

# ENGLISH


## User manual




**Table of contents:**

1.	PRECAUTIONS AND SAFETY MEASURES .....	2
1.1.	Preliminary instructions .....	2
1.2.	During use .....	2
1.3.	After use .....	2
1.4.	Definition of measurement (overvoltage) category .....	3
2.	GENERAL DESCRIPTION .....	4
3.	PREPARATION FOR USE .....	4
3.1.	Initial checks .....	4
3.2.	Instrument power supply .....	4
3.3.	Calibration .....	4
3.4.	Storage .....	4
4.	OPERATING INSTRUCTIONS .....	5
4.1.	Instrument description .....	5
5.	INSTRUMENT FUNCTIONS .....	6
5.1.	Phase detection.....	6
5.2.	Lamp test.....	7
5.3.	Continuity / Diode test .....	8
6.	MAINTENANCE .....	9
6.1.	General information.....	9
6.2.	Battery replacement .....	9
6.3.	Cleaning the instrument .....	9
6.4.	End of life .....	9
7.	TECHNICAL SPECIFICATIONS .....	10
7.1.	Technical characteristics .....	10
7.2.	General characteristics.....	10
7.3.	Environment .....	10
7.3.1.	Environmental conditions of use.....	10
7.4.	Accessories .....	10
7.4.1.	Standard accessories .....	10
8.	SERVICE .....	11
8.1.	Warranty conditions.....	11
8.2.	Service.....	11

## 1. PRECAUTIONS AND SAFETY MEASURES

The instrument has been designed in compliance with directive IEC/EN61010-1 relevant to electronic measuring instruments. For your safety and in order to prevent damaging the instrument, please carefully follow the procedures described in this manual and read all notes preceded by the symbol  with the utmost attention.

Before and after carrying out the measurements, carefully observe the following instructions:

- Do not carry out any voltage or current measurement in humid environments.
- Do not carry out any measurements in case gas, explosive materials or flammables are present, or in dusty environments.
- Avoid contact with the circuit under test if no measurements are being carried out.
- Avoid contact with exposed metal parts, with unused measuring probes, circuits, etc.
- Do not carry out any measurement in case you find anomalies in the instrument such as deformation, breaks, substance leaks, absence of display on the screen, etc.
- Pay special attention when measuring voltages higher than 20V, since a risk of electrical shock exists .

In this manual, and on the instrument, the following symbols are used:



Warning: observe the instructions given in this manual; an improper use could damage the instrument or its components.



High voltage danger: electrical shock hazard.



Double-insulated meter

### 1.1. PRELIMINARY INSTRUCTIONS

- This clamp has been designed for use in environments of pollution degree 2.
- It can be used for **VOLTAGE** measurements on installations with measurement category CAT II 300V. For a definition of measurement categories, see § 1.4.
- We recommend following the normal safety rules devised by the procedures for carrying out operations on live systems and using the prescribed PPE to protect the user against dangerous currents and the instrument against incorrect use.
- Do not test circuits exceeding the specified current and voltage limits.
- Check that the battery is correctly inserted.

### 1.2. DURING USE

Please carefully read the following recommendations and instructions:



#### CAUTION

Failure to comply with the Caution notes and/or Instructions may damage the instrument and/or its components or be a source of danger for the operator.

- When the instrument is connected to the circuit under test, do not touch any unused terminal.
- Don't execute continuity test when external voltage is present.

### 1.3. AFTER USE

- If the instrument is not to be used for a long time, remove the batteries.

#### 1.4. DEFINITION OF MEASUREMENT (OVERVOLTAGE) CATEGORY

Standard CEI 61010: Safety requirements for electrical equipment for measurement, control and laboratory use, Part 1: General requirements” defines measurement category, commonly called overvoltage category. In § 6.7.4: Measured circuits, circuits are divided into the following measurement categories:

(OMISSIS)

