



Y-FCT

Ø8 Flexible Rogowski coil

- High linearity from 1A to 100kA
- Wide dynamic range
- Very useful with large size or awkward shaped conductors or in places with limited access
- 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

Y-FCT is a flexible current transducer based on Rogowski principle, particularly suitable for measurement in combination with portable devices. Y-FCT coils are available in different sizes and can be supplied according to customer's design, therefore they can be used in all those applications, in which traditional transducers are not fitting due to its size and/or weight.

Due to its specific features, flexible Rogowski coil is an extremely comfortable solution for current measurement and can be used in a number of cases where traditional current transducer is not the adequate solution.

Y-FCT 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

- Calibrated to 0.5%
- 8mm section easy to install
- Two layers shielded
- Lower zero drift down to 0.1mV

Related Products

S1 D1 S9 SW A01 A05 ME631 ME432

Applications

- Measuring devices, lab instrumentation
- Power monitoring & control systems
- DC ripple measurement
- Harmonics and transients monitoring
- Power meter, Power analyzer sensor

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		Y-FCT-200	Y-FCT-300	Y-FCT-350	Y-FCT-510	Y-FCT-800
Coil length		200mm	300mm	350mm	510mm	800mm
Window size		50mm	85mm	100mm	150mm	240mm
Rated current		500A	1000A	1000A	3000A	6000A
Weight		110g	120g	120g	130g	150g
Ratio	Calibrated	100mV/kA@50Hz	100mV/kA@50Hz	100mV/kA@50Hz	85mV/kA@50Hz	50mV/kA@50Hz
	Uncalibrated	105mV/kA@50Hz			95mV/kA@50Hz	60mV/kA@50Hz
Read Accuracy		Calibrated <0.5% (central position, 25℃) Uncalibrated < 5% tolerance (central position, 25℃)				
Maximum current measurable		100kA				
Coil Resistance		from 100 to 250 Ω or 10kΩ				
Coil Section		8mm				
Lead length		2meter				
Temperature		Uncalibrated 200ppm/C				
		Calibrated 400ppm/C				
Position Error		± 1% maximum				
Output on 0A (zero drift)		≤0.1mV				
Phase error		≤0.5°				
Linearity		±0.2% of reading				
Bandwidth		1Hz to 100kHz(-3dB)				
Operating temperature		-30℃ to 80℃				
Storage temperature		-40℃ to 90℃				
Other requirements, please contact us to OEM.						



