

**LABEL**

**LINKSYS-1W**

## **SPRINGBOK DIGITRONICS**

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*Innovative Hardware and Software for the modern world*

Case Modifications

INNOVATIVE HARDWARE AND SOFTWARE


# Product Installation Series


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## Standard Document Format


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## Overview

*Keeping it easy...*

### LP-LINKSYS-1W Case modification

When we were first designing the LP-LINKSYS-1W adapter, the original impulse was to use a DB9 connector for the serial input and a RJ45 jack for the 1-Wire connection. But on closer examination on the LINKSYS case we discovered that there really wasn't room in the case unless we butchered the case or mounted them in a way that made it look like a hacked up case. And neither is easy for a average user to punch out without special tools or spending lots of time with a file. Instead we discovered if we used mini-din size connectors instead we could create a system that could maintain a finished professional look for the product, yet would still be easy for the typical user to create with minimal work.



Figure 1 – Original unmodified WRT54GS unit

In the following image of the modified case., you can see that the only changes were made to the front panel of the unit. It still appears very much like the original unit did.



Figure 2 – Finished LINKSYS WRT54GS with LP-LINKSYS-1W adapter installed inside a modified case (for the 2 new connectors) and a new label installed.



Figure 3 – Close-up of the new label and connectors

We have created a totally new label and added two new jacks to the front panel of the unit so both the RS232 and 1-Wire abilities of the LP-LINKSYS-1W adapter are accessible. The rest of this document details in a rough step-by-step procedure on how we did it so you can do it to.

# Chapter

## Modifications

*Keeping it easy...*

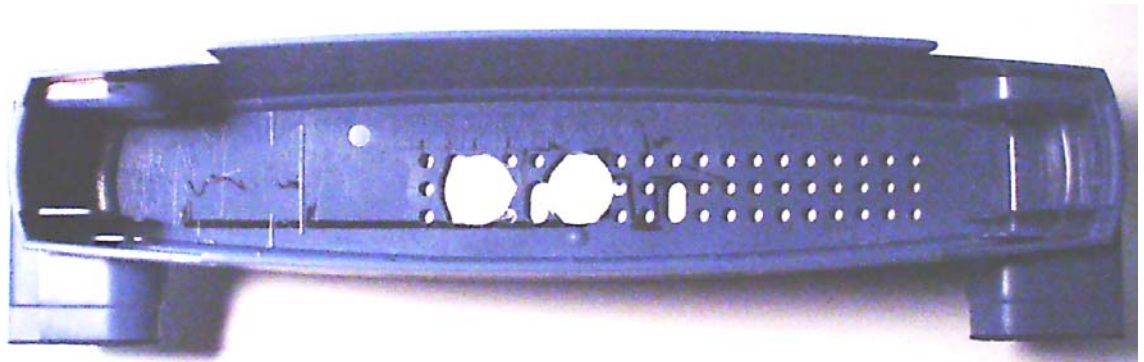
### LP-LINKSYS-1W Case modification

#### Remove the original LINKSYS label

Turn the blue front panel over to its back, and using a dull object gently push slightly on the label through holes to help lift label from front of case. A ball-point pen tip works well for this. Use care not to distort or injure the original label as someday you may wish to restore it.

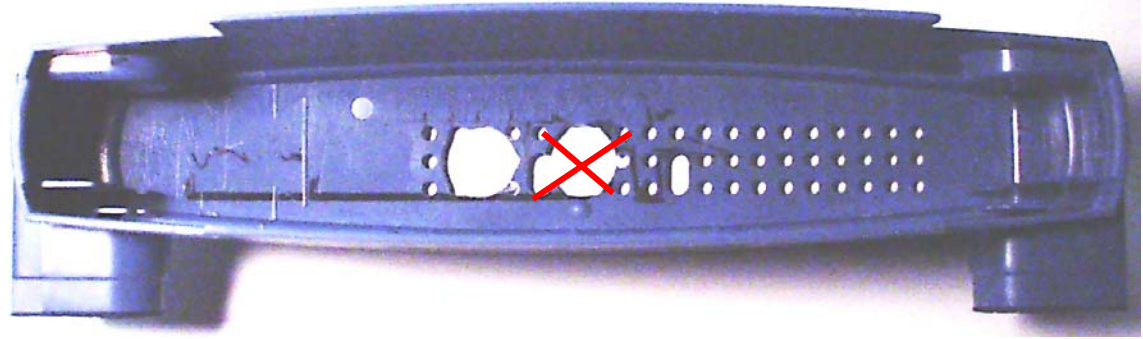
#### Mark the front panel for drilling

We need to now mark the front panel of the case for drilling the holes for the mini-din connectors so it will end up like the image below.



