

Cloud connected low power, low noise systems for LMT & MT

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SUMMARY

Over the past years, we developed and field tested two easy to operate low power, low-noise magnetotelluric systems, LEMI-423 (wideband) and LEMI-424 (long period). Recently, both systems were adapted to be connected via a noise-free web access box for continuous data streaming allowing near real-time remote reference application.

The key feature of both systems is the low noise amplifiers and the sensors. The LEMI-424 is used already in many countries for low-frequency magnetotelluric work and past field experience has shown their high field reliability. The system is also used for magnetic studies of the magnetosphere. The sensor has a noise level of 10 pT/sqrt(Hz) at 1 Hz. Other sensors can also be connected. The entire system weighs less than 3 Kg (plus environment-friendly non-polarized electrodes). Its total power consumption is less than 1 W.

The sister system is the LEMI-423 which addresses the standard magnetotelluric band from 0.0001 Hz to 1000 Hz. It can go up to 4 kHz sampling rate while still keeping the power consumption including sensors under 1 W. The LEMI-423 uses the well-established LEMI-120 coils, used not only for magnetotellurics but also for many space research projects. The system weights under 3 Kg (excluding cables) and the sensors each under 6 kg.

The construction peculiarities and application examples are presented in the report.

Keywords: web access box, LMT & MT system, low-noise, low-power station.
