

## HAUPPAGE MEDIAMVP TOSLINK: Installation Summary

OK, as I've really been around the houses on this one, I thought I'd write a wee summary and a primer for future reference. Please feel free to correct or add anything. I hope it helps someone and I have no issues about keeping it simple :-). Note that this pretty much summarises others work. The credit goes to all of them! This mod is for older Hauppauge MediaMVP's without a TOSLINK optical out. Newer MediaMVP's have it already.

Note that this mod gives you digital out (but NOT AC3) to feed your amp and comes in two flavours:

- a 1/8" mini-jack (SPDIF) and
- OPTICAL (TOSLINK).

Some PC peripherals (see below) have BOTH types of jack on board.

In summary (for future dummies like myself) if you are installing a SPDIF/TOSLINK (i.e. NOT BtB's original solution with a COAX BNC connector and capacitors) but one similar to Stuart's solution detailed here <http://home.xnet.com/~stuart/images/mediamvp/index.shtml> you can EITHER:

**(A) Purchase a TOTX177(F,T) or TOTX179 a which operates at 5V supply voltage**

Hook it up as shown in Fig.1:

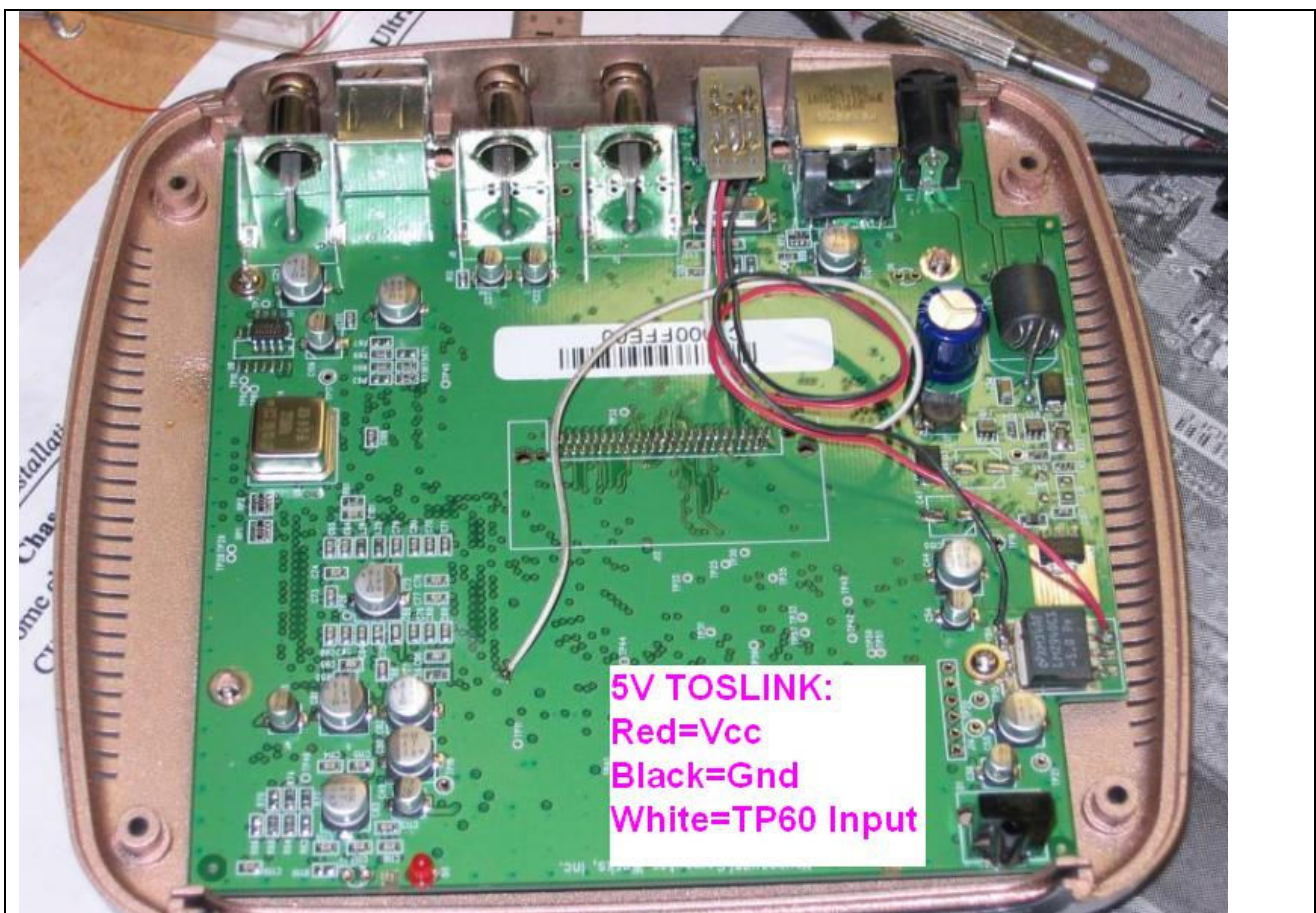
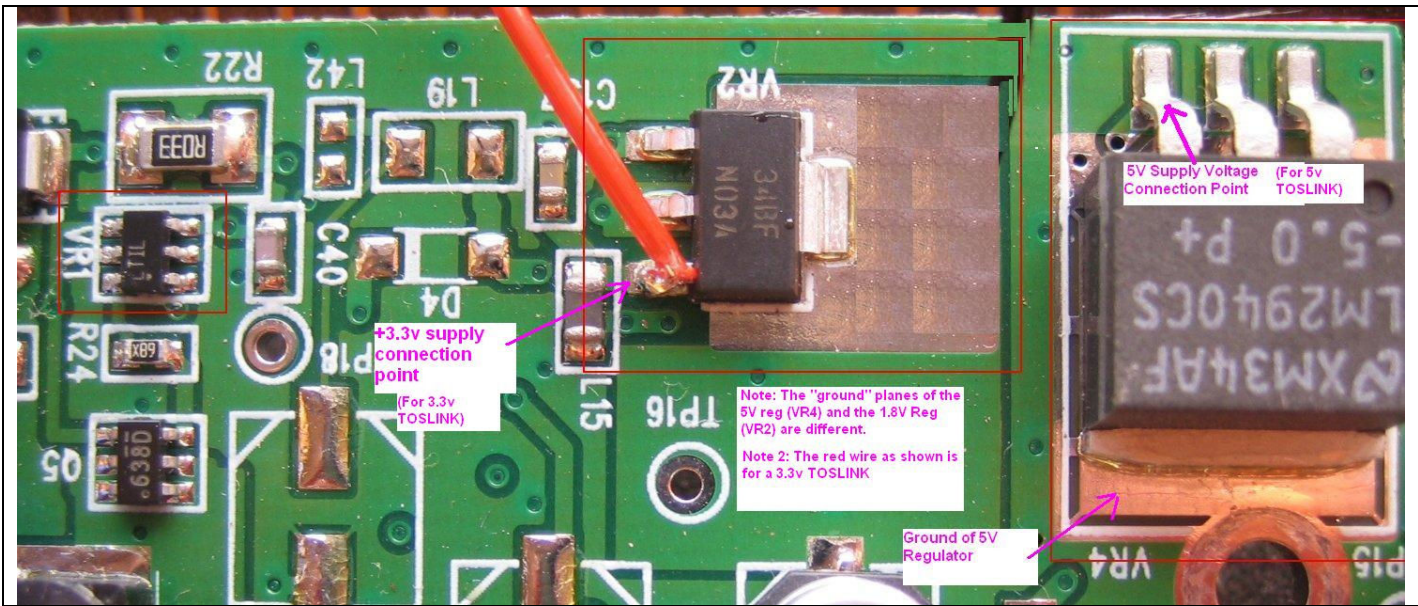


