

ROCOIL RAIL CURRENT TRANSDUCER



The Rocoil Rail Current Transducer is used to aid non-intrusive **accurate measurement of the signalling currents in a railway line** in a compact and portable measuring system which is simple to use and measures from a few mA up to 65A.

When rail track circuits fail, they indicate a section being occupied as part of their fail safe design resulting in rail traffic being delayed. Use of the Rocoil is followed worldwide to aid or diagnose track faults in audio frequency track circuits such as TI21 by detecting **where current leakage is occurring**.

Why the Rocoil is used by Railways as the preferred choice?

A Rogowski coil, does not saturate and is 'linear' over an enormous range of currents 'from milliamps to millions of amps'. This feature enables the accurate measurement of very low currents at certain selected frequencies in the presence of extremely large currents at other frequencies, typical of Railway installations.

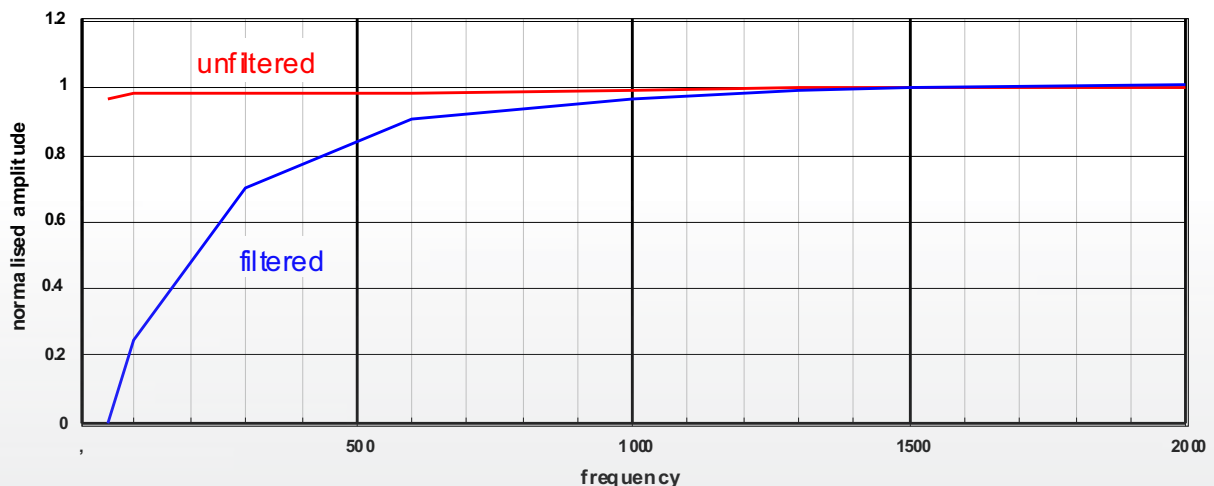
Why its use is critical : A track circuit is a safety-critical asset. Any failure can cause significant disruption to rail services and be a safety risk. Therefore, the ability to detect and diagnose track circuit failures in order to provide a fast response to failures/incidents has significant safety & economic benefits.



In Association with
Rocoil® UK

Features:

- Measures signalling currents in the presence of large 50Hz component.
- Quick and easy fitting on the track.
- Frequency response upto 10kHz.
- Measures from a few mA upto 65A.
- Overload indicator.
- Will not be damaged by large overloads.
- Analogue wave form output for the direct monitoring of current wave forms or for use with a testmeter/voltmeter, oscilloscope spectrum analyzer or multimeter that is suitable for measuring true rms ac voltage at frequencies upto 3kHz [voltmeter/oscilloscope/sp analyzer/multimeter to be purchased separately].
- Powered by internal batteries (2xPP3).
- Robust construction.
- Insulated from the rail.

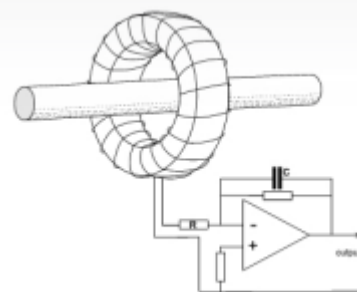


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Working Principle:

The Rocoil or Rogowski coil is an 'air cored' toroidal winding placed round the conductor and the coil is in the form of an inverted 'U' which encircles roughly half of the rail. The output of such a coil is sensitive to the distribution of current in the rail and the current distribution is a function of the frequency. The design minimises the effect of this change in current distribution with frequency.



Schematic Arrangement of a Rogowski Coil and Integrator

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.

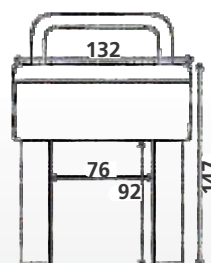
In the Rail Transducer additional filtering has been built into the electronics which can be switched on when needed to provide a frequency characteristic with excellent rejection of 50Hz currents but with a flat frequency response for frequencies above 1.3kHz. Also, the measuring capacity of the transducer will not be affected by presence of large DC current. The output from the integrator can be used with any form of high-impedance electronic indicating device such as a voltmeter, oscilloscope, or spectrum analyser.

Specification:

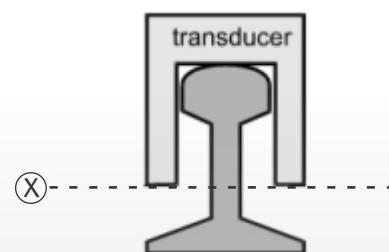
Frequency Response:	Filtered Mode	50Hz Rejection Feature	10A/volt & 1A/volt
	Unfiltered mode	No Rejection	1A/volt
Sensitivity Measuring Range:	Filtered Mode	Sensitivity Range	Maximum Current
		10A/volt (100mV/Amp)	65A peak
		1A/volt (1V/Amp)	6.5A peak
	Unfiltered mode (No filtering @50Hz)	Sensitivity Range 1A/volt (1V/Amp)	Unfiltered 6.5A peak
Overloads:	A red LED on the top of the transducer indicates when the transducer is near the overload condition.		
Output Connections:	Output is via 4mm sockets		
Enclosure:	The Transducer is enclosed in a plastic box which ensures that the internal circuitry cannot make contact with a live rail		
Electromagnetic Compatibility:	The transducer has no oscillatory circuits and there are no internal fast-edge transitions that could cause harmful emissions. The enclosure is screened internally to minimise interference from external sources of radiation.		
Power Supply:			
Batteries:	2 x PP3 batteries		
Battery Monitor:	When the transducer is turned on a red LED labelled POWER is lit. When the combined battery voltage is lower than about 15.6 Volts the POWER light starts to flash		
Battery Life:	Greater than 45 hours continuous use when alkaline batteries are used.		

OPERATION:

The transducer is placed over the rail preferably in a central position. There should be no packing between the transducer and the rail as this will affect accuracy. The transducer should be positioned approximately mid way between rail supports. The transducer is switched on using a rotary switch having positions OFF, 1A no filter, 10A, 1A. When the transducer is switched on the overload LED lights for about 2 seconds. Apart from this the transducer requires no 'settling time'.



Dimensions in mm



The Return conductor should be in this plane

Illustration

Item Code : ST-Rocoil Bigtron