

LEM expands its range of fluxgate technology based current sensors for high accuracy current measurement with a low noise level, over a wide temperature range

Key points:

- **Closed-loop Fluxgate transducer measures DC, AC or pulsed current for 1000A**
- **Wide operating temperature range from -40 to +85°C**
- **Very low offset over temperature range up to 19.5 ppm**
- **Excellent linearity over temperature range up to 3 ppm**
- **Low noise level & high accuracy over a wide temperature range thanks to patented fluxgate technology**
- **Compact size**

LEM expands its range of high accuracy transducers announcing the new IN 1000-S for non-intrusive and isolated measurement of DC, AC and pulsed nominal current of 1000 A. LEM already launched a 2000 A model last year as first model of this range reinventing the fluxgate technology.

+10 to +40 or +50°C temperature range is usually offered by the traditional high accuracy 1000 A transducer, the IN 1000-S model provides an extended operating temperature range of -40 to +85°C, allowing it to be used in a wider range of applications in addition to labs. These applications include: test equipment for traditional industrial applications, medical equipment (e.g. MRI, proton therapy etc.), precision motor controllers and metering.

LEM used patented innovations for this new transducer. A maximum signal processing has been treated in the digital domain, and a new approach to the fluxgate technology architecture has been applied for the ripple cancellation of the fluxgate drive frequency. The result is a compact transducer, maintaining its high accuracy over a wider temperature range, with reduced noise level vs the previous generation.

Processing the signal in the digital domain brings complete immunity to temperature effects, interference and supply voltage variation after the ADC. This contributes to offset and offset drift improvement.

The reduction of the interference or ripple from the fluxgate driving signal at a fixed frequency is as a result of the use of the DSP (Digital Signal Processor). Higher frequency harmonics have been reduced.

The remaining interference has been eliminated by driving a 'ripple compensation coil' whose amplitude and phase are adjusted during the calibration of each transducer.



After calibration, the remaining peak-to-peak ripple is less than 34 ppm, relative to the full scale transducer output, over the full -40 °C to 85 °C operating temperature range.

These innovations contribute IN 1000-S model to provide the high performance across the extended temperature range, delivering extremely high accuracy with linearity and low offset over temperature range better than 3 ppm and 19.5 ppm respectively.

The IN 1000-S has been designed to operate from a bipolar +/-15 V DC power supply and will accommodate round primary conductors of up to 38.2 mm diameter. In addition to its normal current output, the transducer offers an additional output indicating the transducer state (low or high output levels) and an external LED showing normal operation.

An equivalent product would usually be made up of 2 parts, the measuring head and the treatment electronic, while this new model proposes a compact design integrating all in one, allowing a variety of panel mounting topologies (flat or vertical).

The transducer is CE marked and is covered by LEM's five-year warranty.

LEM – At the heart of power electronics

LEM is the market leader in providing innovative and high quality solutions for measuring electrical parameters. Its core products - current and voltage transducers - are used in a broad range of applications in drives & welding, renewable energies & power supplies, traction, high precision, conventional and green cars businesses. LEM's strategy is to exploit the intrinsic strengths of its core business, and to develop opportunities in existing and new markets with new applications. LEM is a mid-size, global company. It has production plants in Beijing (China), Geneva (Switzerland), Machida (Japan) and Sofia (Bulgaria). With its regional sales offices close to its clients' locations, the company offers a seamless service around the globe. LEM is listed on the SIX Swiss Exchange since 1986; the company's ticker symbol is LEHN

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