FR - Notice de fonctionnement
GB - User's manual
DE - Bedienungsanleitung
IT - Manuale d'uso
ES - Manual de instrucciones

CHAUVIN ARNOUX®
CHAUVIN ARNOUX GROUP

J93
J193

Pinces ampèremétriques
Current clamps
Zangenstromwandler
Pinze amperometriche
Pinzas amperimétricas

Measure up

English *16*
Deutsch *30*
Italiano *44*
Español *58*

Vous venez d'acquérir une **pince ampèremétrique J93 ou J193** et nous vous remercions de votre confiance. Ces pinces sont faites pour être utilisées avec les analyseurs de puissances et d'énergie PEL1XX (J93 et J193) ou C.A 833X et C.A 843X version 4 ou au-dessus (J93).

- **lisez** attentivement cette notice de fonctionnement,
- **respectez** les précautions d'emploi.

⚠	ATTENTION, risque de DANGER ! L'opérateur doit consulter la présente notice à chaque fois que ce symbole de danger est rencontré.
⧈	Appareil protégé par une isolation double.
ϟ	Application ou retrait autorisé sur les conducteurs nus sous tension dangereuse. Capteur de courant type A selon IEC 61010-2-032.
⚠ϟ	ATTENTION, risque de choc électrique. La tension appliquée sur les pièces marquées de ce symbole peut être dangereuse.
▭	Pile.
CE	Le marquage CE indique la conformité aux directives européennes, notamment DBT et CEM.
🗑	La poubelle barrée signifie que, dans l'Union Européenne, le produit fait l'objet d'une collecte sélective conformément à la directive DEEE 2012/19/UE. Ce matériel ne doit pas être traité comme un déchet ménager.

Définition des catégories de mesure :

- La catégorie de mesure IV correspond aux mesurages réalisés à la source de l'installation basse tension.
  Exemple : arrivée d'énergie, compteurs et dispositifs de protection.
- La catégorie de mesure III correspond aux mesurages réalisés dans l'installation du bâtiment.
  Exemple : tableau de distribution, disjoncteurs, machines ou appareils industriels fixes.
- La catégorie de mesure II correspond aux mesurages réalisés sur les circuits directement branchés à l'installation basse tension.
  Exemple : alimentation d'appareils électrodomestiques et d'outillage portable.

PRÉCAUTIONS D'EMPLOI

Ces pinces sont conformes aux normes de sécurité IEC 61010-1 et IEC 61010-2-032 pour des tensions de 300 V par rapport à la terre en catégorie IV ou 600 V en catégorie III.
Le non-respect des consignes de sécurité peut entraîner un risque de choc électrique, de feu, d'explosion, de destruction de l'appareil et des installations.

- L'opérateur et/ou l'autorité responsable doit lire attentivement et avoir une bonne compréhension des différentes précautions d'emploi. Une bonne connaissance et une pleine conscience des risques des dangers électriques est indispensable pour toute utilisation de cet appareil.
- Si vous utilisez cette pince d'une façon qui n'est pas spécifiée, la protection qu'elle assure peut être compromise, vous mettant par conséquent en danger.
- N'utilisez pas la pince sur des réseaux de tensions ou de catégories supérieures à celles mentionnées.
- N'utilisez pas la pince si elle semble endommagée, incomplète ou mal fermée.
- Avant chaque utilisation, vérifiez le bon état des isolants des cordons et du boîtier. Tout élément dont l'isolant est détérioré (même partiellement) doit être consigné pour réparation ou pour mise au rebut.

ENGLISH

Thank you for purchasing a **J93 or J193 current clamp**. These clamps are made for use with power and energy analyzers: PEL1XX analyzers (J93 and J193) or C.A 833X and C.A 843X version 4 or higher analyzers (J93).
For best results from your current clamp:

- **read** these operating instructions carefully,
- **comply with** the precautions for use.

⚠	WARNING, risk of DANGER! The operator must refer to these instructions whenever this danger symbol appears.
⧈	Equipment protected by double insulation.
⚡	Application or withdrawal authorized on bare conductors containing dangerous voltages. Type A current sensor as per IEC 61010-2-032.
⚠⚡	WARNING! Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.
+ -	Battery.
CE	CE marking indicates conformity with European directives, in particular LVD and EMC.
🗑	The rubbish bin with a line through it indicates that, in the European Union, the product must undergo selective disposal in compliance with Directive WEEE 2012/19/UE. This equipment must not be treated as household waste.

Definition of measurement categories:

- Measurement category IV corresponds to measurements taken at the source of low-voltage installations.
  Example: power feeders, counters and protection devices.
- Measurement category III corresponds to measurements on building installations.
  Example: distribution panel, circuit-breakers, machines or fixed industrial devices.
- Measurement category II corresponds to measurements taken on circuits directly connected to low-voltage installations.
  Example: power supply to electro-domestic devices and portable tools.

PRECAUTIONS FOR USE

Those current clamps comply with safety standards EN 61010-1, EN 61010-031, and EN 61010-2-032 for voltages of 300 V in category IV or 600 V category III.
Failure to observe the safety instructions may result in electric shock, fire, explosion, and destruction of the instrument and of the installations.

- The operator and/or the responsible authority must carefully read and clearly understand the various precautions to be taken in use. Sound knowledge and a keen awareness of electrical hazards are essential when using this instrument.
- If you use this clamp other than as specified, the protection it provides may be compromised, putting you in danger.
- Do not use the clamp on networks at higher voltages or in higher categories than those mentioned.
- Do not use the clamp if it seems to be damaged, incomplete, or incorrectly closed.
- Before each use, check the condition of the insulation on the leads and housing. Any item of which the insulation is deteriorated (even partially) must be set aside for repair or scrapping.
- Use personal protection equipment systematically.
- Keep your fingers behind the physical guard.
- All troubleshooting and metrological checks must be performed by competent and accredited personnel.

