Configuration Guide

Introduction to Configuring Project Patch

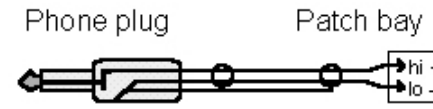
This guide is intended to assist you in selecting the proper components for your Project Patch installation. For further technical information and hints on installation please refer to the Project Patch Owners Manual, shipped with each patch bay.

It is very important to have a complete plan for your patch bay installation before beginning. The most important item is the patch bay layout. Patch bay layout is influenced by the cable types you choose - and cable types are influenced by the patch bay layout. For example, if you wanted to start an 8-channel device at jack #5, you would need to use two 4-channel cables for it instead of an 8. The only way you can determine the exact cables you need is by doing a complete layout. This section will help you in that process.

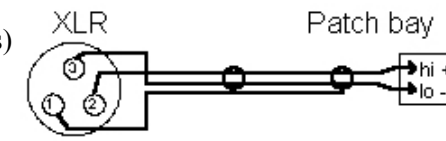
Choosing Cables

Pick cables which match the equipment you are interfacing. Use unbalanced squids for unbalanced gear and balanced squids for balanced gear. Keep in mind that many devices offer both unbalanced and balanced terminations; for example, balanced inputs and unbalanced outputs. In this case you should use a balanced squid on the input and an unbalanced squid on the output.

All of Signal Transport's standard cables are wired according the two basic schematics shown. All cables have their shield tied at the equipment end and lifted at the patch bay end. Unbalanced cables (1/4U and RCA) have their lows tied with shield to the ground at the equipment end. In this way, signal ground is referenced from the equipment ground, and "forward referencing" is possible. (See "The Ground Rules" for more on this) Multipin cables (ADATs and DA88s) are balanced, and are wired like XLRs and Tip-Ring-Sleeve (TRS) 1/4" plugs.



Typical unbalanced cable schematic



Typical balanced cable schematic

Our cables are offered in 2 channel, 4 channel, and 8 channel for the most flexibility. Cables are modular and plug into the rear of the patch bay in groups of 8 channels: one 8 ch, two 4 ch, or four 2 ch cables per block of 8 patch bay jacks. The cleanest way to lay out a bay is to choose cable groupings which match your equipment's functionality. Suppose for instance that your console has 12 line inputs, 12 channel inserts, 4 buss outputs, one stereo master output, two auxiliary outputs, and four echo returns. Here's the cables you would need:

Hypothetical Console

Console Function	# Channels	Cable Type	Possible Part #
Line Input	12	(1) 8ch (1) 4ch	PP-08-10-1/4B PP-04-10-1/4B
Channel Insert	12	(1) 8ch (1) 4ch	PP-16-10-IO-INS PP-08-10-IO-INS
Buss Output	4	(1) 4ch	PP-04-10-1/4B
Stereo Master Output	2	(1) 2ch	PP-02-10-1/4B
Aux Output	2	(1) 2ch	PP-02-10-1/4U
Echo Return	4	(1) 4ch	PP-04-10-1/4B

Of course, if your patch bay was farther from the console, you would need 25' cables instead of 10' as shown.

Microphone Patching

We do not recommend that your attempt to patch microphones with standard cables and PP-96-1 bays. Microphone inputs are often sensitive to shield noise and it is important to have a single shield path from each microphone directly back to the mic preamp. For this reason a ground-bussed bay like the PP-96-1 may not be

the best solution. Additionally, our standard cables do not pass shield, and therefore cannot be used for phantom powered microphones.

If you are doing your own wiring, you can terminate the shield to your mic input panel and then the mics will function. If you take care to route the patch bay ground back to the console ground, it is possible to get good performance. One other problem to watch out for is the half normalling (see below for explanation). Mics may not respond well to double termination which is possible with half normalled bays. If in doubt, dead patch out the normal input when re-routing mics.