Position sensitivity

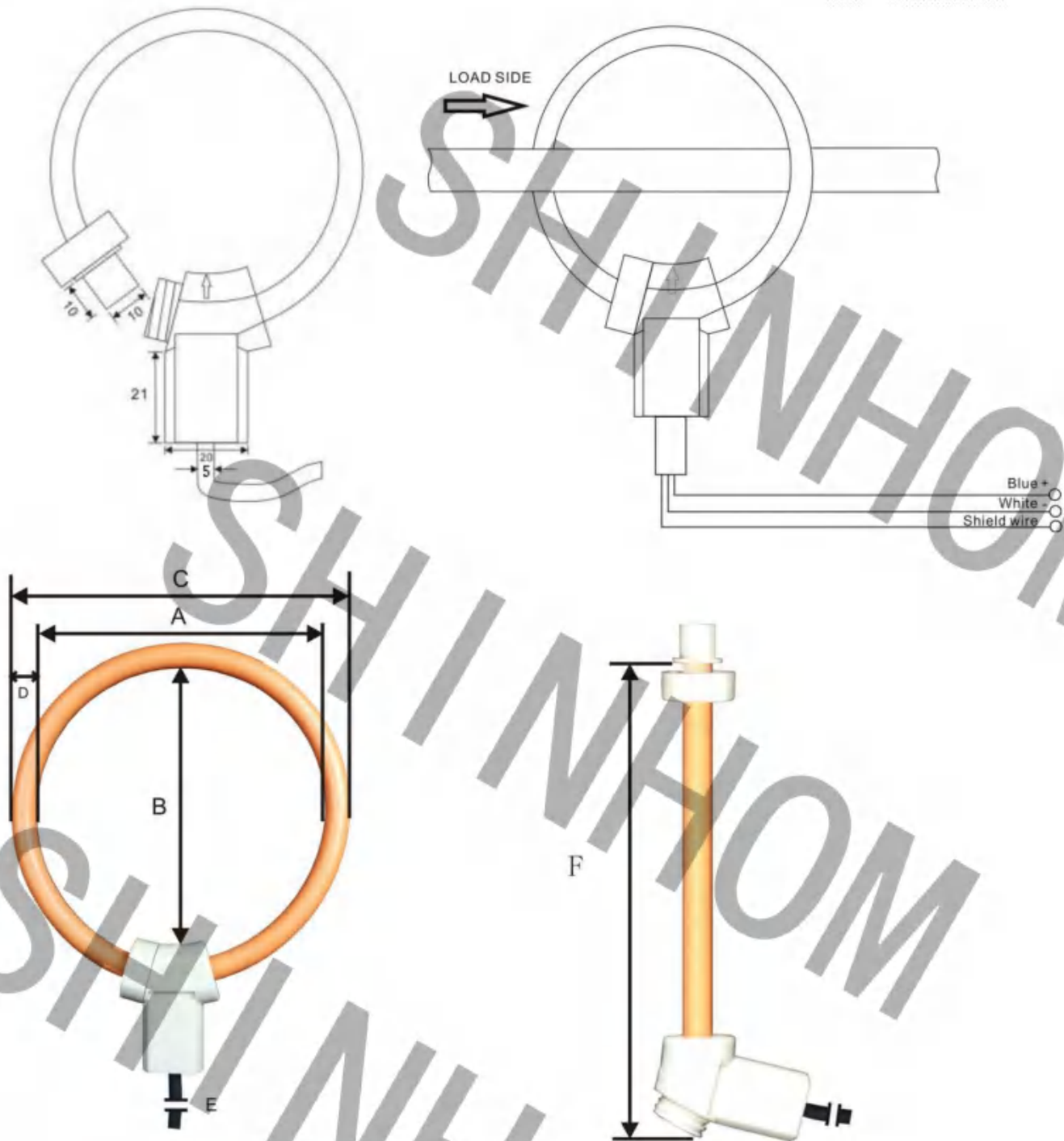
Conductor Position	Typical Error(%)
● Central in the rogowski loop	0.2%
● Adjacent to the inside coil edge	<0.8%
● Adjacent to the clip together mechanism	<1%

Materials

Coil & cable	Thermoplastic rubber flame retardant UL 94 V-0 rated
Couplings	PA6 UL 94 V-O rated
Color(coil)	Black, Yellow, Red, Green, Blue
Shielded	100% coil, 100% output cable

Safety

Certifications	CE marked
	Complies with EMC EN 61326-1 2006
	IP68
Voltage insulation	Coil: 3000V
	Signal cable:1000V
Safety	1000V CATIII ,600V CATIV



Dimensions tolerance:

A,B,C,F: $\pm 5\text{mm}$, D: $\pm 0.2\text{mm}$, E: $\pm 10\text{mm}$

Dimensions(mm)	Y-FCT-200	Y-FCT-300	Y-FCT-350	Y-FCT-510	Y-FCT-800
A.Windows size A	50	90	105	155	245
B.Windows size B	60	85	100	150	240
C.Coil O.D.	66	106	121	171	261
D.Coil section	8				
E.Lead Cable Total Length	2000				
F:Coil length	200	300	350	510	800

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.shinhom.com

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.

WARNING!