CONTENTS

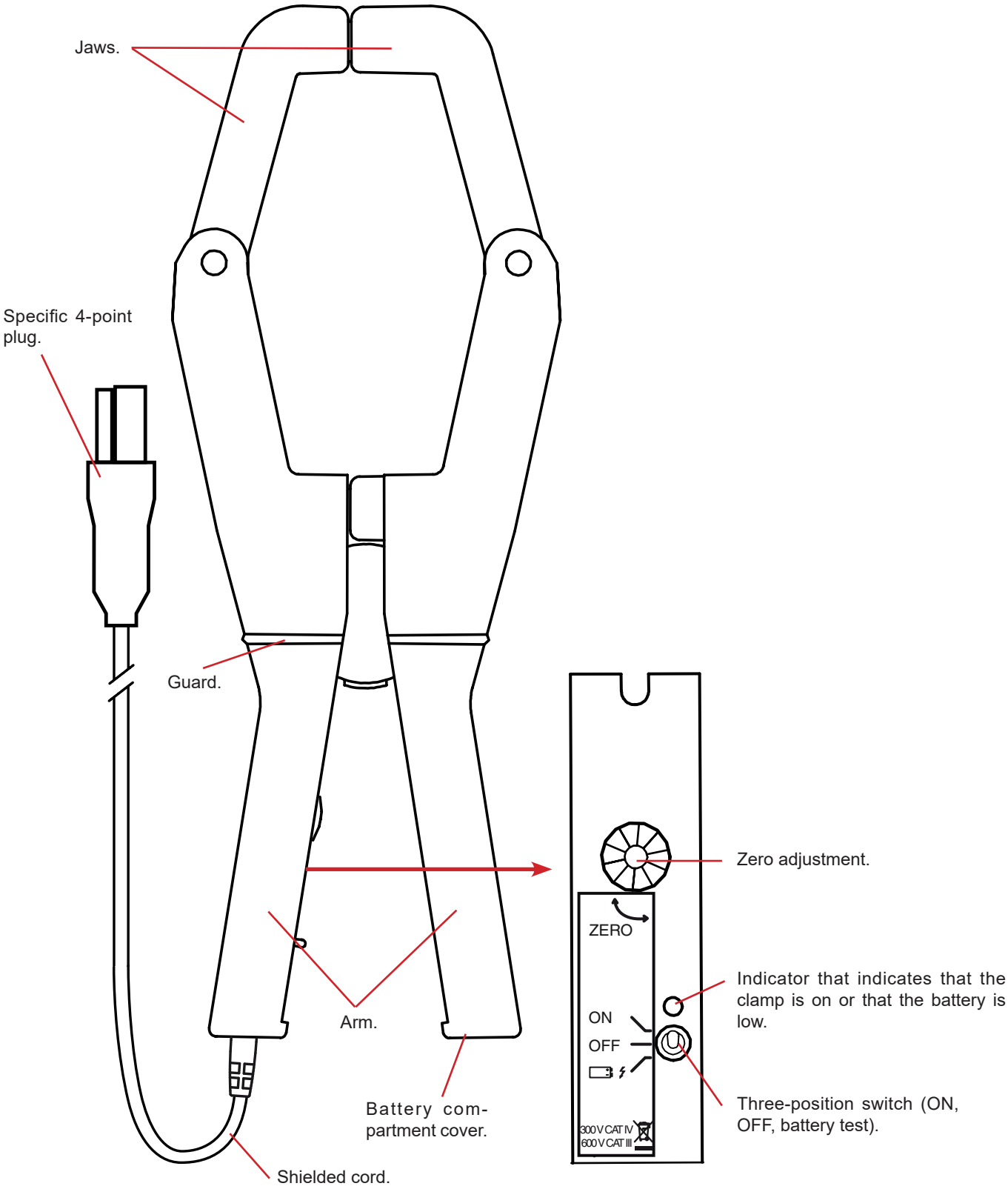
1. PRESENTATION **18**
1.1. J93 clamp 18
1.2. J193 clamp 19
2. USE **20**
2.1. Starting up the J93 clamp 20
2.2. For the J93 and J193 clamps 20
2.3. Switching off the J93 clamp 21
3. CHARACTERISTICS **22**
3.1. Reference conditions 22
3.2. Electrical characteristics 22
3.3. Variations in the range of use 23
3.4. Typical curves 23
3.5. Power supply 26
3.6. Environmental conditions 26
3.7. Construction specifications 27
3.8. Conformity to international standards 27
3.9. Electromagnetic compatibility (EMC) 27
4. MAINTENANCE **28**
4.1. Cleaning 28
4.2. Replacing of the battery (J93 clamp) 28
5. WARRANTY **29**
6. TO ORDER **29**

1. PRESENTATION

J93 and J193 Hall effect ammeter clamps are used to measure DC currents up to 5000A and AC currents up to 3500A, without opening the circuit

