



2016

GENERAL  
CATALOGUE





2016

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CATALOGUE



## 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.

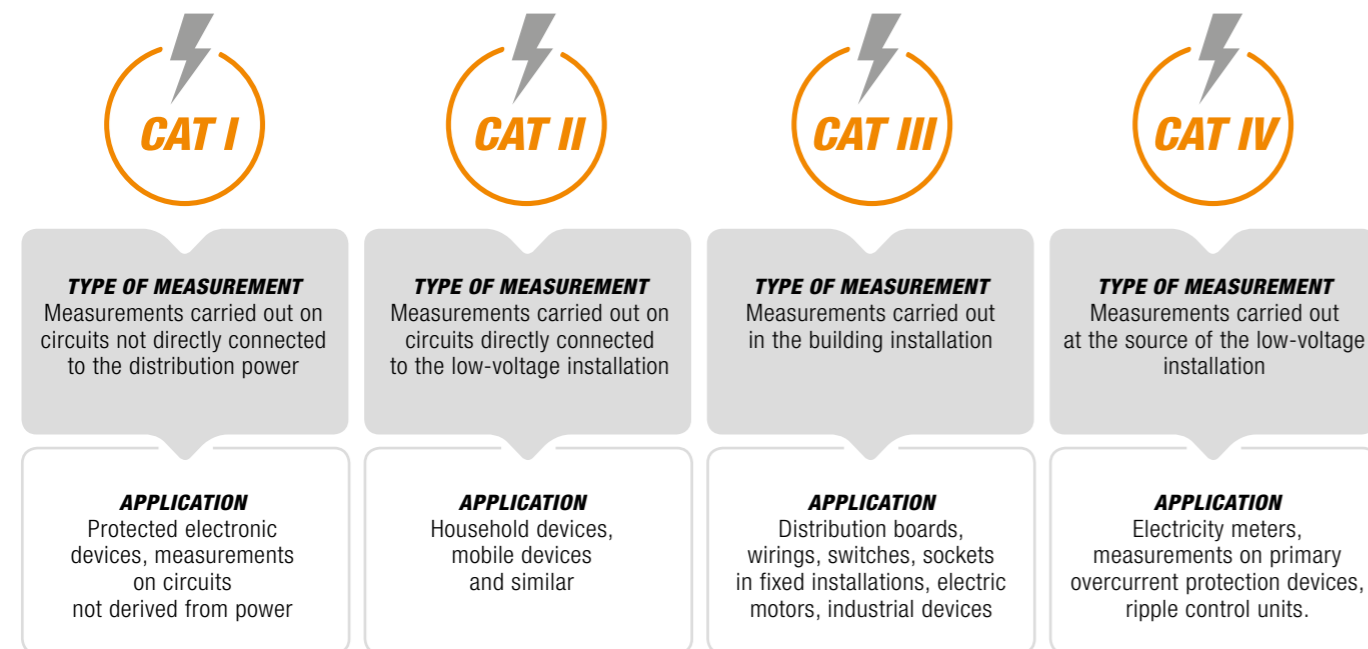
This certification has further enhanced the quality of the production processes of products and services: as required by the laws in force, all HT products are provided with the CE mark. Anyway, for a better protection of Customers, certification is only granted after tests are carried out by prominent 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:



## 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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| ANALYSISTAB            | 25  | HT4010                           | 185 | M70                         | 92  |
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| DM40                   | 135 | HT4020                           | 180 | M74                         | 67  |
| EQUITEST5071           | 68  | HT4022                           | 180 | M75                         | 66  |
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| F30 - F40 - F50        | 69  | HT-5000                          | 139 | MACROTESTG3                 | 60  |
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# 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.



# PHOTOVOLTAIC TESTERS

## Troubleshooting

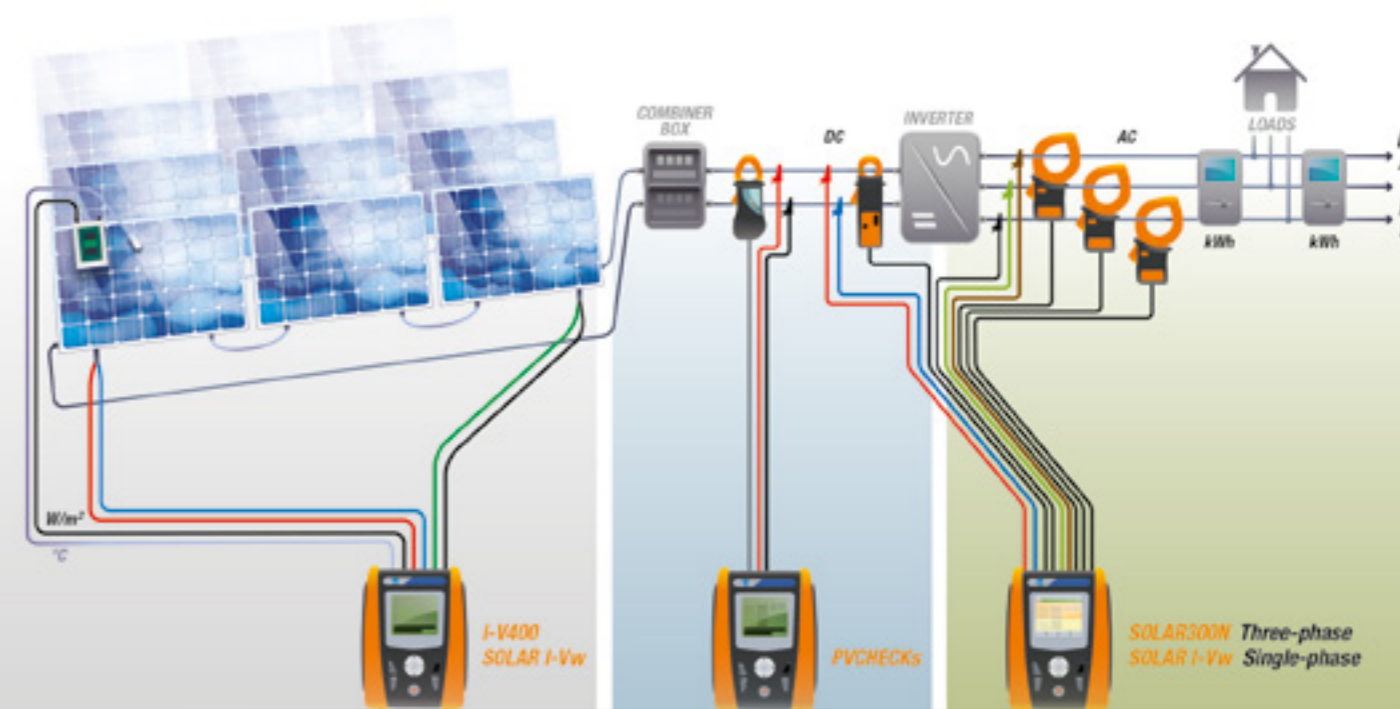
- It may happen that, during the operation of a system, **some modules may jeopardize the performance** of the whole system. When system efficiency is lower than expected, it is necessary **to detect the defective modules** so that they can be replaced. This can be achieved **by measuring the I-V curve** with devices **SOLAR I-Vw** and **I-V400w**.

## 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-Vw** and **MPP300** are the **ideal solution** for **recording over time the energy production of a system** and the **performance check of an inverter**.



Troubleshooting

Commissioning  
Tests

Performance

## COMPARISON TABLE FUNCTIONS



SOLAR I-Vw I-V400w SOLAR300N PVCHECKs MPP300

### MAINTENANCE AND EFFICIENCY OF THE PHOTOVOLTAIC SYSTEM

|   |                             |      |                             |      |               |
|---|-----------------------------|------|-----------------------------|------|---------------|
| Continuity of protective conductors with 200mA  | -                           | -    | -                           | •    | -             |
| Insulation measurement with test voltage 250, 500, 1000VDC with no service interruption | -                           | -    | -                           | •    | -             |
| I-V Curve measurement on single module or string  | •                           | •    | -                           | -    | -             |
| VOC and ISC measurement on single module or string                                      | •                           | •    | -                           | •    | -             |
| Single-Phase and Three-Phase efficiency measurement                                     | • 1MPPT (3MPPT with MPP300) | -    | • 1MPPT (3MPPT with MPP300) | -    | •             |
| DC side efficiency of the photovoltaic field  | -                           | -    | •                           | •    | -             |
| Use of remote unit SOLAR-02 with USB \ RF connection                                    | • RF                        | • RF | • USB                       | • RF | • RF<br>• USB |
| Measurement of irradiation with reference cell  | •                           | •    | •                           | •    | -             |
| Temperature measurement of cell and environment   | •                           | •    | •                           | •    | -             |

### POWER QUALITY ANALYSIS

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

### MEMORY AND RECORDING

|  |        |   |        |        |        |
|--|--------|---|--------|--------|--------|
| Max number of simultaneously selectable parameters                         | 9      | - | 251    | 5      | -      |
| Recording with selectable integration period                               | 5s-60m | - | 1s-60m | 5s-60m | 1s-60m |
| Indicative memory duration (in days @ PI=10min @ max number of parameters) | 8      | - | 90     | -      | 8      |
| Indication of recording duration for power quality analysis                | -      | - | •      | -      | -      |
| Internal memory extension with Compact Flash card                          | -      | - | •      | -      | -      |



SOLAR I-Vw I-V400w SOLAR300N PVCHECKs MPP300

### » FOLLOWS

|                               |   |   |   |   |   |
|-------------------------------|---|---|---|---|---|
| Default and custom recordings | - | - | • | - | - |
|-------------------------------|---|---|---|---|---|

### 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

|   |                                  |                |                        |                              |                                   |
|---|----------------------------------|----------------|------------------------|------------------------------|-----------------------------------|
| Measuring range of I-V Curve / IVCK                         | 1000V / 15A                      | 1000V / 15A    | -                      | 1000V / 15A only VOC and ISC | -                                 |
| Measuring range for efficiency measurement                  | 1000VDC / 265VAC                 | -              | 1000VAC-DC 3000A       | -                            | 1000VDC / 600VAC 3000AC / 1000ADC |
| Measurement category:                                       | CAT III 300V                     | CAT III 300V   | CAT IV 600V            | CAT III 300V                 | CAT IV 300V                       |
| Touchscreen colour display                                  | -                                | -              | •                      | -                            | -                                 |
| LCD display with backlight                                  | •                                | •              | -                      | •                            | -                                 |
| Internal memory capacity                                    | 200 curves I-V 8 days@ PI=10 min | 200 curves I-V | 15MB 90 days@ PI 10min | 999 Locations                | 2MB 8 days@ PI=10 min             |
| USB port for data download onto Pen Drive                   | -                                | -              | •                      | -                            | -                                 |
| PC interface with software for Windows                      | •                                | •              | •                      | •                            | -                                 |
| Integrated WiFi interface                                   | •                                | •              | -                      | -                            | -                                 |
| Custom management of internal PV module database            | •                                | •              | -                      | •                            | -                                 |
| Power supply with rechargeable battery and battery charger  | -                                | -              | •                      | -                            | •                                 |
| Auto power off  | •                                | •              | •                      | •                            | •                                 |
| Indication of recording duration for efficiency measurement | •                                | -              | •                      | -                            | -                                 |
| Reference standard for Power Quality Analysis               | -                                | -              | EN50160                | -                            | -                                 |
| Help on line on the display                                 | •                                | •              | •                      | •                            | -                                 |
| Size (LxWxH) (mm)   | 235x165x75                       | 235x165x75     | 235x165x75             | 235x165x75                   | 300x265x214                       |
| Weight in kg (batteries included)                           | 1.2                              | 1.2            | 1                      | 1.2                          | 2.3                               |
| Reference standard for safety                               | IEC/EN61010-1                    | IEC/EN61010-1  | IEC/EN61010-1          | IEC/EN61010-1                | IEC/EN61010-1                     |
| Order Code  | HV000IWW                         | HV00400W       | HV00300N               | HV00PVCS                     | HVMPP300                          |

ORDER CODE HV0001VW

# SOLAR I-Vw

MULTIFUNCTION DEVICE FOR TESTS AND MAINTENANCE ON SINGLE-PHASE INSTALLATIONS. (THREE-PHASE WITH ACCESSORY MPP300 see page 20)

- Measurement of **efficiency of a single-phase photovoltaic system**
- Measurement of **I-V Curve** of a **module** or of a **string**
- Measurement of **open-circuit voltage** and of **short-circuit current Voc/Isc**
- Database of **30.000 selectable photovoltaic** modules

SOLAR I-Vw allows both **testing** a single-phase (three-phase with optional MPP300) photovoltaic system and **verifying I-V Curve**.

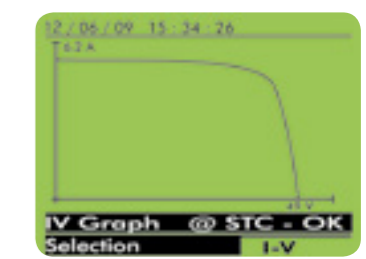
Thanks to remote unit SOLAR02, it is possible to test the system complying with the requirement of simultaneity as provided for by the reference standard. SOLAR02 is a datalogger which, **synchronized with SOLAR I-Vw**, acquires the data relevant to **irradiation and temperature while tests carried out by SOLAR I-Vw** are carried out.

For measuring **I-V curve**, SOLAR I-Vw manages an **internal database of modules**, (which can be updated at any time by the user) **to compare the measured data with the rated values**, thus allowing the **immediate evaluation** whether the string or the module **fulfills the efficiency parameters declared by the manufacturer**.

Current and voltage measurement at modules/strings output is measured with the 4-terminal method, which allows extending measuring cables without considering any compensation of their resistance, thus obtaining always precise measurements. At the end of the test, the display of I-V Curve on the screen is a clear indication about the compliance with the specifications declared by the panel manufacturer.

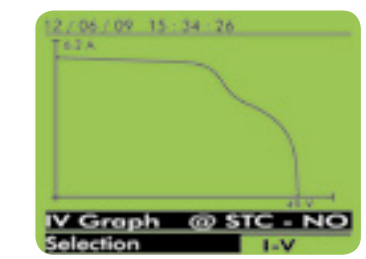


Measuring a I-V Curve on a string through remote synchronization of irradiation and temperature



I-V Curve: **OK**

Measurement of curve IV with environmental sensors connected to SOLAR Iw

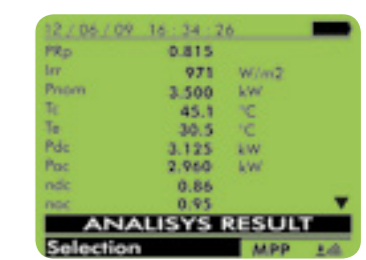


I-V Curve: **NOT OK**

Measurement of single-phase efficiency with remote environmental sensors



Measuring system efficiency



Result of efficiency measurement.

## Functions

- Maintenance of photovoltaic system**
- Measurement of PV module/string output voltage up to 1000V DC
  - Measurement of PV module/string output current up to 15A DC
  - 128 spots per I-V Curve in STD or Capacitive mode
  - Measurement of Voc-Isc-Pmax-Vmpp-Imp-Fill Factor
  - Measurement of cell temperature through external probe
  - Measurement of irradiation [W/m<sup>2</sup>] through reference cell
  - Measurement of DC and rated power at module/string output
  - Detection of I-V Curve with direct measurement of Irr/Temp parameters
  - Detection of I-V Curve by means of SOLAR-02
  - Measurement of resistance of series Rs of panels
  - Measuring method with 4 terminals
  - Direct comparison with reference conditions (STC – 1000W/m<sup>2</sup>, 25°C)
  - Test result OK / NO
  - Internal database for managing up to 30 PV modules (30.000 modules by software)
  - Internal memory for data saving
  - Recalling measured data on the display
  - Optical/USB interface for transferring data onto the PC
  - Help on line on the display
- Efficiency measurements of the photovoltaic system**
- DC/AC TRMS single-phase voltage
  - DC/AC TRMS single-phase current
  - Single-phase DC power / AC active power
  - Solar irradiation [W/m<sup>2</sup>] 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.

## Main features

- Display:** LCD custom, 128x128pxl, with backlight
- Power supply:** 6x1.5V alkaline batteries type AA LR06
- Automatic power off:** after 5 minutes in stand-by
- Duration for PV testing:** 1.5 hours (@IP=5s); 8 days (@IP=10min)
- Duration for I-V Curve:** > 200 curves
- PC interface:** opto-isolated optical / USB
- Safety:** IEC/EN61010-1
- Safety and measuring accessories:** IEC/EN61010-031, IEC/EN61010-032
- Measurement of I-V Curve:** IEC/EN60891, IEC/EN62446
- Insulation:** double insulation
- Pollution level:** 2
- Measurement category:** CAT II 1000V DC, CAT III 300V (to earth)  
Max 1000V between inputs
- Size:** 235x165x75 mm
- Weight (batteries included):** 1.3 kg

## Accessories provided

|             |  |
|-------------|--|
| SOLAR02     | Remote unit RF or Irradiation and Temperature    |
| KITGSC4     | Set of 4 banana cables 4mm + 4 alligator clips   |
| KITPVMC3    | Set of 2 adapters with compatible connectors MC3 |
| KITPVMC4    | Set of 2 adapters with compatible connectors MC4 |
| HT4005K     | Standard 200AC/1V clamp, diameter 40mm           |
| HT4004N     | Standard DC 10-100A/1V clamp, diameter 32mm      |
| HT304N      | Reference cell for irradiation measurement       |
| PT300N      | PT1000 probe for cell/environmental temperature  |
| M304        | Mechanical inclinometer                          |
| TOPVIEW2006 | Windows software + optical/USB C2006 cable       |
| VA500       | Transport case                                   |
|             | User manual on CD-ROM                            |
|             | ISO9000 calibration certificate                  |
|             | Quick user guide                                 |

## Optional accessories

|             |  |
|-------------|--|
| MPP300      | Testing accessory on multi-string systems        |
| 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           |
| SP-0400     | Shoulder strap to use the device with free hands |
| KITPVEXT25M | Set of 2 banana cables 4mm, Green/Black, 25m     |
| 606-IECN    | Connector with magnetic terminal                 |



ORDER CODE HV00400W

# I-V400w

MULTIFUNCTION DEVICE FOR MAINTENANCE AND TROUBLESHOOTING OF PHOTOVOLTAIC SYSTEMS

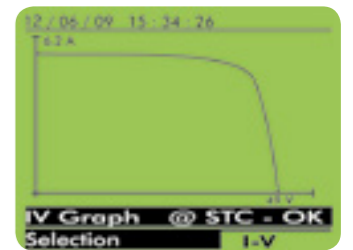
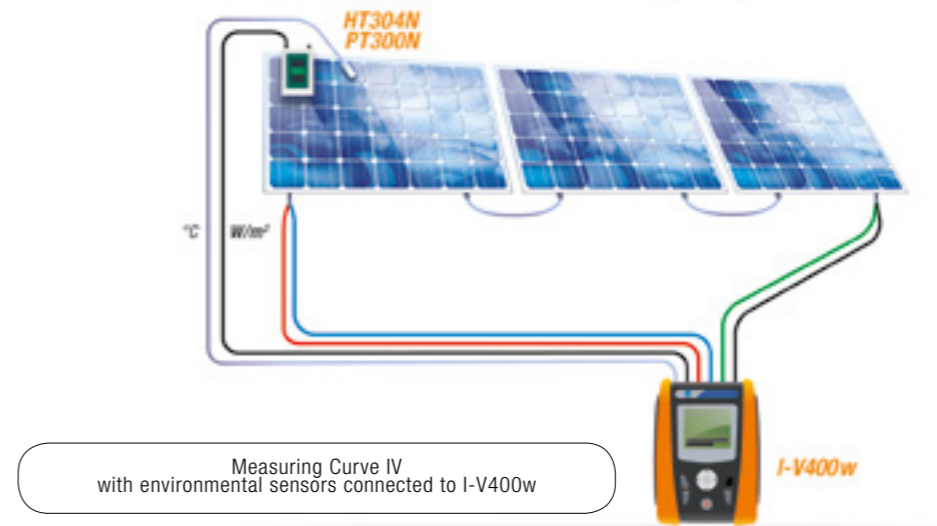
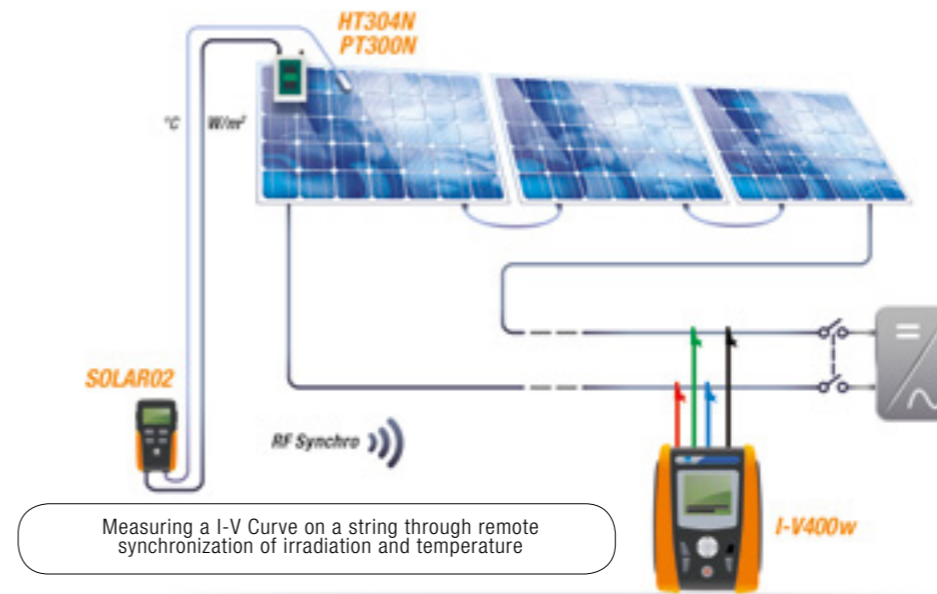
- Measurement of I-V Curve of a module or of a string
- Measurement of open-circuit voltage and of short-circuit current Voc/Isc
- Database of 30.000 selectable photovoltaic modules

I-V400w allows field detection of I-V Curve and of the main characteristic parameters both of a single module and of a string for PV installations up to a maximum of 1000V and 15A.

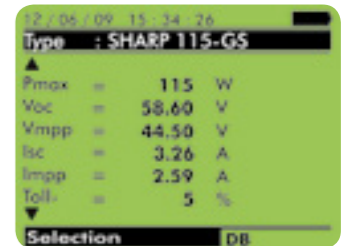
For measuring I-V Curve, I-V400w manages an internal database modules, (which can be updated at any time by the user) to compare the measured data with the rated values, thus allowing the immediate evaluation whether the string or the module fulfills the efficiency parameters declared by the manufacturer.

I-V400w carries out irradiance and temperature measurement directly or under remote mode through the optional unit SOLAR 02, synchronized with main unit I-V400w.

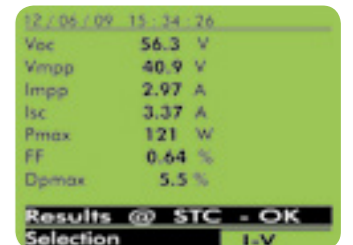
Also for I-V400w, the display at the end of the test of I-V Curve is a clear indication about the compliance with the specifications declared by the panel manufacturer.



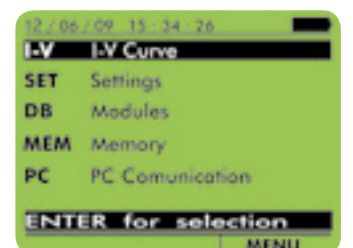
Result of I-V Curve: OK



Manual insertion of a module



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



General Menu

## Functions

### Maintenance of photovoltaic system

- Measurement of PV module/string output voltage up to 1000V DC
- Measurement of PV module/string output current up to 15A DC
- 128 points per I-V Curve in STD or Capacitive mode
- Measurement of Voc-Isc-Pmax-Vmpp-Imp-FF Factor
- Measurement of cell temperature through external probe
- Measurement of irradiation [W/m²] through reference cell
- Measurement of DC and rated power at module/string output
- Detection of I-V Curve with direct measurement of Irr/Temp parameters
- Detection of I-V Curve using the remote unit SOLAR02
- Measurement of resistance of series Rs of panels
- Measuring method with 4 terminals
- 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 software)
- Internal memory for data saving
- Recalling measured data on the display
- Optical/USB interface for transferring data onto the PC
- Help on line on the display

## Main features

|  |  |
|--|--|
| <b>Display:</b>                          | LCD custom, 128x128pxl, with backlight   |
| <b>Power supply:</b>                     | 6x1.5V alkaline batteries type AA LR06   |
| <b>Automatic power off:</b>              | after 5 minutes in stand-by              |
| <b>Duration for I-V Curve:</b>           | > 200 curves                             |
| <b>PC interface:</b>                     | opto-isolated optical / USB              |
| <b>Safety:</b>                           | IEC/EN61010-1                            |
| <b>Safety and measuring accessories:</b> | IEC/EN61010-031, IEC/EN61010-032         |
| <b>Measurement of I-V Curve:</b>         | IEC/EN60891, IEC/EN62446                 |
| <b>Insulation:</b>                       | double insulation                        |
| <b>Pollution level:</b>                  | 2  |
| <b>Measurement category:</b>             | CAT II 1000V DC, CAT III 300V (to earth) |
| <b>Size:</b>                             | Max 1000V between inputs                 |
| <b>Weight (batteries included):</b>      | 235x165x75 mm                            |
|  | 1.3 kg                                   |

## Accessories provided

|             |  |
|-------------|--|
| KITGSC4     | Set of 4 cables + 4 alligator clips        |
| KITPVMC3    | Set of 2 adapters with connectors MC3      |
| KITPVMC4    | Set of 2 adapters with connectors MC4      |
| HT304N      | Sensor for irradiance measurement          |
| M304        | Mechanical inclinometer                    |
| TOPVIEW2006 | Windows software + optical/USB C2006 cable |
| VA500       | Rigid carrying case                        |
|             | User Manual                                |
|             | ISO9000 calibration certificate            |

## Optional accessories

|             |  |
|-------------|--|
| PT300N      | PT1000 probe for PV modules temperature          |
| SP-0400     | Shoulder strap to use the device with free hands |
| SOLAR02     | Remote unit for Irradiance and Temperature       |
| KITPVEXT25M | Set of 2 banana cables 4mm, Green/Black, 25m     |

ORDER CODE HV00300N

# 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.

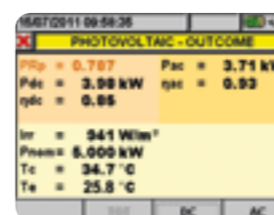
HT Instruments has introduced a **remote measuring device SOLAR02** which **acquires the values of solar Irradiation [W/m<sup>2</sup>], panel Temperature [°C] and environmental Temperature [°C]** and transfers them onto SOLAR300N, which inserts them onto the same string of power measurements and then 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.).



Connection diagram (three-phase system)



Photovoltaic testing result on PC application TOPVIEW.



Photovoltaic testing result.

## 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 cosφ (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

|                                      |  |
|--------------------------------------|--|
| <b>Display:</b>                      | Colour touchscreen with adjustable brightness            |
| <b>Power supply:</b>                 | Rechargeable Li-ION, 3.7V battery                        |
| <b>Internal memory:</b>              | 15MB (duration 1 month @ IP=15min, 251 parameters)       |
| <b>External memory:</b>              | Compact Flash (CF) card                                  |
| <b>PC interface:</b>                 | USB 2.0  |
| <b>Safety:</b>                       | IEC/EN61010-1  |
| <b>Insulation:</b>                   | double insulation  |
| <b>Pollution level:</b>              | 2  |
| <b>Measurement category:</b>         | CAT IV 600V (to earth)<br>CAT III 1000V (between inputs) |
| <b>Unbalance:</b>                    | IEC/EN61000-4-7  |
| <b>Power quality:</b>                | IEC/EN50160  |
| <b>Flicker:</b>                      | IEC/EN61000-4-15   |
| <b>Reference standard and class:</b> | IEC/EN61000-4-30 Class B                                 |
| <b>Size:</b>                         | 235x165x75mm   |
| <b>Weight (batteries included):</b>  | 1kg  |

## Accessories provided

|              |   |
|--------------|---|
| SOLAR02      | Remote unit for Irradiation and Temperature               |
| KIT800       | Set of 5 cables + 5 alligator clips                       |
| HT4005K      | Standard 200A AC clamp, diameter 40mm (3pcs)              |
| HT4004N      | 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)

## 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                        |
| HP30C2     | Standard 200-2000A AC clamp, diameter 70mm                           |
| HP30C3     | Standard 3000A AC clamp, diameter 70mm                               |
| HT98U      | Standard 1000A DC clamp, diameter 50mm                               |
| 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)

ORDER CODE HV00PVCS

# PVCHECKS

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

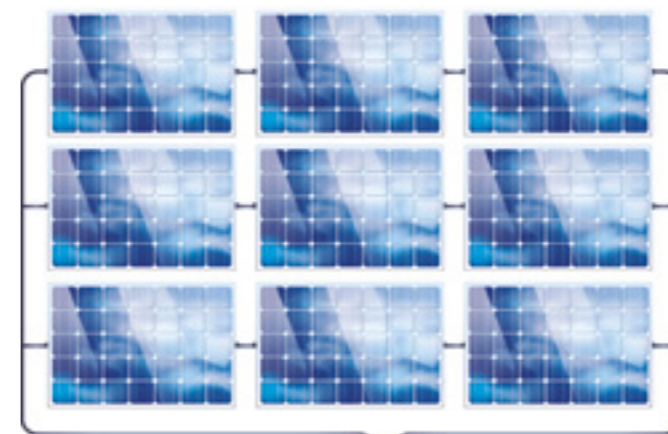
Automatic test in a sequence of:

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

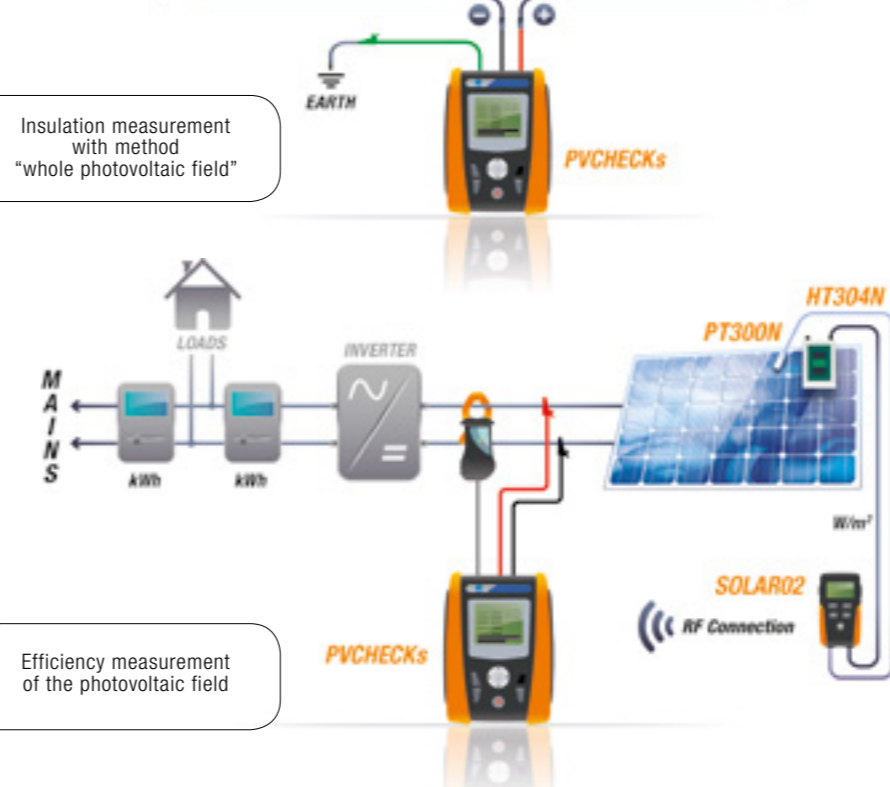
The multifunction device PVCHECKS allows quickly and safely carrying out the commissioning tests provided for a PV system (section in DC) and the functional test of modules/strings the system consists of according to the requirements of Standard IEC/EN62446.

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.

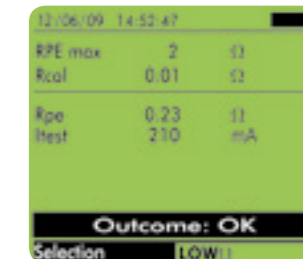
PVCHECKS also allows checking the functionality of the connections and of the strings in a photovoltaic field, according to the provisions of standard IEC/EN62446 by measuring the open circuit voltage and the short-circuit current at operating conditions (OPC) and referred to STC (via the optional measurement 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.



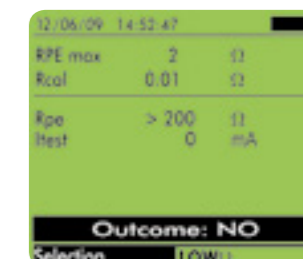
Insulation measurement with method "whole photovoltaic field"



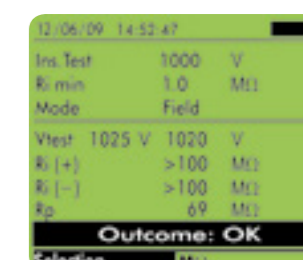
Efficiency measurement of the photovoltaic field



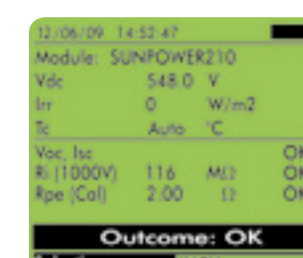
Continuity test result with 200mA OK



Continuity test result with 200mA NOT OK



Insulation measurement result at 1000V OK



Automatic sequence test result OK

## 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/m<sup>2</sup>] 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

|                                     |  |
|-------------------------------------|--|
| <b>Display:</b>                     | LCD, 128x128pxl, with backlight                        |
| <b>Power supply:</b>                | 6x1.5V alkaline batteries type AA LR06                 |
| <b>Auto power off:</b>              | after 5 minutes  |
| <b>Internal memory:</b>             | 256kBytes  |
| <b>PC interface:</b>                | optical/USB  |
| <b>Safety:</b>                      | IEC/EN61010-1  |
| <b>Safety of accessories:</b>       | IEC/EN61010-031  |
| <b>Measurements:</b>                | IEC/EN 62446   |
| <b>Insulation:</b>                  | Double insulation                                      |
| <b>Pollution level:</b>             | 2  |
| <b>Overvoltage category:</b>        | CAT III 1000VDC (to earth)<br>Max 1000V between inputs |
| <b>Size:</b>                        | 235x165x75mm   |
| <b>Weight (batteries included):</b> | 1.2kg  |

## Accessories provided

|             |  |
|-------------|--|
| 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 |
| BORSA2051   | 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                   |



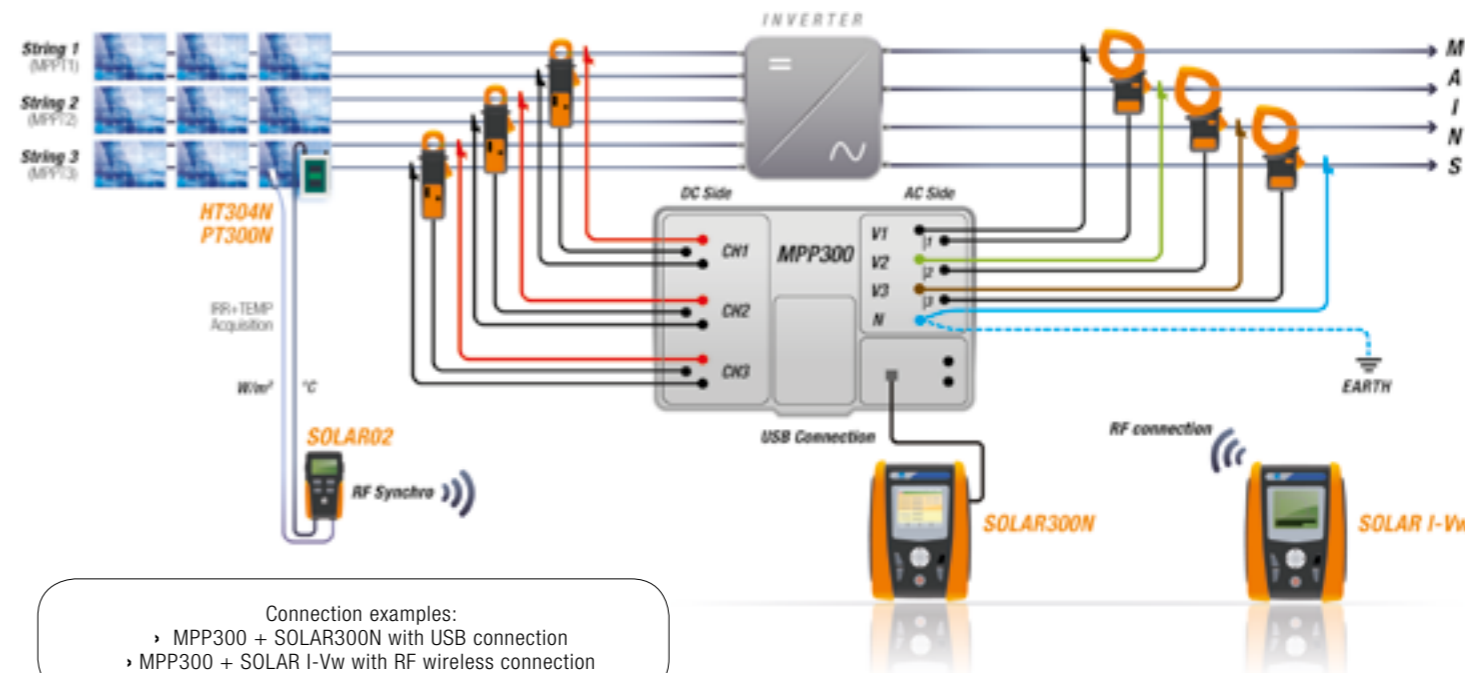
ORDER CODE **HVMPP300**

# 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-Vw
- › **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-Vw 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-Vw 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.



**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-Vw**: while MPP300 records the electrical and environmental parameters, it is possible to measure the I-V curves of strings and modules with SOLAR I-Vw, **thus saving time and money**.



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

## Functions

- 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-Vw
- 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-Vw
- Internal memory for saving recordings

## Main features

|                                     |  |
|-------------------------------------|--|
| <b>Inputs:</b>                      | 3 DC voltage inputs (CH1, CH2, CH3),<br>3 DC current inputs (CH1, CH2, CH3),<br>4 AC voltage inputs (L1, L2, L3, N),<br>3 AC current inputs (L1, L2, L3) |
| <b>Front panel:</b>                 | 4 two-colour LEDs (red, green)   |
| <b>Power supply:</b>                | Rechargeable Li-Ion battery<br>Duration >3 hours   |
| <b>Internal memory:</b>             | 2 MBytes   |
| <b>Communication interfaces</b>     | USB + RF   |
| <b>Safety:</b>                      | IEC/EN61010-1  |
| <b>Insulation:</b>                  | double insulation  |
| <b>Pollution level:</b>             | 2  |
| <b>Mechanical protection:</b>       | IP40 (open), IP65 (closed)   |
| <b>Measurement category:</b>        | CAT IV 300 VAC (to earth),<br>600 VAC (between inputs)<br>CAT III 1000 VDC (to earth),<br>1000 VDC (between inputs)                                      |
| <b>Size:</b>                        | 300 x 265 x 140 mm   |
| <b>Weight (batteries included):</b> | 2.3 kg   |

## Accessories provided

|                  |  |
|------------------|--|
| <b>KITMPPDCW</b> | Set of 2 cables, red and black banana-banana length 2m, 3 pieces         |
| <b>KITMPPDCC</b> | Set of 2 alligator clips, black and red, 3 pieces                        |
| <b>KITMPPACW</b> | Set of 4 cables for AC voltage, 2m                                       |
| <b>KITMPPACC</b> | Set of 4 alligator clips for AC voltage                                  |
| <b>A0055</b>     | External AC/DC battery charger power supply                              |
| <b>C2007</b>     | USB cable  |
| <b>ACON3F4M</b>  | Adapter for the connection of clamps HT98U, HP30D1 and HT4004N, 3 pieces |
| <b>BORSA2051</b> | Soft carrying bag for accessories  |
|                  | User Manual  |
|                  | ISO9000 calibration certificate  |

## Optional accessories

|                  |   |
|------------------|---|
| <b>HT4004P</b>   | Standard 10-100ADC clamp, diameter 32mm (only MPP300) |
| <b>HT4005N</b>   | Standard AC 0÷5A, 0÷100A clamp, diameter 20mm         |
| <b>HT4005K</b>   | Standard 200A AC clamp, diameter 40mm                 |
| <b>HT96U</b>     | Standard 1-100-1000A AC clamp, diameter 54mm          |
| <b>HT97U</b>     | Standard 10-100-1000A AC clamp, diameter 54mm         |
| <b>HT98U</b>     | Standard 1000A DC clamp, diameter 50mm                |
| <b>HP30C2</b>    | Standard 200-2000A AC clamp, diameter 70mm            |
| <b>HP30C3</b>    | Standard 3000A AC clamp, diameter 70mm                |
| <b>HP30D1</b>    | Standard clamp, diameter 83mm 1000A DC                |
| <b>HTFLEX33E</b> | Flex 3000A clamp, for power analysis, diameter 174mm  |
| <b>HTFLEX35</b>  | Flex 3000A clamp, for power analysis, diameter 274mm  |
| <b>606-IECN</b>  | Magnetic connectors for voltage measurement           |













COMPARISON TABLE OF ACCESSORIES



|  | SOLAR I-Vw       | I-V400w          | SOLAR300N        | PVCHECKs         | MPP300 |
|--|------------------|------------------|------------------|------------------|--------|
|  <b>TOPVIEW2006 TOPVIEW2007*</b><br>PC Windows software + USB/optical cable<br>ORDER CODE HA000716<br>* ORDER CODE HA000714 | S<br>TOPVIEW2006 | S<br>TOPVIEW2006 | S<br>TOPVIEW2007 | S<br>TOPVIEW2006 | -      |
|  <b>PT300N</b><br>PT1000 probe for PV module temperature<br>ORDER CODE HA00300N   | S                | O                | S                | O                | -      |
|  <b>SOLAR02</b><br>Remote unit for Irradiation and Temperature<br>ORDER CODE HA000120                                       | S                | O                | S                | O                | -      |
|  <b>KITGSC4</b><br>Set of 4 cables + 4 alligator clips<br>ORDER CODE HA000021   | S                | S                | -                | S                | -      |
|  <b>KITPVMC3 - KITPCMC3*</b><br>Set of 2 adapters with connectors MC3<br>ORDER CODE HA000032<br>* ORDER CODE HA000757      | S<br>KITPVMC3    | S<br>KITPVMC3    | -                | S<br>KITPCMC3    | -      |
|  <b>KITPVMC4 - KITPCMC4*</b><br>Set of 2 adapters with connectors MC4<br>ORDER CODE HA000034<br>* ORDER CODE HA000758     | S<br>KITPVMC4    | S<br>KITPVMC4    | -                | S<br>KITPCMC4    | -      |
|  <b>KIT800</b><br>Set of 5 cables + 5 alligator clips<br>ORDER CODE HA008000  | -                | -                | S                | -                | -      |
|  <b>KITMPPACC</b><br>Set of 4 alligator clips for AC voltage<br>ORDER CODE HA000752                                       | -                | -                | -                | -                | S      |
|  <b>KITMPPACW</b><br>Set of 4 cables for AC voltage 2m<br>ORDER CODE HA000753   | -                | -                | -                | -                | S      |
|  <b>KITMPPDCC</b><br>Set of 2 alligator clips for DC voltage<br>ORDER CODE HA000754                                       | -                | -                | -                | -                | S      |
|  <b>KITMPPDCW</b><br>Set of 2 alligator clips for DC voltage<br>ORDER CODE HA000755                                       | -                | -                | -                | -                | S      |
|  <b>A0055</b><br>External power supply AC/DC battery charger 230V 50/60Hz**<br>ORDER CODE HA005500                        | -                | -                | S                | -                | S      |

» FOLLOWS



|   | SOLAR I-Vw | I-V400w | SOLAR300N | PVCHECKs | MPP300 |
|---|------------|---------|-----------|----------|--------|
|  <b>PT400</b><br>Touch-screen pen<br>ORDER CODE HA0PT400   | -          | -       | S         | -        | -      |
|  <b>HT304N</b><br>Sensor for irradiation measurement<br>ORDER CODE HA0304N0  | S          | S       | S         | O        | -      |
|  <b>M304</b><br>Mechanical inclinometer<br>ORDER CODE HA000026   | S          | S       | -         | O        | -      |
|  <b>HT4004N</b><br>Standard 10-100A DC clamp, diameter 32 mm<br>ORDER CODE HP04004N  | S          | -       | S         | -        | O*     |
|  <b>HT4005K</b><br>Standard 200A AC clamp, diameter 40 mm<br>ORDER CODE HP04005K   | S          | -       | S         | -        | O      |
|  <b>C2007</b><br>USB cable<br>ORDER CODE HA002007  | -          | -       | S         | -        | S      |
|  <b>BORSA2051</b><br>Soft carrying bag<br>ORDER CODE HA002051  | -          | -       | -         | S        | S      |
|  <b>SP-0400</b><br>Shoulder strap to use the device with free hands<br>ORDER CODE HA000112   | O          | O       | O         | O        | -      |
|  <b>KITPVEXT25M</b><br>Green and black cable extension, length 25m<br>ORDER CODE HA000129  | O          | O       | -         | O        | -      |
|  <b>VA500</b><br>Rigid Carrying case<br>ORDER CODE HA050000  | S          | S       | S         | -        | -      |
|  <b>MPP300</b><br>Accessory for measuring and recording the efficiency of a single- and three-phase single- and multi-string photovoltaic system (up to three MPPT)<br>ORDER CODE HVMPP300 | O          | -       | O         | -        | -      |
|  <b>HT96U</b><br>Standard clamp 1-100-1000A AC, diameter 54 mm<br>ORDER CODE HP00096U  | O          | -       | O         | -        | O      |

S = Standard O = Optional

\*Adapter ACON3F4M necessary

\*\*Please check accessory line to find the correct power adapter for your country

S = Standard O = Optional

\*Adapter ACON3F4M necessary

COMPARISON TABLE OF ACCESSORIES

> FOLLOWS



|   | SOLAR I-Vw | I-V400w | SOLAR300N | PVCHECKS | MPP300        |
|---|------------|---------|-----------|----------|---------------|
| <b>HT97U</b><br>Standard clamp 10-100-1000A AC, diameter 54 mm<br>ORDER CODE <i>HP000972</i>                              | 0          | -       | 0         | -        | 0             |
| <b>HT98U</b><br>Standard 1000A DC clamp, diameter 50 mm<br>ORDER CODE <i>HP00098U</i>                                     | 0          | -       | 0         | -        | 0*            |
| <b>HTFLEX33E</b><br>Flex 3000A AC clamp, diameter 174mm<br>ORDER CODE <i>HP00033E</i>                                     | -          | -       | 0         | -        | 0             |
| <b>HP30D1</b><br>Standard 1000A DC clamp, diameter 83 mm<br>ORDER CODE <i>HP0030D1</i>                                    | 0          | -       | 0         | -        | 0*            |
| <b>HP30C3</b><br>Standard 3000A AC clamp, diameter 70 mm<br>ORDER CODE <i>HP003003</i>                                    | -          | -       | 0         | -        | 0             |
| <b>HP30C2</b><br>Standard 200-2000A AC clamp, diameter 70 mm<br>ORDER CODE <i>HP003002</i>                                | -          | -       | 0         | -        | 0             |
| <b>HT4004P</b><br>Standard 10-100 ADC clamp, diameter 32 mm<br>ORDER CODE <i>HP04004P</i>                                 | -          | -       | -         | -        | 0             |
| <b>HT4004</b><br>Standard 10-100A DC clamp, diameter 30 mm<br>ORDER CODE <i>HP004004</i>                                  | -          | -       | -         | S        | -             |
| <b>HT903</b><br>3x1 - 5A/1V box for TA connection<br>ORDER CODE <i>HA019030</i>   | -          | -       | 0         | -        | -             |
| <b>606-IECN</b><br>Magnetic connectors for voltage measurement<br>ORDER CODE <i>HA006060</i>                              | 0          | -       | 0         | 0        | 0             |
| <b>ACON3F4M</b><br>Adapter for the connection of clamps HT4004N, HP30D1 and HT98U to MPP300<br>ORDER CODE <i>HA00ACON</i> | -          | -       | -         | -        | S<br>3 pieces |

S = Standard    0 = Optional    \*Adapter ACON3F4M necessary



ORDER CODE *HA000406*



**ANALYSIS TAB**

7.85" IPS Touchscreen, Quad Core, Dual SIM 3G

HT introduces the new tablet with pre-installed HTAnalysis App to immediately start working, right from the first time.

WITH **ANALYSIS TAB** you will:

- Work in a quicker way
- Work in a more collaborative way
- Reduce the amount of paper documents
- Work more safely, protected from any danger of direct contact
- Through HTCLOUD you will be able to share all measurements with your colleagues and/or download them from the PC without physically connecting the device to the PC

CHARACTERISTICS **TABLET**

CPU: MT8382 Cortex A7 Quad Core 1.2Ghz  
 GPU: Mali-400 MP2 Graphic Processor  
 RAM: 1GB DDR3  
 Cell network: Dual SIM 3G  
 Internal memory: NAND FLASH 8 GB  
 External memory: MicroSD Slot  
 Display: 7.85" LCD 1024 x768 (4:3)  
 OS: Android 4.4 OS  
 Display: Capacitive touchscreen  
 Photo camera: 0.3MP (front), 2.0MP (back)

COMPATIBLE DEVICES  
**MacroTestG3, G2, G1**  
**CombiG2**  
**PQA820, PQA819**  
**HT9022**





# POWER QUALITY ANALYZERS

## COMPARISON TABLE FUNCTIONS



|  | PQA824        | PQA823        | VEGA78        | PQA820                | PQA819                | HT9022         |
|--|---------------|---------------|---------------|-----------------------|-----------------------|----------------|
| <b>MAIN MEASUREMENTS</b>   |               |               |               |                       |                       |                |
| AC/DC voltage in single-phase/three-phase systems                          | •             | •             | •             | •                     | •                     | • Single-phase |
| AC/DC current in single-phase/three-phase systems                          | •             | •             | •             | •                     | •                     | • Single-phase |
| Cosphi, Power Factor   | •             | •             | •             | •                     | •                     | •              |
| Voltage unbalance (NEG%, ZERO%)  | •             | •             | •             | •                     | -                     | -              |
| Active, reactive, apparent power/energy and DC power                       | •             | •             | •             | •                     | •                     | •              |
| Voltage and current harmonics up to the 49th with THD%                     | •             | •             | •             | •                     | • Only THD            | • 25th         |
| Voltage anomalies (dips, peaks) with 10ms resolution (@ 50Hz)              | •             | •             | •             | •                     | -                     | -              |
| Voltage fast transients (spikes) with 5µs resolution                       | •             | -             | -             | -                     | -                     | -              |
| Electric motor starting current (INRUSH)                                   | •             | •             | -             | -                     | -                     | •              |
| Voltage flickers (Pst, Pit)  | •             | •             | -             | -                     | -                     | -              |
| Full analysis according to EN50160   | •             | •             | -             | -                     | -                     | -              |
| Phase sequence   | •             | •             | •             | •                     | •                     | •              |
| Neutral-Ground Voltage   | •             | •             | •             | -                     | -                     | •              |
| Neutral current  | •             | •             | •             | •                     | -                     | •              |
| <b>MEMORY AND RECORDING</b>  |               |               |               |                       |                       |                |
| 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-15min       |
| Indicative memory duration (in days @ PI=10min @ max number of parameters) | 90 days       | 90 days       | 90 days       | 30 days               | 153 days              | 2 days         |
| Indication of recording duration   | •             | •             | •             | •*                    | •*                    | •              |
| Internal memory capacity   | 15MB          | 15MB          | 15MB          | 8MB                   | 8MB                   | 2MB            |
| External compact flash card  | •             | •             | •             | -                     | -                     | -              |
| Default and custom recordings  | •             | •             | •             | -                     | -                     | -              |
| Saving instant sampled values  | •             | •             | •             | •*                    | •*                    | •*             |
| <b>REAL-TIME DISPLAY</b>   |               |               |               |                       |                       |                |
| Summary table of main electric parameters                                  | •             | •             | •             | •*                    | •*                    | •*             |
| Voltage/current waveforms  | •             | •             | •             | •*                    | •*                    | •*             |
| Tables or histograms of Harmonics and THD%                                 | •             | •             | •             | •*                    | •*                    | •*             |
| Voltage/current vector diagram   | •             | •             | •             | •*                    | •*                    | •*             |
| <b>ADDITIONAL CHARACTERISTICS</b>  |               |               |               |                       |                       |                |
| Measurement category:  | CAT IV 600V   | CAT IV 600V   | CAT IV 600V   | CAT IV 300V           | CAT IV 300V           | CAT IV 600V    |
| Measurement with use of external CT and VT (with optional accessory HT903) | •             | •             | •             | •**                   | •**                   | -              |
| Touchscreen colour display   | •             | •             | •             | -                     | -                     | -              |
| Power supply and rechargeable battery recharging                           | •             | •             | •             | • Auto power supplied | • Auto power supplied | -              |
| 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         | • Bluetooth    |
| Context help active on each screen   | •             | •             | •             | -                     | -                     | •              |
| Protection password on recording   | •             | •             | •             | -                     | -                     | -              |
| Size (LxWxH) (mm)  | 235x165x75    | 235x165x75    | 235x165x75    | 255x200x115           | 255x200x115           | 252x88x44      |
| Weight in kg (batteries included)  | 1             | 1             | 1             | 0.7                   | 0.7                   | 0.5            |
| Reference standard for power 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              | HP009022       |

\*Through App HTANALYSIS

\*\*Adapter ACONBIN necessary

# PQA824 | PQA823 | VEGA78

THREE-PHASE POWER QUALITY ANALYZERS



PQA824, PQA823 and VEGA78 are three-phase and single-phase 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.

