



FLEXIBLE AC CURRENT PROBES ETA 5403



Operating Instructions

Thank you for buying this product.
For safety reasons and optimum use of this instrument
read through the operating instructions very carefully.

Table of Contents

1	SAFETY	2
2	INTRODUCTION	4
3	SPECIFICATIONS	5
4	OPERATION	7
4.1	BATTERY INSTALLATION	7
4.2	EXTERNAL POWER SUPPLY	8
4.3	MEASURING CURRENT	8
4.4	OPERATION.....	9
4.5	BATTERY STATUS	9
5	MAINTENANCE	10
6	WARRANTY	10



1. SAFETY

The following symbols appear on the products:



Attention! Refer to Manual



Double/Reinforced Insulation



Do not apply around or remove from HAZARDOUS LIVE conductors without additional protective means. "Additional protective means" can be de-energizing the circuit or wearing protective clothing suitable for high voltage work.



Do not dispose of this product as unsorted municipal waste. Contact a qualified recycler for disposal.



Complies with the relevant European standards.



Read all instructions completely before using this product.

To avoid electric shock:

- Use caution during installation and use of this product; high voltages and currents may be present in circuit under test.
- This product must be used only by qualified personnel practising applicable safety precautions.
- Wear protective clothing and gloves as required.
- Do not install this product on live conductors.
- Always de-energise circuit under test before installing flexible measuring head. Always inspect the electronics unit, connecting cable, and flexible probe for damage before using this product.
- Do not use product if damaged.
- Always connect electronics unit to display device before installing the flexible measuring head.
- Never change batteries while measurement head is installed on conductor.
- Never connect or disconnect the external power supply while the measurement head is installed on a conductor.
- Never connect the output to any equipment with a common mode voltage to earth greater than 30 Volts.
- Always wear protective clothing and gloves if hazardous live parts are present in the installation where the measurement is carried out.
- If the probe is used in a manner not specified by the manufacturer the protection provided by the equipment may be impaired.

2. INTRODUCTION

The ETA 5403 is an AC current probe utilising Rogowski principle. It can be used to measure AC current up to 3000A, when used with oscilloscopes, recorders or data loggers. The flexible probe allows current measurements on conductors that are hard to reach.

The probes provide a 3V full scale AC output proportional to the current being measured with three selectable ranges.

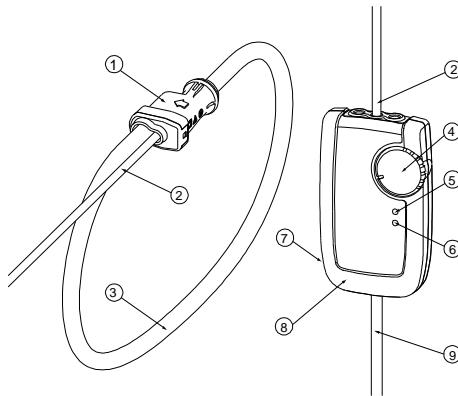


Fig 1

1. Probe Coupling
2. Probe Output Cable
3. Flexible Current Probe
4. Power On / Range Switch
5. RED LED – Overload
6. ORANGE LED – Low Battery
7. External Power Supply Input
8. Integrator Housing
9. Output Cable

3. SPECIFICATIONS

Measuring ranges	30A / 300A / 3000A AC
Output sensitivity	100mV / 10mV / 1mV per A (AC coupled)
Accuracy (45-65Hz)	$\pm 1\%$ of reading $\pm 0.1A$ 30/300A ranges $\pm 1\%$ of reading $\pm 1A$ 3000A range
Minimum load	100k Ω for specified accuracy
Frequency range	10Hz to 20kHz (-1dB)
Phase (45-65Hz)	$<\pm 1^\circ$
Position sensitivity	$\pm 2\%$ of reading
External field	$\pm 0.2\%$ of range with cable >200mm (8") from the probe
Noise	8mV rms in 30A range 2mV rms in 300A / 3000A ranges
Temperature coeff.	$\pm 0.1\%$ of reading/ $^\circ C$
Power supply	Two AA MN1500 LR6 alkaline batteries, or an external power supply (+3V/100mA)
Battery life	2000 hours typical
External Power	Via 2.1mm (0.08") mini power connector
Low battery	Indicated by an orange LED
Overload	Indicated by a red LED
Enclosure	
Material	ARNITE T06-200SNF, UL94 V0
Degree of Protection	IP40
Dimensions	110 (l) x 65 (w) x 23 (d) mm
Output	0.5m coax cable terminated with a safety BNC

Probe

Probe length 610mm (24 inches), double insulated

Probe diameter 9.9mm (0.39 inches)

Output cable 2m (78.7inches), probe to integrator

Material Alcryn 2070 NC, LATI LATENE 7H2W V0

Degree of Protection IP65

General Characteristics

Operating temp. -20°C to +65°C (-4°F to +149°F)

Storage temp. -40°C to +75°C (-40°F to +167°F)

Operating humidity 15% to 85% (non-condensing)

Safety standards EN 61010-1
EN 61010-2-032

EMC EN 61326-2-2

1000 V_{RMS}, Category III, 600 V_{RMS}, Category IV, Pollution Degree 2
(Probe and Integrator)

30V maximum between output and earth

ROHS and WEEE compliant

Rated for continuous use

4. OPERATION

4.1 BATTERY INSTALLATION



Never replace batteries with flexible measuring head installed on conductor to be tested or output connected to a display device.

