DATA ACQUISITION SYSTEM IN MEASURING CARBON DIOXIDE, HUMIDITY AND TEMPERATURE: DESIGN AND FABRICATION

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Abstract

This research aims at designing and fabricating data acquisition systems in measuring concentration of carbon dioxide, relative humidity (RH) and temperatur (T) of peatland which were trapped by closed-chamber measurement. Carbon dioxide was sensed by TGS4160 modul sensor while relative humidity and temperature were detected by SHT11 modul sensor. TGS4160 is carbon dioxide gas sensor that operated together with voltage follower and connected with ATMega8535 microcontroller via port A.0. SHT11 is a modul sensor that detect two parameters simultanously, relative humidity and temperature, that operated with fully calibrated and digital output. SHT11 is connected to ATMega8535 via port B.0 for data and port B.1 for clock with two wire interface mode. The ATMega8535 microcontroller is single chip to catch input signal from sensors, to compute the characteristic equation of sensor and to send measuring data to LCD 16x2 character as display unit which was programmed by basic compiler. The measuring devices interfaced with personal computer via universal serial bus to formed data acquisition systems. In personal computer, the data measurement were displayed on monitor screen that was developed by delphi. The data result were recorded and stored in excell and data base.

Key words: ATMega8535 microcontroller, peatland, SHT11, TGS4160