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:105 105mV/kA@50Hz±5%	Code:-2m Code:-5m Code:-10m Code:-20m
	Code:350(Typical rated 1500A)	Code:100 100mV/kA@50Hz±0.5%	
	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:120 120mV/kA@50Hz±5%	Code:-2m
	Code:510(Typical rated 3kA)	Code:100 100mV/kA@50Hz±0.5%	Code:-5m
	Code:620(Typical rated 6kA)		Code:-10m
	Code:800(Typical rated 10kA)		Code:-20m
MRC	Code:16(Typical rated 100A)	Code:50 50mV/kA@50Hz±0.5%	Code:-2m
	Code:24(Typical rated 300A)	Code:60 60mV/kA@50Hz±5%	Code:-5m
	Code:36(Typical rated 600A)		Code:-10m Code:-20m
NRC	Code:100(Typical rated 1kA)	Code:105 105mV/kA@50Hz±5%	Code:-2m
	Code:150(Typical rated 3kA)	Code:100 100mV/kA@50Hz±0.5%	Code:-5m
	Code:200(Typical rated 6kA)		Code:-10m Code:-20m
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: -500A Code: -1kA Code: -3kA Code: -10kA	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: -500A Code: -1kA Code: -3kA Code: -10kA	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: -500A Code: -1kA Code: -3kA Code: -10kA	Code: -12(4-12V DC) Code: -24(24V DC)
Code:A01 (1A output integrator)	N/A(0-1A)	N/A	Code: -500A Code: -1kA Code: -3kA Code: -10kA	N/A(85-265V AC DC)
Code:A05 (5A output integrator)	N/A(0-5A)	N/A	Code: -500A Code: -1kA Code: -3kA Code: -10kA	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($\pm 3.3V$ DC) Code: -5($\pm 5V$ 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

How to use



ZRC

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- Excellent degree of rejection to the external current conductor

Feature

ZRC is a flexible current transducer based on Rogowski principle, particularly suitable for measurement in combination with portable devices. ZRC coils are available in different sizes and can be supplied according to customer's design, therefore they can be used in all those applications, in which traditional transducers are not fitting due to its size and/or weight.

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ZRC 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.

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- 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		ZRC-50	ZRC-100	ZRC-150
Coil length		214MM	375MM	535MM
Window size		50mm	100mm	150mm
Reference Rated current		600A	1000A	3000A
Weight		Approx 100-120g		
Ratio	Calibrated	100mV/kA@50Hz 85mV/kA@50Hz 50mV/kA@50Hz		
	Uncalibrated	105mV/kA@50Hz		
Read Accuracy		Calibrated <0.5% (central position, 25℃) Uncalibrated < 5% tolerance (central position, 25℃)		
Maximum current measurable		100kA		
Coil Resistance		from 100 to 250 Ω		
Coil Section		8mm		
Lead length		2meter		
Temperature		Uncalibrated 200ppm/C Calibrated 400ppm/C		
Position Error		± 1% maximum		
Output on 0A (zero drift)		≤0.1mV		
Phase error		≤0.5°		
Linearity		±0.2% of reading		
Bandwidth		1Hz to 100kHz(-3dB)		
Operating temperature		-30℃ to 80℃		
Storage temperature		-40℃ to 90℃		
Other requirements, please contact us to OEM.				



