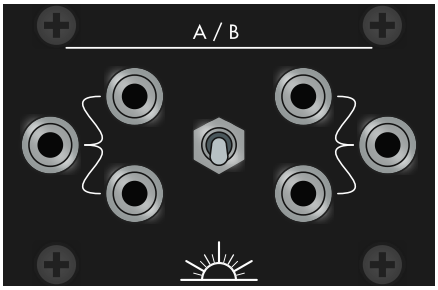
A/B



A/B Switch

Manual Revision 1.0

NEW SYSTEMS INSTRUMENTS

SPECIFICATIONS

Size	12HP
Depth	12mm

DESCRIPTION

A/B is a dual switch with convenient normalizations. Since the module is passive, the common or traveller jacks can be used either for routing an input to alternate outputs, or routing two alternate inputs to an output.

When the switch is up, the left and right middle jacks are connected to the left and right upper jacks, respectively. When down, they are connected to the lower jacks. The two upper and two lower jacks are normalled to each other, such that a jack plugged in either one will break the connection (full normal). Using both switches together, A/B routes an input to an output (the common jacks) across two effects loops (the traveller jacks), where without anything plugged it acts as a bypass switch. But there are other ways to patch A/B as well.

BOM

Ref. Des.	Qty	Manufacturer	Part No.
J1, J2, J3, J4, J5, J6	6	Qing Pu	WQP518MA
SW1	1	Taiway	200-MDP1-T1B1M2QE

TOOLS

Soldering Iron	Recommend 60W+ with screwdriver tip, e.g. Miniware TS100.
Tip Rest	Stable and safe.
Brass Wool	Something to clean gunk off the tip, e.g. Hakko 599B.
PCB Holder	Recommend cheap spring-loaded plastic, e.g. Aven 17010.
Solder	Recommend no clean/water wash, e.g. Chip Quik SMD3SW.020.
Knurled Nut Driver	For jack nuts.
7mm Hex Nut Driver	For the switch nut.

Desoldering Braid	If needed, e.g. MG Chemicals #426.

BUILD DIRECTIONS

(1) Put the pcb in the pcb holder, facing up. If you have a holder with slots, just use the flat edge so that you don't obstruct the space where the jacks will go.

(2) Place the jacks. You may have to straighten the long ground leg a little.

(3) Place the switch.

(4) Carefully put the faceplate on and tighten all the nuts.

(5) Flip and solder.

Soldering instructions: You will want to heat your iron to around 330-350° C, but this depends on your tip, iron, and solder. If it's too hot, the flux will burn off too quickly and the solder will feel dry. If you're burning off the flux before it gets a chance to work, the solder won't go in the joint, or properly bond to it, and might not even properly bond to the tip of the iron.

Tin the tip, i.e. melt some solder on the tip of the iron, so the part that will be contacting the joint and lead is covered in solder. Hold the iron so that the tip contacts the joint between the pad and the lead, and a portion of the side of the tip is pressed against the lead. Apply solder on the opposite side of the joint, tip first. What should happen: the flux core of the solder melts at the same time as the solder, the flux cleans the metal, the heat of the joint sucks the solder into it, and everything bonds together. Too much solder and you risk creating a heat sink which keeps the joint from heating up properly, so apply the solder slowly and be careful not to use too much. Stop when the joint is fully "wet," i.e. when the solder has bonded with the pad and all sides of the leg and filled the hole. If the solder forms a convex dome on the top instead of getting sucked into the joint, apply more heat. If it still does this, you probably put on too much solder. If this was NASA you'd redo the joint, but as long as everything looks fully bonded, it should be ok.

The tip of the iron should have a shiny surface of solder. When it starts getting too much black gunk on it (burned flux), jab the tip into the brass sponge, and it should come out looking clean. You might need to tin the tip again after. If the iron gets dirty or oxidized and solder doesn't stick, apply new solder and the flux should clean it. If you have more than a thin layer of solder, jab the tip into the brass sponge to wipe off the excess before the next joint.

Solder melts at 180°–220° C, so insufficient heat is usually about transfer, not temperature. To maximize the heat transferred into the joint, first, maximize the surface area in contact with the tip, by holding the iron such that more of the tip is in contact, and making sure that there's solder on the tip covering the areas that are in contact. Second, wait for a longer time: up to 15 seconds or so, if necessary. Only raise the temperature when this doesn't work.

(6) (Optional) Clean the flux off the board with a toothbrush and/or a damp paper towel. If you don't have water washable flux, use isopropyl (ok) or ethyl (better) alcohol. Do not submerge the board since water flowing through the jacks or switch could get flux on them and corrode them. Note: if you don't have a "no clean" type solder, this step is not optional.