

Current clamp - LW-MZ-50

for leakage current measurement

Instruction manual

Measuring range
1 A and 10 A

For use with
measuring card
LW-MK3plus

No disconnection
of the current path
necessary

Can also be used
with larger cable
cross-sections



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1.0 Important basic information

1.1 Legal notice

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1.2 Target group

This documentation is intended for qualified personnel according to IEC 60417-6182.



Qualified personnel are persons who have the appropriate qualifications for the activities to be carried out during installation, assembly, commissioning and operation of the product (electricians).

1.3 Liability

The names, trade names, product names and other designations used may be protected by law even without special identification (e.g. as trademarks). EPA GmbH assumes no liability or warranty for their free usability.

The greatest care has been taken in the compilation of illustrations and texts. Nevertheless, errors cannot be excluded.

The compilation is without guarantee.

The information is for customer information purposes only and does not contain any assurances or binding guarantees. Binding statements can only be made in response to specific enquiries.

The contents of these operating instructions are believed to be correct at the time of going to press. In order to maintain continuous development work, the manufacturer reserves the right to change the specification of the product and its performance data as well as the content of these instructions for use, both technically and commercially, without prior notice. The current version is made available at www.leakwatch.de or www.epa.de.

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1.4 General equal treatment

EPA GmbH is aware of the importance of language with regard to the equality of all genders and always endeavors to take this into account. Nevertheless, for reasons of better readability, it was necessary to refrain from using differentiating formulations throughout.

1.5 Registered trademarks

Trademarks are the property of their respective owners and are not generally identified as such in this manual.

The absence of such a designation does not mean that it is a free name within the meaning of trademark and brand law.

1.6 CE marking



The CE marking is located on the rating plate of the unit and on the packaging.







The unit meets the relevant basic requirements of all applicable EU directives.

Thank you for purchasing an EPA LW-MZ-50 current clamp and for the confidence you have placed in us. In order to achieve the best results with your LEAKWATCH measuring and analysis system, please:

- Read these operating instructions carefully.
- Observe the safety instructions contained therein.

2.0 Symbols an signal words

To indicate hazards and important information, the following symbols and signal words are used in this documentation:

Symbol / signal word	Meaning
	Danger Alerts you to a dangerous situation that will result in serious injury or death if not avoided.
	Warning Alerts you to a dangerous situation that may result in serious injury or death if not avoided.
	Caution Alerts you to a dangerous situation that may result in a minor to moderate injury if not avoided.
NOTE / OBSERVE	Makes you aware of the handling and impact of safety information.
	The unit is insulated or protected by reinforced insulation. Connection to an earth conductor is not necessary to ensure electrical safety.
	The output of these clamp current transformers is equipped with an electronic protection circuit that limits overvoltages to max. 30 V peak if the secondary circuit of the clamp is accidentally opened.
CAT III	The current clamp corresponds to overvoltage category III with a pollution degree of 2 and thus fulfils the strict safety and reliability requirements for permanently installed electrical installations in industry and households (cf. IEC standard 664-1).
	Must not be handed in at the municipal collection points for electrical appliances or disposed of with household waste.

3.0 Safety Instructions

- Never measure currents above 10 A and – if possible – reduce the measuring time if current peaks exceed 10 A.
- Never use the current clamp on non-insulated conductors with a potential of more than 600 V to earth and with an overvoltage category higher than III.
- The permissible environmental conditions must be observed.
- Always keep the clamp gap meticulously clean.

4.0 Warranty

Unless expressly agreed otherwise, our warranty covers a period of 12 months from the date of invoice.

5.0 Device overview

The LW-MZ-50 current clamp is used for measuring alternating currents from 1mA to 10 A.

The current clamp can be connected to the LEAKWATCH LW-MK3plus.

The current measuring range can be set by adjusting the range switch (1 A, and 10 A).

