

## Rogowski Coils, Integrators & Power Meters



Modern, current measurement technology has evolved significantly, with Rogowski coils becoming one of the most practical solutions for measuring alternating current (AC). When combined with an integrator and a smart power meter, they provide a complete system for monitoring electrical performance.

Rogowski coils, available in two main designs, either as a flexible or rigid current sensor, is designed to measure AC flowing through a cable or busbar without making direct electrical contact. Instead of touching the conductor, the coil detects the magnetic field produced by the flowing current and generates a small electrical signal proportional to that current. This non-contact measurement method improves safety while allowing accurate readings, even on high-current systems. They are lightweight, easy to install, and are especially useful where space is limited or where conventional current transformers are difficult to fit. The Flexible Rogowski coils can be wrapped around large or irregularly shaped conductors, making them ideal for retrofit installations and confined spaces. Whereas the Rigid Rogowski coils offer a fixed, durable solution suited for permanent installations where long-term stability is required.

Since a Rogowski coil produces only a very small voltage signal, it cannot be connected directly to most measuring equipment. An integrator, (sometimes referred to as an amplifier), is required to process and strengthen this signal into a standard output that can be read by power meters, programmable logic controllers (PLCs), multimeters, oscilloscopes, and other monitoring devices. The integrator also maintains measurement accuracy across different electrical frequencies, ensuring reliable and consistent performance.

Depending on the application, integrators can provide various industry-standard outputs, including 4–20 mA for PLCs and industrial automation systems, 0–5 V or 0–10 V voltage outputs, and 333 mV or 1 A/5 A equivalent AC outputs. Several integrator models are offered with 4–20 mA capability, including the S9.4 Waterproof Integrator, D1 Industrial Integrator, and S1 High Accuracy Integrator, allowing users to select the most suitable option for their installation environment.

Completing the measurement system is the smart power meter, which receives the processed signal from the integrator and displays valuable electrical information. The combination of using Rogowski coils, integrators, and power meters together brings integrated solutions, simplified installation, while delivering dependable performance. Some smart power meters can even connect directly to Rogowski coils, eliminating the need for a separate integrator and reducing installation costs and project complexity.

The ME238 Three-Phase Multifunction Smart Meter is versatile for industrial and commercial applications, supporting external 333 mV current transformers (CTs) and flexible Rogowski coils through a convenient RJ45 connection, enabling quick installation. For more advanced energy management applications, the ME337 Three-Phase Multifunction Smart Panel Meter provides comprehensive power analysis and energy measurement capabilities.

Together, Rogowski coils, integrators, and smart power meters provide a safe, flexible, and highly accurate solution for electrical current measurement and energy monitoring. Their non-contact operation, ease of installation, and compatibility with modern automation and monitoring systems make them an excellent choice for electrical engineers, maintenance teams, facility managers, and industrial operators seeking dependable power measurement and improved energy management. Call us for more information.

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