Tech Blog

TRS Interconnect Cable Considerations

How to be sure you're getting proper signal transfer for the best audio fidelity performance

This blog defines the various types of TRS interconnects that may be needed in a miniDSP Flex system using TRS connectors. This guide also applies to Hypex Class D amplifiers and other equipment where TRS connectors are used.

In general TRS and XLR are balanced connectors, while RCA and TS connectors are single-ended. TS connectors have the ring shorted to the sleeve.

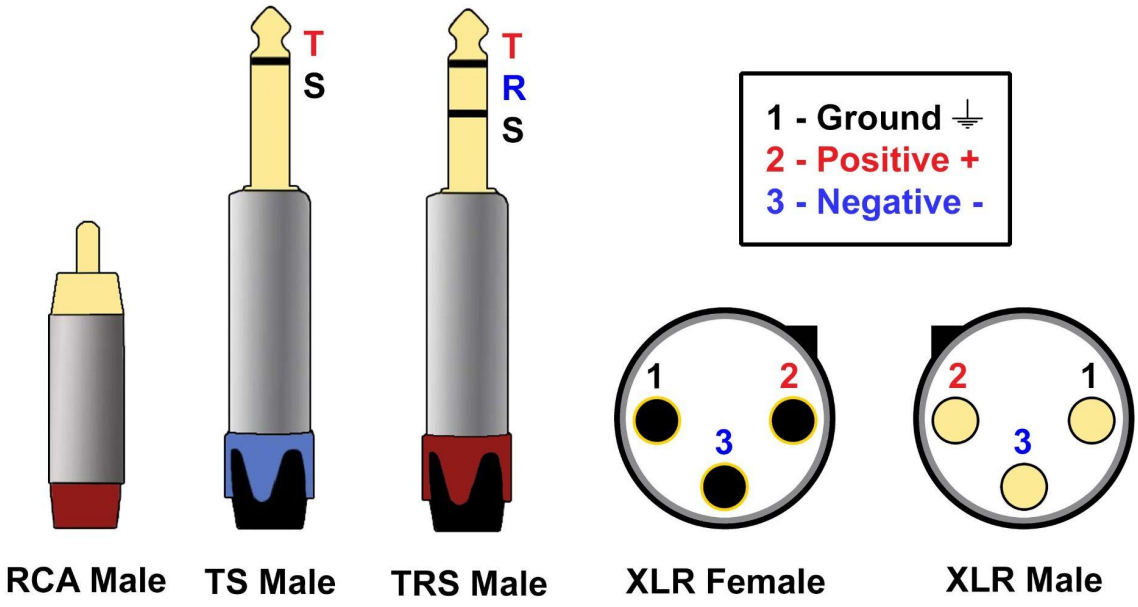

Diagram 1. Connectors used in the interconnects described in the following examples

When mixing balanced and single-ended inputs and outputs, it is critical to get the proper wiring configuration to avoid unnecessary hum and noise.

It's imperative that your balanced to single-ended cables do not connect the TRS ring (R) to ground, as that would result in driving the negative balanced output leg into a short circuit. We also discourage the use of adaptors as they can cause performance and reliability issues.

We will demonstrate five different cable configurations that are commonly used with the miniDSP Flex and / or Hypex Class D power amplifiers:

1. Flex TRS to XLR Pre or Power Amplifier Input
2. XLR Source to Flex TRS Input
3. Flex TRS to RCA Input Subwoofer
4. RCA Source to Flex TRS Input
5. RCA Output to XLR Pre or Power Amplifier Input

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1. Flex TRS to XLR Pre or Power Amplifier Input

When connecting the Flex TRS to a balanced XLR input power amplifier, the cable is a straightforward balanced design with plus, minus and shield connections.

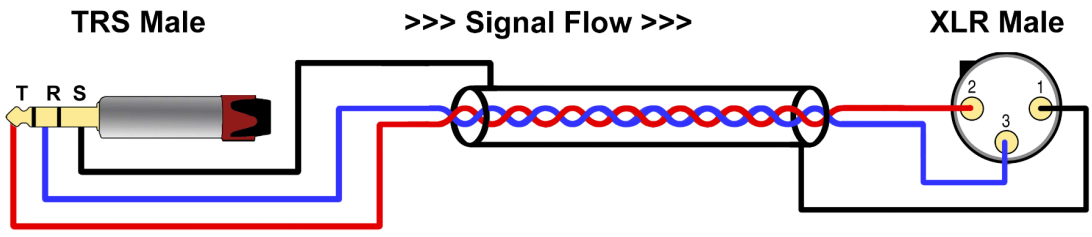

Diagram 2. TRS male to XLR male

2. XLR Source to Flex TRS Input

When connecting an XLR source such as a CD player to a Flex with TRS inputs, the required configuration is the reverse of the above.

