

## **LEM reinvents the fluxgate technology 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 2000A**
- **Wide operating temperature range from -40 to +85°C**
- **Very low offset over temperature range up to 10 ppm**
- **Excellent linearity over temperature range up to 3 ppm**
- **Low noise level & high accuracy over a wide temperature range thanks to a patented fluxgate technology**
- **Compact size**

LEM reinvents the fluxgate technology, announcing the new IN 2000-S high accuracy current transducer for non-intrusive and isolated measurement of DC, AC and pulsed nominal current of 2000 A. This is the first model of a future family that will cover a range of different primary currents.

IN 2000-S model offers an extended operating temperature range of -40 to +85°C, compared to the usual +10 to +40 or +50°C temperature range of traditional high accuracy 2000 A transducers, allowing it to be used in a wider range of applications in addition to labs, including test equipment for traditional industrial applications, medical equipment (e.g. MRI, proton therapy etc.), precision motor controllers and metering.

LEM's patented innovations are at the heart of this new transducer, performing maximum signal processing in the digital domain, and applying a new approach to the fluxgate technology architecture for the ripple cancellation of the fluxgate drive frequency. These improvements have resulted in a compact transducer, that maintains its high accuracy over a wider temperature range, with reduced noise level vs the previous generation.

Allowing signal processing to be done in the digital domain means a complete immunity to temperature effects, interference and supply voltage variation after the ADC. In particular, offset and offset drift have been improved.

The DSP (Digital Signal Processor) has also been used to reduce the interference or ripple from the fluxgate driving signal at a fixed frequency. This led to higher frequency harmonics reduction. 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 50 ppm, relative to the full scale transducer output, over the full -40 °C to 85 °C operating temperature range.



These innovations contribute IN 2000-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 10 ppm respectively.

A 200-turn test winding is provided so that the transducer function can be checked using a current of 1 Amp without interfering with its installation in systems where access is difficult.

The IN 2000-S has been designed to operate from a bipolar +/-15 V DC power supply and will accommodate round primary conductors of 70 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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