Fig 1: +5V TOSLINK Hook-up showing all 3 wires.

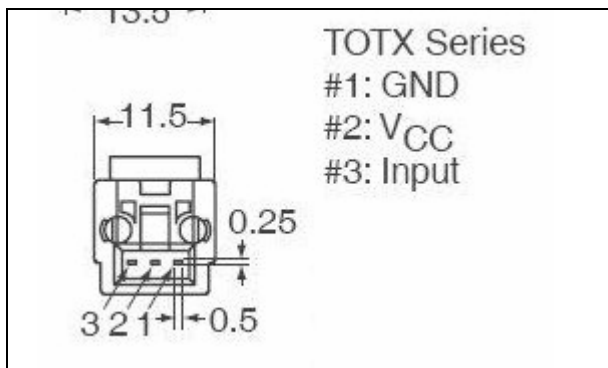
i.e. to the 5V Reg. labelled "VR4" in this picture:



**Fig 2: TOSLINK Vcc Supply Hook-up points for both +5V and +3.3V Modules. Red wire is for +3.3V example.**

- You will need to use the Datasheet to check which pin out is Ground (Gnd), Vcc, and Input.
- It appears many have done this with a 5V TOSLINK and it works fine. I have found some datasheets for TOSLINK modules do NOT show the pinouts e.g. <http://dkc3.digikey.com/PDF/T062/0210.pdf> has NO pinouts (Fig. 1) for TOTX modules.
- But <http://dkc3.digikey.com/PDF/T063/0230-0233.pdf> has pinouts (Fig. 1) for TOTX modules. Refer detail below.
- Make sure you order TOTX (transmitter) series NOT TORX (receiver) modules!

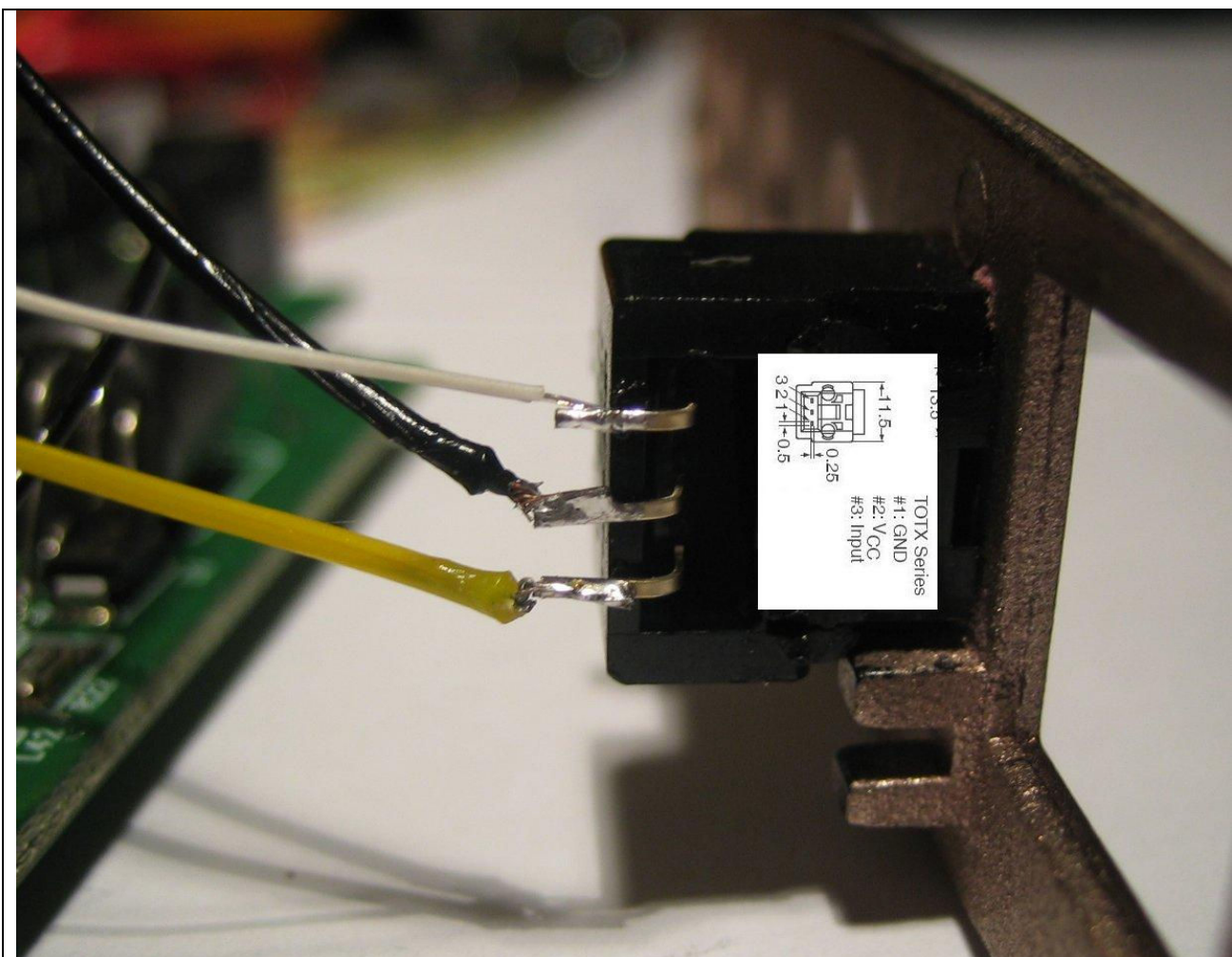
For the TOTX series, holding the module so that you are looking straight DOWN the pins and ALSO with the Optical-Out Shutter Door UP (i.e. PINS at bottom) the pin-out is (from RIGHT to left) 1, 2, 3 = GND, Vcc and Input respectively. Here is an example from my +3.3v TOSLINK, viewed looking down the pins.