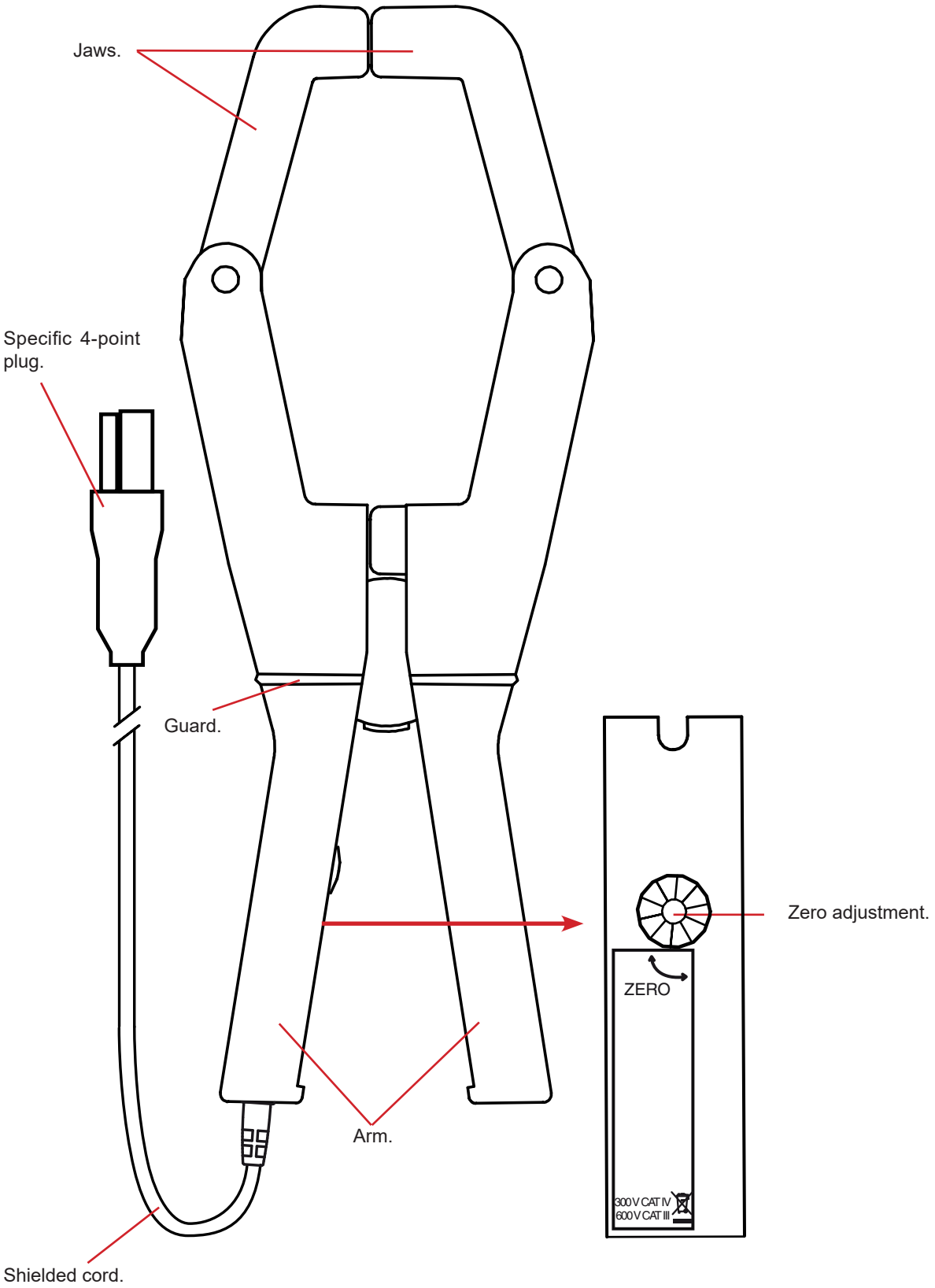
1.1. J93 CLAMP

The J93 clamp is powered by a battery.



1.2. J193 CLAMP

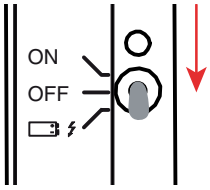
The J193 clamp is powered by the device to which it is connected.



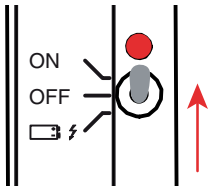
2. USE

2.1. STARTING UP THE J93 CLAMP

- Set the switch to ⊟ ⚡ n order to check that the battery is OK. If the indicator lights, the battery must be replaced (see §4.2).

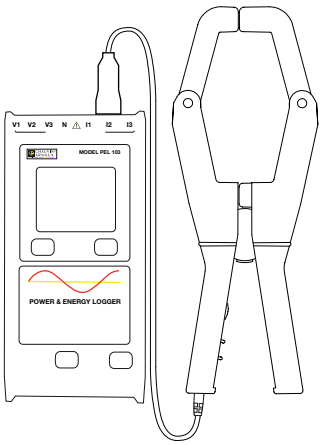


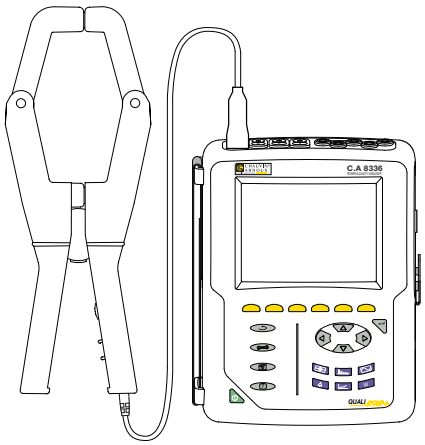
- Set the switch to ON. The indicator lights.



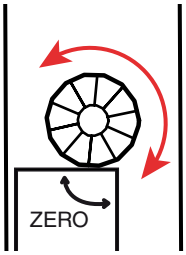
2.2. FOR THE J93 AND J193 CLAMPS

- Connect the clamp to the device, on one of the current inputs.

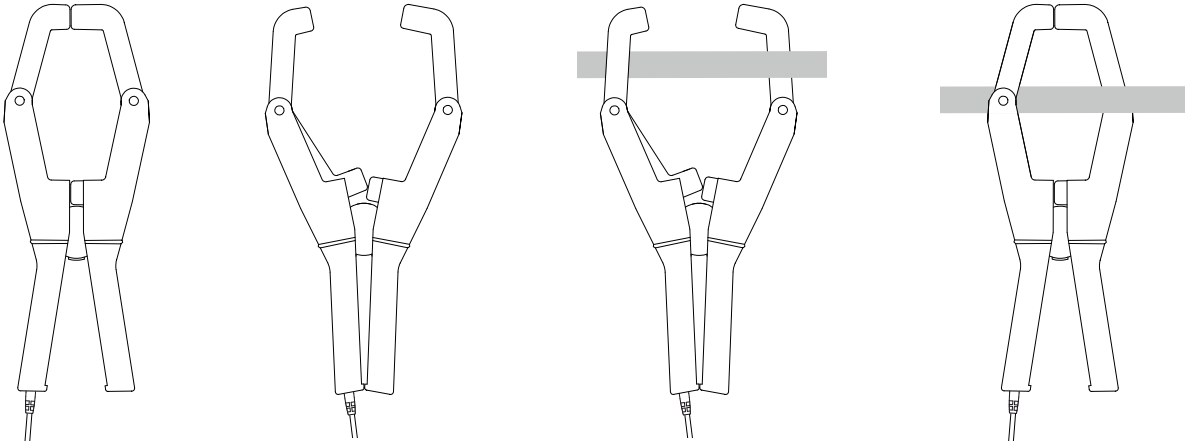




- Switch on the device.
- Adjust the zero by watching the display of the device and turning the zero adjustment knob until the device displays 0.



