

I put this hack together after buying a JV-880 on eBay with a broken LCD. Not including the minimal shipping costs for parts, the price to get everything working was under \$8 (USD). Used JV-880 LCD's seldom show up on eBay. When they do, they're costly and already in poor condition at 25+ years old. I didn't bother to see if Roland had any in stock. From past experiences, it's cheaper just to buy a whole synthesizer from eBay and cannibalize the parts, as opposed to buying any OEM parts from the Roland Service Department. I say this is a hack because it's nowhere near a perfect solution to replace the broken LCD. However, it's a lot better than having no LCD screen and a dead synth. The issues which make it buggy are:

- ▶ On some models of JV-880, adjusting the LCD contrast from the menu is no longer possible. The only way to adjust the contrast is to use an additional 50K Ohm potentiometer and a 5.1K Ohm 1/2 Watt resistor. Depending on when your JV-880 was manufactured, you may or may not need the extra Pot and Resistor. Some newer JV-880 production models don't need these extra parts and the LCD works. You will just need to experiment to find if your JV-880 was modified mid-production.



Apparently, Roland changed some components along the way. Use caution! During the test phase, I blew up the fusible resistor at silkscreen location **R116**. I suggest starting out by using these two parts so you don't supply too much voltage and burn out the Fusible Resistor (**R116**). I have two JV-880's which required these extra parts and another JV-880 where I just popped in a new LCD without the Pot and Resistor and adjusting contrast via the front panel works as it's supposed to. The Power Supply Unit (PSU) supplies varying Voltage levels (from 0V to 15VDC) to IC#2 which in turn regulates the Voltage levels to pin #3 at Connector **CN3** on the main PCB. This is the pin which controls the contrast level. The replacement LCD's listed below are not rated for anything higher than 5V. This is why there is a 5.1K Ohm limiting resistor connected to the 50K Ohm potentiometer needed for some models. Triple-check your wiring connections before applying power because you won't get a second chance! I have tried replacing the potentiometer with a static hard-wired 29K Ohm resistor and had mixed results. The LCD contrast adjustment seems to be a precision setting and during the power-up phase, the O/S settings for the LCD were intermittent for me. Sometimes the LCD went blank and other times the screen turned solid black. The best performance I found was by adding a 50K Ohm linear potentiometer and an extra 5.1K Ohm limiting resistor

- ▶ The LCD will not fit into some cases without modification to the steel frame

PARTS

The LCD screen model I used for this DIY is the first one on the parts list*. I've also tested the other two models on this list. My only complaint about these models is the right side is brighter than the rest of the screen because that's where the backlight LED is located. However, I can't be too picky for a \$5 part! My experiences with White/Blue and Black/Y-G LCD's from this same company are mixed. The Black/Y-G is crisp and very bright but it's a horrendous monkey vomit green color. The White/Blue looked a little washed out at the maximum contrast level because of the dark background mixed-in with the bright LED. The 16-Pin ribbon cable is a common part found on eBay. Don't pay more than \$2 for one. All parts shown below are available from eBay, mouser.com and the buydisplay.com website. The part numbers and vendors shown below are there for reference so you can get an exact description of each part and what you need to buy

