

***Solar Power Plant Performance Monitoring System with Data Logger  
Integration and Internet of Things (IoT) Based on Microcontroller***  
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***ABSTRACT***

*Energy is a vital need for survival of the nation and state. One of the most popular forms of energy is electrical energy, because it is easy to convert to the other forms of energy. One source of electrical energy that is widely used in Indonesia comes from solar power. As a tropical country, Indonesia gets sun exposure in the range of 10 up to 12 hours per day with an average intensity of 4.8 kWh/m<sup>2</sup>. This potential is followed by the development of the implementation of Solar Power Plants (PLTS) which is increasingly widespread. PLTS installation requires a fairly large initial capital. The initial investment capital will be returned by saving electrical energy from PLN for a certain period of time by utilizing electrical energy from PLTS. Therefore, PLTS needs to be regularly maintained to maintain optimal performance. It is necessary to have a PLTS performance monitoring system that can read, transmit, and display PLTS performance conditions in real time. In this case, integration with data loggers and Internet of Things (IoT) based in microcontroller is very supportive in obtaining complete information for decision making for maintenance and further analysis. The PLTS performance monitoring system is designed using the NodeMCU ESP8266 module, PCF8574 module, RS-485 module, PZEM-016, PZEM-017, and other supporting components. This device can read, transmit, and display PLTS performance information to the Blynk platform which can be accessed via Android phones or computers. This device can measure with accuracy above 90% when compared to measurements using a calibrated AVO Meter and Ampere Tang.*

***Keywords:*** data logger, internet of things (IoT), microcontroller, performance monitoring, PLTS