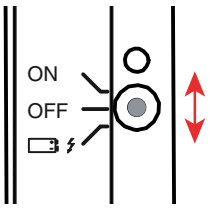
- Open the jaws of the clamp by moving the arm closer.
- Clamp the conductor carrying the current to be measured. There must be only one conductor in the jaws of the clamp.
- Gently close the jaws. In order to optimize measurement quality, centre the conductor as accurately as possible in the jaws.



- Read the measurement on the device.
- When the measurement is over, open the clamp and withdraw the conductor. Then disconnect the clamp from the device.
- Switch off the device.

2.3. SWITCHING OFF THE J93 CLAMP

- Set the switch to OFF.



3. CHARACTERISTICS

3.1. REFERENCE CONDITIONS

Quantity of influence	Reference values
Temperature	23±5°C
Relative humidity	20 to 75% RH
DC signal	With an AC signal of which the distortion factor is <0.1%
AC signal	45 to 65 Hz with a DC signal <0.1%
Supply voltage	J93: 9 V ± 0.1 V J193: 5 V ± 0.1 V
External electric field	Zero
External DC magnetic field (earth's field)	< 40 A/m
External AC magnetic field	Zero
Position of the conductor	centred in the measurement ring

3.2. ELECTRICAL CHARACTERISTICS

Measurement range	50 A - 3 500 AAC 50 A - 5 000 ADC
Sensitivity	1 V / 3 500 A
Output impedance	≥ 100 kΩ
Frequency	DC to 3 kHz (-3 dB typical)

Primary current (AC/DC)	[50 - 100[	[100 - 500[	[500 - 2 000[	[2 000 - 3 500]	]3 500 - 5 000] DC only
Amplitude error (see the curve in §3.4.1)	± 2% ± 2.5 A	± 1.5% ± 2.5 A	± 1%	± 1%	± 1%
Phase error (see the curve in §3.4.2)	4°	2°	1°	1.5°	-

Zero adjustment:
± 200 A in 25 turns

3.3. VARIATIONS IN THE RANGE OF USE

Quantity of influence	Range of influence	Uncertainty
Temperature	-10 to + 55 °C	< 0,7 % / 10 °C
Relative humidity	10 to 90% HR	< 0,7 %
Frequency response	DC at 2 kHz	See the curve in § 3.4.4
Phase shift	DC at 2 kHz	See the curve in § 3.4.5
Position of the conductor in the sensor	Any position [1]	< ± 2 %
Conductor adjacent	Conductor touching the jaws [2]	Rejection > 35 dB
Battery voltage	J93: from 6,5 to 10 V J193: 4,75 to 5,25 V	± 2,25 A typique
Remanence	at 5 000 ADC	< 2 A
Earth's magnetic field		< 0,5 A

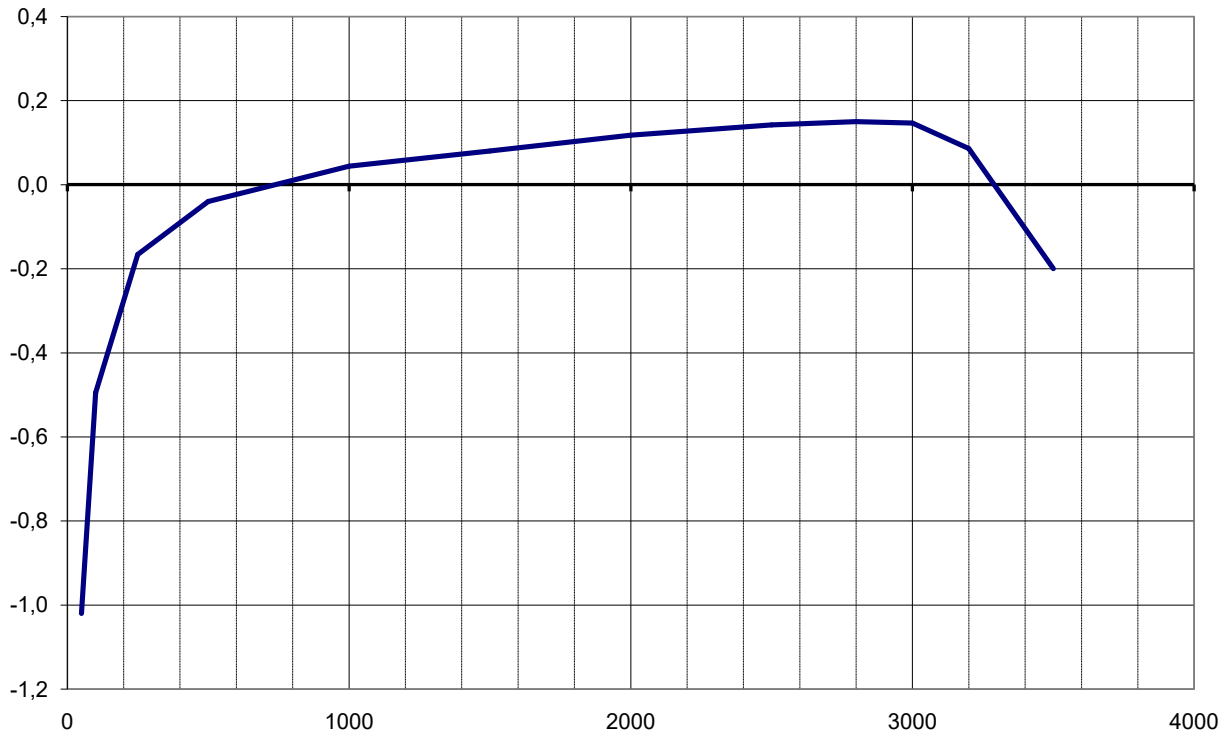
1: Test performed with a 40x30 mm² cable and a current of 3500 A at 50 Hz. The error in % is the ratio of the maximum variation to the mean value.
2: Test performed with a current of 300 A at 50 Hz.

