

staticdj

ETCR-FA-FB

Series Flexible

Coil Current

Sensor



staticdj ETCR-FA-FB Series Flexible Coil Current Sensor User Guide

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staticdj ETCR-FA-FB Series Flexible Coil Current Sensor



Product Information

Specifications:

- **Function:** Detecting of AC leakage current, AC big current, high harmonic currents, complex waveforms current, inrush transient current, phase, electric energy, power, power factor.
- **Testing method:** Flexible CT – the output signal is the derivative of the current with respect to time, the input current can be truly restored by integrating the output voltage signal.
- **Coil Diameter:** 7.5mm/12mm (optional)
- **Range:** 10mA to 10,000A
- **Resolution:** 10mA
- **Output Interface:** Electric field interference
- **Wire Position:** Current Frequency Response Frequency
- **Line Voltage:** Working Temperature and Humidity
- **Storage Temperature and Humidity:** -10~60°C; below 70%rh
- **Insulation strength:** AC 2000V/rms (The two ends of the coil after unlocking and unfolding)
- **Suitable Safety Standard:** CAT IV 600V, CAT 1000V

Product Usage Instructions

Introduction:

The ETCR-FA-FB Series Flexible Coil Current Sensor is designed for detecting various types of currents and waveforms. It offers precise measurements and is suitable for a range of applications.

Model Category:

The product is available in various models with different coil circle diameters, lengths, and weights. Choose the model that best suits your requirements.

Technical Specification:

Ensure you understand the technical specifications of the sensor, including its function, testing method, range, resolution, and safety standards before use.

The Principle And Structure:

Get familiar with the components of the sensor including the coil, trigger, output lead, and handle. Understanding the structure will help in efficient usage.

FAQ:

- **Q: Can the coil length and interface be customized?**

A: Yes, the coil length and interface can be customized according to specific requests.

- **Q: What is the suitable safety standard for the product?**


A: The product complies with CAT IV 600V and CAT 1000V safety standards.

Precautions For Use

Thanks for your purchase of ETCR series flexible coil current sensor (alternate name: flexible coil, Rogowski Coil, flexible coil current sensor) of our company. In order to better use this product, please be sure to read this user manual in detail:

Read this user manual in details.

Comply by the safety rules and precautions listed in this manual.



- Under any circumstance, shall pay special attention on safety in using this sensor.
- Pay attention to the text labeled on the panel and sensor backplane.
- Keep the sensor clean, maintain regularly and avoid random bending.
- Stop using the sensor when there is rupture or break.
- Do not place and store the meter in high temperature and humidity or dewy places and under direct sunlight for a long time.
- Use, disassembly and maintenance of this leakage current meter shall hand by authorized personnel.
- In case dangers would occur if continue to use a faulty leaker, please stop to use it and seal it for safekeeping immediately; and then, send it for disposal of authorized agency.
- The meter manual with the danger mark ““, users must follow instructions to operate safely.

Introduction

ETCR series flexible coil current sensor is composed of coil and handle. The coil hasn't any bare metal conductor, no-contact measurement, safe and reliable. It is small in size, light in weight, exquisite in appearance, soft and flexible, suitable for narrow environment and flat cable dense place. The measurement range is wide, high accuracy, strong reliability and wide response frequency band (0.1 Hz-1 MHz). Users can customize the coil length according to the request. Widely used in electric power, communications, meteorology, railway, oil field, construction, measurement, scientific research and teaching units, industrial and mining enterprises and other fields. Especially suitable for the flat cable dense place, current test of transformer grounding core, thick wire and cable, relay protection, silicon controlled rectifier, frequency conversion speed regulation, semiconductor switch, power electronic conversion equipment, arc welding and other industrial environment with serious signal distortion.

ETCR series flexible coil current sensor, which is Rogowski coil, adopts advanced Rogowski Coil technology, which is a loop coil uniformly wound on non-ferromagnetic materials, with no hysteresis effect, almost zero phase error, no magnetic saturation, high linearity and strong anti-interference ability. The output signal is the differential of the current with respect to time. By integrating the output voltage signal, the input current can be truly restored. The measured current ranges from milliamperes up to ten thousands of amperes. It is mainly used for the detection of AC leakage current, large current, higher harmonic current (up to 400 times), complex waveform current, transient impulse current, phase, electric energy, power and power factor. With integrator, it is easy to integrate into other equipment, such as phase detection analyzer, industrial control device, data recorder, oscilloscope, harmonic analyzer, power quality analyzer, high-precision digital multimeter, transient impact recorder, distributed measurement system, protection system, etc.