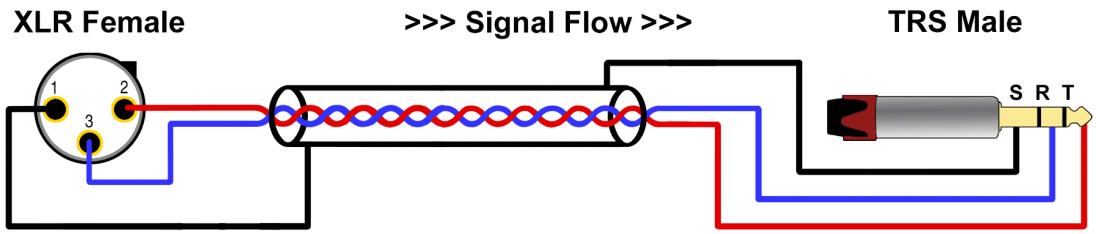

Diagram 3. XLR female to TRS male

3. Flex TRS to RCA Input Subwoofer

When connecting your Flex TRS to a subwoofer that only has RCA single-ended inputs, it is critical that you use a properly configured TRS to RCA interconnect. Please exercise caution as many common cables and adapters short the ring (R) to the shield (S), which shorts the negative output of the Flex TRS and is not recommended. Here's the correct cabling configuration.

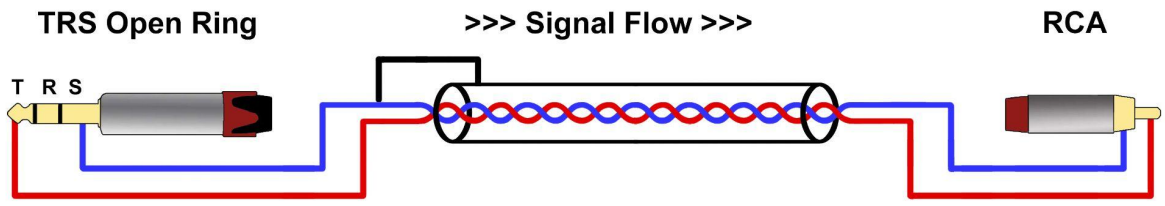

Diagram 4. Interconnect with TRS ring (R) not connected

4. RCA Source to Flex TRS Input

When connecting a single-ended RCA source such as a phono preamp to the Flex TRS, it is critical that you maintain proper shielding. Here the shield (S) and ring (R) are shorted on the Flex input, eliminating hum and noise. Following is the proper wiring diagram.

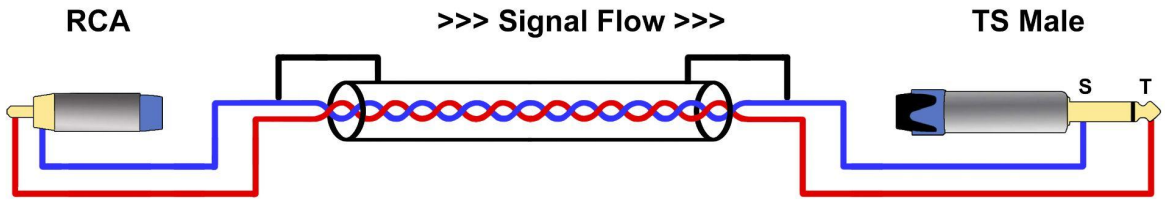

Diagram 5. Shield (S) and ring (R) are connected at Flex input

5. RCA Output to XLR Pre or Power Amplifier Input

When connecting a single-ended RCA preamplifier or other source to an XLR balanced input power amplifier, cable configuration and shielding is again critical. The diagram below shows the correct configuration.

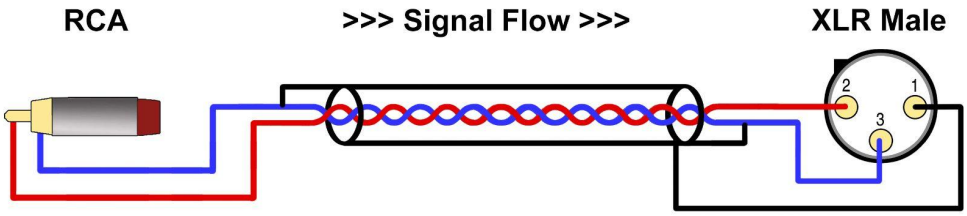

Diagram 6. Pins 1 and 2 are shorted at the amplifier input

If you have questions or would like to discuss in more depth, feel free to give us a call or drop a line.