

User Manual

Rogowski Coil for Power Meters

Model: POM000x00



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Notices

Please read this manual in full and carefully observe the notes and instructions before and during installation, operation and maintenance. The manufacturer cannot be held liable for any damage which occurs as a result of noncompliance with this manual.

Do not tamper with device. Should the device be tampered with in any manner other than a procedure which is described and specified in this manual, the warranty is cancelled and the manufacturer is exempt from liability.

The product is designed exclusively for the described application. Use of this product in conditions not specified in this manual or, contrary to the instructions provided by the manufacturer, is considered improper handling of the product and will void your warranty. The manufacturer will not be held liable for any damages resulting from improper use of the product.

This manual should be read carefully by relevant personnel and the end user. This manual should be kept with the product and be made available as needed. **Once you install or use the product, you accept that you have read, understood and complied with this manual.**

CAA Sensors endeavours to make the content of this manual correct, but is not responsible for omissions or errors and the consequences caused. In case of any doubts or questions regarding this manual or the product, please contact CAA Sensors.



Warnings

Ignoring the warnings can lead to serious injury and/or cause damage!

When handling, operating or carrying out maintenance on this product, personnel must employ safe working practices and observe all local health & safety requirements and regulations.

Improper operation or maintenance of this product could be dangerous and result in an accident causing damage to machinery or injury or death.

The manufacturer cannot anticipate every possible circumstance which may represent a potential hazard. The warnings in this manual cover the most common potential hazards and are therefore not all-inclusive. If the user employs an operating procedure, an item of equipment or a method of working which is not specifically recommended by the manufacturer they must ensure that the product will not be damaged or made unsafe and that there is no risk to persons or property.

NEVER CHANGE ORIGINAL COMPONENTS WITH ALTERNATIVES.

About Rogowski Coils

Rogowski coils are a flexible current transducers that have been used for the detection and measurement of electric currents for decades. They are based on a simple principle: an “air-cored” coil is placed around the conductor in a toroidal fashion and the magnetic field produced by the current induces a voltage in the coil. The voltage output is proportional to the rate of change of current. This voltage is integrated, thus producing an output proportional to the current.

By using precision winding techniques, especially developed for the purpose, the coils are manufactured so that their output is not influenced by the position of the conductor within the toroid, and to reject interference from external magnetic fields caused, for example, from nearby conductors.

Basically, a Rogowski coil current measuring system consists of a combination of a coil and conditioning electronics. Rogowski coil current transducers are used for AC measurement.

The transducer does not measure direct currents but, unlike a current transformer, it can carry out accurate measurements of AC component even if there is a large superimposed

DC component, since there is no iron core causing saturation. This feature is particularly useful for measuring ripple currents for example in battery charging systems.

Rogowski coils can be used in similar circumstances to current transformers but for many applications they have considerable advantages:

- Wide dynamic range
- High linearity
- Very useful with large size or awkward shaped conductors or in places with limited access
- Unlike traditional current transducers, there is no danger from open-circuited secondaries
- They cannot be damaged by large overloads
- Measurement uniformity at any position of the conductor inside the coil
- They are non-intrusive
- They are light weighted and in some applications are light enough to be suspended on the conductor being measured
- Excellent degree of rejection to the external current conductor

These Rogowski Coils are designed to be used with CAA Sensors Power Meters.

Specifications

	POM000100 (500 Amps)	POM000200 (1,000 Amps)	POM000300 (3,000 Amps)
For use with Power Meter:	<ul style="list-style-type: none"> • POM100100 - din rail mounted power meter with no display or <ul style="list-style-type: none"> • POM100400 - Handheld (portable) power meter 	<ul style="list-style-type: none"> • POM100200 - din rail power meter with a display or <ul style="list-style-type: none"> • POM100400 - Handheld (portable) power meter 	<ul style="list-style-type: none"> • POM100100 - panel mount power meter with a display or <ul style="list-style-type: none"> • POM100400 - Handheld (portable) power meter
Rogowski Coil Size	500 Amps	1,000 Amps	3,000 Amp
Coil Resistance	140 (+/- 10) Ω	210 (+/- 10) Ω	290 (+/- 10) Ω
Coil Length	200 mm or 7.87"	350 mm or 13.78"	510 mm or 20.08"
Window Size	50 mm or 1.97"	100 mm or 3.94"	150 mm or 5.91"
Weight	140g	150g	160g
Coil section	8 mm or 0.31"		
Lead Length	2 meters		
Ratio	Calibrated: 85mV / kA@50Hz / 100mV / kA@50Hz Uncalibrated: 110mV / kA@50Hz		
Read Accuracy	Calibrated: <0.5% (central position, 25°C) Uncalibrated: < 5% tolerance (central position, 25°C)		
Temperature	Calibrated: 300ppm/C Uncalibrated: 200ppm/C		
Maximum Current Measurable	100kA		
Position Error	$\pm 1\%$ maximum		
Output on 0 Amps (zero drift)	$\leq 0.05\text{mV}$		
Phase error	$\leq 0.5^\circ$		