Position sensitivity

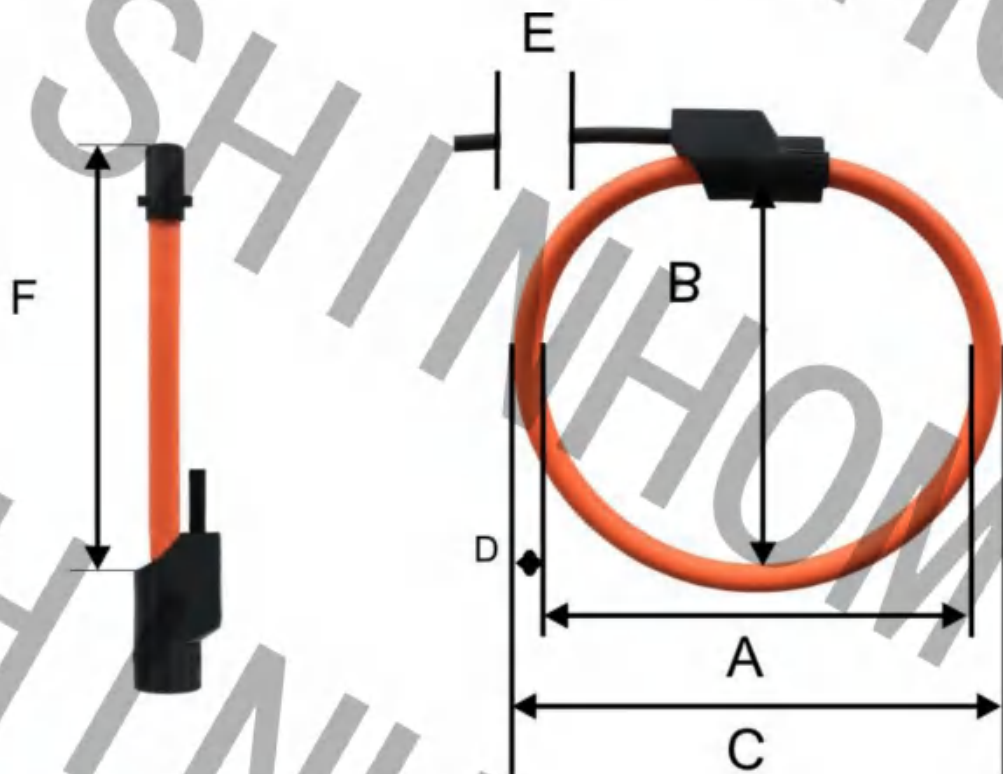
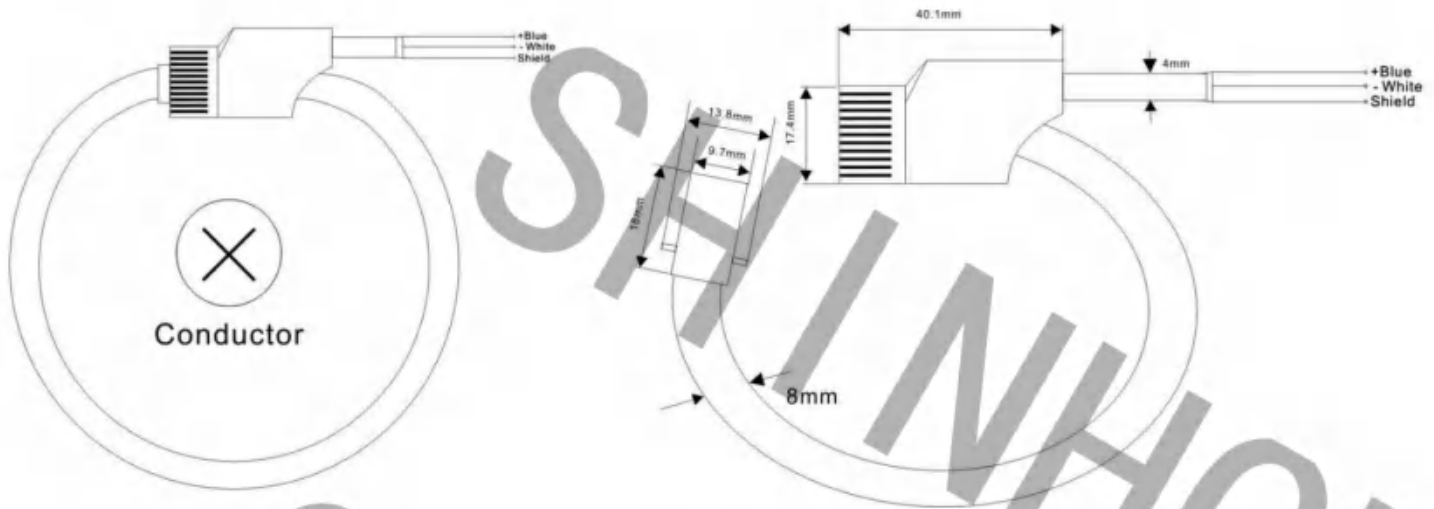
Conductor Position	Typical Error(%)
● Adjacent to the clip together mechanism	<0.5%
● Adjacent to the inside coil edge	<0.8%
● Adjacent to the opposite clip	<1%

Materials

Coil & cable	Thermoplastic rubber flame retardant UL 94 V-0 rated
Couplings	PA6 UL 94 V-O rated
Color(coil)	Black, Yellow, Red, Green, Blue
Shielded	100% coil, 100% output cable

Safety

Certifications	CE marked
	Complies with EMC EN 61326-1 2006
	IP68
Voltage insulation	Coil: 3000V
	Signal cable:1000V
Safety	1000V CATIII ,600V CATIV



Dimensions tolerance:

A,B,C,F: $\pm 5\text{mm}$, D: $\pm 0.2\text{mm}$, E: $\pm 10\text{mm}$

Dimensions(mm)	ZRC-50	ZRC-100	ZRC-150
A.Windows size A	70	125	165
B.Windows size B	50	100	150
C.Coil O.D.	86	141	181
D.Coil section	8		
E.Lead Cable Total Length	2000		
F:Coil length	214	375	535

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.shinhom.com

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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.

