

Light Intensity Controller for Tissue Culture Applications

K. Tharshan¹, L. Udawatta², J. M. L. C. Piyathilaka¹, R. M. T. C. B. Ekanayake¹ and
A. R. Nihmiya¹

¹Uva Wellassa University, Sri Lanka

²University of Moratuwa, Sri Lanka

Still there are a few Important sectors in our country where automation has not been adopted or not been put to a full-fledged use, because of several reasons. One such reason is high cost. Bio laboratory forms an important part of the tissue cultural sectors in our country as they can be used to grow plants under controlled climatic conditions for optimum produce, so the model of constant light Intensity instruments has been developed. By using led panel light Intensity was controlled between 0 to 1000 lux in an enclosed environment. A Microcontroller-based circuit was built to monitor the value of light of the natural environment continuously and controlled in order optimize them to achieve maximum tissue culture performance. An integrated Liquid crystal display (LCD) is also used as the real time display of data, acquired from the sensors. Also, the use of control systems (LED panels) reduces the manufacturing and maintenance costs. The design is quite flexible as the software can be changed a t any time. Constant light intensity instruments makes the proposed system to be economical, portable, power-efficient and an easy to maintain solution for tissue culture applications in biology laboratories. The main aim of implementing a constant light intensity at biology laboratory has been accomplished successfully. The prototype can measure light, using LDR. The design uses a set of PIC microcontrollers as the microcontroller was programmed in C language using a Micro C compiler. Simulations were performed in PROTEUS software.

Key words: LDR sensors, LED panel, Microcontroller application processor