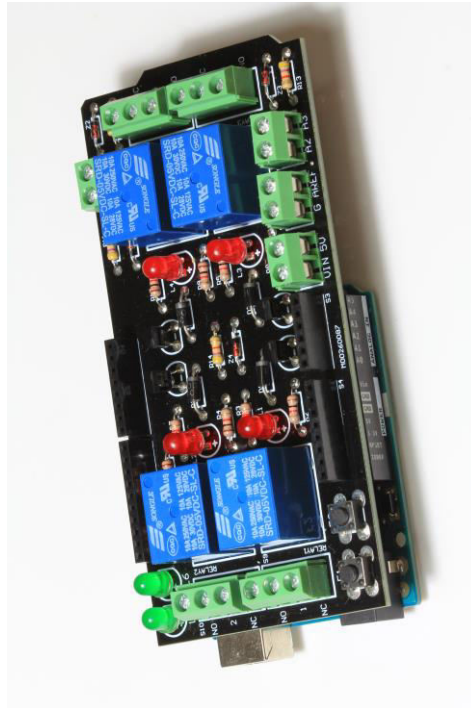


## RELAY SHIELD (4 CHANNELS)

(ARDUINO COMPATIBLE)  
PRODUCT CODE: M00270052

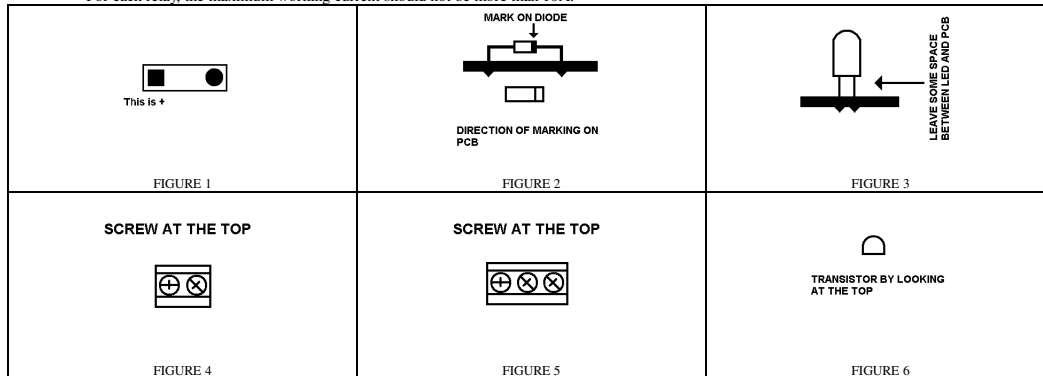
### FEATURE:

- 4 channels SPDT relay output.
- 4 screw type analog input (With resistor and zener diode for overvoltage protection)
- Two independent push button switches (Propose is set by Sketch writer)
- Two independent LED (Propose is set by Sketch writer)
- Screw type input/output for VIN, 5V, G and AREF.
- Assembly is needed.
- Arduino Sketch example for showing simplest input and output is attached.
- Requires 1 Arduino UNO (not included).



### READ BEFORE INSTALLATION:

- Put the component on the side of screen printing and solder on the back of PCB without printing.
- Placing direction of component.
- 1. On component, longer leg is "+".
- 2. On PCB marking, square pad as Figure 1 is always "+".
- 3. For diode, please install as Figure 2.
- Do not put the LED to very bottom, just install as Figure 3.
- For each relay, the maximum working current should not be more than 10A.



can be set as certain indication of setting of whole shield on site. Or other proposes.....

When connection the sensor to A0----A3, there must be at least one additional wire from the sensor such as ground of sensor connecting to the ground of this shield. If not, this shield would not know where (Potential) you are. The Sketch has shown you the simple action of A0 and RELAY 1 and which output of NO, NC AND 1 of S9 would be conductive. The pin no of circuit diagram is not the same as Sketch sample. For UNO board, the circuit shows this is 4 but the Sketch should be 3. Show in this way because some may use other kind of board but not UNO. The Sketch is based on the connection of sensor (Using variable resistor as sensor) on FIGURE 8.

