

## ABSTRACT

*Infusion is one of the medical instrument used to insert the form of liquid nutrients through a vein sufferers in a certain amount and within a specific time according to the type of illness. The working principle of this tool is to use a DC motor to adjust the flowrate of the fluid that dripped so it can be easier because it can tell how much the amount of fluid that has been given to the patient.*

*In DF1200 having an infusion pump drip sensor, occlusion sensor, door sensor, and sensor bubbles. However, no sensor fluid runs out. Hence, in the liquid in the bottle has been discharged and the air enters the hose will infuse bubbles detected by the sensor to turn off the motor.*

*From the above considerations, the authors will make modifications Infusion Pump modules equipped with sensors of fluid discharged. This sensor is used to detect fluid infusion on the bottle so as not completely discharged. So that no air enters the hose at the time of infusion nurse or doctor to replace the new infusion bottles. This module is designed using electronic circuits using AT89S51 microcontroller as the whole control system. In making this module uses a series of LED and LDR as a sensor of fluid discharged and the circuit PWM (pulse width modulation) to control the speed of a DC motor. On the seven segment display driver IC used 74HC154 remedy displays the volume, setting out the amount of fluid flowrate and (droplets).*

*Based on the analysis of the velocity flowrate 250 ml / h obtained% error of 0.48%, at a speed flowrate 300 ml / h obtained% error of 0.8%, at a speed flowrate 350 ml / h obtained% error of 0.68%, on the speed flowrate 400 ml / h obtained by 0.21%% error, at a speed flowrate 450 ml / h obtained% of 0.13% error. based on the results of the analysis concluded that the proper tool to use.*

*After a process of making and literature studies, planning, experimentation, testing, data collection tool, it was found that an infusion pump devices with more advanced techniques that facilitate the work of the operator.*

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*Keywords: infusion pump, PWM, Flow Rate, the liquid discharged*