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ABSTRACT

The fluorescent lamp is closely bound up with modern life. Over years, many major companies have invested a large amount of manpower, material resources and money in technologies to improve the performance of fluorescent lamp; as a result, the start-up time, luminance and stability of fluorescent lamp have improved significantly. However, when it comes to the glimmering problems caused by dysfunctional fluorescent lamps, neither any manufacturers have designed a relevant controlling circuit, nor there is any related product or patents, in Taiwan or where else. Therefore, this research aims at developing an electronic circuit module which can control a fluorescent lamp set with four lamp tubes. When glimmering happens, the electronic circuit module will cut off the power for the particular lamp circuit, while keeping the other lamps function normally. This research is based on using AT89C2051 microchip to design and control the lamp set. The measured voltage in the control circuit is utilized as the basis for the determination of the malfunction of the lamp set. When glimmering happens, it induces unstable voltage signal. The voltage signal is converted into lower voltage, rectified and fed into the microchip for the following analysis. When the accumulated count of the dysfunctional signal reaches the predetermined number in the program, the microchip sends the command to cut off the power immediately.

Keywords: Fluorescent Lamp, Low Pressure Mercury Fluorescent Lamp, Single Chip Microprocessor, AT89C2051