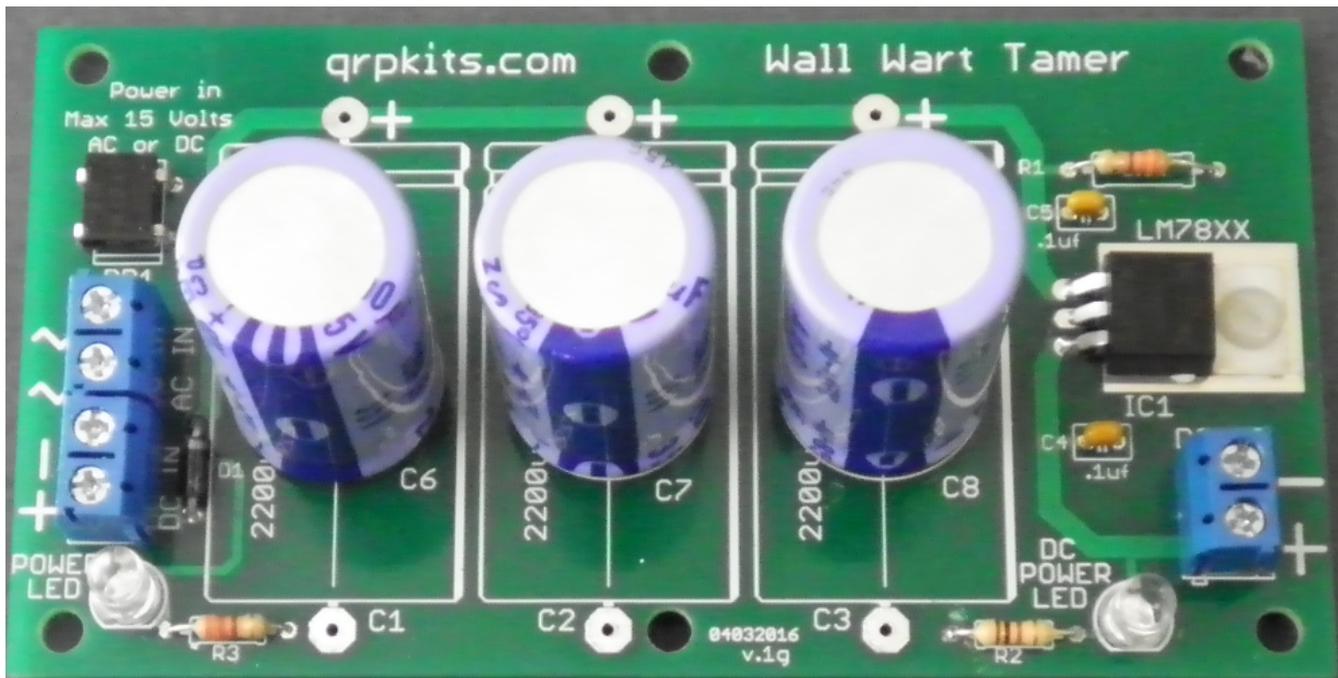


Pacific Antenna Wall Wart Tamer Kit



Overview

The Wall Wart Tamer is a simple device designed to filter input power and remove most of the “hash” noise that is generated from common wall warts and laptop supplies. The kit comes standard with a 12V regulator but by changing the regulator, the Wall Wart Tamer can be used to provide output voltage up to 15v.

This documentation covers the construction of the Wall Wart Tamer board. It approaches this task as a learning exercise for new builders, so that they can develop proficiency and self-confidence. The project itself is quite simple and if you follow the steps you will have a working Wall Wart Tamer module putting out CLEAN DC power when you finish.

Specifications

- Converts input AC or DC to clean, regulated DC voltage
- Reuse surplus wall warts or computer supplies as DC power sources.
- Input voltage range of 14-25V
- Supplied with 12V regulator
- Current output of up to 1A
- Board size of 2.3” x 4.3”.
- Can use other LM78xx series regulators for other output voltages.