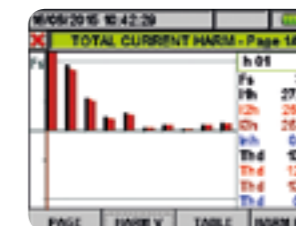
The Help online function available on each screen is a valid and concrete help for the operator in understanding how the devices are used. Each internal parameter is easily reached through the typical tree structure, widely known to Windows system users.

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

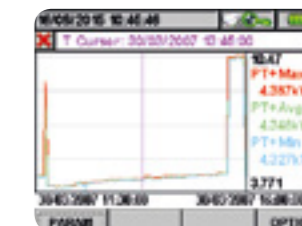
The graphic function "vector diagram" allows, among other things, to immediately evaluate the phase angle between input voltage and current signals, thus defining the loads' nature.

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

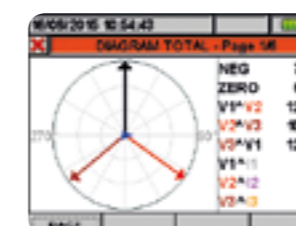
Model PQA824, compared to PQA823 and VEGA78, also allows detecting spikes on input voltages with a minimum resolution of 5µs (200kHz), setting different trigger thresholds which are very useful when solving typical problems on installations (monitoring atmospheric charges, commutations of switching suppliers,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



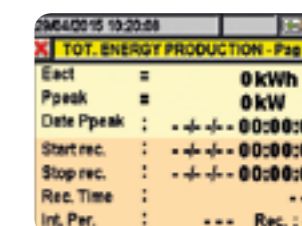
Current harmonics' display in real time



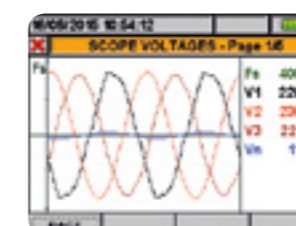
Display of recorded power graph



Voltage and current vector diagram



Energy consumption display



Waveform display (voltage)



General Menu

## 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

- Display:** TFT, 65536 colours, (320x240pxl) with high contrast, touch screen
- Power supply:** 1x3.7V rechargeable Li-ION battery, with external adapter, duration >3h, auto power of after 5 minutes' idling
- Internal memory:** 15Mbytes (duration approx. 3 months @ IP=15min and 251 selectable parameters)
- Memory extension:** external Compact Flash card (ca. 32Mb)
- PC interface:** USB 2.0
- Safety:** IEC/EN61010-1
- Insulation:** double insulation
- Measurement category:** CAT IV 600V (Phase - Neutral) CAT IV 1000V (between inputs) EN50160
- Power quality and Flicker:** EN61000-4-30, class B
- Electric energy quality:** EN61000-4-7, EN50160
- Unbalance:** EN61000-4-7, EN50160
- Size:** 235x165x75mm
- Weight (battery included):** approx 1kg

## Accessories provided

|              |  |
|--------------|--|
| 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                      |
| CF800    | 1GB Compact Flash Card  |
| MCR800   | Compact flash card reader                                     |
| 606-IECN | Connector with magnetic terminal                              |
| SP-0400  | Set of straps for slinging the instrument over one's shoulder |



# 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™** 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
- Reference standards:** EN50160
- Operating temperature:** 0 ÷ 40°C
- Operating humidity:** <80%RH
- Storage temperature:** -10 ÷ 60°C
- Storage humidity:** <80%RH
- Size:** 235x165x75mm
- Weight (battery included):** approx 0.7 kg

## Accessories provided

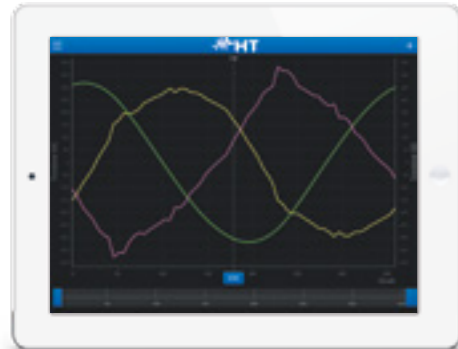
|             |  |
|-------------|--|
| KITMPPACW   | Set of 4 measuring cables                |
| KITMPPACC   | Set of 4 alligator clips                 |
| 606-IECN    | Adapters with magnetic terminal (4x)     |
| HTFLEX33L   | Flex 1000A AC clamp, diameter 174mm (4x) |
| TOPVIEW2007 | PC Windows software + USB cable          |
| BORSA2051   | Soft carrying bag for accessories        |
|             | Quick user guide                         |
|             | ISO9000 calibration certificate          |
|             | User manual on CD-ROM                    |

## Optional accessories

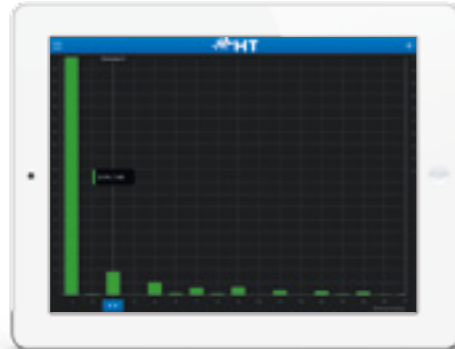
|         |   |
|---------|---|
| HT96U   | AC clamp for leakage current, 1-100-1000A/1V, diameter 54mm |
| HT97U   | Standard 10-100-1000A AC clamp, diameter 54mm               |
| HT98U   | DC clamp for leakage current, 1000A/1V, diameter 50mm       |
| HP30C2  | Standard AC 200-2000A/1V clamp, diameter 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               |

# PQA820|PQA819|HT9022 WITH HTANALYSIS™

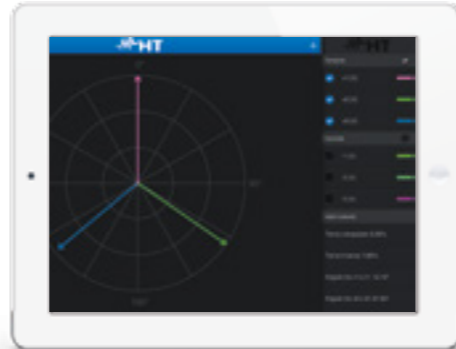
More information on [page 56](#)



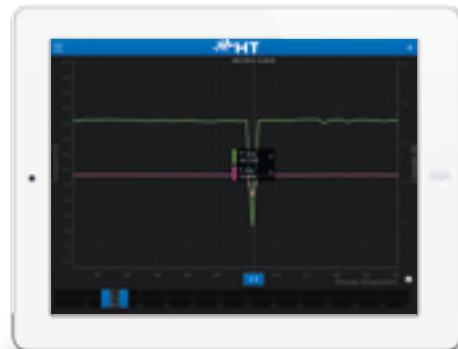
Voltage and current waveforms.



Current and voltage harmonics.



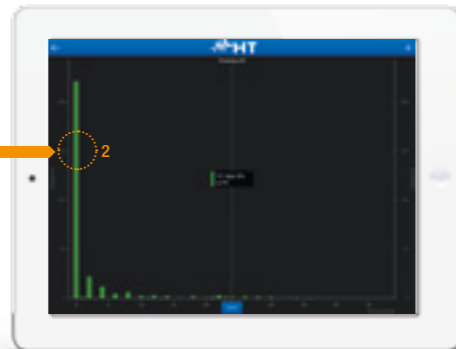
Voltage and current vector diagram.



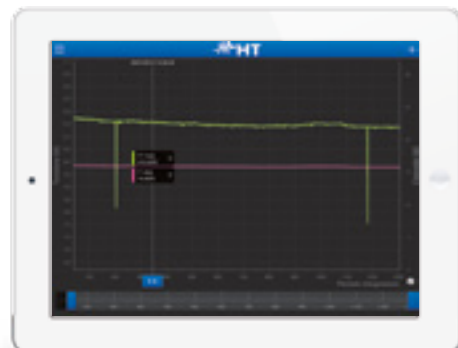
**Zoom** on a voltage and current drop.



**Jump function**  
1 Click on the arrow next to the desired value.



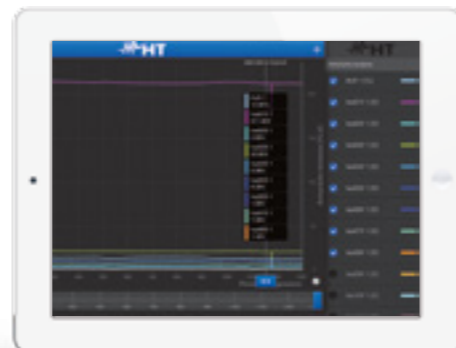
**Jump function**  
2 It switches to harmonic values in real-time.



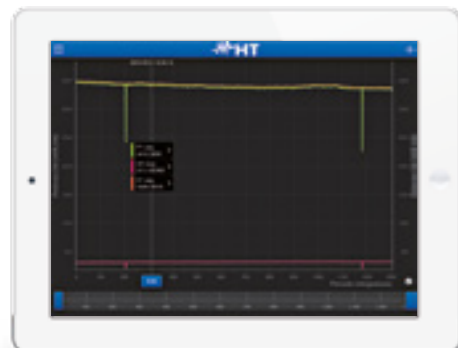
Trend of main quantities.



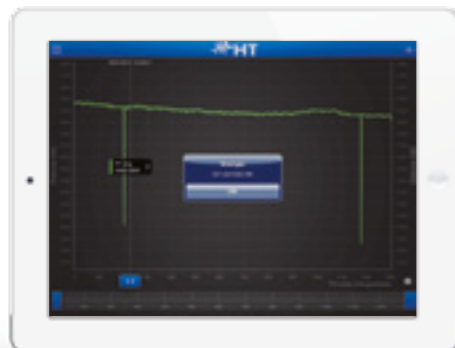
Harmonics up to the 49th.



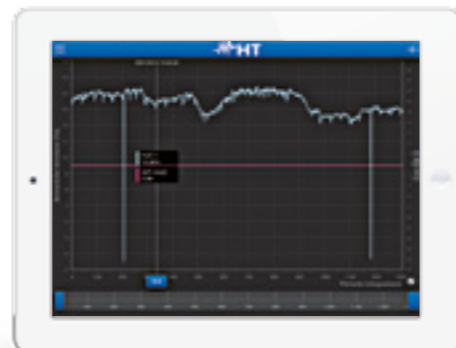
Trend of all harmonics.



Power trend.



Jump function to know how much energy has been consumed.



Example of analysis on THD% and Power factor.



ORDER CODE **HP009022**

## HT9022

CLAMP ON POWER QUALITY ANALYZER WITH POWER/HARMONIC MEASUREMENT AND BLUETOOTH CONNECTION

The power clamp meter HT9022 has 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 and records **Active, Reactive and Apparent Power, Energy, voltage/current harmonic analysis up to the 25th with THD% calculation** in single-phase and balanced three-phase systems. It also allows testing **phase sequence and conformity** with the 1-terminal measuring method. It is also possible to detect and record the events linked to **motor starting (INRUSH) currents**. HT9022 allows **recording** each measured electric parameter over time, with the possibility of transferring data via **Bluetooth** to **Android** 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.



HT9022 in use.

### Functions

- AC, DC, AC + DC TRMS current up to 1000A
- AC, DC, AC + DC TRMS voltage up to 1000V
- Frequency with test leads and clamp jaws
- Phase sequence / phase concordance
- Resistance and Continuity test
- DC power measurement/recording
- Active, reactive, apparent power meas./rec. on single-phase systems
- Active, reactive, apparent energy meas./rec. on single-phase systems
- Power factor measurement/recording on single-phase systems
- Voltage/current harmonic meas./rec. up to the 25th with THD%
- Motor starting current detection (INRUSH)
- Data logger function with programmable PI
- Autorange
- Backlight
- Auto Power OFF
- Data HOLD, MAX/MIN/CREST
- Bluetooth for connection to PC and Android devices through HTAnalysis App

### Main features

|                                     |   |
|-------------------------------------|---|
| <b>Display:</b>                     | Dot-matrix 128x128pxl with backlight                  |
| <b>Power supply:</b>                | 2x1.5V batteries type AAA                             |
| <b>Duration:</b>                    | > 50 hours  |
| <b>Internal memory:</b>             | 2MBytes (approx. 2 days @ IP=15min and 60 parameters) |
| <b>PC interface:</b>                | Bluetooth   |
| <b>Safety:</b>                      | IEC/EN61010-1   |
| <b>Insulation:</b>                  | Double insulation                                     |
| <b>Pollution level:</b>             | 2   |
| <b>Measurement category:</b>        | CAT IV 600V to earth, max 1000V between inputs        |
| <b>Max diameter of cable:</b>       | 45mm  |
| <b>Size (LxWxH):</b>                | 252x88x44mm   |
| <b>Weight (batteries included):</b> | 0.42kg  |

### Accessories provided

|              |   |
|--------------|---|
| YAAMK0000HT0 | Pair of 4mm test leads  |
| YAAMK0001HT0 | Pair of alligator clips   |
| TOPVIEWS     | Windows software for PC connection<br>Bluetooth/USB adapter for PC connection                                   |
| YABRS0000NNO | Soft carrying bag<br>Batteries and user manual on CD-ROM<br>ISO9000 calibration certificate<br>Quick user guide |

COMPARISON TABLE OF ACCESSORIES



|   | PQA824 | PQA823 | VEGA78 | PQA820 | PQA819 | HT9022 |
|---|--------|--------|--------|--------|--------|--------|
| <b>TOPVIEWS</b><br>PC Windows software<br>ORDER CODE HA000715   | -      | -      | -      | -      | -      | S      |
| <b>TOPVIEW2007</b><br>PC Windows software + USB cable<br>ORDER CODE HA000714                                    | S      | S      | S      | S      | S      | -      |
| <b>PT400</b><br>Touch-screen pen<br>ORDER CODE HA0PT400   | S      | S      | S      | -      | -      | -      |
| <b>VA500</b><br>Rigid Carrying case<br>ORDER CODE HA050000  | S      | S      | S      | -      | -      | -      |
| <b>BORSA2051</b><br>Soft carrying bag for device/accessories<br>ORDER CODE HA002051                             | 0      | 0      | 0      | S      | S      | -      |
| <b>YABRS0000NNO</b><br>Soft carrying bag for HT9022<br>ORDER CODE HA000145                                      | -      | -      | -      | -      | -      | S      |
| <b>SP-0400</b><br>Shoulder strap to use the device with free hands<br>ORDER CODE HA000112                       | 0      | 0      | 0      | -      | -      | -      |
| <b>A0055</b><br>External power supply AC/DC<br>ORDER CODE HA005500  | S      | S      | S      | -      | -      | -      |
| <b>KITMPPACC</b><br>Set of 4 alligator clips for AC voltage<br>ORDER CODE HA000752                              | -      | -      | -      | S      | S      | -      |
| <b>KITMPPACW</b><br>Set of 4 cables for AC voltage 2m<br>ORDER CODE HA000753                                    | -      | -      | -      | S      | S      | -      |
| <b>KIT800</b><br>Set of 5 cables, black, red, green, blue and brown with alligator clips<br>ORDER CODE HA008000 | S      | S      | S      | -      | -      | -      |
| <b>YABAT0003HT1</b><br>Rechargeable Li-ION battery 3,7V (included in the device)<br>ORDER CODE HA000146         | S      | S      | S      | -      | -      | -      |
| <b>606-IECN</b><br>Connector with magnetic terminal<br>ORDER CODE HA006060                                      | 0      | 0      | 0      | S      | S      | -      |

S = Standard 0 = Optional

> FOLLOWS

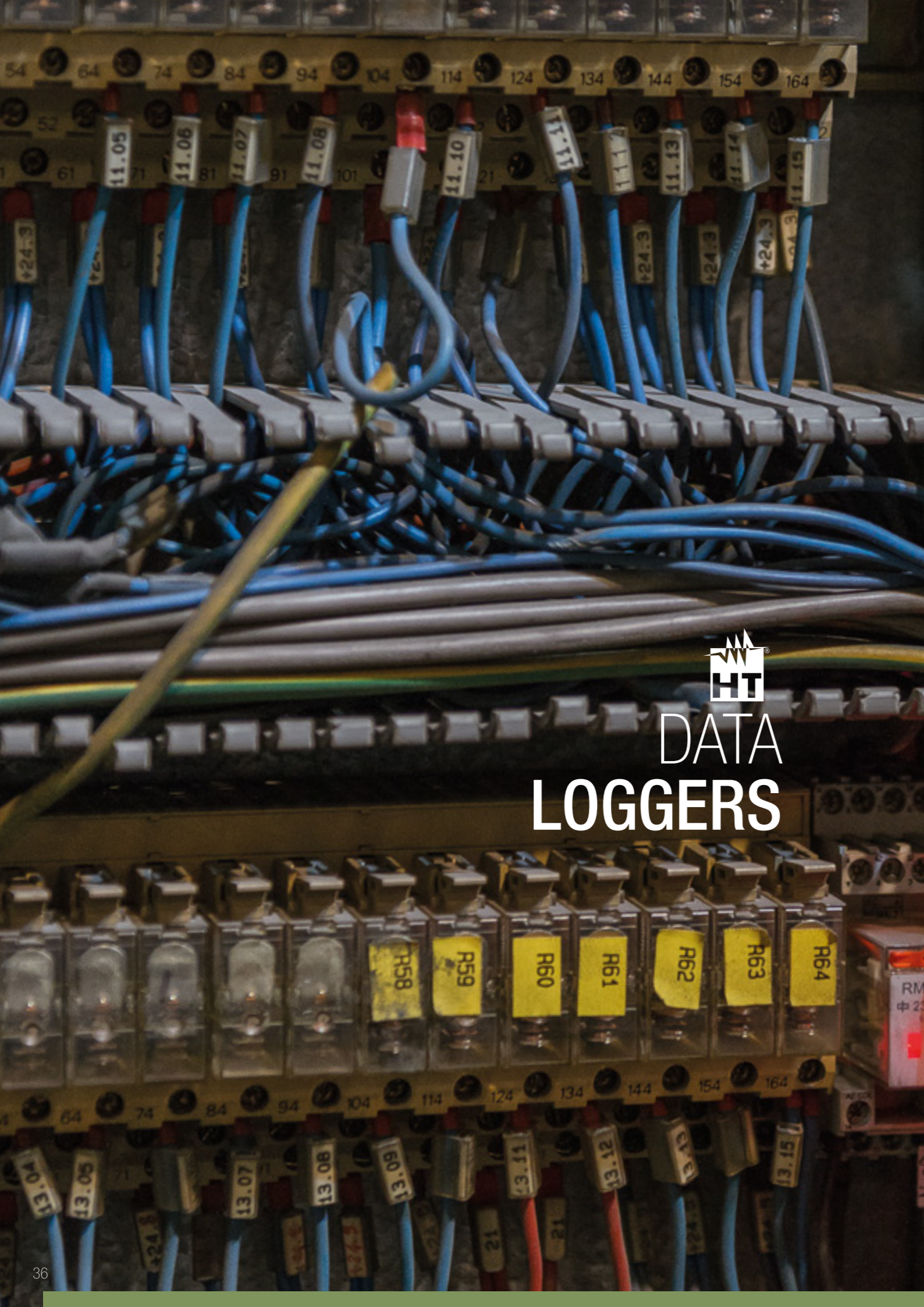


|  | PQA824 | PQA823 | VEGA78 | PQA820 | PQA819 | HT9022 |
|--|--------|--------|--------|--------|--------|--------|
| <b>ACONBIN</b><br>Adapter for connection standard clamps<br>ORDER CODE HA000BIN              | -      | -      | -      | 0      | 0      | -      |
| <b>HT903</b><br>Connection kit for external TA, 1A and 5A/1V<br>ORDER CODE HA019030          | 0      | 0      | 0      | 0      | 0      | -      |
| <b>YAAMK0000HTO</b><br>Pair of test leads<br>ORDER CODE HA000143                             | -      | -      | -      | -      | -      | S      |
| <b>YAAMK0001HTO</b><br>Pair of test leads with alligator clips<br>ORDER CODE HA000144        | -      | -      | -      | -      | -      | S      |
| <b>HTFLEX33E</b><br>Flex 3000A AC clamp, max diameter of cable 174 mm<br>ORDER CODE HP00033E | S      | S      | S      | -      | -      | -      |
| <b>HTFLEX33L</b><br>Flex 1000A AC clamp, diameter 174mm<br>ORDER CODE HP00033L               | -      | -      | -      | S      | S      | -      |
| <b>HTFLEX35</b><br>Flex 3000A AC clamp, max diameter of cable 274 mm<br>ORDER CODE HP000035  | 0      | 0      | 0      | 0**    | 0**    | -      |
| <b>HT96U</b><br>Standard AC clamp 1-100-1000A/1V, diam.54 mm<br>ORDER CODE HP00096U          | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HT97U</b><br>Standard clamp 10-100-1000A AC, diameter 54 mm<br>ORDER CODE HP000972        | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HT98U</b><br>Standard 1000A DC clamp, diameter 50 mm<br>ORDER CODE HP00098U               | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HP30C2</b><br>Standard 200-2000A AC clamp, diameter 70 mm<br>ORDER CODE HP003002          | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HP30C3</b><br>Standard 3000A AC clamp, diameter 70 mm<br>ORDER CODE HP003003              | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HP30D1</b><br>Standard DC clamp 1000A/1V, diam. 83 mm<br>ORDER CODE HP0030D1              | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HT4004N</b><br>Standard DC clamp 10-100A/1V, diameter 20mm<br>ORDER CODE HP04004N         | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HT4005K</b><br>Standard AC 200A/1V clamp, diameter 40mm<br>ORDER CODE HP04005K            | 0      | 0      | 0      | 0*     | 0*     | -      |
| <b>HT4005N</b><br>Transducer AC 5A-100A/1V<br>ORDER CODE HP04005N                            | 0      | 0      | 0      | 0*     | 0*     | -      |

S = Standard 0 = Optional

\*Adapter ACONBIN necessary

\*\*Max measurement 1000A AC



HT  
DATA LOGGERS

COMPARISON TABLE  
FUNCTIONS



| MAIN MEASUREMENTS  | XL421                        | XL422                              | XL423                        | XL424                              |
|--|------------------------------|------------------------------------|------------------------------|------------------------------------|
| TRMS   | •                            | •                                  | •                            | •                                  |
| AC voltage in single-phase/three-phase systems                     | -                            | -                                  | •<br>Single-phase            | •<br>Single-phase /<br>three-phase |
| AC current in single-phase/three-phase systems                     | •<br>Single-phase            | •<br>Single-phase /<br>three-phase | -                            | -                                  |
| <b>MEMORY AND RECORDING</b>  |                              |                                    |                              |                                    |
| 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 @ PI=5min) | 455                          | 455 / 1820*                        | 455                          | 455 / 1820*                        |
| Internal memory capacity   | 1MB                          | 1MB                                | 1MB                          | 1MB                                |
| <b>ADDITIONAL CHARACTERISTICS</b>                                  |                              |                                    |                              |                                    |
| Protection rating  | IP65                         | IP65                               | IP65                         | IP65                               |
| Protection category  | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V       | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V       |
| Power supply   | 2x AA batteries              | 2x AA batteries                    | 2x AA batteries              | 2x AA batteries                    |
| 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

# XL421

TRMS SINGLE-PHASE CURRENT DATA LOGGER



XL421 is a **Data Logger** capable of measuring and recording the true root mean square (TRMS) value of AC current up to **2500A** in **single-phase** electric systems for different applications (evaluation of load currents, rated powers of transformers, etc.). The device is enclosed in a practical waterproof plastic case with integrated flex clamp jaws able to surround also a big-sized cable or bar. Thanks to an advanced memory management algorithm it is possible to monitor a system even for a long time. The device starts 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 device then goes 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**. Each recording is kept stored in the internal memory and can be **downloaded and managed by PC** always through a dedicated software. Data Logger XL421 is also provided with a special adhesive strap which makes it possible to place it in any place in the installation where measuring is needed. The high protection rating (**IP65**) makes this device fully reliable also under extreme operating conditions.



ORDER CODE HV000422

# XL422

TRMS THREE-PHASE CURRENT DATA LOGGER



XL422 is a **Data Logger** capable of measuring and recording the true root mean square (TRMS) value of AC current up to **2500A** in **three-phase** 3-wire electric systems for different applications (evaluation of load currents, rated powers of transformers, etc.). The device is enclosed in a practical waterproof plastic case with integrated flex clamp jaws able to surround also big-sized cables or bars. Thanks to an advanced memory management algorithm it is possible to monitor a system even for a long time. The device starts 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 device then goes on recording new values, using the new measuring interval. In this way, it is possible to keep the device recording up to **approximately 90 days**. Each recording is kept stored in the internal memory and can be **downloaded and displayed on the PC** always through a dedicated software. Data Logger XL422 is also provided with a special adhesive strap which makes it possible to place it in any place in the installation where measuring is needed. The high protection rating (**IP65**) makes this device fully reliable also under extreme operating conditions.



## Functions and characteristics

- TRMS single-phase current measurement
- 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:
  - 1s.....5
  - 6s.....34
  - 30s.....170
  - 60s.....364(\*)
  - 5min .....1820(\*)
- 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

## Accessories provided

|             |  |
|-------------|--|
| VELCRO      | Adhesive strap 50x70mm                       |
| TOPVIEW2004 | Windows software for PC + serial cable C2004 |
| BORSA 2000  | Soft carrying bag                            |
|             | Batteries                                    |
|             | User Manual                                  |

## Optional accessories

|       |                   |
|-------|-------------------|
| C2009 | RS232-USB adapter |
|-------|-------------------|

## Functions and characteristics

- TRMS three-phase current measurement
- 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:
  - 1s.....1.5
  - 6s.....8
  - 30s.....42
  - 60s.....91
  - 5min .....455(\*)
- 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

## Accessories provided

|             |  |
|-------------|--|
| VELCRO      | Adhesive strap 50x70mm                       |
| TOPVIEW2004 | Windows software for PC + serial cable C2004 |
| BORSA75     | Soft carrying bag                            |
|             | Batteries                                    |
|             | User Manual                                  |

## Optional accessories

|       |                   |
|-------|-------------------|
| C2009 | RS232-USB adapter |
|-------|-------------------|



ORDER CODE HV000423

# XL423

TRMS SINGLE-PHASE VOLTAGE DATA LOGGER



XL423 is a **Data Logger** capable of measuring and recording the true root mean square (TRMS) value of AC voltage up to **600V** in **single-phase** electric systems for different applications (evaluation of power voltage, load unbalance, etc.).

The device is enclosed in a practical waterproof plastic case with integrated flex clamp jaws able to surround also a big-sized cable or bar. Thanks to an advanced memory management algorithm it is possible to monitor a system even for a long time. The device starts 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 device then goes 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**. Each recording is kept stored in the internal memory and can be **downloaded and displayed on the PC** always through a dedicated software. Data Logger XL423 is also provided with a special adhesive strap which makes it possible to place it in any place in the installation where measuring is needed. The high protection rating (**IP65**) makes this device fully reliable also under extreme operating conditions.



ORDER CODE HV000424

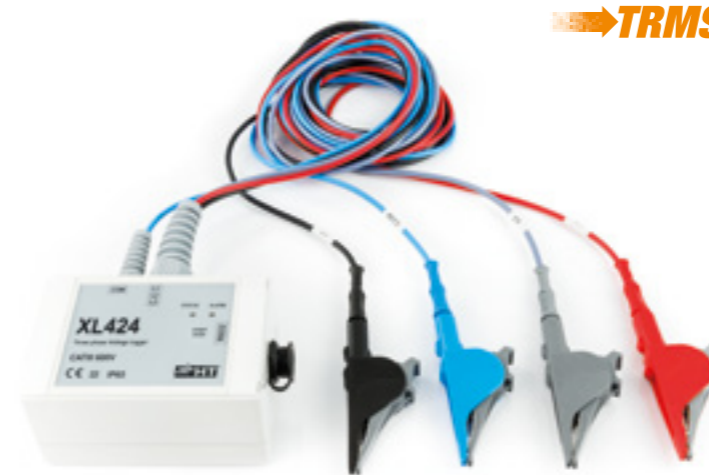
# XL424

TRMS THREE-PHASE VOLTAGE DATA LOGGER



XL424 is a **Data Logger** capable of measuring and recording the true root mean square (TRMS) value of AC voltage up to **600V** in **three-phase** 3-wire electric systems for different applications (evaluation of power voltage, load unbalance, etc.).

The device is enclosed in a practical waterproof plastic case with integrated flex clamp jaws able to surround also a big-sized cable or bar. Thanks to an advanced memory management algorithm it is possible to monitor a system even for a long time. The device starts 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 device then goes on recording new values, using the new measuring interval. In this way, it is possible to keep the device recording up to **approximately 90 days**. Each recording is kept stored in the internal memory and can be **downloaded and displayed on the PC** always through a dedicated software. Data Logger XL424 is also provided with a special adhesive strap which makes it possible to place it in any place in the installation where measuring is needed. The high protection rating (**IP65**) makes this device fully reliable also under extreme operating conditions.



## Functions and characteristics

- TRMS single-phase voltage measurement
  - 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
    - 6s.....34
    - 30s.....170
    - 60s.....364(\*)
    - 5min .....1820(\*)
  - 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): 120x80x43 mm
  - Weight (batteries included): approx. 0.5kg
- \*according to battery duration

## Accessories provided

|             |  |
|-------------|--|
| KITXL423C   | Set of 2 alligator clips                     |
| VELCRO      | Adhesive strap 50x70mm                       |
| TOPVIEW2004 | Windows software for PC + serial cable C2004 |
| BORSA2000   | Soft carrying bag                            |
|             | Batteries and user manual                    |

## Optional accessories

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

## Functions and characteristics

- AC TRMS three-phase voltage measurement
  - 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.....1.5
    - 6s.....8
    - 30s.....42
    - 60s.....91
    - 5min .....455(\*)
  - 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): 120x80x43 mm
  - Weight (batteries included): approx. 0.5kg
- \*according to battery duration

## Accessories provided

|             |  |
|-------------|--|
| KITXL424C   | Set of 4 alligator clips                     |
| VELCRO      | Adhesive strap 50x70mm                       |
| TOPVIEW2004 | Windows software for PC + serial cable C2004 |
| BORSA2000   | Soft carrying bag                            |
|             | Batteries and user manual                    |

## Optional accessories

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

COMPARISON TABLE OF ACCESSORIES



XL421      XL422      XL423      XL424

|  |  |    |    |    |    |
|--|--|----|----|----|----|
|  | <b>TOPVIEW2004</b><br>PC Windows software + serial cable<br><i>ORDER CODE HA000177</i> | S  | S  | S  | S  |
|  | <b>C2009</b><br>RS232-USB adapter<br><i>ORDER CODE HA0C2009</i>                        | O  | O  | O  | O  |
|  | <b>KITXL423C</b><br>Set of 2 alligator clips<br><i>ORDER CODE HA00423C</i>             | -  | -  | S  | -  |
|  | <b>KITXL424C</b><br>Set of 4 alligator clips<br><i>ORDER CODE HA00424C</i>             | -  | -  | -  | S  |
|  | <b>606-IECN</b><br>Connector with magnetic terminal<br><i>ORDER CODE HA006060</i>      | -  | -  | O  | O  |
|  | <b>C2004</b><br>RS232 cable/IP65 connector for series XL devices                       | S* | S* | S* | S* |

S = Standard    O = Optional    \*Always provided in TOPVIEW2004



**HT**  
MULTIFUNCTION  
INSTALLATION  
TESTERS  
WITH POWER  
QUALITY  
ANALYSIS



## COMPARISON TABLE FUNCTIONS

|  | GSC3    | GSC57F           | ZG47    | SIRIUS89N |
|--|---------|------------------|---------|-----------|
| <b>ELECTRIC SAFETY MEASUREMENTS</b>  |         |                  |         |           |
| Insulation with test voltage 50, 100, 250, 500, 1000VDC                              | •       | •                | •       | •         |
| Continuity of protective conductors with 200mA / 10A                                 | •       | •<br>200mA / 10A | •       | •         |
| Current and tripping time of RCDs type A, AC Standard and Selective                  | •       | •                | •       | •         |
| Current and tripping time of delayed and B-type RCDs                                 | •       | -                | -       | -         |
| Non-trip earth resistance  | •       | •                | •       | •         |
| Earth resistance with rods   | •       | •                | •       | •         |
| Earth resistance with stakeless testing method                                       | •       | -                | -       | -         |
| 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 (0.1mΩ) | •***    | •***             | •***    | •***      |
| Percentage voltage drop on the line  | •       | -                | -       | -         |
| Contact voltage  | •       | •                | •       | •         |
| Phase sequence   | •       | •                | •       | •         |
| Leakage current  | •*      | •*               | •*      | •*        |
| <b>MEMORY AND RECORDING</b>  |         |                  |         |           |
| AC/DC voltage and current in single-phase/three-phase systems                        | •       | •                | •       | •         |
| Active, reactive, apparent power/energy and DC power                                 | •       | •                | •       | •         |
| Voltage and current harmonics up to the 49th with THD%                               | •       | •                | •       | •         |
| Voltage anomalies (dips, peaks) with a resolution of 10ms (@ 50Hz)                   | •       | •                | •       | •         |
| Cosphi and Power Factor  | •       | •                | •       | •         |
| Max number of simultaneously selectable parameters                                   | 383     | 64               | 64      | 64        |
| Recording with selectable integration period   | 5s-60m  | 5s-60m           | 5s-60m  | 5s-60m    |
| Indicative memory duration (@ PI=10min @ max numb parameters)                        | 30 days | 32 days          | 32 days | 32 days   |
| Indication of recording duration   | •       | •                | •       | •         |
| Internal memory capacity   | 8MB     | 2MB              | 2MB     | 2MB       |
| Saving instant sampled values  | •**     | •                | •       | •         |
| <b>REAL-TIME DISPLAY</b>   |         |                  |         |           |
| Summary table of main electric parameters  | •**     | •                | •       | •         |
| Voltage/current waveforms  | •**     | •                | •       | •         |
| Tables or histograms of Harmonics and THD%   | •**     | •                | •       | •         |
| Voltage/current vector diagram   | •**     | •                | •       | •         |

\* Through optional clamp HT96U

\*\*Through HTANALYSIS App

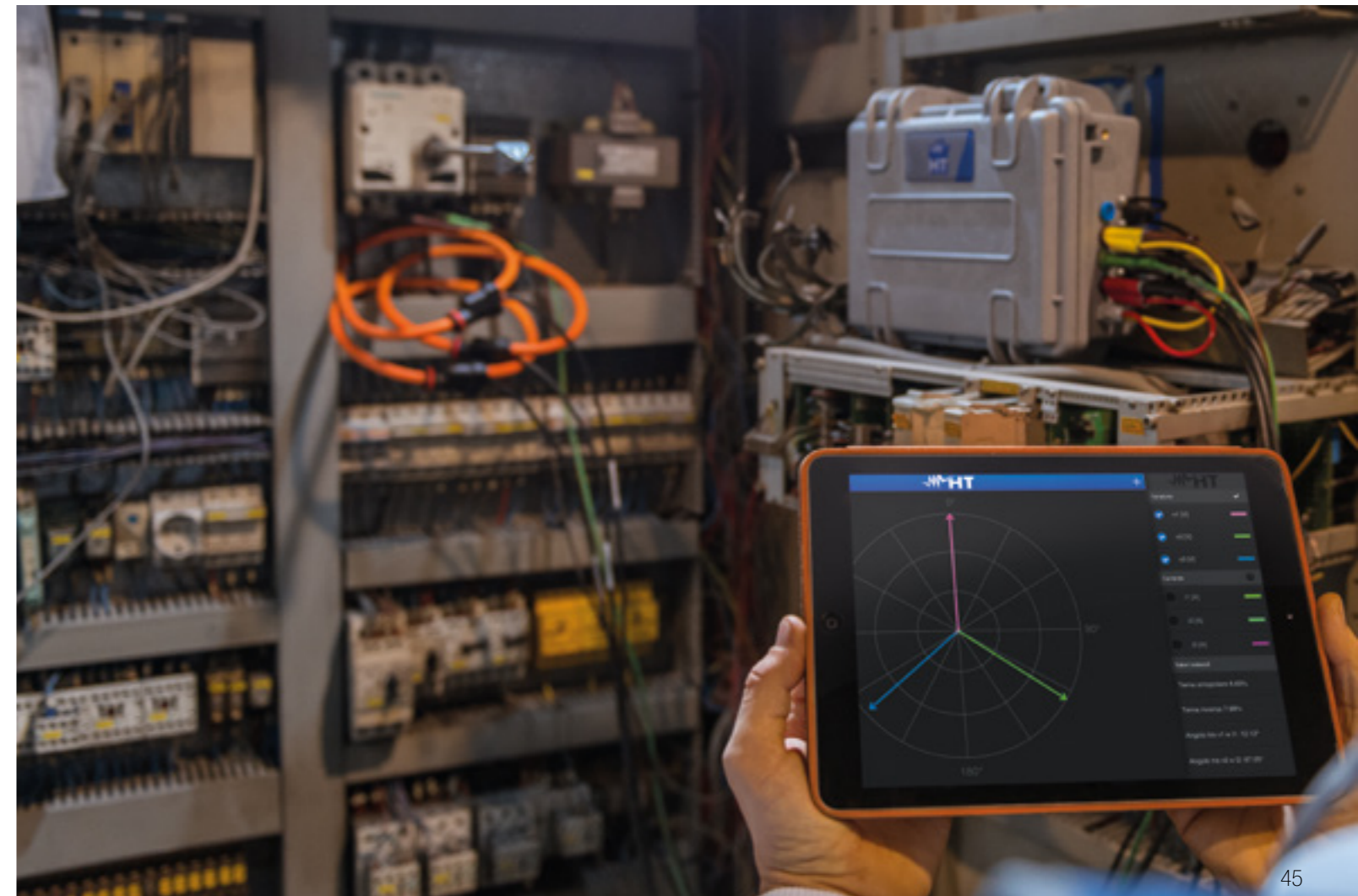
\*\*\*With optional accessory IMP57

## COMPARISON TABLE FUNCTIONS

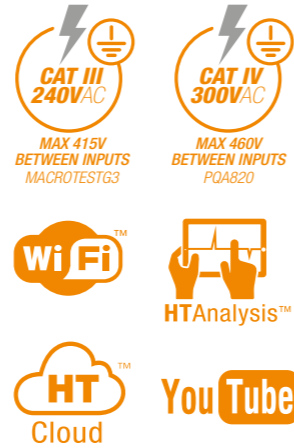


|   | GSC3                         | GSC57F                       | ZG47                         | SIRIUS89N                    |
|---|------------------------------|------------------------------|------------------------------|------------------------------|
| <b>ADDITIONAL CHARACTERISTICS</b>   |                              |                              |                              |                              |
| Measurement category  | CAT IV 300V                  | CAT III 600V                 | CAT III 600V                 | CAT III 600V                 |
| Measurement with use of external CT and VT (with optional accessory HT903)            | •****                        | •                            | •                            | •                            |
| Measurement of air temperature (°C/°F), relative humidity (%RH) and illuminance (Lux) | •                            | •                            | •                            | •                            |
| Touchscreen colour display  | •                            | -                            | -                            | -                            |
| Power supply  | Auto power supplied (PQA820) | 6x1.5V batteries type AA LR6 | 6x1.5V batteries type AA LR6 | 6x1.5V batteries type AA LR6 |
| Auto power off  | •                            | •                            | •                            | •                            |
| PC interface with software for Windows  | •<br>Wi-Fi / Optical / USB   | •<br>Optical / USB           | •<br>Optical / USB           | •<br>Optical / USB           |
| Context help active on each screen  | •                            | -                            | -                            | -                            |
| Size (LxWxH) (mm)   | 255x200x115                  | 225x165x105                  | 225x165x105                  | 225x165x105                  |
| Weight in kg (batteries included)   | 0.7 + 1                      | 1.4                          | 1.3                          | 1.2                          |
| Reference standard for safety   | IEC/EN61010-1                | IEC/EN61010-1                | IEC/EN61010-1                | IEC/EN61010-1                |
| Order Code  | HV00GSC3                     | HV000570                     | HV000047                     | HV00089N                     |

\*\*\*\*Adapter ACONBIN necessary







ORDER CODE **HV00GSC3**

## GSC3

MULTIDEVICE KIT FOR TESTING THE ELECTRIC SAFETY AND CARRYING OUT POWER QUALITY ANALYSES ON DOMESTIC AND INDUSTRIAL ELECTRIC SYSTEMS

GSC3 is the ideal solution for technicians who want to have both the device to carry out the tests (MACROTESTG3) and the power quality analyzer (PQA820) always at hand.

Both devices can be used separately and are located in a comfortable case, very useful for transport and for the protection of the devices themselves.

## MACROTESTG3

- › All verifications of electric safety provided for by standard IEC/EN61557-1.
- › **Advanced Loop** Verification of magnetothermal protections, fuses, cable size and prospective short-circuit current.
- › **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 or three-phase balanced** installations (V, I, W, VAR, VA, PF)
- › **Test of RCDs** of type A, AC, B and earth leakage relays with test current up to 10A\*
- › Measurement of **insulation resistance.**
- › Measurement of **continuity** of protection conductors.
- › Verification of **phase sequence (SEQ)** and of **leakage currents.**
- › **Measurement of environmental parameters** through external probes.

## PQA820

- › 3 types of system: **single-phase, three-phase 3-wire, three-phase 4-wire.**
- › **383 simultaneously recorded parameters.**
- › **Directly configurable via smart phone or tablet** through the **HTAnalysis App.**
- › **Real Time.** Real-time display of all waveforms, harmonics, vector diagrams and summary function on phases for an immediate reading of the most important parameters **through the HTAnalysis App.**
- › **Energy saving.** Discover the detailed absorption of all devices connected to one line with a simple click, and save energy **through the HTAnalysis App.**
- › **Jump Function.** Relationship between time and frequency or between power and consumed energy available at any time, **thanks to the HTAnalysis App.**
- › **REC Function.** Analyzing and sharing the recordings carried out **through the HTAnalysis App and HTCloud.**



## HTAnalysis and HTCloud

It is possible to take advantage of the technological innovation offered by the cutting-edge GSC3 through the **HTAnalysis App on tablet or smart phone**, with iOS or Android operating system. The App can be downloaded free on AppStore™ or Play Store™, **discover all the details on page 56.**

\* For 10A with optional accessory RCDX10



## Functions of MACROTESTG3

- 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
- Line/Loop impedance, Phase-Phase, Phase-Neutral, Phase-PE
- Line/Loop impedance, Phase-Phase, Phase-Neutral, Phase-PE with high resolution (0.1 mΩ)
- 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)
- 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 calc THD%
- Measurement of environmental parameters (with optional probes HT52/05 and HT53/05)
- Help on line on the display
- Internal memory for measured data saving
- Optical/USB serial port for PC connection
- Integrated WiFi communication interface

## Functions of PQA820

- 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
- Voltage dips and peaks on 10ms
- 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 383
- Voltage/current harmonic analysis up to the 49th
- Calculation and recording of voltage/current THD%
- Indication of recording duration

## Accessories provided

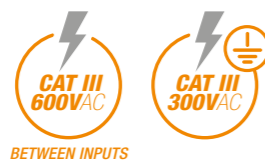
| MACROTESTG3    |  |
|----------------|--|
| C2033X         | Cable with 3-terminal Shuko plug                     |
| UNIVERSALKITG3 | Set of 4 cables + 4 alligator clips + 3 leads        |
| KITTERRNE      | Bag with 4 cables + 4 metal rods                     |
| PR400          | Remote lead for test activation                      |
| PT400          | Touch-screen pen                                     |
| BORSA2000      | Soft carrying bag                                    |
| YABAT0003000   | 1.2V NIMH AA rechargeable battery, 6 pieces          |
| YABAT0004001   | Battery charger for 6 AA/AAA batteries               |
| TOPVIEW2006    | Management software + optical/USB C2006 cable        |
| VA502          | Rigid transport case for devices and accessories     |
|                | Quick user guide and ISO9000 calibration certificate |
|                | User manual on CD-ROM                                |

| PQA820    |  |
|-----------|--|
| KITMPPACW | Set of 4 measuring cables                            |
| KITMPPACC | Set of 4 alligator clips                             |
| 606-IECN  | Adapters with magnetic terminal (4x)                 |
| HTFLEX33L | Flex 1000A AC clamp, 174mm (4x)                      |
| C2007     | USB cable  |
| BORSA2000 | Soft carrying bag for accessories                    |
|           | Quick user guide and ISO9000 calibration certificate |
|           | User manual on CD-ROM                                |

## Optional accessories

| MACROTESTG3 |   |
|-------------|---|
| HT96U       | AC clamp for leakage current, 1-100-1000A/1V, diameter 54mm     |
| IMP57       | Accessories for loop impedance measurement with high resolution |
| T2100       | Clamp for measuring the resistance of earth probes              |
| HT52/05     | Probe for measuring temperature/humidity                        |
| HT53/05     | Probe for illuminance measurement                               |
| 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                         |
| HT4005K     | Standard 200A AC clamp, diameter 40mm                           |

| PQA820  |   |
|---------|---|
| HT96U   | AC clamp for leakage current, 1-100-1000A/1V, 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 TA                 |
| ACONBIN | Adapter for the connection of standard clamps               |



ORDER CODE HV000570

# GSC57F

MULTIFUNCTION DEVICE FOR VERIFICATION OF ELECTRIC SAFETY AND POWER ANALYSIS ON SINGLE-PHASE AND THREE-PHASE INSTALLATIONS

GSC57F is the first big **multifunction** device developed by HT! In a **single device**, all functions of the most advanced systems for safety testing; **power analyses**, THREE-PHASE or SINGLE-PHASE (**voltages, currents, powers, power factor, energies**, etc.), voltage/current **harmonic analysis** (up to the 49th) and **an analysis of the anomalies on power supply voltages (dips, peaks)**; **continuity test with test current 10A**.

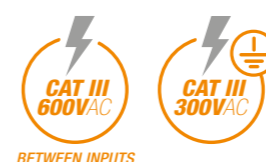
The device has a whole variety of functions and can be used with external probes for measuring **environmental parameters** such as **temperature/humidity** of air, **illuminance (Lux)** further to measuring **leakage currents**, **Loop/Line impedance** and calculating the **prospective short-circuit current** with high resolution (0.1mOhm) in TN systems with the use of the 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**.

### Reference standards

The device has been developed to carry out measurements, tests and analyses in compliance with the following standards:

- CEI 64-8
- IEC/EN61557-1
- VDE 0100
- VDE 0413
- IEC/EN61010-1
- 17th edition



ORDER CODE HV000047

# ZG47

MULTIFUNCTION DEVICE FOR VERIFICATION OF ELECTRIC SAFETY AND POWER ANALYSIS ON SINGLE-PHASE AND THREE-PHASE INSTALLATIONS

ZG47 is the complete and versatile **multifunction device** developed starting from real installation needs. In a **single device**, all functions of the most advanced systems for safety testing developed by HT; possibility of carrying out **power analyses**, THREE-PHASE or SINGLE-PHASE (**voltages, currents, powers, power factor, energies**, etc.), voltage/current **harmonic analysis** (up to the 49th) and **an analysis of the anomalies on power supply voltages (dips, peaks)**. The device has a whole variety of functions and can be used with external probes for measuring **environmental parameters** such as **temperature/humidity** of air, **illuminance (Lux)** further to measuring **leakage currents**, **Loop/Line impedance** and calculating the **prospective short-circuit current** with high resolution (0.1mOhm) in TN systems with the use of the 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**.

### Reference standards

The device has been developed to carry out measurements, tests and analyses in compliance with the following standards:

- CEI 64-8
- IEC/EN61557-1
- VDE 0100
- VDE 0413
- IEC/EN61010-1
- 17th edition

## Functions and characteristics

- Continuity of protective and equipotential conductors with 200mA and 10A
- Insulation with test voltage 50, 100, 250, 500, 1000VDC
- Tripping time and current on type A RCDs, AC General and Selective RCDs up to 500mA
- Non-trip earth resistance
- Line/Loop impedance P-N, P-P, P-PE also with high resolution (0.1mΩ) with optional accessory IMP57
- Earth resistance by voltammetric method
- Ground resistivity by 4-terminal method
- Phase sequence
- Leakage current (with optional clamp HT96U)
- Measurement of electric parameters (voltages, currents, powers, energies, frequency cosphi) in single-phase and three-phase systems
- Recording of electric parameters with integration period from 5s to 60min
- Voltage and current harmonic analysis up to the 49th with THD% calculation
- Analysis of voltage anomalies (dips, peaks) with resolution 10ms
- Numerical display, display of waveforms and harmonic histogram
- Measurement of air temperature (°C/°F), relative humidity (%RH) and Illuminance (Lux) with optional external probe
- **Internal memory: 2MB**
- **Optical/USB interface for transferring data onto the PC**
- **Backlight LCD display**
- **Power supply: 6x1.5V batteries type AA LR6**
- **Safety: IEC/EN61010-1**
- **Measurement category: CAT III 600VAC between inputs, 300VAC to earth**
- **Size (L x W x H): 225x165x105mm**
- **Weight (batteries included): 1.2 kg (approx.)**

## Accessories provided

|                |   |
|----------------|---|
| C2033X         | Cable with 3-terminal Shuko plug                  |
| UNIVERSALKITG3 | Set of 4 cables + 4 alligator clips + 3 leads     |
| KITTERRNE      | Set of 4 cables + 4 earth probes                  |
| C5700          | Power supply cable for test with 10A              |
| HTFLEX3003     | Set of 3 flex 300-3000A AC clamps, diameter 174mm |
| A0050          | Power power supply 230VAC/12VDC                   |
| TOPVIEW2006    | Windows software for PC + optical/USB cable       |
| BORSA 2051     | Soft carrying bag                                 |
|                | ISO9000 calibration certificate                   |

## Optional accessories

|           |   |
|-----------|---|
| HT96U     | Standard 1-100-1000A AC clamp, diameter 54mm              |
| HT97U     | Standard 10-100-1000A AC clamp, diameter 54mm             |
| 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                  |
| C7000/05  | Set of cables for continuity test 10A, 5m                 |
| C7000/10  | Set of cables for continuity test 10A, 10m                |
| HT52/05   | Probe for measuring air temperature/humidity              |
| HT53/05   | Probe for illuminance measurement (Lux)                   |
| IMP57     | Access. for measuring Loop impedance with high resolution |
| A0053     | External power supply 110VAC-60Hz /12VDC                  |
| CN0050    | Strap for slinging the device over one's shoulder         |
| 606-IECN  | Connector with magnetic terminal                          |
| 1066-IECN | Connector for cable extension banana 4mm                  |

## Functions and characteristics

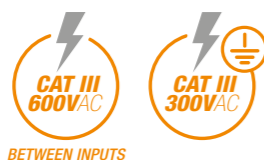
- Continuity of protective and equipotential conductors with 200mA
- Insulation with test voltage 50, 100, 250, 500, 1000VDC
- Tripping time and current on type A, AC General and Selective RCDs up to 500mA
- Non-trip earth resistance
- Line/Loop impedance P-N, P-P, P-PE also with high resolution (0.1mOhm) with optional accessory IMP57
- Earth resistance by voltammetric method
- Ground resistivity by 4-terminal method
- Phase sequence
- Leakage current (with optional clamp HT96U)
- Measurement of electric parameters (voltages, currents, powers, energies, frequency cosphi) in single-phase and three-phase systems
- Recording of electric parameters with integration period from 5s to 60min
- Voltage and current harmonic analysis up to the 49th with THD% calculation
- Analysis of voltage anomalies (dips, peaks) with resolution 10ms
- Numerical display, display of waveforms and harmonic histogram
- Measurement of air temperature (°C/°F), relative humidity (%RH) and Illuminance (Lux) with optional external probe
- **Internal memory: 2MB**
- **Optical/USB interface for transferring data onto the PC**
- **Backlight LCD display**
- **Power supply: 6x1.5V batteries type AA LR6**
- **Safety: IEC/EN61010-1**
- **Measurement category: CAT III 600VAC between inputs, 300VAC to earth**
- **Size (L x W x H): 225x165x105mm**
- **Weight (batteries included): 1.2 kg (approx.)**

## Accessories provided

|                |   |
|----------------|---|
| C2033X         | Cable with 3-terminal Shuko plug              |
| UNIVERSALKITG3 | Set of 4 cables + 4 alligator clips + 3 leads |
| KITTERRNE      | Set of 4 cables + 4 earth probes              |
| HTFLEX333E     | Flex clamp 3000A, diameter 174mm, 3 pieces    |
| A0050          | Power power supply 230VAC/12VDC               |
| TOPVIEW2006    | Windows software for PC + optical/USB cable   |
| BORSA 2051     | Soft carrying bag                             |
|                | ISO9000 calibration certificate               |

## 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             |
| 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                  |
| HT52/05   | Probe for measuring air temperature/humidity              |
| HT53/05   | Probe for illuminance measurement (Lux)                   |
| IMP57     | Access. for measuring Loop impedance with high resolution |
| A0053     | External power supply 110VAC-60Hz /12VDC                  |
| CN0050    | Strap for slinging the device over one's shoulder         |
| 606-IECN  | Connector with magnetic terminal                          |
| 1066-IECN | Connector for cable extension banana 4mm                  |



ORDER CODE HV00089N

# SIRIUS89N

MULTIFUNCTION DEVICE FOR VERIFICATION OF ELECTRIC SAFETY AND POWER ANALYSIS ON SINGLE-PHASE INSTALLATIONS

SIRIUS89N is the complete and versatile multifunction device developed starting from real installation needs. It has all of the functions of the most advanced systems for safety testing. Single-phase power analysis allows recording parameters such as voltages, currents, powers, power factor, energies, voltage/current harmonic analyses (up to the 49th) and analyzing the anomalies on power supply voltages (dips, peaks).

