Roland MC-505

–LCD Replacement

By Kim Lidström

Notice:

This document will show you how I changed the LCD-Display on my own MC-505 and what equipment and tools I used.

There are no guarantee that it will work for you.

Also, excuse me for possible bad English from time to time... =P

Equipment and tools that I used:

LCD Display (ATM1602B)
Ordered from www.kjell.com
Art Nr: 90215

Wires (0,2mm2)
Ordered from www.kjell.com
Art Nr: 39515

Soldering Station
Ordered from www.kjell.com
Art Nr: 40065

Solder Wire (I used 0,6mm flux cored wire)
Ordered from www.kjell.com
Art Nr: 40053

Resistor, (10 ohm, 1/4watt 5%)
Color code: Brown, Black, Black, Gold
Found mine in a old trashed monitor

I also used a:

Screwdriver

Plier

A small saw

Scissor

Tweezer

And in arm's reach, (just in case)....

So lets begin....

1. Place a soft blanket on the table and let the 505 rest upside down.
2. Remove all screws holding the bottom cover of the MC-505.
   (2 on the sides and 8 in the bottom)
3. Carefully disconnect all wires and screws on the card. Try not to destroy anything!
4. Remove all screws and nuts holding the card on the backside.
5. Pull the card out from the case.
6. Card successfully removed. (*On my picture the LCD already has been removed*)

7. Flip the 505 over on its right side.
8. Remove the “protection cover” with help of knife or other thin object. Be gentle.

9. Remove the 4 screws holding the old LCD, pull it out and send it to back to Roland with regards.

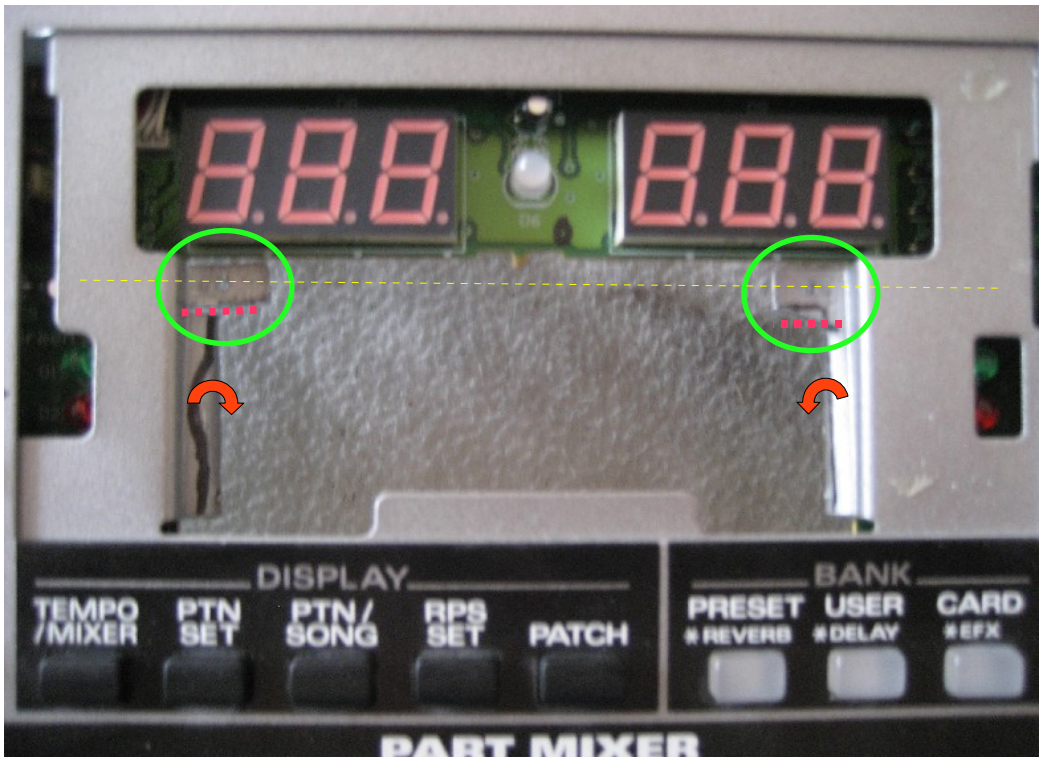
10. Take a small saw and make a cut in the metal below the upper screw holes on each side of the case that held the old LCD. (See red dot-markings on picture below)
Be careful not to cut in the motherboard underneath!

11. Then with help of a plier bend the lower metal part of the case you've cut downwards. (See red arrows) **Once again, Be careful not damaging the motherboard underneath!!**

12. Because the new LCD is "thicker" the two remaining holes in the top has to be adjusted a little bit to make more room, use the plier and bend the metal down a bit. (See green circles)

13. Place the new LCD in the case to see if your modification is satisfying.

If the two upper holes don't fit the new LCD perfect (To wide) its no problem, we solve this later by putting washers on the screws. Just make sure the holes line up straight with each other, this is important so the new LCD will be straight. (See yellow dot-marking)



That was the easy part, now the fun begins.