**Fig 3: TOSLINK Pin-out assignments**

So for the e.g. Module Shown, for a **5V TOSLINK**

- (i) Solder a wire from Pin 1 (GND) to the +5V GROUND PLANE (e.g. the big silver square the +5V Voltage Regulator (VR4) is sitting on).
- (ii) Solder a wire from Pin 2 (Vcc) to the +5V PIN on the 5V Voltage Reg (VR4). This is the pin closest to VR2 as shown above.
- (iii) Solder a wire from Pin 3 (Input) to TP60.



**Fig 4: e.g. TOSLINK Pin-out assignments in-place.**

OR

**(B) Purchase a Computer Bracket SPDIF/TOSLINK Module which operates at 5V supply voltage and hook it up exactly as shown in A above.**

You will need to WORK out which cable is which, but as a guess these often have 3 colours, Black/Red/White. A good pin-out reference will be the motherboard manual. Refer Fig 14a and 14b below for an example of this.

Assume: "Black=GND, Red=Vcc, White=Data". (Vcc is "common collector voltage". You don't really need to know what that is). Assuming these colours, connect (as per A above):

- (i) Black (Gnd) Wire to the Ground Plane
- (ii) Red (Vcc) to Supply Voltage
- (iii) White (Data) to TP60.

Some online sources for SPDIF Motherboard Headers (thanks to all above) are as follows. Note that some of the older links for MSI Motherboards died, so the MSI ones may be hard to get.

- [http://www.excaliberpc.com/ASUS\\_Motherboard\\_Accessories\\_SPDIF/SPDIF\\_OUT\\_COA\\_OT/partinfo-id-551265.html](http://www.excaliberpc.com/ASUS_Motherboard_Accessories_SPDIF/SPDIF_OUT_COA_OT/partinfo-id-551265.html)
- <http://estore.asus.com/shop/item.asp?itemid=1420&catid=137>
- [http://www.vidabox.com/shop/index.php?main\\_page=product\\_info&cPath=4&products\\_id=9](http://www.vidabox.com/shop/index.php?main_page=product_info&cPath=4&products_id=9)
- Gigabit or MSI SPDIF Headers may also be found around the place.

OR

**(C) Take (break, cut) a SPDIF/TOSLINK Module directly off a PC soundcard** (might be only SPDIF, not Optical TOSLINK) OR a **TOSLINK transmitter from a computer "dash board"** (a gadget that fits into a 5.24 drive bay with assorted audio plugs) which operates at 5V supply voltage and hook it up as shown in A above. Most of these should be 5V supply and will work with the connections as per A above. However if you happen to get a 3.3V one, 5V "might" fry it. YMMV.

You're probably wondering which wire is which if you obtained your TOSLINK in this way. You'll have to either

- Find the datasheet for that module if there are markings on it
- Assume a similar pin-out system as per the datasheet above and try it.
- Guess based on the wire colours.
- Just try it until it works.

OR

**(D) Purchase a TOTX147(F,T) TOSLINK Module which operates at 2.7~3.6V supply voltage.** This is what I did and it works fine.

The biggest advantage of this module is it has lower voltage requirements, closer to that of the main chip (as the stb02500 uses 3.3v for I/O on board, ref. BtB), so there's less chance of killing that chip. Refer Post #65 and #97 of this thread <http://www.shspvr.com/smf/index.php?topic=4267.90> for a more detailed explanation (by zaphod) of **why** BtB preferred this.

*Zaphod observes: He <BtB> was concerned that a failure could put 5 volts on a 3.3 volt chip, killing it; so he used a 3 volt module (much harder to find). I didn't think a failure was likely (I think those modules are more reliable than the rest of the electronics in the MVP itself) to do that so I went with a 5 volt device (from a dead DVD player in my case), because I didn't want to mess with a CPU's voltage regulator.*

One advantage of using the 5V supply module is that (if your soldering is like mine) you can more easily hook it up to the nice big fat supply pin of the 5V Voltage Regulator (VR4) and to the ground plane of the same. BtB noted earlier he was happier using a 3.3v rather than a 5v module as the main chip runs at 3.3 and would less likely cause damage to that chip in case of failure, but no problems have (thus far) been reported for the 5V module.

### **The +3.3V capacitor supply that does not work; for interest only!**

Note that BtB originally observed that he used an output pin from "a capacitor".

Not knowing which one, I have tested a few and assumed this is the output pin on the underside of the Big Blue Capacitor ("E Cap") as shown here, but this has proved not to work in practice. A suitable alternative +3.3v supply is detailed below. My original assumption was based on these two posts:

- In post #44 BtB noted: "If you have a voltmeter - it would be a good idea to check you have the correct volts between ground and your chosen supply ( +3.3v ) point"
- In post #59 BtB noted: "I located a suitable large capacitor which had 3.3v on the +ve side."