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

### Reference standards

The device has been developed to carry out measurements, tests and analyses in compliance with the following standards:

- CEI 64-8
- IEC/EN61557-1
- VDE 0100
- VDE 0413
- IEC/EN61010-1
- 17th edition

## Functions and characteristics

- Continuity of protective and equipotential conductors with 200mA
- Insulation with test voltage 50, 100, 250, 500, 1000VDC
- Tripping time and current on type A, AC General and Selective RCDs up to 500mA
- Non-trip earth resistance
- Line/Loop impedance P-N, P-P, P-PE also with high resolution (0.1mΩ) with optional accessory IMP57
- Earth resistance by voltammetric method
- Ground resistivity by 4-terminal method
- Phase sequence
- Leakage current (with optional clamp HT96U)
- Measurement of electric parameters (voltages, currents, powers, energies, frequency cosphi) in balanced single-phase and three-phase systems
- Recording of electric parameters with integration period from 5s to 60min with THD% calculation
- Voltage and current harmonic analysis up to the 49th
- Analysis of voltage anomalies (dips, peaks) with resolution 10ms
- Numerical display, display of waveforms and harmonic histogram
- Measurement of air temperature (°C/°F), relative humidity (%RH) and illuminance (Lux) with optional external probe
- Internal memory: 2MB
- Optical/USB interface for transferring data onto the PC
- Backlight LCD display
- Power supply: 6x1.5V batteries type AA LR6
- Safety: IEC/EN61010-1
- Measurement category: CAT III 600VAC between inputs, 300VAC to earth
- Size (L x W x H): 225x165x105mm
- Weight (batteries included): 1.2 kg (approx.)

## Accessories provided

|                |   |
|----------------|---|
| C2033X         | Cable with 3-terminal Shuko plug              |
| UNIVERSALKITG3 | Set of 4 cables + 4 alligator clips + 3 leads |
| KITERRNE       | Set of 4 cables + 4 earth probes              |
| TOPVIEW2006    | Windows software for PC + optical/USB cable   |
| BORSA 2051     | Soft carrying bag                             |
|                | ISO9000 calibration certificate               |

## Optional accessories

|           |   |
|-----------|---|
| HTFLEX33E | Flex 3000A AC clamp, diameter 174mm                       |
| 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             |
| 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                  |
| C7000/05  | Set of cables for continuity test 10A, 5m                 |
| C7000/10  | Set of cables for continuity test 10A, 10m                |
| HT52/05   | Probe for measuring air temperature/humidity              |
| HT53/05   | Probe for illuminance measurement (Lux)                   |
| IMP57     | Access. for measuring Loop impedance with high resolution |
| A0053     | External power supply 110VAC-60Hz /12VDC                  |
| CN0050    | Strap for slinging the device over one's shoulder         |
| 606-IECN  | Connector with magnetic terminal                          |
| 1066-IECN | Connector for cable extension banana 4mm                  |
| A0050     | Power power supply 230VAC/12VDC                           |

## COMPARISON TABLE OF ACCESSORIES

|  | GSC3                  | GSC57F                | ZG47                  | SIRIUS89N             |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>KITERRNE</b><br>Neutral bag + 4 NBVR bna-bna cables + 4 earth rods<br><i>ORDER CODE HA100001</i>  | S                     | S                     | S                     | S                     |
| <b>UNIVERSALKITG3</b><br>Set of 4 cables + 4 alligator clips + 3 terminals<br><i>ORDER CODE HA000203</i>                                     | S                     | S                     | S                     | S                     |
| <b>KITMPPACC</b><br>Set of 4 alligator clips for AC voltage<br><i>ORDER CODE HA000752</i>  | S                     | -                     | -                     | -                     |
| <b>KITMPPACW</b><br>Set of 4 banana-banana green, blue, brown and black cables, 2m long<br><i>ORDER CODE HA000753</i>                        | S                     | -                     | -                     | -                     |
| <b>C2033X</b><br>Cable with 3-terminal Shuko plug<br><i>ORDER CODE HA02033X</i>  | S                     | S                     | S                     | S                     |
| <b>606-IECN</b><br>Connector with magnetic terminal<br><i>ORDER CODE HA006060</i>  | S                     | O                     | O                     | O                     |
| <b>1066-IEC#</b><br>Connector for extension banana cable 4mm # = colour N (black) - R (red)<br><i>ORDER CODE HA10660#</i>                    | O                     | O                     | O                     | O                     |
| <b>404-IEC#</b><br>Measuring lead with protection cap diameter 4mm # = colour N (black) - B (blue) - V (green)<br><i>ORDER CODE HA40400#</i> | S<br>Black-Blue-Green | S<br>Black-Blue-Green | S<br>Black-Blue-Green | S<br>Black-Blue-Green |
| <b>ACONBIN</b><br>Adapter for standard clamps for PQA820<br><i>ORDER CODE HA000BIN</i>   | O                     | -                     | -                     | -                     |
| <b>IMP57</b><br>Accessory for loop impedance measurement with high resolution<br><i>ORDER CODE HAIMP001</i>                                  | O                     | O                     | O                     | O                     |

S = Standard O = Optional

COMPARISON  
TABLE  
OF ACCESSORIES

> FOLLOWS



GSC3



GSC57F



ZG47



SIRIUS89N

> FOLLOWS



GSC3



GSC57F



ZG47



SIRIUS89N

|  |  |    |         |   |   |  |  |    |   |   |   |
|--|--|----|---------|---|---|--|--|----|---|---|---|
|  | <b>HT903</b><br>3x1 - 5A/1V box<br>for TA connection<br><i>ORDER CODE HA019030</i>   | 0* | 0       | 0 | 0 |  | <b>HT4004N</b><br>Standard DC clamp<br>10-100A/1V, diameter 20mm<br><i>ORDER CODE HP04004N</i>         | 0* | - | - | - |
|  | <b>PT400</b><br>Touch-screen pen<br><i>ORDER CODE HA0PT400</i>   | S  | -       | - | - |  | <b>HT4005N</b><br>Standard AC 5-100A/1V<br>clamp, diameter 20mm<br><i>ORDER CODE HP04005N</i>          | 0* | 0 | 0 | 0 |
|  | <b>HTFLEX3003</b><br>Set of 3 flex clamps<br>300-3000A AC,<br>diameter 174mm<br><i>ORDER CODE HPOX3003</i>   | -  | S       | - | - |  | <b>HT4005K</b><br>Standard AC clamp<br>200A/1V,<br>diameter 40mm<br><i>ORDER CODE HP04005K</i>         | 0* | 0 | 0 | 0 |
|  | <b>HTFLEX33E</b><br>Flex clamp 3000A AC,<br>diameter 174mm<br><i>ORDER CODE HP00033E</i>   | -  | -       | S | 0 |  | <b>HP30C2</b><br>Standard AC clamp<br>200-2000A/1V,<br>diameter 70 mm<br><i>ORDER CODE HP003002</i>    | 0* | 0 | 0 | 0 |
|  | <b>HTFLEX35</b><br>Flex clamp 3000A AC,<br>diameter 274mm<br><i>ORDER CODE HP000035</i>  | 0* | -       | 0 | 0 |  | <b>HP30C3</b><br>Standard 3000A AC clamp,<br>diameter 70mm<br><i>ORDER CODE HP003003</i>               | 0* | 0 | 0 | 0 |
|  | <b>HTFLEX33L</b><br>Flex 1000A AC clamp, 174mm<br><i>ORDER CODE HP00033L</i>   | S  | -       | - | - |  | <b>HP30D1</b><br>Standard DC clamp<br>1000A/1V, diameter 83mm<br><i>ORDER CODE HP0030D1</i>            | 0* | - | - | - |
|  | <b>T2100</b><br>Clamp for measuring<br>earth probes' resistance<br><i>ORDER CODE HP002100</i>  | 0  | -       | - | - |  | <b>HT52/05</b><br>Probe for measuring<br>air temperature/humidity<br><i>ORDER CODE HN005205</i>        | 0  | 0 | 0 | 0 |
|  | <b>HT96U</b><br>Standard AC clamp<br>1-100-1000A/1V,<br>diameter 54 mm<br><i>ORDER CODE HP00096U</i>   | 0* | 0       | 0 | 0 |  | <b>HT53/05</b><br>Probe for illuminance<br>measurement (Lux)<br><i>ORDER CODE HN005305</i>             | 0  | 0 | 0 | 0 |
|  | <b>HT97U</b><br>Standard AC clamp<br>10-100-1000A/1V,<br>diameter 54 mm<br><i>ORDER CODE HP000972</i>  | 0* | 0       | 0 | 0 |  | <b>SP-0400</b><br>Set for slinging the instrument<br>over one's shoulder<br><i>ORDER CODE HA000112</i> | 0  | - | - | - |
|  | <b>HT98U</b><br>Standard DC clamp<br>1000A/1V,<br>diameter 50 mm<br><i>ORDER CODE HP00098U</i>   | 0* | -       | - | - |  | <b>CN0050</b><br>Set for slinging the instrument<br>over one's shoulder<br><i>ORDER CODE HA000052</i>  | -  | 0 | 0 | 0 |
|  | <b>C7000</b><br>Set of cables for continuity<br>test with 10A 5m and 10m<br><i>ORDER CODE HA007000 2m</i><br><i>ORDER CODE HA700005 5m</i><br><i>ORDER CODE HA700010 10m</i> | -  | S<br>2m | - | - |  | <b>RCDX10</b><br>Accessory for industrial<br>RCDs up to 10A<br><i>ORDER CODE HA000801</i>              | 0  | - | - | - |

S = Standard 0 = Optional

\*For PQA820, the adapter ACONBIN is necessary

S = Standard 0 = Optional

\*For PQA820, the adapter ACONBIN is necessary



ORDER CODE HAIMP001

# IMP57

ACCESSORY FOR LOOP IMPEDANCE MEASUREMENT WITH HIGH RESOLUTION AND PROSPECTIVE SHORT-CIRCUIT CURRENT UP TO 400KA

IMP57 is an optional accessory to measure **Loop/Line fault loop impedance** and **calculating the prospective short-circuit current**. IMP57 can be used together with the devices of series **GSC, SIRIUS, Combi** and **Macrotest Gx** further to **ZG47, Fulltest3** and **Speed418**. The high generated test current (**approx. 200A**) allows carrying out measurements **with high resolution (0.1mΩ)** and, therefore, obtaining correct and precise results, **even near MT/BT transformer cabinets (TN systems)** and, in general, carrying out measurements in which the devices' basic resolution is not sufficient to guarantee correct measurements of prospective short-circuit currents according to the project's theoretical data. IMP57 is provided with a comfortable and resistant case structure. Finally with 4-terminal measurement allows not considering the effect of the provided cables' resistance and, hence, **no preliminary calibrations are necessary**.

Short-circuit current up to **400KA**



**MACROTESTG3**  
› Page 60

**SPEED418**  
› Page 96



**GSC5x / ZG47  
SIRIUS89N**  
› Page 48, 49, 50



**COMBI42x / COMBIGx**  
› Page 64, 65, 62



**FULLTEST3**  
› Page 100

## Main features

- Type of measurement:** Loop impedance P-N, P-P, P-PE and calculation of short-circuit current
- Measurement resolution:** 0.1mΩ (Zloop); 400kA (Ipsc)
- Test current:** approx. 200A
- Frequency range:** 50Hz ± 5%
- Size (LxWxH):** 340x300x150mm
- Weight:** 4.1kg

## Accessories provided

|       |  |
|-------|--|
| C7000 | Couple of cables, 3m, with alligator clips |
| C2001 | Serial optical / RS-232 cable              |
| B80   | Soft carrying bag for accessories          |
|       | ISO9000 calibration certificate            |
|       | User manual on CD-ROM                      |
|       | CD-ROM with Firmware update                |

## Optional accessories

|          |                                   |
|----------|-----------------------------------|
| C7000/05 | Set of measuring cables, 5m long  |
| C7000/10 | Set of measuring cables, 10m long |



## HTANALYSIS. Artificial Intelligence.

With the latest-generation HT devices **it is possible to interface with tablets and smart phones** thanks to the creation of 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 your colleagues trough the **HTCloud** database.

HTanalysis allows generating professional reports complete with images, texts, videos and audio comments. 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.

### WITH MacroTestG3, G2, G1 and CombiG2

- You can generate reports complete with photos, videos, audio comments and texts.
- You can archive reports in the big HT-Cloud database and share them safely with your colleagues.

### WITH PQA820, PQA819 and HT9022\*

- You can display voltage, current, power, harmonic, THD%, cosphi and frequency recordings.
- You can display in real time all wave-forms, vector diagrams and harmonics.
- You can archive all recordings in the HT-Cloud database and share them safely with your colleagues.

\*Only compatible with Android



## HT CLOUD. Share everything. When, how and where you like.

Install the HTanalysis App to **use** the big **HTCloud** database as an archive and **share** measured and recorded data with colleagues and cooperators **from all over the world**.



## COMPARISON TABLE FUNCTIONS



|   | MACROTEST<br>G3 | COMBI<br>G2    | COMBI<br>420                       | COMBI<br>419                       | M75                                   | M74                                   | EQUITEST<br>5071 |
|---|-----------------|----------------|------------------------------------|------------------------------------|---------------------------------------|---------------------------------------|------------------|
| <b>ELECTRIC SAFETY MEASUREMENTS</b>   |                 |                |                                    |                                    |                                       |                                       |                  |
| <b>TRMS</b>   | •               | •              | •                                  | •                                  | •                                     | •                                     | •                |
| 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/10A      |
| Tripping time and current of RCDs type B, A, AC Standard, Selective and Delayed up to 1A                  | •               | •              | • Only A, AC general and selective | • Only A, AC general and selective | • A = 30mA<br>AC = 300mA only general | • A = 30mA<br>AC = 300mA only general | -                |
| 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 with rods  | •               | -              | -                                  | -                                  | -                                     | -                                     | -                |
| Earth resistance with stakeless testing method  | •**             | -              | -                                  | -                                  | -                                     | -                                     | -                |
| 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 (0.1mΩ)                     | •*              | •*             | •*                                 | •*                                 | -                                     | -                                     | •*               |
| 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   | •               | •              | •                                  | •                                  | •                                     | •                                     | •                |
| <b>POWER ANALYSIS</b>   |                 |                |                                    |                                    |                                       |                                       |                  |
| Measurement of Voltage, Current, Active, Reactive, Apparent Power   | •(1)            | •(1)           | •(1)                               | -                                  | -                                     | -                                     | -                |
| Measurement of Cosphi, Power Factor   | •(1)            | •(1)           | •(1)                               | -                                  | -                                     | -                                     | -                |
| Voltage and current harmonics up to the 49th with calculation of THD%                                     | • 25th          | • 25th         | • 49th                             | -                                  | -                                     | -                                     | -                |
| <b>ADDITIONAL CHARACTERISTICS</b>   |                 |                |                                    |                                    |                                       |                                       |                  |
| Protection category   | CAT III 240V    | CAT III 240V   | CAT III 240V                       | CAT III 240V                       | CAT III 550V                          | CAT III 550V                          | CAT III 550V     |
| DC/AC TRMS voltage and current, Frequency, Resistance, Continuity with buzzer                             | -               | -              | -                                  | -                                  | •                                     | •                                     | •                |
| AUTOMATIC test (Ra, RCD, Insulation)  | -               | -              | •                                  | •                                  | -                                     | -                                     | -                |
| Measurement of environmental parameters (°C, °F, %RH, Lux)  | •               | •              | •                                  | -                                  | -                                     | -                                     | -                |
| Test with remote lead PR400   | •               | •              | •                                  | •                                  | -                                     | -                                     | -                |
| Help on line on the display   | •               | •              | •                                  | •                                  | -                                     | -                                     | -                |
| Internal memory for measured data saving  | •               | •              | •                                  | •                                  | -                                     | -                                     | •                |
| Optical/USB serial port for PC connection   | •               | •              | •                                  | •                                  | -                                     | -                                     | •                |
| Integrated WiFi connection and compatibility with HTANALYSIS App  | •               | •              | -                                  | -                                  | -                                     | -                                     | -                |
| Size (LxWxH) (mm)   | 222x162x57      | 222x162x57     | 222x162x57                         | 222x162x57                         | 240x100x45                            | 240x100x45                            | 225x1165x105     |
| Weight (batteries included):  | 1.2 kg          | 1.2 kg         | 1.2 kg                             | 1.2 kg                             | 450g                                  | 450g                                  | 1.7kg            |
| 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  | HV005036        | HV0000G2       | HV000420                           | HV000419                           | HV000075                              | HV000074                              | HV005071         |

\* With optional accessory IMP57    \*\* With optional accessory clamp T2100    \*\*\* With optional accessory RCDX10    (1) Single-phase or balanced three-phase system



**HT**  
**MULTIFUNCTION  
INSTALLATION  
TESTERS**



ORDER CODE HV005036

# 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**.
- **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**.



Power measurement, using the HTAnalysis™ App on tablet.



Start/stop measuring with remote lead PR400.



Lux measurement with HT53/05.



Earth resistance measurement with clamp T2100.



Selection of RCD type and tripping current



Selection of test voltage and minimum limit value on MΩ measurement



Continuity of protective conductors: Measurement result negative



Leakage current with optional clamp 96U



Power measurement.



Power measurement: harmonics



Advanced Loop.



Advanced Loop: negative result of breaking capacity test.



Earth resistance: selection of measurement type



Earth resistance: result OK.

## Functions

- 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
- 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)
- 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 earth leakage relays up to 10A
- RCD tripping current (Ramp test)
- 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)
- Voltage and Current harmonics analysis and THD% and PF
- Measurement of environmental parameters (with optional probes HT52/05 and HT53/05)
- 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

|                                     |  |
|-------------------------------------|--|
| <b>Power supply:</b>                | 6x1.2V rechargeable batteries type AA NiMH or 6x1.5 type AA alkaline |
| <b>Battery life:</b>                | > 550 test (alkaline)  |
| <b>Display:</b>                     | Resistive touch screen, colour LCD, resolution 320x240 pxl           |
| <b>Memory:</b>                      | 999 locations, 3 levels of markers                                   |
| <b>PC interface:</b>                | optical/USB and WiFi   |
| <b>Safety:</b>                      | IEC/EN61010-1, double insulation                                     |
| <b>Operating humidity:</b>          | <80%RH   |
| <b>Operating temperature:</b>       | 0 ÷ 40°C   |
| <b>Storage humidity:</b>            | <80%RH   |
| <b>Storage temperature:</b>         | -10 ÷ 60°C   |
| <b>Measurement category:</b>        | CAT III 240V, max 415V between inputs                                |
| <b>Pollution level:</b>             | 2  |
| <b>Reference standard:</b>          | IEC/EN61557-1-2-3-4-5-6-7  |
| <b>Size (LxWxH):</b>                | 225 x 165 x 75 mm  |
| <b>Weight (batteries included):</b> | 1.2 kg   |

## Accessories provided

|                |   |
|----------------|---|
| 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                              |
| BORSA2051      | Soft carrying bag                             |
| 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                              |
|                | 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            |
| HT52/05   | Probe for measuring temperature/humidity                    |
| HT53/05   | Probe for illuminance measurement                           |
| 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              |





MAX 415V  
BETWEEN INPUTS



ORDER CODE HV0000G2

# COMBIG2

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, I2t 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** or **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.



Selection of RCD type and tripping current



Selection of test voltage and minimum limit value on measurement



Measurement result negative



Selection of measurement type with external probe



Selection of measurement type of phase sequence



Measurement of leakage current with optional clamp HT96U



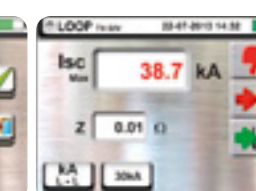
Power measurement, using the HTAnalysis™ App on tablet.



Lux measurement with accessory HT53/05.



General screen Advanced Loop



Negative result of breaking capacity test

## Functions

- 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 mΩ)
- 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)
- 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)
- Voltage and Current harmonics analysis and THD% and PF
- Measurement of environmental parameters (with optional probes HT52/05 and HT53/05)
- 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

|                                     |  |
|-------------------------------------|--|
| <b>Power supply:</b>                | 6x1.2V rechargeable batteries type AA NiMH or 6x1.5 type AA alkaline                           |
| <b>Battery life:</b>                | > 550 test (alkaline)  |
| <b>Display:</b>                     | Resistive touch screen, colour LCD, resolution 320x240 pxl, 999 locations, 3 levels of markers |
| <b>Memory:</b>                      | 999 locations, 3 levels of markers   |
| <b>PC interface:</b>                | optical/USB and WiFi   |
| <b>Safety:</b>                      | IEC/EN61010-1, double insulation   |
| <b>Operating humidity:</b>          | <80%RH   |
| <b>Operating temperature:</b>       | 0 ÷ 40°C   |
| <b>Storage humidity:</b>            | <80%RH   |
| <b>Storage temperature:</b>         | -10 ÷ 60°C   |
| <b>Measurement category:</b>        | CAT III 240V, max 415V between inputs  |
| <b>Pollution level:</b>             | 2  |
| <b>Reference standard:</b>          | IEC/EN61557-1-2-3-4-5-6-7  |
| <b>Size (LxWxH):</b>                | 225 x 165 x 75 mm  |
| <b>Weight (batteries included):</b> | 1.2 kg   |

## Accessories provided

|                          |   |
|--------------------------|---|
| <b>C2033X</b>            | Cable with 3-terminal Shuko plug              |
| <b>UNIVERSALKITCOMBI</b> | Set of 3 cables, 3 alligator clips, 3 leads   |
| <b>PT400</b>             | Touch-screen pen                              |
| <b>BORSA2051</b>         | Soft carrying bag                             |
| <b>TOPVIEW2006</b>       | Management software + optical/USB C2006 cable |
|                          | Quick user guide                              |
|                          | User manual on CD-ROM                         |
|                          | ISO9000 calibration certificate               |

## Optional accessories

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

ORDER CODE HV000420

# COMBI420

MULTIFUNCTION DEVICE FOR TESTS  
ON DOMESTIC AND INDUSTRIAL SYSTEMS  
WITH POWER ANALYSIS

COMBI420 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 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 USB connection.

The instrument has been provided with the innovative **AUTO function**: by selecting this function and only setting the value of RCD current, COMBI420, 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**.



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, COMBI419, 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 Standard and Selective RCDs up to 1A
- Tripping current of type A, AC Standard and Selective RCDs up to 1A
- 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 49th 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**

## 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 |
|                   | ISO9000 calibration certificate               |

## Optional accessories

|             |   |
|-------------|---|
| TOPVIEW2006 | Windows software for PC + optical/USB cable                         |
| IMP57       | Accessory for measuring Loop impedance with high resolution (0,1mΩ) |
| 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         |
| HT52/05     | Probe for measuring temperature/humidity                            |
| HT53/05     | Probe for illuminance measurement                                   |
| 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                     |

## Functions and characteristics

- Continuity of protective conductors with 200mA
- Insulation with 50, 100, 250, 500, 1000VDC
- Tripping time of type A, AC Standard and Selective RCDs up to 1A
- Tripping current of type A, AC Standard and Selective RCDs up to 1A
- 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 |
|                   | ISO9000 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             |



TRMS

YouTube

ORDER CODE HV000075

## M75

SAFETY VERIFICATION DEVICES IN COMPLIANCE WITH STANDARD IEC/EN61557-1 WITH TRMS MULTIMETER AND LAN RJ-45 NETWORK CABLE MAPPING FUNCTIONS

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 **non-trip earth resistance, testing RCDs type A and AC, insulation and continuity of protective conductors**.

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 **non-trip 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 cables, Test of phase sequence with a single lead.



TRMS

ORDER CODE HV000074

## M74

DEVICE FOR SAFETY TESTS ACCORDING TO IEC/EN61557-1 WITH TRMS MULTIMETER FUNCTIONS

M74 measures **Non-trip earth resistance, tripping time of RCDs type AC, Insulation and Continuity of earth and equipotential conductors** according to the laws in force in domestic electric installations.

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, M74, connected to a power outlet, carries out **tests of non-trip 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**.

M74 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's true root mean square value TRMS**.

### Functions and characteristics

- Continuity of protective conductors with 200mA
- 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
- 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**

### Accessories provided

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

### Optional accessories

|                |   |
|----------------|---|
| HT96U          | Standard 1-100-1000A/IV clamp, diam. 54 mm                  |
| HT4005K        | Standard 5-100A AC/IV clamp                                 |
| HT4004N        | Standard 10-100A DC/IV clamp                                |
| NOCANBA        | Adapter for connecting HT96U, HT4004, HT4005N               |
| REM3,4,5,6,7,8 | Single remote LAN unit, choose between no.3, 4, 5, 6, 7, 8. |
| REM38          | Kit of 6 remote units (no. 3, 4, 5, 6, 7, 8)                |

### Functions and characteristics

- Continuity of protective conductors with 200mA
- 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
- 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**

### Accessories provided

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

### Optional accessories

|         |   |
|---------|---|
| HT96U   | Standard 1-100-1000A/IV clamp, diameter 54 mm |
| HT4003  | Standard 400A AC clamp                        |
| HT4005N | Standard 5-100A AC/IV clamp                   |
| HT4004N | Standard 10-100A DC/IV clamp                  |
| NOCANBA | Adapter for connecting HT96U, HT4004, HT4005N |

ORDER CODE **HV005071**

# EQUITEST5071

DEVICE FOR MEASURING CONTINUITY  
OF PROTECTIVE CONDUCTORS  
WITH 10A AND LINE/LOOP IMPEDANCE

EQUITEST5071 is a device mainly designed for testing **equipotential conductors with test current >10A** according to the prescriptions of standards for test of medical environments and IEC/EN60204-1:2006 (safety tests on electric machines and machine boards). This device also allows measuring **continuity on protective conductors with 200mA, Line/Loop impedance** also with **high resolution (0.1mΩ)**, using the optional accessory IMP57, **non-trip earth resistance without causing the RCDs' tripping and phase sequence**. Each measurement can be saved in the **internal memory** of the device and transferred **onto the PC** through the provided Windows software.



## Functions and characteristics

- Continuity of protective conductors with current >200mA
- Continuity of protective conductors with current >10A and voltage <12V
- Continuity with current >10A in compliance with IEC/EN60204-1:2006
- Measuring mode: 4 terminals
- Loop/Line impedance P-N, P-P, P-PE also with high resolution (0.1mΩ) with optional accessory IMP57
- Prospective short-circuit current calculation
- Non-trip earth resistance
- Contact voltage
- Phase sequence with 3 terminals
- **Internal memory: 999 locations**
- **Power supply for tests 10A: 230V/50Hz**
- **Device power supply: 6x1.5V batteries type AA LR06**
- **Safety: IEC/EN61010-1**
- **Measurement category: CAT III 300V to earth**
- **Insulation: double insulation**
- **Pollution level: 2**
- **Size (LxWxH): 225x165x105mm**
- **Weight (batteries included): 1.7kg**

## Accessories provided

|                   |   |
|-------------------|---|
| C2033X            | Cable with 3-terminal Shuko plug  |
| UNIVERSALKITCOMBI | Set of 3 cables + 3 alligator clips + 3 leads   |
| C5700             | Power supply cable for tests with 10A   |
| C7000             | Pair of cables, 3m with alligator clips for tests with 10A  |
| BORSA2051         | Soft carrying bag   |
| TOPVIEW2006       | Windows software for PC + optical/USB cable<br>ISO9000 calibration certificate<br>User manual on CD-ROM<br>Quick user guide |

## Optional accessories

|           |   |
|-----------|---|
| IMP57     | Access. for measuring Loop impedance with high res. |
| C7000/05  | Couple of cables, 5m, with alligator clips          |
| C7000/10  | Couple of cables, 10m, with alligator clips         |
| 1066-IECN | Connector for cable extension banana 4mm            |
| CN0050    | Strap for slinging the device over one's shoulder   |



ORDER CODE **HU000740**

## F30

STANDARD SCISSORS  
WITH INTEGRATED CRIMPER

- › New design, even more ergonomic
- › Non-slip grip
- › Blade in reinforced steel
- › Universal crimper for crimp terminals between 1 and 6 mm<sup>2</sup>



ORDER CODE **HV000697**

## F40

PROFESSIONAL SCISSORS WITH INTEGRATED  
CRIMPER FUNCTION AND CABLE CUTTER 70mm<sup>2</sup>

- › 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 mm<sup>2</sup>, sleeve type
- › Long grip for easy cutting



Blade for cutting cables up to 70 mm<sup>2</sup>



Crimper function for crimp terminals between 1 and 6 mm<sup>2</sup>, sleeve type



ORDER CODE **HU000741**

## F50

STANDARD SCISSORS WITH CABLE CUTTER UP  
TO 50mm<sup>2</sup> AND CRIMPER FUNCTION

- › New design, even more ergonomic
- › Non-slip grip
- › Blade in reinforced steel
- › Universal crimper for crimp terminals between 1 and 6 mm<sup>2</sup>
- › Cable cutter up to 50 mm<sup>2</sup>
- › Case with safety lock
- › Practical hooking system



# COMPARISON TABLE OF ACCESSORIES



|   | MACROTEST<br>G3 | COMBI<br>G2 | COMBI<br>420 | COMBI<br>419 | M75 | M74 | EQUITEST<br>5071 |
|---|-----------------|-------------|--------------|--------------|-----|-----|------------------|
| <b>TOPVIEW2006</b><br>PC Windows software<br>+ USB/optical cable<br><i>ORDER CODE HA000716</i>  | S               | S           | 0            | 0            | -   | -   | S                |
| <b>KITERRNE</b><br>Set of 4 cables<br>+ 4 earth probes<br><i>ORDER CODE HA100001</i>  | S               | -           | -            | -            | -   | -   | -                |
| <b>UNIVERSALKITG3</b><br>Set of 4 cables + 4 alligator<br>clips + 3 terminals<br><i>ORDER CODE HA000203</i>   | S               | -           | -            | -            | -   | -   | -                |
| <b>UNIVERSALKITCOMBI</b><br>Set of 3 cables<br>+ 3 alligator clips + 3 leads<br><i>ORDER CODE HA000201</i>  | -               | S           | S            | S            | -   | -   | S                |
| <b>KIT0075</b><br>Set of 2 cables + 2 leads<br>+ 2 alligator clips<br><i>ORDER CODE HA000158</i>  | -               | -           | -            | -            | S   | S   | -                |
| <b>C2033X</b><br>Cable with 3-terminal<br>Shuko plug<br><i>ORDER CODE HA02033X</i>  | S               | S           | S            | S            | -   | -   | S                |
| <b>C2075</b><br>Cable with 2 terminals<br>with SHUKO plug<br><i>ORDER CODE HA002075</i>   | -               | -           | -            | -            | S   | S   | -                |
| <b>606-IECN</b><br>Magnetic connectors<br>for voltage measurement<br><i>ORDER CODE HA006060</i>   | 0               | 0           | 0            | 0            | 0   | 0   | 0                |
| <b>404-IEC#</b><br>Measuring lead with<br>protection cap diameter 4mm<br># = colour N (black) - B (blue)<br>- V (green)<br><i>ORDER CODE HA40400#</i> | 0               | 0           | 0            | 0            | -   | -   | 0                |
| <b>1066-IEC#</b><br>Connector for extension<br>banana cable 4mm<br># = colour N (black) - R (red)<br><i>ORDER CODE HA10660#</i>                       | 0               | 0           | 0            | 0            | 0   | 0   | 0                |
| <b>PR400</b><br>Remote lead<br>for test activation<br><i>ORDER CODE HA000400</i>  | S               | 0           | 0            | 0            | -   | -   | -                |
| <b>PT400</b><br>Touch-screen pen<br><i>ORDER CODE HA0PT400</i>  | S               | S           | -            | -            | -   | -   | -                |

S = Standard 0 = Optional \*Adapter NOCANBA necessary

> FOLLOWS

|   | MACROTEST<br>G3 | COMBI<br>G2 | COMBI<br>420 | COMBI<br>419 | M75 | M74 | EQUITEST<br>5071 |
|---|-----------------|-------------|--------------|--------------|-----|-----|------------------|
| <b>RCDX10</b><br>Accessory for industrial<br>RCDs up to 10A<br><i>ORDER CODE HA000801</i>                         | 0               | 0           | -            | -            | -   | -   | -                |
| <b>T2100</b><br>Clamp for earth resistance<br>with stakeless testing method<br><i>ORDER CODE HP002100</i>         | 0               | -           | -            | -            | -   | -   | -                |
| <b>NOCANBA</b><br>Adapter banana-hypertac<br>for devices series M<br><i>ORDER CODE HA00NOCA</i>                   | -               | -           | -            | -            | 0   | 0   | -                |
| <b>HT96U</b><br>Standard AC clamp<br>1-100-1000A/1V,<br>diameter 54 mm<br><i>ORDER CODE HP00096U</i>              | 0               | 0           | 0            | 0            | 0*  | 0*  | -                |
| <b>HT97U</b><br>Standard AC clamp<br>10-100-1000A/1V,<br>diameter 54 mm<br><i>ORDER CODE HP000972</i>             | -               | -           | 0            | 0            | 0*  | 0*  | -                |
| <b>HT98U</b><br>Standard DC clamp<br>1000A/1V,<br>diameter 50 mm<br><i>ORDER CODE HP00098U</i>                    | -               | -           | -            | -            | 0*  | 0*  | -                |
| <b>HT4003</b><br>Standard 400A AC clamp<br><i>ORDER CODE HP004003</i>   | -               | -           | 0            | 0            | S   | 0   | -                |
| <b>HT4004N</b><br>Standard DC clamp<br>10-100A, diameter 20mm<br><i>ORDER CODE HP04004N</i>                       | -               | -           | -            | -            | 0*  | 0*  | -                |
| <b>HT4005K</b><br>Standard AC clamp<br>200A/1V,<br>diameter 40mm<br><i>ORDER CODE HP04005K</i>                    | 0               | 0           | 0            | 0            | 0*  | 0*  | -                |
| <b>HP30C2</b><br>Standard AC clamp<br>200-2000A/1V,<br>diameter 70 mm<br><i>ORDER CODE HP003002</i>               | -               | -           | 0            | 0            | 0*  | 0*  | -                |
| <b>HP30C3</b><br>Standard 3000A AC clamp,<br>diameter 70mm<br><i>ORDER CODE HP003003</i>                          | -               | -           | 0            | 0            | 0*  | 0*  | -                |
| <b>HP30D1</b><br>Standard DC clamp<br>1000A/1V<br>diameter 83 mm<br><i>ORDER CODE HP0030D1</i>                    | 0               | 0           | -            | -            | 0*  | 0*  | -                |
| <b>IMP57</b><br>Accessory for loop impedance<br>measurement with high<br>resolution<br><i>ORDER CODE HAIMP001</i> | 0               | 0           | 0            | 0            | -   | -   | 0                |

S = Standard 0 = Optional \*Adapter NOCANBA necessary

# COMPARISON TABLE OF ACCESSORIES

> FOLLOWS



MACROTEST G3    COMBI G2    COMBI 420    COMBI 419    M75    M74    EQUITEST 5071

|   | MACROTEST G3 | COMBI G2 | COMBI 420 | COMBI 419 | M75           | M74 | EQUITEST 5071 |
|---|--------------|----------|-----------|-----------|---------------|-----|---------------|
| <b>HT52/05</b><br>Probe for measuring air temperature/humidity<br>ORDER CODE <i>HN005205</i>                                    | 0            | 0        | 0         | -         | -             | -   | -             |
| <b>HT53/05</b><br>Probe for illuminance measurement (Lux)<br>ORDER CODE <i>HN005305</i>   | 0            | 0        | 0         | -         | -             | -   | -             |
| <b>CH1 - CH2</b><br>Remote unit LAN N°1<br>Remote unit LAN N°2<br>ORDER CODE <i>HA000CH1</i><br>ORDER CODE <i>HA000CH2</i>      | -            | -        | -         | -         | S             | -   | -             |
| <b>YAAMS0000000</b><br>Patch cable LAN RJ45<br>ORDER CODE <i>HA000141</i>   | -            | -        | -         | -         | S<br>3 pieces | -   | -             |
| <b>REM 3</b><br>Remote unit LAN N°3<br>+ Patch cable LAN RJ45<br>ORDER CODE <i>HA000383</i>                                     | -            | -        | -         | -         | 0             | -   | -             |
| <b>REM 4</b><br>Remote unit LAN N°4<br>+ Patch cable LAN RJ45 20cm<br>ORDER CODE <i>HA000384</i>                                | -            | -        | -         | -         | 0             | -   | -             |
| <b>REM 5</b><br>Remote unit LAN N°5<br>+ Patch cable LAN RJ45<br>ORDER CODE <i>HA000385</i>                                     | -            | -        | -         | -         | 0             | -   | -             |
| <b>REM 6</b><br>Remote unit LAN N°6<br>+ Patch cable LAN RJ45<br>ORDER CODE <i>HA000386</i>                                     | -            | -        | -         | -         | 0             | -   | -             |
| <b>REM 7</b><br>Remote unit LAN N°7<br>+ Patch cable LAN RJ45<br>ORDER CODE <i>HA000387</i>                                     | -            | -        | -         | -         | 0             | -   | -             |
| <b>REM 8</b><br>Remote unit LAN N°8<br>+ Patch cable LAN RJ45<br>ORDER CODE <i>HA000388</i>                                     | -            | -        | -         | -         | 0             | -   | -             |
| <b>REM 38</b><br>Set of 6 remote units no. 3,<br>4, 5, 6, 7, 8. + 6 patch cables<br>LAN RJ45 20cm<br>ORDER CODE <i>HA000380</i> | -            | -        | -         | -         | 0             | -   | -             |

S = Standard    0 = Optional

> FOLLOWS



MACROTEST G3    COMBI G2    COMBI 420    COMBI 419    M75    M74    EQUITEST 5071



|   | MACROTEST G3  | COMBI G2 | COMBI 420 | COMBI 419 | M75 | M74 | EQUITEST 5071 |
|---|---------------|----------|-----------|-----------|-----|-----|---------------|
| <b>YABAT0003000</b><br>Rechargeable batteries NiMH<br>1.2V type AA,<br>ORDER CODE <i>HA030000</i>   | S<br>6 pieces | 0        | 0         | 0         | 0   | 0   | 0             |
| <b>YABAT0004001</b><br>Battery charger for 6 AA/AAA<br>batteries<br>ORDER CODE <i>HA040010</i>  | S             | 0        | 0         | 0         | 0   | 0   | 0             |
| <b>BORSA2051</b><br>Soft bag with two big<br>compartments<br>for transporting devices<br>and accessories.<br>ORDER CODE <i>HA002051</i>               | S             | S        | 0         | 0         | 0   | 0   | S             |
| <b>BORSA75</b><br>Bag with three internal<br>compartments, medium size,<br>for transporting devices<br>and accessories.<br>ORDER CODE <i>HA750000</i> | -             | -        | S         | S         | S   | 0   | -             |
| <b>BORSA2000</b><br>Bag for transporting small to<br>medium-sized devices and<br>accessories<br>ORDER CODE <i>HA002000</i>                            | -             | -        | -         | -         | -   | S   | -             |
| <b>SP-0400</b><br>Set for slinging the instrument<br>over one's shoulder<br>ORDER CODE <i>HA000112</i>  | 0             | 0        | 0         | 0         | -   | -   | -             |
| <b>CN0050</b><br>Set for slinging the instrument<br>over one's shoulder<br>ORDER CODE <i>HA000052</i>   | -             | -        | -         | -         | -   | -   | 0             |

S = Standard    0 = Optional





# EARTH RESISTANCE AND STEP/CONTACT VOLTAGE TESTERS



## COMPARISON TABLE FUNCTIONS



|  | MACROTEST<br>G2 | MACROTEST<br>G1 | GE0416          | M71             | T2000<br>T2100                       | HT2055          |
|--|-----------------|-----------------|-----------------|-----------------|--------------------------------------|-----------------|
| <b>MAIN MEASUREMENTS</b>   |                 |                 |                 |                 |                                      |                 |
| <b>TRMS</b>  | •               | •               | •               | •               | •                                    | •               |
| Measuring range  | 50KΩ            | 50KΩ            | 50KΩ            | 50KΩ            | 1KΩ                                  | 200Ω            |
| Insulation with voltage 50, 100, 250, 500, 1000VDC                   | •               | -               | -               | -               | -                                    | -               |
| Earth resistance by 2- and 3-wire method                             | •               | •               | •               | •               | -                                    | •               |
| Earth resistance with stakeless testing method                       | •*              | •*              | -               | -               | •                                    | -               |
| Ground resistivity by 4-wire method                                  | •               | •               | •               | -               | -                                    | •               |
| Compensation of disturbance voltages                                 | •               | •               | •               | •               | -                                    | •               |
| Resistance compensation of test cables                               | •               | •               | •               | •               | -                                    | •               |
| Measurement of leakage current on earth systems                      | -               | -               | -               | -               | • T2000                              | -               |
| Measurement of step/contact voltage                                  | -               | -               | -               | -               | -                                    | •               |
| <b>Power ANALYSIS</b>  |                 |                 |                 |                 |                                      |                 |
| Measurement of Voltage, Current, Active, Reactive and Apparent Power | •               | •               | -               | -               | -                                    | -               |
| Cosphi and Power Factor  | •               | •               | -               | -               | -                                    | -               |
| Voltage and current harmonics up to the 25th and THD%                | •               | •               | -               | -               | -                                    | -               |
| <b>ADDITIONAL CHARACTERISTICS</b>                                    |                 |                 |                 |                 |                                      |                 |
| Measurement category   | CAT III 240V    | CAT III 240V    | CAT III 240V    | CAT III 240V    | CAT III 150V                         | CAT IV 50V      |
| Detection of disturbance currents on measurement                     | •               | •               | •               | •               | -                                    | •               |
| Touchscreen colour display   | •               | •               | -               | -               | -                                    | -               |
| Backlight  | •               | •               | •               | -               | •                                    | •               |
| AutoPowerOFF   | •               | •               | •               | •               | •                                    | •               |
| Help on line on the display  | •               | •               | •               | -               | -                                    | -               |
| Internal memory for measured data saving                             | •               | •               | •               | -               | •                                    | •               |
| Integrated WiFi connection and compatibility with HTANALYSIS App     | •               | •               | -               | -               | -                                    | -               |
| Optical/USB serial port for PC connection                            | •               | •               | •               | -               | -                                    | • RS-232/USB    |
| Size (LxWxH) (mm)  | 225x165x75      | 225x165x75      | 225x165x75      | 240x100x45      | 293x90x66                            | 230x115x103     |
| Weight in kg (batteries included)                                    | 1.2             | 1.2             | 1.0             | 0.6             | 1.3                                  | 30.8            |
| Reference standard for safety  | IEC / EN61010-1 | IEC / EN61010-1 | IEC / EN61010-1 | IEC / EN61010-1 | IEC / EN61010-1                      | IEC / EN61010-1 |
| Order Code   | HV005038        | HV005037        | HV000416        | HV000071        | HP002000 (T2000)<br>HP002100 (T2100) | HN002055        |

\*With optional clamp T2100



ORDER CODE HV005038

# MACROTESTG2

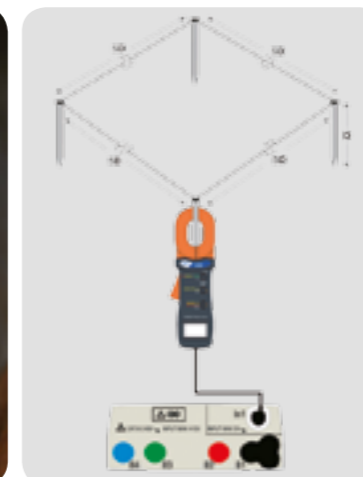
ADVANCED MULTIFUNCTION DEVICE FOR VERIFICATION OF ELECTRIC SAFETY OF DOMESTIC AND INDUSTRIAL ELECTRIC SYSTEMS (IEC/EN61557-1)

- > **Earth resistance** by **voltammetric method** with 2 or 3 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)
- > Measurement of **insulation resistance.**
- > Measurement of **continuity** of protection conductors.

MacroTestG2 fully takes advantage of the **touch-screen** technology developed for MacroTestG3 and, hence, of all its settings, but its 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** or **NOT OK**.



Measurement of earth resistance with Clamp T2100.



Example of measurement diagram with T2100.



Use on tablets through the HTAnalysis™ App.



Measurement of earth impedance by voltammetric method



Start/stop measuring with remote lead PR400.



Measurement result negative



Selection of test voltage and minimum limit value on measurement



Power measurement.



Power measurement: harmonics



Selection of earth measurement type.



Earth resistance measurement result OK.

## Functions

- 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
- Measurement with use of remote lead (with optional accessory PR400)
- Measurement of electric parameters (V, I, W, VAR, VA, Wh, cosphi)
- Voltage and Current harmonics analysis and THD% and PF
- 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

|                                     |  |
|-------------------------------------|--|
| <b>Power supply:</b>                | 6x1.2V rechargeable batteries type AA NiMH or 6x1.5 type AA alkaline |
| <b>Battery life:</b>                | > 550 test (alkaline)  |
| <b>Display:</b>                     | Resistive touch screen, colour LCD, resolution 320x240 pxl           |
| <b>Memory:</b>                      | 999 locations, 3 levels of markers                                   |
| <b>PC interface:</b>                | optical/USB and WiFi   |
| <b>Safety:</b>                      | IEC/EN61010-1, double insulation                                     |
| <b>Operating humidity:</b>          | <80%RH   |
| <b>Operating temperature:</b>       | 0 ÷ 40°C   |
| <b>Storage humidity:</b>            | <80%RH   |
| <b>Storage temperature:</b>         | -10 ÷ 60°C   |
| <b>Measurement category:</b>        | CAT III 240V, max 415V between inputs                                |
| <b>Pollution level:</b>             | 2  |
| <b>Reference standard:</b>          | IEC/EN61557-1-2-3-4-5-6-7  |
| <b>Size (LxWxH):</b>                | 225x165x75 mm  |
| <b>Weight (batteries included):</b> | 1.2 kg   |

## Accessories provided

|                       |   |
|-----------------------|---|
| <b>UNIVERSALKITG3</b> | Set of 4 cables, 4 alligator clips, 3 leads   |
| <b>KITERRNE</b>       | Bag with 4 cables + 4 metal probes            |
| <b>PT400</b>          | Touch-screen pen                              |
| <b>BORSA2051</b>      | Carrying soft bag                             |
| <b>YABAT0003000</b>   | 1.2V NiMH AA rechargeable battery, 6 pieces   |
| <b>YABAT0004001</b>   | Battery charger for 6 AA/AAA batteries        |
| <b>TOPVIEW2006</b>    | Management software + optical/USB C2006 cable |
|                       | Quick user guide and User manual on CD-ROM    |
|                       | ISO9000 calibration certificate               |

## Optional accessories

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





ORDER CODE HV005037

# MACROTESTG1

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 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)
- > Measurement of **continuity** of protection conductors.

MacrotestG1 fully takes advantage of the **touch-screen** technology developed for MacrotestG3 and, hence, of all its settings, but its application range is for **measuring 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** or **NOT OK**.

[You Tube](#)



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 50kΩm)** 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.

## Functions and characteristics

- 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)
- Voltage and Current harmonics analysis and THD% and PF
- Help on line on the display
- Internal memory for measured data saving
- Power supply: 6x1.2V rechargeable batteries type AA NiMH or 6x1.5 alkaline batteries type AA
- 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
- 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 standards: IEC/EN61557-1-2-3-4-5-6-7
- Size (LxWxH) and weight (batt. included): 225x165x75mm, 1.2 kg

## Accessories provided

|                |   |
|----------------|---|
| UNIVERSALKITG3 | Set of 4 cables, 4 alligator clips, 3 leads   |
| KITTERRNE      | Bag with 4 cables + 4 metal probes            |
| PT400          | Touch-screen pen                              |
| BORSA2051      | Soft carrying bag                             |
| 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                     |
| VA500     | Rigid transport case for device and accessories     |
| VA504     | Rigid transport case for device and clamp T2100     |

## Functions and characteristics

- Earth measurement with 2 and 3 terminals
- Ground resistivity by 4-wire method
- Measuring range: 0.01Ω - 50kΩ
- 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

## Accessories provided

|           |                                  |
|-----------|----------------------------------|
| KITTERRNE | Set of 4 cables + 4 metal probes |
| COC4-UK   | Set of 4 alligator clips         |
| BORSA2000 | 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                        |



YouTube

ORDER CODE **HV000071**

# M71

DEVICE FOR MEASURING EARTH RESISTANCE

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 (50kΩ)** 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.



TRMS

YouTube

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 0.05mA**.

This devices comply with standard IEC/EN61010-1 in **CAT III 150V** and they are the ideal solution for measurements to be carried out both in domestic and in industrial environments.



## Functions

- Earth measurement with 2 terminals
- Earth measurement with 3 terminals
- Measuring range: 0.01Ω -50kΩ
- Compensation of disturbance voltages
- Compensation of test cables

## Accessories provided

|         |  |
|---------|--|
| 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                      |

## 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 32mm
- Serial interface RS-232 for connection to devices of **MacrotestG series (only T2100)**

## Technical Specifications

- Resistance measurement**
- Measuring range Ω: 0.010 ÷ 1000
  - Resolution Ω: 0.001 ÷ 20
  - Basic accuracy Ω: ± (1%reading + 0.01)
- TRMS current measurement (only T2000)**
- Measuring range: 0.00mA ÷ 20A
  - Resolution: 0.05mA ÷ 0.01A
  - Basic accuracy: ± (2.5%reading + 1mA)

## 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                     |

## Optional accessories

|           |                                   |
|-----------|-----------------------------------|
| 1066-IECN | Connector for cable extension 4mm |
|-----------|-----------------------------------|

## 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/EN61010-1-2-032                            |
| Measurement category:        | CAT III 150V                                   |
| Size (LxWxH):                | 293x90x66mm                                    |
| Weight (batteries included): | 1320g  |

## Accessories provided

|       |   |
|-------|---|
|       | Resistive test loop   |
|       | Batteries   |
|       | User Manual   |
|       | ISO9000 calibration certificate                                     |
| C2100 | Connection cable Hypertac / Jack 3,5mm RS-232 ( <b>only T2100</b> ) |
|       | 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.



