the ideal solution to carry out common inspection checks on **environmental noise**, verification of **soundproofing levels**, **acoustic pollution**, etc.

This model allows performing real-time measurements of sound pressure level (SPL) with A/C frequency weighting and integration in Fast/Slow time, and the recording of quantities via PC connection through dedicated software.

Sound level meter HTA102 comes in a **practical carrying case** with all of the accessories necessary for measurements.



## **Functions and characteristics**

	HT155	HT157
Sound level meter category	Tipo 1	Tipo 1
Noise measuring range	25÷140dB	25÷140dB
Noise measuring resolution	0.0÷10.1dB	0.0÷10.1dB
Dynamic range	> 90dB	> 90dB
Measurement of sound pressure level (SPL)	•	•
Measurement of equivalent noise levels (Leq)	•	•
Frequency weighting	A/C/Z	A/C/Z
Integration over time	F/S/ Impulse	F/S/ Impulse
Peak measurements (Peak-, Peak+)	•	•
Statistic analysis of noise type "A"	•	•
24H analysis of noise	•	•
Octave-band spectrum analysis	-	•
1/3 octave-band spectrum analysis	-	•
1/2 condenser microphone	•	•
Analogue AC output	•	•
Internal calibration in Class 1	•	•
Provided mobile calibrator	•	•
Internal memory for data saving	(128 groups)	(128 groups)
Interface with USB Pen Drive	•	•
USB interface for PC connection	•	•



### Main features

**Display:** LCD, dot-matrix (240x160pxl) with backlight **External power supply:** Adapter 100-240VAC/5VDC

Internal power supply: 4x1.5V alkaline batteries type AA LR6

Reference IEC 61672:2002 type1 standards: IEC 61260:1995 type1 (HT157)

IEC 60804:1985 type1
IEC 60651:1979 type1DLgs 477/91,

195/06 285x90x3

Size: 285x90 Weight (batteries included): 500 g



## **Included accessories**

HT151	Mobile calibrator Class 1
	Power supply 100-240VAC/5VDC with USB output
	Mini-USB/USB cable for PC connection
	USB Pen Drive (TRASCEND JF V30/2GB)
	USB cable for connecting the Pen Drive to the device
	Wind protection 60mm
	Windows software for data transfer
	Transport case
	4x1.5V alkaline batteries type A LR06
	User manual, Calibration certificate of sound level meter and calibrator



## **Functions and characteristics**

- Sound level meter category: Type (Class) 2
- Measuring range: 30 ÷ 130dB
- · Noise measurement resolution: 0.1dB
- Dynamic range: 50dB
- Measurement of sound pressure level (SPL)
- A and C frequency weighting
- Integration over time: Fast / Slow
- Display of MAX / MIN values of SPL
- Recording of parameters from software
- 1/2 inch condenser microphone
- Analogue AC and DC outputs (max 1V)
- · Manual calibration with trimmer
- Display: LCD, 4 digits
- Power supply: 1x9V batteries type IEC 6F22
- Reference standards: IEC 61672 type 2
- Size (LxWxH): 255x60x40mm
- Weight (batteries included): 265g



## Main features

Wind protection
Screwdriver for manual calibration of sound level meter
Jack for analogue AC/DC outputs
Rigid transport bag
Battery for sound level meter
External power supply 230V AC / 9V DC
Windows software
User manual for sound level meter
1x9V alkaline battery type IEC 6F22
User Manual



Order code





HA004000

MAIN MEASUREMENTS	iDM70	DM40
Distance measuring range	0,05 ÷70m	0,05 ÷40m
Measurement of area and volume	•	•
Measurement of heights by indirect method of the Pythagorean theorem	•	•
Measurement of tilt and distance	•	-
Continuous (dynamic) 2-spot and 3-spot measurements	•	•
Partial operations (additions/subtractions) with internal memory	•	•
ADDITIONAL CHARACTERISTICS  Connection to iOS/Android devices through HTLaserMeter App	•	_
Activation of the laser pointer for measurement	•	•
Setting of measuring reference	•	•
letting of timer for measurements	•	-
Selection of measuring unit	m - ft	m - ft
Backlight	•	•
Air bubble level	•	-
Hole for tripod insertion	•	-
Activation of buzzer upon key pressing	•	-
Auto Power OFF	•	•
Power supply	2x 1.5V AA	2x 1.5V AAA
Size (LxWxH) (mm)	135x53x30	110x48x28
Weight (batteries included)	160g	135g

HA000700





#### ORDER CODE HA000700

LASER DISTANCE METER WITH 70M RANGE, INCLINOMETER AND BLUETOOTH INTERFACE FOR CONNECTION TO IOS AND ANDROID DEVICES

iDM70 is a professional laser distance meter designed for measuring distances between two spots in a simple, quick and efficient manner thanks to the integrated laser pointer. Its **small size** makes it a fully mobile device which can be used in any conditions and for any application (construction, electric, do-it-yourself sector, etc.) in which it is necessary to measure a linear length. This device also allows calculating areas and volumes and carrying out the indirect measurement of heights in 2 spots and 3 spots with the use of the trigonometric method and the mathematical principle of the **Pythagorean theorem**. The **measurement** of the tilt with respect to the horizontal line, a timer on measurements and a small air bubble level for a perfect alignment to the targets are among the available functions. Management of simple operations with the **internal memory** (sums and subtractions) and the presence of the backlight function of the display complete the available functions for the device. The HTLaserMeter App is also available for free for iOS and Android and is capable of connecting in real time to iDM70 and to carry out measurements associated to pictures in order to subsequently trace the lines within it.