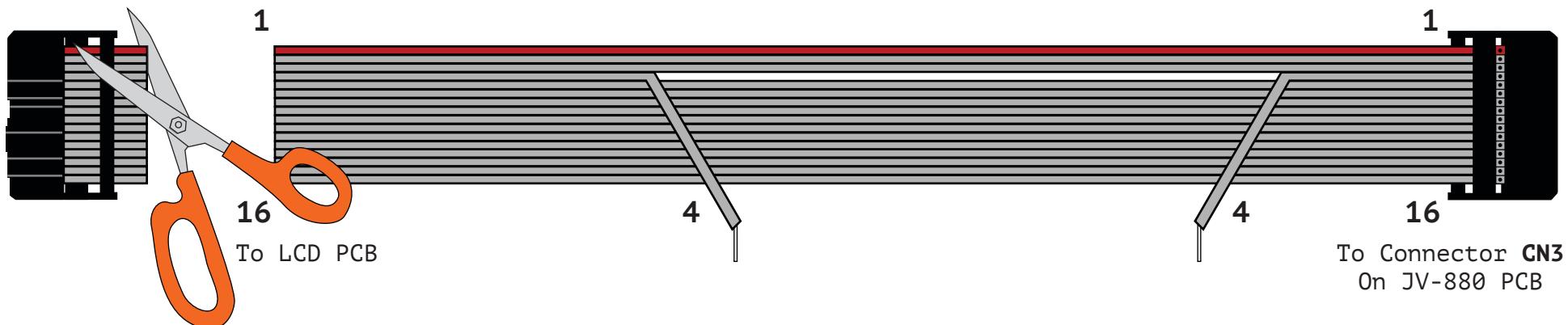
QUAN	PART NUMBER	DESCRIPTION	PRICE (USD)	VENDOR
1	ERM2402FS-1*	BLACK/WHITE 24x2 CHARACTER LCD - CHOOSE +5V WITHOUT A 2x8 Pin Header	\$5.30	buydisplay.com
1	16-PIN CABLE	16-PIN RIBBON CABLE 30cm LONG WITH FEMALE/FEMALE IDC CONNECTORS	\$1.00	eBay.com
1	MF1/2CC5101F	5.1K OHM 1/2 WATT METAL FILM RESISTOR	\$0.30	mouser.com
1	A-1983	50K OHM POT - LINEAR TAPER (B50K)	\$0.50	taydaelectronics.com
1	A-4911	200mm HEAT SHRINK TUBING - 3.5mm DIAMETER	\$0.10	taydaelectronics.com
2	A-4990	300mm #22 GAUGE HOOKUP WIRE	\$0.20	taydaelectronics.com
1	NFR25H0008208JA500	1/2 WATT 8.2OHM FUSIBLE RESISTOR (<i>OPTIONAL - A "Just In Case" Part</i>)	\$0.45	mouser.com
	ERM2402SBS-1	WHITE/BLUE 24x2 CHARACTERS LCD	\$4.72	buydisplay.com
	ERM2402SYG-1	BLACK/Y-G 24x2 CHARACTERS LCD	\$4.72	buydisplay.com
	ERM2402DNS-1	WHITE/BLACK 24x2 CHARACTERS LCD	\$4.72	buydisplay.com

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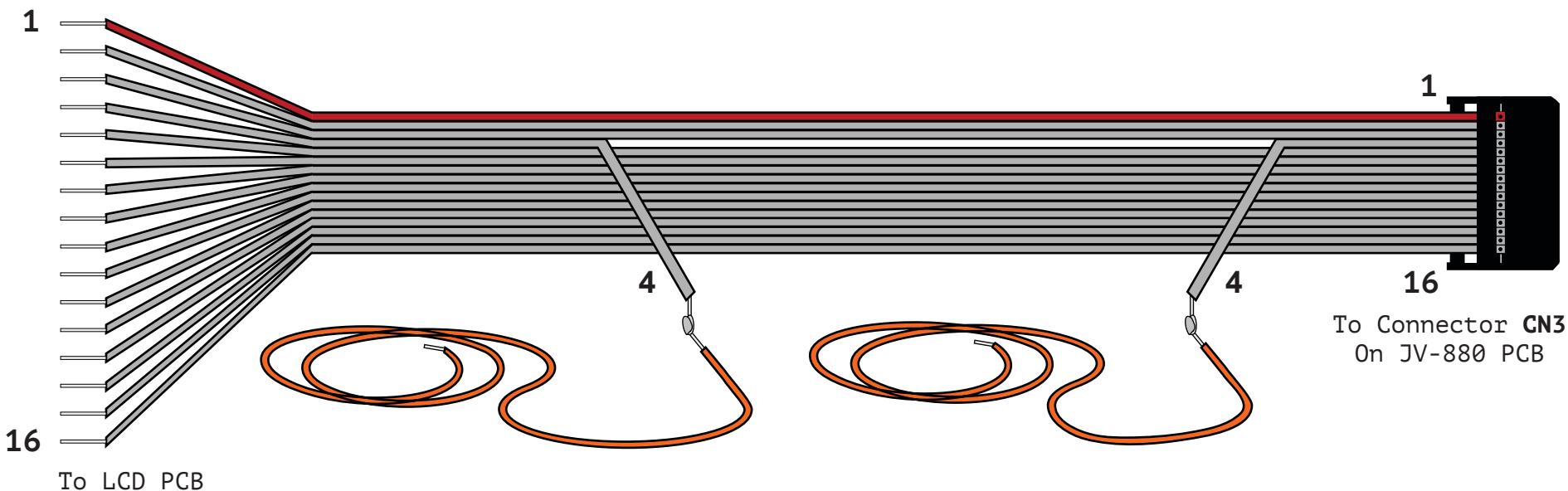
MODIFY THE CABLE

!! SOME NEWER JV-880 PRODUCTION MODELS DO NOT NEED THE #4 WIRE MODIFIED OR THE 50K POTENTIOMETER. YOU WILL NEED TO EXPERIMENT !!

