Hello CL, long time reader, first time poster.

I love my GS: It does everything I ask. It's elegant, it's fast, and quiet. IMO, for a stock radio, the Nakamichi system sounds great and gets plenty loud enough for me. With the advent of smart-phone navigation, I don't feel any need to add a navigation system with LCD, DVD, etc. However, I would like to interface my smart-phone with my GS. IMO, the best way to do this is with Bluetooth. I thought about changing the head unit and the CD-changer. I priced it out and decided I could do a better job for (a lot) less money.

After some investigation, I settled on the GROM Audio, GROM-USB2-TOY (www.GromAudio.com). I located the Nakamichi wiring diagram from this site (thanks CL), I removed the CD-changer and reviewed the wiring with GROM, we both felt it would work. The GROM didn't work because I missed several subtle points (see my notes at the end of this note for more details). BTW, I highly recommend GROM. They have been very helpful throughout this process.

After the GROM unit didn't work, I took a closer look at the wiring for the car. I pulled the CD-changer and took a number of pictures. I have not pulled the radio -- I want to get a panel-puller before I dig into that.

I got a two-day pass on http://techinfo.toyota.com to locate wiring diagrams, etc. After reviewing everything, I believe that the Nakamichi CD-changer does not send analog-audio to the head unit. I believe it sends digital-audio. This note explains how I came to this conclusion.

To start, the wiring harness to the CD-changer has two cables:

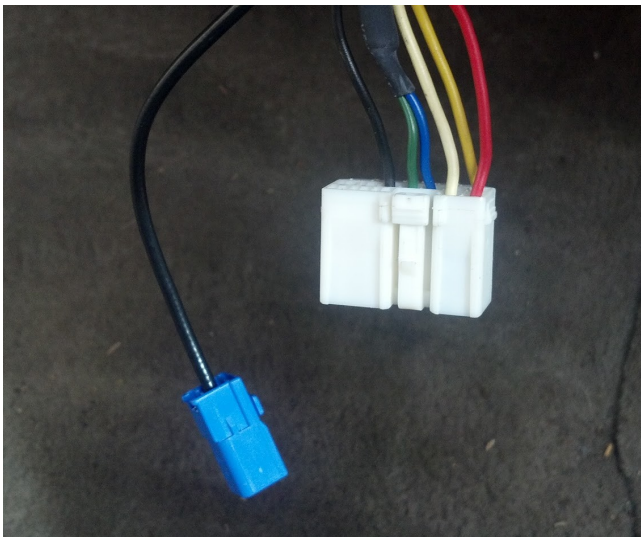


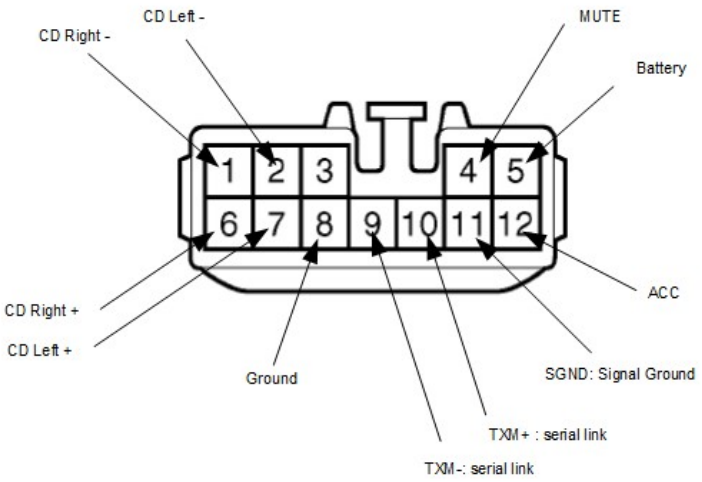
Illustration 1: Cables that connect to the Nakamichi CD-changer

The large white connector is the classic Toyota 7+5 audio connector it contains BAT/GND, ACC, MUTE and AVC-LAN. Note that there are only six positions wired (out of 12). I believe the signals are as follows:

Pin	Signal Name	Wire Color	Notes
4	Mute	White	
5	Battery	Red	Tested with a meter
8	Ground	Black	Tested with a meter
9	TXM-	Green	AVC-LAN bus. Shielded with TXM+
10	TXM+	Blue	AVC-LAN bus. Shielded with TXM-
12	ACC	Yellow	Tested with a meter

Note that there is no analog-audio in this connector. The smaller blue coaxial connector is the digital-audio connector.

