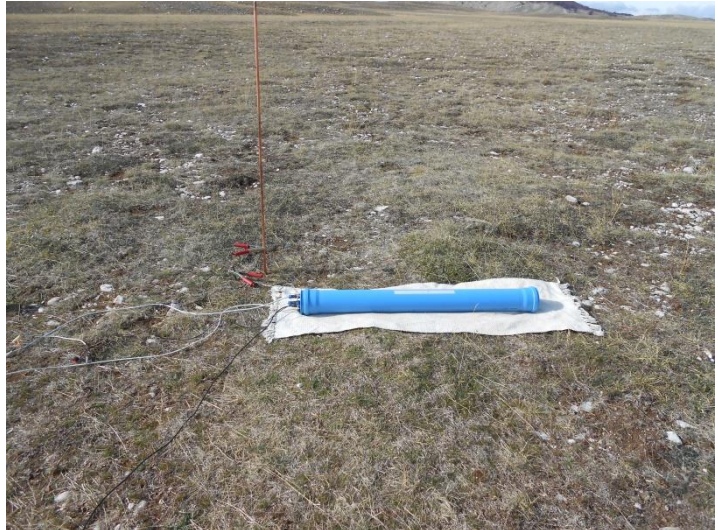


Magnetic Field Sensor

The **ULF030JXX** is an high sensitivity induction magnetometer receiving sensor and is intended for the study of magnetic field fluctuations in the frequency range $0.001 \div 30$ Hz. It is ideal for geophysical and geomagnetic studies of the Earth, natural electromagnetic waves analysis, such as monitoring of low frequency signals as precursors of seismic or volcanic activities. Can be also used in the field of geophysical prospection such as minerals and oil exploration.

The basic sensing element is a rod shaped induction coil with a ferromagnetic core. The core characteristics and winding parameters were carefully selected through computer optimization to match the noise characteristics of a custom designed low noise current preamplifier.

The **ULF30JXX** induction coil is provided with an internal preamplifier and filters which are remotely programmable. Exceptionally low noise, $e_n = 3.5 \text{ nV}/\sqrt{\text{Hz}}$, at 10 Hz, a low $1/f$ noise corner frequency of 2.7 Hz, and high gain allow accurate high-gain amplification of low-level signals. A gain-bandwidth product of 8 MHz and a 2.8 V/msec slew rate provides excellent dynamic accuracy in high-speed, data acquisition systems.



The preamplifier in SMD technology is a balanced type configuration with a virtual short circuit. There are three selectable gains: 0, 20 or 40 dB. The circuits includes a 6 pole Chebychev configuration filter, which has been designed to be very steep, with a roll-off frequency equal to 30 Hz, and able to suppress the 50 Hz down to 40 dB. Gains and filters can be remotely controlled via PC.

Our system can be used both as a part of the computer measuring and registration equipment and automously with any analogue recorder.

Specifications

Frequency range	0.01 \div 30 Hz
Noise rejection 50 Hz	>60 dB
Power supply voltage	24 Vdc
Total power consumption	< 1 W
Dimensions	L = 1000 mm : d = 110 mm
Weight	10 kg
Waterproof	

IOJXX di Donzello Rosanna

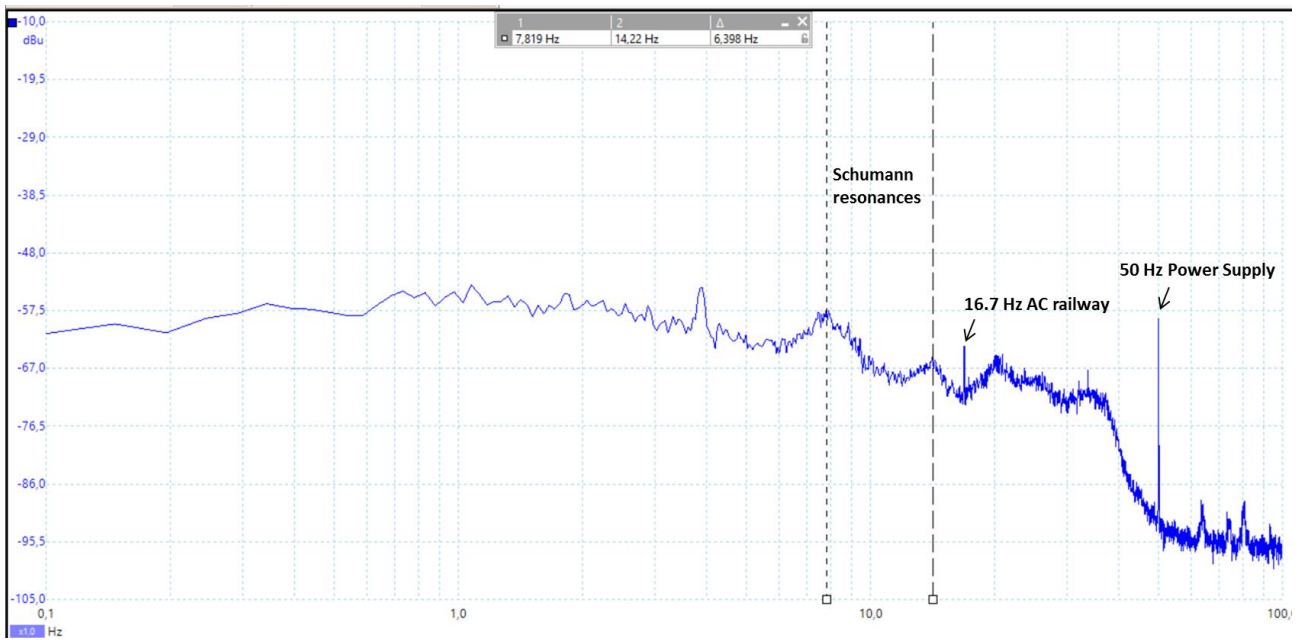
Via della Fattoria di Torrenova 36 - 00133 Roma

& Fax 06 - 27858223 3282899664

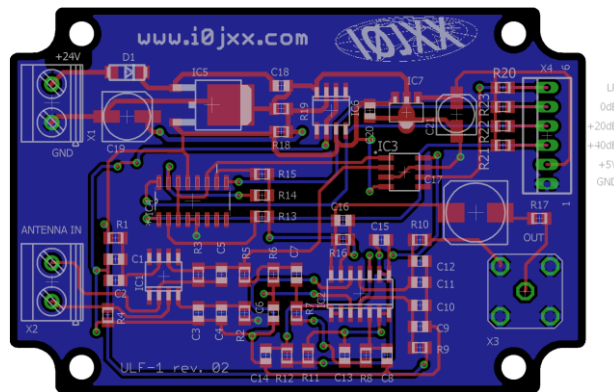
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- Zcoil @ 10 Hz = 138 kOhm
- OP07 Vnoise @ 10 Hz = 10,3 nV in 1 Hz RBW (from OP07 data sheet)
- OP07 Inoise @ 10 Hz = 0,32 pA in 1 Hz RBW (from OP07 data sheet)
- Inoise flowing in Z coil will produces 44,36 nV (Inoise x Zcoil)
- Thermal noise of coil will be 14,42 nV (given by 11,3 kOhm wire resistance, Noise floor [nV/ sqrt Hz] = 4 x sqrt R [kohm])
- Total input noise @ 10 Hz = 47,77 nV (it will be the square sum of these three terms: OP07 Vnoise + Vnoise caused by Inoise flowing in Zcoil + Coil thermal noise)



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