

KDR00101 DMX Controlled Relay Kit



This is a DMX512-A relay kit using ANSI approved RJ-45 connectors for DMX networks. Power requirements are 12 Vdc @ 100 ma. The relay contact rating is 10 Amp @ 120 or 240 Vac and 8 Amp @ 30 Vdc. The board features a indicator LED for power and relay status, screw terminal blocks for power and relay connections, solder points for hard wiring a external DMX connector, dip switch for DMX address selections and jumpers for termination, options and testing. The relay activates when the DMX value of the set channel equals 200 or more and releases at values of 54 or less.

What's Included in the kit:

- | | |
|--|---|
| 1 - Quality PC Board | 1 - Programmed Micro-controller IC |
| 1 - SN75176 Bus Transceiver | 1 - 78L05a Voltage Regulator |
| 1 - 2N7000 N-Channel Mosfet | 1 - 1N4002 Diode |
| 1 - DIP Switch 9-Position | 1 - 20 Pin IC Socket |
| 1 - 8-Pin IC Socket | 1 - 220ufd 25v Electrolytic Capacitor |
| 1 - 220ufd 6.3v Electrolytic Capacitor | 2 - 0.1ufd 50v Ceramic Capacitors (104) |
| 2 - LED's | 2 - LED Spacers |
| 1 - 4.7k $\frac{1}{4}$ Watt Resistor (yellow, violet, red) | 1 - 3 Position Terminal Block |
| 1 - 1.5k $\frac{1}{4}$ Watt Resistor (brown, green, red) | 1 - 2 Position Terminal Block |
| 1 - 120 ohm Resistor (brown, red, brown) | 2 - RJ45 Jacks |
| 1 - 6 Pin Header | 1 - Header Jumper |
| 4 - PCB Standoffs | 1 - Relay |

What you will need:

1. Good quality soldering iron 25 – 40 watt
2. Solder tip cleaning sponge
3. Rosin core or no clean solder
4. Diagonal wire cutter

Basic instructions:

Insert parts from top side (component side) of PC board.

Parts should be fully inserted, most parts will touch PC board.

If parts are polarity sensitive, double check your installation.

On some parts you can bend the leads after inserting to help hold them in place.

While soldering apply a small amount of solder to the solder tip to help with heat transfer.

Touch the soldering tip to both the component lead and PC board.

To improve your solder connection apply solder to part/PC board instead of solder tip.

The solder should flow around the component lead and on the PC board.

Avoid adding too much solder or too much heat.

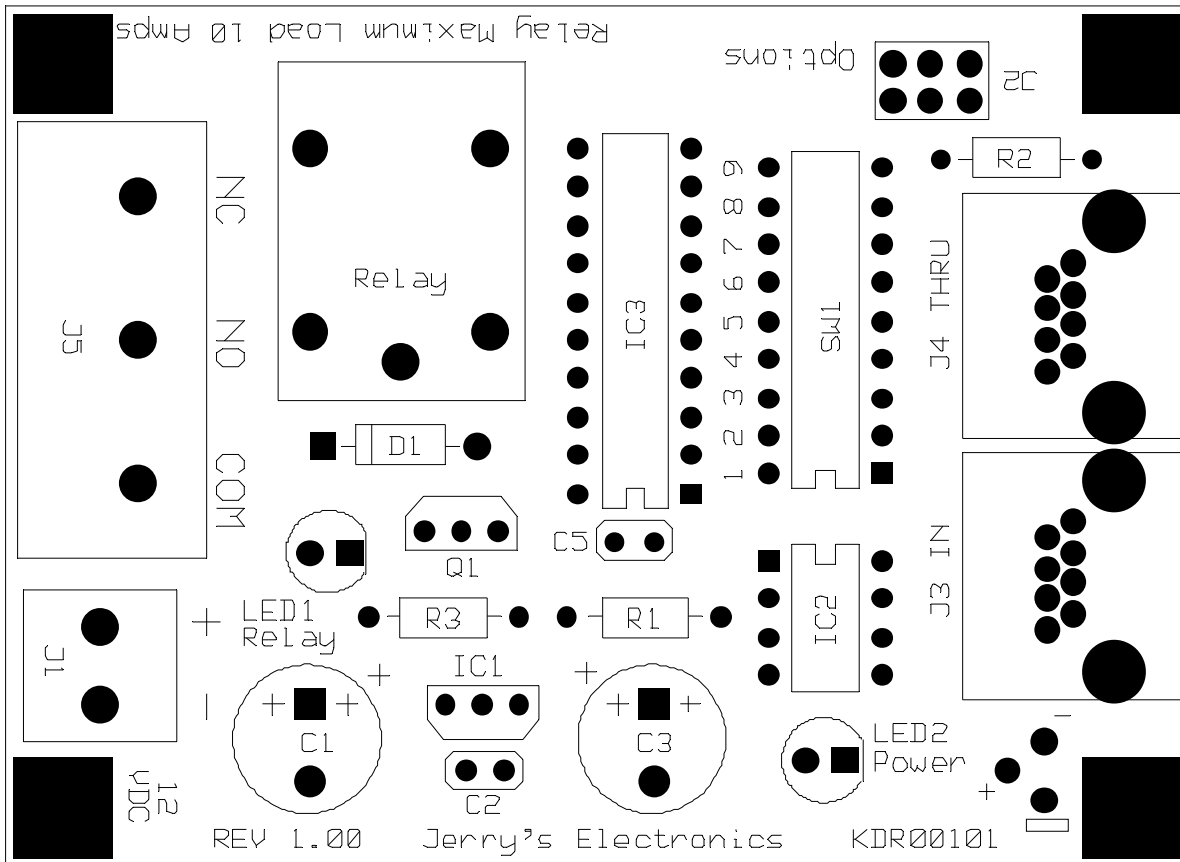
Your solder connection should be shiny and smooth, not balled or grainy looking.