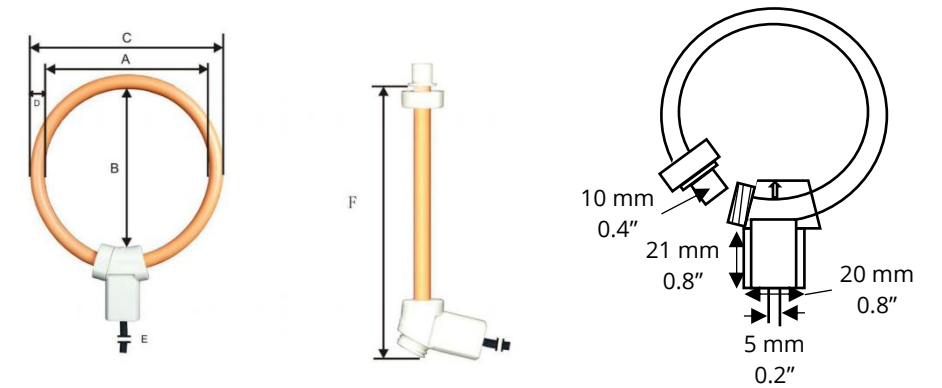
Linearity	±0.2% of reading	
Bandwidth	1Hz to 100kHz(-3dB)	
Materials	Coil & cable: Thermoplastic rubber, flame retardant UL 94 V-0 rated	
Shielded	00% coil, 100% output cable	
Couplings	PA6 UL 94 V-O rated	
Voltage Insulation	Coil: 3000V Signal cable: 1000V	
Compliance	LVD EN 61010-1:2010 EMC EN 61326-1:2013	
Safety	1000V CATIII ,600V CATIV	
Operation Temperature	-30°C to +80°C	-22°F to +176°F
Storage Temperature	-40°C to +90°C	-40°F to +194°F
Installation Type	Temporary or permanent installation	
Warranty	12 months	

Position Sensitivity



Conductor Position		Typical Error (%)
●	Adjacent to the center of coil	0.2%
●	Adjacent to the inside coil	<1%

Dimensions



	500 Amps	1,000 Amps	3,000 Amp
A Windows size A	50 mm	105 mm	155 mm
B Windows size B	60 mm	100 mm	150 mm
C Coil Outer Diameter	66 mm	121 mm	171 mm
D Coil section	8 mm		
E Lead Cable Total Length	2 meters		
F Coil length	200 mm	350 mm	510 mm

Installation – Mechanical



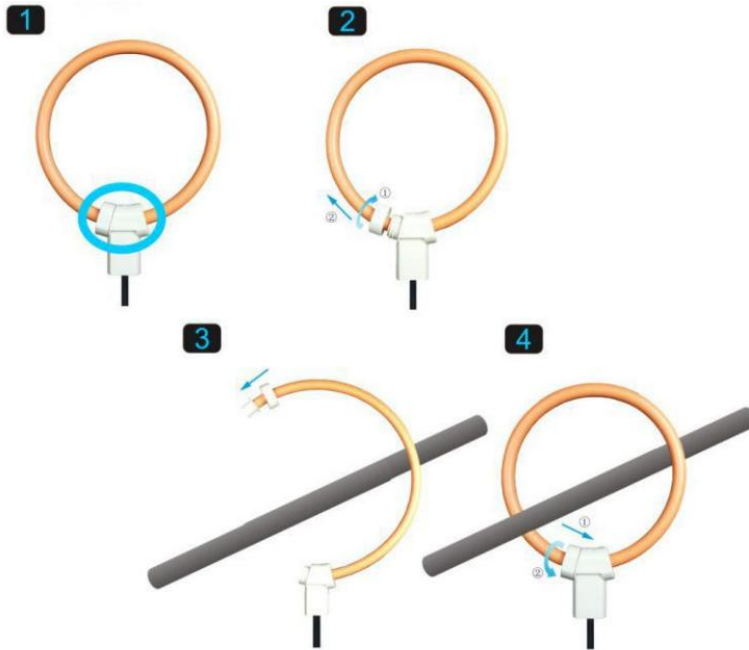
WARNING! Risk of electrical shock.

Any contact with energised parts of the product, may lead to an electrical shock which can lead to serious injuries or even death. The user shall take all measures necessary to protect against electrical shock.