The underside of the Big Blue Capacitor ("E Cap") as shown here measures +3.3V

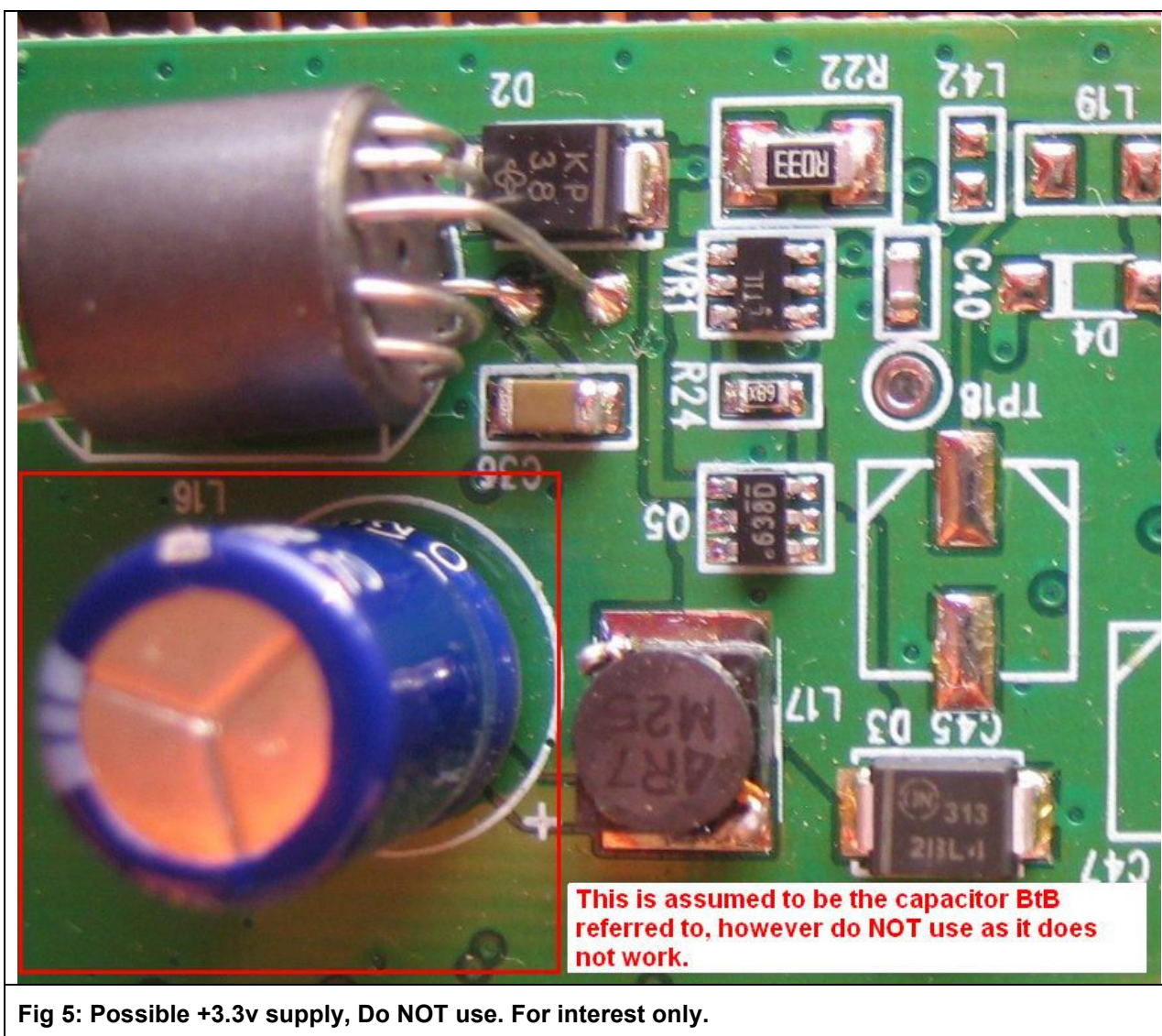


Fig 5: Possible +3.3v supply, Do NOT use. For interest only.

What occurs is this: I get the TOSLINK's red light at power-on, so it appears to be working OK, but as soon as the dongle loads and the MVP starts, it turns off. We also measured a voltage drop at the ECAP before and after the addition of the TOSLINK.

The solution to the +3.3V supply was offered (outside of this thread) by "LikeHardwareHackin" to use a **relative** +3.3v supply, based on measurements of the output of VR2 relative to various grounds. Unlike VR4, which outputs +5V relative to its own Ground Tab, VR2 measures +1.6v or so relative to its own ground tab. (VR1 likewise).

LikeHardwareHackin measured +3.3V between the output of VR2 and the Ground of VR4. We also discovered that the ground at (empty) capacitor location C47 was the same ground as the VR4 Ground Tab, and was also easier to solder to. Thanks and Kudos to LikeHardwareHackin.