Future additions to the Project Patch line will address this problem.

Time Code Patching

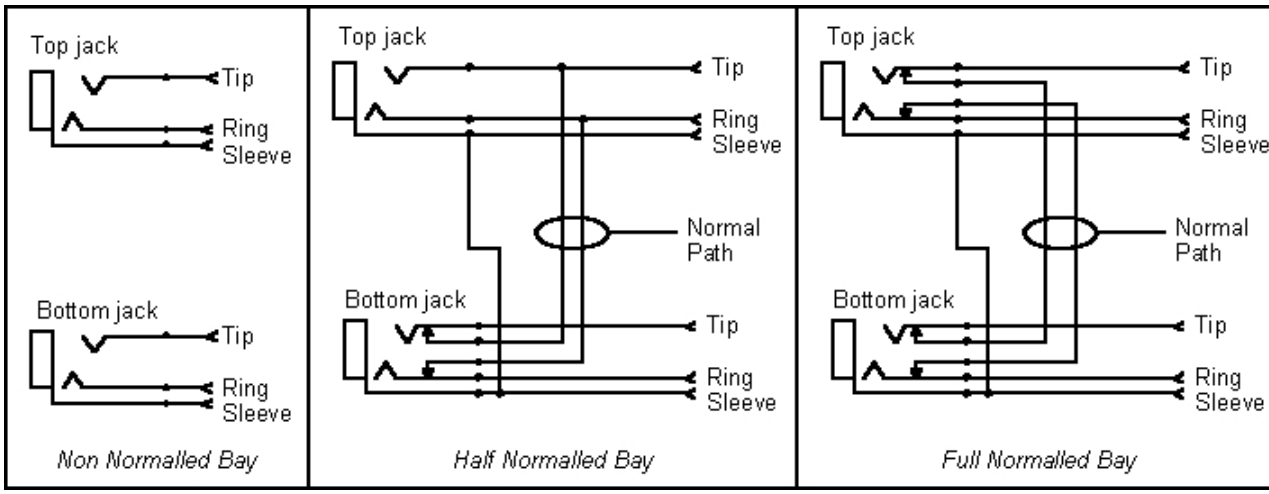
SMPTE time code is audio. There is no reason not to patch it along with the rest of your signals. However, it is a high level signal which is right in the middle of the ear's most sensitive frequency range (1200-2400 Hz). Therefore if cross talk exists between time code channels and audio channels, it is quite likely that you will hear it. Wiring and patching systems *rarely* contribute to crosstalk unless they are severely mis-wired. The most common causes of crosstalk are the same problems which contribute to hum and buzz pickup -- namely, unbalanced signal paths and signal current in the ground.

90% of all time code bleed problems can be traced to one problem -- many devices "cheap out" on the time code I/O circuit to save cost. The result is a simple differential balanced time code output with it's output shorted out by feeding an unbalanced input -- and driving significant time code signal current into the ground of that device, causing unpredictable results.

To completely avoid capacitive crosstalk within the bay itself, it is a good idea not to locate time code patch points directly next to audio. A handy way to guarantee separation is to dedicate an 8-channel module to timecode patching (this keeps code and audio on separate PC boards).

