

PRODUCT OF THE MONTH

Low Frequency Rogowski Current Probe

A new LFR ac current probe with market leading low frequency performance has been introduced by Power Electronic Measurements Ltd (PEM). This compact, low cost, clip-around probe is both flexible and dual-range, while being optimised to give minimal phase measurement error at frequencies from 45Hz to 20kHz. This is a Rogowski current probe, similar to PEM's highly successful CWT range, which covers 1Hz to 20MHz.

The LFR unit is ideal for use as a general purpose power frequency ac current probe and can be used with oscilloscopes, acquisition cards, data loggers, power analysers and meters. Other typical applications include power measurement, leakage current and power quality where minimal phase error, low noise and good accuracy are key measurement criteria.

All Rogowski current probes generate noise, but the noise floor of the LFR is very small, and the LFR1/15 model is only 2.0mVrms on the 300A range. The rated output voltage is 6Vpeak for a 300A peak current, thus at 20% rated current the noise contributes less than 0.1deg additional uncertainty to the phase error. This is better than a measuring class 0.5 current transformer. The same unit with peak current rating 300A/3000A and coil length of 300mm has minimal phase measurement error at 50Hz of <0.35deg and at 20kHz of <1.8 deg.

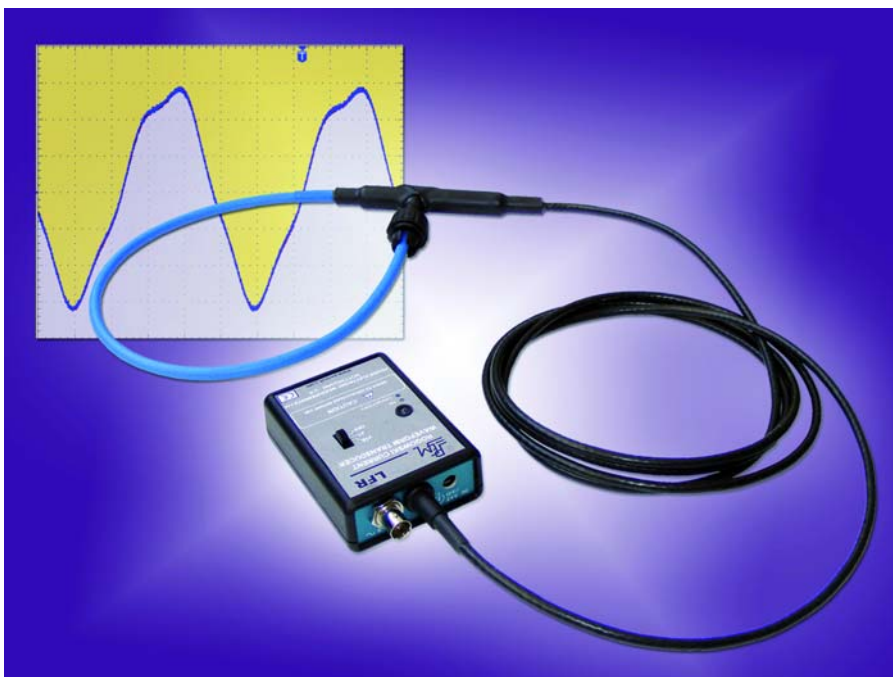
Each probe is supplied with a traceable calibration certificate, with the probe calibrated to an accuracy of $\pm 0.3\%$ of reading with a conductor central in the LFR coil loop. If the conductor is large and fills the coil area, or the conductor can be kept central, the overall accuracy will approach the calibrated

value. Even if the conductor is not central the LFR's accurately wound and tolerated coil keeps the variation in accuracy with position to typically $\pm 1\%$.

The LFR has all the established benefits of a Rogowski probe. A flexible, clip-around coil of only 8.5mm thickness enables measurement in confined spaces or with otherwise difficult to reach cables and busbars. The probe is non-intrusive, very linear with current magnitude and frequency, undamaged by overloads and the coil size can be specified independently of current magnitude.

The instrument can be specified with coil lengths 300 to 1000mm as standard, with longer coils also available. It is EN61010 safety compliant, and can be powered by either a single 9V battery or an external 12/24V DC supply, with alternative power supplies also possible. It features a dual range switch allowing very wide dynamic measurement ranges from 60/600A to 6kA/60kA. It is also suitable for operation within a temperature range of -20°C to $+70^{\circ}\text{C}$.

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