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Shade Controller Board

Here is a board that you can use to control your motorized window shades. This board has two 10A relays – one for up and one for down. There are 4 fused terminals for each direction meaning this board can simultaneously control 4 shades. It is designed to work with motors that have a common and 2 "hots" – one for each direction, and will control both AC or DC motors (not mixed, though). There is a remote 3-button switch attached to the main board via a 6-wire straight-through telephone wire. The 3 buttons are for Up, Down & Stop. When either the Up or Down button is pressed, the associated relay is activated providing power to the 4 Up or Down terminals for a user-determined amount of time. This time is set using by inserting resistors into sockets on the board. See below for a table that shows time interval/resistor values. When either the Up or Down relay is activated, the board will ignore the Up or Down buttons until the time interval has completed. The Stop button will interrupt the time interval and stop the movement. The board also has provisions to be controlled remotely. There are 2 terminal blocks on the board – one for Up and one for Down. A switch closure at either terminal acts the same as pressing either the Up or Down buttons. This allows you to interface this to a computer via a relay board for automated control.

An LED indicates when the NO contacts of the relay are closed.

The board requires 12VDC for operation. Other voltages are available upon request.

Miscellaneous Information:

- I provide a short cable between the remote switch and the main board so that you can run the board on your bench to get a feel for how it works. This is because I have no idea how far apart the switch board and the main board will be in your application. I can custom build a cable for you, however. Please contact me for pricing.
- If you purchase a pre-made cable, make sure it is a straight-through version. A cross-over version will not work and may damage the board. To tell if your cable is a straight-through cable, hold the ends together, top side up, side-by-side. You can see the colored wires in the tip. They should be mirror images of each other.
- **IMPORTANT!!! There are 2 terminals for the motor power input. They are TIED TOGETHER so put only the hot wire in either terminal. DO NOT put the hot wire in one**

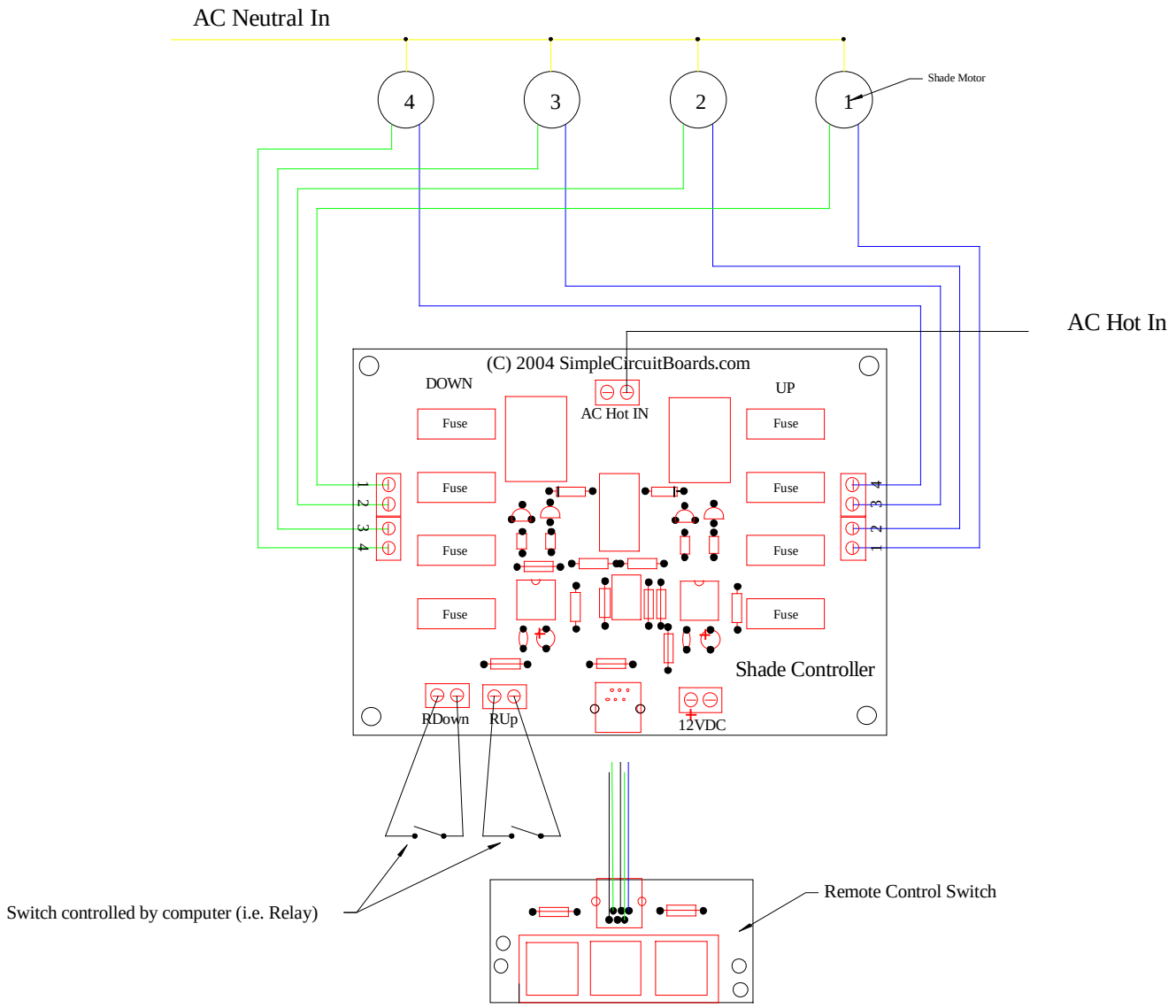
terminal and the common (or neutral) wire in the other. THIS WILL RESULT IN A DEAD SHORT! The neutral wire should not be attached anywhere on this board. See the wiring diagram below and follow it carefully!

