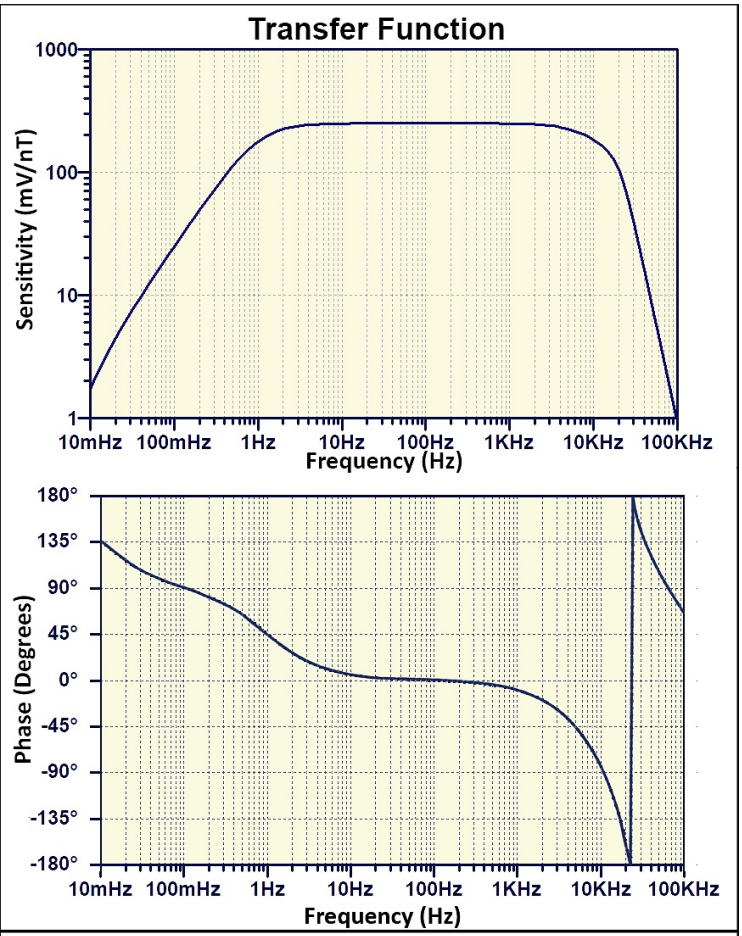
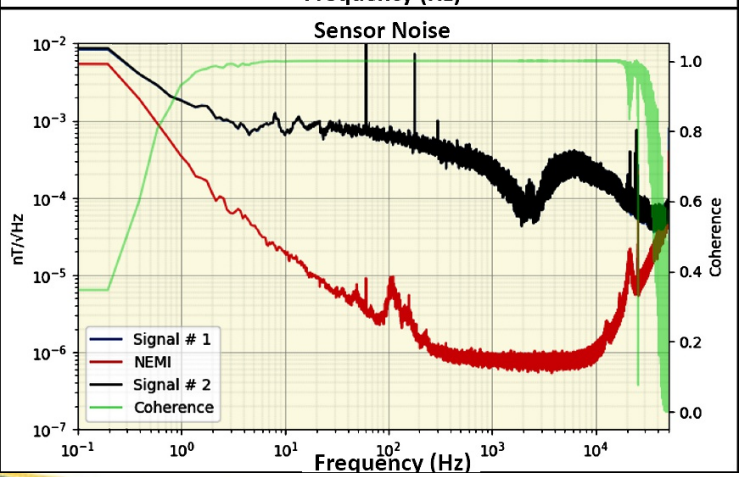
Ant 6 Induction Magnetometer





The ANT/6 magnetic field sensors are extremely low noise instruments designed to withstand the difficult conditions encountered in the field environment. By utilizing high-permeability cores and transformer coupled feedback the Ant 6 has a very flat and stable transfer function across a wide bandwidth. The ANT/6 is a multipurpose coil with extremely low noise levels from 0.1 Hz to 10 KHz, making it an excellent choice for AMT and Controlled Source Audiofrequency Magnetotelluric investigations (CSAMT/ AMT).