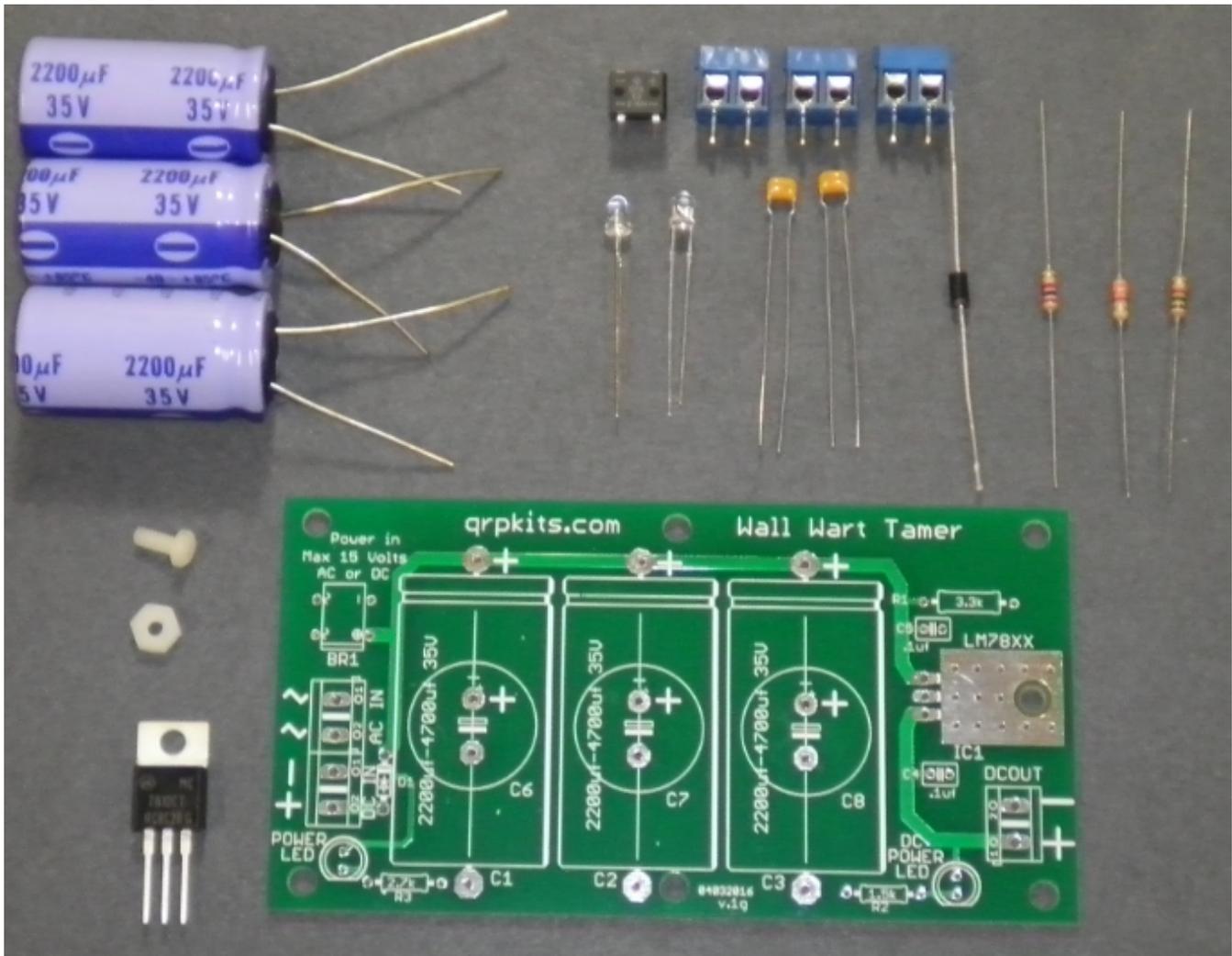
Assembly Instructions

This section covers the construction of the N7XG Wall Wart Tamer. The project itself is quite simple and if you follow the steps carefully, you should have no problem assembling the kit.

Parts List

Picture	Name	Quantity	Description	Marking
	R2	1	1.5k ohm resistor 1/4 watt	brn-grn-red-gold
	R3	1	2.7k ohm resistor 1/4 watt	red-vio-red-gold
	R1	1	3.3k ohm resistor 1/4 watt	org-org-red-gold
	C4 C5	2	0.1uF (100nF) monolithic ceramic cap	104
	BR1	1	BR1 Bridge rectifier 1amp	4 pin dip
	D1	1	Schottky Rectifier 1Amp	1N5817
	LED	2	LED Standard 5mm	N/A
	DC In, AC IN, DC OUT	3	Terminal Blocks PCB MOUNT 2P	N/A
	IC1	1	LM7812 voltage regulator	LM7812
	C6 C7 C8		2200uF 35V Radial	2200uF 35V
	Screw	1	#4 nylon screw	N/A
	Nut	1	#4 nylon nut	N/A

Parts Included



Note: Occasionally the parts supply may vary slightly in appearance from those shown in photo