Notes

- Users should be suitably qualified, licensed and experienced to install, operate, maintain and remove this product
- **Before installing the product, make sure it is rated for your system** (refer to the “Specifications” section).
 - Use of the product outside specified ranges or operating parameters can lead to malfunctions and may damage the product or system.
- The system must be disconnected from any power supply during maintenance work.
- When operating the Rogowski Coil, certain parts of the module may carry hazardous live voltage (e.g. primary conductor). The user shall take all measures necessary to protect against electrical shock. The Coil's transducer is a built-in device containing conducting parts that shall not be accessible after installation. A protective enclosure or additional insulation barrier may be necessary.
- Do not use this product in explosive areas.
- Do not stress the coil by applying any kind of mechanical force (i.e. twisting, puncturing, excessive pressure, tight bending, etc.) as this will dramatically degrade the device's accuracy.
- Do not disassemble the product.
- Please observe local and national regulations before/during installation and operation.
- The product must be installed properly, otherwise it may lead to inaccurate measurement values.
- Incorrect installation can damage the product, cause it to work incorrectly or result in injury or death.



Installation and maintenance shall be done with the main power supply disconnected except if there are no hazardous live parts in or in close proximity to the system. Local and national regulations must be fully observed.

Step 1 – Locate clip on the base unit

Step 2 – Unscrew clip and pull out coil from base unit

Step 3 – Place coil over load

Step 4 – Insert coil back into base unit and screw clip to secure the coil

Installation – Electrical



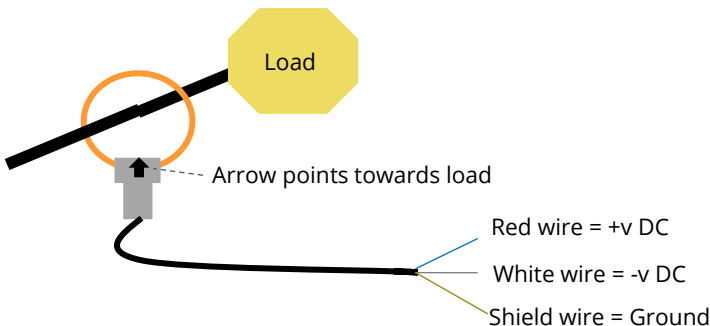
WARNING! Risk of electrical shock

Incorrect wiring or contact with energised parts of the product, may lead to an electrical shock which can lead to serious injuries or even death. The user shall take all measures necessary to protect against electrical shock.

Notes:

- Always check the coloured wires to make sure they are wired correctly.
- Consider all local and national safety requirements and regulations for electrical installations.
- **The system must be disconnected from any power supply during installation and maintenance work.**
- Any electrical work on the system is only allowed by authorised and qualified personal.

Rogowski Coil	
Blue Wire	+ Voltage DC
White Wire	- Voltage DC
Shield Wire	Ground



Warranty

CAA Sensors provides a 12-month warranty for all Rogowski Coils. The warranty covers materials and workmanship under the stated operating conditions from the date of delivery. Please report any findings immediately and within the warranty time.

If faults occur during the warranty period CAA Sensors will repair or replace the defective unit, without charge for repair labour and material costs but there is a charge for other services such as labour to remove or reinstall the instrument, transport and packing. Warranty repairs do not extend the period of warranty.

The following damage is excluded from this warranty:

- Improper use and non-adherence to the user manual.
- Use of unsuitable accessories.
- External influences (e.g. damage caused by vibration, damage during transportation, excess heat or moisture).

The warranty is cancelled when one of the following situations occurs:

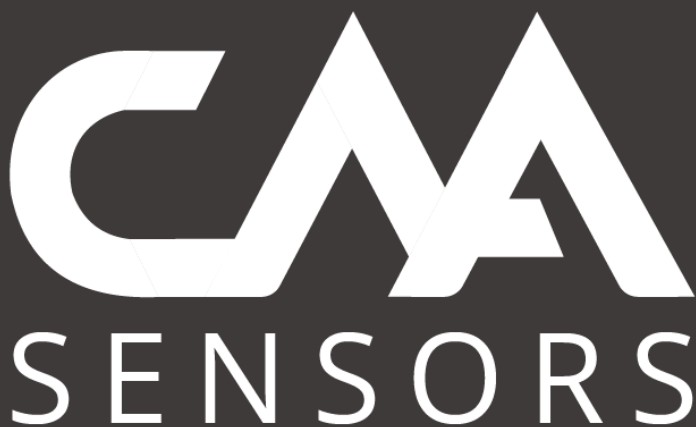
- The user opens the measurement instrument without a direct request written in this manual.
- Repairs or modifications are undertaken by third parties or unauthorised persons.
- The serial number has been changed, damaged or removed.

Other claims, especially damage occurring on the outside of the instrument (eg dents, marks), are not included unless responsibility is legally binding.

Need help?

You can contact CAA Sensors via:

- Phone: +61 494 095 632
- WhatsApp: +61 494 095 632
- E-mail: sales@caasensors.com
- Website: www.caasensors.com



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