Here are the signals in the 7+5 Nakamichi CD changer connector:



Pin	Signal Name	Notes
1	CDRM	Differential analog-audio negative
2	CDLM	Differential analog-audio negative
3	Unknown	I haven't found anything on this yet...
4	Mute	
5	Battery	+12V
6	CDRP	Differential analog-audio positive
7	CDLP	Differential analog-audio positive
8	Ground	Tested
9	TXM-	AVC-LAN bus negative signal
10	TXM+	AVC-LAN bus positive signal
11	Signal Ground	For use with 1,2, 6, 7
12	ACC	Accessory voltage

I figured this out by taking the CD-changer apart. When I got it apart the A/D converter board had the signal names on the silkscreen.

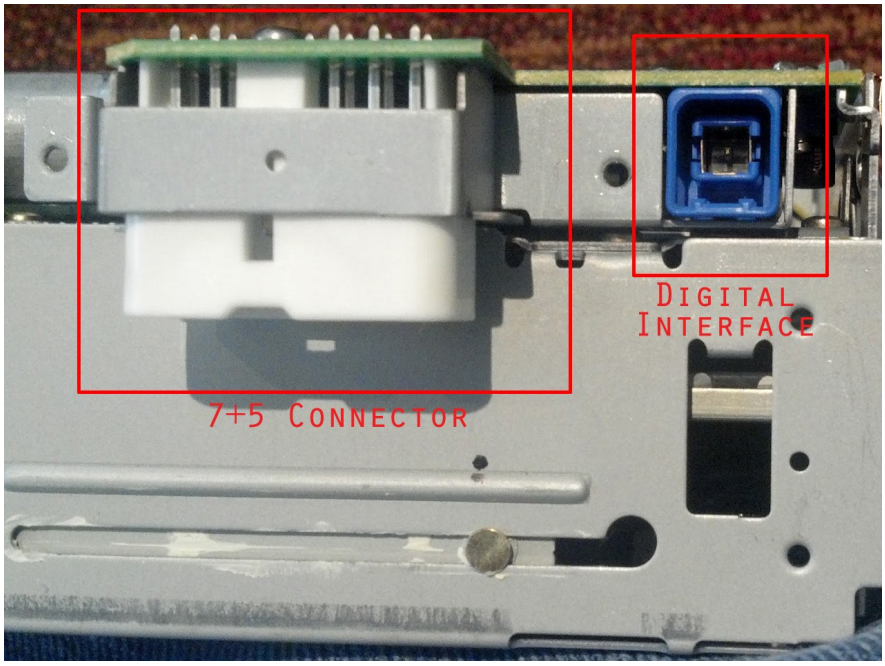


Illustration 2: Here is a picture of the CD-changer during dis assembly. Note the two connectors.