Model Category

Product Photo	Model	Coil Circle Diameter	Coil Length	Coil Weight	Coil Diameter
	ETCR50FA	φ50mm	160mm	80g	φ7.5mm
	ETCR100FA	φ100mm	320mm	90g	
	ETCR150FA	φ150mm	480mm	100g	
	ETCR200FA	φ200mm	640mm	110g	
	ETCR300FA	φ300mm	950mm	132g	
	ETCR500FA	φ500mm	1580mm	170g	
	ETCR1000FA	φ1000mm	3150mm	290g	
	ETCR1500FA	φ1500mm	4720mm	390g	
	ETCR200FB	φ200mm	640mm	212g	φ12mm
	ETCR300FB	φ300mm	950mm	274g	
	ETCR500FB	φ500mm	1580mm	400g	
	ETCR1000FB	φ1000mm	3150mm	715g	
	ETCR2000FB	φ2000mm	6290mm	1340g	
	ETCR3000FB	φ3000mm	9420mm	1970g	

Note: Coil length and interface can be customized according to request.

Technical Specification

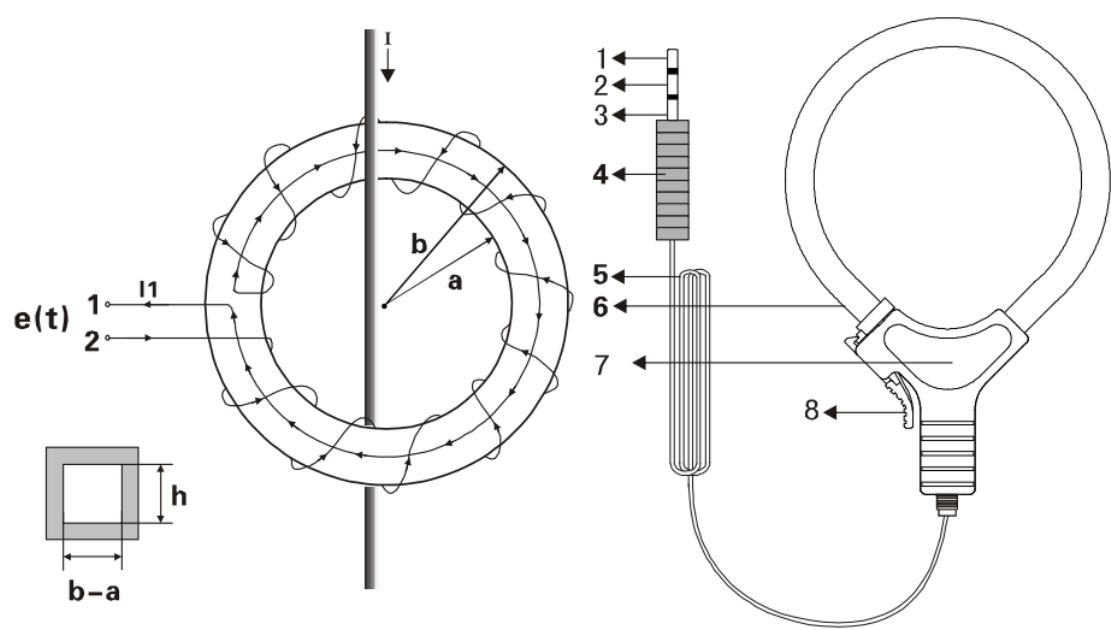
Function	Detecting of AC leakage current, AC big current, high harmonic currents, complex Waveform current, inrush transient current, Phase, electric energy, power, power factor.
Testing method	Flexible CT: The output signal is the derivative of the current with respect to time, The input current can be truly restored by integrating the output voltage signal
Coil diameter	φ7.5mm/φ12mm (optional)
Range	10mA 10000A Large
Resolution	10mA
Accuracy Class	±0.1%FS (50Hz/60Hz; 23°C±2°C, Below 70%RH, cable in the center of the coil)
Phase Error	≤0.1°(50Hz/60Hz; 23°C±2°C)
Output Interface	3.5mm audio plug/ BNC plug/ pigtail (optional), wire length: 2M
Electric field interference	No hysteresis effect, No electric interfering field
Wire Position	The tested wire is at the center of the coil, position error influence ≤ ± 0.3% FS
Current Frequency	45Hz~70Hz(The tested current frequency)
Response Frequency	0.1Hz~1MHz
Line Voltage	Below AC 1000V line test
Working Temperature and Humidity	-20°C~50°C; below 80%rh
Storage Temperature and Humidity	-10°C~60°C; below 70%rh
Insulation	AC 2000V/rms (The two ends of the coil after unlocking and unfolding)