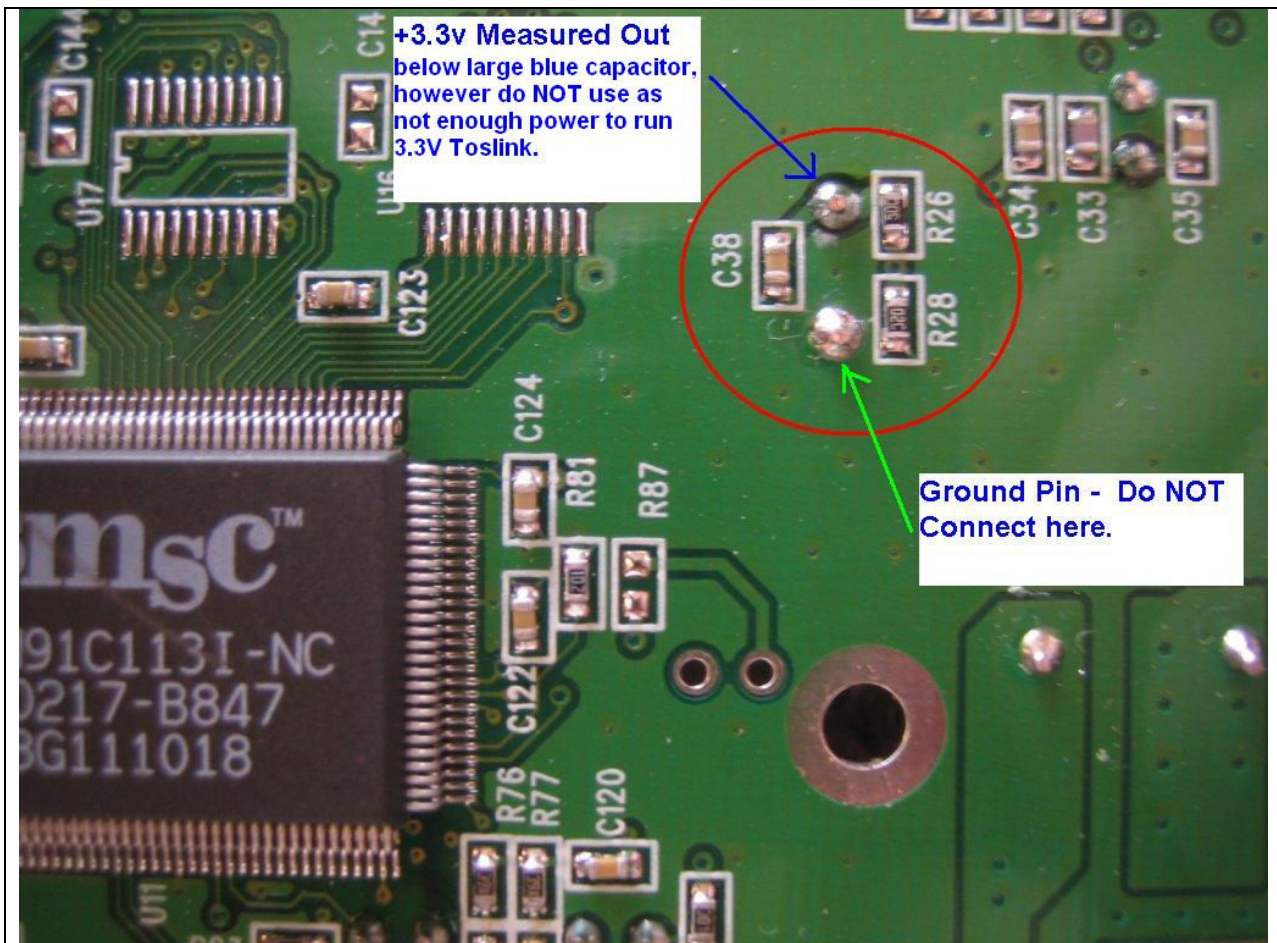


Fig 6: Possible +3.3v supply, Do **NOT** use. For interest only.

### The +3.3V supply that DOES work:

So: To hook it up you have to:

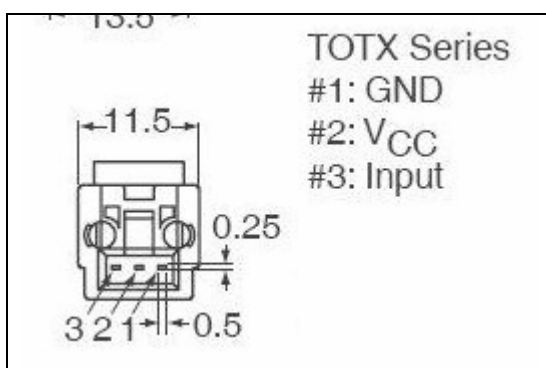


Fig 7: TOSLINK Pin-out assignments in-place (identical to Fig. 3).

- (i) Solder a wire from Pin 1 (GND) of the TOSLINK to EITHER the +5V GROUND PLANE (the big silver square the +5V Voltage Regulator (VR4) is sitting on) or to the ground pin at C47.
- (ii) Solder a wire from Pin 2 (Vcc) to the +1.8V PIN on Voltage Reg (VR2). This is the pin closest to the rear of the board as shown here. The resultant voltage is + 3.3V.
- (iii) Solder a wire from Pin 3 (Input) to TP60 as in A Above.

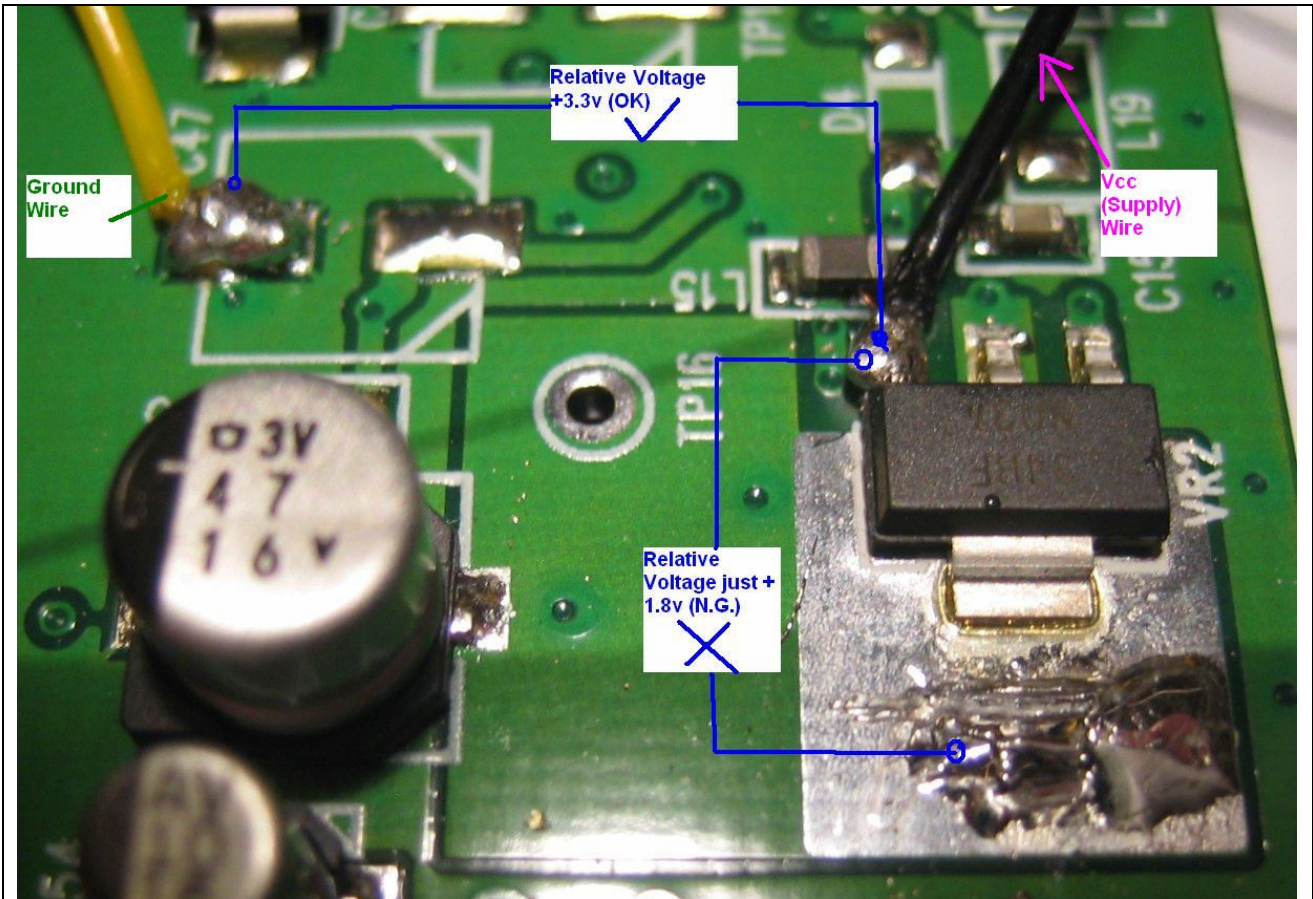


Fig 8: Working +3.3v supply. The wire colours correspond to those in Fig. 4.