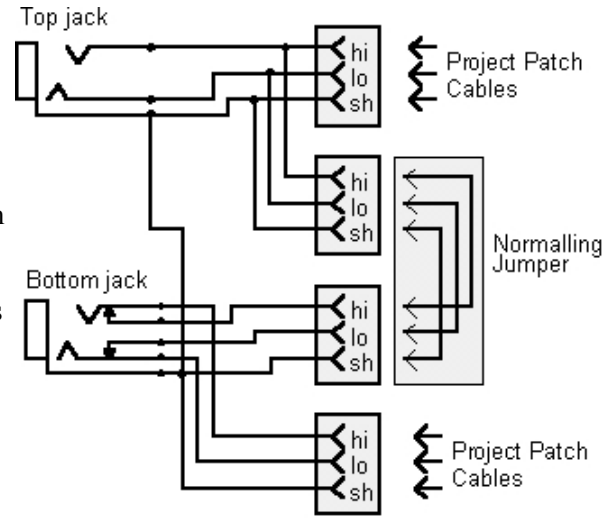
Normalling

Normalling refers to wiring within the patch bay itself which creates a signal path from one device to another without the use of a patch cord. This is the "normal" path which may be defeated by inserting a patch cord. This activates a switch on the jack which disconnects the normal path, replacing it with the path through the patch cord.



Full Normal means that both the source jack and the destination jack are fitted with switches, thus disconnecting the normal path if a patch cord is inserted into either jack. *Half Normal* means that only the destination jack is fitted with a switching jack. The Half Normal configuration is preferred for modern audio installations because it allows a monitor function: by inserting a patch cord from the source jack to a second destination jack, the signal is passed to both destinations.

Many patch bays have configurable normals meaning that you can switch them on or off. The PP96-1 bay is configurable externally through the use of jumpers and cables, allowing a wider range of normalling options. Half Normalling only is supported. You must locate any equipment inputs you wish to normal into on the bottom row. You may put inputs on the top or outputs on the bottom if you wish -- the only problem is that you won't be able to normal into top row inputs. It is a good practice to standardize on sources on top, destinations on the bottom, as this also helps operators remember where things are.

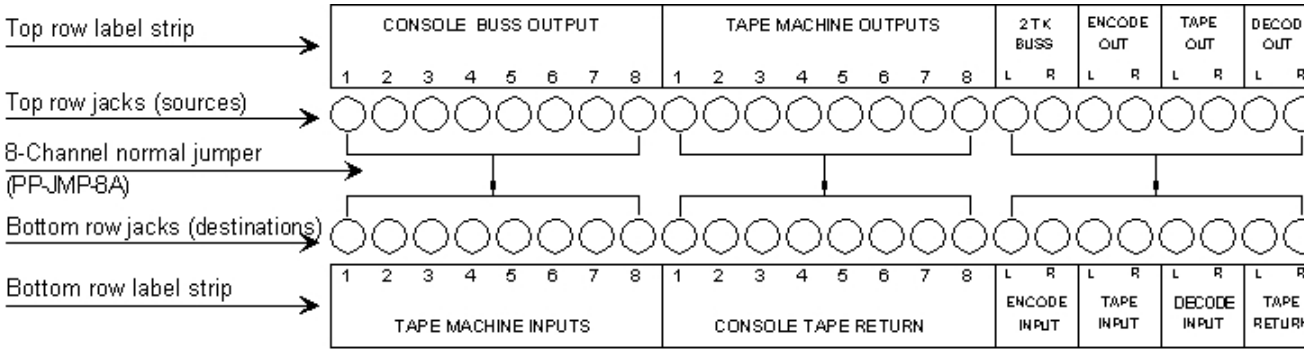


Typical channel schematic -- Project Patch Bay

This configurability allows you to route normals in creative ways. You can use any combination of normal - down, wild - normal, and multiples in a single installation.