If your ribbon cable does not have Pin #1 marked in red, Use a sharpie and mark it yourself. Make it match the image shown below. Cut off one of the connectors at the end of the ribbon cable. Carefully use an X-Acto knife to cut along the borders of wire #4 and separate a section about 70mm long near the middle. Cut it in half and strip off a 5mm length of insulation from each end



For the next step, I found it was easier tearing the wires apart using my fingers rather than using an X-Acto knife. Separate each wire at the end of the cable and make the wire segments about 40mm each. Strip off a 5mm length of insulation from each end as shown in the diagram below. Take two separate pieces of #22 gauge wire, each one about 300mm long, strip off a 5mm length of insulation from each end and solder them onto the ends of the #4 wires



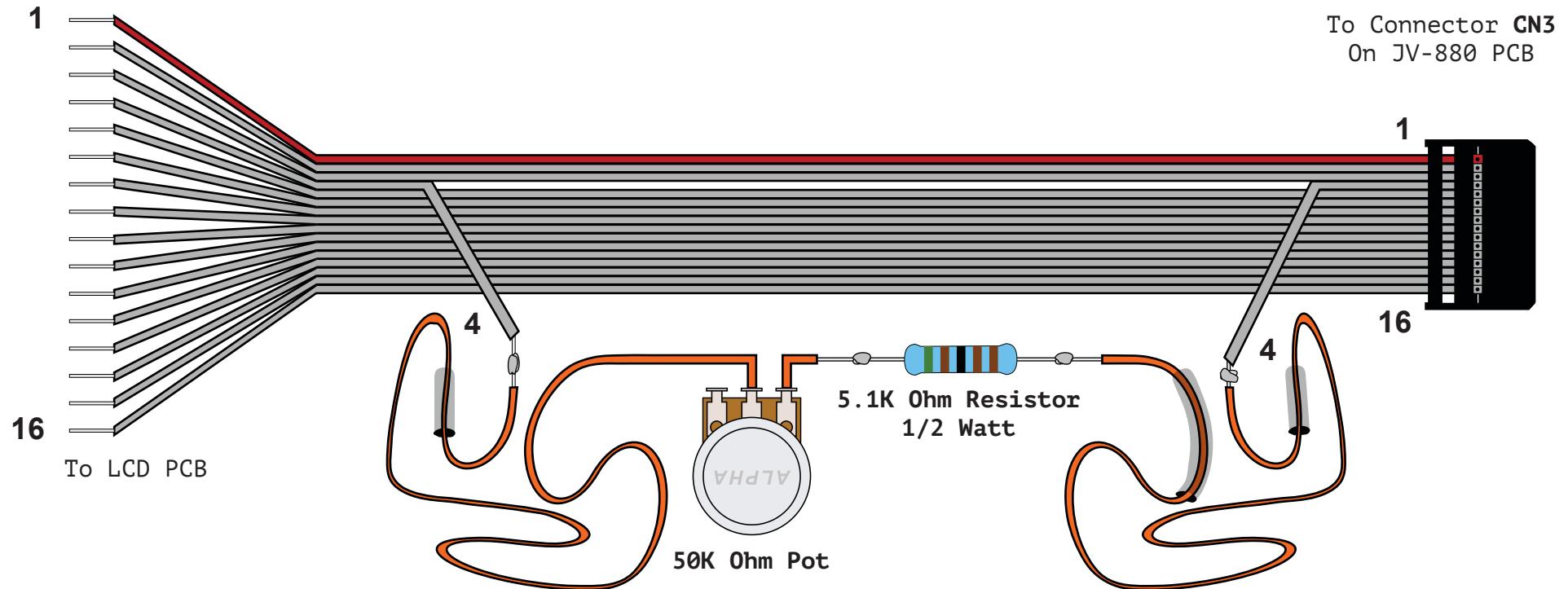
JV-880 LCD DIY

ADD COMPONENTS TO THE CABLE

!! SOME NEWER JV-880 PRODUCTION MODELS DO NOT NEED THE #4 WIRE MODIFIED OR THE 50K POTENTIOMETER. YOU WILL NEED TO EXPERIMENT !!