- **Measurement category IV** is for measurements performed at the source of the low-voltage installation.  
*Examples are electricity meters and measurements on primary overcurrent protection devices and ripple control units.*
- **Measurement category III** is for measurements performed on installations inside buildings.  
*Examples are measurements on distribution boards, circuit breakers, wiring, including cables, bus-bars, junction boxes, switches, socket-outlets in the fixed installation, and equipment for industrial use and some other equipment, for example, stationary motors with permanent connection to fixed installation.*
- **Measurement category II** is for measurements performed on circuits directly connected to the low-voltage installation.  
*Examples are measurements on household appliances, portable tools and similar equipment.*
- **Measurement category I** is for measurements performed on circuits not directly connected to MAINS.  
*Examples are measurements on circuits not derived from MAINS, and specially protected (internal) MAINS-derived circuits. In the latter case, transient stresses are variable; for that reason, the standard requires that the transient withstanding capability of the equipment is made known to the user.*

## 2. GENERAL DESCRIPTION

The instrument HT5 can be used as:

- Lamp test for gas filled lamps
- Continuity / diode test
- Single pole voltage test
- Torch light

The instrument can be also used for testing ballasts, starters, capacitors, resistors more than the herewith lamp types:

- Fluorescent lamps
- Low pressure sodium vapour lamps
- High pressure sodium vapour lamps
- Neon tubes
- Mercury and metal halogen lamps

## 3. PREPARATION FOR USE

### 3.1. INITIAL CHECKS

Before shipping, the instrument has been checked from an electric as well as mechanical point of view. All possible precautions have been taken so that the instrument is delivered undamaged.

However, we recommend generally checking the instrument in order to detect possible damage suffered during transport. In case anomalies are found, immediately contact the forwarding agent.

We also recommend checking that the packaging contains all components indicated in § 7.4. In case of discrepancy, please contact the Dealer

In case the instrument should be replaced, please carefully follow the instructions given in § 8.2.

### 3.2. INSTRUMENT POWER SUPPLY

The instrument is powered by a single 9V battery type NEDA1604, JIS006P, IEC6F22 included in the package.

In order to prevent compromising its charge, the battery is not inserted in the instrument. For battery installation, follow the instructions given in § 6.2

Replace the battery by following the instructions given in § 6.2

### 3.3. CALIBRATION

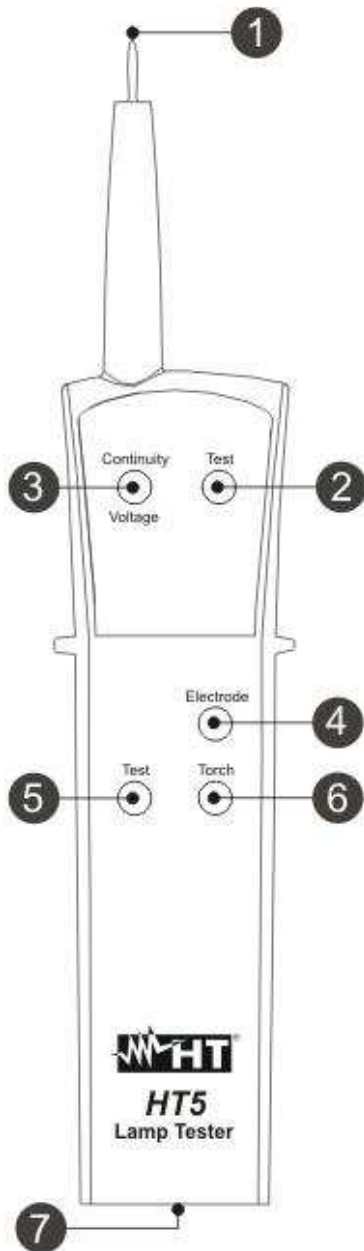
The instrument has the technical specifications described in this manual. The instrument's performance is guaranteed for 12 months.

### 3.4. STORAGE

In order to guarantee precise measurement, after a long storage time under extreme environmental conditions, wait for the instrument to be restored to normal condition (see § 6.2.1).

## 4. OPERATING INSTRUCTIONS

### 4.1. INSTRUMENT DESCRIPTION



#### CAPTION:

1. Test Probe for lamp test, voltage test and continuity/diode test
2. "Test" LED
3. "Continuity/Voltage" LED
4. Touch electrode for voltage test and Continuity / diode test
5. Button for lamp test
6. Button for torch light
7. Battery case

Fig. 1: Instrument description

## 5. INSTRUMENT FUNCTIONS

### 5.1. PHASE DETECTION

The HT5 can be used as phase detector in the presence of voltage between 60V and 250V AC.