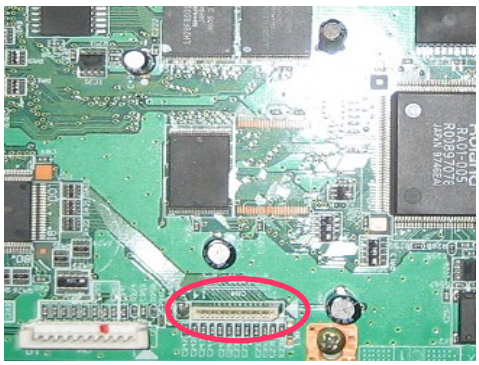
14. Because the new LCD doesn't have the same wire connection as the old one, we have to be creative and make our own. (Some people use the existing wire, but I think its too fragile).

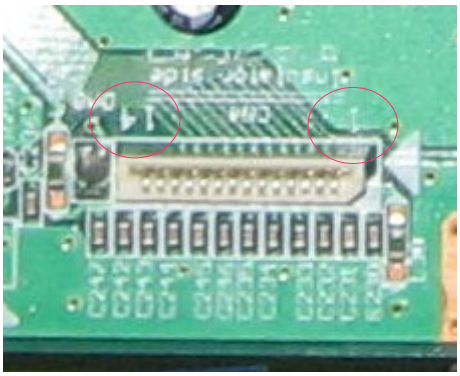
15. Take the plier again and carefully yank the white LCD connector back and forward until it comes loose. (See red circle)

16. Use your soldering station and clean out the remains in the 14 holes to make room for new wires. I used the solder and a wood toothpick to clear out the holes.

17. If you take a closer look at the card you can see there is a marking where Pin 1 starts and where Pin 14 ends. (See the two red circles in picture 2)

    My incredible nice drawing (Picture 3) may not be 100% accurate, but it gives you the idea how the pins are lined up.)



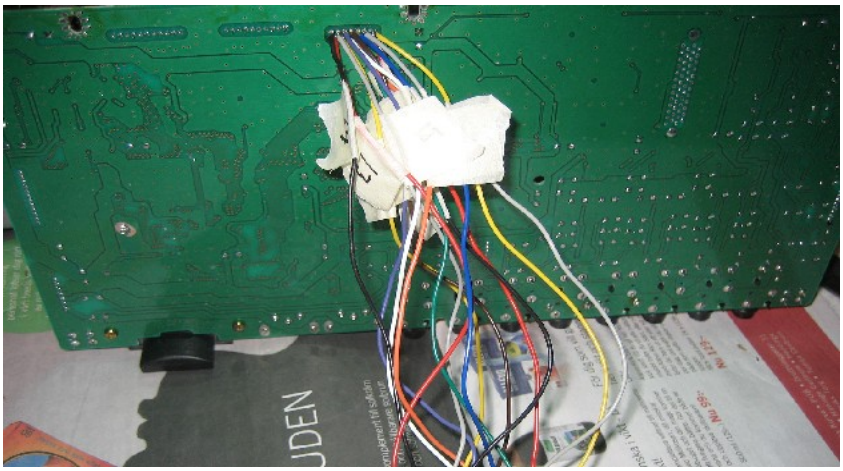


18. Turn the card upside down.

19. Solder 14 new wires (color of choice) each wire should be about 150 – 200mm long.

20. Put tape on each wire and write down the pin number they are attached to. (Very important.)

    A tip (and reminder to myself) do not put the tape so far down on the wires like I did on the picture below. Makes them hard to read when you solder the wires to the new LCD.....



21. Now pull the new wires (with tape and numbers) up through the LCD hole on the top.

22. Also re-attach the card with the 3 screws holding the card to make it stable and wont fall down when you turn the 505 over.

    If you are sure you have done everything correct at this point you can also re-attach everything else in the bottom (Wires, screws etc) including the bottom cover.

    (But its probably best you leave it open, just in case..)

Its time to solder the wires to the new LCD.

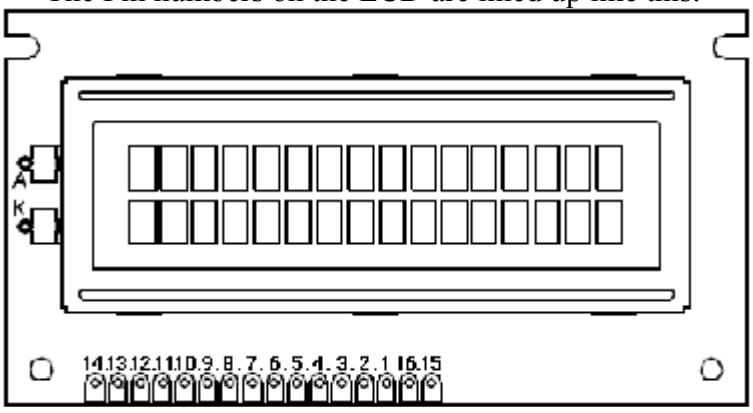
23. Turn the MC-505 over on its right side.