- Do not run more than 8 amps total through the 4 Up or Down terminal connections. For example, if you are using 4 motors, they can not draw more than 2A each. If you are only using one motor, it can draw up to 8A. Each of the 4 terminals are fused for 2A each so you may have to change the fuses for your application.

Specifications:

- Input Power: 12 VDC
- Output: NO and NC Contacts
- Relay Rating: 10A Max
- Board Dimensions: 4 x 4.5 inches (Main)
  1.3 x 2.75 inches (Switch)

Example Hook-Up
Below is an example of how this board should be hooked up:



Resistor Values / Time Delay* Chart

Resistor Value (K)	Delay Seconds	+5%	-5%
10 K	1.4	1.3	1.5
11 K	1.6	1.5	1.6
12 K	1.7	1.6	1.8
13 K	1.8	1.7	1.9
15 K	2.1	2.0	2.2
16 K	2.3	2.1	2.4
18 K	2.5	2.4	2.7
20 K	2.8	2.7	3.0
22 K	3.1	2.9	3.3
24 K	3.4	3.2	3.6
27 K	3.8	3.6	4.0
30 K	4.2	4.0	4.4
33 K	4.7	4.4	4.9
36 K	5.1	4.8	5.3
39 K	5.5	5.2	5.8
43 K	6.1	5.8	6.4
47 K	6.6	6.3	7.0
51 K	7.2	6.8	7.6
56 K	7.9	7.5	8.3
62 K	8.7	8.3	9.2
68 K	9.6	9.1	10.1
75 K	10.6	10.1	11.1
82 K	11.6	11.0	12.1
91 K	12.8	12.2	13.5
100 K	14.1	13.4	14.8
110 K	15.5	14.7	16.3
120 K	16.9	16.1	17.8
130 K	18.3	17.4	19.3
150 K	21.2	20.1	22.2
160 K	22.6	21.4	23.7
180 K	25.4	24.1	26.7
200 K	28.2	26.8	29.6

Resistor Value (K)	Delay Minutes	+5%	-5%
220 K	0.52	0.49	0.54
240 K	0.56	0.54	0.59
270 K	0.63	0.60	0.67
300 K	0.71	0.67	0.74
330 K	0.78	0.74	0.81
360 K	0.85	0.80	0.89
390 K	0.92	0.87	0.96
430 K	1.01	0.96	1.06
470 K	1.11	1.05	1.16
510 K	1.20	1.14	1.26
560 K	1.32	1.25	1.38
620 K	1.46	1.39	1.53
680 K	1.60	1.52	1.68
750 K	1.76	1.68	1.85
820 K	1.93	1.83	2.02
910 K	2.14	2.03	2.25
1.0 M	2.35	2.23	2.47
1.1 M	2.59	2.46	2.72
1.2 M	2.82	2.68	2.96
1.3 M	3.06	2.90	3.21
1.5 M	3.53	3.35	3.70
1.6 M	3.76	3.57	3.95
1.8 M	4.23	4.02	4.44
2.0 M	4.70	4.47	4.94
2.2 M	5.17	4.91	5.43
2.4 M	5.64	5.36	5.93
2.7 M	6.35	6.03	6.67
3.0 M	7.06	6.70	7.41
3.3 M	7.76	7.37	8.15
3.6 M	8.47	8.04	8.89
3.9 M	9.17	8.71	9.63
4.7 M	11.05	10.50	11.61
5.1 M	11.99	11.39	12.59
5.6 M	13.17	12.51	13.83
6.2 M	14.58	13.85	15.31
6.8 M	15.99	15.19	16.79
7.5 M	17.64	16.76	18.52
8.2 M	19.28	18.32	20.25
9.1 M	21.40	20.33	22.47
10.0 M	23.52	22.34	24.69

* Above time values are calculated and are approximate. You may have to experiment a little to get the exact time you want. Use ¼ watt resistors – available at any electronics supply store (i.e., Radio Shack). The +/- 5% Values above show approximate range expected when using 5% resistors.

Disclaimer:
These boards are designed for educational use only. In no circumstances should these circuit boards be used in critical situations where failure could mean injury or property damage.

For more information, contact me at:
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