3.4. TYPICAL CURVES

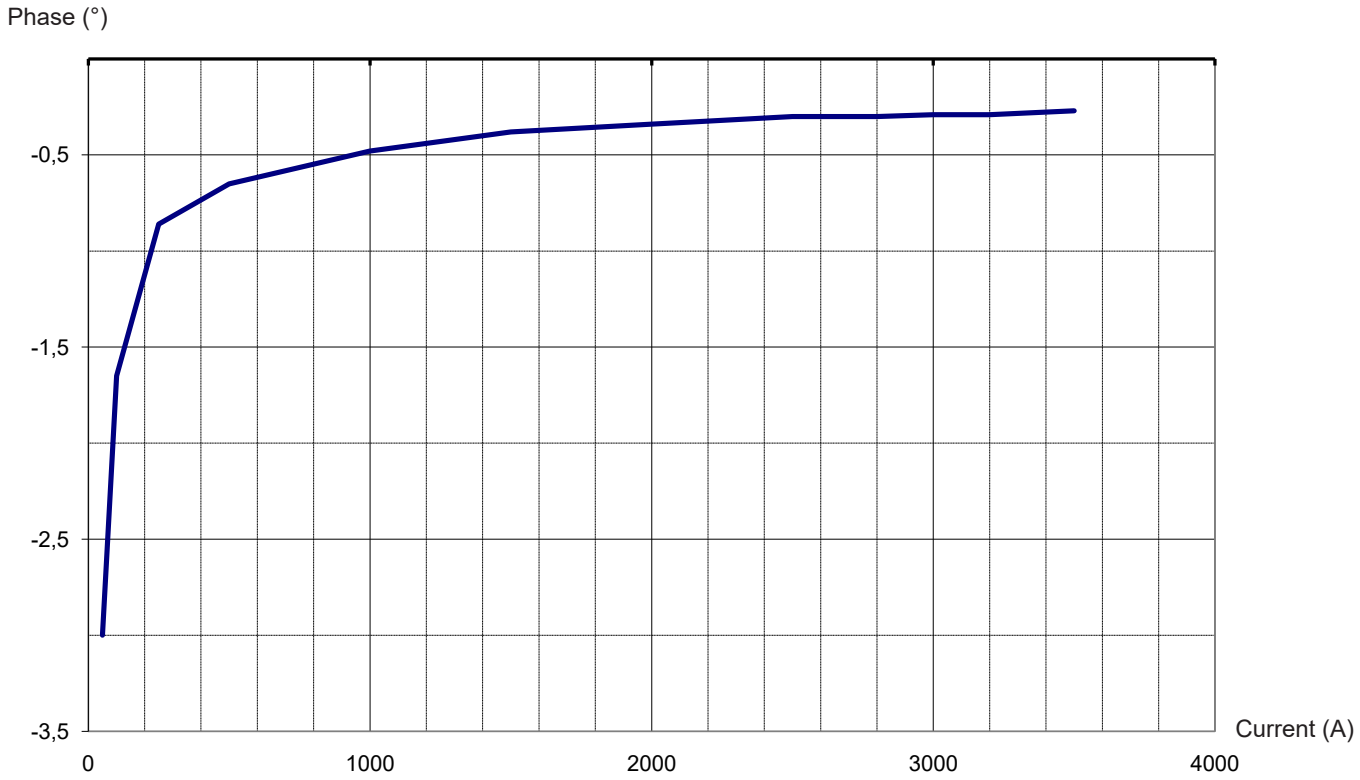
3.4.1. TYPICAL LINEARITY ERROR IN AC VS CURRENT AT 50HZ

Error (%)