Remote unit



Soft carrying bag for remote unit and accessories



Cable 10mm<sup>2</sup> with cable winder and alligator clip, 50m



Red measuring cable, 50m



Black measuring cable, 3m, with industrial plugs, 2 pieces

- 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

## 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 1kΩ/1MΩ
- 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

## Accessories provided

|                  |   |
|------------------|---|
|                  | Power supply cable of power unit                            |
|                  | Metal plate (200x100mm), 2 pieces                           |
|                  | Current metal probe   |
|                  | Voltage metal probe   |
|                  | Cable 10mm <sup>2</sup> with winder and alligator clip, 50m |
|                  | Cable 10mm <sup>2</sup> with alligator clip, 10m            |
|                  | Black measuring cable, 3m, with industrial plugs, 2 pcs.    |
|                  | Green measuring cable, 10m                                  |
|                  | Black measuring cable, 1.5m                                 |
|                  | Red measuring cable, 50m                                    |
|                  | Red connection cable with alligator clip, 1m                |
| <b>5004-IECN</b> | Alligator clip, 4 pieces                                    |
|                  | Cable RS-232  |
| <b>C2007</b>     | 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                                       |
| <b>TERAVIEW</b>  | Windows software on CD-ROM                                  |
|                  | User manual and ISO9000 calibration certificate             |

## Optional accessories

- Metal probe, 1m long
  - Metal probe, 60cm long
- For further information on optional accessories, please contact HT.

COMPARISON TABLE OF ACCESSORIES



|  | MACROTEST G2  | MACROTEST G1  | GEO416 | M71 | T2000 T2100 | HT2055        |
|--|---------------|---------------|--------|-----|-------------|---------------|
| <b>TOPVIEW2006</b><br>PC Windows software + optical/USB C2006 cable<br>ORDER CODE HA000716                           | S             | S             | O      | -   | -           | S<br>TeraView |
| <b>KITERRNE</b><br>Set of 4 cables + 4 metal probes<br>ORDER CODE HA100001   | S             | S             | S      | -   | -           | -             |
| <b>KIT0071</b><br>Set of 3 cables + 3 alligator clips + 2 metal probes<br>ORDER CODE HA000089                        | -             | -             | -      | S   | -           | -             |
| <b>COC4-UK</b><br>Set of 4 alligator clips<br>ORDER CODE HA0004UK  | O             | O             | S      | -   | -           | -             |
| <b>UNIVERSALKITG3</b><br>Set of 4 cables + 4 alligator clips + 3 terminals<br>ORDER CODE HA000203                    | S             | S             | -      | -   | -           | -             |
| <b>HT96U</b><br>Standard AC clamp 1-100-1000A/1V, diam.54 mm<br>ORDER CODE HP00096U                                  | O             | O             | -      | -   | -           | -             |
| <b>HT4005K</b><br>Standard AC clamp 200A/1V, diameter 40mm<br>ORDER CODE HP04005K                                    | O             | O             | -      | -   | -           | -             |
| <b>T2100</b><br>Clamp for earth resistance with stakeless testing method<br>ORDER CODE HP002100                      | O             | O             | -      | -   | -           | -             |
| <b>PR400</b><br>Lead for remote test starting<br>ORDER CODE HA000400   | O             | O             | -      | -   | -           | -             |
| <b>1066-IEC#</b><br>Connector for extension banana cable 4mm<br># = colour N (black) - R (red)<br>> Page 55 HA10660# | O             | O             | O      | O   | -           | -             |
| <b>YABAT0003000</b><br>Rechargeable batt. NiMH 1.2V type AA<br>ORDER CODE HA030000                                   | S<br>6 pieces | S<br>6 pieces | O      | O   | O           | S<br>6 pieces |

S = Standard O = Optional



|   | MACROTEST G2 | MACROTEST G1 | GEO416 | M71 | T2000 T2100 | HT2055 |
|---|--------------|--------------|--------|-----|-------------|--------|
| <b>YABAT0004001</b><br>Battery charger for 6 AA/AAA batteries<br>ORDER CODE HA040010                  | S            | S            | O      | O   | O           | O      |
| <b>PT400</b><br>Touch-screen pen<br>ORDER CODE HA0PT400   | S            | S            | -      | -   | -           | -      |
| <b>BORSA2051</b><br>Soft Soft carrying bag for device/accessories<br>ORDER CODE HA002051              | S            | S            | O      | O   | -           | -      |
| <b>SP-6085</b><br>Soft Soft carrying bag for devices of series M<br>ORDER CODE HU000325               | -            | -            | -      | S   | -           | -      |
| <b>SP-0400</b><br>Shoulder strap to use the device with free hands<br>ORDER CODE HA000112             | O            | O            | O      | -   | -           | -      |
| <b>BORSA2000</b><br>Soft transport bag for accessories<br>ORDER CODE HA000066                         | O            | O            | S      | O   | -           | -      |
| <b>VA504</b><br>Rigid transport case for device with accessories + clamp T2100<br>ORDER CODE HA000237 | O            | O            | -      | -   | -           | -      |
| <b>VA500</b><br>Rigid transport case for device + accessories<br>ORDER CODE HA050000                  | O            | O            | O      | -   | -           | -      |
| <b>C2100</b><br>Connection cable T2100 / MacrotestGx 1.5 m long<br>ORDER CODE HA000244                | -            | -            | -      | -   | S<br>T2100  | -      |
| <b>606-IECN</b><br>Magnetic connectors for voltage measurement<br>ORDER CODE HA006060                 | O            | O            | -      | -   | -           | -      |

S = Standard O = Optional

## COMPARISON TABLE FUNCTIONS



HT7052      HT7051      ISO410      M72      M70

| MAIN MEASUREMENTS   | HT7052                         | HT7051                           | ISO410          | M72            | M70              |
|---|--------------------------------|----------------------------------|-----------------|----------------|------------------|
| <b>TRMS</b>   | -                              | -                                | -               | •              | -                |
| Insulation test voltage measuring range                       | 500V ÷ 10kVDC                  | 100V ÷ 5kVDC                     | 50V ÷ 1kVDC*    | 250 / 500VDC   | 250 ÷ 1000VDC**  |
| Insulation resistance measuring range                         | 120kΩ ÷ 10TΩ                   | 0.01MΩ ÷ 9.99TΩ                  | 0.01MΩ ÷ 1999MΩ | 0.00MΩ ÷ 999MΩ | 0.001MΩ ÷ 4000MΩ |
| DC Dielectric Withstand                                       | •                              | -                                | -               | -              | -                |
| Continuity of protective conductors with 200mA                | -                              | -                                | •               | •              | •                |
| <b>ADDITIONAL FUNCTIONS</b>                                   |                                |                                  |                 |                |                  |
| Test with programmable ramp                                   | • steps of 25VDC               | • steps of 25VDC                 | -               | -              | -                |
| Programmable test timer                                       | • 1s ÷ 30min                   | 5s ÷ 100min                      | • 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 the measured object                    | •                              | •                                | •               | •              | •                |
| Measurement of DC/AC voltage up to 600V                       | •                              | •                                | -               | •              | •                |
| Measurement of resistance and continuity with buzzer          | -                              | -                                | -               | •              | •                |
| Measurement of phase sequence                                 | -                              | -                                | -               | •              | -                |
| <b>ADDITIONAL CHARACTERISTICS</b>                             |                                |                                  |                 |                |                  |
| Measurement category:   | 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 for saving results                            | •                              | •                                | •               | -              | -                |
| Recalling on the display the measured results                 | •                              | •                                | •               | -              | -                |
| RS232/optical/USB interface for transferring data onto the PC | •                              | •                                | •               | -              | -                |
| Power supply with rechargeable battery from power             | •                              | •                                | -               | -              | -                |
| AutoPowerOFF  | -                              | •                                | •               | •              | •                |
| Power supply  | 6x 1.2V NiMH LR20              | Rechargeable NiMH                | 6x 1.5V AA      | 4x 1.5V AA     | 4x 1.5V AA       |
| Size in mm (LxWxH)  | 360 x 330 x 160                | 360 x 310 x 195                  | 222 x 162 x 57  | 240 x 100 x 45 | 240 x 100 x 45   |
| Weight (batteries included):                                  | 5.5kg                          | 3.5kg                            | 1kg             | 450g           | 450g             |
| Safety  | IEC/EN61010-1<br>IEC/EN61557-2 | IEC/EN61010-1<br>IEC/EN61557-1-2 | IEC/EN61010-1   | IEC/EN61010-1  | IEC/EN61010-1    |
| Order Code  | HV007052                       | HV007051                         | HV000410        | HV000072       | HV000070         |

\*Insulation with 50,100, 250, 500, 1000VDC

\*\*Insulation with 250, 500, 1000VDC



# INSULATION TESTERS





ORDER CODE HV007052

# 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 10TΩ** 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 and safe for "on-site" use.



ORDER CODE HV007051

# HT7051

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 **10TΩ** 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

## Accessories provided

|           |  |
|-----------|--|
|           | 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 5MΩ)**
- **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

## Accessories provided

|           |  |
|-----------|--|
| KIT14000  | Set of 3 cables with alligator clips + 2 cables with leads |
| C7051     | Power supply cable Europlug-Schuko with no earthing        |
| BORSA2000 | Transport bag for accessories                              |
| TOPVIEW   | Windows software for PC + cable RS-232                     |
|           | ISO9000 calibration certificate                            |
|           | User Manual  |

## Optional accessories

|       |                   |
|-------|-------------------|
| C2009 | RS232-USB adapter |
|-------|-------------------|



ORDER CODE HV000410

# ISO410

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 commutators, 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.



ORDER CODE HV000072

# 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).



## Functions and characteristics

- Continuity of protective conductors with 200mA
- Insulation with 50, 100, 250, 500, 1000VDC
- Insulation measuring range 0.01MΩ-2GΩ
- 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**

## Accessories provided

|                   |   |
|-------------------|---|
| 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 |

## Functions and characteristics

- Continuity of protective conductors with 200mA
- Insulation with 250,500VDC
- Insulation measuring range 0.01MΩ-2GΩ
- 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: 4 x 1.5V batt. type AA**
- **Size (LxWxH): 240x100x45 mm**
- **Weight (batteries included): 450g**

## Accessories provided

|           |  |
|-----------|--|
| KIT0075   | Set of 2 cables with leads + 2 alligator clips |
| 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 |



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**.

## 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

## Accessories provided

|           |  |
|-----------|--|
| KIT0070   | Set of 2 cables + 2 alligator clips + 1 lead |
| BORSA2000 | Soft carrying bag                            |
|           | Batteries                                    |
|           | CE declaration of conformity                 |
|           | User Manual                                  |

## COMPARISON TABLE OF ACCESSORIES



|   | HT7051         | ISO410           | M72            | M70            |
|---|----------------|------------------|----------------|----------------|
| <b>TOPVIEW / TOPVIEW2006</b><br>PC Windows software + cable<br><i>ORDER CODE for TOPVIEW HA000715</i><br><i>ORDER CODE for TOPVIEW2006 HA000716</i> | S<br>TOPVIEW   | O<br>TOPVIEW2006 | -              | -              |
| <b>UNIVERSALKITCOMBI</b><br>Set of 3 cables + 3 alligator clips + 3 leads<br><i>ORDER CODE HA000201</i>   | -              | S                | -              | -              |
| <b>KIT0070</b><br>Set of 2 cables + 2 alligator clips + 1 lead<br><i>ORDER CODE HA000164</i>  | -              | -                | -              | S              |
| <b>KIT14000</b><br>Set of 3 cables with alligator clips + 2 cables with leads<br><i>ORDER CODE HA014000</i>   | S              | -                | -              | -              |
| <b>KIT0075</b><br>Set of 2 leads + 2 black and green alligator clips<br><i>ORDER CODE HA000158</i>  | -              | -                | S              | -              |
| <b>C2009</b><br>RS232-USB adapter<br><i>ORDER CODE HA0C2009</i>   | O              | -                | -              | -              |
| <b>C7051</b><br>Power supply cable Europlug-Schuko with no earthing<br><i>ORDER CODE HA007051</i>   | S              | -                | -              | -              |
| <b>PR400</b><br>Remote lead for test activation<br><i>ORDER CODE HA000400</i>   | -              | O                | -              | -              |
| <b>HT96U</b><br>Standard clamp diam. 54mm, 1-100-1000A/1V<br><i>ORDER CODE HP00096U</i>   | -              | -                | O*             | -              |
| <b>HT4003</b><br>Standard 400A AC clamp<br><i>ORDER CODE HP004003</i>   | -              | -                | O*             | -              |
| <b>HT4004N</b><br>Standard AC 5-100A/1V clamp, diameter 20mm<br><i>ORDER CODE HP04004N</i>  | -              | -                | O*             | -              |
| <b>HT4005N</b><br>Standard AC 200A/1V clamp, diameter 40mm<br><i>ORDER CODE HP04005N</i>  | -              | -                | O*             | -              |
| <b>NOCANBA</b><br>Adapter for connecting HT96U, HT4004N, HT4005N<br><i>ORDER CODE HA00N0CA</i>  | -              | -                | O              | -              |
| <b>BORSA75 - BORSA2000</b><br>Device and accessories<br><i>ORDER CODE for BORSA75 HA750000</i><br><i>ORDER CODE for BORSA2000 HA002000</i>          | S<br>BORSA2000 | S<br>BORSA75     | S<br>BORSA2000 | S<br>BORSA2000 |
| <b>SP-0400</b><br>Shoulder strap to use the device with free hands<br><i>ORDER CODE HA000112</i>  | -              | O                | -              | -              |
| <b>YABAT0003000</b><br>Rechargeable batteries NiMH 1.2V type AA,<br><i>ORDER CODE HA030000</i>  | -              | O                | O              | O              |
| <b>YABAT0004001</b><br>Battery charger for 6 AA/AAA batteries<br><i>ORDER CODE HA040010</i>   | -              | O                | O              | O              |

S = Standard O = Optional \*Adapter NOCANBA necessary





# RCD TESTERS

## COMPARISON TABLE FUNCTIONS



**SPEED418**



**M73**

### MAIN MEASUREMENTS

|  | SPEED418                     | M73   |
|--|------------------------------|---|
| <b>TRMS</b>  | •                            | •   |
| Measuring range of nominal RCD currents  | 10,30,100,300,500,650,1000mA | 30,30x5,100,300mA                           |
| Tripping time of type A, AC General and Selective RCDs                               | •                            | •<br>A = 30mA<br>AC = 300mA<br>only general |
| Ramp test for tripping current of RCDs type A, AC General and Selective              | •                            | •<br>A = 30mA<br>AC = 30mA<br>only general  |
| Non-trip earth resistance  | •                            | •   |
| Loop/Line impedance, Phase-Phase, Phase-Neutral, Phase-PE                            | •                            | -   |
| Loop/Line impedance Phase-Phase Phase-Neutral, Phase-PE with high resolution (0.1mΩ) | •*                           | -   |
| Contact voltage  | •                            | •   |
| Leakage current with optional clamp  | -                            | •   |

### ADDITIONAL FUNCTIONS

|   |   |   |
|---|---|---|
| DC/AC TRMS voltage and current          | - | • |
| Phase sequence                          | • | • |
| Frequency                               | - | • |
| Resistance                              | - | • |
| Continuity with buzzer                  | - | • |
| Data HOLD, MAX/MIN/AVG                  | - | • |
| Measurement of voltage and current PEAK | - | • |

### ADDITIONAL CHARACTERISTICS

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

\*With optional accessory IMP57



ORDER CODE HV000418

# 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 commutators 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.**



ORDER CODE HV000073

# M73

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

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 is therefore capable of measuring **Non-trip earth resistance**, carrying out **tests on RCDs type A and AC** and measuring **Insulation and Continuity**. 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

- 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 and Selective RCDs 10,30,100,300,500,650,1000mA
- Non-trip earth resistance
- Line/Loop impedance also with high resolution (0.1mΩ) 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**

## Accessories provided

|         |   |
|---------|---|
| C2033X  | 3-wire cable with Shuko plug                  |
| BORSA75 | Soft carrying bag                             |
|         | ISO9000 calibration certificate               |
|         | User manual on CD-ROM and Quick guide 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
- 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**

## Accessories provided

|           |  |
|-----------|--|
| 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 |

# COMPARISON TABLE OF ACCESSORIES



SPEED418



M73

|  |  |                |              |
|--|--|----------------|--------------|
|  | <b>TOPVIEW2006</b><br>PC Windows software + USB/optical cable<br><i>ORDER CODE HA000716</i>  | 0              | -            |
|  | <b>UNIVERSALKITCOMBI</b><br>Set of 3 cables + 3 alligator clips + 3 leads<br><i>ORDER CODE HA000201</i>                                    | 0              | -            |
|  | <b>KIT0075</b><br>Set of 2 cables with leads + 2 alligator clips<br><i>ORDER CODE HA000158</i>   | -              | S            |
|  | <b>C2075</b><br>2-wire cable with Shuko plug<br><i>ORDER CODE HA002075</i>   | -              | S            |
|  | <b>C2033X</b><br>3-wire cable with Shuko plug<br><i>ORDER CODE HA02033X</i>  | S              | -            |
|  | <b>IMP57</b><br>Accessory for loop impedance measurement with high resolution<br><i>ORDER CODE HAIMP001</i>                                | 0              | -            |
|  | <b>PR400</b><br>Remote lead for test activation<br><i>ORDER CODE HA000400</i>  | 0              | -            |
|  | <b>HT96U</b><br>Standard clamp, diameter 54mm 1-100-1000A/1V<br><i>ORDER CODE HP00096U</i>   | -              | 0*           |
|  | <b>HT4003</b><br>Standard 400A AC clamp<br><i>ORDER CODE HP004003</i>  | -              | 0            |
|  | <b>HT4004N</b><br>Standard 10-100A DC clamp, diameter 20mm<br><i>ORDER CODE HP04004N</i>   | -              | 0*           |
|  | <b>HT4005N</b><br>Standard AC/1V, 5-100A clamp<br><i>ORDER CODE HP04005N</i>   | -              | 0*           |
|  | <b>NOCANBA</b><br>Adapter for connecting HT96U, HT4004N, HT4005N<br><i>ORDER CODE HA00NOCA</i>   | -              | 0            |
|  | <b>BORSA75 - BORSA2000</b><br>Device and accessories<br><i>ORDER CODE for BORSA75 HA750000</i><br><i>ORDER CODE for BORSA2000 HA002000</i> | S<br>BORSA2000 | S<br>BORSA75 |
|  | <b>SP-0400</b><br>Shoulder strap to use the device with free hands<br><i>ORDER CODE HA000112</i>   | 0              | -            |

S = Standard 0 = Optional

\*Adapter NOCANBA necessary



# ELECTRICAL SWITCHBOARDS AND MACHINE TESTERS



ORDER CODE HV000003

# FULLTEST3

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 (gG, 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.**

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 0.1mΩ (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 gG and aM**. The device is also provided with a "touch-screen" colour display and 3 USB ports for connection to PC, USB pen drive, USB printers and possible bar code readers.



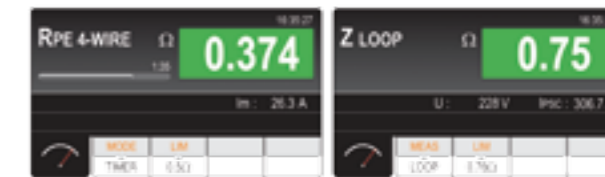
FULLTEST at work



2-wire continuity test



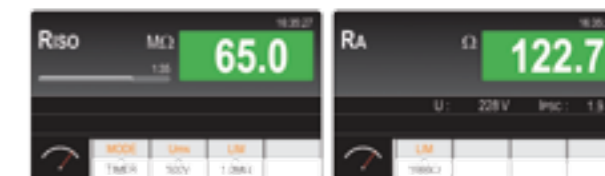
Test on RCDs



4-wire continuity test



Measurement of Loop impedance



Measurement of insulation resistance



Measurement of non-trip earth resistance



Dielectric strength test



Residual voltage measurement



Compact USB printer with rechargeable battery

Soft carrying bag for accessories.

IMP57 (Optional)

HT96U (Optional)

FT3REDLP (Optional)

FT3RMTCT (Optional)

## 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
- 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 Ipsc 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

## Main features

|                               |  |
|-------------------------------|--|
| <b>Power supply:</b>          | 207V ÷ 253V / 50-60Hz  |
| <b>Protection:</b>            | with fuses, at input   |
| <b>Display:</b>               | LCD colour "touch-screen" display  |
| <b>Memory:</b>                | internal, 999 locations  |
| <b>PC interface:</b>          | USB (PC, pen drive, printers, etc.) and Bluetooth™   |
| <b>Mechanical protection:</b> | IP40   |
| <b>Pollution level:</b>       | 2  |
| <b>Safety:</b>                | IEC/EN61010-1  |
| <b>Considered standards:</b>  | IEC/EN61557-1-2-3-4-13-14<br>IEC/EN60204-1:2006<br>IEC/EN61439-1<br>IEC/EN60335-1<br>EN50106 |
| <b>Measurement category:</b>  | CAT III 300V (safety test)<br>CAT III 300V (functional test)                                 |
| <b>Size (LxWxH):</b>          | 400x300x170mm  |
| <b>Weight:</b>                | 15 kg  |

## Accessories provided

|                  |   |
|------------------|---|
|                  | 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   |
| FT3KB DEN | USB keyboard  |
| FT3REDLP  | Control lamp to warn tests are being carried out with cable length 7 m. |
| FT3RMTCT  | Remote start/stop/save button with cable length 7 m.                    |
| FT3SFTSW  | Open door detection device for verification room                        |
| C2009AD   | Cable with adapter for connection to IMP57                              |
| FT3MPT2   | Thermal printer with 32 columns   |
| FT3BARCR  | Bar code reader with USB port   |



# INFRARED CAMERAS



## Simply advanced.



- Capacitive touch screen extra-bright
- Interchangeable optics Optional equipment
- Laser pointer
- Optical thermal camera in visible range
- Integrated Flash LED
- Up to 3 independent pointers
- Preset selection properties of materials
- Multi-areas with independent pointers
- 50 hz Fluid image also on moving targets
- 384x288  
160x120  
80x80  
32x31  
pixel 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
- Temperature range -20 → +400 °C
- Automatic adjustment of SPAN
- 0,06 °C Higher thermal sensitivity
- Rechargeable batteries and battery chargers
- Recording of IR videos
- Recording of comments Audio
- Integration Comments Text

### Industrial, electric or construction. Excellent in any sector.

The new THT range makes use of a highly innovative technology, more and more reliable over time. The use of IR technology nowadays 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 THT45), 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.

\* THT70, THT60 and THT45. \*\* Only THT60 and THT70

## COMPARISON TABLE FUNCTIONS



| CHARACTERISTICS OF IR IMAGE | THT70                     | THT60                     | THT46                     | THT45                     | THT32                     |
|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| IR sensor resolution        | 384 x 288                 | 160 x 120                 | 160 x 120                 | 80 x 80                   | 32 x 31                   |
| Temperature range           | -20 ÷ 400°C<br>-4 ÷ 752°F | -20 ÷ 400°C<br>-4 ÷ 752°F | -20 ÷ 350°C<br>-4 ÷ 662°F | -20 ÷ 350°C<br>-4 ÷ 662°F | -20 ÷ 300°C<br>-4 ÷ 572°F |
| Thermal sensitivity         | < 0.06°C @ 30°C           | < 0.08°C @ 30°C           | < 0.1°C @ 30°C            | < 0.1°C @ 30°C            | < 0.15°C @ 25°C           |
| NETD                        | < 60mK                    | < 80mK                    | < 100mK                   | < 100mK                   | < 150mK                   |
| Spectrum range              | 8 ÷ 14µm                  | 8 ÷ 14µm                  | 8 ÷ 14µm                  | 8 ÷ 14µm                  | 6.5 ÷ 14µm                |
| IFOV (@1m)                  | 1.14mrad                  | 3.33mrad                  | 2.78mrad                  | 3.78mrad                  | -                         |
| Type of IR sensor           | UFPA                      | UFPA                      | UFPA                      | UFPA                      | UPC                       |
| Frequency                   | 50Hz                      | 50Hz                      | 50Hz                      | 50Hz                      | 9Hz                       |

### CHARACTERISTICS OF IR AND INTEGRATED OPTICS

|   |                                    |                                    |                     |                     |              |
|---|------------------------------------|------------------------------------|---------------------|---------------------|--------------|
| Field of view (FOV):                    | 24.6° X 18.6°<br>(provided optics) | 29.8° X 22.6°<br>(provided optics) | 25° X 19°           | 17° X 17°           | 38° X 38°    |
| Focal length of standard lens           | 22mm                               | 7.5mm                              | 9mm                 | 9mm                 | -            |
| Focusing of IR optics                   | Manual                             | Manual                             | Manual              | Manual              | Fixed        |
| Resolution and FOV of integrated camera | 640 x 480pxl,<br>FOV 62.3°         | 640 x 480pxl,<br>FOV 62.3°         | 1.3Mpxl,<br>FOV 59° | 1.3Mpxl,<br>FOV 59° | 320 x 240pxl |
| Interchangeable optics                  | •                                  | •                                  | -                   | -                   | -            |

### FUNCTIONS

|   |          |          |                              |                              |                              |
|---|----------|----------|------------------------------|------------------------------|------------------------------|
| Fusion PIP function for combination of thermal and visual images              | •        | •        | •                            | •                            | • (Blending)                 |
| 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 | • Only reflected temperature |
| 8 standard + 10 custom colour palettes  | •        | •        | • 4 standard, no custom      | • 4 standard, no custom      | • 5 standard, no custom      |
| 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 ÷ 20x | 1x ÷ 20x | 1x ÷ 32x                     | 1x ÷ 32x                     | -                            |
| Manual and automatic span   | •        | •        | •                            | •                            | Only Auto                    |
| Vertical and horizontal lines   | •        | •        | -                            | -                            | -                            |

## COMPARISON TABLE FUNCTIONS



| DATA SAVING  | THT70 | THT60 | THT46 | THT45 | THT32   |
|--|-------|-------|-------|-------|---------|
| Standard format of saved images JPEG                   | •     | •     | •     | •     | • (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 | • | • | •      | •      | • (No software) |
| PAL/NTSC video output                    | • | • | • HDMI | • HDMI | -               |

### POWER SUPPLY

|                        |  |  |   |   |   |
|------------------------|--|--|---|---|---|
| Battery type:          | rechargeable Li-ION<br>7,4V 2700mAh              | rechargeable Li-ION<br>7,4V 2700mAh              | rechargeable Li-ION<br>3,7V 2000mAh             | rechargeable Li-ION<br>3,7V 2000mAh             | rechargeable Li-ION<br>3,7V 1400mAh             |
| Recharging system      | On thermal camera or external recharging base    | On thermal camera or external recharging base    | On thermal camera                               | On thermal camera                               | On thermal camera                               |
| Duration               | 4.5 hours  | 4.5 hours  | 4 hours   | 4 hours   | 2 hours   |
| External power supply: | External power supply 100/240VAC (50/60Hz)/12VDC | External power supply 100/240VAC (50/60Hz)/12VDC | External power supply 100/240VAC (50/60Hz)/5VDC | External power supply 100/240VAC (50/60Hz)/5VDC | External power supply 100/240VAC (50/60Hz)/5VDC |

### GENERAL CHARACTERISTICS

|                            |                                       |                                       |                                       |                                       |              |
|----------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------|
| Operating temperature      | -20°C ÷ 50°C                          | -20°C ÷ 50°C                          | -15°C ÷ 50°C                          | -15°C ÷ 50°C                          | 0°C ÷ 50°C   |
| Operating humidity         | 10% ÷ 90%HR                           | 10% ÷ 90%HR                           | 10% ÷ 90%HR                           | 10% ÷ 90%HR                           | 10% ÷ 90%HR  |
| Storage temperature        | -40°C ÷ 70°C                          | -40°C ÷ 70°C                          | -40°C ÷ 70°C                          | -40°C ÷ 70°C                          | -20°C ÷ 60°C |
| Storage humidity           | 10% ÷ 90%HR                           | 10% ÷ 90%HR                           | 10% ÷ 90%HR                           | 10% ÷ 90%HR                           | 10% ÷ 90%HR  |
| Mechanical protection      | IP65 in compliance with IEC529        | IP65 in compliance with IEC529        | IP50 in compliance with IEC529        | IP50 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                                    | -            |
| Size (L x W x H):          | 243x103x160mm                         | 243x103x160mm                         | 224x77x96mm                           | 224x77x96mm                           | 205x155x62mm |
| Weight (battery included): | 0.92kg                                | 0.92kg                                | 0.5kg                                 | 0.5kg                                 | 0.4kg        |
| Order Code                 | HN000070                              | HN000600                              | HN000046                              | HN000045                              | HN000032     |

384x288  
pixel

YouTube

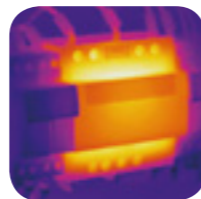


ORDER CODE **HN000070**

# THT70

ADVANCED TOUCH SCREEN INFRARED CAMERA WITH IR RESOLUTION 384X288PXL

THT70 is a professional thermal camera provided with an IR sensor with **high resolution 384x288pxl** which makes it suitable both for use in **industrial environments** and in the **construction sector**, thus allowing it to be used for **energetic certification tests**. Its peculiarity is its **internal icon structure** with one **capacitive colour touch-screen display with high brightness**. It is possible to save thermal and visual images in standard JPG format in the internal memory or on the appropriate Micro-SD card and **transfer data onto the PC** through the **USB** interface. It can be used to record **IR videos**. THT70 has a **wide temperature range (max. 400°C)** and it is possible to carry out **advanced analyses** including **spots, lines, areas** and **isotherm lines** on every image. The thermal camera is the ideal solution for **detecting electric problems, checking mechanical parts, analyzing hydraulic systems, forced ventilation**, etc. This thermal camera is completed and made particularly performing by the possibility of using **optional interchangeable optics**, the **Flash LED** and the **laser pointer**. In order to make thermographic analyses more immediate, this thermal camera has been provided with the technology **Picture in Picture** (possibility of **overlapping thermographic and visual images**), with the **SPAN** function (**creation of a temperature range of interest**) and with the **automatic setting of emissivity** with a **preset table of materials**. Finally, with the **provided software THTLink** it is possible to **analyze IR photos, change colour palettes**, prepare advanced reports and much more.



160x120  
pixel

YouTube

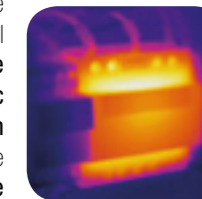


ORDER CODE **HN000600**

# THT60

ADVANCED TOUCH SCREEN INFRARED CAMERA WITH IR RESOLUTION 160X120PXL

THT60 is a professional thermal camera provided with an IR sensor with **high resolution 160x120pxl** which makes it suitable both for use in **industrial environments** and in the **construction sector**, thus allowing it to be used for **energetic certification tests**. Its peculiarity is its **internal icon structure** with one **capacitive colour touch-screen display with high brightness**. It is possible to save thermal and visual images in standard JPG format in the internal memory or on the appropriate Micro-SD card and **transfer data onto the PC** through the **USB** interface. It can be used to record **IR videos**. THT60 has a **wide temperature range (max. 400°C)** and it is possible to carry out **advanced analyses** including **spots, lines, areas** and **isotherm lines** on every image. The thermal camera is the ideal solution for **detecting electric problems, checking mechanical parts, analyzing hydraulic systems, forced ventilation**, etc. This thermal camera is completed and made particularly performing by the possibility of using **optional interchangeable optics**, the **Flash LED** and the **laser pointer**. In order to make thermographic analyses more immediate, this thermal camera has been provided with the technology **Picture in Picture** (possibility of **overlapping thermographic and visual images**), with the **SPAN** function (**creation of a temperature range of interest**) and with the **automatic setting of emissivity** with a **preset table of materials**. Finally, with the **provided software THTLink** it is possible to **analyze IR photos, change colour palettes**, prepare advanced reports and much more.



## Functions and characteristics

### Characteristics of IR image

- IR sensor resolution 384x288pxl / 25µm
- Temperature range from -20°C to 400°C
- Thermal sensitivity < 0,06° @ 30°C
- NETD: < 60mK
- Spectrum range 8÷14µm
- IFOV (@1m) 1.14mrad
- Type of sensor IR UFPA
- Frequency 50Hz

### Characteristics of IR and integrated optics

- Field of view (FOV) 24.6° x 18.6° (lens 22mm)
- Focal length of standard lens 22mm
- Manual focusing of IR optics
- Integrated photo-camera resolution 640x480pxl

### 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 function
- Correction according to distance, reflected temperature and relative humidity
- 8 standard + 10 custom colour palettes
- 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

### Data saving

- Standard format of saved images JPEG
- Saving of IR videos in MPEG4 format
- Voice and text annotation

### Additional characteristics

- Capacitive touch-screen colour display
- Power supply with rechargeable battery
- USB interface to PC
- PAL/NTSC video output

### Accessories provided

|                  |   |
|------------------|---|
|                  | Optics 22mm f/1.0                           |
|                  | Micro SD Card 4GB                           |
| <b>BAT7X</b>     | Rechargeable Li-ION battery (2x)            |
|                  | USB cable for PC connection                 |
|                  | Video cable                                 |
| <b>A007X</b>     | AC/DC power supply + universal plugs        |
|                  | Headset with microphone                     |
|                  | User manual on CD-ROM + Quick guide for use |
| <b>VA6070</b>    | Rigid Carrying case                         |
|                  | Recharging base                             |
| <b>TRIP07X</b>   | Adapter for tripod                          |
| <b>SSHIELD7X</b> | Sun screen                                  |
| <b>THTLink</b>   | Windows software                            |
|                  | ISO9000 calibration certificate             |

### Optional accessories

|                 |                      |
|-----------------|----------------------|
| <b>RL-11-70</b> | Optional optics 11mm |
| <b>RL-38-70</b> | Optional optics 38mm |

## Functions and characteristics

### Characteristics of IR image

- IR sensor resolution 160x120pxl / 25µm
- Temperature range from -20°C to 400°C
- Thermal sensitivity < 0,08° @ 30°C
- NETD: < 80mK
- Spectrum range 8÷14µm
- IFOV (@1m) 3.33mrad
- Type of sensor IR UFPA
- Frequency 50Hz

### Characteristics of IR and integrated optics

- Visual range (FOV) 29.8° x 22.6° (lens 7.5mm)
- Focal length of standard lens 7.5mm
- Manual focusing of IR optics
- Integrated photo-camera resolution 640x480pxl

### 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 function
- Correction according to distance, reflected temperature and relative humidity
- 8 standard + 10 custom colour palettes
- 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

### Data saving

- Standard format of saved images JPEG
- Saving of IR videos in MPEG4 format
- Voice and text annotation

### Additional characteristics

- Capacitive touch-screen colour display
- Power supply with rechargeable battery
- USB interface to PC
- PAL/NTSC video output

### Accessories provided

|                  |   |
|------------------|---|
|                  | Optics 7.5 mm f/1.0                         |
|                  | Micro SD Card 4GB                           |
| <b>BAT7X</b>     | Rechargeable Li-ION battery (2x)            |
|                  | USB cable for PC connection and video cable |
| <b>A007X</b>     | AC/DC power supply + universal plugs        |
|                  | Headset with microphone                     |
|                  | User manual on CD-ROM + Quick guide for use |
| <b>VA6070</b>    | Rigid Carrying case                         |
|                  | Recharging base                             |
| <b>TRIP07X</b>   | Adapter for tripod                          |
| <b>SSHIELD7X</b> | Sun screen                                  |
| <b>THTLink</b>   | Windows software                            |
|                  | ISO9000 calibration certificate             |

### Optional accessories

|                 |                      |
|-----------------|----------------------|
| <b>RL-11-60</b> | Optional optics 11mm |
| <b>RL-22-60</b> | Optional optics 22mm |
| <b>RL-33-60</b> | Optional optics 33mm |

160x120  
80x80  
pixel

YouTube

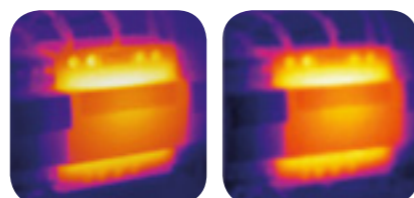


ORDER CODE **HN000046** | **HN000045**

# THT46 | THT45

COMPACT INFRARED CAMERAS WITH PIP FUNCTION

THT45 and THT46 are an **absolute innovation** in the field of thermal imaging cameras, due to both the advanced performance, specific to thermal imaging cameras, **and the compact design**. THT45 is equipped with IR sensor with **80x80pxl resolution**, which makes this the ideal instrument for routine **maintenance and analysis**. THT46 with a resolution of **160x120pxl** boasts an even greater performance that allows obtaining a **better definition** of the infrared image. These instruments feature a **high-brightness color LCD display** and a very simple drop-down menu that enables easy programming via a keypad. The temperature range is very broad (**-20° C to 350° C**), and you can save both the thermal images and the visual images in standard JPG format to a micro SD card. It is also possible to **transfer data to PC via USB**. **IR video recording** is also available. THT45 and THT46 cameras are the ideal solution for **detecting electrical problems, check of mechanical parts, analysis of hydraulic systems, forced ventilation**, etc. These 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.



THT46 160x120pxl

THT45 80x80pxl

ORDER CODE **HN000032**

# THT32

COMPACT INFRARED CAMERA WITH 32X31PXL IR RESOLUTION AND PIP FUNCTION

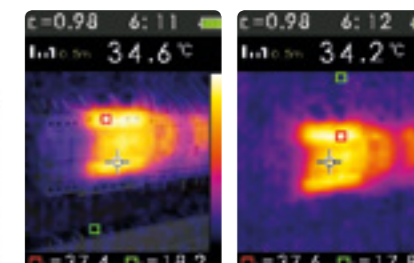
THT32 is the entry level **thermal imaging camera** for anyone who wants to enter the world of thermographic inspection for the first time. The device is extremely simple and features an intuitive menu that allows you to set up measurement solutions till now available only on expensive equipment. For example, **you can read all maximum or minimum temperature values by choosing to display on display either a visual image or an infrared image**. The images can be saved and opened later.

An interesting feature of THT32 is the ability to gradually mix the visual image with the infrared image (**PiP**). That's why it represents a handy solution for everyone. Last but not least, THT32 is equipped with a **rechargeable battery**, via **Mini USB**, to charge the battery in any condition (Network, PC, Car).



32x31  
pixel

YouTube



PiP function

Only infrared image

## Functions and features

### IR image features

- IR sensor resolution 160x120pxl / 25µm (**THT46**)  
80x80pxl / 34µm (**THT45**)
- Temperature range -20°C to 350°C
- Thermal sensitivity < 0.1° @ 30°C
- NETD: < 100mK
- Spectral range 8÷14µm
- IFOV (@1m) 2.78mrad (**THT46**)  
3.78mrad (**THT45**)
- Sensor type IR UFPFA
- Frequency 50Hz

### IR and integrated optical system features

- Field of view (FOV) 25° x 19° (**THT46**) 17° x 17° (**THT45**)
- 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

### Additional features

- Powering with rechargeable battery
- USB port for PC connection
- HDMI output



## Supplied accessories

|         |   |
|---------|---|
|         | Micro SD Card 8GB                       |
| BAT45N  | Rechargeable Li-ION battery             |
|         | USB cable for PC connection             |
|         | HDMI Video Cable                        |
| A0045N  | Universal Mini USB adapter + AC/DC plug |
|         | Headset with microphone                 |
|         | User manual on CD-ROM + quick guide     |
| B45     | Soft bag for transport                  |
| THTLink | Windows software                        |
|         | Calibration certificate ISO9000         |

## Functions and features

### IR image features

- IR sensor resolution: 32x31pxl
- Temperature range: -20°C ÷ 300°C
- Thermal sensitivity: <0.15°C @ 25°C
- NETD: <150mK
- Spectral range: 6.5 ÷ 14µm
- IFOV (@1m):
- IR sensor type: UPC
- Frequency: 9Hz

### IR and integrated optical system features

- Field of view (FOV): 38°x 38°
- Standard lens focal length:
- Focus: automatic

### Functions

- **Fusion (Blendings) function with adjustable distance**
- 3 cursors: Central, Max, Min
- Object emissivity adjustable from 0.10 to 1.00
- Reflected temperature correction
- 5 color palettes
- Readout in °C, °F
- Automatic read lock (HOLD)

### Data saving

- Saved images in BMP format
- Save to micro SD card (max 6000 images)

### Additional features

- Powering with rechargeable battery
- USB port



## Supplied accessories

|                              |
|------------------------------|
| Rechargeable Li-ION battery  |
| Battery charger power supply |
| USB cable                    |
| Tripod                       |
| Transport bag                |
| Micro SD card 4GB + reader   |
| User manual                  |



COMPARISON TABLE OF ACCESSORIES



THT70 THT60 THT46 THT45 THT32

|  |  |   |   |   |   |   |
|--|--|---|---|---|---|---|
|  | <b>THTLink software</b><br>Software for managing images and preparing reports            | S | S | S | S | - |
|  | <b>RL-11-60</b><br>Additional lens 11mm<br>FOV 20.6° x 15.5°<br>ORDER CODE HA000245      | - | O | - | - | - |
|  | <b>RL-22-60</b><br>Additional lens 22mm<br>FOV 10.4° x 7.8°<br>ORDER CODE HA000246       | - | O | - | - | - |
|  | <b>RL-33-60</b><br>Additional lens 33mm<br>FOV 6.9° x 5.2°<br>ORDER CODE HA000247        | - | O | - | - | - |
|  | <b>RL-11-70</b><br>Additional lens 11mm<br>FOV 47.1° x 36.2°<br>ORDER CODE HA000248      | O | - | - | - | - |
|  | <b>RL-38-70</b><br>Additional lens 38mm<br>FOV 14.4° x 10.8°<br>ORDER CODE HA000249      | O | - | - | - | - |
|  | <b>A0045N</b><br>Battery charger power supply + universal plugs<br>ORDER CODE HA000211   | - | - | S | S | - |
|  | <b>A007X</b><br>Battery charger power supply + universal plugs<br>ORDER CODE HA000208    | S | S | - | - | - |
|  | <b>SSHIELD7X</b><br>Rubber screen for protection against sun rays<br>ORDER CODE HA000205 | S | S | - | - | - |
|  | <b>TRIP07X</b><br>Support for tripod<br>ORDER CODE HA000214                              | S | S | - | - | - |
|  | <b>USB A/MINI USB CABLE</b><br>USB cable for PC connection                               | S | S | S | S | S |

S = Standard O = Optional



> FOLLOW



THT70 THT60 THT46 THT45 THT32

|  |  |               |               |   |   |   |
|--|--|---------------|---------------|---|---|---|
|  | <b>VA6070</b><br>Rigid case<br>ORDER CODE HA000204           | S             | S             | - | - | - |
|  | <b>BRS47</b><br>Soft bag<br>ORDER CODE HA000207              | O             | O             | - | - | O |
|  | <b>B45</b><br>Soft bag<br>ORDER CODE HA000213                | -             | -             | S | S | - |
|  | <b>BAT7X</b><br>Rechargeable battery<br>ORDER CODE HA000206  | S<br>2 pieces | S<br>2 pieces | - | - | - |
|  | <b>BAT45N</b><br>Rechargeable battery<br>ORDER CODE HA000212 | -             | -             | S | S | - |

S = Standard O = Optional

THTLink. All in one.

- > **Detailed** analyses
- > **Image** adjustment
- > Creation of **professional** reports

Thanks to the new THT Link software, it will be possible to prepare professional and detailed reports in a very simple and quick manner. Adding pointers, creating areas, lines, figures will be immediate. Everything thanks to the new THT Link interface.



# HT SOUND LEVEL METERS



## COMPARISON TABLE FUNCTIONS



HT157



HT155



HT154

| Device category (Class)                         | Class 1                              | Class 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     | 30kHz ÷ 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) | •<br>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      | • Only AC                            | • Only AC         | •                |
| 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 3½ digits    |
| Display backlight                               | •                                    | •                 | -                |
| Power supply                                    | 4x 1.5V AA                           | 4x 1.5V AA        | 1x 9V            |
| Provided external power supply                  | •                                    | •                 | -                |
| Reference standards                             | IEC61672 Class 2<br>IEC61620 Class 2 | IEC61672 Class 1  | IEC61672 Class 2 |
| Size (LxWxH) (mm)                               | 285x90x39                            | 285x90x39         | 289x80x32        |
| Weight in grams (batteries included)            | 500                                  | 500               | 300              |
| Order Code                                      | HN000157                             | HN000155          | HN000154         |

ORDER CODE **HN000154**

# HT154

PROFESSIONAL SOUND LEVEL METER TYPE 2

HT154 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.

The use of the device is extremely easy and immediate thanks to the wide **LCD display** and the management of operations through **only 5 buttons**.

Sound level meter HT154 is provided with **mobile calibrator** for integrity checks before each operation and it is housed in a **practical carrying case** to transport it together with all accessories necessary for measurements.



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 noise (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.



## 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
- 1/2 inch condenser microphone
- Analogue AC and DC outputs (max 1V)
- Manual calibration with trimmer
- Provided mobile calibrator
- **Display:** LCD 3½ digits
- **Power supply:** 1x9V batteries type IEC 6F22
- **Reference standards:** IEC 61672 type2
- **Size (LxWxH):** 289x80x32mm
- **Weight (batteries included):** 300g

## Accessories provided

|              |   |
|--------------|---|
| <b>HT150</b> | Mobile calibrator with integrated battery               |
|              | Wind protection   |
|              | Screwdriver for manual calibration of sound level meter |
|              | Jack for analogue AC/DC outputs                         |
|              | Rigid Carrying case                                     |
|              | Battery for sound level meter                           |
|              | User manual for sound level meter                       |
|              | User manual for mobile calibrator                       |
|              | 4x1.5V alkaline batteries type A LR06                   |
|              | User Manual   |

## Optional accessories

|              |   |
|--------------|---|
| <b>HT150</b> | Mobile calibrator with integrated battery |
|--------------|---|

## Functions and characteristics

|  | <b>HT155</b> | <b>HT157</b> |
|--|--------------|--------------|
| 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

|                                     |  |
|-------------------------------------|--|
| <b>Display:</b>                     | LCD, dot-matrix (240x160pxl) with backlight  |
| <b>External power supply:</b>       | Adapter 100-240VAC/5VDC  |
| <b>Internal power supply:</b>       | 4x1.5V alkaline batteries type AA LR6  |
| <b>Reference standards:</b>         | IEC 61672:2002 type1<br>IEC 61260:1995 type1 ( <b>HT157</b> )<br>IEC 60804:1985 type1<br>IEC 60651:1979 type1DLgs 477/91, 195/06 |
| <b>Size:</b>                        | 285x90x33  |
| <b>Weight (batteries included):</b> | 500 g  |

## Accessories provided

|              |  |
|--------------|--|
| <b>HT151</b> | 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 |



# THERMOMETERS AND THERMO-ANEMOMETERS

## COMPARISON TABLE FUNCTIONS



| MAIN MEASUREMENTS   | HT4000        | HT300                          | HT3320                         | HT3302                       | HT950N                                      |
|---|---------------|--------------------------------|--------------------------------|------------------------------|---|
| Distance / infrared spot ratio                              | -             | -                              | 50:1                           | 12:1                         | -   |
| Infrared temperature measuring range                        | -             | -                              | -50 ÷ 1000°C<br>-58°F ÷ 1832°F | -30 ÷ 500°C<br>-22°F ÷ 932°F | -   |
| Temperature measuring range with K-type probe               | -             | -200 ÷ 1370°C<br>-328 ÷ 2498°F | -200 ÷ 1370°C<br>-328 ÷ 2498°F | -                            | With probe Pt100<br>0 ÷ 200°C<br>32 ÷ 392°F |
| Temperature measurement with K-type probes                  | -             | •*                             | •                              | -                            | -   |
| Measurement of volumetric capacity (m3/s) and enthalpy (kW) | •             | -                              | -                              | -                            | -   |
| Measurement of air relative humidity in %RH                 | •             | -                              | •                              | -                            | -   |
| Measurement of wind speed in m/s                            | •             | -                              | -                              | -                            | -   |
| Measurement of atmospheric pressure hPa (mbar/mmHg)         | •             | -                              | -                              | -                            | -   |
| 4 inputs with Pt100 DIN with three wires available          | -             | -                              | -                              | -                            | •   |
| 3 outputs with independent relays 5A/250V                   | -             | -                              | -                              | -                            | •   |
| Integrated photo-camera (640x480pxl)                        | -             | -                              | •                              | -                            | -   |
| Image saving in JPG format                                  | -             | -                              | •                              | -                            | -   |
| Video saving in 3GP format                                  | -             | -                              | •                              | -                            | -   |
| Air temperature/humidity measurement with in-built sensor   | •             | -                              | •                              | -                            | -   |
| Temperature measurement of dew point and wet bulb           | -             | -                              | •                              | -                            | -   |
| Datalogger function for temperature measure recording       | -             | -                              | •                              | -                            | -   |
| <b>ADDITIONAL CHARACTERISTICS</b>                           |               |                                |                                |                              |   |
| Emissivity adjustment of target                             | -             | -                              | •                              | •                            | -   |
| Setting of alarm thresholds on measurements                 | -             | -                              | •                              | •                            | -   |
| Continuous measurement                                      | •             | •                              | •                              | -                            | •   |
| Class 2 integrated laser pointer                            | -             | -                              | •                              | • (Class 3R)                 | -   |
| Internal memory for measured data saving                    | -             | -                              | •                              | -                            | -   |
| SD Card slot for measure saving                             | -             | -                              | •                              | -                            | -   |
| PC connection through USB cable                             | -             | -                              | •                              | -                            | -   |
| Backlight   | •             | -                              | •                              | •                            | -   |
| Autorange   | •             | •                              | •                              | •                            | •   |
| Data HOLD   | -             | •                              | •                              | •                            | -   |
| MAX/MIN/AVG   | -             | •<br>Only MAX-MIN              | •                              | •                            | •<br>Only MAX                               |
| Selection of measuring unit                                 | •             | •<br>°C \ °F                   | •<br>°C \ °F                   | •<br>°C \ °F                 | -<br>Only °C                                |
| DC analogue output  | -             | -                              | -                              | -                            | -   |
| Automatic compensation of cable resistance Pt100            | -             | -                              | -                              | -                            | •   |
| Low battery indication                                      | •             | •                              | •                              | •                            | -   |
| Auto Power OFF  | •             | •                              | •                              | •                            | -   |
| Power supply  | 1x9V          | 1x9V                           | Rechargeable battery           | 3x1,5V AA                    | AC/DC<br>24 ÷ 240V 50/60Hz                  |
| Size in mm (LxWxH)  | 130 x 56 x 38 | 130 x 56 x 38                  | 205 x 155 x 62                 | 185 x 104 x 54               | 96 x 96 x 110                               |
| Weight in grams (batteries included)                        | 160           | 170                            | 410                            | 380                          | 800   |
| Order Code  | HN040000      | HA000300                       | HA000179                       | HA003302                     | HA000950                                    |

\* With optional TK probes (TK101 is provided)

ORDER CODE **HN040000**

# HT4000

MOBILE DIGITAL THERMO-ANEMOMETER

HT4000 is a **multifunction analyzer** of environmental parameters with **single probe** for measuring **air temperature, relative air humidity, wind speed, capacity, enthalpic consumption, dew point**. Especially indicated for tests on **air conditioning systems**.



ORDER CODE **HA003302**

# HT3302

INFRARED THERMOMETER WITH LASER RETICLE PROJECTION

The model HT3302 is a portable digital thermometer that performs **contactless temperature measurements** on any object extremely fast.

The measurements are carried out with great precision thanks to the **integrated laser pointer** and an optimal **Distance/Measurement Spot ratio of 12:1**.

An interesting feature of this instrument is the **indication, projected onto the surface tested, of the exact area to be measured**.

Very often, when using this kind of equipment (i.e. equipped with laser pointer), it is incorrectly considered that the measured area is exactly that indicated by the laser pointer.

HT3302 is extremely easy to use with a **Joystick** that enables quick selection of internal functions.

The auto power off function allows the instrument to preserve the internal battery when the device is not used.