WARNING!

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.

Coil:

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

Final Code=Coil model+Coil length(MRC ZRC 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: .3(4-20mA output)	Code: -333(333mV) Code: -1(1V) Code: -3(3V) Code: -5(5V) N/A	Code: -500A Code: -1kA Code: -3kA Code: -10kA	Code: -12(12V DC) Code: -24(24V DC)
Code:S9 (mini integrator)	Code: .1(AC voltage output) Code: .2(DC voltage output)	Code: -333(333mV) Code: -1(1V) Code: -3(3V)	Code: -500A Code: -1kA Code: -3kA Code: -10kA	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: -500A Code: -1kA Code: -3kA Code: -10kA	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: -500A Code: -1kA Code: -3kA Code: -10kA	Code: -12(4-12V DC) Code: -24(24V DC)
Code:A01 (1A output integrator)	N/A(0-1A)	N/A	Code: -500A Code: -1kA Code: -3kA Code: -10kA	N/A(85-265V AC DC)
Code:A05 (5A output integrator)	N/A(0-5A)	N/A	Code: -500A Code: -1kA Code: -3kA Code: -10kA	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($\pm 3.3V$ DC) Code: -5($\pm 5V$ 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



NRC series

Ø8 screw type flexible Rogowski coil

The shinhom NRC series is a new generation of flexible Rogowski coil current sensors, which are especially suitable for measuring in combination with portable devices. NRC coils have different sizes to cope with different conductors. The new generation of NRC coil strengthens the shielding layer and greatly reduces the influence of external magnetic fields; it can be directly connected to our rail-mounted and panel-type meters without the need for external integrators. NRC series coils have IP68 protection grade, which is extremely suitable for outdoor use.

Advantage

- Excellent linearity
- Wide dynamic range
- Not damaged by large overloads
- Excellent degree of rejection to the external current conductor
- No danger from open-circuited secondary
- Zero power consumption
- Small position error
- Soft and light, easy to install
- Long-term stability
- Wide dynamic range
- IP68 protection level

Applications

- Smart meter
- Rectifier current measurement
- Power quality analysis
- Motor overload/short circuit protection
- Current monitoring of power frequency and intermediate frequency welding machine
- Medium and high voltage switchgear protection system
- Remote Terminal Unit (RTU)
- Synchronous Phasor Measurement Unit (PMU)
- Current measurement on the secondary side of the electric furnace

Specification

At 25℃, RL = 100 kΩ

Reference Rated current		100A,600A,3000A,6000A...(Unlimited)
Ratio @50Hz	Calibrated (Manufacturing tolerance<0.5%)	... 22.5mV/kA 50mV/kA 85mV/kA 100mV/kA ...
	Uncalibrated (Manufacturing tolerance<5%)	... 56mV/kA 95mV/kA 108mV/kA
Sensitivity temperature drift coefficient		Uncalibrated, < 50ppm/℃
		Calibrated, < 100ppm/℃
Internal resistance temperature drift coefficient ¹⁾		Uncalibrated, < 3800ppm/℃
Read Accuracy		0.5%class (Vertically centered position)
Internal resistance		50~250 Ω
Position Error ²⁾		< 1%
Output on 0A (zero drift)		< 0.05mV
Phase error		< 0.5° (45Hz~65Hz)
Linearity		±0.1% (1%~100%)
Bandwidth(3dB)		1Hz~20kHz
Operating temperature		-40℃~85℃
Coil Section		8mm
Lead length(default)		2 meter
For other requirements, please contact us for customization.		

Remark:

- 1) The internal resistance temperature drift characteristic diagram of the coil with calibration, please contact customer service to obtain;
- 2) The position error of the metering type A-NRC series is less than 0.5%.