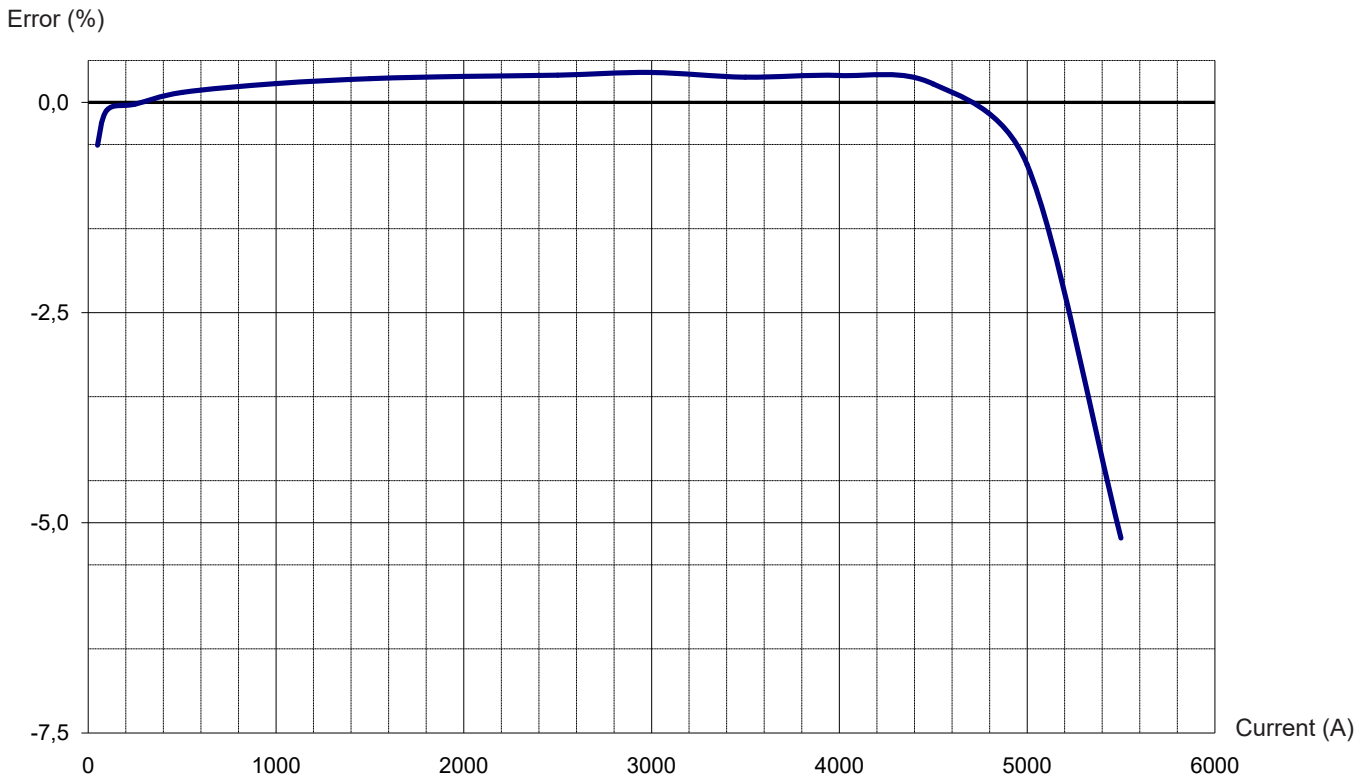
Current (A)



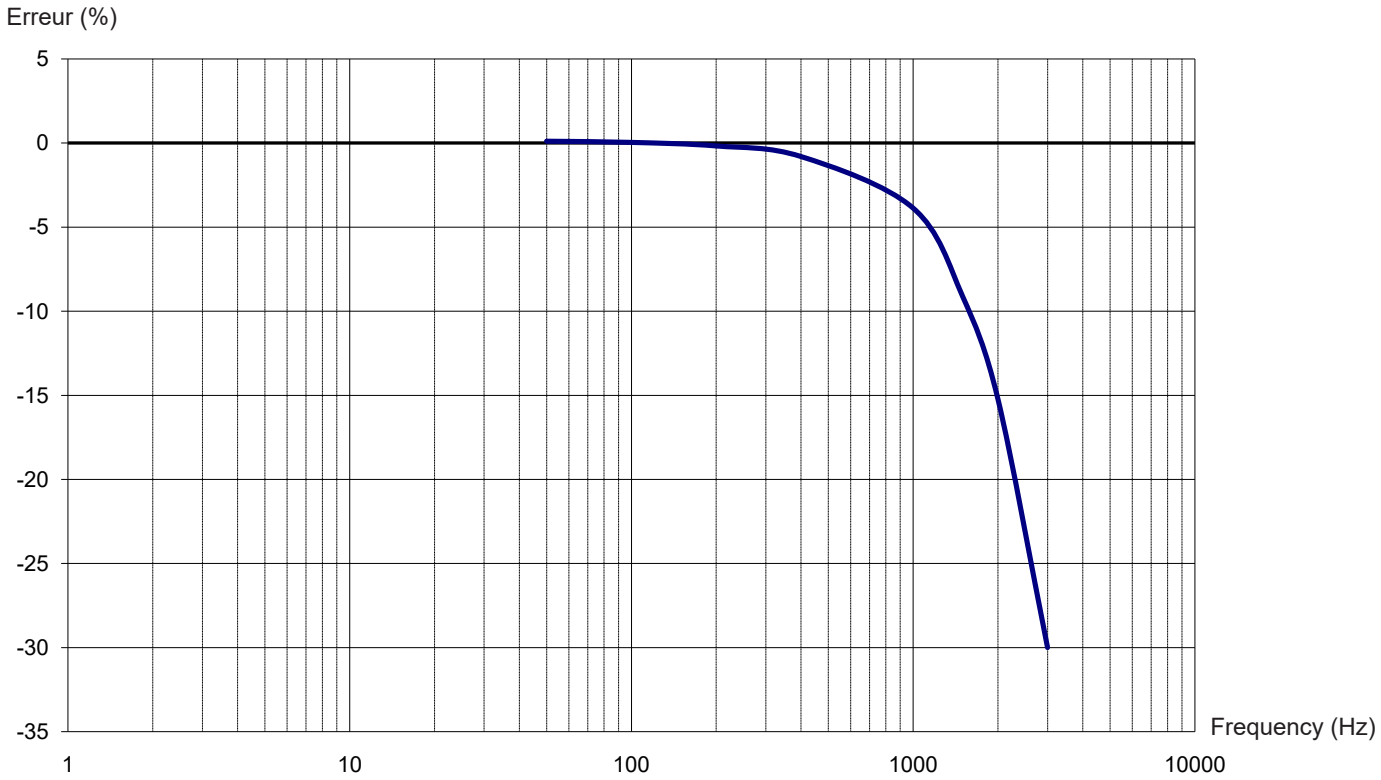
3.4.2. TYPICAL PHASE ERROR VS CURRENT AT 50 HZ