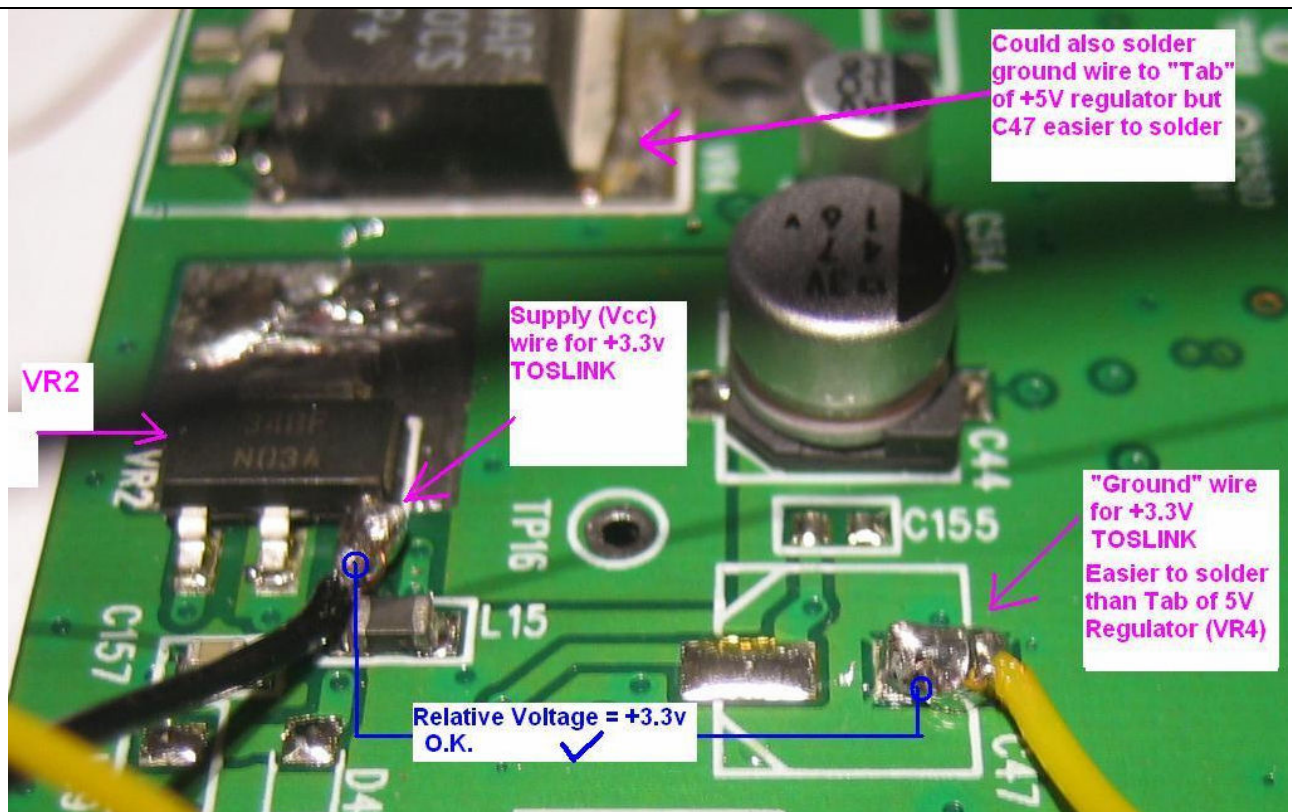


Fig 9: Another view of the working +3.3v supply. The wire colours correspond to those in Fig. 4.

## Alternative supply voltage:

An alternative supply (applies to both the +3.3V and +5V TOSLINKS) is to use a regulator + capacitor attached to the DC input plug. You could of course also do this for the 5V supply module (case A above) if you were uncomfortable soldering to the 5V Voltage Regulator pin. The disadvantage is you need a Voltage regulator and a capacitor and know how about where to connect it all up. Zaphod notes *"You could of course just get a 3 pin 3.3 volt regulator IC, a filter capacitor (100uf or so) and tap it off the incoming 6 volt supply and not mess with the internal regulators at all."* Maybe we can add specific directions for that later.

## Parts and Tools:

1. For both of the above you will need 30 gauge "wrapping wire" which just fits through the tiny hole to TP60.
2. Either a TOSLINK Module (TOTX147(3.3V) or TOTX177(5V) or TOTX179 (5V)) OR an SPDIF/TOSLINK header for a PC, (usually 5V for a PC, but check the Voltage OR a TOSLINK from an old DVD Player probably 5V, but if you blow it up, it was free anyway right).
3. Fine Tip (preferably variable heat) Soldering Iron, some solder.
4. A dremel and a small file for the hole.
5. Some patience and a steady hand.

## General Directions:

1. UNPLUG it from the mains. Simple. But true.
2. 4# small black Philips (cross) screws hold the thing together. Unscrew these fully (slowly, if they are a bit stuck you might break the brittle plastic ) and prise sides apart gently, using a coin or wide bladed knife in the recess between the edges.
3. You will be presented with the PCB attached to the bottom plastic plate and two plastic end pieces. Do NOT attempt to take these out yet!
4. I strongly recommend you take the Circuit Board out (USE AN ANTI\_STATIC STRAP!). If you try and dremel hole/solder/fit anything in place, you're in for nightmare.
5. To do this, undo the two small silver screws diagonally across the board. Then lift up the PCB GENTLY at the IR receiver end (i.e. NOT the end with all the RCA or SCART plugs/jacks /Ethernet DC power). When you lift it, it will disengage from the first of two plastic nibs that go through the board. You can take out the IR plastic end plate as it comes off the first nib.
6. Continue to lift from the IR end and when it comes off the second nib (closest the jacks) gently wiggle it away from the jacks and it will lift up and out.
7. Now, BEFORE you solder all your wires to the TOSLINK, fit it (to make the hole) into the vertical back plate next to the SCART connector, or if you have RCA Jacks like mine, between the RCA and Ethernet jacks.
8. The latter type is a tight fit. I filed down (flat) the rounded top of my TOSLINK a bit, AND before I even started fitting it, gently bent the straight pins of the Module at right angles, pointing toward the IR end of the board, so they didn't touch the metal sides of the Ethernet Jack.. You might want to pop the PCB back on (without screws) to get the level right. Don't make it too deep, the TOSLINK centreline should just line up with the RCA Jack Hole centreline or just slightly lower. Make sure the TOSLINK fixing screw hole is not too close to the edge of the RCA Jack hole. Not much room, mine is about 2~3mm away.
9. Mark the Optical Out hole, then REMOVE the PCB and back plate and working JUST on the back plate, start small, dremel it out and file it square until the TOSLINK fits.
10. When it fits, mark and drill a small hole for the fixing screw. One of the black ones from the main case works well here if you don't have a spare to hand. Don't fix it yet, but make sure you're happy it's snug. Tape some electrician's tape or other insulator to the metal case of the Ethernet jack. (refer pic below).
11. NOW you can solder the wires to the TOSLINK as directed above for either the +3V or +5V case.
12. Then solder these wires to the PCB Vreg, TP60 (Refer Fig. 10) and Ground Plane as directed above for the TOSLINK module you bought.
13. Fit and screw it all back together, gently. First put the Jack-end Back Plate into place, angle the PCB in to fit it, then attach the IR-end Plate onto the PCB and lower over the two nibs. Screw the two silver screws back.
14. Do NOT over-tighten any of the screws, it's not a car, it's PLASTIC.