Optimal Frequency Range	0.1Hz to 10kHz
Length	1032mm / 40.625"
Diameter	1.875"
Weight	2.6gkg / 5.8lbs
High Pass Corner Frequency	1Hz
Low Pass Corner Frequency	10 kHz, 3 pole
Sensitivity	250mV/nT
Noise at 1Hz	240fT/√Hz
Power Supply	Split Supply +-9.5V to +-18V
Power Supply Current	6.3mA
Standard Connector	PT07A-12-8S

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Ant 6 Operating Instructions

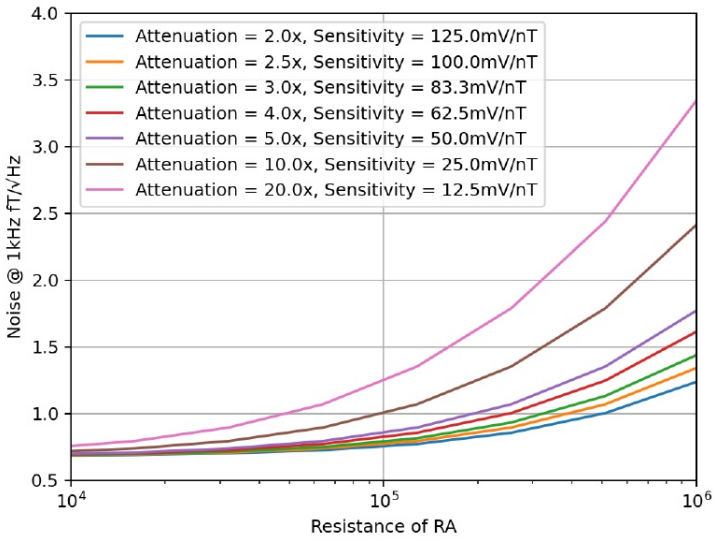
Turning on the Antenna

This version of the Ant 6 does not have an on-off switch. To turn it on plug it in to a suitable power source as specified on on the specifications page.

Output

The Ant 6 features a differential output and the maximum signal level is determined by the supply voltage. Each of the two outputs can swing from the positive rail minus appoximately 1.5V to the negative power rail plus 1.5V. With a +-12 volt supply this means each signal phase can swing from -10.5V to + 10.5V, or 21VPP. The differential output voltage is thus swings 42VPP. This voltage level is often impractical and a simple voltage divider as shown in the circuit to the right can be used to attenuatate the output. There is 49.9 ohms in series with each phase of the output.

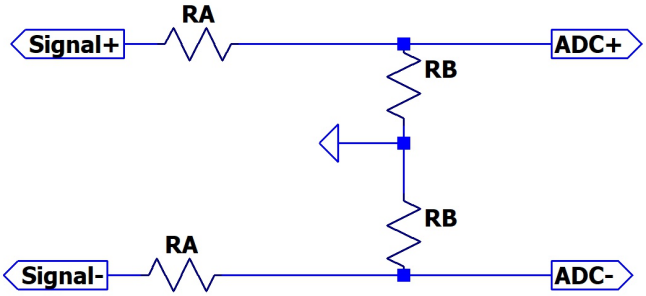
It is possible for the voltage divider to increase the noise floor of the magnetometer if the resistors in the voltage divider are too large. The magnetometer is most sensitive to this where the noise is lowest, around 1kHz. Refer to the plot below to see what effect a voltage divider will have on the noise level at different attenution values for different values of RA. Values below 5kohm are not recommended as it will lead to excessive power consumption. Does not take into account ADC noise.



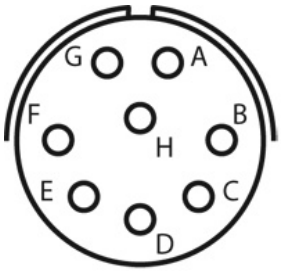
+ Polarity -

The end with the connector on it is the negative end of the magnetometer and the other end is positive. If we align the positive end with B field direction, the measured voltage signal is in phase with the B field. If we align the negative end with B field direction, the measured voltage signal is out of phase with the B

$$Vout = \frac{250mV}{nT} \cdot \frac{RB}{RA + RB + 49.9}$$



Connector Pin out



A) Power +
B) Power -
C) Signal - phase
D) Signal + phase
E) Ground
F) NC
G) NC
H) NC

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