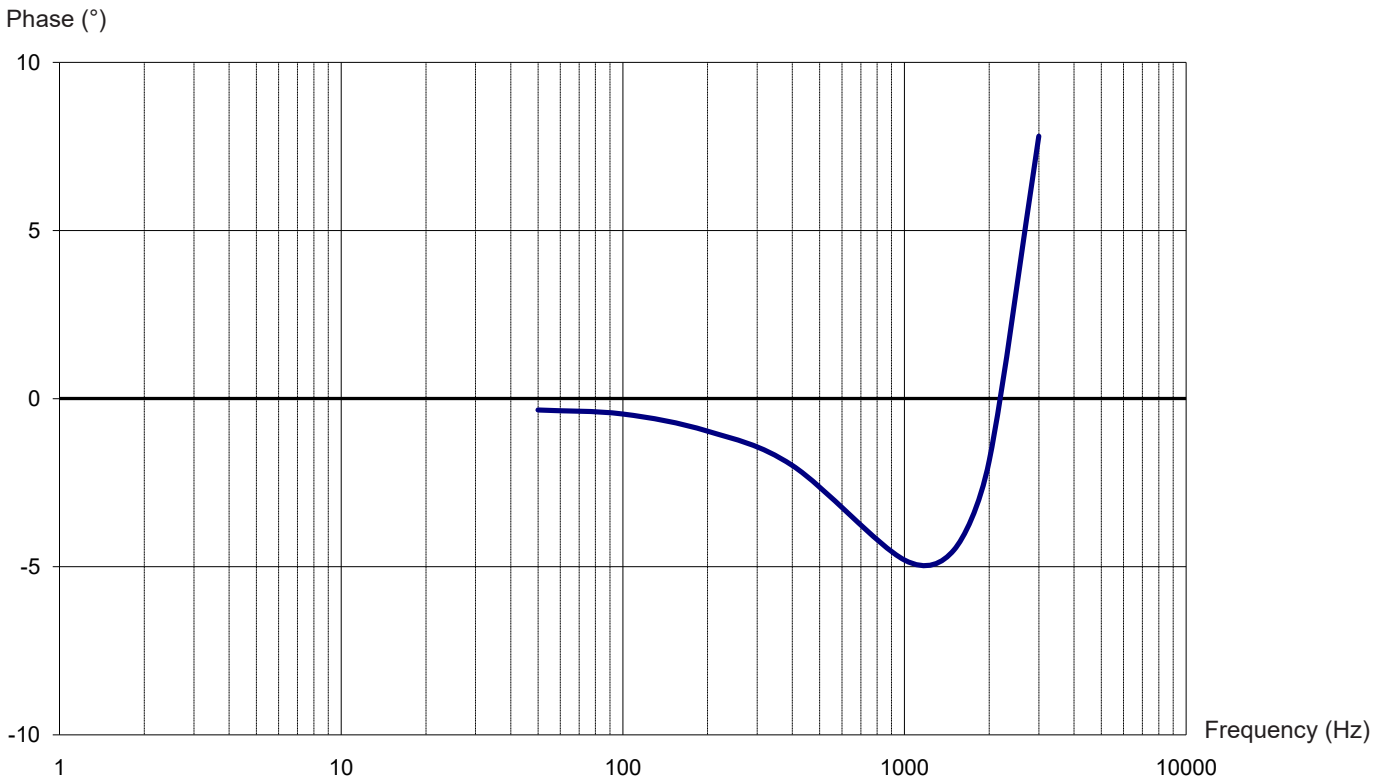
3.4.3. TYPICAL LINEARITY ERROR IN DC VS CURRENT



3.4.4. TYPICAL AMPLITUDE ERROR VS FREQUENCY



3.4.5. TYPICAL PHASE ERROR VS FREQUENCY



3.5. POWER SUPPLY

3.5.1. J93 CLAMP

The power supply of the J93 clamp is provided by a 9 V alkaline battery (type 6LF22, 6LR61, or NEDA 1604).
The nominal operating voltage is between 6.5 and 10 V.

The battery life is 70 hours. The typical consumption is 11 mA.

During the battery test, if the indicator lights, the clamp can be used.
When the indicator no longer lights, the battery must be replaced (see §4.2).

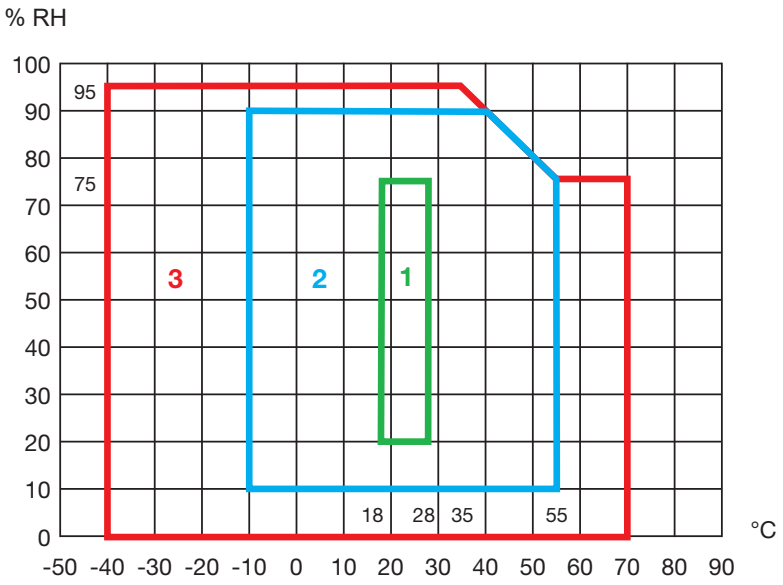
3.5.2. J193 CLAMP

The J193 clamp is supplied by the device to which it is connected. It delivers a voltage of 5 V ±0.25 V.

The typical consumption of the clamp is 5.4 mA.

3.6. ENVIRONMENTAL CONDITIONS

The device must be used under the following conditions:



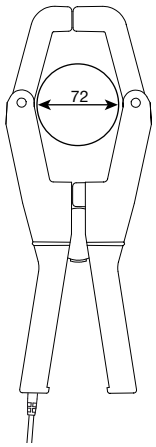
1: Reference range
2: Operating range
3: Storage range (without battery)

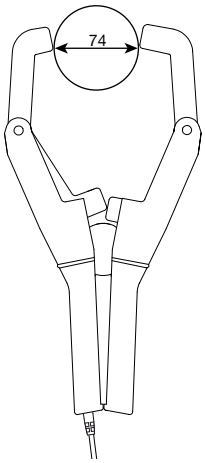
For an extended period of non-use or storage, remove the battery from the J93 clamp.

