

MFC190

Ø12 mm flexible Rogowski coil



- High sensitivity
- Suitable to measure currents from mA to several kA
- High output value
- High linearity
- 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 overloads
- Non-intrusive, no power drawn from the main
- Thanks to its light weight, it can be changed on the measured conductor
- Totally shielded
- Optional UL Recognized Component Mark UL 61010-1



» Strong points

- Delivered already calibrated
- 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

MFC190 is a flexible current transducer based on Rogowski principle, particularly suitable for measurement in combination with portable devices. MFC190 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.

MFC190 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. The Rogowski coils must be connected to an electronic integrator for 90° phase shift compensation and frequency equalization.

The particular features of the Rogowski coils combined with the extremely flexible input programming of 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.

» Benefits

- The absence of magnetic core grants a wide frequency response. This make MFC190 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

» 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 mA 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:	30 ... 300 cm
Sensor internal diameter:	8.3 ... 94.2 cm
Cord diameter:	12.4 ±0.2 mm
Jacket material:	Thermoplastic polyurethane UL94-V0
Fastening:	Bayonet holder
Weight:	150 ... 500 g
ELECTRICAL CHARACTERISTICS	
Nominal output rate:	333 mV / kA @ 50 Hz (RMS values)
Max measurable current:	65 kA
Coil resistance:	300 ... 2000 Ω
Accuracy:	Class 0,5-A1 according to IEC 61869-10
Frequency:	50/60 Hz
Overvoltage category:	1000 V CAT III, 600 V CAT IV
Pollution degree:	2
Insulation test voltage:	7400 V _{RMS} / 5 s
CONNECTION CABLE	
Type:	3 x 22 AWG shielded
Length:	3 m. Other lengths on request: 5, 7, 10, 15 m
ENVIRONMENTAL CONDITIONS	
Protection degree:	IP67 or IP68 according to the model (not evaluated by UL)
Altitude:	Up to 2000 m over sea-level
Operating temperature:	-30 ... +80°C
Storage temperature:	-40 ... +80°C
Relative humidity:	0 ... 95%
Installation and use:	Indoor
STANDARD COMPLIANCE	
IEC, UL standards:	UL 61010-1 Ed3, UL 61010-2-032, CAN/CSA-C22.2 No. 61010-1, IEC 60529

ORDER CODE	COIL DETAIL		CABLE DETAIL	COLOUR	CALIBRATED
	Length [cm]	Internal diameter [cm]	3 m	Red	Yes
MFC190 (333mV/1kA@50Hz OUTPUT VALUE)					
3301.0001.0001	30	~6	●	●	●
3301.0002.0001	35	~7	●	●	●
3301.0004.0001	60	~17	●	●	●
3301.0005.0001	90	~26	●	●	●
3301.0006.0001	120	~35	●	●	●
3301.0007.0001	180	~54	●	●	●

OPTIONS AVAILABLE ONLY ON REQUEST (SUBJECT TO MOQ)

UL Recognized Component Mark UL 61010-1

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)

FRB connector

Different coil colour

IP68 protection degree

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

NOTE: Subject to change without notice



algodue®
ELETTRONICA

Innovative Electronic Systems

Via P. Gobetti, 16/F - 28014 Maggiore (NO) - Italy - Tel.: +39 0322 89307

sales@algodue.it - www.algodue.com

82PG01_2_202401_2