

## ABSTRACT

*It is now known that in recent years the smart home in the world is growing very rapidly which is strengthened by the presence of the Internet of Things (IoT) which makes it easier for many people. The presence of IoT makes what was previously done manually can now be done automatically and now it can also be controlled remotely, most importantly connected to the internet network. But even though it is connected to the internet network there are sometimes problems that will arise if IoT devices are in various places that cannot be reached directly. The solution that will be carried out is to use the Over the Air (OTA) method of updating firmware on IoT devices and using a website-based mobile application as a user interface to monitor the results of updates and the results of data processing.*

*This final project will design a device called Memory-Based Single Load Amperemeter. This Memory Based Single Load Ammeter is where we will measure and monitor AC current. The memory here included is the eeprom that is in the esp 12-E. Eeprom itself is a chip - memory that can store a few data. The data stored in the project I am working on is in the form of SSID and password. The ssid and password here are used to connect the esp 12-E to devices connected to wifi such as cellphones. In this project, there are two output sites, namely the mobile application and cloud Antares. This research uses NodeMCU ESP8266, ACS712 sensor, and FTDI. And also, later a system will be designed that can make it easier for users to update the firmware if the IoT device is located in a place that was previously unreachable.*

*The results of the design are obtained when Multiple SSID is successfully carried out and the average time for 30 tests is 11.166 seconds. Furthermore, the SSID Update test was carried out 30 times on the IEMS application with units of ms with an average SSID update time of 66.833 ms. The Over the Air (OTA) test was carried out 30 times and was successfully carried out. The time range for the output to be sent to the application is 1-2 minutes. The aspect measured in the Over the Air (OTA) test is a 5w lamp with an AC voltage of PLN electricity. The last test is memory capacity, the results obtained when not using OTA the capacity of the memory is 453536 bytes while when using OTA, the capacity of the memory is 329256 bytes.*

**Keywords:** *Internet of Thing (IoT), Memory, OTA, Firmware, ACS712-5A, ESP 8266, Antares.*