Parts Assembly

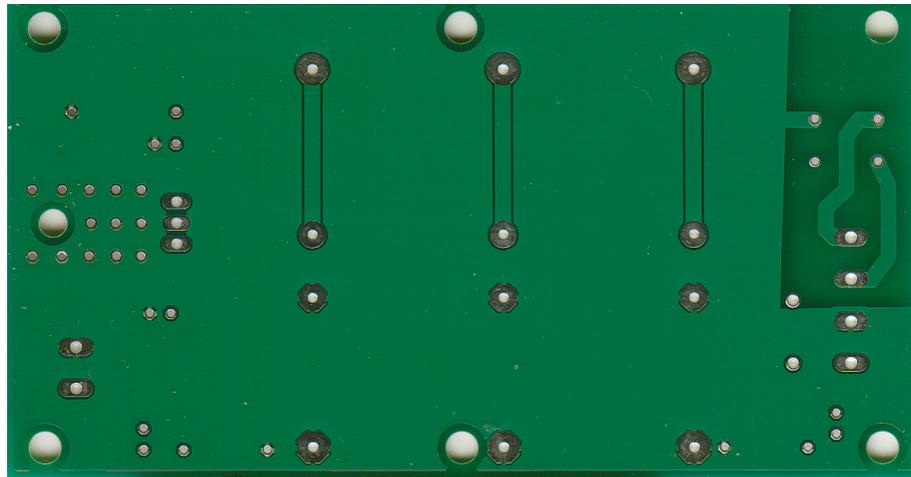
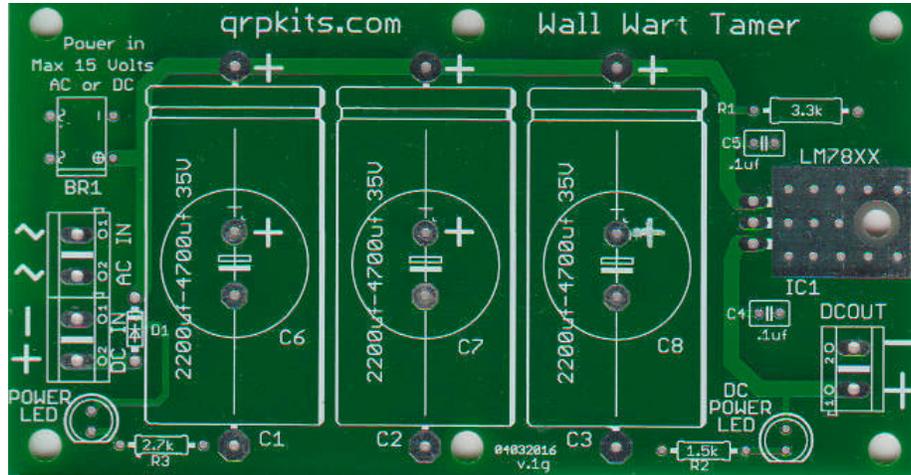
The N7XG Wall Wart Tamer is a fairly simple device to assemble and test.

It is easiest if you follow these instructions, checking off steps as they are performed.

This will lead you through the assembly installing components generally from shortest/smallest to tallest.

First Things First

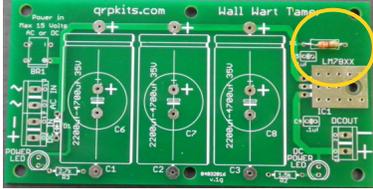
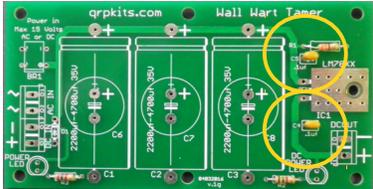
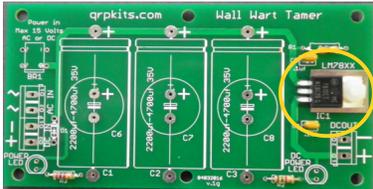
Begin by inspecting the PCBs to look for any defects such as cracks or breaks. The holes on the board should be open on both sides.

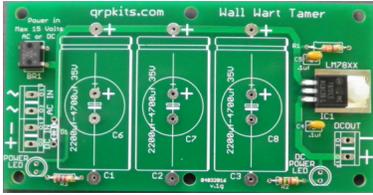
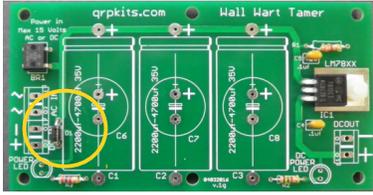
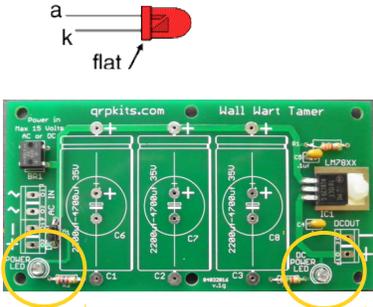


Next inspect inventory and sort out the various parts for the board. Make sure you understand which parts are which, and things like resistor codes and component orientation. A Google search will yield a plethora of information including resource sites like Wikipedia

Generally, the following component assembly order is grouped from shortest to tallest parts to make assembly easier. Special instructions for component orientation should be listed if a component has any. Don't stress it- we try to make this as easy as possible!