Solder a 5.1K Ohm 1/2 Watt resistor in series with a 50K Ohm linear potentiometer in-between the #4 wires

Note: Before soldering, you may want to prepare the wires and put some heat shrink tubing in place. I always seem to forget!



Note: The image above shows the back view of the 50K Ohm potentiometer. Lug #1 is not connected

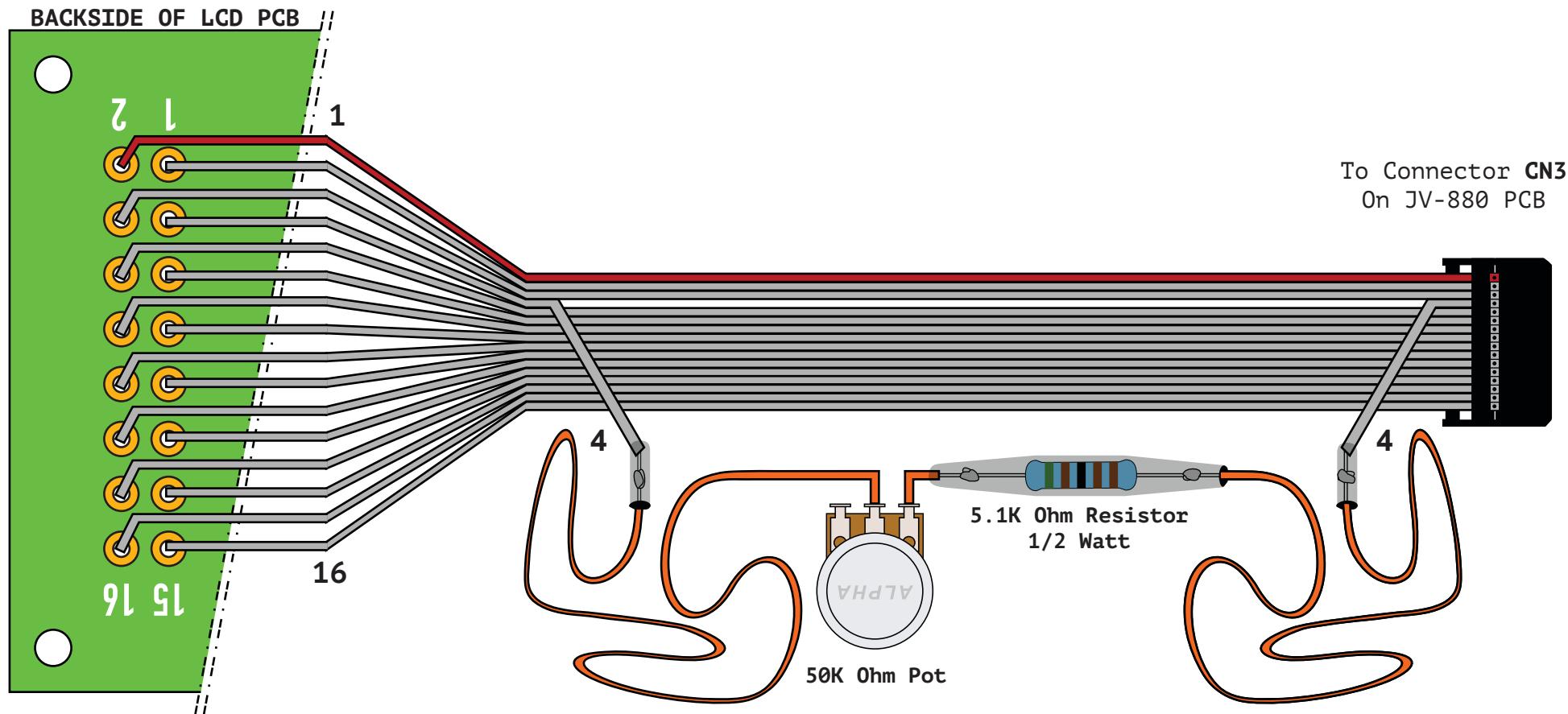
SOLDER THE CABLE TO THE LCD PCB

Get your Anti-Static Wrist Strap and use proper grounding procedures before continuing. Now comes the part where you will wonder if you even want to continue on with this hack! This is where it starts to get tricky. Use the diagram and the pin chart on Page 4 to solder the ribbon cable onto the backside of the LCD circuit board. The pin numbers and wire connections are **backwards** to what you would normally expect (1 to 2, 2 to 1, 3 to 4, 4 to 3, 5 to 6, 6 to 5, etc...)