## Functions

- Measurement of air temperature in °C / °F
- Measurement of volumetric capacity (m<sup>3</sup>/s) and enthalpy (kW)
- Measurement of air relative humidity in %RH
- Measurement of wind speed in m/s
- AutoPowerOFF

## Accessories provided

|        |                   |
|--------|-------------------|
|        | Soft carrying bag |
| TK4000 | External probe    |
|        | Battery           |
|        | User Manual       |

## Main features

| Measuring unit                                   | Range      | Measuring unit | Range     |
|--|------------|----------------|-----------|
| <b>Wind speed with external probe</b>            |            |                |           |
| m/s  | 0.4 ÷ 25   | Km/hr (kph)    | 1.5 ÷ 90  |
| mph  | 0.9 ÷ 55   | Knots (kts)    | 0.8 ÷ 48  |
| ft/min (fpm)                                     | 79 ÷ 4921  | Beaufort       | 1 ÷ 10    |
| <b>Wind speed with external probe</b>            |            |                |           |
| CMM  | 0 ÷ 9999   | CFM            | 0 ÷ 9999  |
| <b>Air humidity with internal sensor</b>         |            |                |           |
| %RH  | 0 ÷ 100    | -              | -         |
| <b>Air temperature with internal sensor</b>      |            |                |           |
| °C   | 20 ÷ 60    | °F             | -4 ÷ 140  |
| <b>Atmospheric pressure with internal sensor</b> |            |                |           |
| hPa (mbar)                                       | 350 ÷ 1100 | inHg           | 10.3 ÷ 32 |
| mmHg   | 263 ÷ 825  | -              | -         |

Power supply: 1x9V battery type IEC6F22

Size (LxWxH): 130x56x38mm

Weight (battery included): 160g

## Functions

- Infrared temperature measurement up to 500° C
- Integrated laser pointer
- Laser pointers for instant location of distance/measurement spot
- Automatic read lock (HOLD)
- Auto Power OFF
- Distance/Measurement spot Ratio D:S = 12:1
- Measurements in °C/°F
- Object emissivity adjustable from 0.10 to 1.00
- Backlight LCD
- Built-in white LED lights
- Integrated blue LED lights with UV function
- Measurements of MAX, MIN, MAX-MIN, AVG values
- Upper (HIGH) and lower (LOW) alarm threshold settings
- Joystick for quick selection of internal functions
- Modern ergonomic design

## Supplied accessories

|               |
|---------------|
| Batteries     |
| Transport bag |
| User manual   |

## Main features

|                                     |   |
|-------------------------------------|---|
| <b>Laser Pointer:</b>               | Class 3R (according to EN60825-1:2014)          |
| <b>UV Pointer:</b>                  | Group 1 (according to IEC62471)                 |
| <b>Max operating altitude:</b>      | 2000m   |
| <b>Safety:</b>                      | IEC/EN61010-1                                   |
| <b>Vibrations:</b>                  | 2.5 g in accordance with IEC60068-2-6, 10÷200Hz |
| <b>Shock:</b>                       | 50 g in accordance with IEC60068-2-27, 11ms     |
| <b>Drop test:</b>                   | 1.2m (4ft)                                      |
| <b>Display:</b>                     | 5-digit backlight LCD                           |
| <b>Power supply:</b>                | 3x1.5V alkaline battery type AA LR06            |
| <b>Battery life:</b>                | approximately 20 hours (laser and backlight on) |
| <b>Auto Power OFF:</b>              | after 5 minutes of inactivity                   |
| <b>Dimensions (L x P x H):</b>      | 185 x 104 x 54mm                                |
| <b>Weight (batteries included):</b> | 380g  |

## Technical specifications

- Infrared temperature measurement**
- Reading range °C: -30° ÷ 500°C
  - Reading range °F: -22° ÷ 932°F
  - Resolution: 0.1 °C - 0.2 °F
  - Standard accuracy: ±1.5°C or ±1.5%reading
  - Response time: <500ms
  - Spectral sensitivity: 8 ÷ 14µm
  - D/S ratio: 12:1
  - Emissivity range: 0.10 ÷ 1.00

ORDER CODE HA000179

# HT3320

PROFESSIONAL INFRARED VIDEO THERMOMETER



HT3320 is a mobile digital **video thermometer** provided with **integrated digital photo-camera** capable of measuring **temperature with no need for contact** with any target object, using their reflected infrared radiation, with a very quick performance of measurements. Measurements are carried out with high precision thanks to the integrated laser pointer and an **optimum Distance / Spot ratio of 50:1**. The device can **save** in its **internal memory** or on external **micro SD card** JPG images and short **3GP videos** which correspond to the value of the measured IR temperature. It is possible to record temperature values with **programmable time intervals**. Each test result can be **downloaded onto the PC** with no need for any additional software, by simply connecting the device through the provided **USB cable**. Further measurements carried out by the device are **temperature/humidity of air** with internal sensor, **dew point/wet bulb temperature** and temperature with use of **k-type thermocouples**. HT3320 allows setting **MAX** and **MIN** alarm thresholds on the whole measuring range, with the activation of a **buzzer** in case they are exceeded. A comfortable LCD display with backlight makes it easy to read even in critical environments. The auto power off function allows the device to preserve its internal battery when not in use.



ORDER CODE HA000300

# HT300

THERMOMETER FOR MEASURING TEMPERATURE WITH K/J-TYPE PROBE



HT300 is a mobile **compact digital thermometer**, the ideal solution for **each temperature measurement with contact**, inside **liquids** or in **air** with use of **K-type or J-type probes** directly connected to the input through a standard connector. This device allows measuring temperature both in **°C** and in **°F**, it is provided with a wide display for easy reading, it is provided with **HOLD** function, **MAX/MIN**, **relative measurement** and can be used in **domestic and industrial environments** for many applications.



## Functions and characteristics

- Infrared temperature measurement from -50° to 1000°C
- Integrated photo-camera (640x480pxl)
- Distance / Spot ratio 50:1
- Saving of images in JPG format and videos in 3GP format.
- Air temperature/humidity measurement with in-built sensor
- Temperature measurement of dew point and wet bulb
- Temperature measurement by means of external K-type probe
- Datalogger function for temperature measure recording
- Internal memory and external SD Card for measure saving
- Emissivity adjustment, double laser pointer, continuous measurement
- Selection between measuring unit °C and °F
- Setting of Hi and Lo alarm thresholds on measurements
- Data HOLD, MAX/MIN/DIF/AVG functions
- PC connection through USB cable
- **Display: 2.2" (320x240pxl), backlight colour LCD display**
- **Power supply: 1x3.7V 1400mAh Li-ION battery**
- **Battery duration: approx. 4 hours in continuous operation**
- **External power supply: 100-240VAC 50/60Hz / 5VDC**
- **Auto Power OFF: programmable 3, 15, 60min, can be disabled**
- **Internal memory: 70MB (50kB/image; video 3.1MB/min)**
- **External memory: micro SD card (max 8GB)**
- **Operating temperature: 0°C to 50°C**
- **Operating and storage humidity: <90%HR**
- **Size (LxWxH): 205x155x62mm**
- **Weight (battery included): 410g**

## Technical Specifications

- Infrared temperature measurement**
- Measuring range °C: -50° ÷ 1000°C
  - Measuring range °F: -58° ÷ 1832°F
  - Resolution: 0.1°C / 0.1°F
  - Basic accuracy: ± (1%reading + 1.0°C), ± (1%reading + 1.8°F)
- Temperature measurement with K-type probe**
- Measuring range °C: -50 ÷ 1370°C
  - Measuring range °F: -58 ÷ 2498°F
  - Resolution: 0.1°C / 0.1°F
  - Basic accuracy: ± (0.5%reading + 1.5°C), ± (0.5%reading + 2.7°F)

## Accessories provided

|       |   |
|-------|---|
| TK101 | K-type wire probe                       |
|       | Rechargeable Li-ION battery             |
|       | Battery charger power supply, USB cable |
|       | Tripod, Transport case and User manual  |

## Optional accessories

For optional accessories, please refer to the table.

## Functions

- Measuring channels at input K/J-type probes
- Autorange
- Selection of temperature measuring unit °C /°F
- MAX/MIN, Data HOLD
- Relative measurement
- Wide custom LCD display, Auto Power Off
- Low battery indication

## Main features

|                                     |  |
|-------------------------------------|--|
| <b>Display:</b>                     | 5-digit LCD, decimal sign and point      |
| <b>Internal power supply:</b>       | 1 battery 9V NEDA 1604 IEC 6F22 JIS 006P |
| <b>Auto power OFF:</b>              | after 15 minutes' idling                 |
| <b>Size:</b>                        | 130x56x38mm                              |
| <b>Weight (batteries included):</b> | 170g                                     |

## Accessories provided

|       |  |
|-------|--|
| TK101 | K-type wire probe                          |
|       | Soft carrying bag, battery and user manual |

## Technical Specifications

- Temperature with K-type probe**
- Measuring range °C: -200 ÷ 1370°C
  - Measuring range °F: -328 ÷ 2498°F
  - Resolution: 0.1°C / 0.1°F
  - Basic accuracy: ±(0.05% reading + 0.7 °C), ±(0.05% reading + 1.4 °F)
- Temperature with J-type probe**
- Measuring range °C: -200 ÷ 1050°C
  - Measuring range °F: -328 ÷ 1922°F
  - Resolution: 0.1°C / 0.1°F
  - Basic accuracy: ±(0.05% reading + 0.7 °C), ±(0.05% reading + 1.4 °F)

## Optional accessories

|       |  |
|-------|--|
| TK107 | "K"-type thermocouple for air and gas temperature  |
| TK108 | "K"-type thermocouple for internal temperatures of liquids and semi-solid substances           |
| TK109 | "K"-type thermocouple for internal temperatures of liquid and solid substances, fruit and food |
| TK110 | "K"-type thermocouple for surface temperatures   |
| TK111 | "K"-type thermocouple for temperatures of surfaces with 90° fixed tip                          |

ORDER CODE HA000950

# HT950N

TEMPERATURE CONTROL UNIT  
MT/BT TRANSFORMERS

The HT950N control unit has been developed for the control of **temperature in internal circuits** with **MT/BT transformers** in oil or **air** with the purpose of **preventing breaks** or **overheating**. HT950N, configured as a standard sized board (96x96mm), received up to **4 input signals** coming from the same number of **Pt100 DIN** with 3 wires and measures temperature **up to 200°C**.



## Functions

- Temperature measurement ranging from 0°C to 200°C
- 4 inputs with PT100 DIN 4 with three wires available
- 3 outputs with independent relays 5A/250V
- 4 programmable temperature thresholds for alarm activation
- Recording of MAX temperature on each input channel
- Automatic compensation of cable resistance PT100
- Visual indications with red LED display
- Membrane keypad for maximum mechanical protection
- AC/DC power power supply

## Accessories provided

Extractable connector for PT100, relay inputs and power supply, 8 pieces

Filter for power supply cable

Fastening hook to board with screws, 2 pieces

User Manual

## COMPARISON TABLE OF ACCESSORIES



|  | HT4000 | HT3302 | HT300 | HT3320 | HT950N |
|--|--------|--------|-------|--------|--------|
| <p><b>TK101</b><br/>Thermocouple with wire, K-type<br/>Operating temp.<br/>- 20 ÷ 250°C<br/>ORDER CODE HA000108</p>  | -      | -      | S     | S      | -      |
| <p><b>TK107</b><br/>"K"-type thermocouple for temperatures of air and gas<br/>Operating temp.<br/>- 40 ÷ 800°C<br/>ORDER CODE HA110000</p>   | -      | -      | O     | O      | -      |
| <p><b>TK108</b><br/>"K"-type thermocouple for internal temperatures of liquids and semi-solid substances<br/>Operating temp.<br/>- 40 ÷ 800°C<br/>ORDER CODE HA110001</p>                    | -      | -      | O     | O      | -      |
| <p><b>TK109</b><br/>"K"-type thermocouple for internal temperatures of liquid substances, solid substances, fruit and food.<br/>Operating temp.<br/>- 40 ÷ 800°C<br/>ORDER CODE HA110002</p> | -      | -      | O     | O      | -      |
| <p><b>TK110</b><br/>"K"-type thermocouple for temperatures of surfaces<br/>Operating temp.<br/>- 40 ÷ 400°C<br/>ORDER CODE HA110003</p>  | -      | -      | O     | O      | -      |
| <p><b>TK111</b><br/>"K"-type thermocouple for temperatures of surfaces with 90° fixed tip<br/>Operating temp.<br/>- 40 ÷ 400°C<br/>ORDER CODE HA110004</p>                                   | -      | -      | O     | O      | -      |



  
**LAN TESTERS**

COMPARISON TABLE  
**FUNCTIONS**



QUICKLAN6050



QUICKLAN6055

**MAIN MEASUREMENTS**

|   |          |   |
|---|----------|---|
| Cable mapping on LAN networks                           | •        | • |
| Tests on twisted pair cables RJ45 type UTP, STP and FTP | •        | • |
| Verification on COAX cables                             | •        | - |
| Errors of open pairs                                    | •        | • |
| Errors of short-circuited pairs                         | •        | • |
| Errors of exchanged pairs                               | •        | • |
| Errors of inverted pairs                                | •        | • |
| Errors of split pairs                                   | •        | • |
| Generic errors (MISWIRE)                                | •        | • |
| Measurement of cable length                             | •        | - |
| Cable length measuring range                            | 1 ÷ 350m | - |

**ADDITIONAL CHARACTERISTICS**

|  |             |           |
|--|-------------|-----------|
| Display indication of error type         | •           | •         |
| Test indication <b>OK - NOT OK</b>       | •           | •         |
| Remote unit recognition                  | •           | •         |
| Internal memory for measured data saving | •           | -         |
| Memory locations                         | 99          | -         |
| Recalling and deletion of saved data     | •           | -         |
| AutoPowerOFF                             | •           | •         |
| Low battery indication                   | •           | •         |
| Power supply                             | 6x 1.5V AAA | 1x 9V     |
| Size (LxWxH) (mm)                        | 150x72x35   | 128x67x39 |
| Weight in grams (batteries included)     | 215         | 165       |
| Order Code                               | HV006050    | HV006055  |



ORDER CODE HV006050 | HV006055

# QUICKLAN6050 QUICKLAN6055

WIRE MAPPERS FOR CABLE TESTS  
IN LOCAL AREA NETWORKS

Mobile devices QUICKLAN6050 and QUICKLAN6055 are capable of detecting and indicating at the display the presence of **incorrect connections** on LAN cables (**crossed, reversed, split, open, short-circuited**, pairs, etc.) both of type **UTP** (not screened) and of type **STP** or **FTP** (shielded or failed). Model **HT6050** also allows **measuring cable length** and **saving** the results of the tests in its **internal memory**. Each model is provided with more **remote units** and is capable of recognizing further (optional) ones, 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**. HT6050 and HT6055 are the ideal solution for any installer who needs simple and efficient devices to carry out preliminary checks and verifications on installations of **LAN** cables with connectors type **RJ45**.



## Functions

|  | HT6050   | HT6055 |
|--|----------|--------|
| Cable mapping on LAN networks                            | •        | •      |
| Checks on twisted pair cables RJ45 type UTP, STP and FTP | •        | •      |
| Verification on COAX cables                              | •        | •      |
| 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/failed                         | •        | •      |
| Remote unit recognition                                  | •(4)     | •(8)   |
| Measurement of cable length                              | •        | -      |
| Cable length measuring range                             | 1 ÷ 350m | -      |
| Internal memory for measured data saving                 | •        | -      |
| Memory locations   | 99       | -      |
| Recalling and deletion of saved data                     | •        | -      |
| AutoPowerOFF   | •        | •      |
| Low battery indication                                   | •        | •      |

## Main features

|                                   | HT6050          | HT6055         |
|-----------------------------------|-----------------|----------------|
| Input connectors                  | RJ45, BNC       | RJ45           |
| Protection: against voltages      | (50V)           | (30V)          |
| Power supply (alkaline batteries) | 6x1.5V type AAA | 1x9V type 6F22 |
| Size (LxWxH):                     | 150x72x35mm     | 128x672x39mm   |
| Weight (batteries included):      | 215g            | 165g           |

## Accessories provided

|              |   |
|--------------|---|
| 6050MARKER01 | Remote unit #1 ( <i>only HT6050</i> )                                 |
| CH1, CH2     | Remote unit #1 and #2 ( <i>only HT6055</i> )                          |
|              | 2 patch cables FTP RJ45-RJ45, 20cm ( <i>only HT6050</i> )             |
|              | 3 patch cables FTP RJ45-RJ45, 20cm ( <i>only HT6055</i> )             |
|              | Soft carrying bag   |
|              | User Manual   |
|              | Batteries   |
|              | For optional accessories, please refer to the table here to the side. |

## COMPARISON TABLE OF ACCESSORIES



|  | QUICKLAN6050             | QUICKLAN6055         |
|--|--------------------------|----------------------|
| <b>REMOTE UNIT #1</b><br>ORDER CODE 6050 HA000389<br>ORDER CODE 6055 HA000CH1      | <b>S</b><br>6050MARKER01 | <b>S</b><br>CH1      |
| <b>REMOTE UNIT #2</b><br>ORDER CODE HA000CH2                                       | -                        | <b>S</b><br>CH2      |
| <b>YAAMS0000000</b><br>Patch cable LAN RJ45<br>ORDER CODE HA000141                 | <b>S</b><br>2 pieces     | <b>S</b><br>3 pieces |
| <b>REM1</b><br>Remote unit #1 + patch cable<br>ORDER CODE HA000381                 | -                        | <b>O</b>             |
| <b>REM2</b><br>Remote unit #2 + patch cable<br>ORDER CODE HA000382                 | -                        | <b>O</b>             |
| <b>REM3</b><br>Remote unit #3 + patch cable<br>ORDER CODE HA000383                 | -                        | <b>O</b>             |
| <b>REM4</b><br>Remote unit #4 + patch cable<br>ORDER CODE HA000384                 | -                        | <b>O</b>             |
| <b>REM5</b><br>Remote unit #5 + patch cable<br>ORDER CODE HA000385                 | -                        | <b>O</b>             |
| <b>REM6</b><br>Remote unit #6 + patch cable<br>ORDER CODE HA000386                 | -                        | <b>O</b>             |
| <b>REM7</b><br>Remote unit #7 + patch cable<br>ORDER CODE HA000387                 | -                        | <b>O</b>             |
| <b>REM8</b><br>Remote unit #8 + patch cable<br>ORDER CODE HA000388                 | -                        | <b>O</b>             |
| <b>REM38</b><br>Set of remote units #3 to #8 + patch cables<br>ORDER CODE HA000380 | -                        | <b>O</b>             |
| <b>6050MARKER0204</b><br>Set of remote units #2, #3, #4<br>ORDER CODE HA006050     | <b>O</b>                 | -                    |

S = Standard O = Optional



# LIGHT METERS AND SOLAR IRRADIANCE METERS



## COMPARISON TABLE FUNCTIONS



### MAIN MEASUREMENTS

|   | HT309                          | HT307                          | HT204  |
|---|--------------------------------|--------------------------------|--|
| Measuring range   | 0.01 ÷ 400klux<br>0.01 ÷ 40kFc | 0.01 ÷ 200klux<br>0.01 ÷ 20kFc | 1 ÷ 1999W/m <sup>2</sup><br>1 ÷ 634 BTU/(ft <sup>2</sup> *h) |
| Measurement of illuminance in Lux/Fc  | •                              | •                              | -  |
| Measurement of LED sources' illuminance                                     | •                              | -                              | -  |
| Luminous intensity measurement (Cd)   | •                              | -                              | -  |
| Solar irradiation measurement W/m <sup>2</sup> and BTU/(ft <sup>2</sup> *h) | -                              | -                              | •  |

### ADDITIONAL CHARACTERISTICS

|  |                                       |                            |   |
|--|---------------------------------------|----------------------------|---|
| Internal memory for measured data saving | •                                     | -                          | -   |
| Zeroing                                  | •                                     | •                          | •   |
| Manual measuring range                   | -                                     | -                          | •   |
| Autorange                                | •                                     | -                          | -   |
| Data HOLD                                | •                                     | •                          | •   |
| MAX/MIN/AVG                              | •                                     | • No AVG                   | • No AVG                                    |
| Selection of measuring unit              | Lux-Fc-Cd                             | Lux-Fc                     | W/m <sup>2</sup> - BTU/(ft <sup>2</sup> *h) |
| DC analogue output                       | -                                     | •                          | -   |
| Auto Power OFF                           | •                                     | -                          | -   |
| Reference standard                       | Class A JIS C<br>1609:1993 + CNS 5119 | Class A JIS C<br>1609:1993 | -   |
| Power supply                             | 1x 9V                                 | 1x 9V                      | 1x 9V                                       |
| Size (LxWxH) (mm)                        | 130x55x38                             | 172x55x38                  | 130x55x38                                   |
| Weight (batteries included):             | 150g                                  | 250g                       | 150g  |
| Order Code                               | HA003090                              | HA000309                   | HA000157                                    |

ORDER CODE **HA003090** | **HA000309**

# HT309|HT307

PORTABLE LIGHT METERS

Models HT307 and HT309 are digital light meters used to **measure illuminance** up to 20kLux (HT307) and 400kLux (HT309) through a silicon photodiode sensor. **Model HT309 also allows** measuring illuminance of **LED sources with various colours** by setting the relevant correction factors, further to measuring luminous intensity (expressed in Candles or Lux).



ORDER CODE **HA000157**

# HT204

PORTABLE SOLAR METER

HT204 is a **digital solar irradiance meter** for measurements of **solar irradiation** up to **2000W/m<sup>2</sup>**, which can be used as an inspection device, typically in **photovoltaic installations**.



## Functions and characteristics

|   | <b>HT307</b>                   | <b>HT309</b>                              |
|---|--------------------------------|---|
| Measuring range of Illuminance (Lux/Fc) | 0.01 ÷ 200kLux<br>0.01 ÷ 20kFc | 0.01 ÷ 400kLux<br>0.01 ÷ 40kFc            |
| Luminous intensity measurement (Cd)     | -                              | •   |
| Measurement of LED sources' illuminance | -                              | •   |
| Basic accuracy                          | ±3%reading                     | ±3%reading                                |
| Zeroing                                 | Manual with trimmer            | Digital                                   |
| Autorange                               | -                              | •   |
| Spectrum response correction            | •                              | •   |
| Data HOLD, MAX/MIN                      | •                              | • (also AVG)                              |
| Internal memory                         | -                              | •   |
| Analogue DC output                      | •                              | -   |
| Auto Power OFF                          | -                              | •   |
| Reference standard                      | Classe A<br>JIS C 1609:1993    | Classe A<br>JIS C 1609:1993<br>+ CNS 5119 |

## Accessories provided

- Jack for connection to DC analogue output (*only HT307*)
- Screwdriver for trimmer adjustment (*only HT307*)
- Soft carrying bag
- Test certification
- Battery
- User Manual

## Functions and characteristics

- Measuring range: 1 ÷ 1999W/m<sup>2</sup> 1 ÷ 634 BTU/(ft<sup>2</sup>\*h)
- Resolution: 1W/m<sup>2</sup> 1BTU/(ft<sup>2</sup>\*h)
- Accuracy: > between 10 W/m<sup>2</sup> and 5%reading  
> between 1BTU/(ft<sup>2</sup>\*h) and 5%reading
- Selection of the measuring unit: W/m<sup>2</sup> and BTU/(ft<sup>2</sup>\*h)
- Zeroing: Manual with trimmer
- Manual change of scale
- Data HOLD / MAX/MIN

## Accessories provided

- Transport case
- CE declaration of conformity
- Battery
- User Manual



# LASER DISTANCE METERS



## COMPARISON TABLE FUNCTIONS



iDM70



DM40

### MAIN MEASUREMENTS

|   |            |            |
|---|------------|------------|
| 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                             | •          | •           |
| Setting 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   | •          | •           |
| Activation   | 2x 1.5V AA | 2x 1.5V AAA |
| Size (LxWxH) (mm)  | 135x53x30  | 110x48x28   |
| Weight (batteries included):                               | 160g       | 135g        |
| Order Code   | HA000700   | HA004000    |

ORDER CODE HA000700

# iDM70

LASER DISTANCE METER WITH 70M RANGE, INCLINOMETER AND BLUETOOTH INTERFACE FOR CONNECTION TO IOS AND ANDROID DEVICES



Model 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.

**USE ALL THE POWER OF iDM70**

Download free HTLaserMeter APP for iOS and Android devices  
Download the free App from [App Store](#) and [Google play](#).

ORDER CODE HA004000

# DM40

COMPACT LASER DISTANCE METER WITH 40M MEASURING RANGE



Model DM40 has been 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 that 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 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.

## Functions

- 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

|                                     |  |
|-------------------------------------|--|
| <b>Power supply:</b>                | 2x1.5V alkaline batteries type AA LR06   |
| <b>Duration:</b>                    | max 8000 measurements                    |
| <b>Display:</b>                     | 5-digit LCD display with backlight       |
| <b>Memory:</b>                      | 20 locations + external through App      |
| <b>Interface:</b>                   | Bluetooth™ compatible with iOS - Android |
| <b>Mechanical protection:</b>       | IP54                                     |
| <b>Laser pointer:</b>               | class 2 according to IEC/EN60825-1       |
| <b>Size (LxWxH):</b>                | 135x53x30mm                              |
| <b>Weight (batteries included):</b> | 160 kg                                   |

## Accessories provided

Soft carrying bag, battery and user manual  
User manual HT LaserMeter APP

## Functions

- 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

|                                     |   |
|-------------------------------------|---|
| <b>Power supply:</b>                | 2x1.5V alkaline batteries type AAA LR03 |
| <b>Duration:</b>                    | max 5000 measurements                   |
| <b>Display:</b>                     | 5-digit LCD display with backlight      |
| <b>Memory:</b>                      | 20 locations                            |
| <b>Mechanical protection:</b>       | IP54                                    |
| <b>Laser pointer:</b>               | class 2 according to IEC/EN60825-1      |
| <b>Size (LxWxH):</b>                | 110x48x28mm                             |
| <b>Weight (batteries included):</b> | 135 kg                                  |

## Accessories provided

Soft carrying bag  
Non-slip strap  
Batteries  
User Manual

ORDER CODE HA000760 | HA000759

# XLITE | MINILITE

MULTIFUNCTION LED LAMPS  
WITH BUILT-IN MAGNETS

XLITE and MINILITE are two work lights equipped with **last generation LED bulbs** to ensure a usage time definitely **longer than common halogen lights**. XLITE model is equipped with a **rechargeable battery** and **battery charger for cars/power network** to ensure utmost versatility of use in any situation. In addition, both types of lights feature a **powerful magnet** that enables anchoring them to any **metal surface** such as an **electrical panel**.



## PORTABLE WORKING LAMPS

### XLITE Functions

- LED COB Technology
- Built-in rechargeable battery
- Magnet on the back
- Top hook

### MINILITE Functions

- High-efficiency LED technology
- Adjustable light beam for the main bulb
- Side LED bulb with 2 modes:  
Steady white light, blink red light
- Magnet on top
- Pocket hook

### Supplied accessories

Battery charger 100-240V 50/60Hz (Euro Plug) **(XLITE)**

Car battery charger **(XLITE)**

### Main features

#### XLITE

**Lighting range:** 11 metres  
**Output power:** 130 Lumen  
**Power supply:** Rechargeable Li-ION battery 1800mAh  
100-240V 50/60Hz battery charger  
(Euro Plug)

**Autonomy**  
**Dimensions (LxWxH):** 320 x 45 x 12mm  
**Weight:** 0.11 Kg

#### MINILITE

**Lighting range:** 30 meters (the main bulb)  
**Output power:** 200 lumens (main bulb)  
**Power supply:** 3x 1.5V AAA  
**Dimensions (LxW):** 125 x 32mm  
**Weight:** 0.147 kg



# BURIED CABLE LOCALIZER AND REVOLUTION COUNTER



ORDER CODE **HN500000**

## HT-5000

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 an electromagnetic field inside an 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.**



### 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



### Accessories provided

- 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 (Shuko plug + cable with RJ11 + coax cable)



### Main features

#### Transmitter TX5000

- Transmission power: 0.1W / 0.5W
- Signal frequency: 33kHz
- Mechanical protection: IP56 (dust and water)
- Power supply: 6x1.5V batteries type IEC LR20
- Size (LxWxH): 260 x 140 x 255mm
- Weight (batteries included): 1.7 kg

#### Receiver RX5000

- Frequency range: 15kHz ÷ 23kHz, 50/60Hz (electric power)
- Depth range: 0.3m ÷ 7m
- Mechanical protection: IP56 (dust and water)
- Power supply: 10x1.5V batteries type AA IEC LR6
- Size (LxWxH): 600 x 252 x 99mm
- Weight (batteries included): 2.5 kg

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



**HT**  
**PROCESS  
CALIBRATORS**



## Functions

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

## Main features

|                                       |                           |
|---------------------------------------|---------------------------|
| Meas. range of speed without contact: | 10.00 ÷ 99999 rev/min     |
| Meas. range of speed with contact:    | 20.00 ÷ 29999 rev/min     |
| Resolution:                           | 0.01 ÷ 1 rev/min          |
| Accuracy:                             | ±(0.04%reading + 2digits) |
| Meas. range of events counter:        | 0 ÷ 99999                 |
| Response time:                        | 0.7s (>60 rev/min)        |
| Distance from target:                 | 50 ÷ 300mm                |
| Display:                              | LCD, 5 digits, 99999 dots |
| AutoPowerOFF:                         | after 30min               |
| Power supply:                         | 4x1.5V batteries A        |
| Size (LxWxH):                         | 172x63x36 mm              |
| Weight (batteries included):          | approx 190g               |

## Accessories provided

- Mechanical adapter + fastening screw
- Rubber protection ring
- Rubber terminals in different shapes
- Reflecting band
- Soft carrying bag
- Batteries
- User manual

## Optional accessories

|                   |   |
|-------------------|---|
| <b>KITHT2234N</b> | Set of rubber spare parts + reflecting band + fastening screw |
|-------------------|---|





HT8051 HT8000 HT8100

## COMPARISON TABLE FUNCTIONS

### CALIBRATION MEASUREMENTS

| TRMS   | HT8051 | HT8000 | HT8100 |
|--|--------|--------|--------|
| 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 | •      | •      | •      |
| Simulation of an external transducer         | •      | •      | •      |
| Loop supply with minimum voltage 24V         | •      | •      | •      |
| Generation of selectable ramp                | •      | •      | •      |
| Load of 250Ω for testing HART transducers    | -      | -      | •      |

### MULTIMETER MEASUREMENTS

|                                  |              |              |      |
|----------------------------------|--------------|--------------|------|
| AC/DC voltage                    | • MAX 10VDC  | • MAX 10VDC  | •    |
| AC+DC voltage                    | -            | -            | •    |
| AC/DC current                    | • MAX 24mADC | • MAX 24mADC | • 1A |
| AC+DC current                    | -            | -            | •    |
| Resistance and buzzer continuity | -            | -            | •    |
| Frequency                        | -            | -            | •    |
| Diode test                       | -            | -            | •    |

### ADDITIONAL CHARACTERISTICS

|                              |                          |               |               |
|------------------------------|--------------------------|---------------|---------------|
| Protection category          | CAT IV 600V              | CAT IV 600V   | CAT IV 600V   |
| Measuring spots              | -                        | -             | 50000         |
| Backlight                    | •                        | •             | •             |
| Autorange                    | -                        | -             | •             |
| Auto power off               | •                        | •             | •             |
| Data HOLD function           | -                        | -             | •             |
| MIN/MAX function             | -                        | -             | •             |
| AVG function                 | -                        | -             | •             |
| Relative measurement         | -                        | -             | •             |
| Memory for data saving       | -                        | -             | •             |
| Activation                   | 1x7.4/8.4V 600mAh Li-ION | 1x9V 6F22     | 4x1.5V AA     |
| Size (LxWxH) (mm)            | 195x92x55                | 195x92x55     | 207x95x52     |
| Weight (batteries included): | 400g                     | 400g          | 630g          |
| Safety                       | IEC/EN61010-1            | IEC/EN61010-1 | IEC/EN61010-1 |
| Order Code                   | HV080510                 | HR000003      | HV008100      |

ORDER CODE HV080510 | HR000003

# HT8051 | HT8000

PROFESSIONAL PROCESS CALIBRATORS



HT8051 and HT8000 are professional process calibrators able to generate and measure DC current and voltage signals up to 10V and 24mA easy, by setting the values, thanks to the innovative setting dial. For current measurement and generation you can also set data to be displayed as a percentage corresponding to the values set (0% = 4mA, 100% = 20mA). Voltage and current signal generation is also possible using up to 3 selectable ramps. The model also measures the current consumption of external transducers directly powered by the instrument, and simulate the presence of a transducer with adjustable current throughout its reading range. The instruments are designed in accordance with safety standard IEC/EN61010-1 with double insulated motor and every function can be selected via the dedicated keys on the front panel. The instruments are the perfect solution for typical industrial automation applications and laboratory activities.

## 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**
  - (slow linear ramp): Goes from 0% →100% → 0% in 40s
  - (quick linear ramp): Goes from 0% →100% → 0% in 15s
  - (step ramp): Goes 0% →100% → 0% through steps of 25% with ramps of 5s

## Main features

|                                   |  |
|-----------------------------------|--|
| <b>Display:</b>                   | 5 LCD + secondary display,   |
| <b>Power supply:</b>              | 1x7.4V rechargeable Li-ION battery ( <b>HT8051</b> )<br>1x9V alkaline battery IEC 6F22 ( <b>HT8000</b> ) |
| <b>External battery charger:</b>  | 230VAC/50Hz – 12VDC ( <b>HT8051</b> )  |
| <b>Autonomy:</b>                  | about 8 hours in generation (@ 12mA, 500Ω)   |
| <b>Auto Power OFF:</b>            | after 20 minutes (adjustable) of non-use   |
| <b>Safety:</b>                    | IEC/EN61010-1  |
| <b>Insulation:</b>                | double insulation  |
| <b>Level of pollution:</b>        | 2  |
| <b>Measurement category:</b>      | CAT I 30V  |
| <b>Dimensions (LxWxH):</b>        | 195x92x55mm  |
| <b>Weight (battery included):</b> | 400g   |

## Supplied accessories

|         |  |
|---------|--|
| KIT0075 | Couple of leads, two crocodile clip terminals  |
|         | Protective cover                               |
|         | Rechargeable battery, External battery charger |
|         | User manual and hard case for transport        |



TRMS

ORDER CODE HV008100

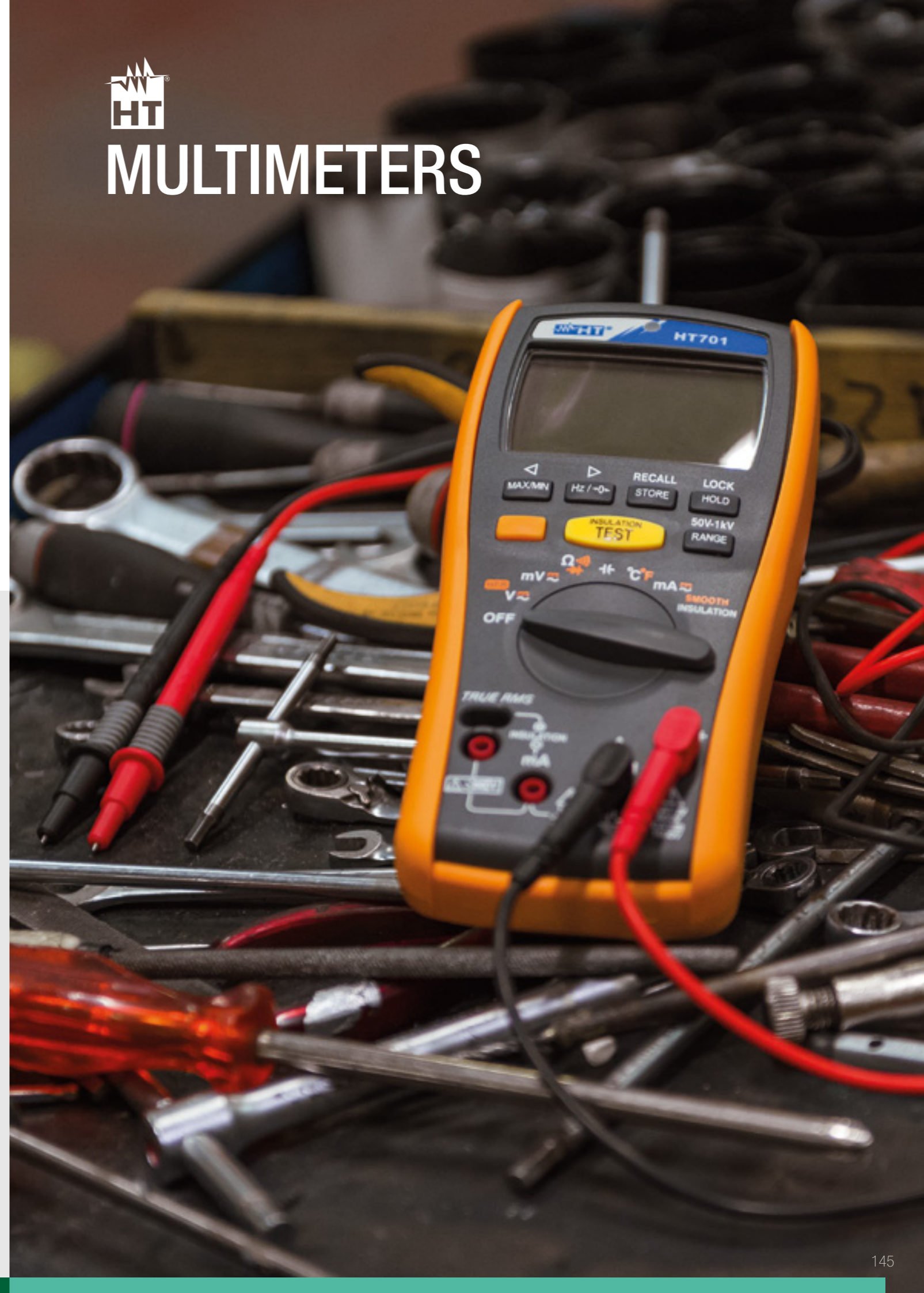
# HT8100

PROFESSIONAL PROCESS CALIBRATOR/MULTIMETER



Model 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.

# HT MULTIMETERS



## 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              |
| Safety:                      | IEC/EN61010-1                         |
| Measurement category:        | CAT III 1000V, CAT IV 600V            |
| Insulation:                  | double insulation                     |
| Pollution level:             | 2                                     |
| Max height:                  | 2000m                                 |
| Size (LxWxH):                | 207x95x52mm                           |
| Weight (batteries included): | 630g                                  |

## Accessories provided

|              |  |
|--------------|--|
| YAAMK0000HTO | Pair of 4mm test leads                   |
| YAAMK0001HTO | 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: ±(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: 0.1Ω ÷ 50MΩ
  - Resolution: 0.01Ω ÷ 1kΩ
  - Basic accuracy: ±(0.2%reading + 10 digits)
  - Continuity test: <30Ω
  - Protection: 1000V DC/ACrms
- Frequency**
- Measuring range: 5Hz ÷ 100kHz
  - Resolution: 0.01Hz ÷ 10Hz
  - Basic accuracy: ±(3 digits)
  - Protection: 1000V DC/ACrms

# COMPARISON TABLE FUNCTIONS



## MAIN MEASUREMENTS

|                                       | HT701 | HT401      | HT60 | HT61 | HT62 | HT63 | HT64       | IRON METER | HT12 | HT210 | HT21 | HT25N   | HT14D   | HT603 | HT712              | HT710 | HT9 | HT8 | HT6 |   |
|---------------------------------------|-------|------------|------|------|------|------|------------|------------|------|-------|------|---------|---------|-------|--------------------|-------|-----|-----|-----|---|
| TRMS                                  | •     | •          | •    | •    | •    | •    | •          | •          | -    | -     | -    | -       | -       | -     | •                  | -     | -   | -   | -   | - |
| AC/DC voltage                         | •     | •<br>AC+DC | •    | •    | •    | •    | •<br>AC+DC | •          | •    | •     | •    | •       | •       | •     | •                  | •     | •   | •   | •   | • |
| AC/DC current                         | •     | •<br>AC+DC | -    | •    | •    | •    | •          | •          | •    | -     | -    | •<br>DC | •<br>DC | -     | -                  | -     | -   | -   | -   | - |
| Lettura 4-20mA%                       | -     | -          | -    | -    | -    | •    | •          | -          | -    | -     | -    | -       | -       | -     | -                  | -     | -   | -   | -   | - |
| Frequency                             | •     | •          | •    | •    | •    | •    | •          | •          | •    | •     | •    | -       | -       | •     | •                  | •     | -   | -   | -   | - |
| Resistance                            | •     | •          | •    | •    | •    | •    | •          | •          | •    | •     | •    | •       | •       | •     | •                  | •     | -   | -   | -   | - |
| Continuity with buzzer                | •     | •          | •    | •    | •    | •    | •          | •          | •    | •     | •    | •       | -       | •     | •                  | •     | •   | •   | •   | • |
| Capacity                              | •     | •          | •    | -    | •    | •    | •          | •          | -    | •     | •    | -       | -       | •     | -                  | -     | -   | -   | -   | - |
| Diode test                            | •     | •          | •    | •    | •    | •    | •          | •          | -    | •     | •    | •       | •       | •     | -                  | •     | •   | •   | •   | • |
| Ciclo di lavoro (Duty Cycle %)        | -     | -          | •    | •    | •    | •    | •          | •          | -    | •     | •    | -       | -       | •     | -                  | -     | -   | -   | -   | - |
| Duty Cycle (%)                        | •     | •          | •    | -    | •    | •    | •          | -          | -    | •     | -    | -       | -       | -     | -                  | -     | -   | -   | -   | - |
| Measurement of insulation up to 1000V | •     | -          | -    | -    | -    | -    | -          | -          | -    | -     | -    | -       | -       | -     | -                  | -     | -   | -   | -   | - |
| Phase sequence                        | -     | -          | -    | -    | -    | -    | -          | -          | -    | -     | -    | -       | -       | -     | •<br>+ Concordance | -     | •   | •   | •   | • |
| Test lamps with internal gas          | -     | -          | -    | -    | -    | -    | -          | -          | -    | -     | -    | -       | -       | -     | -                  | -     | •   | -   | -   | - |
| Torcia a LED integrata                | -     | -          | -    | -    | -    | -    | -          | •          | -    | -     | -    | -       | -       | -     | -                  | -     | •   | •   | •   | • |

## ADDITIONAL CHARACTERISTICS

| Protection category            | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V       | CAT IV 600V       | CAT IV 600V       | CAT IV 600V       | CAT IV 600V                         |  | CAT III 600V      | CAT III 300V<br>CAT II 600V | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 300V<br>CAT II 600V | CAT III 300V<br>CAT II 600V | CAT IV 600V       | CAT IV 600V       | CAT IV 600V<br>CAT III 690V | CAT IV 600V<br>CAT III 690V | CAT IV 600V<br>CAT III 690V |
|--------------------------------|------------------------------|------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------------|--|-------------------|-----------------------------|-------------------|-------------------|-------------------|-----------------------------|-----------------------------|-------------------|-------------------|-----------------------------|-----------------------------|-----------------------------|
| Measuring spots                | 10000                        | 6000                         | 4000              | 6000              | 6000              | 60.000            | 6000                                |  | 4000              | 3400                        | 4000              | 4000              | 2000              | 2000                        | 5000                        | 4000              | 4000              | 6900                        | 6900                        | Indicazioni a LED           |
| Backlight                      | •                            | •                            | •                 | •                 | •                 | •                 | •                                   |  | •                 | -                           | •                 | •                 | •                 | -                           | -                           | -                 | -                 | -                           | -                           | -                           |
| Bargraph                       | •                            | •                            | -                 | •                 | •                 | •                 | •                                   |  | -                 | •                           | -                 | -                 | -                 | -                           | -                           | -                 | -                 | -                           | -                           | -                           |
| Autorange                      | •                            | •                            | •                 | •                 | •                 | •                 | •                                   |  | •                 | •                           | •                 | •                 | -                 | -                           | •                           | •                 | •                 | -                           | -                           | -                           |
| Auto power off                 | •                            | •                            | •                 | •                 | •                 | •                 | •                                   |  | •                 | •                           | •                 | •                 | -                 | -                           | •                           | •                 | •                 | •                           | •                           | •                           |
| Data HOLD function             | •                            | •                            | •                 | •                 | •                 | •                 | •                                   |  | •                 | •                           | •                 | •                 | •                 | •                           | •                           | •                 | •                 | •                           | •                           | •                           |
| MIN/MAX/AVG function           | •                            | •<br>MIN/MAX                 | -                 | •<br>MIN/MAX      | •<br>MIN/MAX      | •<br>MIN/MAX      | •                                   |  | •<br>MIN/MAX      | -                           | -                 | -                 | -                 | -                           | -                           | -                 | -                 | -                           | -                           | -                           |
| PEAK function                  | -                            | •                            | -                 | -                 | -                 | • (1ms)           | • (1ms)                             |  | -                 | -                           | -                 | -                 | -                 | -                           | -                           | -                 | -                 | -                           | -                           | -                           |
| Automatic recognition of AC/DC | -                            | -                            | -                 | -                 | -                 | -                 | -                                   |  | -                 | -                           | -                 | -                 | -                 | -                           | -                           | •                 | -                 | -                           | -                           | -                           |
| Relative measurement           | •                            | -                            | •                 | •                 | •                 | •                 | •                                   |  | -                 | -                           | •                 | •                 | -                 | -                           | •                           | -                 | •                 | -                           | -                           | -                           |
| Data logger e grafico          | -                            | -                            | -                 | -                 | -                 | -                 | •                                   |  | -                 | -                           | -                 | -                 | -                 | -                           | -                           | -                 | -                 | -                           | -                           | -                           |
| Memoria per salvataggio dati   | •                            | -                            | -                 | -                 | -                 | -                 | •                                   |  | -                 | -                           | -                 | -                 | -                 | -                           | -                           | -                 | -                 | -                           | -                           | -                           |
| Alimentazione                  | 4x 1.5V AA                   | 1x 9V 6F22                   | 1x 9V 6F22        | 1x 9V 6F22        | 1x 9V 6F22        | 4x 1.5V AAA       | 1x7.4V batteria ricaricabile Li-ION |  | 2x 1.5V AAA       | 2x 1.5V AAA                 | 1x 9V 6F22        | 1x 9V 6F22        | 1x 9V 6F22        | 1x 12V MS21 / MN21          | 2x 1.5V LR34                | 2x 1.5V AAA       | 2x 1.5V AAA       | 2x 1.5V AA                  | 2x 1.5V AA                  | 2x 1.5V AA                  |
| Size in mm (L x W x H)         | 207x95x52                    | 190x94x48                    | 175x85x55         | 175x85x55         | 175x85x55         | 175x85x55         | 175x85x55                           |  | 120x85x45         | 128x87x24                   | 138x68x37         | 138x68x37         | 150x70x48         | 105x50x25                   | 112x56x12                   | 250x51x30         | 250x51x30         | 255x60x35                   | 255x60x35                   | 255x60x35                   |
| Weight in grams                | 630                          | 460                          | 400               | 400               | 400               | 400               | 400                                 |  | 200               | 210                         | 210               | 210               | 255               | 100                         | 115                         | 150               | 150               | 170                         | 170                         | 170                         |
| Safety                         | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1                   |  | IEC/<br>EN61010-1 | IEC/<br>EN61010-1           | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1           | IEC/<br>EN61010-1           | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1           | IEC/<br>EN61010-1           | IEC/<br>EN61010-1           |
| Order Code                     | HR000701                     | HR000401                     | HR000004          | HR000001          | HR000002          | HR000003          | HR000010                            |  | HR000005          | HR000012                    | HR000210          | HR000021          | HR00025N          | HR00014D                    | HR000603                    | HR000712          | HR000710          | HR000009                    | HR000008                    | HR000006                    |



TRMS

ORDER CODE **HR000701**

# HT701

PROFESSIONAL MULTIMETER FOR INSULATION MEASUREMENT

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.



