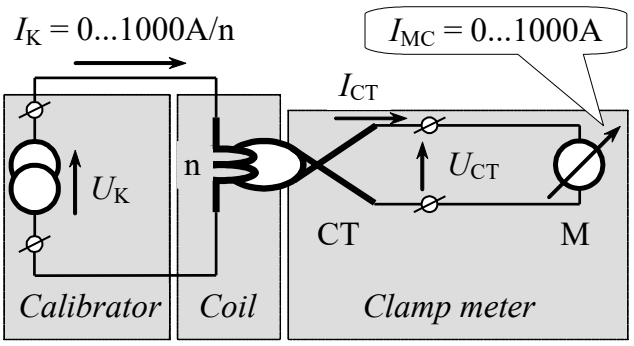
Current Coils

Current Coils ZW's series are wound by means of insulated cooper wire. Connected to the output of the current calibrator enables of clamps, clamps meters, power clamps meters and power quality analysers testing.

Idea of clamp meter testing

On the drawing below is presented system for testing clamp meters compound of current calibrator and clamp meter. Tested clamp meter consists of current clamp CT and meter M. Indication of tested clamp meter I_{MC} in range 0...1000A are referenced to the set current I_K of current calibrator, which is treated as a standard source.



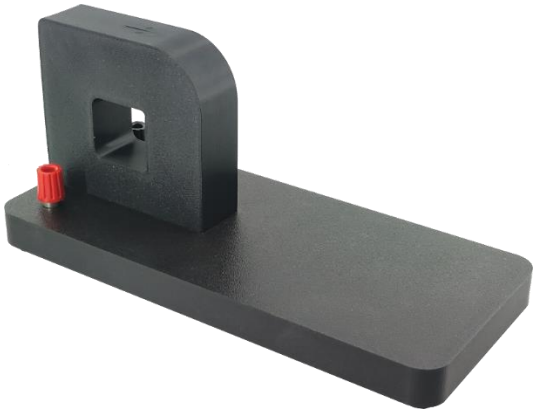
To the output terminals of calibrator is connected coil with n number of turns, on which are closed clamps. Required range of calibrator's settings is described by equation:

$$I_K = \frac{I_{MC}}{n}$$

where: I_{MC} – indication range of(upper limit of measurements) tested meter,
n – number of coil's turns.

As it can be seen from equation, by applying coil with number of turns n=100 and calibrator with settings range I_K=0...10A, it is possible to check clamp meter with measurement range I_{MC}=0...1000A, of course under condition, that calibrator has enough load power at the output terminals. In the calculation of the uncertainty using coils one should take into account Clamp/Coil interaction, which is specified with two components: a percentage of measured value and the values of effective output current.

In the presented circuit, it is also possible to test current clamps CT. In the case of current clamps with current output, the output clamp's current I_{CT} should be measured by means of reference ammeter M, in case of clamps with voltage output, the voltage U_{CT} should be measured by means of reference voltmeter M.



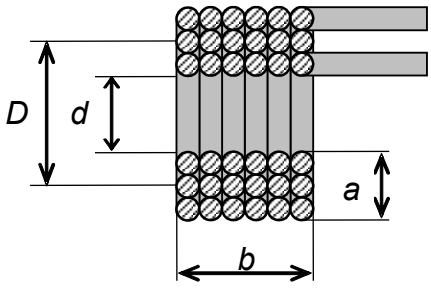
ZW100/10A and ZW10/20A

ZW Coils for clamps and clamp meters

- Extending range up to 1000A
- Coil ZW10 for small clamps
- Coil ZW100 for clamps up to 1000A
- It is possible to design coil for individual requirements

PARAMETERS OF ZW series COILS

Parameter / coil type	ZW10/20A	ZW100/10A
Number of turns	10	100
Nominal Current [A]	20	10
Effective current output [A]	200	1000
Frequency [Hz]	0-500	0-500
Clamp/Coil interaction for toroidal-type clamps and for f=45-65Hz	±0.25% ±0.02A	±0.25% ±0.02A
Wire diameter [mm]	1.8	2.0
Coil crossec. *axb* [mm]	10x7	23x24
Coil diameter *D* [mm]	48	63
Hole diameter *d* [mm]	38	40
Coil resistance [Ω]	0.012	0.120
Coil inductance [μH]	5	560
Coil weight [kg]	0.6	1.2



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