WCT

Welding machine Rogowski coil

- High linearity from 1A to 100kA
- Wide dynamic range
- No danger from open-circuited secondary
- Not damaged by large overloads
- Non-intrusive, no power drawn from the main
- Measurement uniformity at any position of the conductor inside the coil
- Excellent degree of rejection to the external current conductor

Feature

RCT is a rigid current transducer based on Rogowski principle, particularly suitable for measurement in combination with portable devices. RCT coils are limited in different sizes but competitive cost,therefore they can be used in fixed application like power distribution box.

RCT coil is provided with a shield against the influence of external magnetic fields, therefore it grants a stable measurement from low currents to hundreds of kA. The Rogowski coils must be connected to an electronic integrator for 90° phase shift compensation and frequency equalization. Our DIN-RAIL and panel meters can interface Rogowski coils directly without the need of the external integrators. This is an advantage because there is no external boxes or any power supply with consequent ease of use. The particular features of the Rogowski coils combined with the extremely flexible input programming of our portable meters, allow to carry out measurement by all applications.

Advantage

• Competitive cost
• Higher output ratio
• Lower zero drift down to 0.1mV

Related Products

SW

Applications

● Welding machine current monitor
● Welding transformer inside used

What is a Rogowski coil?

Rogowski coils 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 the AC measurement.

They 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. Thanks to the structure without hard core, the coil can be easily manufactured according to the application or to the available space.

• Unlike traditional current transducers, there is no danger from open-circuited secondaries.

• They cannot be damaged by large overloads.

• They are non-intrusive. They draw no power from the main circuit carrying the current to be measured.

• They are also light weighted and in some applications are light enough to be suspended on the conductor being measured.

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.

Specification

MODEL	WCT-44
Window size	44mm
Weight	180g
Output(Di/Dt)	150mV/kA@50Hz
Read Accuracy	Uncalibrated < 2% tolerance (central position, 25℃)
Maximum current measurable	1000kA
Coil Resistance	20-21 Ω
Lead length	0.5 meter
Temperature	200ppm/C
Output on 0A（zero drift）	≤0.1mV
Phase error	≤0.5°
Linearity	±0.2% of reading
Bandwidth	1Hz to 1MHz(-3dB)
Operating temperature	-30℃ to 80℃
Storage temperature	-40℃ to 90℃
Other requirements, please contact us to OEM.	

