

RPS51

Multiscale Rogowski coil integrator with 1 A output

- Four selectable scales
- Equalization and 90° shifting of the Rogowski coil signal
- 1 A RMS full scale output for instantaneous value
- Compact DIN rail enclosure
- 85 ... 265 VAC power supply



» General description

RPS51 is a multiscale Rogowski coil integrator, in a compact DIN rail enclosure, powered directly from the mains. An integrator is essential to equalize and shift by 90° the output signal from the Rogowski coils. It consists of an active electronic circuit with negligible offset and a good linearity. RPS51 can be combined with any model and size of MFC series Rogowski coil. The integrator is provided with a push button for an easy scale selection. Up to four input scales are available: 100, 500, 1000, 5000 A. This provides a wide range of applications with a single coil and RPS51. RPS51 and a Rogowski current transducer is a very flexible system, suitable for high power load analysis, impulsive current monitoring, DC ripple measurement, etc. Ideal solution for standard 1 A input PMD's. 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.

» 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, the same coil can be used to measure currents from A to hundred of kA.
- High linearity. According to the manufacturing (size, inductance value, ...) the maximum measurable frequency can range up to hundreds of kHz and in some special models also MHz.
- Unlike traditional current transducers, there is no danger from open-circuited secondaries.
- They cannot be damaged by large overloads, are non-intrusive, draw no power from the main circuit carrying the current to be 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. This feature is particularly useful for measuring ripple currents for example in battery charging systems.

» Benefits

- Since the Rogowski coil output is proportional to the frequency of the measured current, the signal equalization ensure a linear response on a wide frequency range. RPS51 allows to use coils on different electrical network frequencies, keeping the same output level over the frequencies.
- The 90° correction give the correct phase for power and energy measurements. RPS51 can be used in conjunction with power meters allowing to take advantage of the great measuring linearity of the Rogowski coils.
- The availability of different selectable scales give the possibility to use the same coil on a extremely wide range of current values.

» Applications

- Measuring devices, lab instrumentation
- Power monitoring & control systems
- Harmonics and transients monitoring
- DC ripple measurement
- Welding machine control
- High current measurement

» Related Products

- MFC140, MFC150 series

» Specifications

POWER SUPPLY	
Type:	Auxiliary
Range:	85 ... 265 VAC, 50/60 Hz
Consumption:	6.5 VA typical 20 VA max in overload condition
Safety:	300 V CAT III
ELECTRICAL CHARACTERISTICS	
Input:	100mV/kA@50Hz (RMS values) with MFC140/MFC150 Rogowski coil
AC output:	1 A RMS @ selected full scale
Crest factor:	2
Selectable scales:	Standard values: 100 A, 500 A, 1000 A, 5000 A
Bandwidth:	40 – 3200 Hz
Accuracy:	1.5% @ 5% full scale <1% @ full scale
Phase error:	< 0.1° with 40 ... 150 Hz range < 1° with 150 ... 1000 Hz range < 2° with 1000 ... 3200 Hz range
ENVIRONMENTAL CONDITIONS	
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Relative humidity:	0 ... 80%
MECHANICAL CHARACTERISTICS	
Material:	Plastic enclosure
Protection degree:	IP20
Size and weight:	115x100x23 mm, approx. 122 g
Installation and use:	Indoor
COMPLIANCE	
Directives:	2014/35/EU, 2011/65/EU
Safety:	IEC/EN 61010-1:2010-10
EMC:	IEC/EN 61326-1:2012

ORDER CODE	POWER SUPPLY	FULL SCALE VALUES	OUTPUT
FOR NO. 1 100mV/kA@50Hz MFC150 or MFC140 ROGOWSKI COIL (not included)	80...265VAC	100-500-1000-5000 A	1 A RMS
2105.0001.0001	●	●	●

NOTE: Subject to change without notice



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