Interactive comment on “A remote-control datalogger for large-scale resistivity surveys and robust processing of its signals using a software Lock-In approach” by Frank Oppermann and Thomas Günther

Anonymous Referee #1

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Comments to editor

The paper is very interesting for people works on geoelectrical no-standard system for deep investigation. The introduction misses some papers on the DC deep approach that already use no-standard equipment. Moreover, the authors introduced the Lock-in approach a methods on the correlation between current and voltage signals and it is used when there are small signals out of a huge noise floor. Anyway, the paper introduce a digital Lock-in detection, that is considered more robust then the analoge one. Finally, I think that this approach adds new things and I suggest to publish it.

Comments to authors

Introduction: The introduction is well described but some cited papers are not indicated in the final bibliography. Moreover, I suggest to add some deep DC application with no-standard instruments (transmitter and receiver physically separated) with a single and multichannel system. In example, there are papers where a deep DC instrument with single channel was used: a)Rizzo E., Colella, A., Lapenna, V. and Piscitelli, S. (2004). “High-resolution images of the fault controlled High Agri Valley basin (Southern Italy) with deep and shallow Electrical Resistivity Tomographies”. Physics and Chemistry of the Earth, 29, 321-327;


Datalogger: Line 90 to 92: I suggest to explain why only 3 channels are used.

Line 96: The GSM module is used only for the communication between the DL and the
laptop as remote control. To download the acquired data the system uses a USB way. Why is it not possible to use a 3G module? I suggest to add one sentence to explain.

Line 120: I suggest to add on the figure 4 the frequencies indicated: powerlines, railway, the signals 0.2hz and the harmonics.

Field case: Line 275-279: the authors wrote “Higher DD correspond to larger penetration depths but exhibit lower...” the figure 14b show low S/N signals (blue color) in two zone (one shallow and one deep) with in the middle a better S/N signals zone. Therefore, the sentence needs some more details... it depends also for the electrical resistivity distribution. Low resistivity zone (i.e. clay) produce low S/N signals then relative high resistive layer (i.e. sandstone). I suggest to explain better this part.

References: I suggest to check the matching between the list of the references and the indication in the text.

Figures: Figure 15: I suggest to add the unit (may be “m”) for the X axis