DESCRIPTION:

Mini Helmholtz Coil is made as combination of two one-turn coils integrated on two printed circuit boards. They can be connected to a current source by IEEE 1284 (36 pins male) connector, as shown on *Figure 1*.

Considering the dimensions of the Helmholtz Coils and the maximal current, the magnetic flux density in the middle point between the used coils is:

$$B = \left(\frac{4}{5}\right)^{\frac{3}{2}} \frac{\mu_0 N I}{r} = k \cdot I$$

N - number of windings of each coil (in our case, $N = 1$)

μ_0 - magnetic permeability in vacuum ($\mu_0 = 4\pi \cdot 10^{-7}$ $\frac{Tm}{A}$)

r - the radius of the Helmholtz coils (in our case is $r = 4$ *mm*)

KEY FEATURES & TYPICAL APPLICATIONS

- Generation of high magnetic fields (up to 2.25mT) in a small volume
- Very high frequency bandwidth: DC – 1MHz
- Very low impedance:

  R = 0.1Ω , L = 0.3µH , C = 1pF
- Characterization of magnetic field sensors
- Application in laboratories for research and development, etc.

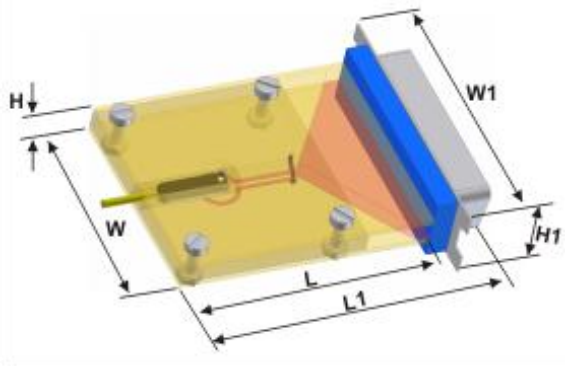

Figure 1. **Dimensions of MHC-x_x**

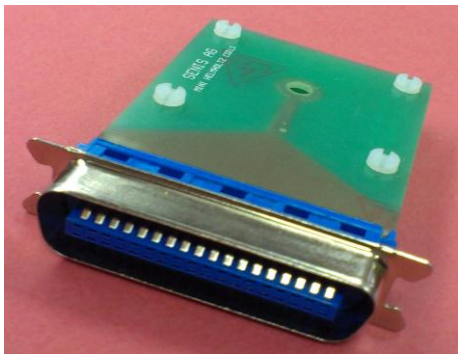

Figure 2. **Photo of MHC-8_1**

SPECIFICATIONS (MHC-8_1):

MHC-8_1	
Max. current	I_{PP}=10 [A]
Coil constant	k = $2.25 \cdot 10^{-4}$ [T/A]
Coil diameter	R = 8 [mm]
Number of turns	N = 1
R	0.1Ω
L	0.3µH
C	1pF
Option	Resonant circuit for higher currents

MHC-x_x Dimensions & Tolerances [mm]	
L = 60 ± 0.5	L1 = 80 ± 1
H = 6.5 ± 0.5	H1 = 15.5 ± 0.5
W = 50 ± 0.5	W1 = 62 ± 0.5

Recommended bipolar current source (DC–1MHz): SENIS HEFR 2008

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Grabenstrasse 25, 6340 Baar, Switzerland
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955 Industrial Road, San Carlos, CA 94070, USA
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