24. Put a magazine or something to protect the 505 panel while you solder.

25. Solder the new wires to the LCD like this:

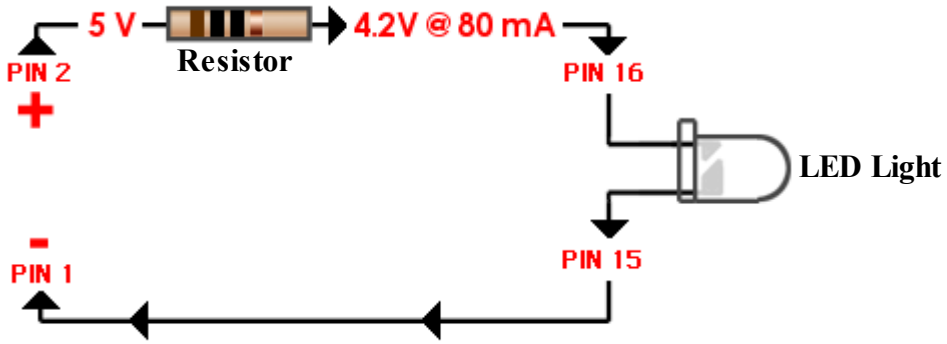
MC-505 PIN	TO	LCD PIN	TO	LCD PIN
1		1		15
14		2	Through resistor	16
13		3		
12		4		
11		5		
10		6		
9		7		
8		8		
7		9		
6		10		
5		11		
4		12		
3		13		
2		14		

The Pin numbers on the LCD are lined up like this:



26. As you can see you need to solder a extra wire from Pin 1 to Pin 15 on the LCD to make the LED back light work . (See picture below)

27. You also need to solder a resistor (10 ohm, 1/4 Watt, 5%) "Color Code: Brown, Black, Black, Gold") between pin 2 and pin 16. The reason for that is because this LCD LED requires 4,2 volt (Max 4,5), and the power supply to the LCD (Pin 2) you take in from is 5 volt. (See picture below) I used a "Calculator" at LED Center: http://led.linear1.org/1led.wiz



If you are awake and have read the online specification for this LCD display (http://www.hebeiltd.com.cn/lcm.datasheet/ATM1602B.pdf) you have probably already noticed that its something wrong with this LED wiring.

*In the specifications for this LCD Pin 16 "**K**" is (–) while Pin 15 "**A**" is (+) but because of some reason (that I don't know) it **only works the opposite way**...*

I've got this tip when translating a Spanish forum discussion about the ATM1602B, and even doe I was very skeptic at the beginning it showed up working just fine..

28. When you are done with the soldering (and all the wires are in right place you can plug in the MC-505 and see if it runs, and perhaps the new LCD also will light up.
    Be careful when doing this so you don't electrocute yourself, don't touch any wiring at this point!

29. If it works, congratulation! Unplug it again and continue the assembling.

    If it doesn't work you probably have done something wrong (I did like 5 times)

    Nothing damaged my MC-505 when making mistakes, two times the 505 didn't even start at all. I even burned one back light when figuring out the wiring for the LED, (tried to bypass PIN 15 and 16 straight to the LED without a Resistor *ops*). But I blame the LCD specification for lying to me about (+) and (-). ;))

30. If nothing works (your LCD behaves just like the old one) you may start consider that maybe something else is wrong with your MC-505. But just in case check all the wiring again, also check so no wires or solder remains touch each other.

    Maybe your LCD is “correct” and Pin 16 actually IS (-) and Pin 15 IS (+)
    Try switching them.

This document continues assuming everything worked just fine.

31. Bend the newly soldered wires backwards around the edge on the LCD. (See picture below)
32. Twist it around and place it in the modified LCD case you've made.

33. Re-attach the two screws in the top holes.
34. You have some right – left adjustment possibility by placing small washers on each screw.

35. When you are satisfied with the alignment, put the plastic protection cover back on.

36. Hope it looks as sweet as mine does!

I hope this document could be a help to all of you broken display owners out there.

As I wrote at the beginning, this document showed you HOW I DID IT on my MC-505. Other people may have different solutions that might work even better, but I didn't find any "guide" for that. Perhaps you find your own shortcuts to a faster and better solution, who knows.

Best regards and hope your new LCD lives a long happy life.

Kim Lidström - 2009-05-31