

ENGLISH


User manual



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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 symbol  with the utmost attention.



CAUTION

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

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

- Do not carry out any 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 any contact with the circuit being measured if no measurements are being carried out.
- Avoid any 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.

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



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



Double-insulated meter.



AC current



DC voltage



Connection to earth



To connect/disconnect the instrument to/from live conductors, take appropriate safety measures.

1.1. PRELIMINARY INSTRUCTIONS

- This instrument has been designed for use in environments of pollution degree 2.
- It can be used together with digital multimeters for **AC CURRENT** measurement on installations with overvoltage category CAT IV 600V or CAT III 1000V to earth. For a definition of the above-mentioned categories, see § 1.4.
- This instrument is not suitable for direct current measurements.
- We recommend following the normal safety rules devised 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 batteries are 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.

- Before switching on the clamp, remove the conductor from the clamp jaw.
- During current measurement, any other current near the clamp may affect measurement precision.
- When measuring current, always put the conductor as near as possible to the middle of the clamp jaw, as described in § 4.3, in order to obtain the most accurate reading.

1.3. AFTER USE

- When measurement is complete, switch off the clamp.
- If the instrument is not to be used for a long time, remove the batteries.

1.4. DEFINITION OF MEASUREMENT (OVERVOLTAGE) CATEGORY

Standard "IEC/EN61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use, Part 1: General requirements", defines what measurement category, commonly called overvoltage category, is. § 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 withstand capability of the equipment is made known to the user.

2. GENERAL DESCRIPTION

The instrument, clamp transducer F3000U, has the following features:

- Measurement of AC TRMS current up to 3000A
- Output for the connection to digital multimeters
- Selection of ranges 30/300/3000A
- Flexible jaws with big diameter (110mm – 4in)
- Low battery indication

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 § 7.3.1. In case of discrepancy, please contact the Dealer.

In case the instrument should be returned, please follow the instructions given in § 8.

3.2. INSTRUMENT POWER SUPPLY

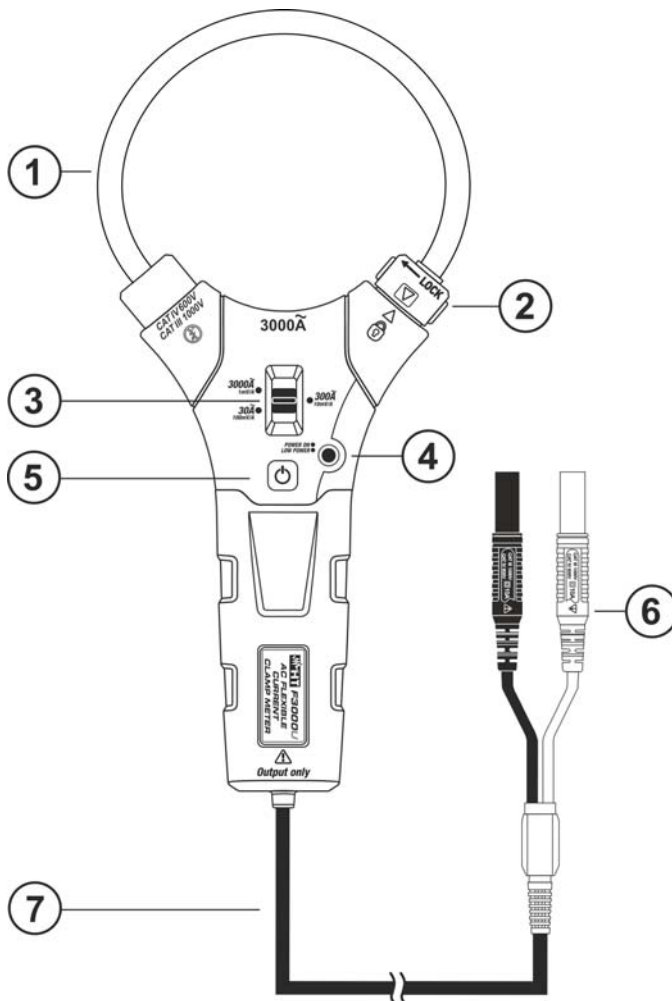
The instrument is supplied with 2x1.5V batteries type AAA IEC LR03, included in the package. When batteries are almost flat, the red LED indicator “LOW POWER” turns on and signals that replacement is necessary. For battery replacement, please refer to § 6.2.

3.3. STORAGE

In order to guarantee precise measurement, after a long storage time under extreme environmental conditions, wait for the instrument to come back to normal operating conditions (see § 7.2.1).