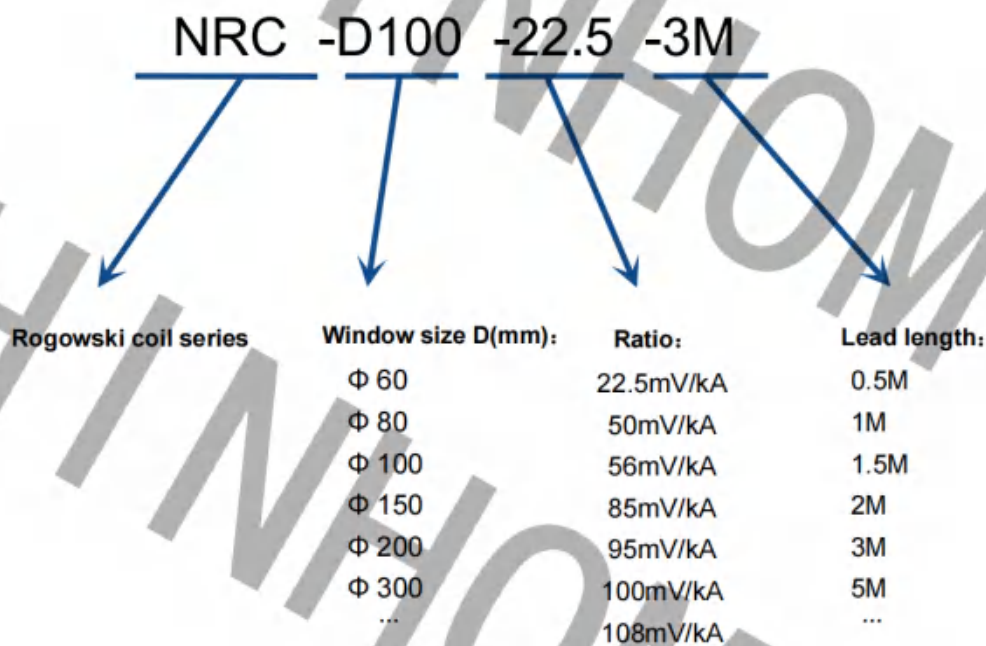
Materials

Coil	Thermoplastic rubber flame retardant UL 94 V-0 rated
Couplings	PC, ABS, UL 94 V-0 rated
Color(coil)	Orange, Yellow, Red, Green, Blue, Grey, Black

