

Lego® Light Flasher Notes

Wiring

- Mode switch (momentary pushbutton) between digital input 11 and ground.
- Speed potentiometer (10 k Ω linear) track wired between +5 V and ground. Wiper wired to analogue input 0. When wiper grounded, flash is fastest. When wiper connected to +5 V flash is slowest.
- LEDs indicating mode (with series resistors) connected between digital outputs 3 to 6 and ground for modes 1 to 4 respectively.
- LEDs indicating output state (with series resistors) connected between digital outputs 9 and 10 and ground for outputs 1 and 2 respectively.
- Relay (Pan Chang SIP-1A05) coils wired between digital outputs 9 and 10 and ground for outputs 1 and 2 respectively. Reverse biased 1N5817 1A 20V Schottky Rectifier Diodes wired across relay coils to suppress back EMF.
- Relay contacts wired between +5 V and 5 V pin of output USB-A sockets.
- Ground pins of output USB-A sockets wired to ground.

Instructions

- Wire the Arduino Nano and components as described above.
- Power the Arduino Nano via its mini USB connector
- Cycle round the four defined flash modes using the pushbutton:
 1. On time = off time, outputs flash in unison
 2. On time = off time, outputs flash in antiphase
 3. Quick strobe flash, outputs flash in unison
 4. Quick strobe flash, outputs flash in antiphase.
- Adjust flashing speed using the potentiometer.
- The output state is indicated by the LEDs and power is switched to the output sockets by the relays.
- The selected mode is stored in EEPROM and restored on next power-up. Rudimentary wear levelling is included: the first half of the EEPROM stores 0 / 1 flags. The first of these encountered that is 1 indicates the address in the second half of the EEPROM containing the Mode value to use.

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