4. NOMENCLATURE

4.1. DESCRIPTION OF THE INSTRUMENT



CAPTION:

1. Openable flexible jaws
2. Opening/closing connector for flexible jaws
3. Selector for measuring ranges
4. LED indicator of power/low batteries
5. (ON/OFF) key
6. Terminals for connection to multimeters
7. Output cable

Fig. 1: Description of the instrument

4.2. DESCRIPTION OF FUNCTION KEYS

4.2.1. Key

The key allows switching on/off the instrument. Upon start-up, a quick autotest of the level of charge of the internal batteries is carried out; the red LED indicator “LOW POWER” (see Fig. 1 – part 4) turns on in case batteries are flat. In this case, replace the batteries (see § 6.2). With the instrument switched on, check that the LED indicator “POWER ON” becomes green.

4.2.2. Range selector

Move the range selector (see Fig. 1 – part 3) to position **30A**, **300A** or **3000A** according to the value of AC current you want to measure (see § 5.2). The output transformation ratio in AC voltage of the clamp transducer (indicated on the front part) is the following:

Range	Output ratio
30A	100mV/A
300A	10mV/A
3000A	1mV/A

4.3. OPENING/CLOSING OF FLEXIBLE JAWS



CAUTION

- In order to meet the meter's accuracy specifications, always put the conductor as close as possible to the middle of the jaws (see Fig. 2).
- When the instrument is to be connected/disconnected to/from live conductors, if it is not possible to remove voltage, **take appropriate safety measures (e.g. wear protective gloves)** in order to prevent dangerous electrical shocks for the operator and damaging the instrument.
- Disconnect voltage from the circuit to be tested or wear protective gloves before performing measurement
- Keep your hand on the reinforced grip of the instrument during measurements

In order to open/close the flexible jaws, proceed as follows:

1. Turn the fastening connector by 90° counterclockwise in order to unlock the jaws (see Fig. 2).
2. Extract the flexible jaws and wind it around the conductor to be tested.
3. Insert the jaws back into their seat and turn the fastening connector by 90° clockwise until the two arrows are aligned and the jaws are locked (see Fig. 2)