Dimensions
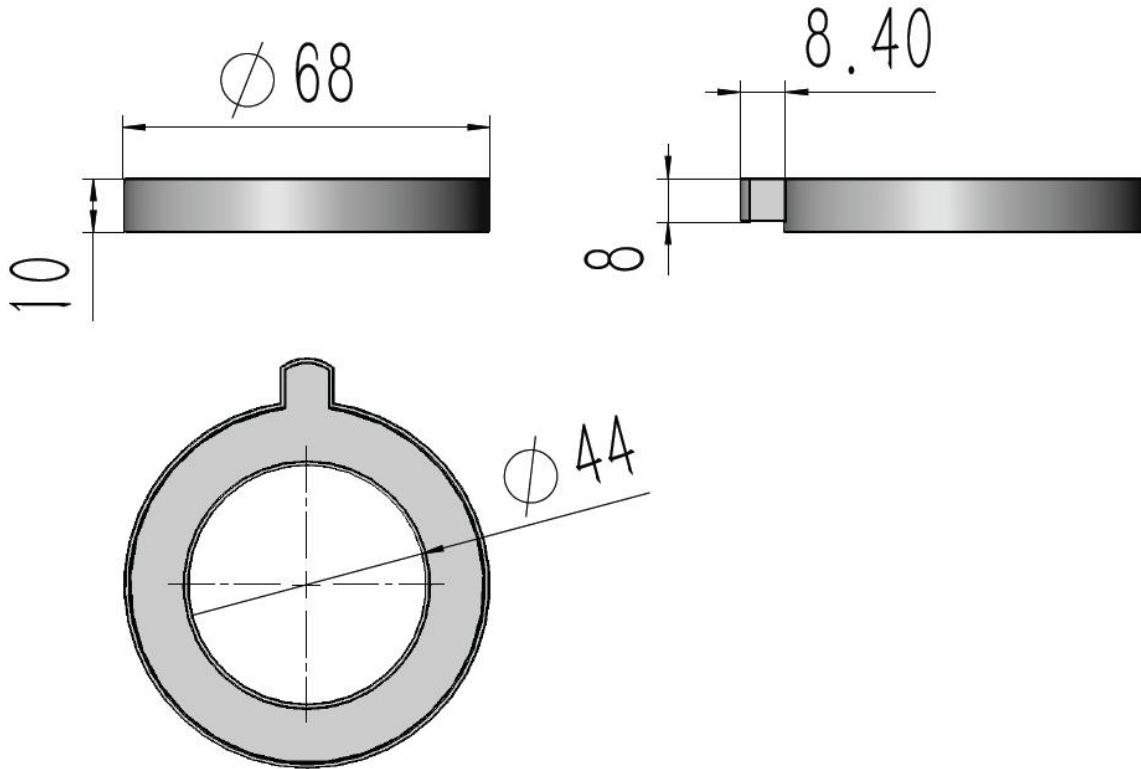
Materials

Housing	PA66

Safety

Certifications	CE marked
	Complies with
	LVD EN 61010-1:2010
	EMC EN 61326-1:2013
	IP68
Voltage insulation	Housing: 10kV
	Signal cable:1000V
Safety	1000V CATIII ,600V CATIV
Signal cable	Φ4mm, 2*0.2mm² 200℃

Safety and warning notes

In order to guarantee safe operation of the transducer and to be able to make proper use of all features and functions,please read these instructions thoroughly!Safe operation can only be guaranteed if the transducer is used for the purpose it has been designed for and within the limits of the technical specifications.Ensure you get up-to-date technical information that can be found in the latest associated datasheet under www.meatrol.cn

Caution!Risk of danger

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

The electric measuring transducer may only be installed and put into operation by qualified personnel that have received an appropriate training,The corresponding national regulations shall be observed during installation and operation of the transducer and any electrical conductor.The transducer shall be used in electric/electronic equipment the respect to applicable standards and safety requirements and in accordance with all the related systems and components manufacturers' operating instructions.

Caution!Risk of electrical shock

When operating the transducer,certain parts of the module may carry hazardous live voltage(e.g.primary conductor).The user shall ensure to take all measures necessary to protect against electrical shock.The transducer is a build-in device containing conducting parts that shall not be accessible after installation.A protective enclosure or additional insulation barrier may be necessary.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 and if the applicable national regulations are fully observed.

Safe and trouble-free operation of this transducer can only be guaranteed if transport,storage and installation are carried out correctly and operation and maintenance are carried out with care.

WARING!

Do not stress the coil by applying any kind of mechanical force(ie.twisting,puncturing,excessive pressure,tight bending,etc.) which will dramatically degrade the device's accuracy.

Order code

Coil:

