

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 the 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 the 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 contact with the circuit being measured 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.

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



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



Double insulated meter.



AC current



DC voltage



Ground reference



Use appropriate security measures to apply/remove the instrument on/from live conductors

1.1. PRELIMINARY INSTRUCTIONS

- This clamp has been designed for use in environments of pollution degree 2.
- It can be used for **AC CURRENT** measurements, on installations with measurement category CAT IV 600V or CAT III 1000V refer to ground. For a definition of the above-mentioned categories, see § 1.4
- This instrument is not suitable for direct current measurements
- Please take the standard safety precautions aimed at protect you against dangerous electric currents and protect 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.

- 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 § 4.1.2 to obtain the most accurate reading.
- While measuring, if the value or the sign of the quantity being measured remain unchanged, check if the HOLD function is enabled.

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 battery.

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. 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 withstand capability of the equipment is made known to the user.



2. GENERAL DESCRIPTION

The instrument carries out the following measurements:

- AC TRMS current measurement up to 3000A with autorange
- Use of high diameter flexible clamp
- Data HOLD feature
- Backlight feature

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

In case the instrument should be replaced, please carefully follow the instructions given in § 7.

3.2. INSTRUMENT POWER SUPPLY

The instrument is supplied with 2x1.5V AAA LR03 batteries, included in the package.

In order to prevent compromising its charge, the battery is not inserted in the instrument. For batteries installation, follow the instructions given in § 5.2.

The “” symbol appears when the battery is nearly discharged. Replace the battery, following the instructions given in § 5.2.

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

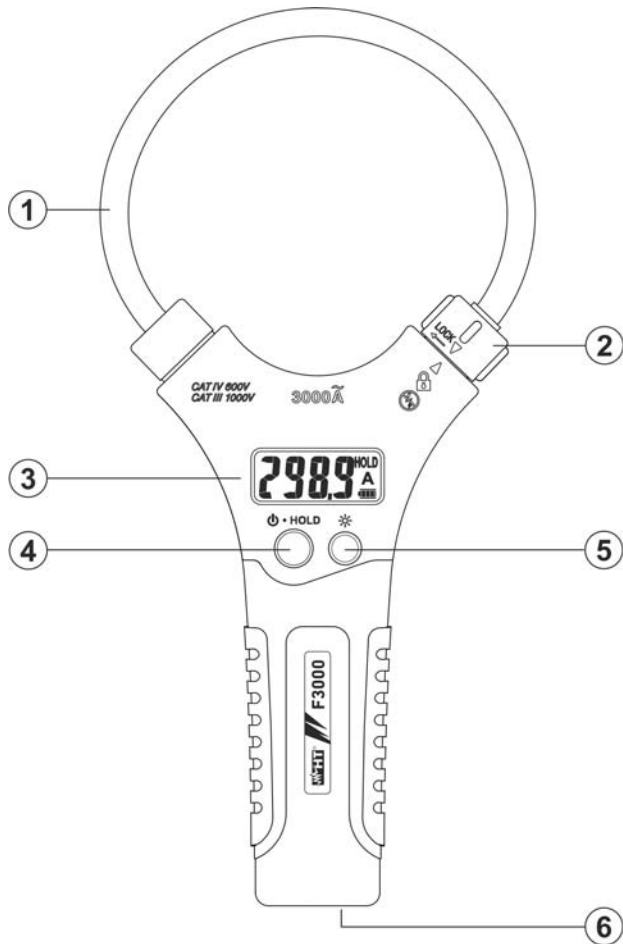
In order to guarantee precise measurement, after a long storage time under extreme environmental conditions, wait for the instrument to come back to normal condition (see § 6.2.1).



4. OPERATING INSTRUCTIONS

4.1. INSTRUMENT DESCRIPTION

4.1.1. Description of the controls



CAPTION:

1. Flexible clamp jaw
2. Opening/closing jaw connector
3. LCD display
4. /HOLD key
5. **Backlight**  key
6. Battery cover

Fig. 1: Instrument description

4.1.2. Opening/closing flexible clamp jaw



CAUTION

- Put the conductor as close as possible to the middle of the jaws in order to meet the meter accuracy specifications (see Fig. 2)
- When apply/remove the instrument on/from live conductors, if is not possible to de-energize the circuit on test, **use appropriate security measures (e.g. protective gloves)** to avoid dangerous electric shock for the operator and a possible damage of the instrument
- Disconnect the main voltage or wear protective gloves before performing measurement
- Put the hand below the LCD display during the measurement as indicated by the arrow in Fig. 2

For opening/closing the flexible clamp jaw following the below steps:

1. Rotate of a quarter in the counterclockwise direction the fixing jaw connector to unlock the jaw (see Fig. 2)
2. Extract the flexible jaw and wrap around the conductor on test
3. Replace the jaw in the seat and rotate of a quarter in the clockwise direction the fixed jaw connector up to align the two arrows on the plastic case to lock the jaw (see Fig. 2)

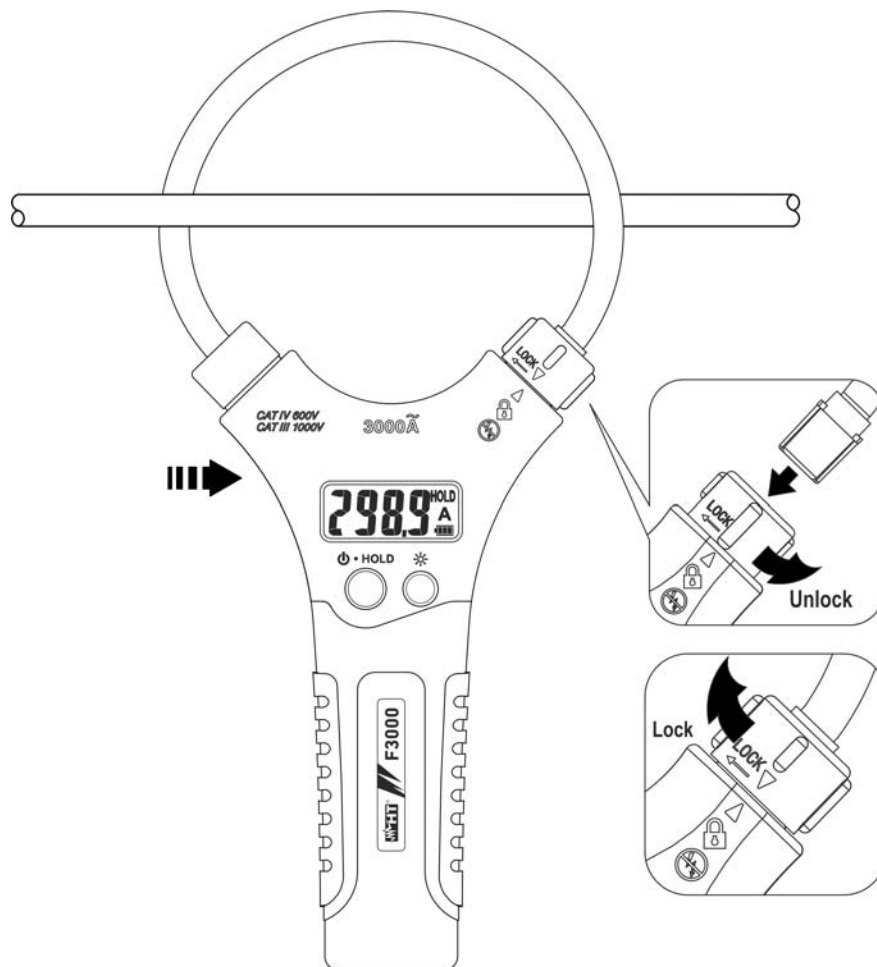


Fig. 2: Opening/closing flexible clamp jaw

4.2. DESCRIPTION OF FUNCTIONS KEYS

4.2.1. /HOLD key

The multifunction /HOLD key allows the herefollowed operations:

- A long pressure (2s) allows to switch on/off the instrument. After switch on, a quick autotest relative to the battery level charging is performed and the “FULL” message is displayed with completely charged batteries. With symbol “” replace the batteries (see § 5.2)
- With instrument switched on, the key allows to activate/deactivate the **HOLD** feature in way to fix the result of the measured value at display. The “HOLD” symbol is shown

4.2.2. Backlight key

Press the  key for the backlight activation/deactivation. This light could help the operator reading the display while he’s measuring in dark sites

4.2.3. Disabling the Auto Power OFF function

In order to preserve internal batteries, the instrument switches automatically off approximately 20 minutes after it was last used. No symbol appears on the display when this function is active. When the instrument must be used for long periods of time, it may be useful to deactivate the Auto Power Off function as follows:

- Switch off the instrument with the /HOLD key
- Switch on the instrument by press and hold the /HOLD key for at least 2s
- With “FULL” message at display press the  key. The “**AoFF**” message is shown at display to indicate the disabling of the function
- Switch off and on the instrument to automatically enable the feature