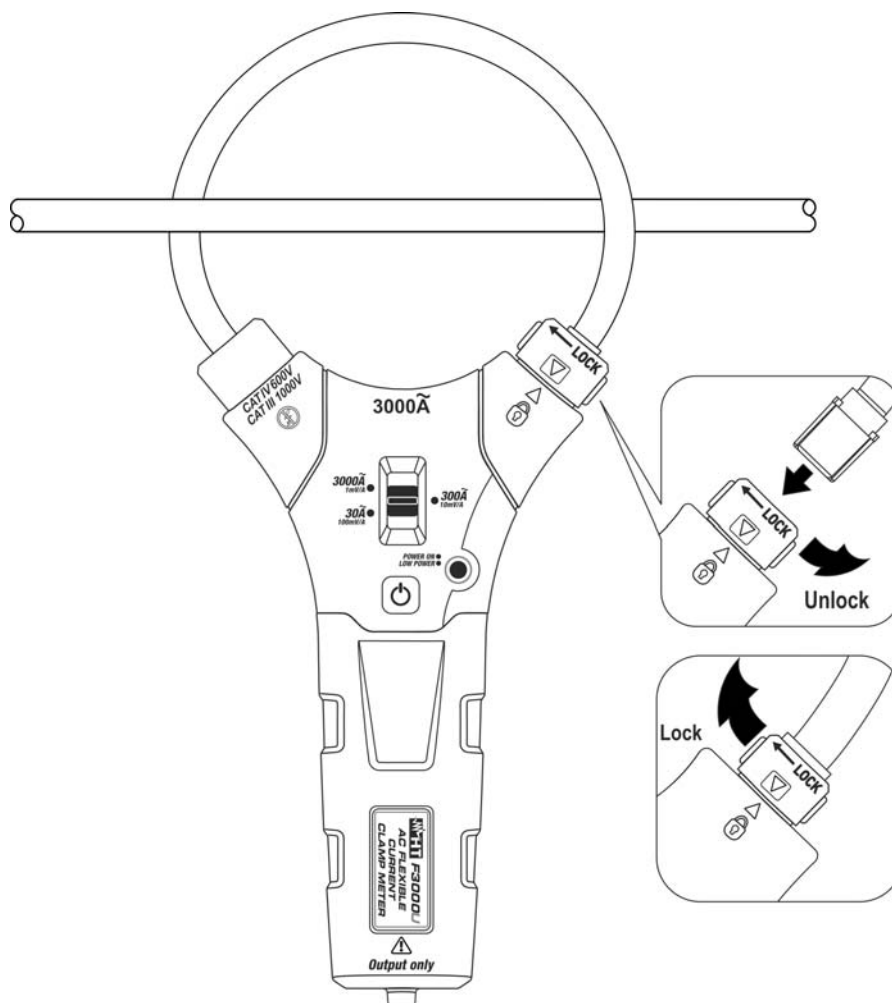


Fig. 2: Opening/closing of flexible jaws

5. OPERATING INSTRUCTIONS

5.1. MEASURING AC CURRENT IN COMBINATION WITH MULTIMETER HT63



CAUTION

- Instrument F3000U has been specifically designed for **direct A** measurements of AC currents up to 3000A in combination with models **HT63** and **HT64**. Please refer to these models' user manuals for the relevant instructions for use.
- Instrument F3000U can also be used in combination with precision multimeters with an **AC voltage** range with a resolution of **at least 1mV** in their lowest range.

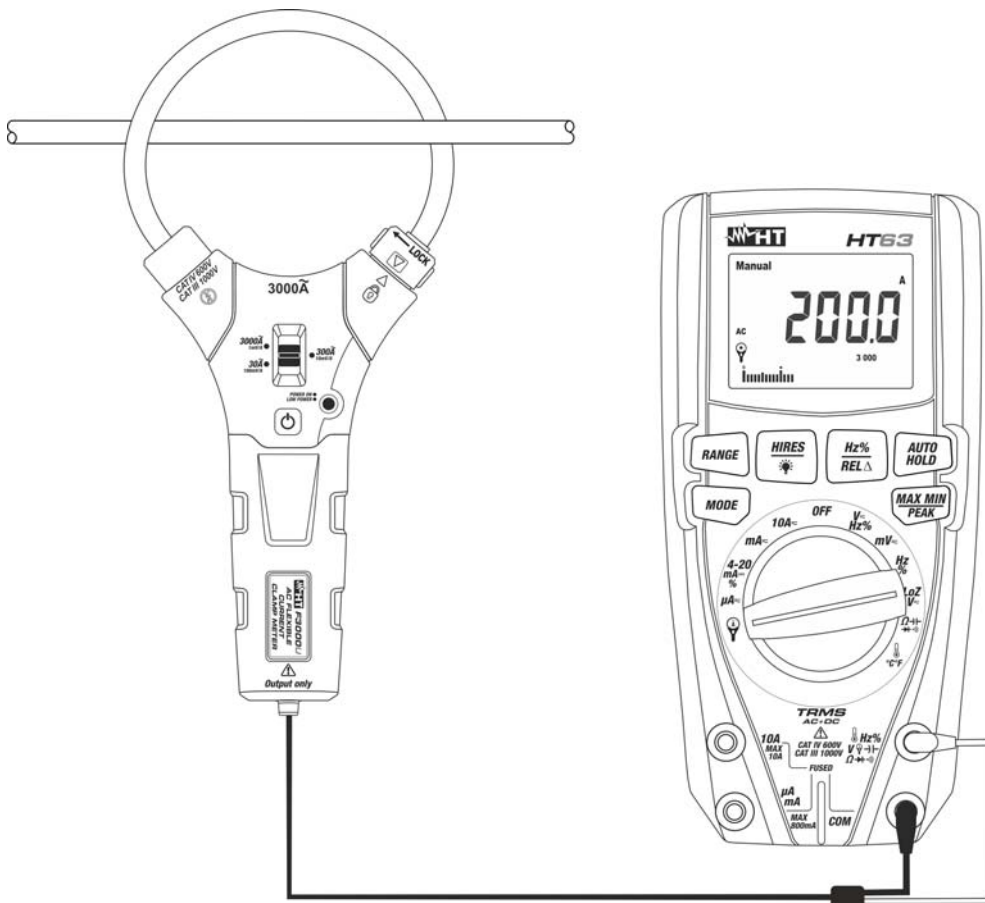


Fig. 3: Use of the instrument for measuring AC current in combination with HT63

1. Insert the black and red connection leads (see Fig. 1 – part 6) of the instrument respectively into inputs **COM** and **10A** (see Fig. 1 – part 6) of the multimeter.
2. Switch on the instrument using the key.
3. Select the desired range among the options **30A**, **300A** or **3000A** (see § 4.2.2).
4. Select the position **A** on the multimeter.
5. Press the **MODE** key on the multimeter to select “AC” measurement.
6. Press the **RANGE** key on the multimeter to select the **same range** set on the instrument. This value appears for 2s on the display.
7. Open the jaws and insert the phase cable in the middle of it (see Fig. 3). The display of the multimeter shows the value of current **expressed in A**.

