ABSTRACT

The development of measuring instrument systems is increasing rapidly along with the pace of technological development. One of the measuring tools is the water flow measurement. The water flow measurement which was originally still manual has now become digital. However, the data from the measurement results are limited to only appearing on the LCD, such as the current water flow meter. Water discharge measuring devices are usually static or can only be used in one place.

In this final project, the author applies the Internet of Things into a water flow measurement system using an Ultrasonic Flow Meter sensor. The system will send the sensor measurement data to the NodeMCU which will then be continued by sending the data into the Firebase database. In this final project, a portable water flow meter will be designed so that it can be used anywhere.

The purpose of making this Portable Flow Meter is to make it easier for PDAM officers to measure water discharge portablely and also send measurement data to the database. The results of functional testing on the Portable Flow Meter, namely the sensor communication test to the microcontroller, the microcontroller to WiFi, the microcontroller to the database have been successful. In the sensor calibration test, the accuracy value is ± 99% after a comparison is made between Analog Flow Meter and Portable Flow Meter. In the last test, the use of the Portable Flow Meter was tested in the field, the test was carried out 15 times and the Portable Flow Meter succeeded in measuring the water flow and sending the measurement data to the database. It is hoped that with this tool, PDAM officers can be more flexible in measuring water discharge and can also view data from the results of water flow measurements in the database.

Keywords: *Ultrasonic Flow Meter, NodeMCU, IoT, Firebase*