If your solder connection is grainy looking try adding some flux and reheat the joint.

Cold solder connections are the most common beginner mistakes.

Cold solder joints happen when the part lead and/or the PC board are not heated well.

After soldering trim the component leads close to the solder joint.

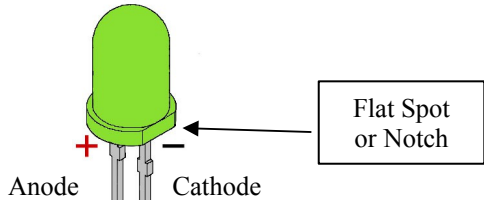


To ease assembly install parts in the following order:

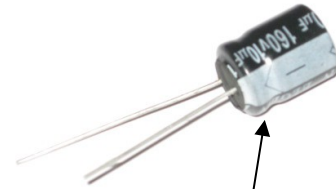
1. R1 – 1.5K Resistor (brown, green, red)
2. R2 – 120 ohm Resistor (brown, red, brown)
3. R3 – 4.7K Resistor (yellow, violet, red)
4. D1 – 1N4002 Diode (observe polarity)
5. 20 Pin IC Socket in IC3 location (observe orientation)
6. 8 Pin IC Socket in IC2 location (observe orientation)
7. C2,5 - 0.1ufd 50v Ceramic Capacitor (104)
8. SW1 – DIP Switch 9-position (observe orientation)
9. LED1,2 – Insert LED's through the LED spacers then PCBoard (observe polarity)
10. IC1 – LM78L05 Regulator (observe orientation)
11. Q1 – 2N7000 Mosfet (observe orientation)
12. J2 – 6-Pin Header
13. J1 – Terminal Block (observe orientation)
14. J3,4 – RJ-45 Jacks
15. C1 – 220ufd 25v Electrolytic Capacitor (observe polarity)
16. C3 – 220ufd 6.3v Electrolytic Capacitor (observe polarity)
17. Relay – Relay
18. J5 – Terminal Block (observe orientation)
19. IC2 - SN75176 Bus Transceiver (observe orientation)
20. IC3 – ATTiny261A Programmed Micro-controller IC (observe orientation)
21. PCB Standoffs

Parts Identification:

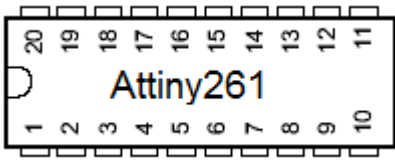
LED's
Flat side indicates Cathode or negative lead



Aluminum Electrolytic Capacitors

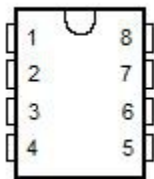
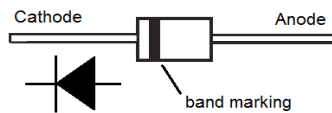


The (-) sign on this white stripe indicates the negative lead, the stripe can be any color.

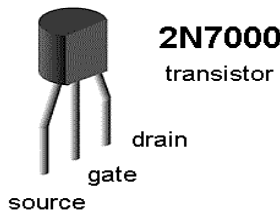


ATTiny261A
Top View

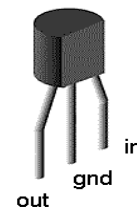
1N4002 Diode



SN75176
Top View



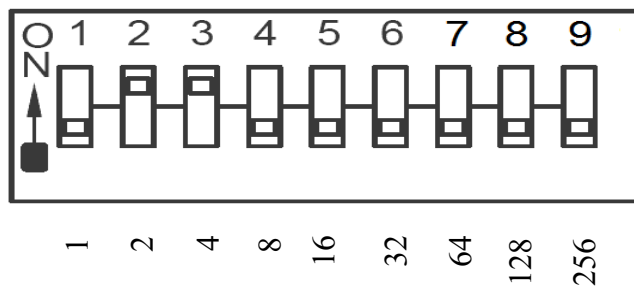
2N7000
transistor



LM78L05
5 Volt Reg

Setting the DIP Switches:

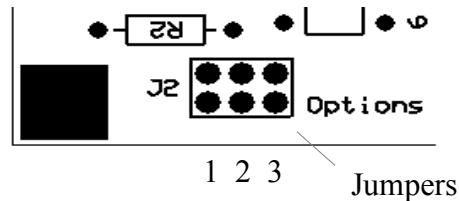
The DMX address selection DIP switch is in BCD format (binary coded decimal), but from least significant (left) to most significant (right) as shown below:



You simply add the BCD values together for each switch that is up or on, for instance the above switches give a DMX address of # 6.

Jumpers:

Jumper #1 - Install a jumper in location #1 to enable the DMX terminator resistor if this device is the final device on the DMX daisy chain.



Jumper #2 – Add a jumper here if you want the relay to turn off if the DMX signal is lost for more than 3 seconds.

Jumper #3 – Turns on the relay for test purposes.

Troubleshooting:

If your kit doesn't work, be sure to check for solder shorts and cold solder joints. This is just a basic troubleshooting guide and it assumes all components are good.

- 1 - Is the LED2 power LED on?
Yes – proceed to step 2
No – check IC1 and your power supply hookup.
- 2 - Are the IC's inserted correctly?
Yes – proceed to step 3
No – remove and insert correctly, they may be damaged or caused damage to other components.
- 3 - Install test jumper #3 does the relay activate?
Yes – proceed to step 4
No – check that Q1, D1 and LED1 were inserted properly?
Yes – Q1 or IC3 maybe damaged.
- 4 - There's not much left, IC2 could be bad or the DIP switches are set wrong or the DMX signal being applied is faulty or reversed.