Measurement procedure:

- Touch contact “Electrode” (see Fig. 1 - point 4) during voltage test
- Connect test probe (see Fig. 1 – point 1) to the device under test
- Illumination of the LED “Continuity/Voltage” indicates the presence of an AC voltage between 60V and 250V. Simultaneously an acoustic sound is audible.

#### CAUTION



- A correct indication is only ensured for AC voltage circuits with a frequency of 40-60 Hz being grounded in accordance with the regulations
- The quality of the indication may be impaired when testing in unfavourable locations, such as wooden ladders or in insulated floor coverings, etc.

## 5.2. LAMP TEST

The HT5 allows you to quickly detect the presence of faults in lamps, especially for all gas-filled low pressure and high pressure vapour lamps.

Measurement procedure:

- connect test probe (see Fig. 1 – point 1) to glass body or lamp socket
- Press “Test” button (see Fig. 1 – point 5) for the duration of the test



### CAUTION

Do not touch the lamp socket (this could lead to faulty test results).

### Testing Fluorescent Tubes

If the fluorescent tubes are lit during lamp tester check but do not work when installed, the spiral-wound filament or the ballast may be faulty. Filaments and ballasts can be tested using the built-in continuity tester (see § 5.3)



### CAUTION

Only check ballasts and capacitors when they are disconnected from live circuits and when capacitors have been discharged. These conditions have to be verified by measurements.

### Testing low pressure sodium vapour tubes

Test tube by contacting the socket pins with test probe and observe if the inner tube is glowing. In some cases, only part of the tube is glowing. The other part should be lit when the test probe touches the second pin.

### Testing high pressure sodium vapour tubes

Touch tube with test probe. A clear, blue line within the arched tube indicates that the tube is in perfect condition. Any other test results indicate a defective tube.

### Testing Neon Tubes

Touch tube or socket with test probe and press button Test. The tube has to be replaced if no illumination is visible.

### Testing mercury vapour and metal halogen lamps

Touch tube socket with test probe and press button Test. The arched tube is defective if there is no constant glowing. If the tube only operates when not installed and goes on and off or seems unstable within the lamp holder, verify if the lamp holder or the lamp are subject to unusual or extreme heat. Unusual or extreme heat can result in repeated opening and closing of the thermal tube switch.



### 5.3. CONTINUITY / DIODE TEST

HT5 allows continuity and diode tests with optical and acoustic indication.



#### CAUTION

Prior to any continuity test, it must be ensured that the resistance to be measured is not live. Failure to comply with this prescription can lead to dangerous user injuries.

Continuity test procedure:

- Touch contact "Electrode" (see Fig. 1 - point 4) during continuity test
- Connect test probe (see Fig. 1 – point 1) to one pole of the device under test
- Touch with the other hand the other pole of device under test
- The lighting of the LED "Continuity / Voltage" and the continuous sound of the buzzer indicates continuity.

The continuity test facility enables resistance tests between 0 and approx 5 M $\Omega$ . The resistance value can be determined by the intensity and the sound level of the acoustic signal. A higher sound level indicates a lower resistance value (approx. 0 $\Omega$ ). Simultaneously the LED Continuity is illuminated.

Diode test procedure:

- Touch contact "Electrode" (see Fig. 1 - point 4) during diode test
- Connect test probe (see Fig. 1 – point 1) to the diode cathode
- Touch with the other hand the diode anode
- The LED "Continuity / Voltage" must be turned on and the buzzer must sound.
  
- Connect test probe (see Fig. 1 – point 1) to the diode anode
- Touch with the other hand the diode cathode
- The LED "Continuity / Voltage" must be turned off and the buzzer must not sound.

## 6. MAINTENANCE

### 6.1. GENERAL INFORMATION

1. While using and storing the instrument, carefully observe the recommendations listed in this manual in order to prevent possible damage or danger during use.
2. Do not use the instrument in environments with high humidity levels or high temperatures. Do not expose to direct sunlight.
3. In case the instrument is not to be used for a long time, remove the batteries to avoid liquid leaks that could damage the instrument's internal circuits.