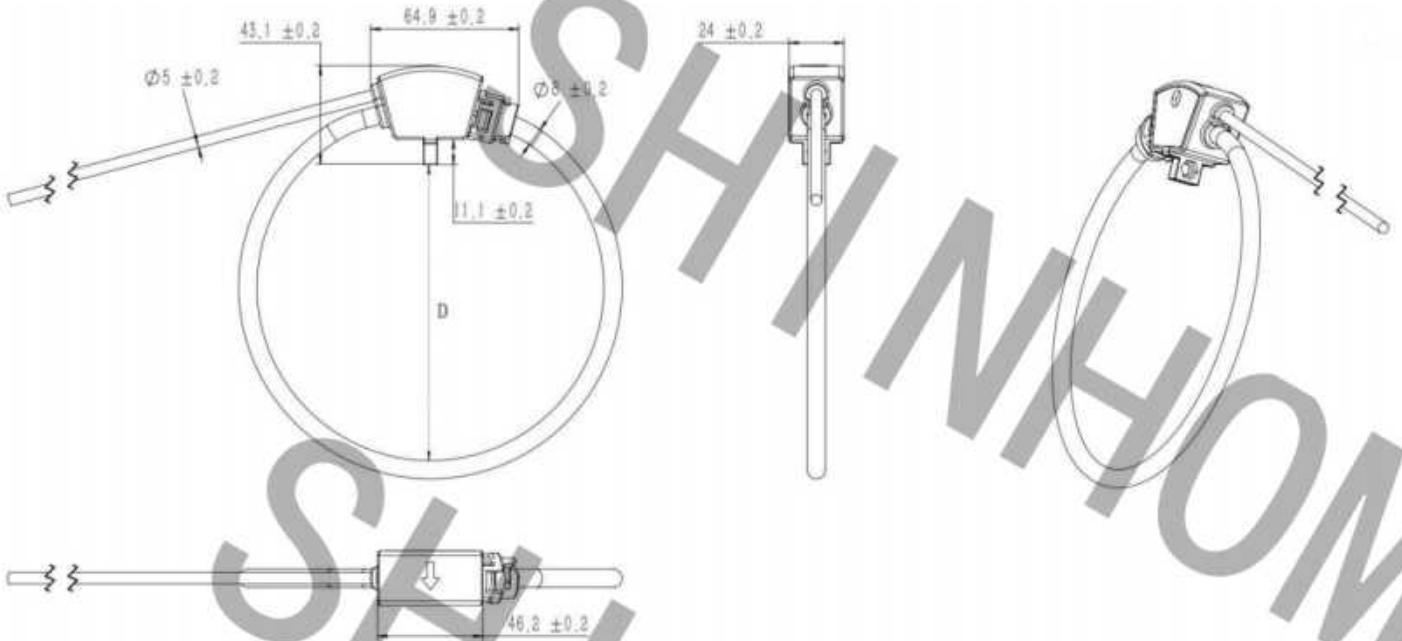
Insulation coordination

Applicable voltage range	1000V CATIII, 600V CATIV
Dielectric strength	7400Vac @ 50/60Hz 1 minute
Certifications	CE, IP68, Rohs 2.0

Model rules



Dimensions



Installation ways



Copper row bracket installation



Three-axis bracket installation



Fix with tie

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 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.

Typical Applications

- Smart meter
- Arc fault current
- Power quality analysis
- Motor overload/short circuit protection
- Grid harmonic monitoring, active filter
- Large complex conductor ground fault monitoring
- Power failure indicator, transmission line fault diagnostic device, line distance measurement
- Current monitoring of power frequency and intermediate frequency welding machine
- Medium and high voltage switchgear protection system
- Capacitor discharge, lightning current detection
- Remote Terminal Unit (RTU)
- Synchronous Phasor Measurement Unit (PMU)

Safety and warning notes

Rogowski coils can only be used within the proper parameters to ensure safety. Please read the following instructions carefully.

You can download the latest product manual from our company's website www.shinhom.com

WARN!

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.

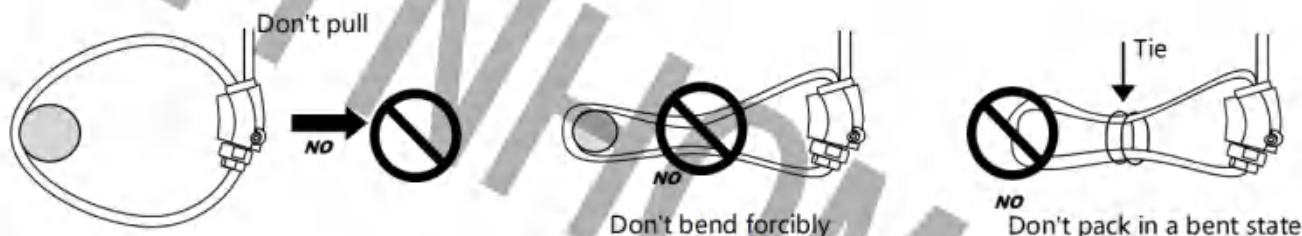
ELECTRIC SHOCK WARNING!

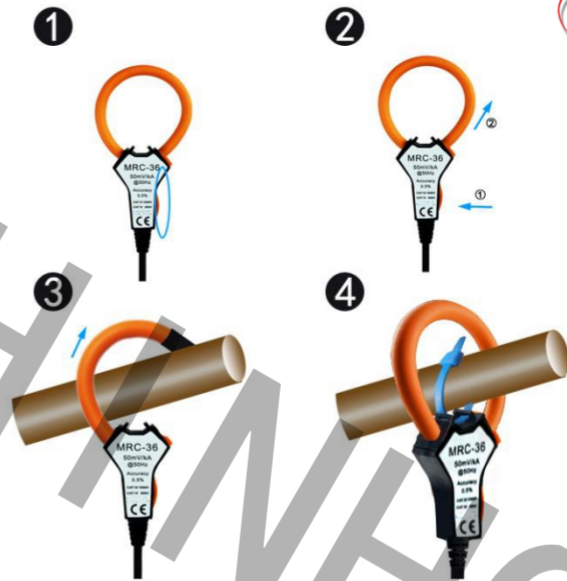
When operating the transducer, certain parts of the module may carry hazardous live voltage (e.g., Primary conductor). The user shall ensure to take all measures necessary to protect against electrical shock. The transducer is a build-in device containing conducting parts that shall not be accessible 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.

NOTICE!

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.