**PR701**  
Remote switch probe for insulation measurements



TRMS

LoZ

ORDER CODE **HR000401**

# HT401

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

|                                     |                                       |
|-------------------------------------|---------------------------------------|
| <b>Display:</b>                     | LCD, 10000 dots                       |
| <b>Power supply:</b>                | 4x1.5V alkaline batteries type AA LR6 |
| <b>Auto Power OFF:</b>              | after 20 minutes' idling              |
| <b>Safety:</b>                      | IEC/EN61010-1, IEC/EN61557-1-2        |
| <b>Measurement category:</b>        | CAT III 1000V, CAT IV 600V            |
| <b>Insulation:</b>                  | double insulation                     |
| <b>Pollution level:</b>             | 2                                     |
| <b>Max height:</b>                  | 2000mm                                |
| <b>Size (LxWxH):</b>                | 207x95x52mm                           |
| <b>Weight (batteries included):</b> | 630g                                  |

## Accessories provided

|                     |  |
|---------------------|--|
| <b>4413-2</b>       | Pair of test leads                                   |
| <b>YAAMK0001HT0</b> | Pair of alligator clips                              |
| <b>PR701</b>        | Probe for insulation measurement                     |
| <b>TK101</b>        | K-type wire probe                                    |
| <b>T10</b>          | Adapter for K-type probes                            |
|                     | Belt with magnetic terminal                          |
|                     | Protective case, battery and user manual             |
|                     | For optional accessories, please refer to the table. |

## Technical Specifications

- DC voltage**
- 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: ±(0.9%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
  - Basic accuracy: ±(0.5%reading + 2 digits)
  - Continuity test: <30Ω
  - 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
- Auto Power OFF

## Main features

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <b>Display:</b>                     | LCD, 4 digits, 6000 dots        |
| <b>Power supply:</b>                | 1x9V alkaline battery type 6F22 |
| <b>Battery life:</b>                | 150 hours                       |
| <b>Auto Power OFF:</b>              | after 20 minutes' idling        |
| <b>Safety:</b>                      | IEC/EN61010-1                   |
| <b>Measurement category:</b>        | CAT III 1000V, CAT IV 600V      |
| <b>Insulation:</b>                  | Double insulation               |
| <b>Pollution level:</b>             | 2                               |
| <b>Max height:</b>                  | 2000mm                          |
| <b>Size (LxWxH):</b>                | 190x94x48mm                     |
| <b>Weight (batteries included):</b> | 460g                            |

## Accessories provided

|               |  |
|---------------|--|
| <b>4413-2</b> | Pair of test leads                                   |
| <b>TK101</b>  | K-type wire probe                                    |
| <b>T10</b>    | Adapter for K-type probes                            |
|               | Protective case, battery and user manual             |
|               | For optional accessories, please refer to the table. |

## Technical Specifications

- DC voltage**
- 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: 0.1Ω ÷ 40MΩ
  - Resolution: 0.1Ω ÷ 0.01MΩ
  - Basic accuracy: ±(0.8%reading + 2 digits)
  - Continuity test: <30Ω
  - 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: 0.001μF ÷ 0.01mF
  - 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



ORDER CODE **HR000010** | **HR000003** | **HR000002** | **HR000001** | **HR000004**

# HT64 | HT63 | HT62 | HT61 | HT60



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.**

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

## Functions

|                            | HT64    | HT63      | HT62      | HT61      | HT60 |
|----------------------------|---------|-----------|-----------|-----------|------|
| TRMS Measurements          | •       | •         | •         | •         | •    |
| Color display              | •       | -         | -         | -         | -    |
| AC/DC Voltage              | • AC+DC | •         | •         | •         | •    |
| AC/DC Current              | •       | •         | •         | •         | -    |
| Resistance/Continuity Test | •       | •         | •         | •         | •    |
| Frequency                  | •       | •         | •         | •         | •    |
| Capacity                   | •       | •         | •         | •         | •    |
| Duty cycle                 | •       | •         | •         | •         | •    |
| Diode test                 | •       | •         | •         | •         | •    |
| Temperature probe type K   | •       | •         | •         | -         | •    |
| Reading 4-20mA%            | •       | •         | -         | -         | -    |
| Data HOLD                  | •       | •         | •         | •         | •    |
| MAX/MIN/AVG                | •       | • Max/Min | • Max/Min | • Max/Min | -    |
| PEAK                       | • 1ms   | • 1ms     | -         | -         | -    |
| Relative Measurement       | •       | •         | •         | •         | •    |
| Autorange                  | •       | •         | •         | •         | •    |
| Backlight                  | •       | •         | •         | •         | •    |
| Bargraph                   | •       | •         | •         | •         | -    |
| Data loggers and graph     | •       | -         | -         | -         | -    |
| Internal memory            | •       | -         | -         | -         | -    |
| Auto Power OFF             | •       | •         | •         | •         | •    |

## Main features

- Display:** 4 digit LCD, 4000 pixels (**HT60**)  
4½ digit LCD, 6000 pixels (**HT61, HT62**)  
4½ digit LCD, 60000 pixels (**HT63**)  
Color 4 4½ digit TFT, 6000 pixels (**HT64**)
- Power supply:** 1x9v battery type 6F22 (**HT60, HT61, HT62**)  
4x1.5 V batteries type AAA LR03 (**HT63**)  
1x7.4V rechargeable Li-ION battery (**HT64**)
- Auto Power OFF:** after 30 minutes of non-use (**HT60**)  
after 15 minutes of non-use (**HT61, HT62, HT63**)  
5min ÷ 60 min of non-use (**HT64**)
- Safety:** IEC/EN61010-1
- Measurement category:** CAT IV 600V – CAT III 1000V
- Level of pollution:** 2
- Max operating altitude:** 2000m
- Dimensions (LxWxH):** 175x85x55mm
- Weight (batteries included):** about 400 g

## Supplied accessories

- KIT4000A** Pair of test leads
- TK101** Type K wire probe (**HT60, HT62, HT63, HT64**)
- T10** Type K Probe adapter
- A64** Power supply + adapter (**HT64**)
- Batteries, user manual and transport bag

## Technical specifications

|                                       | HT64                       | HT63                       | HT62                      | HT61                      | HT60                      |
|---------------------------------------|----------------------------|----------------------------|---------------------------|---------------------------|---------------------------|
| <b>DC Voltage</b>                     |                            |                            |                           |                           |                           |
| Reading range:                        | 0.1mV ÷ 1000V              | 0.1mV ÷ 1000V              | 0.1mV ÷ 1000V             | 0.1mV ÷ 1000V             | 1mV ÷ 600V                |
| Standard accuracy:                    | ± (0.1%reading + 5digits)  | ± (0.9%reading + 5digits)  | ± (1.0%reading + 2digits) | ± (1.0%reading + 2digits) | ± (1.2%reading + 2digits) |
| <b>AC Voltage</b>                     |                            |                            |                           |                           |                           |
| Reading range:                        | 0.1mV ÷ 1000V              | 0.1mV ÷ 1000V              | 1mV ÷ 1000V               | 1mV ÷ 1000V               | 1mV ÷ 600V                |
| Standard accuracy:                    | ± (0.9%reading + 5digits)  | ± (1.0%reading + 5digits)  | ± (1.0%reading + 8digits) | ± (1.0%reading + 8digits) | ± (1.2%reading + 4digits) |
| <b>DC Current</b>                     |                            |                            |                           |                           |                           |
| Reading range:                        | 0.1µA ÷ 10A                | 0.1µA ÷ 10A                | 0.1µA ÷ 10A               | 0.1µA ÷ 10A               | -                         |
| Standard accuracy:                    | ± (0.9%reading + 5digits)  | ± (1.5%reading + 5digits)  | ± (1.0%reading + 3digits) | ± (1.0%reading + 3digits) | -                         |
| <b>AC Current</b>                     |                            |                            |                           |                           |                           |
| Reading range:                        | 0.1µA ÷ 10A                | 0.1µA ÷ 10A                | 0.1µA ÷ 10A               | 0.1µA ÷ 10A               | -                         |
| Standard accuracy:                    | ± (1.2%reading + 5digits)  | ± (2.5%reading + 5digits)  | ± (1.5%reading + 3digits) | ± (1.5%reading + 3digits) | -                         |
| <b>Resistance and continuity test</b> |                            |                            |                           |                           |                           |
| Reading range:                        | 0.1Ω ÷ 60MΩ                | 0.1Ω ÷ 60MΩ                | 0.1Ω ÷ 60MΩ               | 0.1Ω ÷ 60MΩ               | 0.1Ω ÷ 40MΩ               |
| Standard accuracy:                    | ± (0.8%reading + 5digits)  | ± (1.2%reading + 5digits)  | ± (1.0%reading + 4digits) | ± (1.0%reading + 4digits) | ± (1.0%reading + 2digits) |
| Buzzer:                               | <25Ω                       | <35Ω                       | <100Ω                     | <100Ω                     | <30Ω                      |
| <b>Frequency</b>                      |                            |                            |                           |                           |                           |
| Reading range:                        | 0.001Hz ÷ 1MHz             | 0.001Hz ÷ 1MHz             | 0.001Hz ÷ 1MHz            | 0.001Hz ÷ 1MHz            | 0.001Hz ÷ 10MHz           |
| Standard accuracy:                    | ± (0.09%reading + 5digits) | ± (1.0%reading + 2digits)  | ± (0.1%reading + 1digit)  | ± (0.1%reading + 2digits) | ± (1.2%reading + 3digits) |
| <b>Capacity</b>                       |                            |                            |                           |                           |                           |
| Reading range:                        | 0.01nF ÷ 6mF               | 0.01nF ÷ 6mF               | 0.01nF ÷ 1000µF           | -                         | 0.01nF ÷ 100µF            |
| Standard accuracy:                    | ± (1.2%reading + 8digits)  | ± (2.5%reading + 10digits) | ± (3.5%reading + 4digits) | -                         | ± (3.0%reading + 5digits) |
| <b>Duty Cycle</b>                     |                            |                            |                           |                           |                           |
| Reading range:                        | 0.1% ÷ 99.9%               | 20% ÷ 80%                  | 0.1% ÷ 99.9%              | 0.1% ÷ 99.9%              | 0.5% ÷ 99.9%              |
| Standard accuracy:                    | ± (1.2%reading + 2digits)  | ± (1.0%reading + 5digits)  | ± (1.2%reading + 2digits) | ± (1.2%reading + 2digits) | ± (1.2%reading + 2digits) |
| <b>Temperature probe type K</b>       |                            |                            |                           |                           |                           |
| Reading range:                        | -40°C ÷ 1350°C             | 0.1% ÷ 99.9%               | -45°C ÷ 750°C             | -                         | -20°C ÷ 760°C             |
| Standard accuracy:                    | ± (1.0% reading + 3°C)     | ± (2.0% reading + 3°C)     | ± (3.5% reading + 5°C)    | -                         | ± (3.0% reading + 5°C)    |

# HT210 | HT21 | HT25N

COMPACT DIGITAL MULTIMETERS IN CAT III



Models 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

|                               | HT21 | HT210 | HT25N |
|-------------------------------|------|-------|-------|
| AC / DC voltage               | •    | •     | •     |
| DC current                    | -    | -     | •     |
| 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

- Display:** LCD, 3½ digits, 2000 dots with backlight
- Power supply:** 1x9V batteries type IEC 6F22
- Auto Power OFF:** after 30 minutes' idling
- Safety:** IEC/EN 61010-1
- Measurement category:** CAT III 600V
- Pollution level:** 2
- Insulation:** double insulation
- Size (LxWxH):** 138x68x37mm (**HT21-210**)  
150x70x48mm (**HT25N**)
- Weight (batteries included):** 210g (**HT21-210**), 255g (**HT25N**)

## Accessories provided

|          |  |
|----------|--|
| KIT4000A | Pair of test leads                                   |
|          | Adapter T10 + K-type wire probe ( <b>HT210</b> )     |
|          | Soft carrying bag for ( <b>HT21-HT210</b> )          |
|          | Batteries and user manual                            |
|          | For optional accessories, please refer to the table. |

## Technical Specifications

|                     | HT21 - HT210         | HT25N  |
|---------------------|----------------------|--|
| <b>DC voltage</b>   |                      |  |
| Measuring range:    | 20mV ÷ 600V          | 1mV ÷ 600V   |
| Resolution:         | 0.1mV ÷ 1V           | 0.1mV ÷ 1V   |
| Basic accuracy:     | ±(1.5%rdg + 2digits) | ±(1%reading + 3digits)   |
| Protection:         | 600VDC               | 200Vrms for scale 200.0mV<br>600V AC/DC                        |
| <b>AC voltage</b>   |                      |  |
| Measuring range:    | 20mV ÷ 600V          | 1V ÷ 600V  |
| Resolution:         | 0.001 ÷ 1V           | 0.1V ÷ 1V  |
| Basic accuracy:     | ±(2%rdg + 2digits)   | ±(1.5%reading + 12digits)                                      |
| Protection:         | 600VAC               | 600VAC   |
| <b>DC current</b>   |                      |  |
| Measuring range:    | -                    | 2mA ÷ 10A  |
| Resolution:         | -                    | 1µA ÷ 0.01A  |
| Basic accuracy:     | -                    | ±(2.5%reading+2digits)   |
| Protection:         | -                    | Quick fuse 200mA / 600V<br>Quick fuse 10A / 600V for scale 10A |
| <b>Battery test</b> |                      |  |
| Measuring range:    | -                    | 1.5 / 9V   |
| Resolution:         | -                    | 1.5V=1mV / 9V=10mV   |
| Basic accuracy:     | -                    | ±(1.5%reading + 3digits)                                       |
| Protection:         | -                    | 1.5V=100mA / 9V=6mA  |

|   | HT21 - HT210             | HT25N                    |
|---|--------------------------|--------------------------|
| <b>Resistance and Continuity test</b>   |                          |                          |
| Measuring range:                        | 2Ω ÷ 40MΩ                | 1Ω ÷ 2MΩ                 |
| Resolution:                             | 0.1Ω ÷ 0.01MΩ            | 0.1Ω ÷ 1KΩ               |
| Basic accuracy:                         | ±(1%reading + 2digits)   | ±(1.5%reading + 2digits) |
| Continuity test                         | <150Ω                    | <30Ω                     |
| Protection:                             | 250Vrms                  | 250Vrms < 15sec          |
| <b>Frequency</b>                        |                          |                          |
| Measuring range:                        | 25mHz ÷ 10MHz            | -                        |
| Resolution:                             | 0.001Hz ÷ 10KHz          | -                        |
| Basic accuracy:                         | ±(1.2%reading + 3digits) | -                        |
| Protection:                             | 250Vrms                  | -                        |
| <b>Capacity</b>                         |                          |                          |
| Measuring range:                        | 0.2nF ÷ 100µF            | -                        |
| Resolution:                             | 0.01nF ÷ 0.1µF           | -                        |
| <b>Diode test</b>                       |                          |                          |
| Resolution:                             | 1mV                      | 1mA                      |
| MAX Open-circuit voltage:               | 1.5VDC                   | 2.8VDC                   |
| Basic accuracy:                         | ±(10%reading+5digits)    | ND                       |
| <b>Duty Cycle</b>                       |                          |                          |
| Measuring range:                        | 0.5 ÷ 99%                | -                        |
| Resolution:                             | 0.1%                     | -                        |
| Basic accuracy:                         | ±(1.2%reading + 2digits) | -                        |
| Protection:                             | 250Vrms                  | -                        |
| <b>Temperature with K probe (HT210)</b> |                          |                          |
| Measuring range:                        | -20°C ÷ 760°C            | -                        |
| Resolution:                             | 0.1°C ÷ 1°C              | -                        |
| Basic accuracy:                         | ±(3%reading + 5°C)       | -                        |



ORDER CODE **HR00014D** | **HR000603**

# HT14D | HT603

POCKET DIGITAL MULTIMETERS

Model 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. Model **HT603** is an **extremely compact** digital multimeter of modern design and very easy to use, thanks to the comfortable case which contains the integrated measuring leads. The device allows carrying out measurements of **AC/DC voltage**, **Resistance**, **Continuity test**, **Frequency**, **Duty Cycle**, **Diode test** and **Capacity**.



ORDER CODE **HR000712** | **HR000710**

# HT712 | HT710

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

Models HT710 and HT712 are designed to **practically** and **functionally** performing the basic functions of a common digital tester in an **extremely easy** and **quick** way thanks to its narrow and long structure. Model **HT710** carries out measurements of **AC/DC voltage**, **Frequency**, **Resistance** and **Continuity test**. Model **HT712** also allows performing measurements of **Voltage** and **Frequency** and **Phase Sequence** with the **innovative** and **patented method** with **1 terminal** also **directly** on the **isolating sheaths of the cables**.



## Functions

|                                | HT14D | HT603 |
|--------------------------------|-------|-------|
| DC/AC voltage                  | •     | •     |
| DC current                     | •     | -     |
| Resistance and Continuity test | •     | •     |
| Frequency                      | -     | •     |
| Capacity                       | -     | •     |
| Duty Cycle                     | -     | •     |
| Diode test                     | •     | •     |
| Battery test 9V                | •     | -     |
| Data HOLD                      | •     | •     |
| Relative measurement           | -     | •     |
| AutoPowerOFF                   | •     | •     |

## Technical Specifications

|                                       | HT14D                 | HT603                    |
|---------------------------------------|-----------------------|--------------------------|
| <b>DC voltage</b>                     |                       |                          |
| Measuring range:                      | 200mV ÷ 500V          | 400mV ÷ 600V             |
| Resolution:                           | 0.1mV ÷ 1V            | 0.1mV ÷ 1V               |
| Basic accuracy:                       | ±(0.5%rdg + 2digits)  | ±(0.6%rdg + 2digits)     |
| <b>AC voltage</b>                     |                       |                          |
| Range:                                | 1V ÷ 500V             | 400mV ÷ 600V             |
| Resolution:                           | 0.1V ÷ 1V             | 0.1mV ÷ 1V               |
| Basic accuracy:                       | ±(1.2%rdg + 10digits) | ±(1.5%rdg + 2digits)     |
| <b>Resistance and Continuity test</b> |                       |                          |
| Measuring range:                      | 1Ω ÷ 2000Ω            | 2Ω ÷ 40MΩ                |
| Resolution:                           | 0.1Ω ÷ 1kΩ            | 0.1Ω ÷ 0.01MΩ            |
| Basic accuracy:                       | ±(0.8%rdg + 4digits)  | ±(0.9%rdg + 2digits)     |
| Continuity:                           |                       | <50Ω                     |
| <b>DC current</b>                     |                       |                          |
| Measuring range:                      | 2000μA ÷ 200mA        | -                        |
| Resolution:                           | 1μA ÷ 0.1mA           | -                        |
| Basic accuracy:                       | ±(1.2%rdg + 2digits)  | -                        |
| <b>Frequency</b>                      |                       |                          |
| Measuring range:                      | -                     | 0.001Hz ÷ 5MHz           |
| Resolution:                           | -                     | 0.001Hz ÷ 0.001MHz       |
| <b>Duty Cycle</b>                     |                       |                          |
| Measuring range:                      | -                     | 0.1% ÷ 99.9%             |
| Resolution:                           | -                     | 0.1%                     |
| Basic accuracy:                       | -                     | ±(0.5%reading + 3digits) |
| <b>Capacity</b>                       |                       |                          |
| Measuring range:                      | -                     | 50nF ÷ 100μF             |
| Resolution:                           | -                     | 0.01nF ÷ 0.1μF           |
| Basic accuracy:                       | -                     | ±(2.9%reading + 5digits) |

## Main features

|                                     |   |
|-------------------------------------|---|
| <b>Display:</b>                     | LCD, 3 1/2 digits, 2000 dots ( <b>HT14D</b> )<br>LCD, 4 digits, 4000 dots ( <b>HT603</b> )      |
| <b>Power supply:</b>                | 2x1.5V batteries type LR44 ( <b>HT603</b> )<br>1x 12V batteries type MS21/MN21 ( <b>HT14D</b> ) |
| <b>Auto Power OFF:</b>              | after 30 minutes' idling ( <b>HT603</b> )   |
| <b>Safety:</b>                      | IEC/EN61010-1   |
| <b>Insulation:</b>                  | double insulation   |
| <b>Pollution level:</b>             | 2   |
| <b>Size (LxWxH):</b>                | 112x56x12mm ( <b>HT603</b> )<br>105x50x25mm ( <b>HT14D</b> )                                    |
| <b>Weight (batteries included):</b> | 100g ( <b>HT14D</b> ) 115g ( <b>HT603</b> )   |

## Accessories provided

|                 |   |
|-----------------|---|
| <b>KIT4000A</b> | Measuring leads ( <b>HT14D</b> )<br>Batteries and user manual |
|-----------------|---|

## Functions

|                                | HT712  | HT710  |
|--------------------------------|--------|--------|
| TRMS measurement               | •      | -      |
| DC/AC voltage                  | •      | •      |
| AC voltage with 1 terminal     | •      | -      |
| Automatic recognition of AC/DC | •      | -      |
| Resistance and Continuity test | •      | •      |
| Frequency                      | •      | •      |
| Frequency with 1 terminal      | •      | -      |
| Diode test                     | -      | •      |
| Phase sequence with 1 terminal | •      | -      |
| Data HOLD                      | •      | •      |
| LED indications OK/FAIL        | •      | -      |
| Autorange                      | •      | -      |
| Relative measurement           | -      | •      |
| Measurement category (@ 600V)  | CAT IV | CAT IV |
| AutoPowerOFF                   | •      | •      |

## Main features

|                                     |                              |
|-------------------------------------|------------------------------|
| <b>Display:</b>                     | LCD, 3 3/4 digits, 4000 dots |
| <b>Power supply:</b>                | 2x1.5V batteries type AAA    |
| <b>Auto Power OFF:</b>              | after 5 minutes' idling      |
| <b>Safety:</b>                      | IEC/EN 61010-1               |
| <b>Insulation:</b>                  | double insulation            |
| <b>Pollution level:</b>             | 2                            |
| <b>Size (LxWxH):</b>                | 250x51x30mm                  |
| <b>Weight (batteries included):</b> | 150g                         |

## Technical Specifications

|                                       | HT712                | HT710                |
|---------------------------------------|----------------------|----------------------|
| <b>DC voltage</b>                     |                      |                      |
| Measuring range:                      | 0.5V ÷ 600V          | 0.1mV ÷ 600V         |
| Resolution:                           | 0.1V                 | 0.1mV ÷ 1V           |
| Basic accuracy:                       | ±(0.8%rdg + 1 digit) | ±(0.8%rdg + 2digits) |
| <b>AC voltage with 2 terminals</b>    |                      |                      |
| Measuring range:                      | 1.5V ÷ 600V          | 1mV ÷ 600V           |
| Resolution:                           | 0.1V                 | 1mV ÷ 1V             |
| Basic accuracy:                       | ±(1.5%rdg + 5digits) | ±(1.0%rdg + 2digits) |
| <b>Resist. and Continuity test</b>    |                      |                      |
| Measuring range:                      | 1Ω ÷ 1500Ω           | 0.1Ω ÷ 40MΩ          |
| Resolution:                           | 1Ω                   | 0.1Ω ÷ 0.01MΩ        |
| Basic accuracy:                       | ±(1.0%rdg + 5digits) | ±(1.0%rdg + 3digits) |
| Continuity:                           | <100Ω                | <100Ω                |
| <b>Frequency with 2 terminals</b>     |                      |                      |
| Measuring range:                      | 40Hz ÷ 69Hz          | 0,001Hz ÷ 9,999kHz   |
| Resolution:                           | 0.1Hz                | 0,001Hz ÷ 0,001kHz   |
| Basic accuracy:                       | ±(0.5%rdg + 1 digit) | ±(0.8%rdg + 2digits) |
| <b>Phase sequence with 1 terminal</b> |                      |                      |
| Measuring range:                      | 100V ÷ 600V          | -                    |
| Resolution:                           | 1V                   | -                    |

## Accessories provided

|               |   |
|---------------|---|
| <b>P711EU</b> | Red measuring lead                                    |
| <b>P710EU</b> | Black measuring lead                                  |
| <b>B700</b>   | Holster   |
|               | ISO9000 calibration certificate ( <b>only HT712</b> ) |
|               | Batteries and user manual                             |



YouTube

ORDER CODE **HR000009** / **HR000008** / **HR000006**

# HT9|HT8|HT6

TWO-POLE MULTIFUNCTION TESTERS

Devices HT9, HT8 and HT6 are designed to carry out the basic measurements of a digital tester in a practical, quick and functional way thanks to their narrow and long structure, which allows carrying out measurements in any operating conditions. Model **HT9** carries out measurements of **AC/DC voltage**, **Continuity tests with buzzer**, **Diode test** and **Phase sequence** with **LED** indications and **display reading**. **HT9** also carries out **functional tests** on **internal gas lamps**. **HT8** carries out measurements of **AC/DC voltage**, **Continuity tests with buzzer**, **Diode test** and **Phase sequence** with **LED** indications and **Display reading**. **HT6** carries out measurements of **AC/DC voltage**, **Continuity tests with buzzer**, **Diode test** and **Phase sequence** with **LED** indication. These devices are provided with a white LED torch for use in poorly lit environments and complies with **safety** requirements of standards **IEC/EN61243-3:2010**, **IEC/EN61010-1** and **IEC/61010-2-030** in **CAT IV 600V**, **CAT III 690V**.



Use of the integrated LED torch.



Phase detection function through conductive button.



Multimeter function with display and LED indication.



Measurement of phase sequence.

## Functions

|   | HT9 | HT8 | HT6 |
|---|-----|-----|-----|
| AC/DC voltage up to 690V                      | •   | •   | •   |
| AC voltage with 1 terminal                    | •   | •   | •   |
| Phase sequence                                | •   | •   | •   |
| Continuity test with buzzer                   | •   | •   | •   |
| Diode test                                    | •   | •   | •   |
| LED indications and sound notifications       | •   | •   | •   |
| LCD display                                   | •   | •   | -   |
| Integrated torch                              | •   | •   | •   |
| Operation test of neon and fluorescent tubes  | •   | •   | •   |
| Operation test of sodium-vapor lamp           | •   | -   | -   |
| Operation test of mercury-vapor lamp          | •   | -   | -   |
| Operation test of halogen lamps               | •   | -   | -   |
| Check of non-electronic reactors and starters | •   | -   | -   |

## Main features

**Display:** LCD, 4digits, 6900 dots (**HT9-HT8**)  
**Power supply:** 2x1.5V battery type AAA LR03  
**Safety:** IEC/EN61010-1, IEC/EN61010-2-030 (**HT9-HT8**), IEC/EN61243-3:2010  
**Measurement category:** CAT IV 600V – CAT III 690V  
**Pollution level:** 2  
**Insulation:** double insulation  
**Size (LxWxH):** 255x60x35mm  
**Weight (batteries included):** 170g

## Technical Specifications

|  | HT9 - HT8                 | HT6                          |
|--|---------------------------|------------------------------|
| <b>DC/AC voltage</b>                       |                           |                              |
| Measuring range:                           | 10V ÷ 690V                | 12V ÷ 690V                   |
| Frequency band:                            | 16Hz ÷ 400Hz              | 16Hz ÷ 400Hz                 |
| Resolution:                                | 0.1V                      | 1V                           |
| Basic accuracy:                            | ±(3%reading + 5digits)    | in compliance with EN61243-3 |
| Protection against overcharge:             | 690VDC/AC                 | 690VDC/AC                    |
| <b>AC voltage with 1 terminal</b>          |                           |                              |
| Measuring range:                           | 100V ÷ 690V               | 100V ÷ 690V                  |
| Frequency band:                            | 50Hz ÷ 60Hz               | 50Hz ÷ 60Hz                  |
| Protection against overcharge:             | 690VAC                    | 690VAC                       |
| <b>Phase sequence</b>                      |                           |                              |
| Measuring range:                           | 120V ÷ 400V (Phase-Earth) | 120V ÷ 400V (Phase-Earth)    |
| Frequency band:                            | 50Hz ÷ 60Hz               | 50Hz ÷ 60Hz                  |
| Protection against overcharge:             | 690VAC                    | 690VAC                       |
| <b>Continuity test with LED and buzzer</b> |                           |                              |
| Measuring range:                           | 0Ω ÷ 500kΩ                | 0Ω ÷ 500kΩ                   |
| Test current:                              | <7μA                      | <7μA                         |
| <b>Lamp test (only HT9)</b>                |                           |                              |
| Voltage with new battery:                  | approx. 3kV / 240kHz      | -                            |
| Range intensity (200-280kHz):              | Approx. 100μV/m           | -                            |

## Accessories provided

- Protection cap for lead, 2 pieces
- Adapter 4mm for lead, 2 pieces
- PR9 Mobile lead
- Batteries and user manual

## Optional accessories

- PR9 Mobile lead





ORDER CODE **HR000005**

# IRONMETER



TRMS MULTIMETER  
WITH INTEGRATED LED FLASHLIGHT

IRONMETER is a veritable construction site tester with a sturdy casing able to withstand **shocks of all kinds**, always ready to get up after a fall, (even from 10 meters height) and continue to operate with the same accuracy and reliability. It has **all the features required for typical daily usage** but with **integrated LED flashlight** to illuminate in spaces with poor lighting.



ORDER CODE **HR000012**

# HT12

POCKET DIGITAL MULTIMETER  
WITH INTEGRATED AC/DC 60A  
FORK CLAMP METER

Model HT12 is a **super compact** digital multimeter capable of carrying out measurements of **Voltage up to 600V, AC/DC current up to 60A** with **integrated clamp sensor** and complementary functions of **Resistance, Continuity test** and **Frequency**. This device has been designed in compliance with **safety standard IEC/EN61010-1** with double protective insulation in **CAT III 300V, CAT II 600V**. Further functions are **Data HOLD** to freeze data on the display and the **Auto Power OFF** function after 10 minutes' idling, in order to preserve the internal battery. The device is housed in a **protective case** which is also used to rewind the test leads.



## Functions

- TRMS Measurements
- AC/DC Voltage
- AC/DC Current
- Resistance/Continuity Test
- Frequency
- Capacitance, Diode test
- Duty cycle
- Built-in flashlight
- Data HOLD, MAX/MIN
- Autorange
- Backlight
- Auto Power OFF

## Main features

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <b>Power supply:</b>                | 2x1.5 V batteries type AAA LR03 |
| <b>Display:</b>                     | 4 digit LCD, 4000 pixels        |
| <b>Auto Power OFF</b>               | after 15 minutes of non-use     |
| <b>Safety:</b>                      | IEC/EN61010-1                   |
| <b>Measurement category:</b>        | CAT III 600V                    |
| <b>Level of pollution:</b>          | 2                               |
| <b>Max operating altitude:</b>      | 2000m                           |
| <b>Dimensions (LxWxH):</b>          | 120x85x45mm                     |
| <b>Weight (batteries included):</b> | approximately 200 g             |

## Supplied accessories

|                 |  |
|-----------------|--|
| <b>KIT4000A</b> | Test leads                               |
|                 | Batteries, user manual and transport bag |

## Technical specifications

- DC Voltage**
- Reading range: 0.1mV ÷ 600V
  - Resolution: 0.1mV ÷ 1V
  - Standard accuracy: ± (1.0% reading + 3digits)
  - Protection: 600VDC/ACrms
- AC TRMS Voltage**
- Reading range: 1mV ÷ 600V
  - Resolution: 1mV ÷ 1V
  - Standard accuracy: ± (1.0% reading + 3digits)
  - Protection: 600VDC/ACrms
- DC Current**
- Reading range: 0.1µA ÷ 10A
  - Resolution: 0.1µA ÷ 0.01A
  - Standard accuracy: ± (1.0% reading + 3digits)
  - Protection: F500mA/600V, F10A/600V fuses
- AC TRMS Current**
- Reading range: 0.1µA ÷ 10A
  - Resolution: 0.1µA ÷ 0.01A
  - Standard accuracy: ± (1.0% reading + 3digits)
  - Protection: F500mA/600V, F10A/600V fuses
- Resistance and continuity test**
- Reading range: 0.1Ω ÷ 40MΩ
  - Resolution: 0.1Ω ÷ 0.01MΩ
  - Standard accuracy: ± (1.5% reading + 5digits)
  - Continuity test: <50Ω
  - Protection: 600VDC/ACrms
- Frequency**
- Reading range: 10Hz ÷ 10kHz
  - Resolution: 0.01Hz
  - Standard accuracy: ± (1.2% reading)
  - Protection: 600VDC/ACrms
- Duty cycle**
- Reading range: 0.1% ÷ 99.9%
  - Resolution: 0.1%
  - Standard accuracy: ± (1.2% reading + 2digits)
  - Protection: 600VDC/ACrms
- Capacity**
- Reading range: 0.01nF ÷ 4000µF
  - Resolution: 0.01nF ÷ 1µF
  - Standard accuracy: ± (3.0% reading+5digits)
  - Protection: 600VDC/ACrms

## Functions

- 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

|                                     |                              |
|-------------------------------------|------------------------------|
| <b>Display:</b>                     | LCD, 3½ digits, 3400 dots    |
| <b>Power supply:</b>                | 2x1.5V battery type AAA LR03 |
| <b>Auto Power OFF:</b>              | after 10 minutes' idling     |
| <b>Safety:</b>                      | IEC/EN 61010-1               |
| <b>Measurement category:</b>        | CAT III 300V, CAT II 600V    |
| <b>Pollution level:</b>             | 2                            |
| <b>Insulation:</b>                  | double insulation            |
| <b>Size (LxWxH):</b>                | 128x87x24mm                  |
| <b>Weight (batteries included):</b> | 210g                         |

## Accessories provided

|  |       |
|--|-------|
| 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: 0Ω ÷ 34MΩ
  - Resolution: 0.1Ω ÷ 0.01MΩ
  - Basic accuracy: ±(1%reading + 3digits)
  - Protection against overcharge: 720VDC/AC for 10 seconds
  - Continuity buzzer: R<30Ω ± 10Ω
- Frequency**
- Current measuring range: 0Hz ÷ 10kHz
  - Voltage measuring range: 0Hz ÷ 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

COMPARISON TABLE OF ACCESSORIES












HT701 HT401 HT60 HT61 HT62 HT63 HT64 IRON METER HT12 HT210 HT21 HT25N HT14D HT603 HT712 HT710 HT9 HT8 HT6

| Accessory  | HT701 | HT401 | HT60 | HT61 | HT62 | HT63 | HT64 | IRON METER | HT12 | HT210 | HT21 | HT25N | HT14D | HT603 | HT712 | HT710 | HT9 | HT8 | HT6 |
|--|-------|-------|------|------|------|------|------|------------|------|-------|------|-------|-------|-------|-------|-------|-----|-----|-----|
|  <p><b>T10</b><br/>Adapter for K-type probes for multimeters<br/>ORDER CODE HA100010</p>  | S     | S     | S    | -    | S    | S    | S    | -          | -    | S     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>TK101</b><br/>K-type wire thermocouple<br/>Measuring range: - 20 ÷ 250°C<br/>ORDER CODE HA000108</p>  | S     | S     | S    | -    | S    | S    | S    | -          | -    | S     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>TK107</b><br/>K-type thermocouple for air and gas temperature<br/>Measuring range: - 40 ÷ 800°C<br/>ORDER CODE HA110000</p>   | 0     | 0     | 0    | -    | 0    | 0    | 0    | -          | -    | 0     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>TK108</b><br/>K-type thermocouple for internal temperatures of liquids and semi-solid substances<br/>Measuring range: - 40 ÷ 800°C<br/>ORDER CODE HA110001</p>            | 0     | 0     | 0    | -    | 0    | 0    | 0    | -          | -    | 0     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>TK109</b><br/>K-type thermocouple for internal temperatures of liquid and solid substances, fruit and food<br/>Measuring range: - 40 ÷ 800°C<br/>ORDER CODE HA110002</p> | 0     | 0     | 0    | -    | 0    | 0    | 0    | -          | -    | 0     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>TK110</b><br/>"K"-type thermocouple for surface temperatures<br/>Measuring range: - 40 ÷ 400°C<br/>ORDER CODE HA110003</p>  | 0     | 0     | 0    | -    | 0    | 0    | 0    | -          | -    | 0     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>TK111</b><br/>"K"-type thermocouple for surface temperatures with 90° fixed tip<br/>Measuring range: - 40 ÷ 400°C<br/>ORDER CODE HA110004</p>                           | 0     | 0     | 0    | -    | 0    | 0    | 0    | -          | -    | 0     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>A64</b><br/>Battery charger for HT64</p>   | -     | -     | -    | -    | -    | -    | S    | -          | -    | -     | -    | -     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>B80</b><br/>Soft carrying bag for multimeter and leads<br/>ORDER CODE HA001180</p>   | -     | 0     | 0    | 0    | 0    | 0    | 0    | 0          | -    | 0     | 0    | 0     | -     | -     | -     | -     | -   | -   | -   |
|  <p><b>P710EU</b><br/>Cable length 1.10m with 4mm lead<br/>ORDER CODE HA071000</p>  | -     | -     | -    | -    | -    | -    | -    | -          | -    | -     | -    | -     | -     | -     | S     | S     | -   | -   | -   |
|  <p><b>P711EU</b><br/>Red upper lead 4mm<br/>ORDER CODE HA071200</p>  | -     | -     | -    | -    | -    | -    | -    | -          | -    | -     | -    | -     | -     | -     | S     | S     | -   | -   | -   |

S = Standard 0 = Optional \* for USB connection, the adapter C2009 is necessary

HT701 HT401 HT60 HT61 HT62 HT63 HT64 IRON METER HT12 HT210 HT21 HT25N HT14D HT603 HT712 HT710 HT9 HT8 HT6

|   |  |     |     |     |     |     |     |     |     |     |     |     |     |     |   |     |     |   |   |   |   |
|---|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|---|---|---|---|
|    | <b>4413-2</b><br>Pair of leads with 4mm tip and protection, red/black and 90° banana plug<br><i>ORDER CODE HA441200</i>  | S   | S   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | S   | 0   | - | -   | -   | - | - | - | - |
|    | <b>KIT4000A</b><br>Pair of leads with 2mm tip, red/black and 90° banana plug<br><i>ORDER CODE HA000174</i>   | 0   | 0   | S   | S   | S   | S   | S   | S   | S   | S   | S   | 0   | S   | - | -   | -   | - | - | - | - |
|    | <b>4717-S-IEC100#</b><br>Leads with retractable safety tip # = black N - B (blue) - R (red)<br><i>ORDER CODE 4717-S-IEC100#</i>  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | - | 0   | 0   | - | - | - | - |
|    | <b>404-IEC#</b><br>Measuring lead with protection cap diameter 4mm # = colour N (black) - B (blue) - V (green)<br><i>ORDER CODE HA40400#</i>   | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | - | 0** | 0** | - | - | - | - |
|    | <b>5004-IEC#</b><br>Insulated alligator clip for 4mm banana cables # = colour N (black) - B (blue) - V (green) - R (red)<br><i>ORDER CODE HA50040#</i>   | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | - | 0** | 0** | - | - | - | - |
|   | <b>6007-IEC#</b><br>Flexible alligator clip (6A) for 4mm banana cables # = colour N (black) - R (red)<br><i>ORDER CODE HA60070#</i>  | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | - | 0** | 0** | - | - | - | - |
|  | <b>6009-IEC#</b><br>Rigid alligator clip (20A) for 4mm banana cables # = colour N (black) - R (red)<br><i>ORDER CODE HA60090#</i>  | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | 0** | - | 0** | 0** | - | - | - | - |
|  | <b>5001-#</b><br>Cable with 4mm banana-banana connector, 1.5m long # = colour N (black) - B (blue) - V (green) - R (red)<br><i>ORDER CODE HA05001#</i>   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | - | 0   | 0   | - | - | - | - |
|  | <b>425</b><br>Kit consisting in 2 4mm banana-banana cables, 2 leads 404-IECN+R and 2 rigid alligator clips (20A)<br><i>ORDER CODE HA425000</i>   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | - | 0   | 0   | - | - | - | - |
|  | <b>44100</b><br>Set of 2 4mm banana-banana cables, 2 leads 402-IECN+R, 2 alligator clips 6009-IECN+R + 2 long clamp terminals and a set of alligator clips KITMPPDCC<br><i>ORDER CODE HA441000</i> | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | - | 0   | 0   | - | - | - | - |
|  | <b>PR701</b><br>Remote leads with test starting button<br><i>ORDER CODE HA000701</i>   | S   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | - | -   | -   | - | - | - | - |
|  | <b>PR9</b><br>Mobile lead for HT6-HT8-HT9<br><i>ORDER CODE HA000426</i>  | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | - | -   | -   | S | S | S | S |

S = Standard 0 = Optional \*\* Cable with 4mm banana necessary (e.g. 5001-#)



# PHASE SEQUENCE INDICATORS CIRCUIT BREAKER FINDER VOLTAGE DETECTORS



## COMPARISON TABLE FUNCTIONS



HT82

HT70

HT20S

HT38

HT5

### MAIN MEASUREMENTS

|   | HT82                  | HT70                   | HT20S                  | HT38               | HT5                  |
|---|-----------------------|------------------------|------------------------|--------------------|----------------------|
| Measuring range   | 40÷600VAC<br>15÷400Hz | 100÷1000VAC<br>50÷60Hz | 100÷1000VAC<br>50÷60Hz | 200÷250VAC<br>50Hz | 60÷250VAC<br>50÷60Hz |
| Circuit breaker localization  | -                     | -                      | -                      | •                  | -                    |
| 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   | -                     | •                      | •                      | •                  | •                    |

### ADDITIONAL MEASUREMENTS

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| Test of neon tube internal gas                                      | - | - | - | - | • |
| 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 detector 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               | -             | -             | •             | -                                   | •             |
| Safety                         | CAT III 600V  | CAT IV 1000V  | CAT IV 1000V  | CAT III 250V                        | CAT III 300V  |
| Reference standard for safety  | IEC/EN61010-1 | IEC/EN61010-1 | IEC/EN61010-1 | IEC/EN61010-1                       | IEC/EN61010-1 |
| Power supply                   | from power    | 2x 1.5V AAA   | 2x 1.5V AAA   | Dalla rete (HT38T)<br>1X 9V (HT38R) | 1X 9V         |
| Size (LxWxH) (mm)              | 130x69x22     | 160x26x20     | 160x26x20     | 95x60x30                            | 255x60x40     |
| Weight in grams                | 130           | 48            | 48            | 140                                 | 170           |
| Order Code                     | HA000156      | HR000070      | HR000296      | HR000038                            | HA000138      |



ORDER CODE **HA000156**

# HT82

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



ORDER CODE **HR000070** / **HR000296**

# HT70|HT20S

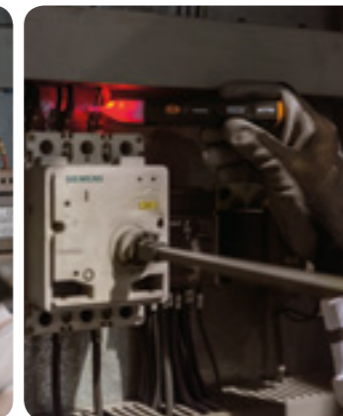
VOLTAGE DETECTOR WITH MEASUREMENT OF PHASE SEQUENCE (HT70)

YouTube

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 assumed phase L1 of the three-phase system (on the conductor or sheath) for **at least 5s** and wait for the **red LED** to flash together with the buzzer sounding.



**Step2** - Now rest and keep HT70 on the assumed phase L2 (on the conductor or sheath) for **at least another 5s** and wait for the **LED** to flash together with the buzzer sounding.



**Step3** - If the **green LED** turns on with steady light, phase sequence is **correct**. If, however, the **red LED** flashes, phase sequence is **incorrect**.

## Functions

- Indications “R” and “L” on the display to measure phase sequence

## Accessories provided

|       |  |
|-------|--|
| KIT82 | Set of 3 cables + 3 alligator clips<br>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, 1.5m long    |

## Functions

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

## Main features

|                              |   |
|------------------------------|---|
| AC reference voltage:        | 100V ÷ 1000V to earth                           |
| Frequency:                   | 50/60Hz   |
| Power supply:                | 2x1.5V alkaline batteries type AAA NEDA24A LR03 |
| Pollution level:             | 2   |
| Safety:                      | IEC/EN61010-1                                   |
| Measurement category:        | CAT IV 1000V                                    |
| Size (LxWxH):                | 160x26x20mm                                     |
| Weight (batteries included): | 48 g  |

## Main features

|                              |                                  |
|------------------------------|----------------------------------|
| Power supply:                | from power 40V ÷ 600V / 15-400Hz |
| Display:                     | LCD display                      |
| Pollution level:             | 2                                |
| Safety:                      | IEC/EN61010-1                    |
| Measurement category:        | CAT III 600V                     |
| Size (LxWxH):                | 130x69x22mm                      |
| Weight (batteries included): | 130 g                            |

## Accessories provided

|             |
|-------------|
| Battery     |
| User manual |



ORDER CODE **HR000038**

# HT38

CIRCUIT BREAKER FINDER

HT38 belongs to that category of instruments (not necessarily meters) that make the job easier for all engineers that need to **detect reference switches** in power lines. The instrument consists of two elements: HT38T which, once plugged in, generates a signal and a receiver HT38R, that recognizes the signal, **indicates the reference switch via a LED and a sound**.



ORDER CODE **HA000138**

# HT5

VOLTAGE DETECTOR  
WITH TEST OF GAS-FILLED LAMPS

Model 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**.

YouTube



## 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

## Supplied 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°C ÷ 40°C (32°F ÷ 104°F)       |
| Operating humidity:        | <80%RH                          |
| Storage temperature:       | 0°C ÷ 50°C (32°F ÷ 122°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

## Main features

|                              |                              |
|------------------------------|------------------------------|
| Power supply:                | 1x9V batteries type IEC 6F22 |
| Safety:                      | IEC/EN61010-1                |
| Measurement category:        | CAT III 300V                 |
| Size (LxWxH):                | 255x60x40mm                  |
| Weight (batteries included): | 170g                         |

## Accessories provided

Batteries  
User manual



**HT**  
**CLAMP METERS**



**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 switchboards
- › Electric motors
- › Measurements near inverters
- › Photovoltaic installations

**Why?**

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.



**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

**Where?**

- › Domestic and industrial electric systems
- › Electric panels
- › Electric motors
- › Photovoltaic installations

**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.



**Leakage clamps**

**Who?**

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

**Where?**

- › Electric panels
- › Electric motors
- › Earthing systems

**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.

# COMPARISON TABLE FUNCTIONS



## MAIN MEASUREMENTS

|   | HT9022  | HT9021 | HT9020  | HT9019 | HT9015 | HT9014 | HT9012 | HT4022 | HT4020 | HT4013 | HT4012 | HT4011 | HT4010 | HT78  | HT77N | F3000 | HT100 | HT7003 |
|---|---------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|--------|
| TRMS  | •       | •      | •       | •      | •      | •      | -      | •      | •      | -      | -      | -      | -      | •     | •     | •     | •     | -      |
| Current measuring range:                    | 1000A   | 1000A  | 1000A   | 1000A  | 600A   | 600A   | 600A   | 400A   | 400A   | 400A   | 400A   | 400A   | 600A   | 3000A | 100A  | 3000A | 200A  | 300A   |
| AC/DC current                               | • AC+DC | •      | • AC+DC | • AC   | •      | • AC   | • AC   | • AC   | • AC   | •      | • AC   | • AC   | • AC   | • AC  | • AC  | • AC  | • AC  | • AC   |
| AC/DC voltage                               | •       | •      | •       | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | -     | -     | -     | •     | -      |
| Leakage current                             | -       | -      | -       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | •     | •     | -     | -     | -      |
| Frequency                                   | •       | •      | •       | -      | •      | •      | -      | •      | •      | •      | -      | •      | -      | -     | -     | -     | -     | -      |
| Resistance and continuity test with buzzer  | •       | •      | •       | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | -     | -     | -     | •     | -      |
| Capacity                                    | -       | •      | -       | -      | •      | •      | -      | -      | -      | •      | -      | •      | -      | -     | -     | -     | -     | -      |
| Diode test                                  | -       | •      | -       | -      | •      | •      | •      | -      | -      | •      | •      | •      | •      | -     | -     | -     | •     | -      |
| Duty Cycle (%)                              | -       | -      | -       | -      | •      | •      | -      | -      | -      | •      | -      | •      | -      | -     | -     | -     | -     | -      |
| Temperature with K-type probe               | -       | •      | -       | -      | •      | •      | -      | -      | -      | •      | •      | •      | -      | -     | -     | -     | -     | -      |
| Phase sequence and phase concordance        | •       | -      | •       | -      | -      | -      | -      | •      | •      | -      | -      | -      | -      | -     | -     | -     | -     | -      |
| Automatic recognition of internal functions | -       | -      | -       | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -     | -     | -     | •     | -      |

## POWER ANALYSIS

|   |   |   |                  |   |   |   |   |    |    |   |   |   |   |   |   |   |   |   |
|---|---|---|------------------|---|---|---|---|----|----|---|---|---|---|---|---|---|---|---|
| AC/DC voltage, current measurement/recording                                | • | - | •*               | - | - | - | - | •* | •* | - | - | - | - | - | - | - | - | - |
| Measurement/recording of Active, Reactive, Apparent AC/DC Power             | • | - | •*               | - | - | - | - | •* | •* | - | - | - | - | - | - | - | - | - |
| Measurement/recording of Active, Reactive, Apparent AC/DC Energy            | • | - | •*               | - | - | - | - | •* | •* | - | - | - | - | - | - | - | - | - |
| Measurement/recording of Cosphi, Power Factor                               | • | - | •*               | - | - | - | - | •* | •* | - | - | - | - | - | - | - | - | - |
| Measurement/recording of V-I harmonics up to the 25th with THD% calculation | • | - | •*               | - | - | - | - | -  | •* | - | - | - | - | - | - | - | - | - |
| Inrush current measurement (INRUSH)   | • | - | • Dynamic INRUSH | - | - | - | - | -  | -  | - | - | - | - | - | - | - | - | - |

## ADDITIONAL CHARACTERISTICS

|  | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V<br>CAT III 300V | CAT III 300V      | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT III 300V      |
|--|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------------------|-------------------|------------------------------|------------------------------|-------------------|
| Measurement category:                            | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V      | CAT III 600V<br>CAT III 300V | CAT III 300V      | CAT IV 600V<br>CAT III 1000V | CAT IV 600V<br>CAT III 1000V | CAT III 300V      |
| Maximum diameter for clamp                       | 45mm                         | 45mm                         | 45mm                         | 45mm                         | 30mm                         | 30mm                         | 30mm                         | 30mm              | 30mm              | 30mm              | 30mm              | 30mm              | 30mm              | 30mm              | 108mm                        | 40mm              | 110mm                        | 16mm                         | 27mm              |
| Measuring spots                                  | -                            | 6000                         | -                            | 6000                         | 6000                         | 6000                         | 2000                         | 10000             | 10000             | 4000              | 2000              | 4000              | 2000              | 3200              | 6000                         | 3000              | 10000                        | 4000                         |                   |
| Backlight  | •                            | •                            | •                            | •                            | •                            | •                            | •                            | •                 | •                 | -                 | -                 | -                 | •                 | -                 | •                            | •                 | •                            | •                            | -                 |
| Bargraph   | -                            | •                            | -                            | •                            | •                            | •                            | -                            | •                 | •                 | -                 | -                 | -                 | -                 | -                 | •                            | -                 | -                            | -                            | -                 |
| Autorange  | •                            | •                            | •                            | •                            | •                            | •                            | •                            | •                 | •                 | -                 | •                 | •                 | •                 | •                 | •                            | •                 | •                            | •                            | •                 |
| Auto power off                                   | •                            | •                            | •                            | •                            | •                            | •                            | •                            | •                 | •                 | •                 | •                 | •                 | •                 | •                 | •                            | •                 | •                            | •                            | •                 |
| Detection of AC voltage without contact          | •                            | •                            | •                            | •                            | •                            | •                            | •                            | -                 | -                 | •                 | -                 | •                 | •                 | •                 | -                            | -                 | -                            | •                            | -                 |
| Data HOLD function                               | •                            | •                            | •                            | •                            | •                            | •                            | •                            | •                 | •                 | •                 | •                 | •                 | •                 | •                 | •                            | •                 | •                            | •                            | •                 |
| MIN/MAX function                                 | •                            | •                            | •                            | •                            | •                            | •                            | • MAX                        | •                 | •                 | -                 | -                 | -                 | • MAX             | -                 | -                            | -                 | -                            | -                            | -                 |
| AVG function (AVERAGE)                           | -                            | -                            | -                            | -                            | -                            | -                            | -                            | •                 | •                 | -                 | -                 | -                 | -                 | -                 | -                            | -                 | -                            | -                            | -                 |
| PEAK function                                    | •                            | •                            | •                            | •                            | •                            | •                            | -                            | •                 | •                 | -                 | -                 | -                 | -                 | -                 | •                            | -                 | -                            | -                            | -                 |
| Relative measurement (ZERO)                      | -                            | •                            | -                            | -                            | •                            | •                            | -                            | -                 | -                 | •                 | -                 | •                 | -                 | -                 | -                            | -                 | -                            | -                            | -                 |
| Low-pass filter to eliminate harmonic components | -                            | -                            | -                            | -                            | -                            | -                            | -                            | -                 | -                 | -                 | -                 | -                 | -                 | • 150Hz           | • 100Hz                      | -                 | -                            | -                            | -                 |
| Analogue output                                  | -                            | -                            | -                            | -                            | -                            | -                            | -                            | -                 | -                 | -                 | -                 | -                 | -                 | -                 | •                            | -                 | -                            | -                            | -                 |
| Recording of electric parameters over time       | •                            | -                            | •                            | -                            | -                            | -                            | -                            | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                            | -                 | -                            | -                            | -                 |
| Memory for data saving                           | •                            | -                            | •                            | -                            | -                            | -                            | -                            | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                            | -                 | -                            | -                            | -                 |
| PC / Smartphone or Tablet interface              | • Bluetooth                  | -                            | -                            | -                            | -                            | -                            | -                            | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                            | -                 | -                            | -                            | -                 |
| Power supply                                     | 2x 1.5V AAA                  | 1x 9V 6F22                   | 2x 1.5V AAA                  | 1x 9V 6F22                   | 1x 9V 6F22                   | 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       | 1x 9V 6F22        | 2x 1.5V AAA       | 2x 1.5V AAA                  | 2x 1.5V AAA       | 2x 1.5V AAA                  | 2x 1.5V AAA                  | 1x 3V CR2032      |
| Size in mm (L x W x H)                           | 252x88x44                    | 252x88x44                    | 252x88x44                    | 252x88x44                    | 215x74x43                    | 215x74x43                    | 215x74x43                    | 205x64x39         | 205x64x39         | 200x66x37         | 205x64x39         | 200x66x37         | 197x70x40         | 341x194x52        | 200 x 70 x 40                | 280x120x25        | 193 x 54 x 31                | 150x52x24                    |                   |
| Weight in grams (batteries included)             | 420                          | 442                          | 420                          | 402                          | 285                          | 285                          | 285                          | 280               | 280               | 205               | 280               | 205               | 180               | 1900              | 265                          | 170               | 280g                         | 110                          |                   |
| Reference standard for safety                    | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1 | IEC/<br>EN61010-1            | IEC/<br>EN61010-1 | IEC/<br>EN61010-1            | IEC/<br>EN61010-1            | IEC/<br>EN61010-1 |
| Codice Metel                                     | HP009022                     | HP009021                     | HP009020                     | HP009019                     | HP009015                     | HP009014                     | HP009012                     | HP004022          | HP004020          | HP004013          | HP004012          | HP004011          | HP004010          | HP000078          | HP00077N                     | HP030000          | HP000100                     | HP007003                     |                   |

\* Only measurement in real time





ORDER CODE **HP009022** | **HP009020**

# HT9022 | HT9020

PROFESSIONAL CLAMP METERS WITH POWER/HARMONIC MEASUREMENT AND BLUETOOTH CONNECTION (HT9022)



TRMS



Power clamp meters HT9022 and 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. They also measure **Active, Reactive and Apparent Power, Energy, voltage/current harmonic analysis up to the 25th with THD% calculation** in balanced single-phase or three-phase systems. They also allow 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**. HT9022, compared to HT9020, also allows **recording** each measured electric parameter over time, with the possibility of transferring data via **Bluetooth** to **Android** devices through the **HTAnalysis** App or onto PC through the **TOPVIEW** software. The clamps are 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 **HP009021**

# HT9021

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



TRMS

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.

## 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/recording of DC power and energy (**HT9022**)
- Active, reactive, apparent power meas./rec. on single-phase systems (**HT9022**)
- Active, reactive, apparent energy meas./rec. on single-phase systems (**HT9022**)
- Power factor measurement/recording on single-phase systems (**HT9022**)
- Voltage/current harmonic meas./rec. up to the 25th and THD% (**HT9022**)
- Measurement of DC power and energy (**HT9020**)
- Active, reactive, apparent power measurement on single-phase systems (**HT9020**)
- Active, reactive, apparent energy measurement on single-phase systems (**HT9020**)
- Power factor measurement on single-phase systems (**HT9020**)
- Voltage/current harmonic measurement up to the 25th and THD% (**HT9020**)
- Motor starting (INRUSH) current detection
- Data logger function with programmable PI (**HT9022**)
- Autorange
- Backlight
- Auto Power OFF
- Data HOLD, MAX/MIN/CREST
- Bluetooth for connection to PC and Android devices (**HT9022**)

## Main features

**Display:** dot-matrix 128x128pxl with backlight  
**Power supply:** 2x1.5V batteries type AAA  
**Duration:** > 50 hours  
**Internal memory:** 2MBytes (**HT9022**) (approx. 2 days @ IP=15min and 60 parameters)  
**PC interface:** Bluetooth (**HT9022**)  
**Safety:** IEC/EN61010-1  
**Insulation:** Double insulation  
**Pollution level:** 2  
**Measurement category:** CAT IV 600V to earth, max 1000V between inputs  
**Max diameter of cable:** 45mm  
**Size (LxWxH):** 252x88x44mm  
**Weight (batteries included):** 0.42kg

## Accessories provided

|              |  |
|--------------|--|
| YAAMK0000HTO | Pair of test leads   |
| YAAMK0001HTO | Pair of alligator clips  |
| TOPVIEWS     | Windows software for PC connection<br>Bluetooth/USB adapter for PC connection                                  |
| YABRS0000NNO | Soft carrying bag<br>Batteries<br>User manual on CD-ROM<br>ISO9000 calibration certificate<br>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)
- 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  
**Safety:** IEC/EN61010-1  
**Measurement category:** CAT IV 600V – CAT III 1000V  
**Insulation:** double insulation  
**Pollution level:** 2  
**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: ±(2.0%reading + 8digits)
- AC TRMS current**
- Measuring range: 0.3A ÷ 1000A
  - 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
- 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)

## Accessories provided

|              |  |
|--------------|--|
| YAAMK0000HTO | Pair of test leads                             |
| T10          | Adapter for K-type wire probe                  |
| TK101        | K-type wire probe                              |
| YABRS0000NNO | Soft carrying bag<br>Batteries and user manual |



TRMS

ORDER CODE **HP009019**

# HT9019

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.



