

APPLICATION NOTES

Rishabh 6016: Bluetooth Digital Multimeter for E-Rickshaw Datalogging



Introduction:

India launched the National Electric Mobility Mission Plan (NEMMP) 2020 in 2013 to boost energy security, reduce pollution, and grow domestic manufacturing. Following a 2015 parliamentary amendment legalizing e-rickshaws for commercial transport, these compact, eco-friendly vehicles became popular in congested areas like Delhi. Operating via a power converter that transforms rechargeable battery DC voltage to AC for the motor, they charge easily using standard residential outlets while manufacturers continuously analyze real-world battery performance to tailor technology for Indian roads.

The Problem:

The e-Rickshaw manufacturer needs to measure the load on a battery installed in rickshaw at different situations testing its carrying capacity in running condition. To measure the load on the vehicle, current consumption is to be monitored, this pattern of current drawn by the vehicle is to be monitored when the vehicle is on-road and is carrying passengers. Their need was to understand the changes in current drawn by motor when riding through different types of roads - bumpy as well as smooth. The bandwidth of load variation is very large, ranging from a few amperes to as high as tens of amperes and the data monitored should be easily accessible for offline analysis.

Our Solution:

The above mentioned application required :

1. Continuous monitoring of current drawn by load
2. Data logging of measured parameters
3. Wide range of current measurement
4. Stability of readings and better response time
5. Communication between measuring device and data-analyser

Rishabh's 6016 Bluetooth multimeter can be considered as the ideal solution for this application :

- It has current measurement range of 10nA - 10A (upto 6000A using external clamps)
- Capable of logging 32,000 readings internally
- Can be easily connected with laptops or mobile phones using bluetooth connectivity
- iOS and Android apps available on Google Playstore for settings, monitoring, recording and viewing data graphically

The meter was connected to the batteries of the vehicle which was placed at the rear end. The data gets stored in the meter and was retrieved for analysis purpose. A data monitoring device was present inside the vehicle which was initially connected using Plug and Play USB cable, but when vehicle used to cross bumpy roads the connecting cables used to loosen-up and connectivity failed. Provision of bluetooth connectivity made transferring data to the device easier. The user can now easily analyse the trends of load consumption without any hassle.

The Benefits:

- Reliable and cost - effective solution
- Highly accurate and best suits the purpose
- Easy to handle and robust design which can sustain in stringent applications.

Contact:

For feedback, partnerships, or further information, please feel free to contact us at:

- **Domestic (India):** +91 253 2202029/026/099 | Email ID: marketing@rishabh.co.in
- **International:** +91 253 2202004/006/008/099 | Email ID: global@rishabh.co.in



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