MFC150-UI series

UL 2808 Ø8 mm flexible Rogowski coil

- Suitable to measure currents from mA to several kA
- High linearity
- Very useful with large size or awkward shaped conductors or in places with limited access
- Not damaged by overloads
- Non-intrusive, no power drawn from the main
- Thanks to its light weight, it can be changed on the measured conductor
- Totally shielded
- Outdoor use on request
- UL 2808 certified

- Delivered already calibrated
- Very thin coil diameter: down to 8 mm
- Bayonet connector including possibility to regulate calibration
- Measurement uniformity at any position of the conductor inside the coil
- Excellent degree of rejection to the external current conductor

» General description

MFC150-UI is a flexible current transducer based on Rogowski principle, particularly suitable for measurement in combination with portable devices. MFC150-UI 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 confortable solution for current measurement and can be used in a number of cases where traditional current transducer is not the adequate solution.

MFC150-UI coil is provided with a shield against the influence of external magnetic fields, therefore it grants a stable measurement from low currents to several kA.

MFC150-UI can be also provided with built-in integrator, without needing of external devices for 90° phase shift compensation and frequency equalization. This is an advantage because there is no external box with consequent ease of use. MFC150-UI with built-in integrator can be connected to devices with differential input only.

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.

» Benefits

- Due to its structure, flexible Rogowski coils allows to embrace conductors or grouped cables, which are large and difficult to reach, without any hazard.
- The coil output gives a low voltage signal, therefore there is no danger from open-circuited secondary. This makes Rogowski transducers extremely suitable for temporary measurements, for example in combination with portable analysers.
- Unlike traditional current transformer with magnetic core, the Rogowski coil is a non-intrusive transducer. Since it has no hard core, it draws no power from the main circuit carrying the current to be measured.
- The absence of magnetic core grants a wide frequency response. This make MFC150-UI particularly suitable for measurement of harmonic content and transients.

» Applications

- Measuring devices, lab instrumentation
- Power monitoring & control systems
- DC ripple measurement
- Harmonics and transients monitoring
- Very high current monitoring

» Available models

MODEL	Built-in INTEGRATOR	INDOOR use	OUTDOOR use
MFC150-UI		•	
MFC150-UI/O			•
MFC150-UI/F	•	•	
MFC150-UI/OF	•		•

» 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:

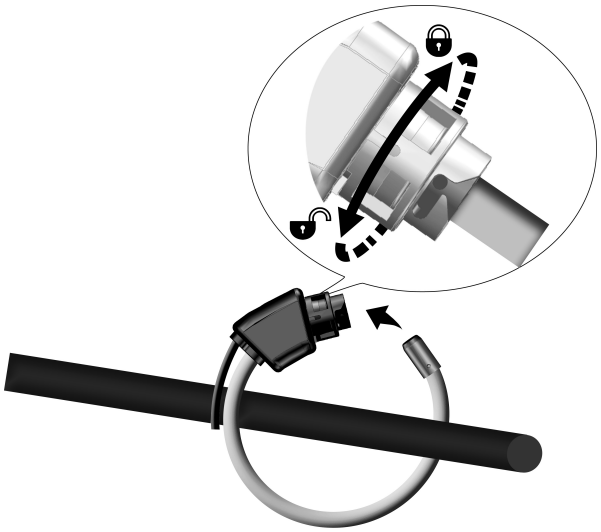
- Wide dynamic range. The same coil can be used to measure currents up to several kA, it is enough to change the RC value in the integrator.
- High linearity. According to the manufacturing (size, inductance value, ...) the maximum measurable frequency can range up to hundreds of kHz and in some special models also MHz.
- 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.

» Specifications

COIL	
Coil length:	25 ... 300 cm
Sensor internal diameter:	5 ... 94 cm
Cord diameter:	8.3 ±0.2 mm
Jacket material:	Polyphenylene and thermoplastic elastomer
Fastening:	Bayonet holder
Weight:	150 ... 500 g
ELECTRICAL CHARACTERISTICS	
Nominal output rate:	120 mV / kA @ 60 Hz (RMS values) 100 mV / kA @ 50 Hz (RMS values)
Max measurable current:	1 kA @ 50/60 Hz with 25 ... 29 cm coil length 2 kA @ 50/60 Hz with 30 ... 42 cm coil length 5 kA @ 50/60 Hz with 43 ... 300 cm coil length
Coil resistance:	70 ... 900 Ω
Accuracy:	Class 0,5-A1 according to IEC 61869-10
Frequency:	50/60 Hz
Maximum primary voltage:	600 V CAT IV, Service Entrance
Pollution degree:	2, Controlled Environment for indoor use model 3, Uncontrolled Environment for outdoor use model
Insulation test voltage:	7400 V_{RMS} / 5 s
CONNECTION CABLE	
Type:	3 x 24 AWG shielded
Length:	3 m. Other lengths on request: 5, 7, 10, 15 m Outdoor use: **min. 5 m cable** required
ENVIRONMENTAL CONDITIONS	
Protection degree:	IP65 for indoor use model IP68 for outdoor use model
Altitude:	Up to 2000 m over sea-level
Operating temperature:	-35 ... +75°C up to 2 kA -35 ... +60°C from 2 to 5 kA
Storage temperature:	-40 ... +90°C
Relative humidity:	0 ... 95%
Installation and use:	Controlled Environment for indoor use model Uncontrolled Environment for outdoor use model
STANDARD COMPLIANCE	
IEC, UL standards:	ANSI/CAN/UL 2808, CSA C22.2 NO. 61010-1-12, IEC 61010-2-032, IEC 61010-1 Ed3, IEC 60529

» Mounting



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ORDER CODE	COIL DETAIL		CABLE DETAIL	COLOUR	CALIBRATED
	Length [cm]	Internal diameter [cm]	3 m	Yellow	Yes
MFC150-UI (120mV/1kA@60Hz OUTPUT VALUE)					
3601.0017.0001	25	~5 (5x7.5)	•	•	•
3601.0001.0001	30	~7 (7x9)	•	•	•
3601.0002.0001	35	~9 (9x10)	•	•	•
3601.0003.0001	60	~17.5	•	•	•
3601.0004.0001	90	~27	•	•	•
3601.0005.0001	120	~36	•	•	•
3601.0006.0001	180	~55	•	•	•

	ALL MODELS	ONLY MODEL WITHOUT INTEGRATOR
OPTIONS AVAILABLE ONLY ON REQUEST (SUBJECT TO MOQ)		
Other coil length than those listed above, up to 300cm	•	
Cable length different from standard (3m): 5, 7, 10, 15 m	•	
Calibrated for customer device (input impedance value of device to be specified)		•
Different coil colour	•	
Outdoor use (min. 5 m cable required)	•	

To be indicated together with the selected order code from the list above.

NOTE: Subject to change without notice

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