TRMS

ORDER CODE **HP009015**

# HT9015

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.



## Functions

- TRMS measurements
- AC current up to 1000A
- AC/DC voltage up to 1000V
- Resistance and Continuity test
- "Voltsense" for AC voltage detection
- Autorange
- Data HOLD
- MAX/MIN
- PEAK CURRENT (<10ms)
- Bargraph
- Backlight
- AutoPowerOFF

## Main features

**Display:** LCD, 4 digits, 6000 dots  
**Conversion type:** TRMS  
**Power supply:** 1x9V batteries type IEC 6F22  
**Auto Power OFF:** after 15 minutes' idling  
**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

## 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: 3Ω ÷ 60MΩ
  - Resolution: 0.1Ω ÷ 0.01MΩ
  - Basic accuracy: ±(1.0%reading + 5digits)
  - Continuity buzzer: <50Ω

## Accessories provided

|              |                           |
|--------------|---------------------------|
| YAAMK0000HTO | Pair of test leads        |
| YABRS0000NNO | Soft carrying bag         |
|              | Batteries and user manual |

## 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  
**Auto Power OFF:** after 15 minutes' idling  
**Max diameter of clamp:** 30mm  
**Safety:** IEC/EN61010-1  
**Measurement category:** CAT IV 600V - CAT III 1000V  
**Insulation:** double insulation  
**Pollution level:** 2  
**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
- 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)

## Accessories provided

|              |  |
|--------------|--|
| YAAMK0000HTO | Pair of test leads                         |
| T10          | Adapter for K-type wire probe              |
| TK101        | K-type wire probe                          |
|              | Battery, User manual and Soft carrying bag |



ORDER CODE **HP009014**

# HT9014

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.



ORDER CODE **HP009012**

# HT9012

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

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

## 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: 0.1Ω ÷ 0.01kΩ
  - Basic accuracy: ±(1.0%reading + 5digits)
  - Continuity test: <60Ω
- 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

## Functions

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

## Main features

- Display:** LCD, 3 1/2 digits, 2000 dots
- 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: 1Ω ÷ 20MΩ
  - Resolution: 0.1Ω ÷ 0.01MΩ
  - Basic accuracy: ±(1.0%reading + 5digits)
  - Continuity buzzer: <100Ω

## Accessories provided

- |              |                                   |
|--------------|-----------------------------------|
| YAAMK0000HT0 | Pair of test leads                |
|              | Battery                           |
|              | User manual and Soft carrying bag |

## Main features

- Display:** LCD, 4 digits, 6000 dots
- Conversion type:** TRMS
- Power supply:** 1x9V battery type IEC 622
- Auto Power OFF:** 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

## Accessories provided

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

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

# HT4022 | HT4020

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. Model 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

|                                     |                                |
|-------------------------------------|--------------------------------|
| <b>Display:</b>                     | LCD, 4 digits, 10000 dots      |
| <b>Conversion type:</b>             | TRMS, 64 samples in 20ms       |
| <b>Power supply:</b>                | 2x1.5V batteries type AAA LR03 |
| <b>Auto Power OFF:</b>              | after 5 minutes' idling        |
| <b>Safety:</b>                      | IEC/EN 61010-1                 |
| <b>Measurement category:</b>        | CAT III 600V                   |
| <b>Pollution level:</b>             | 2                              |
| <b>Insulation:</b>                  | double insulation              |
| <b>Max height:</b>                  | 2000mm                         |
| <b>Clamp jaw internal diameter</b>  | 30mm                           |
| <b>Size (LxWxH):</b>                | 205x64x39mm                    |
| <b>Weight (batteries included):</b> | approx 280g                    |

## Accessories provided

|              |                                 |
|--------------|---------------------------------|
| 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                 |
|--|------------------------|------------------------|
| <b>DC voltage</b>  |                        |                        |
| 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                |
| <b>AC TRMS voltage</b>                                     |                        |                        |
| 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                |
| <b>AC TRMS current</b>                                     |                        |                        |
| 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                |
| <b>Active, Reactive, Apparent AC power [kW, kVAR, kVA]</b> |                        |                        |
| 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                 |
|---|------------------------|------------------------|
| <b>Power factor and Cosφ</b>                    |                        |                        |
| Measuring range:                                | 0.20 ÷ 1.00            | 0.20 ÷ 1.00            |
| Resolution:                                     | 0.01                   | 0.01                   |
| Basic accuracy:                                 | ±3°                    | ±3°                    |
| <b>voltage and current harmonics</b>            |                        |                        |
| Harmonic order                                  | 1 ÷ 25                 | -                      |
| Resolution [V, A]                               | 0.1                    | -                      |
| Basic accuracy:                                 | ±(10%read. + 5digits)  | -                      |
| <b>Resistance and Continuity test</b>           |                        |                        |
| 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                |
| <b>Frequency with test leads and clamp jaws</b> |                        |                        |
| 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        |
| <b>Phase sequence with 1 terminal</b>           |                        |                        |
| Measuring range:                                | 50V ÷ 600V             | 50V ÷ 600V             |
| Frequency range:                                | 40Hz ÷ 69Hz            | 40Hz ÷ 69Hz            |
| Protection:                                     | 600Vrms                | 600Vrms                |



ORDER CODE **HP004013**

# HT4013

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.



ORDER CODE **HP004012**

# HT4012

CLAMP METER AC 400A

Clamp meter HT4012 can carry out measurements of **AC current up to 400 A and AC/DC voltage up to 600V, Resistance and Continuity**. Thanks to the practical patented **rubber protection** which covers the jaws **it is possible to insert a lead** into the free slot and, therefore, **by working with a single hand**, simple and quick measurements are guaranteed. 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.



## Functions

- AC/DC 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

|                                     |   |
|-------------------------------------|---|
| <b>Display:</b>                     | LCD, 4 digits, 4000 dots                |
| <b>Conversion type:</b>             | RMS                                     |
| <b>Power supply:</b>                | 2x1.5V alkaline batteries type AAA LR03 |
| <b>Auto Power OFF:</b>              | after 30 minutes' idling                |
| <b>Max diameter of clamp:</b>       | 30mm                                    |
| <b>Safety:</b>                      | IEC/EN61010-1                           |
| <b>Measurement category:</b>        | CAT III 600V                            |
| <b>Insulation:</b>                  | double insulation                       |
| <b>Pollution level:</b>             | 2                                       |
| <b>Size (LxWxH):</b>                | 200x66x37mm                             |
| <b>Weight (batteries included):</b> | 205g                                    |

## Accessories provided

|                 |  |
|-----------------|--|
| <b>KIT4000A</b> | Pair of leads with 2mm tip                 |
| <b>T10</b>      | Adapter for K-type wire probe              |
| <b>TK101</b>    | K-type wire probe                          |
|                 | Battery, User manual and Soft carrying bag |

## 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: 0.1Ω ÷ 0.01MΩ
  - Basic accuracy: ±(1.0%reading + 4digits)
  - Protection against overcharge: 600VDC/ACrms
  - Continuity buzzer: <30Ω
- 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)

## Functions

- AC/DC voltage
- AC current
- Resistance and Continuity test
- Diode test
- Data HOLD
- Manual change of scale
- AutoPowerOFF

## Main features

|                                     |                                |
|-------------------------------------|--------------------------------|
| <b>Display:</b>                     | LCD 3 1/2 digits, 2000 dots    |
| <b>Conversion type:</b>             | average value                  |
| <b>Power supply:</b>                | 2x1.5V batteries type AAA LR03 |
| <b>Auto Power OFF:</b>              | after 10 minutes' idling       |
| <b>Safety:</b>                      | IEC/EN 61010-1                 |
| <b>Measurement category:</b>        | CAT III 600V                   |
| <b>Insulation:</b>                  | Double insulation              |
| <b>Pollution level:</b>             | 2                              |
| <b>Max height:</b>                  | 2000mm                         |
| <b>Clamp jaw internal diameter:</b> | 30mm                           |
| <b>Size (LxWxH):</b>                | 205x64x39mm                    |
| <b>Weight (batteries included):</b> | approx 280g                    |

## Technical Specifications

- DC voltage**
- Measuring range: 10mV ÷ 600V
  - Resolution: 1mV ÷ 1V
  - Basic accuracy: ±(0.8%reading + 2digits)
  - Protection: 600Vrms
- AC voltage**
- Measuring range: 10mV ÷ 600V
  - Resolution: 1mV ÷ 1V
  - Frequency band: 50 Hz ÷ 60Hz
  - Basic accuracy: ±(1.0%reading + 3digits)
  - Protection: 600Vrms
- AC current**
- Measuring range: 1A ÷ 400A
  - Resolution: 0.1A ÷ 1A
  - Frequency band: 50 Hz ÷ 60Hz
  - Basic accuracy: ±(2.0%reading + 10digits)
  - Protection: 600Arms
- Resistance and continuity test with buzzer**
- Measuring range: 1Ω ÷ 20MΩ
  - Resolution: 0.1Ω ÷ 10kΩ
  - Basic accuracy: ±(1.0%reading + 3digits)
  - Continuity buzzer: <25Ω
  - Protection: 600VAC/DCrms

## Accessories provided

|               |  |
|---------------|--|
| <b>4413-2</b> | Pair of test leads                             |
| <b>B80</b>    | Soft carrying bag                              |
|               | Rubber cap for lead, batteries and user manual |



ORDER CODE **HP004011**

# HT4011

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**

# HT4010

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 of 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.



## 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

|                                     |                                |
|-------------------------------------|--------------------------------|
| <b>Display:</b>                     | LCD, 4 digits, 4000 dots       |
| <b>Conversion type:</b>             | average value                  |
| <b>Power supply:</b>                | 2x1.5V batteries type AAA LR03 |
| <b>Auto Power OFF:</b>              | after 30 minutes' idling       |
| <b>Max diameter of clamp:</b>       | 30mm                           |
| <b>Safety:</b>                      | IEC/EN61010-1                  |
| <b>Measurement category:</b>        | CAT III 600V                   |
| <b>Insulation:</b>                  | double insulation              |
| <b>Pollution level:</b>             | 2                              |
| <b>Size (LxWxH):</b>                | 200x66x37mm                    |
| <b>Weight (batteries included):</b> | 205g                           |



## 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
- 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)

## Accessories provided

|                 |  |
|-----------------|--|
| <b>KIT4000A</b> | Pair of leads with 2mm tip                 |
| <b>T10</b>      | Adapter for K-type wire probe              |
| <b>TK101</b>    | K-type wire probe                          |
|                 | Battery, User manual and Soft carrying bag |

## 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

|                                     |                            |
|-------------------------------------|----------------------------|
| <b>Display:</b>                     | LCD, 3 ½ digits, 2000 dots |
| <b>Conversion type:</b>             | average value              |
| <b>Power supply:</b>                | 1x9V battery type 6F22     |
| <b>Auto Power OFF:</b>              | after 15 minutes' idling   |
| <b>Clamp jaw internal diameter:</b> | 30mm                       |
| <b>Safety:</b>                      | EC/EN 61010-1              |
| <b>Measurement category:</b>        | CAT III 600V               |
| <b>Insulation:</b>                  | double insulation          |
| <b>Pollution level:</b>             | 2                          |
| <b>Max height:</b>                  | 2000mm                     |
| <b>Size (LxWxH):</b>                | 197x70x40mm                |
| <b>Weight (batteries included):</b> | 180g                       |



## Technical Specifications

- DC voltage**
- Measuring range: 1mV ÷ 600V
  - Resolution: 0.1mV ÷ 1V
  - Basic accuracy: ±(0.8%reading + 2 digits)
  - Protection against overcharge: 600Vrms
- AC voltage**
- Measuring range: 1mV ÷ 600V
  - Resolution: 0.1mV ÷ 1V
  - Frequency band: 50Hz ÷ 60Hz
  - Basic accuracy: ±(1.5%reading + 3.5mV)
  - Protection against overcharge: 600Vrms
- AC current**
- Measuring range: 0.01A ÷ 600A
  - Resolution: 1mA ÷ 0.1A
  - Frequency band: 50Hz ÷ 60Hz
  - Basic accuracy: ±(2.5%reading + 4digits)
  - Protection against overcharge: 600Arms
- Resistance and continuity test with buzzer**
- Measuring range: 1Ω ÷ 20MΩ
  - Resolution: 0.1Ω ÷ 0.01MΩ
  - Basic accuracy: ±(1.0%reading + 4digits)
  - Continuity buzzer: <150Ω

## Accessories provided

|                 |  |
|-----------------|--|
| <b>KIT4000A</b> | Pair of test leads                         |
|                 | Soft carrying bag, battery and user manual |



CAT III 600V (ONLY HT78)

ORDER CODE **HP000078** / **HP00077N**

# HT78 | HT77N

AC CLAMP METERS FOR LEAKAGE CURRENT MEASUREMENT



New models HT77N and HT78 are clamp meters designed for an accurate measurement of very low values of AC currents and, therefore, they are mainly employed in detecting and defining leakage currents in domestic and industrial electric systems, which typically cause RCDs' tripping. Clamp meters are provided, among others, with an integrated low-pass filter to eliminate harmonic components. HT78 is provided with an analogue output in DC voltage for the connection with external dataloggers. HT78, thanks to its big jaws (108mm), allows easily measuring leakage currents also on (single-phase and/or three-phase 4-wire) cables having a big cross-section.



CAT III 1000V

ORDER CODE **HP030000**

# F3000

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.



## Functions

|                    | HT78      | HT77N     |
|--------------------|-----------|-----------|
| TRMS measurement   | •         | •         |
| AC current         | • 3000A   | • 100A    |
| Low-pass filter    | • (150Hz) | • (100Hz) |
| Analogue DC output | •         | -         |
| Data HOLD          | •         | •         |
| Auto HOLD          | •         | •         |
| Peak HOLD          | -         | •         |
| Autorange          | -         | •         |
| Bargraph           | -         | •         |
| Backlight          | -         | •         |
| Auto Power OFF     | •         | •         |

## Main features

|                              |   |
|------------------------------|---|
| Display:                     | LCD 4 digits, 6000 dots (HT77N)<br>LCD 4 digits, 3200 dots (HT78)   |
| Conversion type              | TRMS  |
| Power supply:                | 2x1.5V batteries type AAA LR03                                      |
| Auto Power OFF:              | after 20 minutes' idling (HT77N)<br>after 10 minutes' idling (HT78) |
| Safety:                      | IEC/EN 61010-1  |
| Measurement category:        | CAT III 300V (HT77N)<br>CAT II 600V, CAT III 300V (HT78)            |
| Insulation:                  | double insulation   |
| Pollution level:             | 2   |
| Max operating altitude:      | 2000m   |
| Max cable diameter:          | 40mm (HT77), 108mm (HT78)   |
| Size (LxWxH):                | 202x75x42mm (HT77N)<br>341x194x52mm (HT78)                          |
| Weight (batteries included): | 265g (HT77N), 1.9kg (HT78)  |

## Accessories provided

|                                 |
|---------------------------------|
| Soft carrying bag and batteries |
| Non-slip strap (only HT78)      |
| User Manual                     |

## Functions

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

## Main features

|                              |   |
|------------------------------|---|
| Display:                     | LCD, 4 digits, 3000 dots                |
| Conversion type:             | TRMS                                    |
| Power supply:                | 2x1.5V alkaline batteries type AAA LR03 |
| Auto Power OFF:              | after 20 minutes' idling                |
| Max diameter of clamp:       | 110mm                                   |
| Safety:                      | IEC/EN61010-1                           |
| Measurement category:        | CAT IV 600V – CAT III 1000V             |
| Insulation:                  | double insulation                       |
| Pollution level:             | 2                                       |
| Size (LxWxH):                | 280x120x25mm                            |
| Weight (batteries included): | 170g                                    |

## Technical Specifications

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

## Accessories provided

|                   |
|-------------------|
| Batteries         |
| Soft carrying bag |
| User Manual       |

## Technical Specifications

|                                     | HT78                   | HT77N                  |
|-------------------------------------|------------------------|------------------------|
| <b>AC TRMS current</b>              |                        |                        |
| Measuring range:                    | 0.1mA ÷ 3000A          | 0.01mA ÷ 100A          |
| Resolution:                         | 0.1mA ÷ 1A             | 0.001mA ÷ 0.1A         |
| Basic accuracy:                     | ±(1.5%read. + 8digits) | ±(1.0%read. + 8digits) |
| Protection:                         | 3000Arms               | max 120Arms            |
| <b>Analogue output</b>              |                        |                        |
| Measuring range:                    | 0.3,3.30,300.3kA       | -                      |
| Full scale for any measuring range: | 300mV                  | -                      |
| Basic accuracy:                     | ±(1.5%FS)              | -                      |



ORDER CODE **HP000100**

# HT100

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** reaches **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.



ORDER CODE **HP007003**

# HT7003

POCKET CLAMP METER  
FOR AC CURRENT UP TO 300A

Clamp meter HT7003 can carry out measurements of **AC current up to 200A in Autorange**, in compliance with **IEC/EN61010-1, CAT III 300V**. It is provided with **Data HOLD** function and is provided with auto power off function in order to preserve the internal battery when not in use. Thanks to its **extremely small size**, this model is very practical and it is the ideal solution for simple measurements in the most common domestic and industrial environments.



## 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

## Technical Specifications

- DC voltage (Autorange)**
- Measuring range: 2.2V ÷ 1000V
  - Resolution: 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
- Diode test**
- Measuring range: 0.4V ÷ 0.8V
  - Resolution: 0.1V
  - Basic accuracy: ±(1%reading + 3digits)
  - Protection against overcharge: 1000VDC/ACrms

## Main features

- Display:** LCD, 4 digits, 10000 dots, backlight
- Conversion type:** TRMS
- Power supply:** 2x1.5V alkaline batteries type AAA LR03
- Auto Power OFF:** after 20 minutes' idling
- Max diameter of clamp:** 16mm
- Safety:** IEC/EN61010-1
- Measurement category:** CAT IV 600V, CAT III 600V
- Insulation:** double insulation
- Pollution level:** 2
- Size (LxWxH):** 193x54x31mm
- Weight (batteries included):** 280g

## Accessories provided

- 4413-2** Pair of test leads
- Batteries and user manual
- For optional accessories, please refer to the table.

## Functions

- AC current up to 300 A
- Autorange
- Auto Power OFF
- Data HOLD
- Low battery indication

## Main features

- Display:** LCD, 3½ digits, 4000 dots
- Conversion type:** RMS
- Power supply:** 1x3V battery type CR2032
- Auto Power OFF:** after 12 minutes' idling
- Clamp jaw internal diameter:** 27mm
- Safety:** IEC/EN 61010-1, IEC/EN61010-2-32
- Measurement category:** CAT III 300V
- Insulation:** double insulation
- Pollution level:** 2
- Max height:** 2000mm
- Size (LxWxH):** 150x52x24mm
- Weight (batteries included):** 110g

## Technical Specifications

- AC current**
- Measuring range: 0.2A ÷ 300A
  - Resolution: 0.01A ÷ 0.1A
  - Frequency band: 50Hz ÷ 60Hz
  - Basic accuracy: ±(1.8%reading + 5digits)
  - Protection against overcharge: 400Arms (60 seconds)












## Accessories provided

- Soft carrying bag
- Batteries
- User manual



COMPARISON TABLE LINE














|   | HT9022 | HT9021 | HT9020 | HT9019 | HT9015 | HT9014 | HT9012 | HT4022 | HT4020 | HT4013 | HT4012 | HT4011 | HT4010 | HT78 | HT77N | F3000 | HT100 | HT7003 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|-------|-------|-------|--------|
|  <b>T10</b><br>Adapter for K-type probes for multimeters<br><i>ORDER CODE HA100010</i>   | -      | S      | -      | -      | S      | S      | -      | -      | -      | S      | -      | S      | -      | -    | -     | -     | -     | -      |
|  <b>TK101</b><br>K-type wire thermocouple<br>Measuring range: - 20 ÷ 250°C<br><i>ORDER CODE HA000108</i>  | -      | S      | -      | -      | S      | S      | -      | -      | -      | S      | -      | S      | -      | -    | -     | -     | -     | -      |
|  <b>TK107</b><br>K-type thermocouple for air and gas temperature<br>Measuring range: - 40 ÷ 800°C<br><i>ORDER CODE HA110000</i>   | -      | 0      | -      | -      | 0      | 0      | -      | -      | -      | 0      | -      | 0      | -      | -    | -     | -     | -     | -      |
|  <b>TK108</b><br>"K"-type thermocouple for internal temperatures of liquids and semi-solid substances<br>Measuring range: - 40 ÷ 800°C<br><i>ORDER CODE HA110001</i>          | -      | 0      | -      | -      | 0      | 0      | -      | -      | -      | 0      | -      | 0      | -      | -    | -     | -     | -     | -      |
|  <b>TK109</b><br>K-type thermocouple for internal temperatures of liquid and solid substances, fruit and food<br>Measuring range: - 40 ÷ 800°C<br><i>ORDER CODE HA110002</i> | -      | 0      | -      | -      | 0      | 0      | -      | -      | -      | 0      | -      | 0      | -      | -    | -     | -     | -     | -      |
|  <b>TK110</b><br>"K"-type thermocouple for surface temperatures<br>Measuring range: - 40 ÷ 400°C<br><i>ORDER CODE HA110003</i>  | -      | 0      | -      | -      | 0      | 0      | -      | -      | -      | 0      | -      | 0      | -      | -    | -     | -     | -     | -      |
|  <b>TK111</b><br>"K"-type thermocouple for surface temperatures with 90° fixed tip<br>Measuring range: - 40 ÷ 400°C<br><i>ORDER CODE HA110004</i>                           | -      | 0      | -      | -      | 0      | 0      | -      | -      | -      | 0      | -      | 0      | -      | -    | -     | -     | -     | -      |
|  <b>TOPVIEWS</b><br>Data management software<br><i>ORDER CODE HA000719</i>   | S      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -    | -     | -     | -     | -      |
|  <b>YABRS0000NNO</b><br>Soft carrying bag for clamp and accessories<br><i>ORDER CODE HA000145</i>  | S      | S      | S      | S      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -    | -     | S     | -     | -      |
|  <b>B80</b><br>Soft carrying bag for multimeter and leads<br><i>ORDER CODE HA001180</i>  | -      | -      | -      | -      | S      | S      | S      | S      | S      | S      | S      | S      | S      | -    | S     | -     | S     | -      |
|  <b>YAAMK0000HTO</b><br>Pair of leads with 4mm tip and protection, red/black and 90° banana plug<br><i>ORDER CODE HA000143</i>  | S      | S      | S      | S      | S      | S      | S      | S      | S      | 0      | S      | 0      | 0      | -    | -     | -     | 0     | -      |

S = Standard 0 = Optional

COMPARISON TABLE OF ACCESSORIES



|   | HT9022 | HT9021 | HT9020 | HT9019 | HT9015 | HT9014 | HT9012 | HT4022 | HT4020 | HT4013 | HT4012 | HT4011 | HT4010 | HT78 | HT77N | F3000 | HT100 | HT7003 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|-------|-------|-------|--------|
|  <b>YAAMK0001HTO</b><br>Pair of alligator clips, red/black 4mm<br><i>ORDER CODE HA000144</i>  | S      | O      | S      | O      | O      | O      | O      | S      | S      | O      | O      | O      | O      | -    | -     | -     | O     | -      |
|  <b>4413-2</b><br>Pair of leads with 4mm tip and protection, red/black and 90° banana plug<br><i>ORDER CODE HA441200</i>  | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | -    | -     | -     | S     | -      |
|  <b>KIT4000A</b><br>Pair of leads with 2mm tip, red/black and 90° banana plug<br><i>ORDER CODE HA000174</i>   | O      | O      | O      | O      | O      | O      | O      | O      | O      | S      | O      | S      | S      | -    | -     | -     | O     | -      |
|  <b>4717-S-IEC100#</b><br>Leads with retractable safety tip<br># = black N<br>- B (blue) - R (red)<br><i>ORDER CODE HA47170#</i>  | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | -    | -     | -     | O     | -      |
|  <b>404-IEC#</b><br>Connector for extension banana cable 4mm # = colour N (black) - B (blue) - V (green)<br><i>ORDER CODE HA40200#</i>  | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | -    | -     | -     | O*    | -      |
|  <b>5004-IEC#</b><br>Insulated alligator clip (20A) for 4mm banana cables<br># = colour N (black) - B (blue) - V (green) - R (red)<br><i>ORDER CODE HA50040#</i>                                    | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | -    | -     | -     | O*    | -      |
|  <b>6007-IEC#</b><br>Flexible alligator clip (6A) for 4mm banana cables<br># = colour N (black) - R (red)<br><i>ORDER CODE HA60070#</i>   | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | -    | -     | -     | O*    | -      |
|  <b>6009-IEC#</b><br>Rigid alligator clip (20A) for 4mm banana cables<br># = colour N (black) - R (red)<br><i>ORDER CODE HA60090#</i>   | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | O*     | -    | -     | -     | O*    | -      |
|  <b>5001-#</b><br>Cable with 4mm banana-banana connector, 1.5m long<br># = colour N (black) - B (blue) - V (green) - R (red)<br><i>ORDER CODE HA05001#</i>  | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | -    | -     | -     | O     | -      |
|  <b>425</b><br>Kit consisting in 2 4mm banana-banana cables, 2 leads 404-IECN+R and 2 rigid alligator clips (20A)<br><i>ORDER CODE HA425000</i>   | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | -    | -     | -     | O     | -      |
|  <b>44100</b><br>Set of 2 4mm banana-banana cables, 2 leads 402-IECN+R, 2 alligator clips 6009-IECN+R + 2 long clamp terminals and a set of alligator clips KITMPPDCC<br><i>ORDER CODE HA441000</i> | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | -    | -     | -     | O     | -      |

S = Standard O = Optional \* Cable with 4mm banana necessary (e.g. 5001-#)



ORDER CODE **HVOTDEMO**

# TESTBOARD

MULTIFUNCTION DEMONSTRATION CASE

TESTBOARD has been designed for use with electric measuring devices, to learn how they operate, and it is therefore essentially indicated for didactic/promotional purposes. This model allows simulating a low-voltage electric system (type TT or TN). The case is provided with practical commutators capable of activating OK/NO conditions with regard to the insertion of the correct condition on measurement and its respective error condition.

# ACCESSORY LINE



## Functions

- Tests on TT systems (Continuity of protection conductors, Insulation, RCD tests, Non-trip earth resistance, Earth resistance by 3-spot method, Direct and indirect leakage current)
- Tests on TN systems (Line/Loop impedance, Prospective short-circuit current)
- 4mm banana safety terminals
- 6 commutators for error condition selection
- Protection use on power supply
- Test plugs, type Shuko Europlug
- Test RCD adjustable in time and current
- Magneto-thermal switch type C10

## Main features

|                                  |                                 |
|----------------------------------|---------------------------------|
| <b>Power supply</b>              | 230V AC / 50Hz                  |
| <b>Rated consumption:</b>        | 60VA                            |
| <b>Fuse on power supply:</b>     | type T 250V / 3.15A             |
| <b>Presence of PE conductor:</b> | indications with green lights   |
| <b>Test RCD:</b>                 | type A, AC standard, adjustable |
| <b>Magneto-thermal switch:</b>   | type C10, 230V / 10A            |
| <b>Test sockets:</b>             | type F30, 250V/16A              |
| <b>Safety:</b>                   | IEC/EN61010-1                   |
| <b>Mechanical protection:</b>    | IP67 (closed case)              |
| <b>Size (LxWxH):</b>             | 474x415x214mm                   |
| <b>Weight:</b>                   | 7.6kg                           |

## Accessories provided

- Power supply cable with Europlug plug
- User manual

## LIST OF ACCESSORIES

|   |          |
|---|----------|
| AC CLAMP TRANSDUCERS  | Page 196 |
| DC CLAMP TRANSDUCERS  | Page 197 |
| PROBES FOR ENVIRONMENTAL MEASUREMENT                              | Page 198 |
| PROBES FOR TEMPERATURE MEASUREMENT                                | Page 199 |
| STRAPS AND BELTS  | Page 200 |
| RIGID BAGS AND CASES  | Page 200 |
| LEADS   | Page 204 |
| ADAPTERS  | Page 205 |
| MEASURING CABLES  | Page 206 |
| ALLIGATOR CLIPS   | Page 207 |
| KITS  | Page 208 |
| POWER SUPPLY, POWER SUPPLY CABLES, BATTERIES AND BATTERY CHARGERS | Page 209 |
| ACCESSORIES FOR MEASURING EARTH RESISTANCE                        | Page 211 |
| ACCESSORIES FOR LAN NETWORK TESTERS                               | Page 212 |
| REMOTE UNIT KIT   | Page 212 |
| FULLTEST3 ACCESSORIES   | Page 213 |
| SOFTWARE, CABLES AND ADAPTERS FOR CONNECTION DEVICE/PC            | Page 215 |

## AC CLAMP TRANSDUCERS



ORDER CODE **HP00096U** | **HP000972**

**HT96U | HT97U**  
STANDARD CLAMPS  
FOR AC CURRENT

Measuring range: 0.001 ÷ 1A (HT96U)  
Measuring range: 0.01 ÷ 10A (HT97U)  
Measuring range: 0.1 ÷ 100A (BOTH)  
Measuring range: 1A ÷ 1000A (BOTH)  
Basic accuracy: ± 1.0% reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter: 54mm  
Output connector: Hypertac



ORDER CODE **HP003002** | **HP003003**

**HP30C2 | HP30C3**  
STANDARD CLAMPS  
FOR AC CURRENT

Measuring range: 0.1A ÷ 200A (HP30C2)  
Measuring range: 1A ÷ 2000A (HP30C2)  
Measuring range: 1A ÷ 3000A (HP30C3)  
Basic accuracy: ±0.5% reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter: 70mm  
Output connector Hypertac



ORDER CODE **HP04005K**

**HT4005K**  
STANDARD CLAMP  
FOR AC CURRENT

Measuring range: 0.1 ÷ 200A  
Basic accuracy: ±0.5%reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 40mm  
Output connector Hypertac



ORDER CODE **HP04005N**

**HT4005N**  
STANDARD CLAMP  
FOR AC CURRENT

Measuring range: 0.005A ÷ 5A  
Measuring range: 0.1A ÷ 100A  
Clamp jaw internal diameter 20mm  
Basic accuracy: ±1% of reading  
Output connector: Hypertac



ORDER CODE **HP0X3003**

**HTFLEX3003**  
FLEXIBLE CLAMP  
FOR AC CURRENT

Measuring range: 1.5A ÷ 300A  
Measuring range: 15A ÷ 3000A  
Basic accuracy: ±1.0%reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 174mm  
Output connector Hypertac



ORDER CODE **HP00033E**

**HTFLEX33E**  
FLEXIBLE CLAMP  
FOR AC CURRENT

Measuring range: 3000A\*  
Basic accuracy: ±0.5%reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 174mm  
Output connector Hypertac

\*Minimum range depending on instrument in use



ORDER CODE **HP00033L**

**HTFLEX33L**  
FLEXIBLE CLAMP  
FOR AC CURRENT

Measuring range: 3000A\*  
Basic accuracy: ±0.5%reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 174mm  
Output connector: Binder

\*Minimum range depending on instrument in use



ORDER CODE **HP000035**

**HTFLEX35**  
FLEXIBLE CLAMP  
FOR AC CURRENT

Measuring range: 3000A\*  
Basic accuracy: ±0.5%reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 274mm  
Output connector Hypertac

\*Minimum range depending on instrument in use

> *FOLLOWS*



ORDER CODE **HP004003**

**HT4003**  
STANDARD CLAMP  
FOR AC CURRENT

Measuring range: 1A ÷ 400A  
Basic accuracy: ±1.5%reading+ 0.5A  
Measurement category: CAT III 600V  
Clamp jaw internal diameter: 30mm  
Output connector 2x banana connector

## DC CLAMP TRANSDUCERS



ORDER CODE **HP00098U**

**HT98U**  
STANDARD CLAMP  
FOR DC CURRENT

Measuring range: 1 ÷ 1000A  
Basic accuracy: ±(1.0%reading +0.5A)  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 52mm  
Output connector Hypertac



ORDER CODE **HP0030D1**

**HP30D1**  
STANDARD CLAMP  
FOR DC CURRENT

Measuring range: 10 ÷ 1000A  
Basic accuracy: ±(1.5%reading+ 2mV)  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 83mm  
Output connector Hypertac



ORDER CODE **HP04004N**

**HT4004N**  
STANDARD CLAMP  
FOR DC CURRENT

Measuring range 0.01A ÷ 10A  
Measuring range 0.1A ÷ 100A  
Basic accuracy: ±1.0%reading  
Measurement category: CAT III 300V  
Clamp jaw internal diameter 32mm  
Output connector Hypertac



ORDER CODE **HP04004P**

**HT4004P**  
STANDARD CLAMP  
UNBATTERED FOR DC CURRENT

Measuring range 0.01A ÷ 10A  
Measuring range 0.1A ÷ 100A  
Basic accuracy: ±1.0%reading  
Measurement category: CAT III 300V  
Clamp jaw internal diameter 32mm  
Output connector Hypertac with 4 poles



ORDER CODE **HP04004N**

**HT4004**  
STANDARD CLAMP  
FOR AC/DC CURRENT

Measuring range 0.01A ÷ 10A  
Measuring range 0.1A ÷ 100A  
Basic accuracy: ±1.0%reading  
Measurement category: CAT III 600V  
Clamp jaw internal diameter 32mm  
Output connector Hypertac

## PROBES FOR ENVIRONMENTAL MEASUREMENT

ORDER CODE **HN005205**



**HT52/05**  
PROBE FOR AIR  
TEMPERATURE / HUMIDITY

**TEMPERATURE**

Range: -20÷60°C, 4÷140°F  
Accuracy: ±0.7°C, ±1.4°F  
Type of sensor: capacitive

**HUMIDITY**

Range: 0÷100%RH  
Accuracy: ±3%reading at 25°C  
Type of sensor: capacitive

ORDER CODE **HN005305**



**HT53/05**  
LIGHT METER PROBE CLASS A

Sensor type: silicon photodiode  
Ranges: 20 / 2000 / 20000lux  
Response time: <100ms  
Output signal: 20 lux: 0.01lux → 1mV  
2000lux: 1lux → 1mV  
20000lux: 10lux → 1mV  
Accuracy: ±3%reading

ORDER CODE **HA000234**



**TK4000**  
PROBE FOR MEASURING  
WIND SPEED AND AIR  
TEMPERATURE FOR HT4000

ORDER CODE **HA0304N0**



**HT304N**  
REFERENCE CELL  
FOR IRRADIATION MEASUREMENT

Measuring range: 50÷1400W/m<sup>2</sup>  
Basic accuracy: ± 3.0%reading  
Type of cells:  
Monocrystalline / Polycrystalline  
Protection rating: IP65  
Size: 120x85x40mm  
Weight: 260g  
Output connector Binder

ORDER CODE **HA00304N**



**T304N**  
FASTENING BRACKET  
FOR HT304N

T304N is the bracket which allows fastening the reference cell HT304N next to a photovoltaic module. By using T304N, the reference cell will have the same tilt angle of the photovoltaic panel, for a correct measurement of irradiation.

ORDER CODE **HA000026**



**M304**  
MECHANICAL  
INCLINOMETER

ORDER CODE **HA000025**



**C304**  
CONNECTION CABLE  
DEVICE / HT304N

Input connector: Binder  
Output connector Hypertac  
Length: 2.45m

ORDER CODE **HA000120**



**SOLAR02**  
REMOTE UNIT FOR MEASURING  
IRRADIATION, TEMPERATURE  
AND TILT ANGLE

Measuring range: 0÷1400W/m<sup>2</sup>  
Basic accuracy: ± 1.0%reading  
Internal memory: approx. 1.5 hours  
(@ PI master device = 5s)  
Protection rating: IP65  
Size: 120x65x35mm  
Weight: 215g  
Input connectors: Hypertac

## PROBES FOR TEMPERATURE MEASUREMENT

ORDER CODE **HA00300N**



**PT300N**  
PROBE FOR TEMPERATURE  
MEASUREMENT OF  
PHOTOVOLTAIC PANELS

Probe: Pt100  
Operating temp.: -50°C÷105°C  
Plug: Hypertac 3-pole  
Accuracy: class B  
(in compliance with IEC751)

ORDER CODE **HA000108**



**TK101**  
STANDARD CLAMPS  
FOR AC CURRENT

Probes: K-type thermocouple  
Operating temp. -40÷800°C  
Response time: 4s  
Accuracy at 100°C: ±2.2 reading  
(in compliance with IEC 584)

ORDER CODE **HA110000**



**TK107**  
TEMPERATURE  
OF AIR AND GAS

Probes: K-type thermocouple  
Operating temp. -40÷800°C  
Response time: 4s  
Accuracy at 100°C: ±2.2 reading  
(in compliance with IEC 584)

ORDER CODE **HA110001**



**TK108**  
INTERNAL TEMPERATURE  
OF LIQUIDS AND SEMI-SOLID  
SUBSTANCES

Probes: K-type thermocouple  
Operating temp. -40÷800°C  
Response time: 4s  
Accuracy at 100°C: ±2.2 reading  
(in compliance with IEC 584)

ORDER CODE **HA110002**



**TK109**  
INTERNAL TEMPERATURES  
OF LIQUID AND SOLID  
SUBSTANCES, FRUIT AND FOOD

Probes: K-type thermocouple  
Operating temp. -40÷800°C  
Response time: 4s  
Accuracy at 100°C: ±2.2 reading  
(in compliance with IEC 584)

ORDER CODE **HA110003**



**TK110**  
TEMPERATURE  
OF SURFACES

Probes: K-type thermocouple  
Operating temp. -40÷800°C  
Response time: 4s  
Accuracy at 100°C: ±2.2 reading  
(in compliance with IEC 584)

ORDER CODE **HA110004**



**TK111**  
TEMPERATURE  
OF SURFACES  
WITH 90° FIXED TIP

Probes: K-type thermocouple  
Operating temp. -40÷800°C  
Response time: 4s  
Accuracy at 100°C: ±2.2 reading  
(in compliance with IEC 584)

ORDER CODE **HA010000**



**PT1000**  
IMMERSION PROBE  
FOR LIQUIDS

Probes: PT100  
Operating temp. 0÷600°C  
Response time: 4s  
Accuracy at 100°C: ±0.8°C  
(in compliance with IEC 751)  
*Only compatible with HT410*

## STRAPS AND BELTS



ORDER CODE **HA000052**  
**CN0050**

SET OF STRAPS FOR SLINGING THE DEVICE OVER ONE'S SHOULDER



ORDER CODE **HA000112**  
**SP-0400**

SET OF STRAPS FOR SLINGING THE DEVICE OVER ONE'S SHOULDER

## RIGID BAGS AND CASES



ORDER CODE **HA000204**  
**VA6070**

VA6070 is a practical rigid case which allows transporting and protecting your thermal camera. Compatible with thermal cameras such as THT47, THT60 and THT70, it is also suitable for transporting all provided accessories and possible optional optics in the appropriate dedicated compartment.  
**Case for carrying devices with the shape indicated to the side.**



ORDER CODE **HA050000**  
**VA500**

VA500 is the ideal solution for those who want to protect their devices from water, dust and hostile environments. It is also suitable to contain all accessories for a perfect management of the job.  
**Case for carrying devices with the shape indicated to the side.**



ORDER CODE **HA000238**  
**VA501**

VA501 has been designed to those who always want to have everything at hand. Further to the space for housing the device and its accessories such as measuring cables, earth rods, etc., this case is therefore the ideal solution for those who want to carry and protect their devices from water, dust and hostile environments. It contains also all relevant accessories.  
**Case for carrying devices with the shape indicated to the side.**



ORDER CODE **HA000235**  
**VA502**

VA502 is a case designed to contain two devices at the same time. Its interior has been designed to house PQA820\819 on the right and one of the measuring devices of series "MacrotestG" or similar on the left. VA502 is therefore the ideal solution for those who want to carry and protect their devices and accessories from water, dust and hostile environments.

**Case for carrying devices with the shape indicated to the side.**



ORDER CODE **HA000236**  
**VA503**

VA503 is a rigid case designed for photovoltaic sector users. Typically, this case is used to contain devices such as I-V400w + PVCHECKS in order to bring all necessary tools for troubleshooting on site together. It contains also all relevant accessories.

**Case for carrying devices with the shape indicated to the side.**



ORDER CODE **HA000237**  
**VA504**

VA504 has been designed to those who always want to have everything at hand. Further to the space for housing the device and its accessories such as measuring cables, earth rods, etc., VA504 is provided with an internal space for transporting and protecting also clamps for earth measurements such as T2000 or T2100. It is therefore the ideal solution for those who want to carry and protect their devices from water, dust and hostile environments.

**Case for carrying devices with the shape indicated to the side.**



ORDER CODE **HA000251**  
**BORSA2051**

Soft bag with two big compartments to transport devices and accessories.

**Case for carrying devices with the shape indicated to the side.**



> FOLLOWS



ORDER CODE HA750000

## BORSA75

Bag with three internal compartments, medium size, for transporting devices and accessories-  
**Case for carrying devices with the shape indicated to the side.**



ORDER CODE HA002000

## BORSA2000

Bag for transporting small to medium-sized devices and accessories  
**Bag for carrying devices with the shape indicated to the side or with similar dimensions (reference HT701).**



ORDER CODE HA000207

## BRS47

Soft bag for transporting THT32-47-60-70 with compartments for accessories.  
**Bag for carrying devices with the shape indicated to the side. (reference THT32/47/60/70)**



ORDER CODE HA000213

## B45

Soft bag for transporting THT47-60-70 with compartments for accessories.  
**Case for carrying devices with the shape indicated to the side. (reference THT45)**



ORDER CODE HA001180

## B80

Bag for transporting small-sized multimeters, clamps and accessories  
**Bag for carrying devices with the shape indicated to the side or with similar dimensions (reference HT327 - HT9014)**



ORDER CODE HA000145

## YABRS0000NNO

Bag for transporting medium to big-sized clamp meters and accessories  
**Bag for carrying devices with the shape indicated to the side or with similar dimensions (reference HT9022 - HT9015 - HT401).**



> FOLLOWS

## LEADS



ORDER CODE HA000400

**PR400**  
REMOTE LEAD  
WITH TEST STARTING BUTTON

Measurement category:  
CAT IV 600V / CAT III 1000V  
Overall length: 25cm  
Tip length: 1.9cm  
Tip diameter: 4mm



ORDER CODE HA000701

**PR701**  
REMOTE LEAD  
WITH TEST STARTING  
BUTTON FOR HT701

Measuring range: 10A / 1000V  
Measurement category: CAT III 1000V  
Overall length: 18.3cm  
Tip length: 1.8cm  
Tip diameter: 2mm



ORDER CODE HA40400#

**404-IEC#**  
# = colour N (black) - B (blue) - V (green) - R (red)  
MEASURING LEAD  
WITH EXTRACTABLE  
PROTECTION CAP

Measuring range: 36A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Overall length: 11.5cm  
Tip length: 1.9cm  
Tip diameter: 4mm  
Banana diameter: 4mm



ORDER CODE HA40200#

**402-IEC#**  
# = colour N (black) - R (red)  
MEASURING LEAD  
WITH SLIM TIP

Measuring range: 16A / 1000V  
Measurement category: CAT IV 600V  
Overall length: 14cm  
Tip length: 1.8cm  
Tip diameter: 4mm  
Banana diameter: 4mm



ORDER CODE HA431200

**4312-2**  
PAIR OF LEADS WITH 4MM TIP  
AND RED/BLACK PROTECTION AND  
STRAIGHT BANANA CONNECTOR

Measuring range: 20A / 1000V  
Measurement category:  
CAT IV 600V / CAT III 1000V  
Lead overall length: 15.6cm  
Tip length: 1.8cm  
Tip diameter: 4mm  
Length of retractable tip protection: 2cm  
Cable length: 1.5m  
Banana diameter: 4mm



ORDER CODE HA441200

**4413-2**  
PAIR OF LEADS WITH 4MM TIP  
AND RED/BLACK PROTECTION AND  
90° BANANA CONNECTOR

Measuring range: 20A / 1000V  
Measurement category:  
CAT IV 600V / CAT III 1000V  
Lead overall length: 13.4cm  
Tip length: 1.8cm  
Tip diameter: 4mm  
Cable length: 1m  
Banana diameter: 4mm



ORDER CODE HA000174

**KIT4000A**  
PAIR OF LEADS WITH 2MM TIP,  
COMPATIBLE WITH MULTIMETERS  
AND CLAMP METERS

Measuring range: 10A / 1000V  
Measurement category: CAT III 1000V  
Lead overall length: 13.5cm  
Tip length: 1.9cm  
Tip diameter: 2mm  
Cable length: 1.5m  
Banana diameter: 4mm, 90°



ORDER CODE HA000143

**YAAMK0000HTO**  
PAIR OF LEADS WITH 4MM TIP,  
COMPATIBLE WITH MULTIMETERS  
AND CLAMP METERS

Measuring range: 10A / 1000V  
Measurement category:  
CAT IV 600V / CAT III 1000V  
Lead overall length: 14.7cm  
Tip length: 1.9cm  
Tip diameter: 4mm  
Cable length: 1.5m  
Banana diameter: 4mm, 90°  
Can only be used with alligator clips in YAAMK0001HTO

> FOLLOWS



ORDER CODE HA47170#

**4717-S-IEC100#**  
# = colour N (black) - B (blue) - R (red)  
LEADS WITH RETRACTABLE  
PROTECTION CAP IP2X  
AND PROTECTION FUSE

Measuring range: 20A / 1000V  
Measurement category: CAT III 1000V  
Lead overall length: 15.6cm  
Tip length: 1.8cm  
Tip diameter: 4mm  
Length of retractable tip protection: 2cm  
Cable length: 1.5m  
Banana diameter: 4mm



ORDER CODE HA006060

**606-IECN**  
CONNECTOR  
WITH MAGNETIC  
TERMINAL

Measuring range: 4A / 1000V  
Measurement category:  
CAT IV 600V / CAT III 1000V  
Magnetic tip length: 3.5cm  
Banana diameter: 4mm

## ADAPTERS



ORDER CODE HA10660#

**1066-IEC#**  
# = colour N (black) - R (red)  
CONNECTOR FOR EXTENSION  
BANANA IN/OUT 4MM

Measuring range: 36A / 1000V  
Measurement category:  
CAT III 600V / CAT II 1000V  
Overall length: 5.6cm  
Diameter of input/output banana: 4mm



ORDER CODE HA00ACON

**ACON3F4M**  
HYPERTAC ADAPTER  
3 POLES, FEMALE  
4 POLES, MALE



ORDER CODE HA00NOCA

**NOCANBA**  
HYPERTAC ADAPTER  
FEMALE  
MALE BANANA



ORDER CODE HA00ABNA

**ABNACON**  
BANANA ADAPTER  
FEMALE  
MALE HYPERTAC



ORDER CODE HA000BIN

**ACONBIN**  
HYPERTAC ADAPTER  
AND POLES, FEMALE  
FEMALE BINDER

This adapter allows for the connection of standard clamps to devices like PQA820/PQA819



ORDER CODE HA100010

**T10**  
ADAPTER  
FOR CONNECTION  
OF TK TEMPERATURE  
PROBES

This adapter can be used with all multimeters and clamp meters capable of carrying out temperature measurements.



> FOLLOWS



ORDER CODE **HA00034**  
**KITPVMC4**  
 SET OF ADAPTERS  
 BANANA - MC4  
 MALE/FEMALE

This pair of adapters allows for the connection of devices like **I-V400w** and **Solar I-Vw** to photovoltaic panels with connectors MC4.



ORDER CODE **HA00032**  
**KITPVMC3**  
 SET OF ADAPTERS  
 BANANA - MC3  
 MALE/FEMALE

This pair of adapters allows for the connection of devices like **I-V400w** and **Solar I-Vw** to photovoltaic panels with connectors MC3.



ORDER CODE **HA000758**  
**KITPCMC4**  
 SET OF ADAPTERS  
 BANANA - MC4  
 MALE/FEMALE

This pair of adapters allows for the connection of device **PVCHECKs** to photovoltaic panels with connectors MC4.



ORDER CODE **HA000757**  
**KITPCMC3**  
 SET OF ADAPTERS  
 BANANA - MC4  
 MALE/FEMALE

This pair of adapters allows for the connection of device **PVCHECKs** to photovoltaic panels with connectors MC3.