4.3. OPERATING INSTRUCTION

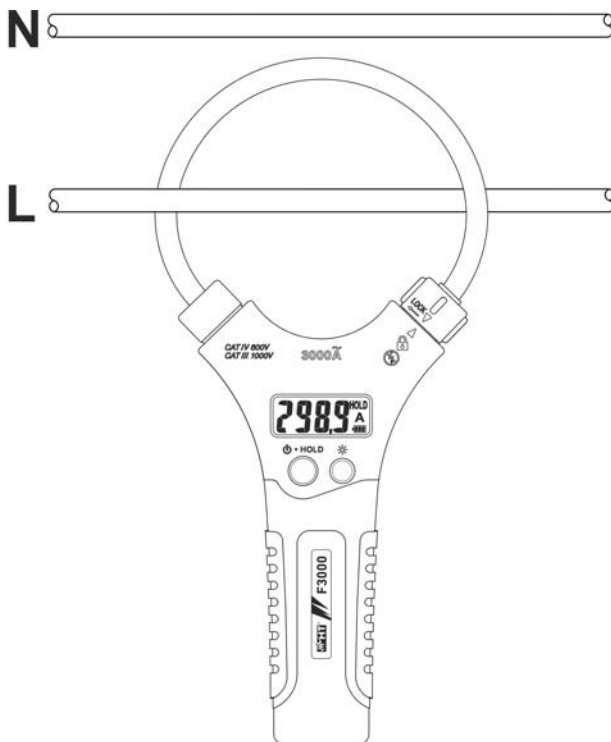
4.3.1. AC Current measurement



CAUTION

- Put the conductor as close as possible to the middle of the jaws in order to meet the meter accuracy specifications (see Fig. 2)
- When apply/remove the instrument on/from live conductors, if is not possible to de-energize the circuit on test, **use appropriate security measures (e.g. protective gloves)** to avoid dangerous electric shock for the operator and a possible damage of the instrument
- Disconnect the main voltage or wear protective gloves before performing measurement
- Put the hand below the LCD display during the measurement as indicated by the arrow in Fig. 2

Correct



Incorrect

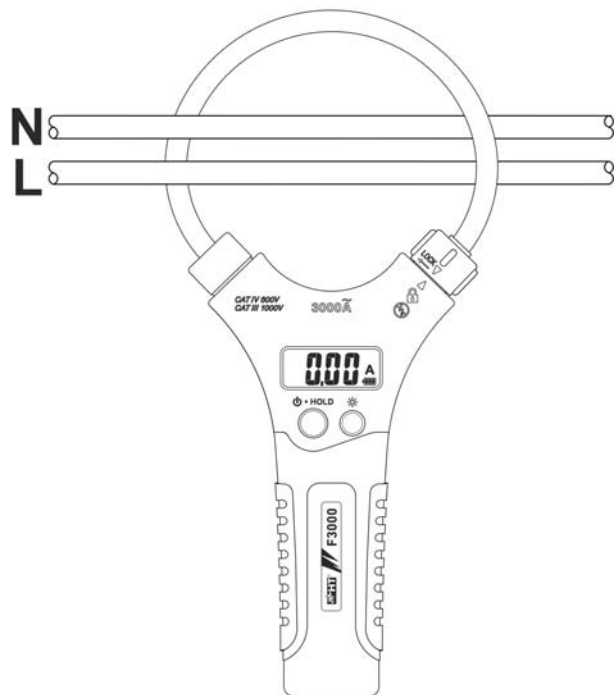


Fig. 3: Use of the clamp for AC current measurement

1. Switch on the clamp by pressing the **ON/HOLD** key
2. Open the flexible clamp jaw and insert the cable in the middle of it (see Fig. 3). The current value will be shown on the display
3. If **"OL"** message is shown at display the current under test is over the maximum value that the instrument is able to measure
4. For HOLD feature refer to § 4.2

5. MAINTENANCE

5.1. GENERAL INFORMATION

1. The instrument you purchased is a precision instrument. 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. Always switch off the instrument after use. In case the instrument is not to be used for a long time, remove the battery to avoid liquid leaks that could damage the instrument's internal circuits.

5.2. BATTERIES REPLACEMENT

When the LCD displays the "■" symbol, replace the batteries



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.

