The 8000 series transducers comprise a complete current-measuring transducer in which a flexible Rogowski coil is attached to the integrator. The output from the integrator is a voltage waveform which reproduces the current waveform. The transducer will accurately reproduce complex waveforms containing frequency components up to the 40th harmonic of power frequency.

THE ROGOWSKI COIL PRINCIPLE

The coil is an ‘air cored’ toroidal winding placed around the conductor such that the alternating magnetic field produced by the current induces a voltage in the coil. The coil is effectively a mutual inductor coupled to the conductor being measured and the voltage output direct from the coil is proportional to the rate of change of current. The special design of the coil ensures that its output is not influenced significantly if the conductor is ‘off-centre’. The design also ensures that the influence from currents and magnetic fields external to the coil is minimal.

To complete the transducer the coil output voltage is integrated electronically to provide an output that reproduces the current waveform. This combination of coil and integrator provides a system where the output is independent of frequency, which has an accurate phase response and is capable of measuring complex current waveforms. By varying the integration parameters the sensitivity of the complete measuring system (measured in Amperes per Volt) can be varied over about five orders of magnitude. The output from the integrator can be used with any form of electronic indicating device such as voltmeter, oscilloscope, data logging or transient recorder, protection system or metering equipment.
COIL SENSOR (Rogowski Coil)

The flexible Rogowski coil in the 8000 can be used for measuring electric current in large or awkwardly-shaped conductors, where space round the conductor is limited, and for measuring very large currents. The standard coil has a maximum diameter of 11mm at the 'free' end. The main body of the coil has a diameter of about 8mm. For the coil with extra insulation both these diameters are increased by 2mm.

SPECIFICATION

Ranges
8112 Single range : 1000A/V Peak
8131 Three range : 100A/V, 1kA/V, 5kA/V
8132 Three range : 100A/V, 1kA/V, 5kA/V

Output Voltage
1V for the nominal sensitivity.

Overrange
3 x nominal sensitivity. (3kA peak on 1kA range)

Coil Length
500 mm.

Noise
1mV p/p referred to output.

Output Impedance
51Ω. For best accuracy the integrator should be used with high impedance recording/monitoring equipment having an input impedance of greater than 50kΩ.

Accuracy
Flexible coils ±1.0%

Frequency Response
Stated accuracy : 20Hz to 2kHz
Low frequency : 2Hz (-3dB point)

Cable Length
2.5 meters Coil to Integrator

Insulation
Single layer of polyolefin of thickness 0.4mm

Power requirements
Battery : PP3

Dimensions
8112 and 8132 : 103 x 62 x 23 mm
8131 : 64x59x37mm

OPTIONS

Coil Length
Alternative coil lengths can be supplied from 330 mm to 3 meters

Coil Diameter
Coils of different diameters can be supplied for applications where access dimensions are limited.
Solid coils are also available.

Non standard ranges
Alternative ranges can be specified from 50A to 1,000,000A. For sensitivities that are higher or lower than standard there may be a degradation of the overall specification.

Insulation
Double insulation of the coil using two layers of polyolefin is available.