### INSTALLATION:

Just install the component to the PCB M00260087 according to below table

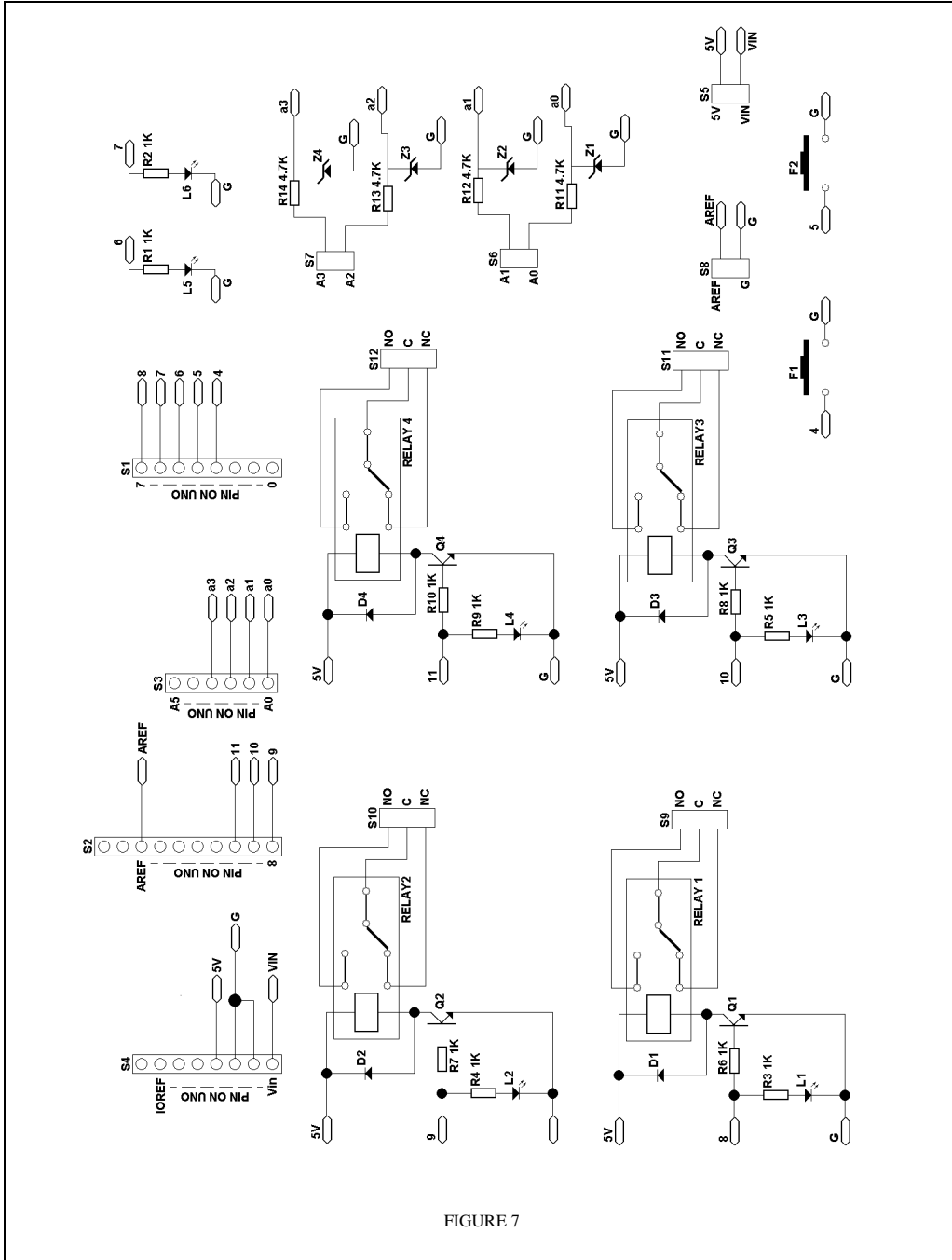
ITEM	SYMBOL ON PCB	DESCRIPTION	OUTLOOK	DIRECTION IS IMPORTANT?
1	R1	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
2	R2	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
3	R3	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
4	R4	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
5	R5	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
6	R6	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
7	R7	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
8	R8	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
9	R9	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
10	R10	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
11	R11	RESISTOR, 4.7K ohms	YELLOW, VIOLET, RED	NO
12	R12	RESISTOR, 4.7K ohms	YELLOW, VIOLET, RED	NO
13	R13	RESISTOR, 4.7K ohms	YELLOW, VIOLET, RED	NO
14	R14	RESISTOR, 4.7K ohms	YELLOW, VIOLET, RED	NO
15	D1	DIODE, IN4001	FIGURE 2	FIGURE 2
16	D2	DIODE, IN4001	FIGURE 2	FIGURE 2
17	D3	DIODE, IN4001	FIGURE 2	FIGURE 2
18	D4	DIODE, IN4001	FIGURE 2	FIGURE 2
19	Z1	ZENER DIODE, 5.1V	FIGURE 2 (MOSTLY TRANSPARENT RED)	FIGURE 2
20	Z2	ZENER DIODE, 5.1V	FIGURE 2 (MOSTLY TRANSPARENT RED)	FIGURE 2
21	Z3	ZENER DIODE, 5.1V	FIGURE 2 (MOSTLY TRANSPARENT RED)	FIGURE 2
22	Z4	ZENER DIODE, 5.1V	FIGURE 2 (MOSTLY TRANSPARENT RED)	FIGURE 2
23	RELAY1	RELAY	BIG RECTANGLE BOX WITH FIVE LEGS	YES
24	RELAY2	RELAY	BIG RECTANGLE BOX WITH FIVE LEGS	YES
25	RELAY3	RELAY	BIG RECTANGLE BOX WITH FIVE LEGS	YES
26	RELAY4	RELAY	BIG RECTANGLE BOX WITH FIVE LEGS	YES
27	L1	LED	RED	YES
28	L2	LED	RED	YES
29	L3	LED	RED	YES
30	L4	LED	RED	YES
31	L5	LED	GREEN	YES
32	L6	LED	GREEN	YES
33	S1	STACKABLE HEADER – 8PIN	LONG 8 PIN	NO
34	S2	STACKABLE HEADER – 10PIN	LONG 10 PIN	NO
35	S3	STACKABLE HEADER – 6PIN	LONG 6 PIN	NO
36	S4	STACKABLE HEADER – 8PIN	LONG 8 PIN	NO
37	S5	VIN, 5V OUTPUT	FIGURE 4	NOTE 1
38	S6	A0, A1 OUTPUT	FIGURE 4	NOTE 1
39	S7	A2, A3 OUTPUT	FIGURE 4	NOTE 1
40	S8	G, AREF OUTPUT	FIGURE 4	NOTE 1
41	S9	RELAY1 OUTPUT	FIGURE 5	NOTE 1
42	S10	RELAY2 OUTPUT	FIGURE 5	NOTE 1
43	S11	RELAY3 OUTPUT	FIGURE 5	NOTE 1
44	S12	RELAY4 OUTPUT	FIGURE 5	NOTE 1
45	F1	PUSH BUTTON SWITCH	FOUR LEGS	NO
46	F2	PUSH BUTTON SWITCH	FOUR LEGS	NO
47	Q1	TRANSISTOR, NPN	FIGURE 6, MARK WITH 9014	YES
48	Q2	TRANSISTOR, NPN	FIGURE 6, MARK WITH 9014	YES
49	Q3	TRANSISTOR, NPN	FIGURE 6, MARK WITH 9014	YES
50	Q4	TRANSISTOR, NPN	FIGURE 6, MARK WITH 9014	YES