To make it easier to insert the ribbon cable wires into the holes on the LCD circuit board, you may want to use a soldering iron to tin the end of each wire

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SOLDER THE CABLE TO THE LCD PCB (continued)



Ensure that any exposed solder joints and bare wires are covered with heat shrink tubing or electrical tape

LCD PCB P/N: ERM2402FS-1*

Note: The image above shows the back view of the 50K Ohm potentiometer. Lug #1 is not connected

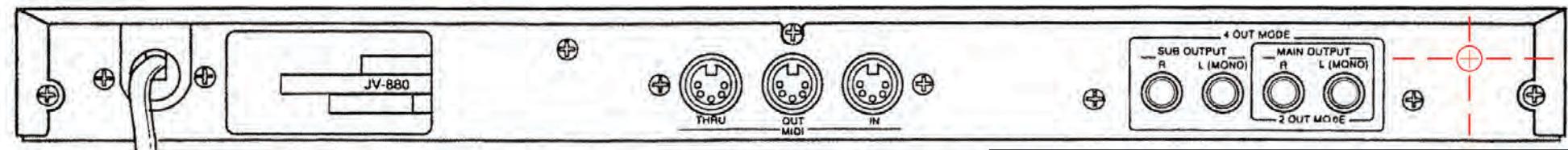
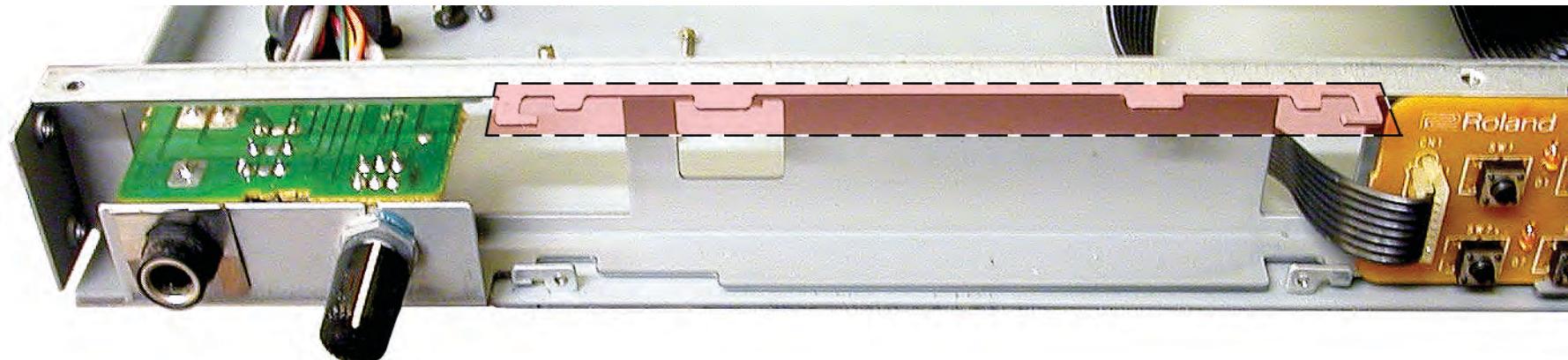
CABLE	LCD PCB						
1 →	2	5 →	6	9 →	10	13 →	14
2 →	1	6 →	5	10 →	9	14 →	13
3 →	4	7 →	8	11 →	12	15 →	16
4 →	3	8 →	7	12 →	11	16 →	15

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CASE MODIFICATION

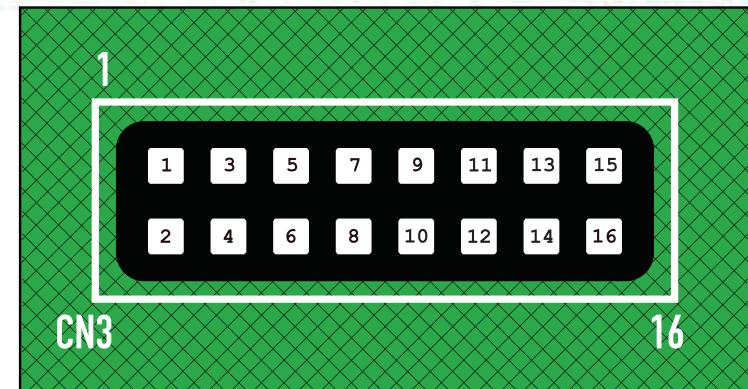
!! SOME JV-880 MODELS DO NOT NEED THIS CASE MODIFICATION. CHECK LCD PLACEMENT TO SEE IF YOURS WILL FIT BEFORE ATTEMPTING THIS STEP !!