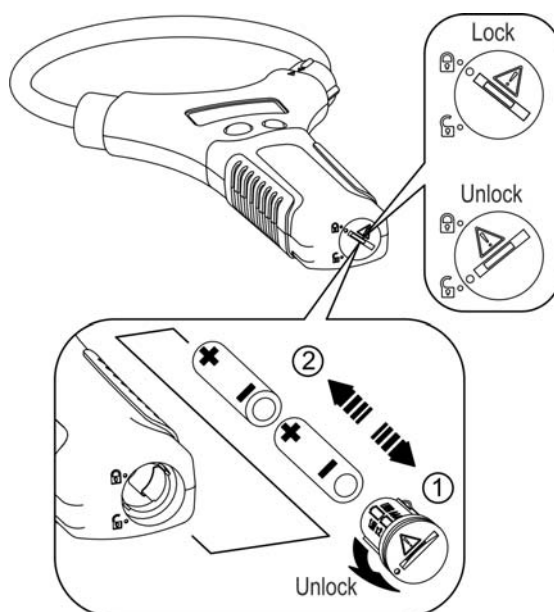


Fig. 4: Batteries replacement

1. Switch off the clamp and remove the cable being tested from the clamp jaw.
2. Rotate the fixing screw of the battery cover from the "Lock" to the "Unlock" position, remove the cover and extract the batteries (see Fig. 4)
3. Fit two new batteries (see § 6.1.3) and pay attention to correct polarity (see Fig. 4)
4. Rotate the fixing screw of the battery cover from the "Unlock" to the "Lock" position
5. Do not scatter old batteries into the environment. Use the relevant containers for disposal

5.3. CLEANING THE INSTRUMENT

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

5.4. END OF LIFE



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

6. TECHNICAL SPECIFICATIONS

6.1. TECHNICAL CHARACTERISTICS

Accuracy indicated as [%reading + (digit number*resolution)] at 23°C±5°C, < 80%RH

AC TRMS current (Autorange)

Range	Resolution	Accuracy (*), (**)	Bandwidth	Max overload reading
30.00A	0.01A	±(3.0%rdg + 5dgt)	45Hz ÷ 500Hz	33.00A
300.0A	0.1A			330.0A
3000A	1A			3300A

NOTE: the display reading is zeroed for values < 10dgt

(*) Accuracy relative to sinusoidal waveforms. For non-sinusoidal signals consider as follows:

Additional error due to the Crest Factor (CF) of non-sinusoidal signals:

C.F: 1.0 ÷ 2.0 → Add 3.0%rdg

C.F: 2.0 ÷ 2.5 → Add 5.0%rdg

C.F: 2.5 ÷ 3.0 → Add 7.0%rdg

(**) Accuracy relative to conductor in the center of jaw, no magnetic/electric fields and reference temperature. The errors due to the conductor not in the center of the jaw are the followed:

- Error 2.0%rdg (distance 15mm from center of jaws)
- Error 2.5%rdg (distance 25mm from center of jaws)
- Error 3.0%rdg (distance 35mm from center of jaws)

6.1.1. Electrical specifications

Conversion type:

TRMS

Sample rate:

4 times / second

Temperature coefficient:

0.2x(accuracy) /°C, <18°C o >28°C

6.1.2. Reference guideline

Safety:

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

EMC :

IEC/EN61326-1

Insulation:

double insulation

Pollution level:

2

Max height of use:

2000m (6562 ft)

Measurement category:

CAT IV 600V, CAT III 1000V to ground

6.1.3. General characteristics

Mechanical characteristics

Dimensions (L x W x H):

280 x 120 x 25mm (11 x 5 x 1in)

Weight (battery not included):

170g (6 ounces)

Flexible jaw length:

254mm (10in)

Max. cable diameter:

110mm (4in)

Power supply

Battery type:

2x1.5V batteries type AAA LR03

Low battery indication:

symbol "■" at display

Battery duration:

approx. 200 hours

Auto Power OFF:

after 20 min of idleness (disabled)

Display

Characteristics:

4 LCD, 3000 counts, decimal point and backlight

6.2. ENVIRONMENT

6.2.1. Environmental conditions for use

Reference temperature:	$23^{\circ} \pm 5^{\circ}\text{C}$ ($73^{\circ} \pm 41^{\circ}\text{F}$)
Operating temperature:	$0^{\circ}\text{C} \div 30^{\circ}\text{C}$ ($32^{\circ}\text{F} \div 86^{\circ}\text{F}$) ($\text{RH} \leq 80\%$)
	$30^{\circ}\text{C} \div 40^{\circ}\text{C}$ ($86^{\circ}\text{F} \div 104^{\circ}\text{F}$) ($\text{RH} \leq 75\%$)
	$40^{\circ}\text{C} \div 50^{\circ}\text{C}$ ($104^{\circ}\text{F} \div 122^{\circ}\text{F}$) ($\text{RH} \leq 45\%$)
Allowable relative humidity:	$<80\%\text{RH}$
Storage temperature:	$-20 \div 60^{\circ}\text{C}$ ($-4^{\circ}\text{F} \div 140^{\circ}\text{F}$)
Storage humidity:	$<80\%\text{RH}$

This instrument satisfies the requirements of Low Voltage Directive 2006/95/EEC (LVD) and of EMC Directive 2004/108/EEC

6.3. ACCESSORIES

6.3.1. Standard accessories

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



7. SERVICE

7.1. 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

7.2. SERVICE

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

