**EMBEDDED SYSTEM PROJECT**

**Topic: Home Automation with Arduino**

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Project Abstract

A vast number of analog/digital ambient light sensors/light sensor modules can be make up with Arduino to build a light- based project – like a simple street light controller. For a serious builder, TSL2561 – the renowned light-to-digital converter that transforms light intensity to a digital signal output capable of direct I2C interface – is a wise choice.

The TSL2561 sensor combines one broadband photodiode (visible plus infrared) and one infraredresponding photodiode on a single CMOS integrated circuit capable of providing a near-photopic response over a 20-bit dynamic range (16-bit resolution). Two integrated ADCs convert the photodiode currents to a digital output that represents the irradiance measured on each channel. This digital output can be input to a microprocessor where illuminance (ambient light level) in lux is derived using an empirical formula to approximate the human eye response.

In addition to the TEMT6000 ambient light sensor, only one resistor is required to complete the add-on hardware setup (see the circuit diagram). The circuit accepts any dc power source (VCC) from 3.3 to 5.5 volt. The analog output (OUT) of the circuit can be connected to any analog input of the Arduino, for example A1.

Circuit Board