Get your Anti-Static Wrist Strap and use proper grounding procedures before continuing. Finding a replacement JV-880 PCB is uncommon if you zap any of those rare IC's! Unplug your synth from the electrical outlet and open the case. I cringe every time I make a change to original equipment. Unfortunately, for this mod I see no other way. The new LCD PCB won't fit into the case unless these six metal tabs (marked by the red outlined box) are either removed or bent downward. On one of my JV-880's, I used a strong pair of pliers and bent the metal tabs downward and insulated the back of the LCD board so the metal wouldn't make contact with any components. On my other JV-880, I used a strong pair of pliers and bent the metal tabs up and down repeatedly until they broke off flush with the top section. Either way, these tabs need to be out of the way. I took an extra step and placed some non-conductive, heat-proof insulation behind the LCD board to keep it from moving around



Drill a 5/16" hole in the back of the case (cringe!) and install the 50K Ohm contrast potentiometer. Before you drill, I recommend making a small pocket using some duct tape. Make it with the sticky side inward to catch the metal shavings. Place it over the backside of where you plan to drill the hole. You don't want any metal bits falling inside the synth case!

Plug the ribbon cable connector onto connector **CN3** on the JV-880 Main PCB. Take special care to match-up Pin-1 on the ribbon cable connector with Pin-1 on the PCB because the connector on the Main PCB board is not polarized. Triple-check your wiring connections! Power on the synth and test that the LCD and contrast potentiometer are working. Unplug the synth from the electrical outlet. Take the black faceplate with the buttons and place it back in its original position. Do not put any of the screws in just yet. A few adjustments are needed before putting all the screws back in place

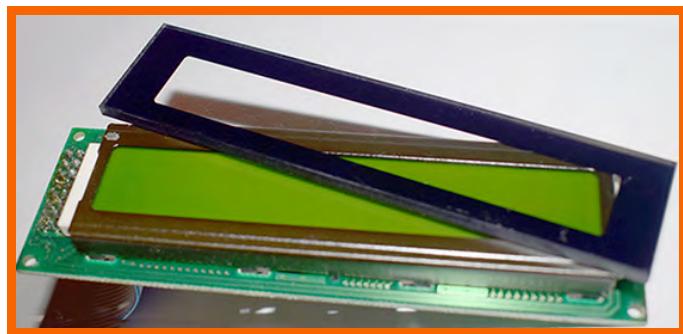


JV-880 Male Pinouts On The Main PCB At CN3

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CASE MODIFICATION (continued)

The last step is to remove the original Plexiglas bezel from the face of the old LCD. This is easier said than done. Roland used some **very** strong double-sided tape to attach this part. Use care not to scratch the black paint from the back surface. I used the back end of a clothespin covered with cloth and carefully pried it off in small steps. Once you remove it, place it in position and press hard to affix it onto the new LCD. I was able to reuse the same very strong double-sided tape. Since the faceplate section is partially assembled, it will be in perfect alignment with the new LCD. Note: I had to cover up small gaps on the left and right sides by placing black electrical tape on the inside because the bright LED backlight was shining through. This LCD is **really** bright! Put all the screws back in place and you're done. If for some reason you don't have the original Plexiglas bezel, I have no suggestions other than to try and fashion your own part using some Plexiglas from the hardware store. The thickness varies from synth to synth from 2.25mm to 3mm. That's it... Your JV-880 is no longer a brick. ENJOY!



Plexiglas Bezel Removal

The images on the right show the new contrast potentiometer, modified ribbon cable with the 5.1K Ohm 1/2 Watt resistor installed inside a JV-880 plus a new Black/White ERM2402FS-1 LCD. Ignore the multitude of shrink wrap on the ribbon cable. This cable is a remnant from the initial development stages. Your ribbon cable will only have a couple of wires with heat shrink tubing on it.

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DISCLAIMER

Modifications used here were performed on a JV-880 manufactured November 1993 and March 1995. If you find any errors because your synth is a different production model, please send me an eMail so I can keep this document accurate. Thanks!

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