

ABSTRACT

ELECTRICITY MONITORING FROM FAR DISTANCE

3 PHASE ELECTRIC NETWORK BASED ON SINGLE BOARD COMPUTER BCM2835

In the 3 phase electricity network, it is necessary to monitor the electrical quantities including voltage (V), current (A), power factor ($\cos \theta$), power (W) and energy consumption (kWh). This is done to determine the change in the amount of electricity to time, so that it can be seen the quality of electrical energy supply in the system, can be known if there is a disturbance and can be known to consume large amounts of electrical energy regularly.

For voltage measurement step-down transformer is used as a voltage sensor, current measurement is used ACS712-30A current sensor and energy consumption measurement is used kWh meter Thera type TEM015-D4250 brand. While the power value is obtained from the calculation, where power is the result of the value of energy consumption to time. When the value of voltage, current and power is known, the value of the power factor can also be calculated because the value of power is the product of voltage, current and power factor. For processing measurement data and calculations python programming is made using the Single Board Computer BCM 2835 or commonly known as the Raspberry Pi.

The results of this study indicate that the voltage, power and power factor used have a level of precision that is in accordance with IEC No.13B-23 standard, but for current measuring devices it does not meet the standard but can still be used because it has a small measurement difference when compared to measurement results using a measuring instrument in the laboratory. By using the Raspberry Pi, the monitoring data is successfully stored in the database and can be viewed from the WEB in graphical form.

Keywords: *3 phase electricity network, voltage sensor, current sensor, kWh meter, Raspberry Pi.*