If you're nervous about soldering, go down to the dump or haul out an old TV or Transistor Radio and solder on that for a while. No massive soldering irons and don't hold the heat on longer than you need to!

SCART Type Overall View <http://www.westerman.clara.net/MediaMVP-inside.jpg>

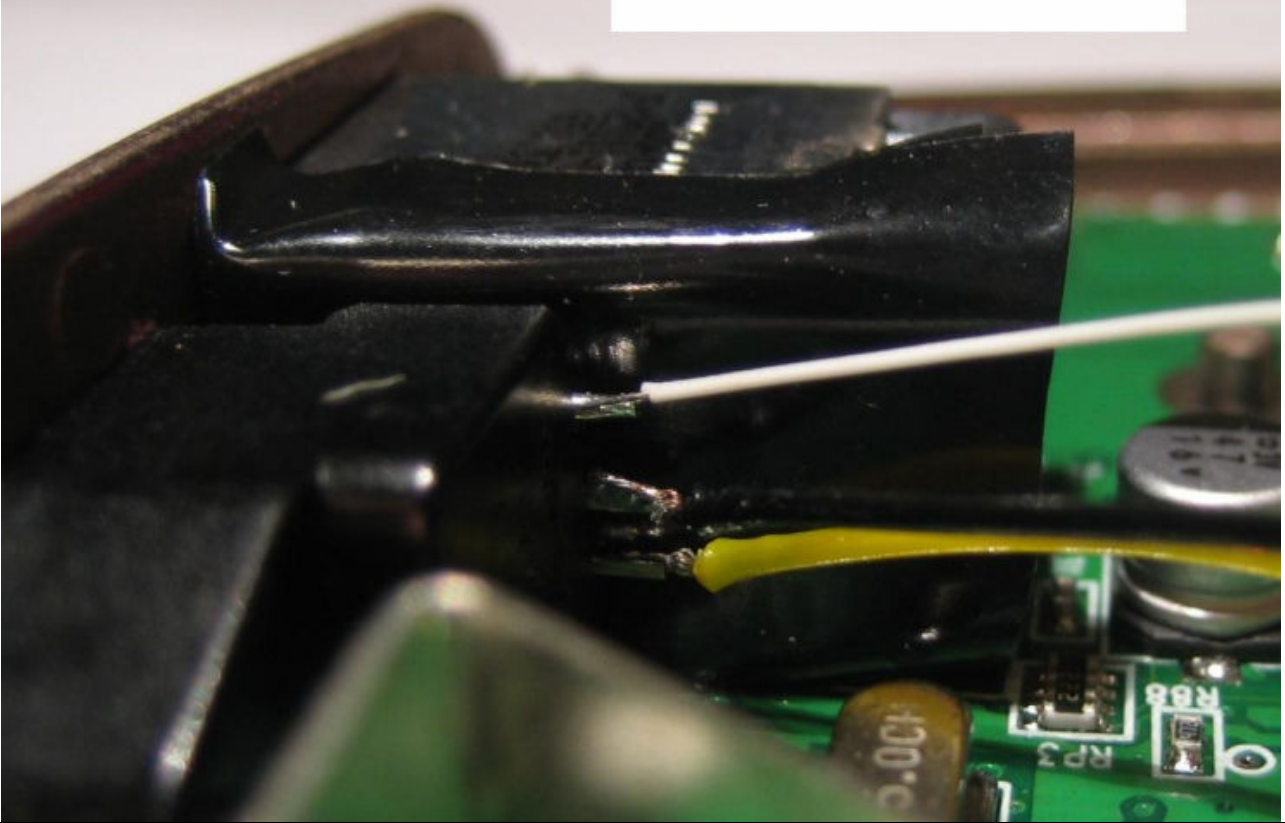
RCA Type Overall View [http://www.mvpmc.org/images/mvp\\_toslink\\_internal\\_large.jpg](http://www.mvpmc.org/images/mvp_toslink_internal_large.jpg)

Cheers k.



Fig 10: Location of TP60.

**Tape Between TOSLINK and Ethernet Socket Casing Strongly Recommended**



**Fig 11: TOSLINK to Ethernet Jack is a Tight Fit. Gently bend the TOSLINK wires at 90 degrees and place tape between Ethernet Jack and pins.**



