Editor-in-chief
Geoscientific Instrumentation, Methods and Data Systems
Dear editor and reviewer

Thank you for your warm work and insightful comments and suggestions, we really appreciate your valuable comments which helped us improve the quality of our manuscript (**gi-2022-23,** titled **Development of a power station unit in a distributed hybrid acquisition system of seismic and electrical methods based on NB-IoT**). After careful considerations, we made following revisions according to your comments:

Anonymous Referee #1

1) **RC :** Please consider enhancing the abstract part. Instead of the detailed description of the functions achieved, more information such as the reason for this development or the significance of this proposed system should be given.

   AC : We simplify the description of functions and enhancing the abstract as suggested. We set our development target from real work with both nodal instrument and conventional instruments, and we found that there's always some problem decreasing the work efficiency when using either system. So we tried to enhance the work efficiency by simplify the system structure while maintaining core features. Therefore, this power station unit is developed. By using the proposed instrument, a new way of networking strategy is given to a bunch of conventional seismic acquisition stations, this also helps to customize a more reasonable acquisition structure.

   The revised Abstract part is as follows:
   In this paper, we propose a new type of power station unit with wireless data transmission capability. This work breaks the limitation that conventional equipment is unable to upload data directly to central unit. Based on that, a novel distributed geophysical data acquisition architecture is also proposed. enhancing the work efficiency by simplify the system structure while maintaining core features. Designs that realize key functions including isolated high-power output, power management, wireless data transmission as well as high-precision clock synchronization etc. are introduced in this article. The prototype was packaged then, and a series of evaluation experiments were implemented to verify the key parameters of the instrument. Experiment results proved that the overall design of the instrument is feasible, and the key parameters outperforms the industry leading instrument LAUL-428. Due to the wireless networking strategy, the proposed instrument further realizes remote control and real-time data playback through the host computer software, making it suitable for joint geophysical exploration as well as microseismic monitoring. As for system level, it could be customized by connecting different kinds of conventional acquisition stations for many kinds of prospecting targets.

2) **RC:** Please check the grammar of 'weights' on P2 column 47.

   AC: Thank you for your comment, this has been corrected.

The revised part is as follow:

In fact, as analyzed by Dean et al.(2013), for dense exploration with receiver interval less than 40m, the cabled system weighs less than nodal system, and specifically, when receiver interval is 10 m, the cabled system weighs only 24% of the nodal system.

3) **RC:** The section **3.1 power board control circuit** is not easy to follow, and a clearer way of description is better. Maybe an architecture description before this part

AC: Thank you for your comment. This part is revised as below.

The revised part is as follow:

The main tasks of power board control circuit are listed as below, therefore an independent microcontroller is needed to achieve those complicated functions. Here, the MSP430G2553 is selected.

4) **RC:** P.6 column 166, please check the usage of 'unsure', which may lead to misunderstanding.

AC: Thank you for your comment. The word 'unsure' is corrected as 'ensure'

The revised part is as follow:

LEA-6T GPS module, whose timing accuracy reaches 15 ns, perform timing when only one satellite is visible is utilized in this case (Ublox, 2017), to ensure the precision of PPS source.

5) **RC:** Please make sure spaces between all numerals and units to keep a unified format.

AC: Thank you for your comment. The format has been revised as below.

The revised part is as follow:

Table 2. Comparison between PSU and LAUL-428

	LAUL-428	**PSU**
Data transmission speed	8Mbps, 16Mbps	16Mbps (Manchester encoding)
Maxim acquisition stations	81 FDUs^{TM}	**120** AS
Function	Power supply: 50 V output	Power supply: 48 V output
Operating power	10.5-15 V DC input **2 battery connectors**	**4.5-18 V** DC input **Internal backup battery**
Wireless data upload	——	NB-IoT & Wi-Fi (2.23 MB/s @ 1km)
Memory	30 MB local buffer	32 GB microSD card
Weight	2.40 kg	**2.27 kg**
Operating Temperature	-40 ℃ to +70 ℃	-40 ℃ to +70 ℃

Durability & Resistance	**15m deep in water**	Water repellent and dust resistant

6) **RC:** Besides NB-IoT remote control, I suggest adding wireless data transmission performance by Wi-Fi.

AC: Thank you for your comment. The data transmission performance of Wi-Fi is 2.23 MB/s at a distance of 1km. To achieve this communication distance, we used directional antenna on central station to amplify the Wi-Fi signal.

The revised part is as follow:

	LAUL-428	**PSU**
Data transmission speed	8Mbps, 16Mbps	16Mbps (Manchester encoding)
Maxim acquisition stations	81 FDUs™	**120** AS
Function	Power supply: 50 V output	Power supply: 48 V output
Operating power	10.5-15 V DC input **2 battery connectors**	**4.5-18 V** DC input **Internal backup battery**
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Durability & Resistance	**15m deep in water**	Water repellent and dust resistant

We tried our best to improve the manuscript, and we really appreciate for Editors & Reviewers' warm work earnestly, and hope that the correction will meet with approval.

Once again, thank you very much for your comments and suggestions.

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