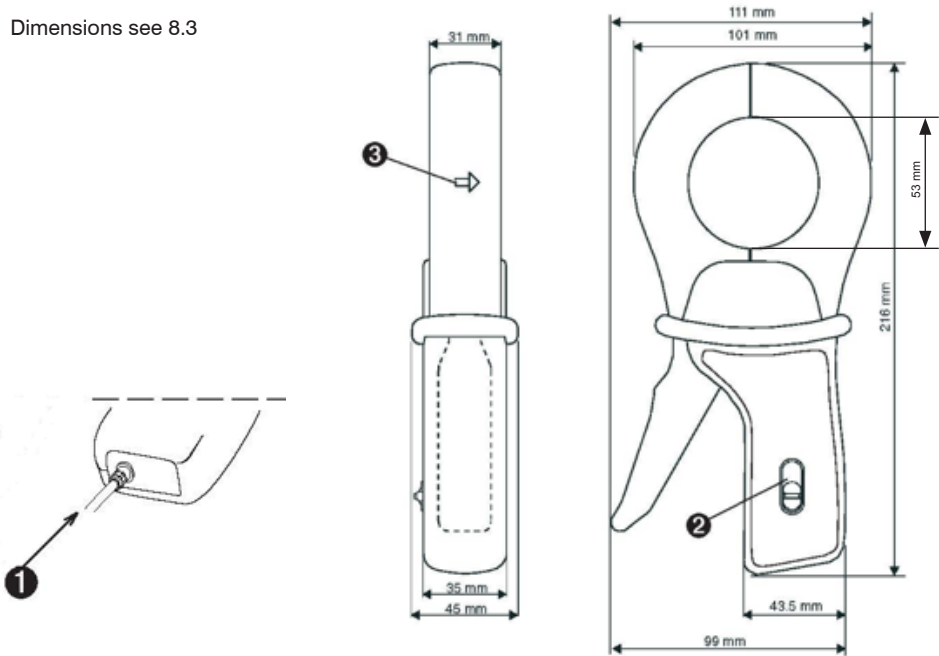
The current clamp is double-insulted or provided with safety insulation and complies with international standards, in particular EN 61010-2-032 for clamp current transformers.

6.0 Device description

Figure see page 6

- ❶ Output: Cable length 2 m
- ❷ Range switch 1 A and 10 A
- ❸ The arrow stamped on top of the jaws indicates the direction of the current. It is assumed that the electricity flows from the generator to the consumer in a “positive” direction. The direction of flow in alternating currents is only of significance for power measurements, i.e. the simultaneous measurement of current and voltage.

Dimensions see 8.3



Limit the duration of the measurement for currents between 10 A and 12 A: 15 minutes of operation and then 30 minutes break.



Always connect the clamps to the meter first before clamping a conductor. In the same sense, the clamps must not be disconnected from the meter while still clamped onto a conductor.

- Before connecting the current clamp, check that the LEAKWATCH software is configured correctly.
- Open the clamp jaws and enclose the conductor with the current to be measured. Centre the conductor in the jaws as much as possible and pay attention to the flow direction of the current if the measurement requires it.
- When reading the measured value, pay attention to the measuring range set in the software.
- Position the current clamp so that the conductor to be measured runs through the clamp centrally and at a right angle (do not position at an angle - this will falsify the measured value). The maximum conductor diameter may be 50 mm. It must be possible to close the clamp completely, otherwise no measurement is possible.

NOTE: Select the measuring range with the best resolution and accuracy.

7.0 Technical data

- Temperature: -10° ... +50°C
- Rel. humidity: 20% ... 75%
- The conductor is in the centre of the clamps
- Sinusoidal alternating current with: 10 Hz...150 kHz
- THD: < 1%
- No DC component
- External DC magnetic field: Earth magnetic field (<40 A/m)
- Input impedance: ≥ 1 MΩ and ≤ 47 pF
- No external AC magnetic field
- No other live conductors in the vicinity

8.0 Usage

8.1 Measuring deviation and phase error

Range 10 A (30 A peak max.)

Current strength in A~	0,01...0,5 A	0,5...2 A	2...10 A	10...12 A
Measurement deviation(1)	≤ 3% ⁽³⁾			
Phase error	(2)	≤ 15°	≤ 10°	≤ 5°

Range 1 A (3 A peak max.)