Install Parts

Step	Instructions	Wall Wart Tamer
1 <input type="checkbox"/>	Install the 3.3K ohm (orange-orange-red) resistor at location R1. Solder and clip leads. Note: Resistors do not have a specific orientation!	
2 <input type="checkbox"/>	Install the 1.5k ohm (brown-green-red) resistor at location R2. Solder and clip leads.	
3 <input type="checkbox"/>	Install the 2.7k ohm (red-violet-red) resistor at location R3. Solder and clip leads.	
4 <input type="checkbox"/>	Install the 0.1uf Ceramic Capacitors at locations C4, C5. Solder and clip leads. Note: Bypass caps do NOT have a specific orientation. .1uf is also known as 100nf.	
5 <input type="checkbox"/>	Install the LM7812 voltage regulator at location IC1. Solder and clip leads. Note: The voltage regulator is polarized and goes only one way. Gently bend the leads of the regulator at the location on the leads where it exits the black plastic down at a 90 degree angle towards the flat side of the regulator. Apply a small layer of thermal grease to the flat	  

Step	Instructions	Wall Wart Tamer
	<p>heat sink side of the regulator and fasten it to the PCB using a #4 screw and nut.</p>	
<p>6 <input type="checkbox"/></p>	<p>Install the bridge rectifier at location BR1. Solder and clip leads (if needed).</p> <p><i>Note: this part has a specific orientation. Notice that one pin on this device has a small + on it and this corresponds to the plus on the board. This in the lower right hand side as shown.</i></p>	
<p>7 <input type="checkbox"/></p>	<p>Install the Schottky Rectifier 1N5819 at location Q1. Solder and clip leads.</p> <p><i>Note: The diode is polarized and it can only go one way. The end with the band (cathode) goes towards the top side of the board as shown.</i></p>	
<p>8 <input type="checkbox"/></p>	<p>Install the 2 LED's at location "Power LED" (indicates power in is present) and "DC POWER LED". Solder and clip leads.</p> <p><i>Note: These parts have a specific orientation. The flat side of the LED is negative and goes toward the flat side on the silkscreen. The negative lead goes in the right hand hole for PWR, HB and ZC as shown.</i></p>	
<p>9 <input type="checkbox"/></p>	<p>Install 3 terminal blocks at locations DC IN, AC IN, and DCOUT. Solder.</p> <p><i>Note: Two of the terminal block should be mated together before they are install at locations DC IN and AC IN. The terminal blocks should be oriented facing outward.</i></p>	

Install Electrolytic Caps

The board was designed to support either axial lead capacitors (the leads come out on opposite ends), OR radial lead caps (the leads come out on the same side of the cap. This version of the kit is supplied with Radial lead capacitors with value of 2200uF and a voltage rating of 35V.

Step	Instructions	Wall Wart Tamer
10 <input type="checkbox"/>	<p>Install 3 radial lead caps at C6, C7 and C8. Solder and clip leads.</p> <p><i>Note: Electrolytic Caps DO have a specific orientation! + goes in the upper solder pad nearer the top of the board, and – in the lower pad nearer the bottom.</i></p> <p><i>Usually the negative lead is marked with negative signs or a strip pointing at it as an indicator of the negative side.</i></p> <p>Also, the plus lead is often slightly longer than the negative lead.</p>	 <p>Negative toward THIS side!!</p>

Congratulations! This completes the construction of your Wall Wart Tamer!

Inspection and Testing

Inspect all connections and solder joints for any problems including shorts between pads.

Doublecheck component orientation, especially, the bridge rectifier, Schottky Diode, the two LEDs and the electrolytic capacitors.

It is strongly recommended to include a fuse of 3A or less on the input to limit current in the event of a short.

Note that while the board labeling indicates 15V maximum input, this is a mistake and does not apply to this kit.

With the capacitors supplied, input voltage can go up to as high as 25V and should be at least approximately 14V to provide 12V output. A good range of input voltage for producing 12VDC output is from 14- 20V.

This covers the range of most wall wart supplies and surplus laptop power supplies. If in doubt, check the output of your supply with a voltmeter.

To use the Wall Wart Tamer, connect the input to either an AC or a DC voltage source of between 14V and 25V. This can be a wall pack, transformer or laptop type supply as long as the output voltage is in this range.

Both LEDs should illuminate, if not, recheck the component installations.

Using a voltmeter, check the output voltage on the DC scale. It should be very close to 12VDC

Once proper operation is verified, you are ready to use your Wall Wart Tamer as a power source. It will provide clean, regulated 12V DC power.

Note that the maximum output is 1.0A at 12VDC. Exceeding this level for an extended time may damage the bridge rectifier and/or the regulator due to heating.

We hope you enjoy your Wall Wart Tamer kit. Please do not hesitate to contact us if we can provide assistance or answer any questions.

Thanks from the Pacific Antenna and Qrpkits.com team!