NOTE 1. Metal terminal is facing outside the PCB.

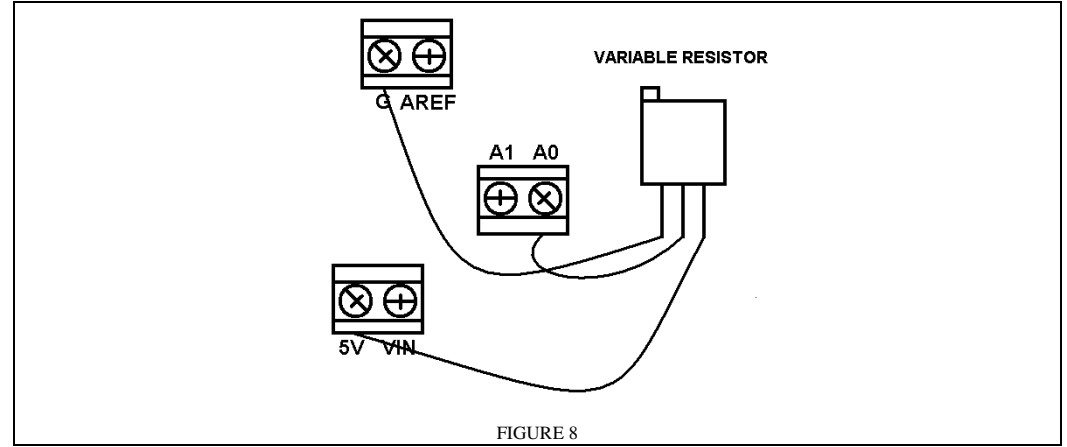
### DESCRIPTION:

The circuit design is based on the Arduino UNO. Of course, this can be used on any brand of Microcontroller or external circuit if the pin location and voltage is matched. If this is not matched, just route this yourself. The two switches and two LED work independent and the proposes is totally dependent on Sketch writer. I use F1 and F2 as example. You can set F1 as switch for increasing the trigger voltage and F2 as switch for decreasing trigger voltage for certain analog input. LED

CIRCUIT DIAGRAM:



SKETCH:



/\* This Sketch show you the simplest way of relay function.  
 When input from A0 is higher than preset value, the relay change this working status.  
 When input from A0 is lower than present value, the relay change back to original status. \*/

```
int relay1 = 7;
int value;

void setup() {
  pinMode(relay1, OUTPUT);
}

void loop() {
  value = analogRead(0);
  if (value > 500) {
    digitalWrite(relay1, HIGH);
  }
  else {
    digitalWrite(relay1, LOW);
  }
}
```