Indoor use.
Degree of pollution: 2.
Altitude: <2000m.

3.7. CONSTRUCTION SPECIFICATIONS

Dimensions (L x W x H)	336 x 127 x 42 mm
Clamping diameter	72 mm





Cord	3 metres long
Weight	approx. 1.7kg
Protection index:	IP20 according to IEC 60529

3.8. CONFORMITY TO INTERNATIONAL STANDARDS

Electrical safety according to IEC 61010-2-032 for type A sensors.

Maximum applicable voltage: 300V Cat. IV or 600V Cat. III.

3.9. ELECTROMAGNETIC COMPATIBILITY (EMC)

Emissions and immunity in an industrial environment in accordance with IEC 61326-1, except for immunity to the electric field with a criterion B.

4. MAINTENANCE

⚠ **Except for the battery, the instrument contains no parts that can be replaced by personnel who have not been specially trained and accredited. Any unauthorized repair or replacement of a part by an "equivalent" may gravely impair safety.**

4.1. CLEANING

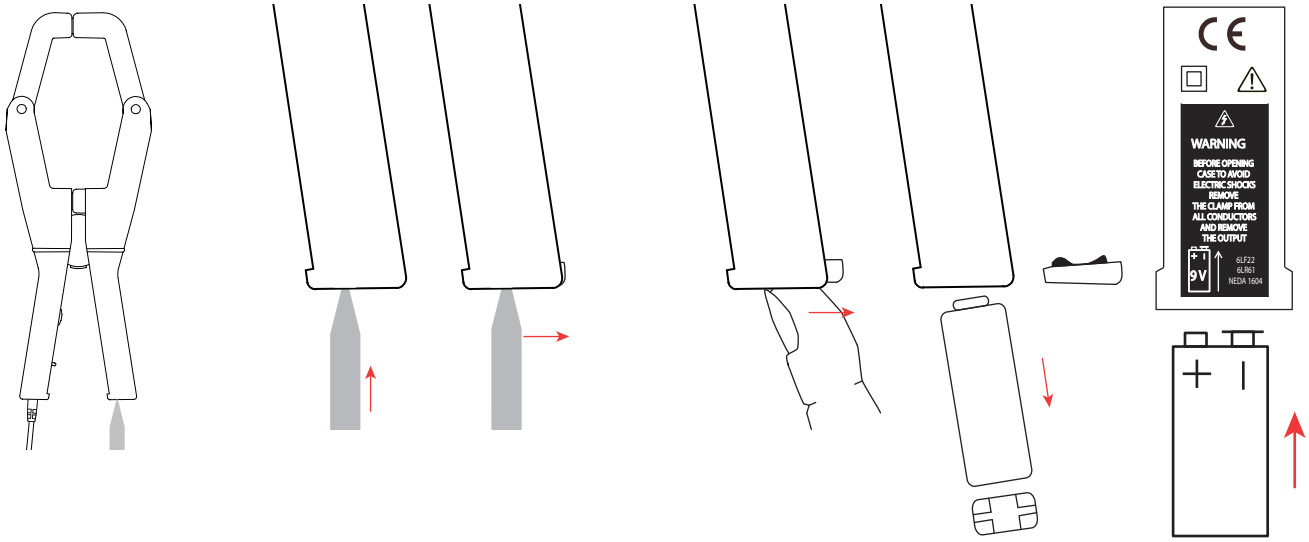
Disconnect the current clamp completely and switch it OFF.

Use a soft cloth, dampened with soapy water. Rinse with a damp cloth and dry rapidly with a dry cloth or forced air. Do not use alcohol, solvents, or hydrocarbons.

Keep the clamp jaws as clean as possible.

4.2. REPLACING OF THE BATTERY (J93 CLAMP)

- Disconnect anything connected to the J93 clamp and switch it off.
- Insert a tool, not more than 3 mm in diameter, in the hole in the battery compartment cover.
- Push to unlock the battery compartment cover, then slide it off.
- Remove it completely by hand.
- Remove the battery and the shim from the compartment.
- Place the new battery in the compartment with the polarity as indicated on the label.



Spent batteries must not be treated as ordinary household waste. Take them to the appropriate recycling collection point.

- Then place the shim.
- Put the battery compartment cover back in the slide and push it in until you hear a click.

5. WARRANTY

Except as otherwise stated, our warranty is valid for **twelve months** starting from the date on which the equipment was sold. Extract from our General Conditions of Sale provided on request.

The warranty does not apply in the following cases:

- Inappropriate use of the equipment or use with incompatible equipment;
- Modifications made to the equipment without the explicit permission of the manufacturer's technical staff;
- Work done on the device by a person not approved by the manufacturer;
- Adaptation to a particular application not anticipated in the definition of the equipment or not indicated in the user's manual;
- Damage caused by shocks, falls, or floods.

6. TO ORDER

J93 clamp
Delivered in a carrying case containing:

- one 9V battery,
- one Velcro fastener for the lead,
- a set of 12 inserts and rings to identify the current sensors,
- a user manual in 5 languages.

J193 clamp
Delivered in a carrying case containing:

- one Velcro fastener for the lead,
- a set of 12 inserts and rings to identify the current sensors,
- a user manual in 5 languages.

693804A00 - Ed. 4 - 05/2019 © Chauvin Arnoux - All rights reserved and reproduction prohibited

FRANCE
Chauvin Arnoux Group
190, rue Championnet
75876 PARIS Cedex 18
Tél : +33 1 44 85 44 85
Fax : +33 1 46 27 73 89
info@chauvin-arnoux.com
www.chauvin-arnoux.com

INTERNATIONAL
Chauvin Arnoux Group
Tél : +33 1 44 85 44 38
Fax : +33 1 46 27 95 69

Our international contacts
www.chauvin-arnoux.com/contacts

CHAUVIN ARNOUX GROUP