

# RFIZ Flexible Rogowski coil

**YHDC**®  
1992

## Introduction to Rogowski coil

The Rogowski coil also called a differential current sensor, is an "empty core" toroidal coil arranged around a conductor, so that the alternating magnetic field generated by the current induces a voltage in the coil. The coil is actually a current transformer coupled to the conductor under test, and the voltage output directly from the coil is proportional to the rate of change of the current.

For example: @50Hz/1kA  $V_{out}=85\text{mV}$ , @60Hz/1kA  $V_{out}=85*60/50=102\text{mV}$ .

If you want to obtain the current waveform or frequency independent current value, you need to add an integral circuit to achieve 90° phase shift compensation and frequency equalization.

The RFIZ series is a flexible current transformer based on the Rogowski coil principle, which is a flexible rod-like hollow core coil that can be connected around the wire when it is "live". They are easier to install and measure than traditional open and closed CT. Due to its flexible design and light weight, it is ideal for use in busbars and irregular shaped multi-core bundles. Rogowski coil technology has low phase shift error, inductance and good linearity, but is basically unaffected by electromagnetic interference and pulsed DC current, so it has high accuracy.

The RFIZ-AC series coils can be used for both single-phase and three-phase measurement applications.

Built-in voltage integrator can simplify wiring installation, can output 0~2V AC voltage, rated input can be selected between 30A~10kA

Product picture print for reference only,  
subject to the actual product



**Electrical parameters:** ( The following parameters are typical values and actual values will be subject to product testing )

| Model                 | RFIZ-80-001AC                                          | RFIZ-105-001AC | RFIZ-150-001AC | RFIZ-180-001AC | RFIZ-240-001AC | RFIZ-300-001AC |
|-----------------------|--------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Coil length           | 293mm                                                  | 363mm          | 493mm          | 593mm          | 723mm          | 943mm          |
| Window diameter       | 80mm                                                   | 105mm          | 150mm          | 180mm          | 240mm          | 300mm          |
| Rated current         | 30A~6KA                                                |                |                |                |                |                |
| Accuracy              | ±0.5% (Typical value 5%~120% of rated current at 25°C) |                |                |                |                |                |
| Position error        | ±1%                                                    |                |                |                |                |                |
| Output voltage        | 1V AC                                                  |                |                |                |                |                |
| Supply voltage        | +12V DC / +24V DC                                      |                |                |                |                |                |
| Frequency range       | 10Hz~10KHz                                             |                |                |                |                |                |
| Linearity             | ±0.2%                                                  |                |                |                |                |                |
| Response time         | ≤1μs                                                   |                |                |                |                |                |
| Phase shift           | ≤0.5°                                                  |                |                |                |                |                |
| Spec. of signal line  | 4×0.2mm²                                               |                |                |                |                |                |
| Length of signal line | 2m (acquiesce)                                         |                |                |                |                |                |
| Working temperature   | -30°C~+80°C                                            |                |                |                |                |                |
| Storage temperature   | -40°C~+80°C                                            |                |                |                |                |                |
| Working voltage       | 1000VRMS CATIII/600VRMS CAT IV                         |                |                |                |                |                |
| Dielectric strength   | 7400VRMS/1min                                          |                |                |                |                |                |
| Material              | TPR UL97-V0                                            |                |                |                |                |                |
| Waterproof grade      | IP67                                                   |                |                |                |                |                |

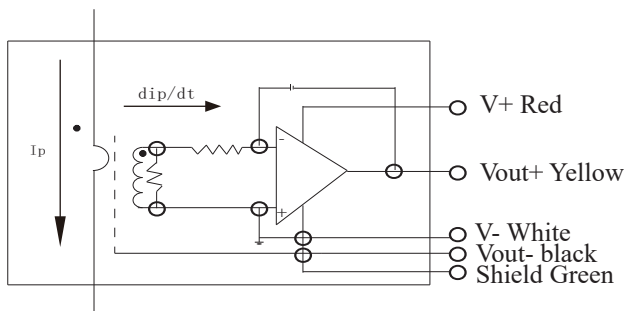
## Features

Light weight and flexible installation  
Wide bandwidth range  
No lag, no saturation  
No danger of second open-circuit  
Good linearity  
Multiple sizes can be customized

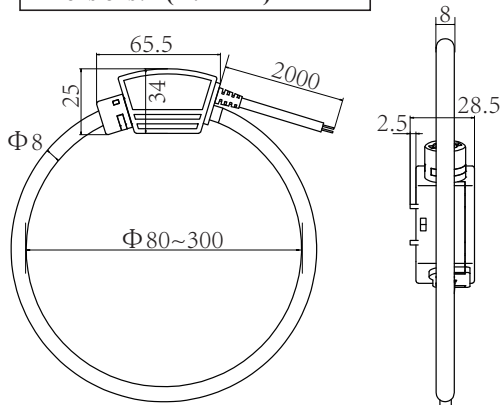
## Application

Power monitoring and analysis  
Harmonics and transient monitoring  
Welding machine control  
High current measurement  
PLC control

## Connection diagram



## Dimensions: (in:mm±1)



## Notice:

1. According to the rogowski coil principle, output voltage is proportional to the derivative of the input current ( $di/dt$ ).
2. The output voltage is a constant rated frequency sinusoidal waveform in Hz, measured by the RMS value.
3.  $V_{out}(\text{RMS}) = \text{Amps}(\text{RMS}) \times \text{Hertz} \times K \times 10^{-6}$ .  
the K depends on the manufacturer, for 50mV model the K value is 1.

## Warning:

Do not apply pressure to the coil by any form of mechanical force (e.g., twisting, piercing, excessive pressure, excessive bending, etc.), which will reduces the accuracy of the device greatly.