**Fig 12a: TOSLINK Position in a SCART MediaMVP – External View**

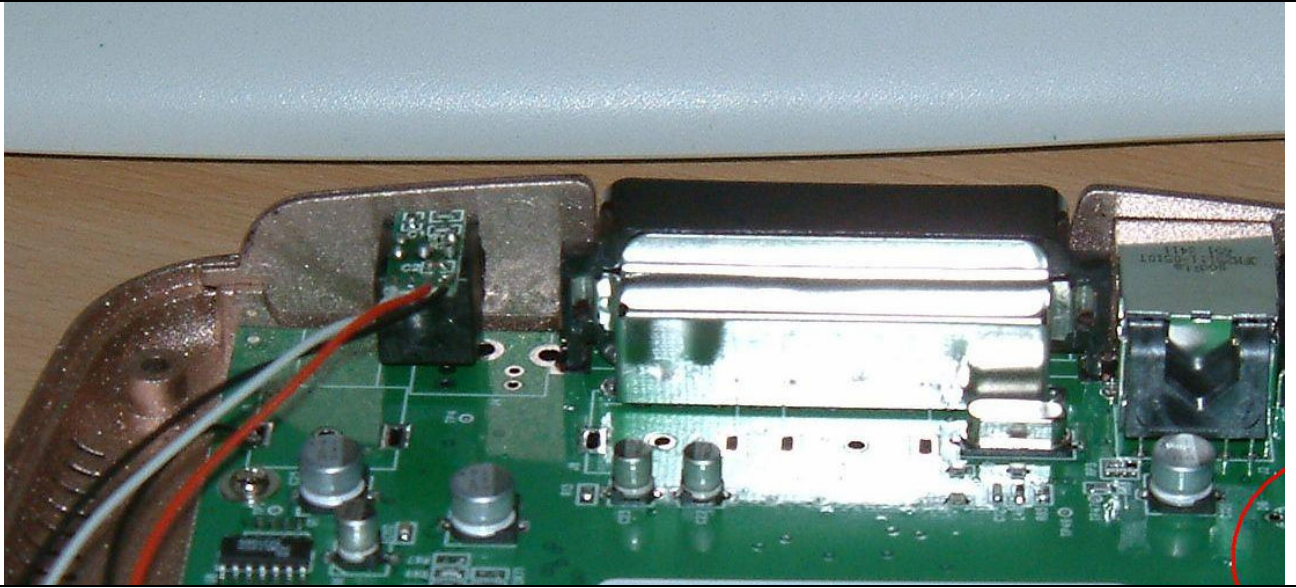


Fig 12b: TOSLINK Position in a SCART MediaMVP – Internal View



Fig 13a: TOSLINK Position in a RCA MediaMVP – External View

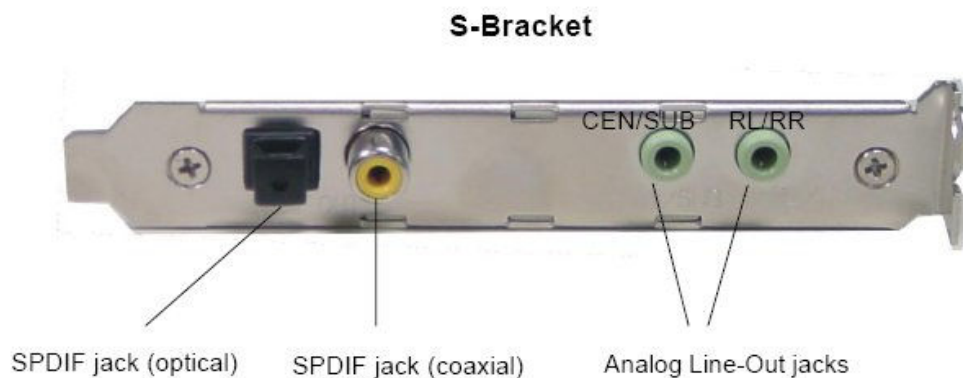


Fig 13b: TOSLINK Position in a RCA MediaMVP – Internal View

## S-Bracket (Optional)

S-Bracket is a bracket which provides 2 SPDIF jacks for digital audio transmission and 2 analog Line-Out connectors for additional 4-channel analog audio output. With the S-Bracket, your system will be able to perform 6-channel audio operation for wonderful surround sound effect, or connect to Sony & Philips Digital Interface (SPDIF) speakers for audio transmission with better quality.

The S-Bracket offers two types of SPDIF connectors: one for optical fiber and the other for coaxial connection. Select the appropriate one to meet your own need. For more information on S-Bracket, refer to *Appendix. Using 4- or 6-Channel Audio Function.*

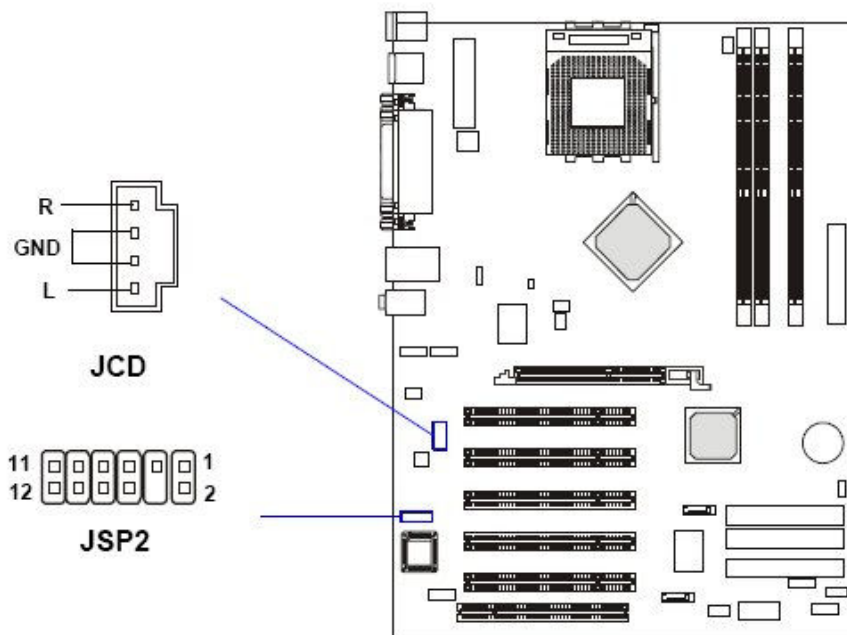


**Fig 14a: Example connector from a PC Bracket (MSI Motherboard MSI-K7N2GSeries-MS-6570MB)**

## S-Bracket Connector: JSP2

The connector allows you to connect a S-Bracket for Sony & Philips Digital Interface (SPDIF). The S-Bracket offers 2 SPDIF jacks for digital audio transmission (one for optical fiber connection and the other for coaxial), and 2 analog Line-Out jacks for 4-channel audio output.

To attach the fiber-optic cable to optical SPDIF jack, you need to remove the plug from the jack first. The two SPDIF jacks support *SPDIF output* only. For more information on the S-Bracket, refer to *Appendix. Using 4- or 6-Channel Audio Function.*



**JSP2 Pin Definition**

PIN	SIGNAL	DESCRIPTION	PIN	SIGNAL	DESCRIPTION
1	VCC5	VCC 5V	2	VDD3	VDD 3.3V
3	SPDFO	S/PDIF output	4	(No Pin)	Key
5	GND	Ground	6	SPDFI	S/PDIF input
7	LFE-OUT	Audio bass output	8	SOUT-R	Audio right surrounding output
9	CET-OUT	Audio center output	10	SOUT-L	Audio left surrounding output
11	GND	Ground	12	GND	Ground

**Fig 14b: Example connector from a PC Bracket (MSI Motherboard MSI-K7N2GSeries-MS-6570MB) showing pin-out assignments.**