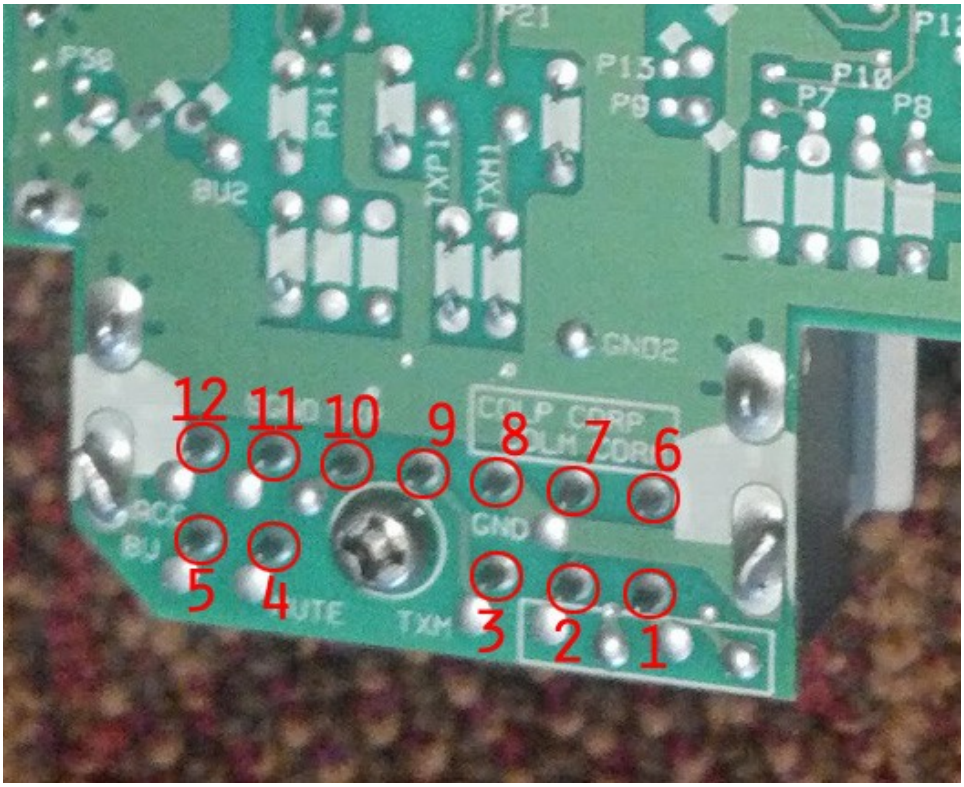


Illustration 3: Here's a picture of the A-to-D board in the CD-changer.

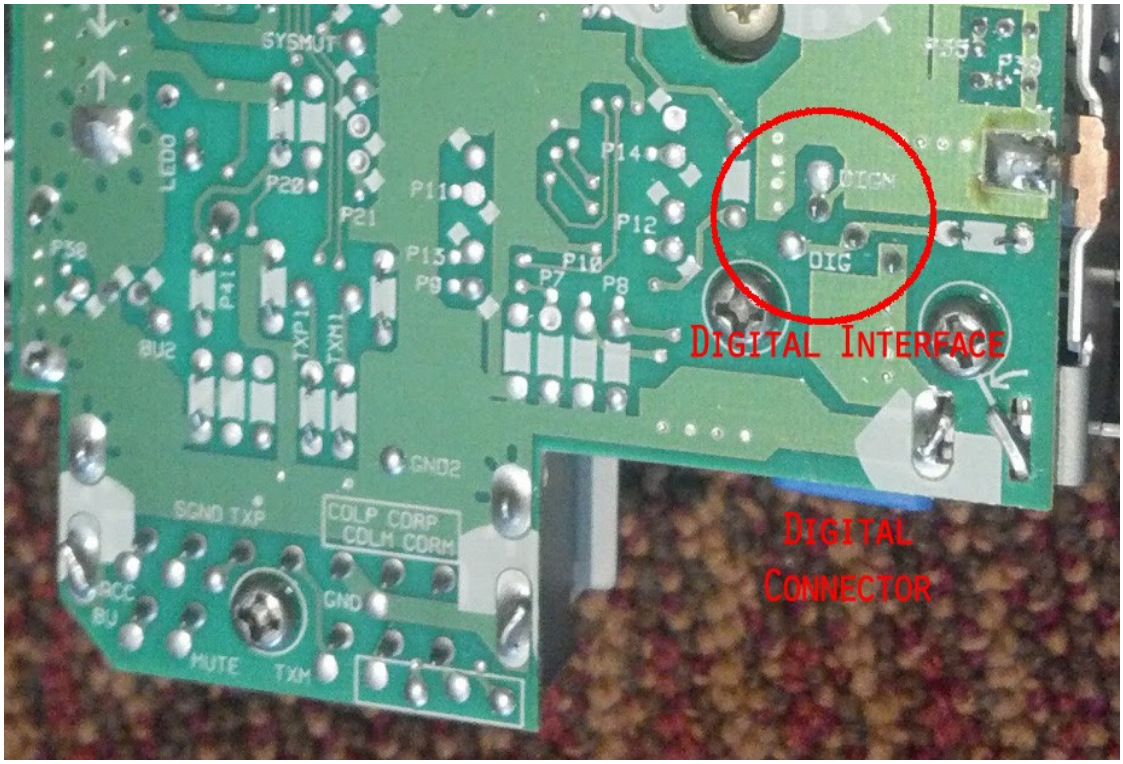
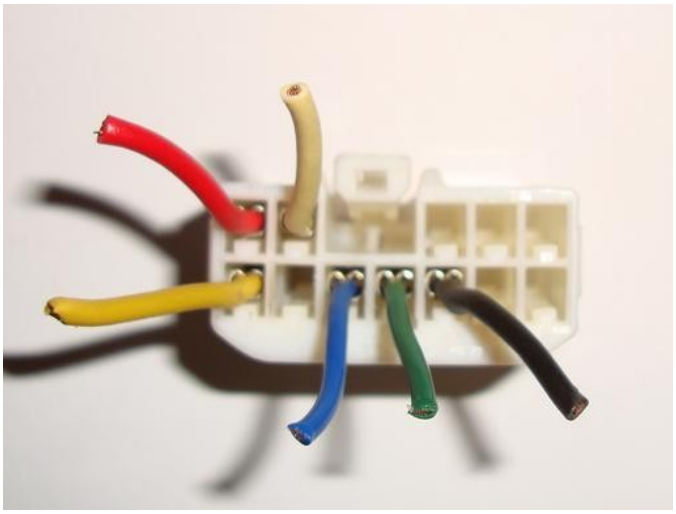