5.2. MEASURING AC CURRENT IN COMBINATION WITH MULTIMETER HT64

CAUTION



- Instrument F3000U has been specifically designed for **direct A** measurements of AC currents up to 3000A in combination with models **HT63** and **HT64**. Please refer to these models' user manuals for the relevant instructions for use.
- Instrument F3000U can also be used in combination with precision multimeters with an **AC voltage** range with a resolution of **at least 1mV** in their lowest range.

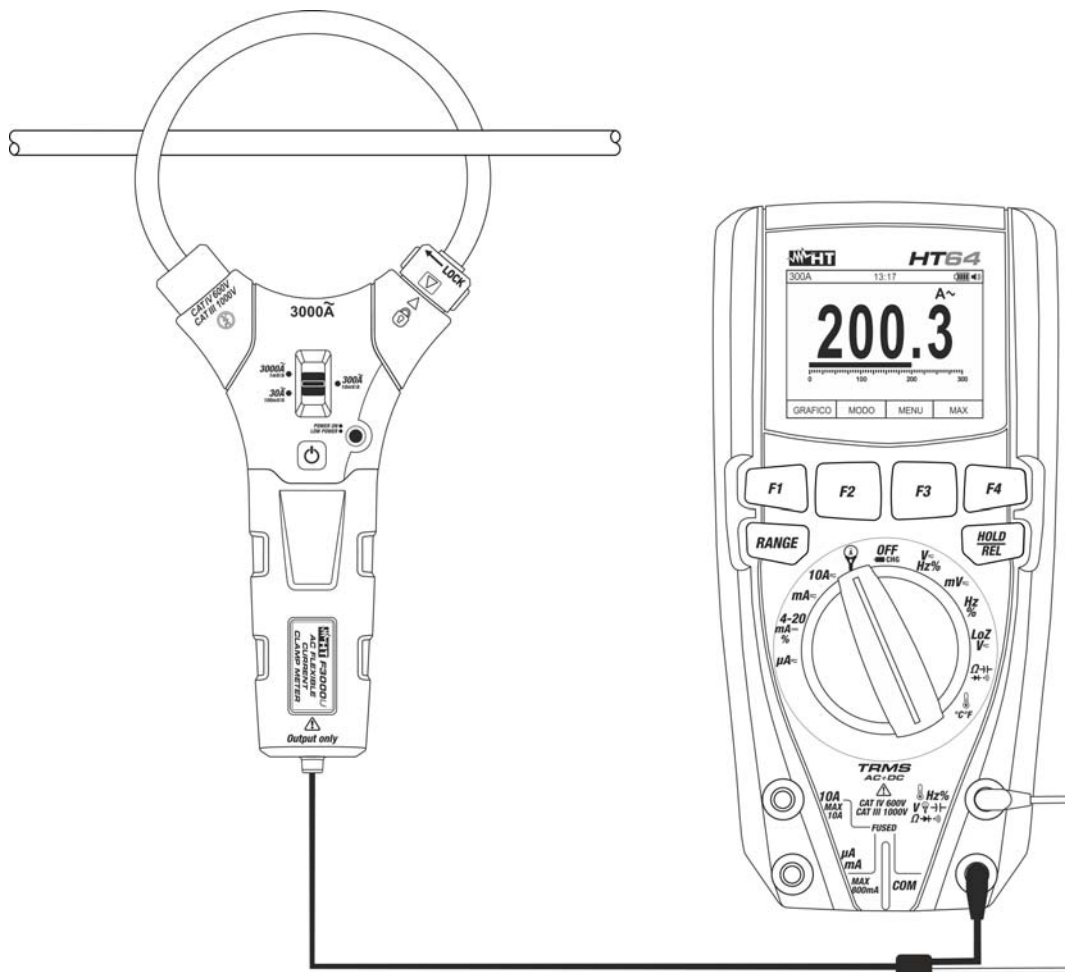


Fig. 4: Use of the instrument for measuring AC current in combination with HT64

- Insert the black and red connection leads (see Fig. 1 – part 6) of the instrument respectively into inputs **COM** and **A** of the multimeter.
- Switch on the instrument using the key.
- Select the desired range among the options **30A**, **300A** or **3000A** (see § 4.2.2).
- Select the position **A** on the multimeter.
- Press the **F2(MODE)** key on the multimeter to select “AC” measurement.
- Press the **RANGE** key on the multimeter to select the **same range** set on the instrument. This value is shown in the top left-hand part of the display.
- Open the jaws and insert the phase cable in the middle of it (see Fig. 4). The display of the multimeter shows the value of current **expressed in A**.