Coil Model	Coil length (mm)	Output ratio and tolerance	Signal cable length
Code:Y-FCY (without integrator)	**Code:**200(Typical rated 500A) **Code:**350(Typical rated 1500A)	**Code:105** 105mV/kA@50Hz±5% **Code:100** 100mV/kA@50Hz±0.5%	**Code:-2m** **Code:-5m** **Code:-10m** **Code:-20m**
	Code:510(Typical rated 3kA)	**Code:95** 95mV/kA@50Hz±5% **Code:85** 85mV/kA@50Hz±0.5%	
	Code:800(Typical rated 10kA)	**Code:50** 50mV/kA@50Hz±5% **Code:30** 30mV/kA@50Hz±0.5%	
Code:FCT (without integrator)	**Code:**420(Typical rated 2kA) **Code:**510(Typical rated 3kA) **Code:**620(Typical rated 6kA) **Code:**800(Typical rated 10kA)	**Code:120** 120mV/kA@50Hz±5% **Code:100** 100mV/kA@50Hz±0.5%	
MRC	**Code:16**(Typical rated 100A) **Code:24**(Typical rated 300A) **Code:36**(Typical rated 600A)	**Code:50** 50mV/kA@50Hz±0.5% **Code:60** 60mV/kA@50Hz±5%	
NRC	**Code:100**(Typical rated 1kA) **Code:150**(Typical rated 3kA) **Code:200**(Typical rated 6kA)	**Code:105** 105mV/kA@50Hz±5% **Code:100** 100mV/kA@50Hz±0.5%	
Other requirement could be OEM			

Final Code=Coil model+Coil length(MRC NRC is diameter)+Output ratio tolerance+Signal cable length

For example:

Y-FCT-350-100-2m is Y shape connector,coil length 350mm,output 100mV/kA@50Hz 0.5% tolerance,signal cable length is 2meter.

Integrator:

Integrator	Output form	Output value	Rated current	Power supply
Code:D1 (DIN-RAIL integrator)	**Code: .1**(AC voltage output) **Code: .2**(DC voltage output)	**Code: -333**(333mV) **Code: -1**(1V) **Code: -3**(3V) **Code: -5**(5V)	**Code: -500A** **Code: -1kA** **Code: -3kA** **Code: -10kA**	**Code: -12**(12V DC) **Code: -24**(24V DC)
	Code: .3(4-20mA output)	N/A		
Code:S9 (mini integrator)	**Code: .1**(AC voltage output) **Code: .2**(DC voltage output)	**Code: -333**(333mV) **Code: -1**(1V) **Code: -3**(3V)		**Code: -12**(6-12V DC) **Code: -24**(24V DC)
Code:S1 (high accuracy integrator)	**Code: .1**(AC voltage output) **Code: .2**(DC voltage output) **Code: .3**(4-20mA output)	**Code: -333**(333mV) **Code: -1**(1V) **Code: -3**(3V) **Code: -10**(10V)		**Code: -12**(4-12V DC) **Code: -24**(24V DC)
Code:TP (three phase integrator)	**Code: .1**(AC voltage output) **Code: .2**(DC voltage output)	**Code: -333**(333mV) **Code: -1**(1V) **Code: -3**(3V) **Code: -10**(10V)		**Code: -12**(4-12V DC) **Code: -24**(24V DC)
Code:A01 (1A output integrator)	**N/A**(0-1A)	N/A		**N/A**(85-265V AC DC)
Code:A05 (5A output integrator)	**N/A**(0-5A)	N/A		**N/A**(85-265V AC DC)
Code:SW (welding integrator)	**N/A**(0-10VDC)	N/A	**Code: -10kA** **Code: -50kA** **Code: -100kA** **Code: -500kA**	**Code: -12**(4-12V DC) **Code: -24**(24V DC)
Code:HF (high frequency integrator)	**N/A**(0-10VAC peak)	N/A	**Code: -1kA**(1kA/1V) **Code: -10kA**(10kA/1V)	**N/A**(4-12V DC)
Code:M2 (Integrator module)	**N/A**(0-5VAC peak)	**Code: -333**(333mV) **Code: -1**(1V)	**Code: -100A** **Code: -500A** **Code: -1kA** **Code: -3kA**	**Code: -3.3**(±3.3V DC) **Code: -5**(±5V DC)
Other requirement could be OEM				

Final Code=Integrator+Output form+Output value+Rated current+Power supply

For example:

D1.1-1-500A-12 is D1 integrator,AC voltage output,500A rated,output 1V,power supply 12V DC

A01-1kA is A01 integrator,rated 1kA,output 1A,power supply 85-265V AC DC