### 6.2. BATTERY REPLACEMENT



#### CAUTION

Only expert and trained technicians should perform this operation. Before carrying out this operation, make sure you have disconnected the instrument from all connected circuits.

1. Loosen the battery cover fastening screw and remove the cover (see Fig. 1 – point 7)
2. Remove the battery from the battery compartment.
3. Insert one new battery of the same type (9V IEC 6LR61). Pay attention to the correct polarity
4. Position the battery cover back over the compartment and fasten it with the relevant screw
5. Do not scatter old batteries into the environment. Use the relevant containers for disposal.

### 6.3. CLEANING THE INSTRUMENT

Use a soft and dry cloth to clean the instrument. Never use wet cloths, solvents, water, etc.

### 6.4. END OF LIFE



**CAUTION:** the symbol on the instrument indicates that the appliance and its accessories must be collected separately and correctly disposed of.

## 7. TECHNICAL SPECIFICATIONS

### 7.1. TECHNICAL CHARACTERISTICS

#### Voltage Test

Test Range:	60-250V AC
Frequency Range:	40-60 Hz
Test Current:	< 200mA

#### Lamp Test

Voltage with new battery:	approx. 3kV / 280kHz
Field strength 150-170 kHz:	approx. 100 $\mu$ V/m
Display:	"Test" LED on and acoustic signal

#### Continuity Test

Dielectrical Strength:	250V AC/DC
Test Range:	approx. 0-5 M $\Omega$
Test Current:	< 7 $\mu$ A
Display:	"Continuity/Voltage" LED on and acoustic signal

### 7.2. GENERAL CHARACTERISTICS

#### Power supply

Internal power supply:	1x9V battery NEDA1604, JIS006P, IEC6F22
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#### Mechanical characteristics

Dimensions (LxWxH):	255 x 60 x 40mm; 10 x 2 x 1in
Weight (battery included):	approx 170g; 5 ounces

#### Safety standards

Compliance with standard:	IEC/EN61010-1
Insulation:	double insulation
Overvoltage category:	CAT II 300V
Max altitude:	2000m (6562ft)

### 7.3. ENVIRONMENT

#### 7.3.1. Environmental conditions of use

Reference calibration temperature:	23 $\pm$ 5°C; (73 $\pm$ 41°F)
Operating temperature:	0 $\div$ 40°C; (32 $\div$ 104°F)
Allowable relative humidity:	<70%HR
Storage temperature:	-10 $\div$ 50°C; (14 $\div$ 122°F)

<p><b>This instrument satisfies the requirements of Low Voltage Directive 2006/95/EEC (LVD) and of EMC Directive 2004/108/EEC</b></p>
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### 7.4. ACCESSORIES

#### 7.4.1. Standard accessories

- Battery (not fitted)
- User manual

## 8. SERVICE

### 8.1. WARRANTY CONDITIONS

This instrument is warranted against any material or manufacturing defect, in compliance with the general sales conditions. During the warranty period, defective parts may be replaced. However, the manufacturer reserves the right to repair or replace the product.

The warranty shall not apply in the following cases:

- Repair and/or replacement of accessories and batteries (not covered by warranty).
- Repairs that may become necessary as a consequence of an incorrect use of the instrument or due to its use together with non-compatible appliances.
- Repairs that may become necessary as a consequence of improper packaging.
- Repairs which may become necessary as a consequence of interventions performed by unauthorized personnel.
- Modifications to the instrument performed without the manufacturer's explicit authorization.
- Use not provided for in the instrument's specifications or in the instruction manual.

The content of this manual cannot be reproduced in any form without the manufacturer's authorization.

**Our products are patented and our trademarks are registered. The manufacturer reserves the right to make changes in the specifications and prices if this is due to improvements in technology**

### 8.2. SERVICE

If the instrument does not operate properly, before contacting the After-sales Service, please check the conditions of battery and replace it if necessary.

Should the instrument still operate improperly, check that the product is operated according to the instructions given in this manual.

Should the instrument be returned to the After-sales Service or to a Dealer, transport will be at the Customer's charge. However, shipment will be agreed in advance.

A report will always be enclosed to a shipment, stating the reasons for the product's return. Only use original packaging for shipment; any damage due to the use of non-original packaging material will be charged to the Customer.