Never operate the unit without the battery cover fitted.

The ETA 5403 requires two AA MN1500 LR6 alkaline batteries for operation. The battery compartment is accessed from the rear of the electronics enclosure.

Battery status is indicated by an orange LED on the front of the integrator module. This LED will flash one time when the unit is switched ON. The length of time the LED is lit will increase as battery life decreases. Continuous lighting of LED indicates low battery and requires batteries to be replaced.

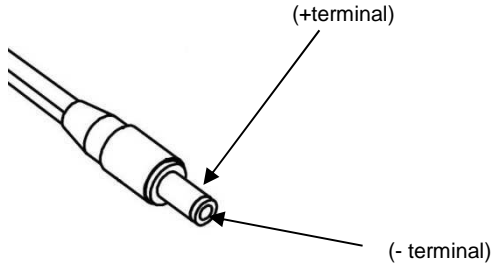
Should you suspect a depleted battery or the low battery LED blinking, proceed as follows.

1. Turn "OFF" all power to the unit and measurement circuits.
2. Set the probe selector switch to the "OFF" position.
3. Remove the flexible current probe from around the conductor of your measurement circuit. Disconnect the output from the display unit.
4. Rotate the battery lock screw (1/4 turn) until it aligns with the unlock symbol. The battery cover can now be removed.
5. Install the replacement batteries into the battery holder.
6. Replace the battery cover and turn the battery lock until it aligns with the lock symbol.

4.2 EXTERNAL POWER SUPPLY

An optional external power supply can be used with the ETA 5403. The requirements are a stabilised 3VDC supply with a minimum current output of 100mA. The supply is to be terminated with a 2.1mm/5.5mm (0.08"/0.219") power connector (centre negative).

The unit is to be externally powered by a Listed Limited Power Supply Only.



4.3 MEASURING CURRENT



Read safety section of instructions before operating this product.



Ensure conductor to be tested is de energised

Connect the output of the electronics to the input of an oscilloscope or other data recording device.

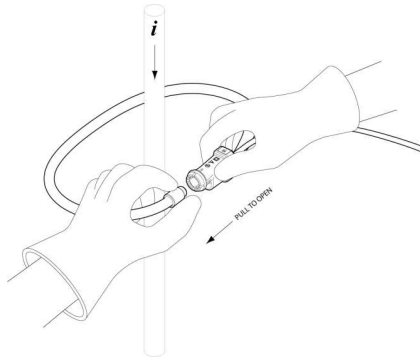


The flexible current probe is not for use on conductors with a potential of over 1000V.

Wrap the flexible probe around the conductor to be tested, close coupling. Energise the circuit under test. Locate the coupling away from nearby conductors.



Always use appropriate equipment for personal protection. Do not use the flexible current probe to measure bare conductors unless wearing protective clothing suitable for high voltage work.



4.4 OPERATION

To activate unit, move the rotary switch from the “off” position to the required measuring range. If the value of current being measured is unknown, first select the highest range and then reduce accordingly.

4.5 BATTERY STATUS

Battery status is indicated by an orange LED on the front of the integrator module. This LED will flash one time when the unit is switched ON. The length of time the LED is lit will increase as battery life decreases. Continuous lighting of LED indicates low battery and requires batteries to be replaced.

5. MAINTENANCE



Do not use ETA 5403 if damaged.

Always inspect the integrator unit, connecting cable, and flexible probe for damage before use.

To avoid electric shock, keep the ETA 5403 clean and free of surface contamination.

Use Isopropyl alcohol to clean the electronics unit and the probe

Make sure the flexible probe, connecting cable, and electronics enclosure are dry before further use.

6. WARRANTY

Your ETA 5403 is guaranteed for two years from the date of purchase against defective material or workmanship. If the unit fails during the warranty period, we shall at our discretion, repair or replace it with a new or reconditioned unit provided we are satisfied that the failure is due to defective material or workmanship. To make a claim under warranty, the probe should be returned to us, postage prepaid, with a description of the defect. The use of a battery or external power supply, other than that specified invalidates this warranty.

Goods alleged by the buyer to be defective shall not form the subject of any claim for injury, loss, damage, or any expense howsoever incurred whether arising directly or indirectly from such alleged defects other than death or personal injury resulting from the seller's negligence.

No condition is made or to be implied nor is any warranty given or to be implied as to the life or wear of goods supplied or that they will be suitable for any particular purpose or for use under specific conditions, notwithstanding that such purpose or conditions may be made known to the seller.

**Suzhou Zhongye Electronic Co.,Ltd
5 F, 8 West Road, Suzhou**

**Tel: 0512-68551216
Fax: 0512-65090042
E-mail: support@tronovo.com**

www.eta-tw.com

N-02.291.0E Rev 1.0