Current strength in A~	0,01...0,05 A	0,05...0,2 A	0,2...1 A	1...1,2 A
Measurement deviation(1)	≤ 3% ⁽³⁾			
Phase error	(2)	(2)	≤ 15°	≤ 5°

(1) In % of the output signal

(2) No information

(3) Sinusoidal, 50 Hz...10 kHz

8.2 Operating conditions

To ensure the safety of the user and the metrological properties, the current clamps must be operated under the following conditions.



Maximum current

Limit the measuring time for currents over 10 A!

Current strength	$I < 10 \text{ A}$	$10 \text{ A} \sim < I < 12 \text{ A} \sim$
Operation	Continuous (1)	15 minutes operation, then 30 minutes break

(1) At a frequency $FF \leq 1 \text{ kHz}$



Frequencies

- Operating range: 10 Hz to 150 kHz (-6 dB between 20 kHz and 150 kHz)
- At frequencies $> 1 \text{ kHz}$, limit the current according to the following formula:

$$I \text{ duration} = \frac{10 \text{ A}}{f \text{ (in kHz)}} \times 100$$



Ambient conditions

- Indoor use only
- Height above sea level: $\leq 2000 \text{ m}$
- Climate conditions: $-10^\circ \text{ to } + 55^\circ \text{ C}$ and rel. humidity $< 85\%$
- Do not expose the device to splash water

8.3 Dimensions, weight

- Outer dimensions 216 x 111 x 45 mm
- Weight approx. 550 g
- Clamp opening 53 mm
- Height with open clamps 139 mm
- Max. enclosure Cable with $\varnothing 52 \text{ mm}$ or 1 busbar 5 x 5 mm or 4 busbars 30 x 5 mm

Dimension drawing see page 6

8.4 Compliance with international standards

Electrical safety (according to EN 61010-1 and EN 61010-2-032)

- Protectively insulated
- Pollution degree 2
- 600 V system class III
- 300 V system class IV

Electromagnetic compatibility

- Interference emission and interference immunity in an industrial environment in accordance with EN 61326-1.

Mechanical protection

- Protection class IP40 (according to EN 60529) with closed clamps or IP30 with clamps open.

Self-extinguishing material

- Clamp jaws: V0 (acc. to UL 94)

9.0 Inspection and maintenance

The LW-MZ-50 current clamp is maintenance-free when used as intended. maintenance-free.

Inspection or maintenance of the LW-MZ-50 current clamp may only be carried out by qualified electricians.

Modifications to the unit, unless explicitly described in these operating instructions, may only be carried out by EPA or persons authorised by EPA.

The accident prevention regulations must be observed.

9.1 Cleaning, care

When cleaning, the LW-MZ-50 current clamp must not enclose a conductor and must be disconnected from the measuring device. Do not splash the clamp with water.

- The air gap of the clamp jaws must always be clean. Remove dust and dirt with a dry soft cloth. Wipe the air gap with an oil-soaked cloth from time to time to protect it from rust.
- Clean the housing with a cloth and a little soapy water, then wipe with a damp cloth. Then dry the unit with a cloth or blow it off with max. 70°C warm air.

9.2 Revision

As with other measuring or testing devices, a regular device check is required. It is recommended to check the instrument once a year. For checking and calibration, please contact our approved measuring laboratories (information and addresses on request) or EPA GmbH directly.

9.3 Repair

The LW-MZ-50 current clamp can be damaged or destroyed if the instructions are not followed.

The housing must not be opened.

Repairs may only be carried out by EPA or repair centres authorised by EPA.

Unauthorized tampering can lead to property damage. In this case, EPA's warranty becomes void.

9.4 Service address

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9.5 Disposal

The current clamp LW-MZ-50 is a device for commercial / industrial use.

This equipment must not be handed in at the municipal collection points for electrical equipment or disposed of with household waste.

If you have any questions, please contact us.



OBSERVE: The units contain electronic components and must be disposed of properly.

WEEE reg. no.: DE 64732845



All information without liability for correctness and accuracy.

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