



Perform your AC measurement with new PRiME design

Applications

- **VFD Controlled Loads:** VFD output indicates how the motor and attached load are operating.
- **SCR Controlled Loads:** Accurate measurement of phase angle fired or burst fired (time proportioned) SCRs. Current measurement gives faster response than temperature measurement.
- **Switching Power Supplies and Electronic Ballasts:** True RMS sensing is the most accurate way to measure power supply or ballast input power.

Features

- VFD and SCR waveforms current measurement
- True RMS output
- Split type
- Loop powered 4-20mA current output
- DIN mounting & Panel mounting
- Eliminates insertion loss
- Switch selectable ranges

AC measurement is based today mainly on Current Transformer technology. These solutions are limited in same applications as high current, high frequency or mechanical fixation. Thanks to PRiME design, new AP and APR series make easier and faster using of current measurement in new or existing systems.

Modern manufacturing processes require continuous collection and analysis of operating data in order to provide real-time event, batch and historical information which can be transferred directly to the business system.

Most industrial systems and manufacturing processes use electrical energy which highlights the importance of current measurement today and in the future. Traditionally, magnetic current transformers were used for this purpose. However, LEM has developed a new product family based on a revolutionary technology called PRiME (Planar Rogowski I MEasurement) which opens up new opportunities and applications for current measurement.

This new generation of current transducers has been designed to meet the demands of the new trends in current measurement : higher sensing performance and quick installations.

The new AP and APR series of current transducers offer dramatic savings in installation time for panel-mount applications by combining split-core functionality and quick connect wiring into

a compact, DIN-rail mountable enclosure. Additional features of the AP and APR series are the user-selectable measuring ranges (from 10A to 400A), choice of output options available (4-20mA or 0-5/0-10V), and a large sensing aperture with built-in strain relief for the primary conductor.

In an industry first, the AP and APR products rely on a patented sensing technique know as PRiME® technology (Planar Rogowski I MEasurement), where current is sensed without the use of a traditional magnetic circuit. This unique, technological innovation gives the transducer immunity against saturation due to over-current conditions while maintaining an absolute accuracy of better than 0.8 percent over a broad range of inputs. This, Coupled with a wide, 6kHz bandwidth, an operating range of -20 to +60°C, and the availability of a True RMS model (APR) for non-linear loads or “noisy” environments, makes the AP and APR transducers an excellent choice for system designers, system integrators and automation distributors looking for accurate and cost-effective DIN-rail mounted AC current transducers.

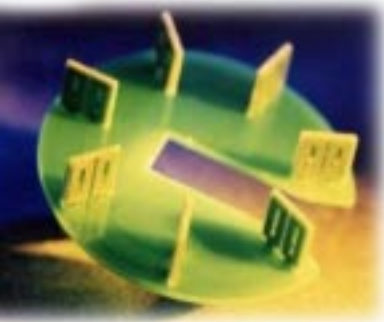
CURRENT TRANSDUCERS: **AP-B, APR-B**, Series

PRiME Technology

The new PRiME technology is an ideal patented alternative to solve the inherent limitations of existing CTs caused by their magnetic circuit. A voltage signal is induced into the coil, proportional to the flux derivative and thus proportional to the derivative of the current to be measured.

PRiME use two parts for the transducer head, a number of sensor printed circuit boards (pcbs), and a base-pcb. The sensor pcb consists of two separate air-cored coils constructed on a multi-layer pcb. Several sensors are mounted onto the base-pcb, at right angles to it, and connected in series to form two concentric inner and outer loops.

To facilitate measurements, the current carrying conductor needs to be positioned within the aperture of the transducer head. This creates an AC magnetic flux, which is coupled into the sensors and induces a voltage proportional to the rate of change of the current (di/dt).



PRiME uses an air-cored coil as the sensing element which means there is no magnetic hysteresis, saturation, or non-linearity, as there is with existing CTs which have a magnetic core. The advantages of the current transducers based on PRiME:

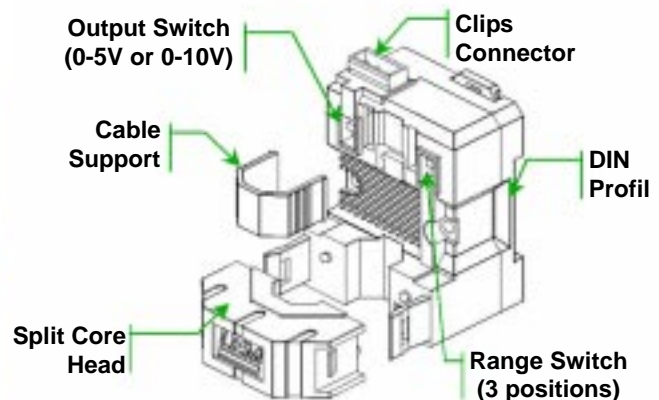
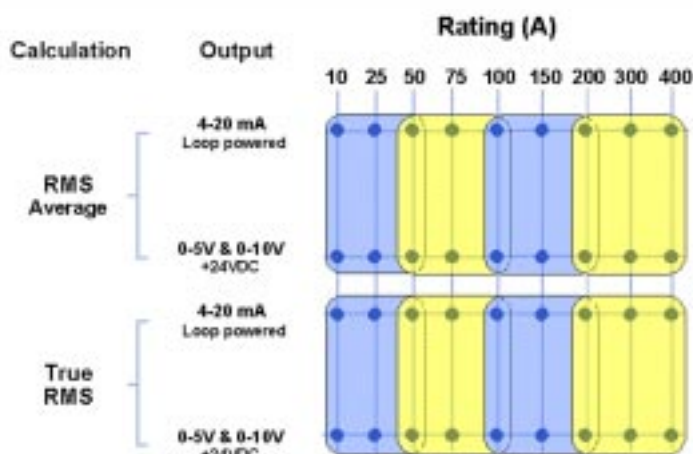
- Wide dynamic range (typically 1000:1 ratio for a given transducer) capable of withstanding high overload.
- Large bandwidth (several kHz)
- Products are lightweight in comparison with their CT counterparts
- Better accuracy over measuring and temperature range.
- Easier to design a clamp-on device (no complex mechanical case requiring a minimum air gap).
- Provides low voltage, isolated output signal (e.g. 4-20 mA) which does not require additional safety precautions.

Performances and Ranges

Features:

- Split core design
- Multi-range selectable
- Range up to 400 A
- Average and True RMS calculation
- Voltage output 5V or 10V DC
- Current output 4-20mA loop powered
- Light Weight

- Accuracy for I_n @ 25°C : 1%
- Linearity : 0.5%
- Bandwidth : 6 kHz
- Voltage isolation : 5 kV
- Temperature range : -20°C .. +60°C
- Protection class : IP20
- Standards : EN50178, EN61010



CURRENT TRANSDUCERS: **AP-B** and **APR-B** Series