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.
3. Always switch off the instrument after use. 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. REPLACING THE BATTERIES

When the red LED indicator "LOW POWER" turns on, batteries must be replaced.



CAUTION

Only expert technicians should perform this operation. Before carrying out this operation, make sure you have removed the cable being tested from inside the clamp jaw.

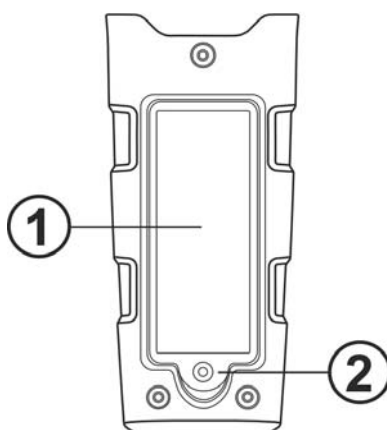


Fig. 5: Battery replacement

1. Switch off the instrument and remove the cable to be tested from inside the jaws.
2. Loosen the fastening screw (see Fig. 5 – part 2) of the battery compartment cover (see Fig. 5 – part 1), remove the cover and remove the batteries.
3. Insert new batteries of the same type (see § 7.1.3), respecting the indicated polarity.
4. Restore the battery compartment cover to its position.
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



WARNING: 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

Accuracy indicated as [%reading + mV] at a temperature of 23°C±5°C, <80%RH

AC TRMS current

Range	Measuring range	Output ratio	Bandwidth	Accuracy (*)
30A	0.30A ÷ 30.00A	100mV/A	50Hz ÷ 400Hz	±(3.0%rdg + 5mV)
300A	30.0A ÷ 300.0A	10mV/A		±(3.0%rdg + 3mV)
3000A	300A ÷ 3000A	1mV/A		

(*) Accuracy referred to a conductor placed in the middle of the jaws, absence of electric or magnetic fields and reference temperature

7.1.1. Electrical characteristics

Conversion type: TRMS
 Max output voltage: 5.8VAC
 Output noise: <5.5mV for each range

7.1.2. Reference standards

Safety: IEC/EN61010-1, IEC/EN61010-2-032
 EMC: IEC/EN61326-1
 Insulation: double insulation
 Pollution level: 2
 Measurement category: CAT IV 600V, CAT III 1000V to ground
 Max operating altitude: 2000m (6562ft)

7.1.3. General characteristics

Mechanical characteristics

Dimensions (L x W x H): 280 x 125 x 25mm (11 x 5 x 1in)
 Weight (batteries included): 230g (8ounces)
 Length of flexible jaws: 254mm (10in)
 Max. cable diameter for clamp: 110mm (4in)
 Connection cable length: 1m (3ft)
 Mechanical protection: IP40

Power supply

Battery type: 2x1.5V batteries type AAA LR03
 Low battery indication: Red LED indicator "LOW POWER"
 Battery duration: approx. 15 days

7.2. ENVIRONMENT

7.2.1. Environmental conditions for use

Reference temperature: 23°C ± 5°C (73°F ± 41°F)
 Operating temperature: 5°C ÷ 40°C (41°F ÷ 104°F)
 Operating humidity: <80%RH
 Storage temperature: -20°C ÷ 60°C (-4°F ÷ 140°F)
 Storage humidity: <80%RH

This instrument satisfies the requirements of Low Voltage Directive 2014/35/EU (LVD) and of EMC Directive 2014/30/EU
This instrument satisfies the requirements of European Directive 2011/65/EU (RoHS) and 2012/19/EU (WEEE)

7.3. ACCESSORIES

7.3.1. Standard accessories

- Carrying bag
- Batteries (not inserted)
- User manual

8. ASSISTANCE

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 manufacturer declines any responsibility for injury to people or damage to property.

The warranty shall not apply in the following cases:

- Repair and/or replacement of accessories and battery (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. ASSISTANCE

If the instrument does not operate properly, before contacting the After-sales Service, please check the conditions of the batteries and replace them, 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.