Illustration 4: Here's a slightly wider view that shows the digital-audio interface on the back of the CD-changer:Note the edge of the blue "Digital Connector". Note also that the board says "DIG" right on it.

A few notes on all this:

1. It looks like the CD-changer itself has analog-audio output. But instead of using that, Lexus opted to use the digital-audio interface. It's a good decision. If the digital-audio link works, no electrical engine noise will leak into the audio system.
2. The digital-audio interface cable is taped on to the main CD-changer wiring harness. To me, this indicates that this wasn't the original design. If the plan all along was to use the digital-audio interface, they would have put all the wires into the same wiring harness.
3. There are no analog-audio wires in the CD-changer wiring harness. Again, to me, this indicates that some of this change was done upstream of the assembly plant (i.e. the wiring harness was intentionally built without the audio wiring).
4. I found this picture from a different CL post.



   Here's a link to the post: http://www.clublexus.com/forums/gs-second-generation/503568-nakamichi-cd-changer-pin.html. This connector is wired exactly the same as mine. It's not clear from the post if the poster was trying to do. But whatever he was trying to do, apparently it worked. Is this connection common?
5. What did I miss? Why didn't the GROM GROM-USB2-TOY work?
   1. I thought that the D-6 connector in the TIS Nakamichi stereo diagram was a Toyota 7+5 connector. It isn't. The D-6 connector is really a 14 pin connector. But, it is very similar to the 7+5 and it's in the right location to be this 7+5 connector. This is a bit of a mystery. There is no 7+5 connector on the TIS Nakamichi stereo diagram.
   2. I missed the fact that there was no analog-audio in the CD-changer connector.
   3. For some reason, the GROM wasn't detected by the head unit. I'm not sure why.
   4. There's more, but any of the above would be sufficient.
6. Last, and I most significant is that I cannot find the Nakamichi CD-changer audio connector (the 7+5 connector) or the blue coaxial digital-audio connector on the TIS Nakamichi stereo wiring diagram for the 1999 GS400. I am going to put my notes on that subject into a different post.