

Mic Selector Switch — Build Guide

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What this builds

A 2-input, 1-output 3.5mm audio selector switch: an SPDT toggle wired so the T41's front-panel MIC jack can be fed by either a real handheld mic or the Pi 5's USB audio adapter output, one at a time, never both. A Y-splitter was ruled out for this because it wires both sources together permanently - whichever one isn't "in use" still loads and distorts the live one, and the T41 jack's own mic-bias voltage would backfeed onto the Pi's sound card output. This switch avoids both: only the selected source is ever electrically connected to the radio.

Parts list

First confirm whether the T41's MIC jack is mono (TS: tip + sleeve) or TRS (tip + ring + sleeve, e.g. if the ring carries PTT or bias sense) - that decides whether you need a mono or stereo switch and jacks. The table below assumes TS (2-conductor); double every switch pole and jack conductor if it's TRS.

Part	Spec	Qty	Notes
SPDT toggle or slide switch	Mono (2-pole) for a TS jack; 3-pole (stereo/TRS switch) if the T41 jack is TRS	1	Panel-mount toggle is easiest to enclose; a mini slide switch works too
Enclosure	Small plastic project box, big enough for the switch + strain relief	1	A mint tin or 3D-printed box also works
3.5mm input jack or pigtail cable	Panel-mount jack, or just a cut 3.5mm male-to-bare-wire cable	2	One for the real mic, one for the Pi's USB audio adapter output
3.5mm output cable	Male 3.5mm plug on a short cable, or a panel-mount jack + short patch cable	1	Plugs into the T41's MIC jack

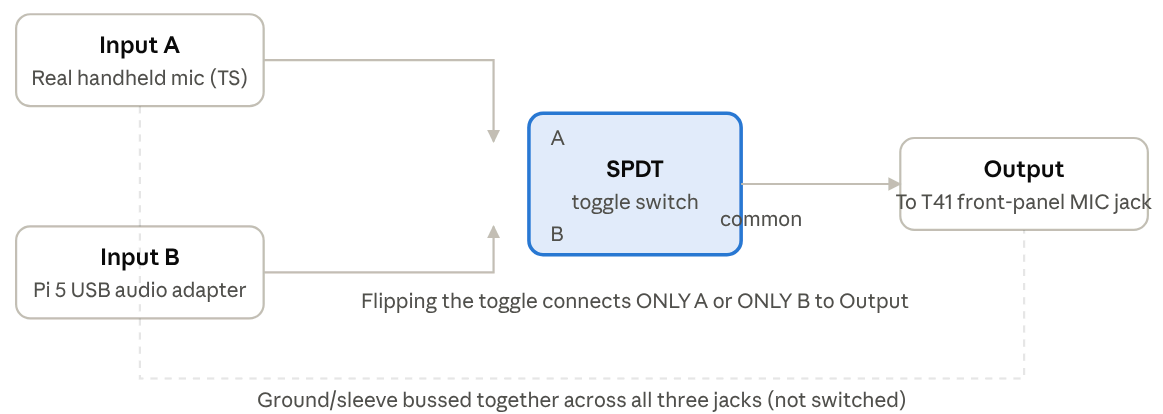
Part	Spec	Qty	Notes
Hookup wire	22-24 AWG stranded, 2 colors	~1 ft	One color for signal, one for ground
Solder + iron	-	-	-
Heat-shrink tubing or electrical tape	Small diameter	-	Insulate each solder joint
Multimeter	-	-	For continuity-checking before powering anything up

Optional: a small knob or switch guard, and a label maker or tape for marking the two positions ("MIC" / "PI").

Wiring diagram

SPDT switch selects one source at a time

Signal path shown; ground is bussed across all three jacks separately



mic selector switch — signal path

The switch's common pole always goes to Output. Flipping it connects either Input A or Input B to that pole - never both at once - which is exactly what rules out the Y-splitter approach from before.

Build steps

1. **Confirm the T41 jack's wiring.** Before cutting anything, check whether the MIC jack is 2-conductor (TS) or 3-conductor (TRS), and whether it supplies bias voltage on the tip. Match the switch and jacks you bought to this.
2. **Drill/cut the enclosure.** Mark and cut three holes for the two input jacks and the output cable's strain-relief, plus a hole for the toggle switch body.
3. **Wire Input A to one throw.** Solder the real mic jack's signal lead (tip) to one of the switch's two throw terminals. Solder its ground (sleeve) to a common ground point - not through the switch.
4. **Wire Input B to the other throw.** Solder the Pi's USB audio adapter jack's signal lead (tip) to the switch's other throw terminal, and its ground to the same common ground point.
5. **Wire the common pole to Output.** Solder the switch's common/pole terminal to the output cable's signal lead (tip). Solder the output cable's ground to the same common ground point.
6. **Bus the grounds.** Tie all three jacks' sleeve/ground connections together at one point (not through the switch) - ground is shared, only signal gets switched.
7. **Insulate every joint.** Heat-shrink or tape each solder joint so nothing can short against the enclosure or another joint.
8. **Continuity-check before connecting anything live.** With a multimeter: flip to position A, confirm Output's tip reads continuous to Input A's tip and open to Input B's tip (and the reverse in position B). Confirm ground is continuous across all three jacks in both switch positions.
9. **Label the two positions ("MIC" / "PI")** so it's obvious at a glance which source is selected.
10. **Test on the bench, then on the air.** Plug the output into the T41's MIC jack, flip to each position, and confirm the radio keys and passes audio correctly from whichever source is selected before relying on it during a QSO.

Notes

- **TS vs TRS, confirmed before buying parts.** A mono (TS) switch and jacks on a TRS circuit will leave the extra conductor (often PTT or bias sense) unswitched and floating, which can behave oddly. Check the T41 jack's actual wiring first.

- **Bias voltage.** If the T41 supplies mic-bias voltage on the tip, that voltage only reaches whichever input is currently selected - it never reaches the unselected input's jack, so there's no backfeed risk into the Pi's USB audio adapter the way there would be with a Y-splitter.
- **Ground stays common, signal gets switched.** Only route the tip/signal conductor through the switch. Bus all three jacks' grounds together directly - switching ground too adds a failure mode (a half-flipped switch briefly floating ground) for no benefit.
- **Label the positions clearly.** It's easy to forget which way is "MIC" and which is "PI" mid-QSO - a simple label avoids transmitting the wrong source.