Normal-down Philosophy

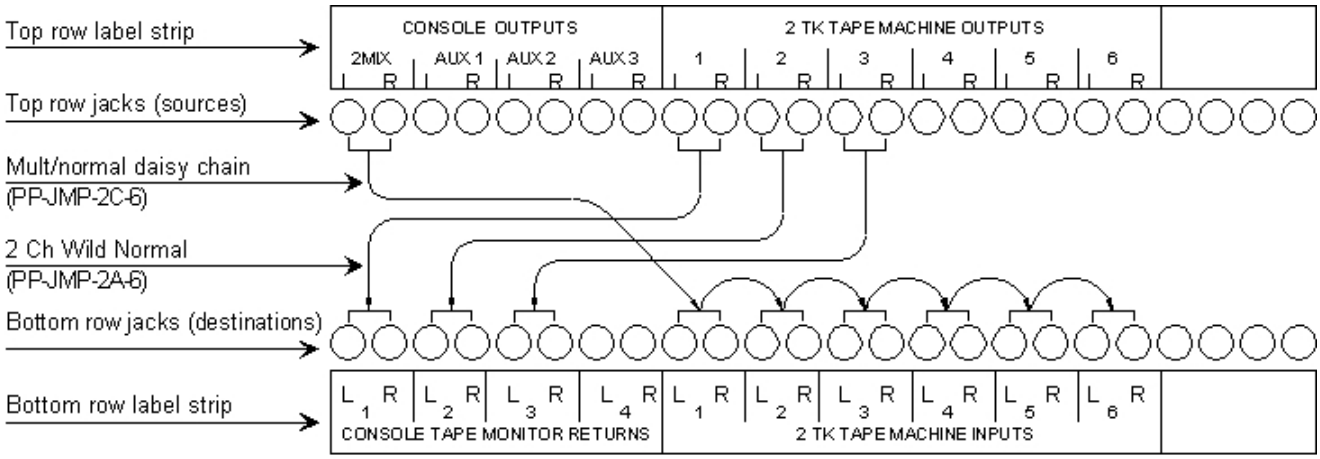
The normal down philosophy of patch bay layout is simply to consider all normals to go from the top jack to the bottom jack directly beneath it. For example, a common normalling path found in many studios is: Console Buss → Tape in, and Tape out → Console tape return. The signal flow is obvious because you can follow it -- every input is pretty much normalled from the signal above it. This is a common layout and one that many operators are familiar with.



Typical bay configured in the "Normal-Down" way

Wild Normal Philosophy

Wild normals allow you to dispense with the normal down philosophy when you want, and normal any top jack to any bottom jack. A good example of where you would do this is 2 track send/returns. Say your console has a single 2 track output and four 2 track returns, and you have five 2 track machines. The wild normal way is to setup each machine with it's outputs over its own inputs. You would install a wild normal from the most useful three of the 2 track outputs into the three 2 track returns. You also could use our 2-channel daisy chain mults to provide the 2 track buss signal into all 5 of the tape inputs. (But beware of balanced/unbalanced problems here -- if any one of the machine inputs are unbalanced, then you have unbalanced the entire chain.)



Typical bay configured in the "Wild Normal" way

In this drawing we have used three 2-channel normal jumpers PP-JMP-2A-6, and one six station daisy chain normal PP-JMP-2C-6 for the buss out. Wild normals also provide a nice way of dealing with outboard processing equipment which you want to normal to your aux sends and returns. It's really convenient to array the console aux sends and returns as a group -- not to spread them all around the patch bay.

Mono Signals

The minimum connector size for project patch cables is 2 channels. Therefore if you need to handle equipment with only one channel you need to get creative. Here's a couple of ways to make a mono setup work neatly without a lot of wasted space:

- Combine mono devices into pairs and use stereo cables to wire to them
- Split a 2-channel cable into input and output (This violates the outputs on top inputs on bottom philosophy, but heck, rules are meant to be broken)
- Throw out the occasional odd half of a cable.

Patch Bay Labels

Each PP-96-1 patch bay comes with two wide label strip covers and screws for holding it down. You can label your bays by hand or use a draw program to laser print nice looking labels. Either way, when it's time to put them under the label strip, poke the screws through the label and tighten them down just enough to pull it down. If you overtighten the screws, the strip will warp.

Signal Transport's Configuration Service

Signal Transport provides a patch bay configuration service (for a fee). You can send us a list of equipment and we will send you a drawing of your patch bays and a listing of the parts required to implement it. What you get is a complete engineering package for your wiring plan, including patch bay labels and a system drawing. For more information call us and request for information on the Project Patch Configuration Service.