ORDER CODE **HA002075**  
**C2075**  
 CABLE WITH BANANA  
 GREEN - BLACK  
 SHUKO PLUG

Measuring range: 16A / 300V  
 Measurement category: CAT III 300V  
 Overall length: 1.5m  
 Banana diameter: 4mm



ORDER CODE **HA02033X**  
**C2033X**  
 CABLE WITH BANANA  
 GREEN - BLACK - BLUE  
 SHUKO PLUG

Measuring range: 16A / 300V  
 Measurement category: CAT III 300V  
 Overall length: 1.5m  
 Banana diameter: 4mm



ORDER CODE **HA014000**  
**KIT14000**  
 SET OF CABLES OR INSULATION  
 MEASUREMENTS UP TO 5KV

Measuring range: 10A / 5000VDC  
 Measurement category:  
 CAT IV 600VAC, CAT III 1000V,  
 CAT I 5000VDC  
 Maximum opening of alligator clip: 2.3cm  
 Overall length: 2m  
 Banana diameter: 4mm



ORDER CODE **HA014000**  
**KITPVEXT25M**  
 25M EXTENSION CABLE FOR  
 MEASURING I-V, ISC AND VOC

Measuring range: 20A / 1000V  
 Measurement category:  
 CAT IV 600V / CAT III 1000V  
 Extension cable connectors: 1066-IEC#  
 Banana diameter: 4mm



## MEASURING CABLES



ORDER CODE **HA05001#**  
**5001-#**  
 # = colour N (black) - B (blue)  
 R (red) - V (green)

MEASURING CABLE  
 WITH LENGTH 1.5M  
 WITH VARIOUS COLOURS AVAILABLE

Measuring range: 10A / 1000V  
 Measurement category: CAT IV 600V /  
 CAT III 1000V  
 Overall length: 1.5m  
 Banana diameter: 4mm



ORDER CODE **HA007000** = LENGTH 3MT  
 ORDER CODE **HA700005** = LENGTH 5MT  
 ORDER CODE **HA700010** = LENGTH 10MT

**C7000**  
 CABLE FOR CONTINUITY  
 MEASUREMENT WITH CURRENT 10A  
 OR LOOP MEASUREMENT  
 WITH IMP57 WITH LENGTH 3M.

Measurement category:  
 CAT IV 600V / CAT III 1000V  
 Maximum opening of alligator clip: 2.5cm  
 Cable length: 3m  
 Banana diameter: 4mm



ORDER CODE **HA000753**  
**KITMPPACW**  
 SET OF CABLES GREEN - BLUE  
 BROWN/BLACK  
 WITH 4MM BANANA CONNECTORS

Measuring range: 36A / 1000V  
 Measurement category: CAT III 1000V  
 Overall length: 2m  
 Banana diameter: 4mm



ORDER CODE **HA000755**  
**KITMPPDCW**  
 PAIR OF RED/BLACK CABLES  
 WITH 4MM BANANA CONNECTORS

Measuring range: 36A / 1000V  
 Measurement category: CAT III 1000V  
 Overall length: 2m  
 Banana diameter: 4mm

## ALLIGATOR CLIPS



ORDER CODE **HA50040#**  
**5004-IEC#**  
 # = colour N (black) - B (blue) - R (red)  
 - V (green)

ALLIGATOR CLIP FOR CABLES  
 WITH 4MM BANANA  
 Measuring range: 20A / 1000V  
 Measurement category: CAT III 1000V  
 Maximum opening of alligator clip:  
 2.3cm  
 Banana diameter: 4mm



ORDER CODE **HA000144**  
**YAAMK0001HTO**

PAIR OF TEST LEADS  
 ALLIGATOR CLIPS  
 COLOUR RED/BLACK 4MM  
 Measuring range: 10A / 1000V  
 Measurement category:  
 CAT IV 600V / CAT III 1000V  
 Maximum opening of alligator clip: 3cm  
 Banana diameter: 4mm  
*Can only be used with YAAMK0000HTO leads*



ORDER CODE **HA000752**  
**KITMPPACC**  
 STANDARD CLAMP  
 FOR DC CURRENT

Measuring range: 36A / 1000V  
 Measurement category:  
 CAT IV 600V / CAT III 1000V  
 Maximum opening of alligator clip:  
 4.1cm  
 Banana diameter: 4mm



ORDER CODE **HA000754**  
**KITMPPDCC**  
 STANDARD CLAMP  
 FOR DC CURRENT

Measuring range: 36A / 1000V  
 Measurement category:  
 CAT IV 600V / CAT III 1000V  
 Maximum opening of alligator clip:  
 4.1cm  
 Banana diameter: 4mm

> FOLLOWS



ORDER CODE HA000752

### COC4-UK

SET OF ALLIGATOR CLIPS IN COLOURS GREEN BLUE - RED - BLACK

Measuring range: 20A / 1000V  
Measurement category: CAT III 1000V  
Maximum opening of alligator clip: 2.3cm  
Banana diameter: 4mm



ORDER CODE HA60070#

### 6007-IEC#

# = colour N (black) - R (red)  
FLEXIBLE ALLIGATOR CLIP

Measuring range: 6A / 1000V  
Measurement category: CAT III 1000V  
Maximum opening of alligator clip: 2.6cm  
Overall length: 17.5cm  
Banana diameter: 4mm

ORDER CODE HA60090#

### 6009-IEC#

# = colour N (black) - R (red)  
RIGID ALLIGATOR CLIP

Measuring range: 20A / 1000V  
Measurement category: CAT III 1000V  
Maximum opening of alligator clip: 1.7cm  
Overall length: 15.5cm  
Banana diameter: 4mm



> FOLLOWS



ORDER CODE HA000021

### KITGSC4

SET OF CABLED AND ALLIGATOR CLIPS BLACK-RED-GREEN-BLUE

Measuring range: 20A / 1000V  
Measurement category: CAT III 1000V  
Cable length: 2m  
Maximum opening of alligator clip: 2.3cm  
Banana diameter: 4mm



ORDER CODE HA008000

### KIT800

SET OF CABLES AND ALLIGATOR CLIPS BLACK-RED-GREEN-BLUE-BROWN

Measuring range: 36A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Cable length: 2m  
Maximum opening of alligator clip: 4cm  
Banana diameter: 4mm

ORDER CODE HA000158

### KIT0075

SET OF LEADS AND ALLIGATOR CLIPS BLACK-GREEN

Measuring range: 10A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Cable length: 1.5m  
Maximum opening of alligator clip: 3.5cm  
Banana diameter: 4mm



ORDER CODE HA000158

### KIT0070

SET OF 2 CABLES, 1 LEAD, 2 ALLIGATOR CLIPS RED-BLACK

Measuring range: 10A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Cable length: 1.5m  
Maximum opening of alligator clip: 3.5cm  
Banana diameter: 4mm



## KITS

ORDER CODE HA441000

### 44100

SET OF 2 4MM BANANA-BANANA CABLES, 2 LEADS 402-IECN+R, 2 ALLIGATOR CLIPS 6009-IECN+R + 2 LONG CLAMP TERMINALS AND A SET OF ALLIGATOR CLIPS KITMPPDCC

For characteristics, please see the single items.



ORDER CODE HA425000

### 425

SET OF 2 4MM BANANA-BANANA CABLES, 2 LEADS WITH INTERCHANGEABLE TIP AND 2 FLEXIBLE CLAMP TERMINALS

Lead measuring range: 36A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Cable length: 1m  
Maximum opening of tweezers: 6mm  
Banana diameter: 4mm



ORDER CODE HA000203

### UNIVERSALKITG3

SET OF 4 CABLES, 4 ALLIGATOR CLIPS AND 3 LEADS BLACK RED-GREEN-BLUE

Measuring range: 10A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Cable length: 2m  
Maximum opening of alligator clip: 4cm  
Banana diameter: 4mm



ORDER CODE HA000201

### UNIVERSALKIT COMBI

SET OF 3 CABLES, 3 ALLIGATOR CLIPS AND 3 LEADS BLACK RED-GREEN-BLUE

Measuring range: 10A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Cable length: 2m  
Maximum opening of alligator clip: 4cm  
Banana diameter: 4mm



## POWER SUPPLY, POWER SUPPLY CABLES, BATTERIES AND BATTERY CHARGERS

ORDER CODE HA005000

### A0050

POWER SUPPLY CATTERY CHARGER CAT IV

Power supply 230V 50Hz  
Plug type: C CEE 7/16 (Europlug)  
Output: 12VDC - 250mA - 3VA  
Output connector: 28/3-10  
Polarization: Negative in the middle



ORDER CODE HA005500

### A0053

POWER SUPPLY STANDARD BATTERY CHARGER

Power supply 115V 60Hz  
Plug type: A NEMA 1-15  
Output: 12VDC - 250mA - 3VA  
Output connector: 28/3-10  
Polarization: Negative in the middle



ORDER CODE HA005500

### A0055

POWER SUPPLY CATTERY CHARGER CAT IV

Power supply 230V 50/60Hz  
Plug type: F+E CEE 7/7 Schuko  
Output: 5VDC - 1.5A  
Output connector: 28 in  
Polarization: Positive in the middle



ORDER CODE HA000208

### A007X

POWER SUPPLY STANDARD BATTERY CHARGER

Power supply 100÷240V 50/60Hz  
Plug type: A,C,G,I  
Output: 12VDC - 250mA - 3VA  
Polarization: Positive in the middle



> FOLLOWS



ORDER CODE HA000211

**A0045**  
POWER SUPPLY  
BATTERY CHARGER  
+ UNIVERSAL PLUGS

Power supply:  
100÷240V 50/60Hz 1.5A  
Plug type: A,C,G,I  
Output: 5VDC - 3500mA  
Polarization: Positive in the middle



ORDER CODE HA005500

**A0056**  
POWER SUPPLY / BATTERY  
CHARGER CAT IV

Power supply 230V 50/60Hz  
Plug type: NEMA 5-15  
Output: 5VDC - 1.5A  
Output connector: 28 in  
Polarization: Positive in the middle



ORDER CODE HA000071

**C5700**  
BIPOLAR POWER SUPPLY  
CABLE

Overall length: 2m  
Connectors: IEC 60320 C-7 - Europlug CEE 7/16

## ACCESSORIES FOR MEASURING EARTH RESISTANCE



ORDER CODE HA030000

**YABAT0003000**  
RECHARGEABLE BATTERY

Battery type: AA  
Composition: Ni-MH  
Rated voltage: 1.2V  
Power: min 2000mAh



ORDER CODE HA000146

**YABAT0003HT1**  
RECHARGEABLE BATTERY

Battery type: 18650  
Composition: Li-ion  
Rated voltage: 3.7V  
Power: 2Ah



ORDER CODE HA100001

**KITTERRNE**  
SET OF 4 RODS  
AND 4 CABLE COILS  
BLUE-RED-GREEN-BLACK

Length of rods: 25cm  
Blue cable length: 25m  
Red cable length: 20m  
Green-black cable length: 4.5m  
Measurement category: CAT III 600V  
Banana diameter: 4mm



ORDER CODE HA000089

**KIT0071**  
SET OF 2 RODS AND 3 CABLE  
COILS BLUE-RED-GREEN

Length of rods: 25cm  
Blue cable length: 30m  
Red cable length: 15m  
Green cable length: 3m  
Measurement category: CAT III 600V  
Banana diameter: 4mm



ORDER CODE HA000212

**BAT45**  
RECHARGEABLE BATTERY

Battery type: 18650  
Composition: Li-ion  
Rated voltage: 3.7V  
Power: 2.6Ah



ORDER CODE HA040010

**YABAT0004001**  
EXTERNAL BATTERY CHARGER

Power supply: 100÷240V 50/60Hz  
Supported batteries: AA, AAA  
Battery Sockets: 6x AA/AAA  
Plug type: IEC 60320 C-7 - Europlug  
CEE 7/16 / NEMA 5-15  
Output: 150mA



ORDER CODE HA000079

**R11**  
ROD FOR EARTH RESISTANCE  
MEASUREMENT AND FOR  
STEP AND CONTACT MEASUREMENT

Length of rod: 40.5cm



ORDER CODE HA000078

**R10**  
ROD FOR EARTH RESISTANCE  
MEASUREMENT

Length of rod: 25cm



ORDER CODE HA007051

**C7051**  
SUPPLY CABLE  
FOR HT7051

Overall length: 2m  
Connectors: Europlug with no earthing  
Shuko CEE 7/17



ORDER CODE HA000206

**BAT7X**  
RECHARGEABLE  
BATTERY

Compatibility: THT47-60-70  
Composition: Li-Polymer  
Rated voltage: 7.4V  
Power: 2700mAh



ORDER CODE HA000244

**C2100**  
CONNECTION CABLE  
T2100 / MACROTESTG

Overall length: 1.5m  
Connectors: Jack 3.5mm - Hypertac



ORDER CODE HP002100

**T2100**  
CLAMP FOR MEASURING EARTH  
RESISTANCE WITHOUT RODS

Resistance measuring range: 0.010÷1000Ω  
Resolution: 0.001÷20Ω  
Basic accuracy: ±0.01%reading + 0.01Ω  
Measurement category: CAT III 150V  
Clamp jaw internal diameter: 32mm  
Output connector Jack 3.5mm  
Size: 293 x 90 x 66mm  
Weight, battery included: 1320gr

## ACCESSORIES FOR LAN NETWORK TESTERS



ORDER CODE 6050 HA000389  
ORDER CODE 6055/M75 HA000CH1

### REMOTE UNIT #1

Type of connector remote unit #1  
for QUICKLAN6055/M75: Ethernet RJ45  
Type of connector remote unit #1  
for QUICKLAN6050: Ethernet RJ45/BNC



ORDER CODE HA000CH2

### REMOTE UNIT #2

Type of connector remote unit #2  
for QUICKLAN6055/M75:  
Ethernet RJ45



ORDER CODE HA000141

### YAAMS0000000

PATCH CABLE LAN RJ45

Cable length: 20cm



ORDER CODE HA00038#

### REM#

# = 1 (REM1) # = 2 (REM2)  
# = 3 (REM3) # = 4 (REM4)  
# = 5 (REM5) # = 6 (REM6)  
# = 7 (REM7) # = 8 (REM8)

REMOTE UNIT + PATCH CABLE

Length of patch cable RJ45: 20cm

## REMOTE UNIT KIT



ORDER CODE HA006050

### 6050MARKER0204

SET OF REMOTE UNITS #2, #3, #4

Type of connector remote units  
for QUICKLAN6050: Ethernet RJ45/BNC



ORDER CODE HA000380

### REM38

SET OF REMOTE UNITS #3 TO #8  
+ PATCH CABLES

Type of connector remote units  
for QUICKLAN6055/M75: Ethernet RJ45  
Cable length: 20cm



## FULLTEST3 ACCESSORIES



ORDER CODE HA000199

### FT3HVTIP

HV CABLE  
BANANA-BLACK LEAD

Overall length: 2m  
Measurement category:  
CAT I 5000VDC, CAT III 1000V,  
CAT IV 600V  
Banana diameter: 4mm



ORDER CODE HA000196

### FT3BARCR

BAR CODE READER  
PRE-PROGRAMMED USB

Cable length: 1.8m



ORDER CODE HA000197

### FT3BRSN

SOFT BAG  
FOR ACCESSORIES



ORDER CODE HA000198

### FT3HVPRB

SET OF 2 CABLES  
BANANA-ALLIGATOR CLIP  
BLACK

Measuring range: 10A / 5000VDC  
Measurement category:  
CAT IV 600V, CAT III 1000V,  
CAT I 5000VDC  
Maximum opening of alligator clip: 2.3cm  
Overall length: 2m  
Banana diameter: 4mm



ORDER CODE HA000194

### FT3RMTCT

REMOTE  
START/STOP/SAVE  
BUTTON

Cable length: 7m



ORDER CODE HA000192

### FT3KB DEN

USB 88-KEY KEYBOARD  
WITH ENGLISH LAYOUT



ORDER CODE HA000193

### FT3REDLP

SIGNAL LAMP  
TEST IN PROGRESS

Cable length: 7m



ORDER CODE HA000209

### FT3HVPRB1

1 CABLE BANANA-ALLIGATOR  
+ 1 CABLE BANANA-LEAD

Measuring range: 10A / 5000VDC  
Measurement category: CAT I 5000VDC  
CAT IV 600V, CAT III 1000V  
Maximum opening of alligator clip: 2.3cm  
Overall length: 2m  
Banana diameter: 4mm

> FOLLOWS



ORDER CODE **HA000195**

### FT3SFTSW

OPEN DOOR DETECTION  
DEVICE FOR VERIFICATION  
ROOM

Cable length: 7m



ORDER CODE **HA000425**

### FT3MPT2

USB THERMAL PRINTER  
WITH RECHARGEABLE BATTERY

Cable length: 1m



ORDER CODE **HA000183**

### 2317-IECIV-200-R

TEST CABLE, RED, 2.5MMQ

Measuring range: 36A / 1000V  
Measurement category: CAT IV 1000V  
Overall length: 2m  
Banana diameter: 4mm



### 2310-IECIV-200-#

# = B (BLUE) ORDER CODE **HA000048**  
# = V (GREEN) ORDER CODE **HA000049**  
# = N (BLACK) ORDER CODE **HA000047**

TEST CABLE, BLUE, 0.75MMQ

Measuring range: 12A / 1000V  
Measurement category: CAT IV 1000V  
Overall length: 2m  
Banana diameter: 4mm



ORDER CODE **HAC2009A**

### C2009AD

ADAPTER  
FOR CONNECTION  
FULLTEST3 / IMP57



ORDER CODE **HA50040#**

### 5004-IEC#

# = colour N (black) - B (blue) - R (red)  
- V (green)

ALLIGATOR CLIP FOR CABLES  
WITH 4MM BANANA

Measuring range: 20A / 1000V  
Measurement category: CAT III 1000V  
Maximum opening of alligator clip: 2.3cm  
Banana diameter: 4mm



ORDER CODE **HA40400#**

### 404-IEC#

# = colour N (black) - B (blue) - V (green) - R (red)

MEASURING LEAD  
WITH EXTRACTABLE  
PROTECTION CAP

Measuring range: 36A / 1000V  
Measurement category: CAT IV 600V / CAT III 1000V  
Overall length: 11.5cm  
Tip length: 1.9cm  
Tip diameter: 4mm  
Banana diameter: 4mm

## SOFTWARE, CABLES AND ADAPTERS FOR CONNECTION DEVICE/PC



ORDER CODE **HA000199**

### TOPVIEW2006

MULTI-LANGUAGE SOFTWARE  
TOPVIEWS FOR MANAGEMENT  
OF DEVICES AND REPORTS  
+ CABLE C2006

Cable length: 1.5m  
Output connector: USB  
Compatibility: Windows XP-7-8-10



ORDER CODE **HA000196**

### TOPVIEW2007

MULTI-LANGUAGE SOFTWARE  
TOPVIEWS FOR MANAGEMENT  
OF DEVICES AND REPORTS  
+ CABLE C2007

Cable length: 1.5m  
Connectors: USB A - USB B  
Compatibility: Windows XP-7-8-10



ORDER CODE **HA000197**

### TOPVIEWS

MULTI-LANGUAGE SOFTWARE  
FOR MANAGEMENT  
OF DEVICES AND REPORTS

Cable length: 1m  
Output connector: USB  
Compatibility:  
Windows XP-7-8-10



ORDER CODE **HA002001**

### C2001

OPTICAL / RS-232  
CABLE

Compatibility with models  
provided with optical and PC  
interface or devices with RS-232  
port (example IMP57)



ORDER CODE **HA002006**

### C2006

USB CABLE  
+ OPTICAL ADAPTER

Compatibility with models provided  
with optical interface.



ORDER CODE **HA002007**

### C2007

USB CABLE TYPE A/B  
LENGTH 1.5M



ORDER CODE **HA0C2009**

### C2009

USB / RS-232 ADAPTER

## KRAFTFORM® GRIP

THE SHAPE WHICH ADAPTS TO YOUR HAND



The innovative logic which inspired the original shape of the Kraftform® grip (the grip adapts to the shape of your hand) has proven successful until today.

### The wide grip takes the whole palm of your hand.

The mass of the grip in contact with your palm and the shape of the grip determine the torque. The big diameter of the grip allows for a high transmission of force.

### Wide millings support the muscles of your hand.

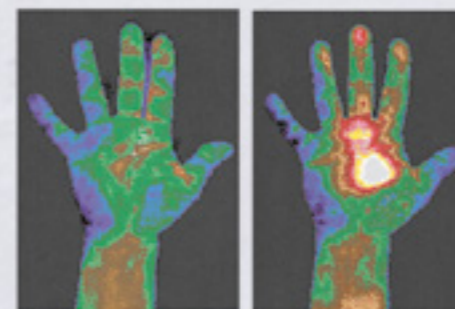
Wide and slightly curved millings make up an optimum resting surface for the muscles of your hand and fingers. Thanks to the soft milling in elastomer, it is possible to take advantage of the entire force of the muscles of the index and of the middle finger, which are particularly strong.



The wide contact surface generates a strong friction with the soft area and guarantees a high transmission of force when gripping.



An almost friction-free contact with the hard areas allows you to change your grip very quickly.



A thermal camera highlights the difference: the parts marked in red and white represent strong stressing.

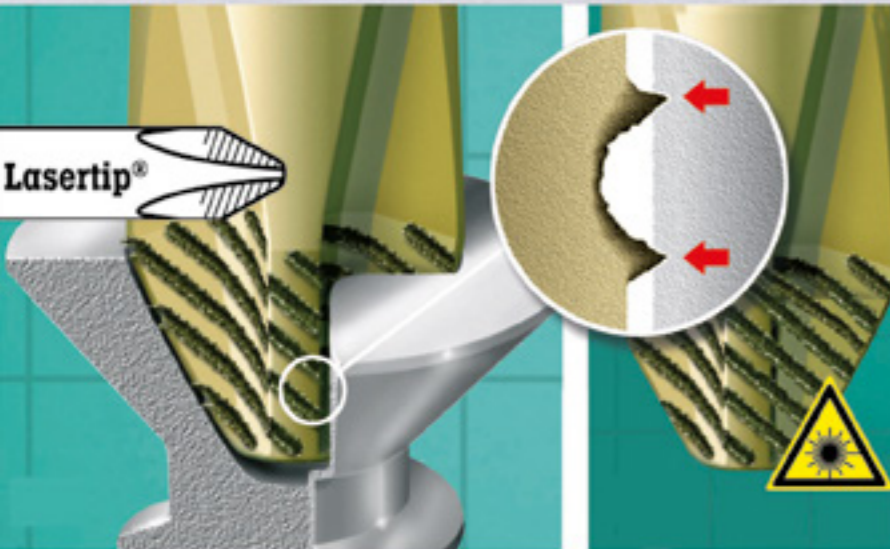
# GEF®



## LASERTIP® BLADE

THE LASER TECHNOLOGY PREVENTS THE BLADE FROM SLIDING AWAY FROM THE SCREW'S HEAD

The Lasertip® tip perfectly fits with the head of the screw, thus preventing the blade to slide away.



**The Lasertip® blade increases productivity.**  
Here are its advantages.

### Higher safety

The blade does not slide away from the screw; therefore, no damage is done to the screw or to delicate surfaces. The danger of injury is reduced.

### Higher strength

Higher torque transmission since the blade perfectly fits with the screw

### Higher speed

It is not necessary to change grip while screwing. Remarkable reduction of pressure.

### Higher number of screwings

The tool has a longer duration thanks to the laser treatment of the tip.

Thanks to the concentrated laser beam, a surface with sharp milling is obtained. This material is very resistant against abrasion. Through the laser treatment, the milled tracks reach hardness up to 1.000 HV 0.3.



**With Lasertip®, pressure applied is remarkably reduced.** - it is possible to obtain this surprising effect through the Lasertip® treatment of the blade tip. The result is a micro-raw surface with border hardness up to 1.000 vickers, which

perfectly matches the head of the screw. In this way, any damage to the surface of the screw, its expensive and problematic

replacement as well as possible injury in case the blade slides away from the screw are prevented.



**GEF, the successful screwdriver with Kraftform® grip and Lasertip® blade!**

## SCREWDRIVERS WITH KRAFTFORM® GRIP AND LASERTIP® BLADE

### 160 i VDE flathead insulated screwdriver Kraftform® Plus

Applications: for slot screws  
Blade: insulated  
Tip: DIN 5264-A, ISO2380, conical tip, Lasertip®  
Grip: Kraftform® with anti-rolling protection, multicomponent  
Standard: IEC 60900 : 2004



| Model           | mm  | mm  | mm  | mm  | mm | Code METEL |
|-----------------|-----|-----|-----|-----|----|------------|
| 0.6 x 3.5       | 0.6 | 3.5 | 100 | 81  | 5  | HU000346   |
| 0.8 x 4.0 x 100 | 0.8 | 4.0 | 100 | 98  | 5  | HU000347   |
| 1.0 x 5.5 x 125 | 1.0 | 5.5 | 125 | 98  | 5  | HU000348   |
| 1.2 x 6.5 x 150 | 1.2 | 6.5 | 150 | 105 | 5  | HU000349   |
| 1.2 x 8.0 x 175 | 1.2 | 8.0 | 175 | 112 | 5  | HU000350   |

### 162 i PH VDE insulated screwdriver Phillips

Applications: for Phillips screws  
Blade: insulated  
Tip: DIN 5260-PH, ISO8764-PH, Lasertip®  
Grip: Kraftform® with anti-rolling protection, multicomponent  
Standard: IEC 60900 : 2004



| Model     | mm  | mm  | mm  | mm | Code METEL |
|-----------|-----|-----|-----|----|------------|
| PH0 x 80  | PH0 | 80  | 81  | 5  | HU000351   |
| PH1 x 80  | PH1 | 80  | 98  | 5  | HU000352   |
| PH2 x 100 | PH2 | 100 | 105 | 5  | HU000353   |
| PH3 x 150 | PH3 | 150 | 112 | 5  | HU000354   |
| PH4 x 200 | PH4 | 200 | 112 | 2  | HU000355   |

### 165 i PZ VDE insulated screwdriver Pozidriv

Applications: suitable for Pozidriv screws  
Blade: insulated  
Tip: ISO 8764-PZ, Lasertip®  
Grip: Kraftform® with anti-rolling protection, multicomponent  
Standard: IEC 60900 : 2004



| Model     | mm  | mm  | mm  | mm | Code METEL |
|-----------|-----|-----|-----|----|------------|
| PZ0 x 80  | PZ0 | 80  | 81  | 5  | HU000356   |
| PZ1 x 80  | PZ1 | 80  | 98  | 5  | HU000357   |
| PZ2 x 100 | PZ2 | 100 | 105 | 5  | HU000358   |
| PZ3 x 150 | PZ3 | 150 | 112 | 5  | HU000359   |
| PZ4 x 200 | PZ4 | 200 | 112 | 2  | HU000360   |

## SCREWDRIVERS FOR THERMAL SWITCHES AND RCDS

### 162 i PH/S VDE insulated screwdriver for PlusMinus screws (Phillips/slot)

Applications: for PlusMinus screws (Phillips/slot)  
Blade: insulated  
Tip: PlusMinus (Phillips/slot)  
Grip: Kraftform® with anti-rolling protection, multicomponent  
Standard: IEC 60900 : 2004



| Model       | mm | mm  | mm  | mm | Code METEL |
|-------------|----|-----|-----|----|------------|
| PH/S1 x 80  | #1 | 80  | 98  | 5  | HU000361   |
| PH/S2 x 100 | #2 | 100 | 105 | 5  | HU000362   |

### 165 i PZ/S VDE insulated screwdriver for PlusMinus screws (Pozidriv/slot)

Applications: for PlusMinus screws (Pozidriv/slot)  
Blade: insulated  
Tip: PlusMinus (Pozidriv/slot)  
Grip: Kraftform® with anti-rolling protection, multicomponent  
Standard: IEC 60900 : 2004



| Model       | mm | mm  | mm  | mm | Code METEL |
|-------------|----|-----|-----|----|------------|
| PZ/S1 x 80  | #1 | 80  | 98  | 5  | HU000363   |
| PZ/S2 x 100 | #2 | 100 | 105 | 5  | HU000364   |

## SET OF SCREWDRIVERS

### Kit of 6 screwdrivers VDE 1000V



Kit consisting of:  
4 insulated flathead screwdrivers  
2 insulated Phillips screwdrivers

| Model | Content   | <input type="checkbox"/> | Code METEL |
|-------|---|--------------------------|------------|
| K01S  | 160 i 06 x 3.5<br>160 i 08 x 4.0<br>160 i 1.0 x 5.5<br>160 i 1.2 x 6.5<br>162 i PH1 x 80<br>162 i PH2 x 100 | 5                        | HU000345   |

### Kit of 4 screwdrivers VDE 1000V



Kit consisting of:  
4 screwdrivers for RCDS

| Model | Content  | <input type="checkbox"/> | Code METEL |
|-------|--|--------------------------|------------|
| K02S  | PH/S1 x 80<br>PH/S2 x 100<br>PZ/S1 x 80<br>PZ/S2 x 100 | 5                        | HU000367   |

### Kit of 4 insulated flathead screwdrivers



Kit consisting of:  
4 insulated flathead screwdrivers

| Model | Content  | <input type="checkbox"/> | Code METEL |
|-------|--|--------------------------|------------|
| K21   | 0.6 x 3.5<br>0.8 x 4.0 x 100<br>1.0 x 5.5 x 125<br>1.2 x 6.5 x 150 | 5                        | HU000498   |

### Set of 4 screwdrivers



Kit consisting of:  
2 insulated flathead screwdrivers  
1 insulated Phillips screwdriver  
1 insulated Pozidriv screwdriver

| Model | Content  | <input type="checkbox"/> | Code METEL |
|-------|--|--------------------------|------------|
| K23   | 0.6 x 3.5<br>0.8 x 4.0 x 100<br>PH2 x 100<br>PZ2 x 100 | 5                        | HU000500   |

### Set of 4 insulated screwdrivers



Kit consisting of:  
2 insulated Phillips screwdrivers  
2 insulated Pozidriv screwdrivers

| Model | Content                                       | <input type="checkbox"/> | Code METEL |
|-------|---|--------------------------|------------|
| K24   | PH1 x 80<br>PH2 x 80<br>PZ1 x 80<br>PZ2 x 100 | 5                        | HU000501   |

### Set of 3 screwdrivers



Kit consisting of:  
2 insulated flathead screwdrivers  
1 insulated Phillips screwdriver

| Model | Content                                  | <input type="checkbox"/> | Code METEL |
|-------|--|--------------------------|------------|
| K3    | 0.6 x 3.5<br>0.8 x 0.4 x 100<br>PH1 x 80 | 5                        | HU000394   |

## INSERT HOLDERS AND ADAPTERS

### Kraftform Kompakt® 20



Applications: for hexagonal inserts 1/4" DIN 3126 C + E 6.3  
Unit: 1/4" hexagonal with quick-release insert holder Rapidaptor®  
Grip: Kraftform® with anti-rolling protection, multi-components and with an integrated housing for inserts

| Model | Content   | <input type="checkbox"/> | Code METEL |
|-------|---|--------------------------|------------|
| KK20  | <ul style="list-style-type: none"> <li>• 889/4R 1x1/4"x100</li> <li>• 800/1Z 1x1/0x5.5x25 - 1x1.2x6.5x25</li> <li>• 851/1ZPH 1xPH 1x25 - 1xPH 2x25</li> <li>• 855/1ZPZ 1xPZ 1x25 - 1xPZ 2x25</li> </ul> | 1                        | HU000365   |

*Ideal for automatic screwing by screwdriver*



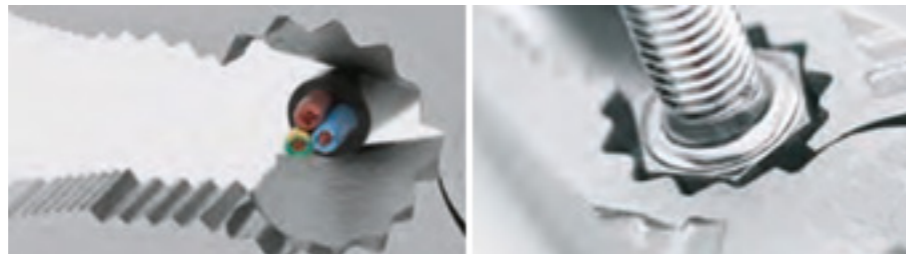
## MULTIFUNCTION VDE CLAMPS

*The ergonomic clamp of the future!*



### Multifunction VDE clamp with ergonomic grip

It is the ideal clamp for working on panels and electric installations. It performs several functions. The special grip guarantees that it is simple to use and with minimum effort. VDE insulation according to IEC60900. Handles in non-slip material with two components



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 290/200 | 200 | 295 | 3 | HU000720   |

### VDE clamp for electricians with ergonomic grip

Multifunction clamp, ideal for peeling and crimping electric cables from 1.5 to 2.5 mm<sup>2</sup>. Special grip to guarantee minimum effort. VDE 1000V insulation according to IEC60900. Handles in non-slip material with two components



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 291/200 | 200 | 295 | 3 | HU000721   |

### Indestructible cable cutter for hard materials

Cable cutter with enhanced lever which offers high cutting performances. Precision cutters for nails, bolts and similar materials. Tool in special steel, oil forged and tempered. Handles in non-slip material with two components



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 292/200 | 200 | 340 | 3 | HU000722   |

## MULTIFUNCTION VDE CLAMPS

### Multifunction VDE clamps with cable cutter - DIN ISO 5746



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 265/160 | 165 | 200 | 3 | HU000371   |
| 265/180 | 180 | 260 | 3 | HU000372   |
| 265/200 | 205 | 285 | 3 | HU000373   |

### VDE clamps with middle round / straight jaws DIN ISO 5745



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 235/160 | 170 | 165 | 3 | HU000375   |
| 235/200 | 205 | 215 | 3 | HU000376   |

### VDE clamps with middle round / curved jaws 40° DIN ISO 5745



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 236/160 | 170 | 165 | 3 | HU000716   |
| 236/200 | 205 | 215 | 3 | HU000377   |

### VDE clamps with long flat jaws DIN ISO 5745



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 215/160 | 160 | 145 | 3 | HU000378   |

### VDE HD clamps for diagonal cuts of rigid and flexible cables - DIN ISO 5749



| Model   | mm  |     |   | Code METEL |
|---------|-----|-----|---|------------|
| 240/160 | 180 | 280 | 3 | HU000382   |
| 240/180 | 200 | 305 | 3 | HU000383   |

### Precision cable cutter

High-precision sharp cable cutters, induction-tempered Ideal for continuous use at maximum performance. Double-injection safety grip according to EN60900: in oil-bath tempered and hardened steel.



| Model   | mm  |     | ∅  |   | Code METEL |
|---------|-----|-----|----|---|------------|
| 220/170 | 160 | 225 | 16 | 3 | HU000504   |
| 220/210 | 210 | 340 | 25 | 3 | HU000385   |

### Tube fastening VDE clamps with seven positions DIN ISO 8976



| Model   | mm  |      |   | Code METEL |
|---------|-----|------|---|------------|
| 280/250 | 250 | 3505 | 3 | HU000384   |

## CABLE STRIPPERS AND PEELERS

### Multipurpose cable duct cutting scissors



5 interchangeable cutting supports in tempered steel with secure fastening through Allen screw  
Performance of straight, circular (max. diameter 25mm), 90° and e oblique cuts with adjustable direction  
Ideal for perfect cuts on plastic (cable ducts, rigid PVC tubes, etc.), rubber (resin tubes, cables, etc.) and other surfaces (Plexiglas, nylon, etc.).

| Model | mm  | g   | □ | Code METEL |
|-------|-----|-----|---|------------|
| F04   | 220 | 316 | 1 | HU000292   |

### Cable cutter VDE 1000V



Suitable for cutting cables and flexible cores in copper or aluminium  
Ratchet mechanism  
High cutting capacity

| Model       | mm  | g   | ∅  | □ | Code METEL |
|-------------|-----|-----|----|---|------------|
| SH320-1000V | 260 | 600 | 32 | 1 | HU000060   |
| SH500-1000V | 285 | 800 | 52 | 1 | HU000040   |

### Auto-adjusting cable peeler and cutter



Insulated cables in PVC 0.02-10 mm<sup>2</sup> / 34 -8 AWG  
For flexible cables 10 mm<sup>2</sup> / 8 AWG  
For rigid cables 1.5 mm<sup>2</sup> / 16 AWG

| Model                         | ∅ mm                      | □ | Code METEL |
|-------------------------------|---------------------------|---|------------|
| SF04                          | 0.02 - 10 mm <sup>2</sup> | 1 | HU000387   |
| L04<br>Interchangeable blades |                           | 1 | HU000391   |

### Cable peeler



Simple and reliable, this cable peeler allows peeling wires with PVC insulation from 0.03 up to 6mm<sup>2</sup>/AEG 30-10a. Adjustable length from 3 up to 16 mm. It is capable of cutting multiple wires, data transmission cables and telephone cables with 4-6-8 poles. Light and easy to use, with a low employment of strength thanks to its ergonomic design. Provided with adjustment device to change the thickness of the wire's insulation. Damaging the conductor is impossible. Built in polyamide reinforced with glass fiber.

| Model | ∅ mm                    | □ | Code METEL |
|-------|-------------------------|---|------------|
| SF03  | 0.2 - 6 mm <sup>2</sup> | 3 | HU000087   |

## CABLE STRIPPERS AND PEELERS

### Cable peelers and cutters 0,5 6mm<sup>2</sup>



Pressure adjustment of blades  
For soft or hard sheaths  
Knives in tempered steel  
Harmless for conductors  
Adjustment of the length of the wire to be peeled.

| Model | ∅ mm                    | □ | Code METEL |
|-------|-------------------------|---|------------|
| SF01  | 0.5 - 6 mm <sup>2</sup> | 6 | HU000039   |

### Auto-adjusting cable peeler



Auto-adjusting cable peeler with rotating action, suitable for any kind of insulating sheath. It allows carrying out circular, helical and longitudinal cuts. It also allows carrying out internal peelings. For cables up to 25 mm<sup>2</sup>

| Model               | ∅ mm <sup>2</sup> | □ | Code METEL |
|---------------------|-------------------|---|------------|
| PC03                | 4.5 - 25          | 1 | HU000065   |
| L03<br>Spare blades |                   | 1 | HU000078   |

### New-generation cable peeler



New-generation tool to peel 8-13 mm<sup>2</sup> cables and wires. It allows peeling cables along their length or circularly, allows accessing difficult points such as roofs and walls, distribution boards, switch panels, etc. It is suitable for all kinds of conductors 0.5 mm<sup>2</sup>, 0.75 mm<sup>2</sup>, 2.5 mm<sup>2</sup>, 4.0 mm<sup>2</sup> and 6.0 mm<sup>2</sup> (24-10AWG). With in-built cable cutter, easily accessible for flexible conductors of max 6.0 mm<sup>2</sup>, conductors of max 4.0 mm<sup>2</sup> (12AWG).

| Model | ∅ mm <sup>2</sup> | □ | Code METEL |
|-------|-------------------|---|------------|
| S400  | 0.6 - 6           | 1 | HU0000096  |

### Cable peeler



Precise, quick and reliable to peel circular cables with a diameter of 4-28 mm<sup>2</sup>. Provided with removable adapter in high-resistance plastic (POM). Thanks to the variable adjusting device of cutting depth, it does not damage the internal conductors.

| Model           | ∅ mm <sup>2</sup> | □ | Code METEL |
|-----------------|-------------------|---|------------|
| S28             | 4 - 28            | 1 | HU000097   |
| L28 spare blade |                   | 1 | HU000098   |

### Clamp for modular connectors



Bronzed steel. To cut, peel and fasten connectors RJ11, RJ12, RJ45 which are used in the field of data and telephone communications.

| Model | mm  | g   | ∅ mm <sup>2</sup> | □ | Code METEL |
|-------|-----|-----|-------------------|---|------------|
| CM01  | 205 | 520 | 0.08 -10          | 1 | HU000286   |

## CRIMPERS AND TOOLS FOR THE PHOTOVOLTAIC FIELD

### On crimping technique

Connections through crimping have replaced over time those through welding in many applications.

Crimping guarantees a better mechanical steadiness and is resistant to corrosion. Crimping may be carried out every time in a similar way, thus offering a longer duration of electric connections. However, in order to correctly carry out crimping, different factors must be taken into consideration: the conductor, the connector and the tool for crimping must fit together.

The minimum quality of a connection through crimping is defined by standards DIN EN 6035-2 IEC 512 and DIN EN 60999-1. In addition, manufacturers often define some crimping standards for the huge quantity of connectors and cables available on the market.

Our crimpers respect these characteristics, offering the user highly technological tools:

- obligatory closing system which guarantees that crimping is always completed
- handles in non-slip material with two components
- adjustable fastening strength and interchangeable dies for each specific connector
- fastening strength normally factory adjusted by the manufacturer.

The appropriate preparation of the part of conductor to be peeled is important as much as the correct positioning of the connector in the tool, in order to obtain precise connections. Also for this reason, cutting-edge tools are used in order to guarantee high levels of accuracy in preparing your connections.

### Photovoltaic field and connectors

The use of solar energy to generate electricity has rapidly increased in the last few years.

With the development of panels with a higher and higher performance, solar energy is now giving its remarkable contribution to the development of renewable energy all over the world. This helps reducing the use of fossil fuels to generate energy and also providing electric energy to remote places.

The installation of a photovoltaic field is an investment of different decades, whose return strictly depends on the quality of the system itself. Long-lasting resistance to weathering and a good cable duration and of connectors are relevant factors in a system's performances.

Each panel must be properly connected, i.e. the cable must be as short as possible in order to prevent losses due to conductors. Crimping with our tools guarantees an optimum resistance to corrosion and infiltrations, minimizing energy losses even after several years. Connectors in photovoltaic systems are continuously evolving: that's why the installer must always be capable of installing and repairing.

To this purpose, we offer a wide range of tools for working on cables and solar connectors which will enable you to carry out operations in a professional way and in conditions of maximum safety. We constantly keep up to date with modern connectors and, therefore, we are able to offer different crimping dies.

With GEF tools, you will be able to install and repair today's and tomorrow's systems.

## Q1 UNIVERSAL CRIMPER

Precision crimper, designed to guarantee crimping of most modern connectors.

Fastening strength enhanced by the innovative internal leverage system.

Interchangeable dies for any type of modern connector.

Practically parallel moving system of heads.

Optimum grip thanks to the non-slip handles and to weight distribution.

Possibility of crimping with a single hand thanks to the locators. Body in bronzed chrome-vanadium steel.

| Model | <input type="checkbox"/> | Code<br>METEL |
|-------|--------------------------|---------------|
| Q1    | 1                        | HU000676      |



### PACKING

Practical anti-shock case, without dies, without locators, with:

- crimper Q1
- L wrench for die assembly
- adjustable wrench

*It can be interfaced as you like, according to your needs!*



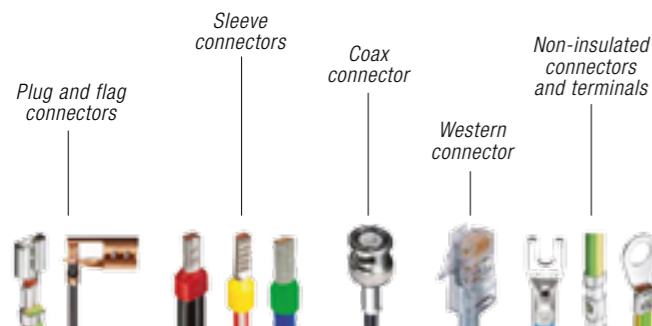
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| <b>INTERCHANGEABLE DIES</b><br>It is not necessary to use a different tool for different connectors, thanks to the wide range of interchangeable dies it is possible to work on all modern connectors with the utmost precision. | <b>FASTENING STRENGTH</b><br>The fastening strength can be adjusted through the relevant knob in order to satisfy the crimping specifications declared by the connectors' manufacturers. | <b>LOCATOR</b><br>Thanks to the locator, the connector is always correctly fastened in the device. This guarantees better connections, similar to each other and with no need to use three hand for crimping. | <b>EMERGENCY UNLOCKING</b><br>In order to remedy for an incorrect insertion of the connector, it is possible to unlock the tool while crimping through a screwdriver |

## DIES AND LOCATORS FOR Q1

| PHOTOVOLTAIC SECTOR |  |                   |     |  |
|---------------------|--|-------------------|-----|--|
| METEL               |  | Type of connector | Die |  |
| HU000662            |  | MC4               |     | Die for 2.5 - 4.0 - 6.0 mm <sup>2</sup> MC4 connectors               |
| HU000661            |  | MC4               |     | Locator for 2.5 - 4.0 - 6.0 mm <sup>2</sup> MC4 connectors           |
| HU000660            |  | Tyco              |     | Die for 1.5 - 2.5 - 4.0 - 6.0 mm <sup>2</sup> Tyco connectors        |
| HU000559            |  | Tyco              |     | Locator for 1.5 - 2.5 - 4.0 - 6.0 mm <sup>2</sup> Tyco connectors    |
| HU000690            |  | Wieland           |     | Die for 0.14 - 1.0 - 1.5 - 2.5 - 4 mm <sup>2</sup> Wieland terminals |
| HU000691            |  | Wieland           |     | Die for 4.0 - 6.0 - 10 mm <sup>2</sup> Wieland connectors            |
| HU000692            |  | Huber & Suhner    |     | Die for 2.5 - 4 mm <sup>2</sup> Huber & Suhner terminals             |
| HU000671            |  | Huber & Suhner    |     | Die for 4.0 - 6.0 mm <sup>2</sup> Huber & Suhner connectors          |
| HU000664            |  | MC3               |     | Die for 2.5 - 4.0 - 6.0 mm <sup>2</sup> MC3 connectors               |
| HU000663            |  | MC3               |     | Locator for 2.5 - 4.0 - 6.0 mm <sup>2</sup> MC3 connectors           |

**IMPORTANT:** further dies both for the photovoltaic and for the electro-technical sector are available upon demand.

| ELECTRO-TECHNICAL SECTOR |                              |   |     |
|--------------------------|------------------------------|---|-----|
| METEL                    | Type of connector            | Capacity mm <sup>2</sup>                    | Die |
| HU000683                 | Insulated terminals          | 0.5 - 1.0<br>1.5-2.5<br>4.0-6.0             |     |
| HU000715                 | Insulated terminals          | 0.5 - 1.0<br>1.5-2.5<br>4.0-6.0             |     |
| HU000677                 | Non-insulated terminals      | 4<br>6<br>10                                |     |
| HU000678                 | Non-insulated terminals      | 0.5 - 1.0<br>1.5-2.5<br>4.0-6.0<br>10       |     |
| HU000680                 | Non-insulated plug terminals | 0.1 - 0.25<br>0.5-1.0<br>0.5-1.0<br>1.5-2.5 |     |
| HU000682                 | Non-insulated plug terminals | 0.5 - 1.0<br>1.5-2.5<br>4.0 - 6.0           |     |
| HU000688                 | Flag terminals               | 0.5 - 1.0<br>0.5 - 1.0<br>1.25-2.5          |     |
| HU000689                 | Flag terminals               | 1.25 - 2.5<br>3 - 4<br>4 - 6                |     |
| HU000685                 | Insulated sleeve terminals   | 0.25 - 0.75<br>1.0-1.5<br>2.5 - 4 - 6       |     |
| HU000686                 | Insulated sleeve terminals   | 10<br>16<br>25                              |     |
| HU000684                 | Western plug (4 poles)       | 4-6-8 pin                                   |     |



## Q2 SPECIAL TOOL FOR ASSEMBLING MC3 (INSERT THE RUBBER CONNECTOR ONTO THE CRIMPED CABLE)

Q2 is a practical clamp for mounting connector MC3 once the terminal has been crimped to the cable. The 3 thimbles provided allow assembly on cables with different diameters (from 2.5 to 10 mm<sup>2</sup>). Thanks to its small size (325 mm) and its weight (460 g), this tool can be used directly on

site and even on a roof. Lightweight and portable, it is made of anti-shock plastic.

| Model |   | Code METEL |
|-------|---|------------|
| Q2    | 1 | HU000675   |

### Mounting examples of MC3 with Q2

Prepare crimped connector MC3 and the insulating connector (male or female)

Choose the thimble according to cable diameter

With the right hand, completely insert the thimble connector.

Insert the thimble with the connector into the appropriate housing for the cable.

Press the clamp until the thimble is completely inserted in the connector and insert the crimped cable, and fasten it with the relevant cable holder.

Continue pressing the tool until no resistance is felt. Then remove the cable by extracting the relevant cable holder. By using this innovative tool it is possible to cable systems directly on site, thus saving installation times and costs.

**ASSEMBLY OF MC3 INNOVATIVE AND SIMPLE**

**TOP QUALITY MADE IN GERMANY**

Built-in thimbles in the device

Inspection window

Safety closure

Cable housing and holder

## Q3 AUTOMATIC CABLE PEELER FOR SPECIAL APPLICATIONS

Special tool with cable holder to remove insulation in a precise manner.

For multiple and single cables up to 16mm<sup>2</sup>.

Applications for different types of insulation with different hardness.

No deformation of conductor thanks to the special geometry of the blades and to the cutting mechanics.

Interchangeable blades for different types of conductors.

Automatic release at the end of the operation.

| Model | □ | Code METEL |
|-------|---|------------|
| Q3    | 1 | HU000712   |



Adjustment of the part to be removed. Thanks to the adjustable cable holder, it is possible to define the part of insulation to be removed with millimetric precision.



Specific profiles for each blade. The wide range of interchangeable blades allows precisely working on many types of cables, with no danger of damaging the conductor part.



Automatic removal of insulation. The part of insulation is removed automatically at the end of the job, so that it is possible to respect the connector's specifications before crimping.

| Part code   | Type of application                                   | Capacity mm <sup>2</sup>                 | Size: peeling - Ø                                 | Blade profile |
|-------------|---|--|---|---------------|
| 708 203 3 0 | Blade for insulated cables in Teflon                  | 2.5 - 10                                 | 4.45<br>3.50<br>2.70<br>2.30                      |               |
| 708 201 3 0 | Blade for insulated cables in Teflon with cable guide | 0.03 - 2.08                              | 0.35 / 0.55<br>0.80 / 1.05<br>1.35 / 1.60<br>1.75 |               |
| 708 205 3 0 | Tool for multiple standard cables                     | 0.14 - 6                                 | 0.70 / 1.35<br>1.70 / 2.30<br>2.70 / 3.50         |               |
| 708 206 3 0 | Blade for POF cables with 1.2 and 4 cores             | 1 wire 6.7<br>2 wires 6.2<br>4 wires 5.5 | 5.80<br>4.80<br>2.50<br>1.50                      |               |
| 708 209 3 0 | Blade for per solar cables Radox 125                  | 2.5 / 4.0 / 6                            | 3.90<br>3.00<br>2.40                              |               |
| 708 212 3 0 | Blade for special insulated cables in Teflon          | AWG 20 - 10                              | 1.00 / 1.20<br>1.40 / 1.80<br>2.40 / 2.80         |               |
| 708 218 3 0 | Blade for external sheath of ASI-BUS cables           | 2 x 1.5<br>10.2 x 4                      | oval shape<br>2 x R1.30<br>2 x 1.70               |               |
| 708 226 3 0 | Blade for solar cables                                | 1.5 - 6.0                                | 3.90<br>3.00<br>2.40<br>1.90                      |               |
| 708 223 3 0 | Blade for PVC cables                                  | 6<br>10<br>16                            | 5.70<br>4.45<br>3.50                              |               |
| 708 269 3 0 | Blade for solar cables                                | 4<br>6<br>10                             | 3.0<br>3.9<br>5.0                                 |               |

## VARIOUS TOOLS

### Universal mini-arc



Universal aluminium mini-arc with possibility of directing the blade to 6 cutting positions. Very small and light, provided with blade model PUK with high resistance.

| Model  | ↔ mm    | ⚖ g | □  | Code METEL |
|--|---------|-----|----|------------|
| SH4010   | 260X100 | 130 | 3  | HU000084   |
| <b>PUK blade with tempered teeth with high resistance.</b> |         |     |    |            |
| LH4000   | 147     |     | 12 | HU000086   |

### Hammer and mallet



German type, patented with safety handle protection collar. In C45 steel, tempered by electric induction. Side polished and stove-enameled. Sharp-angled and polished surface. Handle protection sleeve, handle in shaped ash wood, locking system with steel wedge and epossidic resin.

| Model     | ↕ mm | ↔ mm | ⚖ g | □ | Code METEL |
|-----------|------|------|-----|---|------------|
| MT GR 300 | 22.5 | 300  | 300 | 3 | HU000071   |

### Hammer and mallet



Specific for the installer, with safety handle protection collar. In C45 steel, tempered by electric induction. Side polished and stove-enameled. Sharp-angled and polished surface. Patented handle in three materials: nylon, handle protection sleeve in non-slip rubber, aluminium alloy core, locking system with steel wedge and epossidic resin.

| Model      | ↕ mm | ↔ mm | ⚖ g | □ | Code METEL |
|------------|------|------|-----|---|------------|
| MTS GR 300 | 22.5 | 300  | 300 | 3 | HU000073   |

### Chisels



| Model   | ↔ mm | □  | Code METEL |
|---------|------|----|------------|
| 3612531 | 250  | 3  | HU000425   |
| 3613031 | 300  | 10 | HU000411   |

### Aluminium level with two bubbles



| Model | ↔ mm | □ | Code METEL |
|-------|------|---|------------|
| 92020 | 21   | 3 | HU000417   |

### Tape measure



Nylon tape, automatic back-winding, ABS resin unbreakable case. The tape can be blocked in any position and wound back by means of the appropriate button.

| Model | ↔ mm | □ | Code METEL |
|-------|------|---|------------|
| M5    | 5 m  | 3 | HU000069   |
| M8    | 8 m  | 3 | HU000077   |

## VARIOUS TOOLS

### Universal wrench



in die-cast zinc. With adapter for 1/4" bits and insert with two screwdrivers. Weight 70 grams

| Model  |         |     |   |   |     |     |    |  | Code<br>METEL |
|--------|---------|-----|---|---|-----|-----|----|--|---------------|
| 400172 | 70 x 70 | 7-8 | 6 | 5 | 7-8 | 3-5 | 10 |  | HU000038      |

### Set of 9 Allen keys



Set of 9 Allen keys

| Model       |   | Code<br>METEL |
|-------------|---|---------------|
| 950PKS/9SMN | 3 | HU000386      |

### Professional cutter



With interchangeable and pre-carved adjustable sliding blade. Extra-light handle with non-slip grip.

| Model                  |     |     |   | Code<br>METEL |
|------------------------|-----|-----|---|---------------|
| ZN02                   | 180 | 150 | 5 | HU000081      |
| Set of 10 spare blades |     |     |   |               |
| LZ2                    | -   |     | 1 | HU000080      |

### Roller wrench with ratchet function



| Model  |     |   |   | Code<br>METEL |
|--------|-----|---|---|---------------|
| SAW-8D | 250 | - | 1 | HU000426      |

## DRILLS AND SCREWERS

### Set of hole saws



Complete with PVC box, size 300 x 180 x 65 mm

| Model     | Content  |   | Code<br>METEL |
|-----------|--|---|---------------|
| KW04-9100 | Hole saws Ø mm 16-20-25-32-40-50<br>Coupling KW04-9001 - 6,35 mm<br>Coupling KW04-9002 - 11 mm<br>KW04-9080 adapter<br>Allen key | 1 | HU000285      |

### Step tip



in super quick-HSS steel  
Suitable for mobile drills  
To drill and widen holes on metal sheets  
Holes Ø mm 5-8-10-13-19-21-23-26-29-31-33-35  
No. of steps 13, stem Ø 13 mm

| Model     | Content |   | Code<br>METEL |
|-----------|---------|---|---------------|
| KW31-0318 |         | 1 | HU000284      |



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