Do not stress the coil by applying any kind of mechanical force (transport, storage pressure, tight bending.) which will dramatically degrade the device' s accuracy.





MRC series

Ø6 Mini flexible Rogowski coil

The MRC series is a new generation of flexible Rogowski coil (Rogowski® coil) current sensors, which are especially suitable for measuring in combination with portable devices. MRC coils have different sizes to cope with different conductors. The new generation of MRC coil strengthens the shielding layer and greatly reduces the influence of external magnetic fields; it can be directly connected to our rail-mounted and panel-type meters without the need for external integrators. MRC series coils have IP67 protection grade.

Advantage

- Excellent linearity
- Wide dynamic range
- Not damaged by large overloads
- Excellent degree of rejection to the external current conductor
- No danger from open-circuited secondary
- Zero power consumption
- Small position error
- Soft and light, easy to install
- Long-term stability
- Wide dynamic range
- IP67 protection level

Applications

- Smart meter
- Rectifier current measurement
- Power quality analysis
- Motor overload/short circuit protection
- Current monitoring of power frequency and intermediate frequency welding machine
- Medium and high voltage switchgear protection system
- Remote Terminal Unit (RTU)
- Synchronous Phasor Measurement Unit (PMU)
- Current measurement on the secondary side of the electric furnace

Specification

At 25°C, RL = 100 kΩ

Reference Rated current		100A,600A,3000A,6000A...(Unlimited)
Ratio @50Hz	Calibrated (Manufacturing tolerance<0.5%)	... 22.5mV/kA 50mV/kA
	Uncalibrated (Manufacturing tolerance<5%)	... 56mV/kA
Sensitivity temperature drift coefficient		Uncalibrated, <50ppm/°C
		Calibrated, <100ppm/°C
Internal resistance temperature drift coefficient ¹⁾		Uncalibrated, <3800ppm/°C
Read Accuracy		0.5%class (Vertically centered position) Conforms to IEC 61869-2 & IEEE/ANSI C57.13
Internal resistance		50~250 Ω
Position Error ²⁾		<1%
Output on 0A (zero drift)		<0.05mV
Phase error		<0.5° (45Hz~65Hz)
Linearity		±0.1% (1%~100%)
Bandwidth(3dB)		1Hz~20kHz
Operating temperature		-40°C~85°C
Coil Section		6mm
Lead length(default)		2 meter
For other requirements, please contact us for customization.		

Remark:

- 1) The internal resistance temperature drift characteristic diagram of the coil with calibration, please contact customer service to obtain;
- 2) The position error of the metering type A-MRC series is less than 0.5%.

Materials

Coil	Thermoplastic rubber flame retardant UL 94 V-0 rated
Couplings	PC, ABS, UL 94 V-0 rated
Color(coil)	Orange, Yellow, Red, Green, Blue, Grey

Insulation coordination

Applicable voltage range	1000V CATIII, 600V CATIV
Dielectric strength	7400Vac @ 50/60Hz 1 minute
Certifications	CE, IP67, Rohs 2.0

Model rules

MRC-16-22.5-3M

Rogowski coil series

Window size:

Φ 16
Φ 24
Φ 36
Φ 50
...

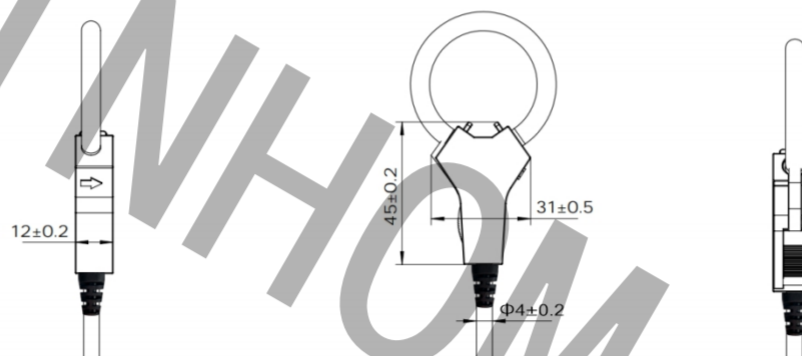
Ratio:

22.5mV/kA
50mV/kA
56mV/kA
...

Lead length:

0.5M
1M
1.5M
5M
...

Dimensions



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