Monochrome LED strip light dimmer

with ambient light and motion sensors

Version 1.1 2015-03-08 http://alephnull.net/software/dioder/pwm.shtml

Suggested components

Resistors:
4x 1k 2W (R10-R13)
5x 1k 600mW (all others)
3x 10k 600mW
1x 100k 600mW
2x 100k linear potentiometer with LED
Bournes PTL45-15O0-104B1

Capacitors (see note):
1x 3.3nF

Transistors:
2x KSD5041RTA NPN BJT 20V 5A
4x 2N3906BU PNP BJT 40V 200mA
3x SS8050CBU NPN BJT 40V 1.5A

Diodes:
2x 1N4148 genral purpose

ICs:
1x LM555 timer
1x LM2903 dual analog comparator

LEDs (diffused):
1x amber (e.g. SSL-LX5093AD 30mcd 30mA)
1x amber (e.g. LTL-1CHA)
(potentiometers have LEDs built-in)

Power supply:
1x LD1117V50-DG 5V 800mA LDO (see note)
1x 12V 2.4A power supply
(typically supplied with lights)

Connectors:
9x right-angle pin header
1x 2.1mm plug
1x 2.1mm right-angle jack
(e.g. Adafruit 393)

Sensors:
1x PIR motion sensor (e.g. Adafruit 189)
1x Phototransistor (e.g. OED-PCC-9P5-1L)

Lights:
12V LED light strip (e.g. Ikea Dioder)

Notes

5V regulator (IC1) does not need to be low drop-out

The phototransistor (Q21) should be in a shadowed location but also have an unobstructed view of the room's main light

For use as a night light, one might swap pins 2 and 3 on IC2 (LM2903)