

## **ABSTRACT**

### **Modern Laboratory Security System Based on PLC Siemens Logo! 230 RC**

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The research of "Modern Laboratory Security System Based on PLC Siemens Logo! 230RC" is done. The purpose of this research is to create the integrated security system on the laboratory that work automatically. Because up till now, the incident and security disruption tackling in the laboratory with manual system is not yet optimal. Therefore, the integrated security system that work automatically is required to settle the weakness of manually security system as we done in this research. The PLC Siemens Logo! 230 RC is used as main control system. This system is equipped with the two infrared detector module, the smoke detector module and the temperature switch module as the input component of the system and the alarm module, the fire extinguishes module, fan and the lighting lamp as the output component that controlled by the system. The work principle of this system is used the simple control engineering, by taking the benefit from physical variable alteration as the system parameter. The physical variable that used in this system are temperature, smoke concentration and light intensity. The result from testing this system is ascertainable that the phototransistor that used in this system have the best response at the angle of light incidence is  $0^0$  with the range between the transmitter and receiver is not more than three meters. The alteration of the light intensity from LED is not linier, but will be change with factor  $1/(r^2R)$  and the highest intensity is  $0,594834 \text{ W/m}^2$  at the 10 k Ohm of resistance with the range of measurement at 3 cm from the LED and the lower intensity is  $0,31307 \text{ W/m}^2$  at the 19 k Ohm of resistance with the range of measurement is 3 cm from the LED. The LM 35 sensor is have the linear response with the output alteration is 10 mV per  $1^0\text{C}$  increasing temperature.

Key words : Laboratory security system, Controlled system, PLC Siemens Logo! 230 RC, infrared detector, smoke detector and temperature switch.