strength	
Suitable Safety Standard	CAT IV 600V CAT III1000V

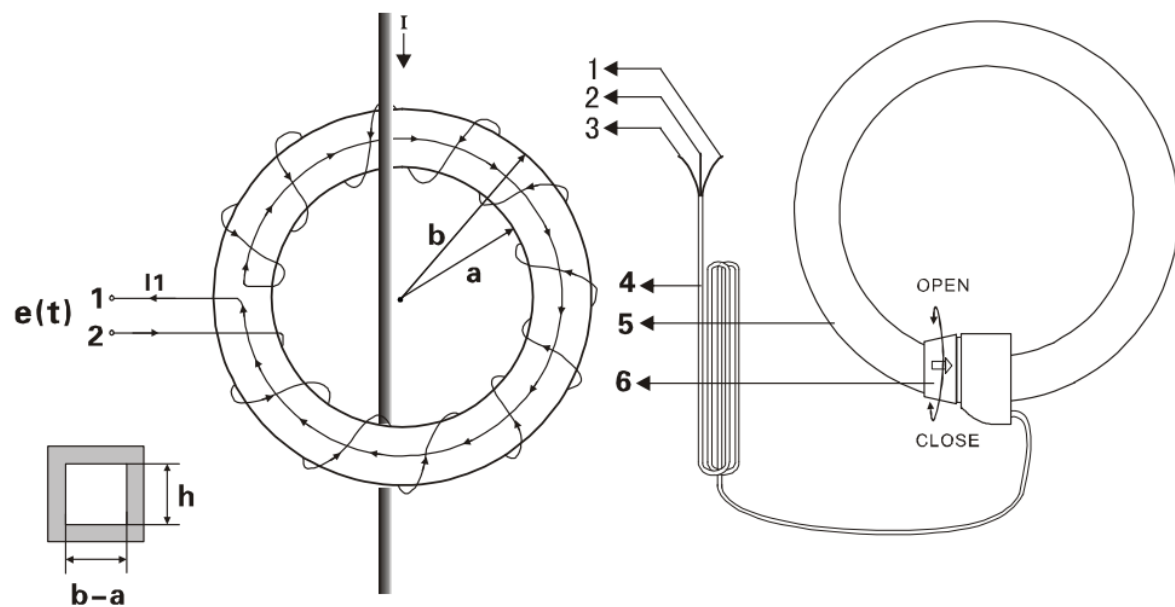
The Principle And Structure

The theoretical basis of Rogowski coil measure current is Faraday's law of electromagnetic induction and ampere

circuit law. When the measured current I passes through the center of Rogowski coil along the axis, it generates a corresponding magnetic field within the volume surrounded by the ring winding, whose intensity is H . According to the ampere circuit law, it is made as follows: $H \cdot dl = I(t)$. The induction voltage of the coil is proportional to the change rate of H , so the sum of the induced potentials of all the coils is proportional to the rate of change of the current. In other words, $e(t) = di/dt$, and the integral of output voltage $e(t)$ can get I . Therefore, Rogowski coil is generally used with integrator.



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|--------------------------|--------------------------|------------------------|-----------------|
| 4.1. Coil pigtail output | 4.2. Coil pigtail output | 4.3. Lead shield layer | 4.4. Audio plug |
| 4.5. Output lead | 4.6. Coil | 4.7. Handle | 4.8. Trigger |



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|--------------------------|--------------------------|------------------------|------------------|
| 4.1. Coil pigtail output | 4.2. Coil pigtail output | 4.3. Lead shield layer | 4.4. Output lead |
| 4.5. Flexible Coil | 4.6. Lock catch | | |

The company is not responsible for other losses caused by use.
The contents of this user manual cannot be used as a reason to use the product for special purposes. The company reserves the right to modify the contents of the user manual. If there are any changes, no further notice will be given.