**Figure 4 – Front panel with two holes drilled for mini-din connectors**

Looking at the panel from its back, note that the case has a series of ventilation holes already formatted in it in a 3 row by 19-column pattern. We will use these holes to help us guide the location of the holes that need to be drilled. Assume row 1 is on the bottom and column 1 is the leftmost column in the above picture.



**Figure 5 – Showing how the ventilation holes were used to guide the drilling of the hole for the 1-Wire mini-din connector.**

Imagine the line intersection if you drew a line from the row 3, column 5 to row 1, column 8 and another line from row 3 column 8 to row 1 column 5. This is shown as the red lines in the above image. Mark the point where the lines intersect. This is the center point of the hole you will need to drill for the 1-Wire connector.

Do the same again, but this time use row 3, column 1 to row 1, column 4 for one line and row 3, column 4 to row 1 column 1 for the other. Mark this center point also. This will be the center point for the RS232-F connector.

### **Drill the holes**

Using a sharp  $\frac{1}{2}$  inch drill bit, carefully drill out the holes. Perfect alignment is not needed. The new label will help cover slight mistakes in position.

The drill bit we used is shown to the right. Note that it cuts on the edges which makes drilling in the plastic a bit easier than a normal drill bit. And the sharp tip helps keep the position of the drill centered on our mark when we start drilling.



If needed, a bit of rolled up sandpaper can be used to smooth the edges of the holes as needed. Don't worry as the label will help cover up any unevenness in your holes.

The hard work is now completed. Your unit should look something like the image on top of this page with two holes drilled.

## Making the label

Print out a copy of the label using the supplied template. It is provided in both word and VISO format so you can modify it if you want to or adjust the position for your label material. An inkjet printer works well for printing. If desired you can change the text to suit your needs (or company name or whatever). We suggest you print a sample and test fit to check alignment from your system.

We wanted to use a self adhesive label since we didn't want to bother with adhesives, and we noticed that the US postal service labels that we had lying around were about the right size (and free from the post office). They peel off some backing paper and since they were free, it was easy to experiment. A sample print later, and we had a useable label made. A good glossy CD label might also be a possibility. Feel free to experiment with label material till you find something you're happy with.



Figure 6 – US postal service label printed with new label

## Label transparency

Your label material should be transparent enough (once the backing is removed if any) to allow the LED light for the POWER and other LED's to shine through the paper.



If desired, you can punch out the LED holes (White circles on template) to make it brighter.

### **Label finish**

Since the US postal labels were a matte finish, we decided to make them look a bit more glossy, by covering with clear shipping tape over the top. This adds to the professional look of the label and makes them shine a bit. If you punched out the holes before covering with tape the clear tape will keep a clean finish to the surface and the light can shine through the tape.

### **Cut out Label**

Cut your label out to size and test fit its size on the panel. A paper cutter is convenient for the top straight edge, but the slightly rounded edge is best with regular scissors. Trim as needed with a sharp knife.

Also carefully cut out the mini-din port holes (the blue circles) using a very sharp knife. (box cutters will work). Work carefully and slowly.



**Figure 7 – Cutting the label out in progress...**

If you need to clean the edges a black marker pen is useful to darken the insides of the holes.

### **Attach Label to front panel**

Carefully position your label and attach to the front panel. Use a sharp knife to trim if needed.

### **Cut the access holes for the screws**

We then located the location the screws were going to be through (holes at row 3, Column 4 and row 1, column 1) and cut small x marks through the label at this location. This allows the mounting screw to be pushed through the label. A pin prick through the back of the panel (where you can see the holes) can help make this easy to mark on the label.

You will also need to do the same at the holes at row 3, column 8 and row 1, column 4. You can see the position of these as indicated by the 4 screw heads in the following image. (one is obscured by the RS232 connector).



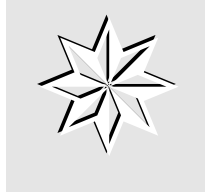
**Figure 8 – note the location of the mini-din screws**

A small wood screw is useful in starting to thread these holes if needed in the label paper.

### **Finished!**

You are now done, and ready to attach the mini-din connectors and wire to the LP-LINKSYS-1W adapter board.

## Final thoughts



### **A General Remark**

The ideas presented in this document are part of Springbok Digitronics efforts to widen its focus by looking in a broad manner at particular problems. Much of the background data has been collected from a wide variety of sources and has not been checked for accuracy. No implied suitability for manufacturing or use is implied but all rights for original materials are reserved.