#### ORDER CODE HA004000

## DM40

COMPACT LASER DISTANCE METER WITH 40M MEASURING RANGE

DM40 has been designed for measuring distances between two spots in a simple, guick and efficient manner thanks to the integrated laser pointer. Its small size makes it a fully mobile device that can be used in any conditions and for any application (construction, electric, do-ityourself sector, etc.) in which it is necessary to measure a linear length. This device also allows calculating areas and volumes and carrying out the indirect measurement of heights with the use of the mathematical principle of the **Pythagorean theorem**. Management of simple operations with the internal memory (sums and subtractions) and the presence of the backlight function of the display complete the available functions for the device.



- Direct measurement of distance from 0.05m to 70m
- Measurement resolution: 0.001m
- Measurement of area and volume
- Measurement of heights by indirect method of the Pythagorean theorem.
- Measurement of tilt and distance
- Continuous (dynamic) 2-spot and 3-spot measurements
- · Activation of the laser pointer for measurements
- · Setting of measuring reference
- · Setting of timer for measurements
- Selection of the measuring unit in "m" o "ft"
- · Partial operations (additions/subtractions) with internal memory
- Connection to iOS/Android devices through Bluetooth
- Air bubble level
- · Hole for tripod insertion
- Backlight
- · Activation of buzzer upon key pressing
- Auto Power OFF



### Main features

2x1.5V alkaline batteries type AA LR06 Power supply:

**Duration:** max 8000 measurements 5-digit LCD display with backlight Display: Memory: 20 locations + external through App

Bluetooth™ compatible with iOS - Android Interface:

Mechanical protection: IP54

class 2 according to IEC/EN60825-1 Laser pointer:

135x53x30mm Size (LxWxH): Weight 160 kg

(batteries included):



### Included accessories

Soft carrying bag, battery and user manual

User manual HT LaserMeter APP



- Direct measurement of distance from 0.05m to 40m
- Measurement resolution: 0.001m
- · Measurement of area and volume
- · Measurement of heights by indirect method of the Pythagorean theorem.
- · Continuous (dynamic) measurements
- Activation of the laser pointer for measurements
- Setting of measuring reference
- · Selection of the measuring unit in "m" o "ft"
- · Partial operations (additions/subtractions) with internal memory
- Backlight
- · Auto Power OFF



## **Main features**

2x1.5V alkaline batteries type AAA LR03 Power supply:

**Duration:** max 5000 measurements 5-digit LCD display with backlight Display:

Memory: 20 locations

Laser pointer: class 2 according to IEC/EN60825-1

110x48x28mm Size (LxWxH):

Weight 135 kg

Mechanical protection: IP54

(batteries included):



## **Included accessories**

Soft carrying bag

Non-slip strap

Batteries

User Manual



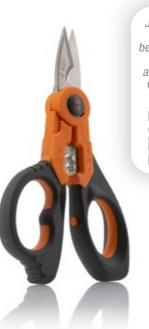
#### COD. METEL HU000743

## **F30P**

- > New design, even more ergonomic
- > Non-slip gri
- > Blade in reinforced steel
- > Universal crimper for crimp terminals between 1 and 6 mm<sup>2</sup>
- > Case with safety lock







Just scan the

QR Code
below with your
smrtphone
and watch the
video of F40



#### COD. METEL HU000697

## F40

PROFESSIONAL SCISSORS WITH INTEGRATED CRIMPER FUNCTION AND CABLE CUTTER 70mm<sup>2</sup>

- + CRIMPER
- > High-quality scissors with rigid case
- > Blade in reinforced stainless steel
- > Blade width 19mm (0.7")
- > Blade thickness 3.5mm (0.1")
- > Blade for cutting cables up to 70 mm<sup>2</sup>
- Crimper function for crimp terminals between 1 and 6 mm², sleeve type
- > Long grip for easy cutting



Lama per taglio cavi fino a 70 mm<sup>2</sup>



Funzione crimpatrice per capicorda da 1 a 6 mm² a bussola



## F50

STANDARD SCISSORS WITH CABLE CUTTER UP TO 50mm<sup>2</sup> AND CRIMPER FUNCTION

- Non-slip grip
- > Blade in reinforced steel
- > Universal crimper for crimp terminals between 1 and 6 mm<sup>2</sup>
- > Case with safety lock
- > Practical hooking system

















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