



DA-7X2 Cross-Band Repeater

Bridge one VHF channel and one UHF channel in real time

What this feature lets you do: Let authorized VHF and UHF stations communicate through the DA-7X2. When the radio hears a signal on one displayed band, it relays that audio on the other band while the caller is still speaking. This is a live bridge, not delayed playback.

Do not confuse the two repeater features: Cross-Band Repeater is live and uses one UHF channel plus one VHF channel. Store-and-Forward replays analog FM or DMR after reception ends and uses separate controls. Configure one feature at a time.

Controlled testing only: Use only frequencies, modes, signaling, and station identification authorized for your license and local band plan. Coordinate repeater-frequency use with the system owner, use the lowest practical power, and stop if the radio becomes unusually warm.

Validated controls: These steps and control names were verified with DA-7X2 firmware V1.05d2 and BTECH CPS V1.05d. A later release may use equivalent labels.

Supported DA-7X2 paths

Confirmed live route	Band requirement	Matching rule
Analog to analog	One UHF and one VHF	Match each side's frequency, bandwidth, and signaling
Analog to DMR	One UHF and one VHF	Analog source matches input; DMR receiver matches output frequency, color code, and talkgroup
DMR to analog	One UHF and one VHF	DMR source matches input frequency, color code, and talkgroup; TS 1 or TS 2 accepted
DMR to DMR	One UHF and one VHF	Source matches the input DMR channel and receiver matches the output DMR channel; TS 1 or TS 2 accepted
Any NXDN cross-band path	Not applicable	Not available on the DA-7X2

Cross-band means two bands: Use VHF-to-UHF or UHF-to-VHF. Do not configure two VHF channels or two UHF channels for the live Cross-Band Repeater feature.

1. Prepare the radio and codeplug

1. Read the DA-7X2 with the current BTECH CPS and save a separate working copy.
2. Create one authorized UHF channel and one authorized VHF channel for a tested route above. Program analog bandwidth/signaling and DMR color code/talkgroup as applicable.
3. Place the VHF channel on one display side and the UHF channel on the other. Both the main and sub channels must remain visible and enabled.
4. Turn Digital Monitor Off before enabling Cross-Band Repeater.
5. Turn the Simplex Repeater side-key function Off for this test. Store-and-Forward recording is not used for live cross-band operation.

6. Save the working codeplug, write it to the radio, power-cycle, and read it back before transmitting.

2. Set the live repeater controls

CPS control	Purpose	First controlled test
Repeater Mode	Master control for live cross-band relay	On; it may also be enabled from the radio menu
Rep CC Limit	Selects the DMR channel side whose color code is used	Match the intended DMR receiving side
Rep Slot Path A / B	Exposed DMR slot-path controls	Do not use as the input-slot gate; matching DMR calls were accepted from TS 1 or TS 2

DMR matching rule: On a DMR receiving side, the source frequency, color code, and talkgroup must match that displayed DA-7X2 channel. The same frequency with a different color code or talkgroup will not relay. On a DMR transmitting side, the destination terminal must match the output frequency, color code, and talkgroup. An incoming DMR call may use TS 1 or TS 2; do not rely on Rep Slot Path A/B to reject one input slot on V1.05d2.

3. Activate and verify the live relay

1. Set both terminal radios and the DA-7X2 to the authorized VHF/UHF test channels, then listen on both channels before transmitting. If either side uses DMR, match that terminal to the DA-7X2 channel's frequency, color code, and talkgroup.
2. On the DA-7X2, open Menu > Settings > Radio Set > DMR Func > Repeater and turn Repeater On, or use a key programmed as Repeater.
3. Transmit a short test on the receiving side of the selected route. For a DMR source, first confirm its color code and talkgroup match the DA-7X2 channel; its input time slot may be TS 1 or TS 2.
4. While the source signal is still present, confirm the DA-7X2 keys the other band and the destination terminal hears live audio.
5. Release PTT and confirm the relay stops without a delayed replay.
6. For a DMR source, repeat once after changing only the source from TS 1 to TS 2 or from TS 2 to TS 1. Keep color code and talkgroup unchanged and confirm the live relay still passes.
7. Wait for the active relay call to finish. To exit Cross-Band Repeater, press the upper-right key directly above P2 - the key marked with two red lines. The radio may not respond to the exit key while a call is still active.

Feature	When the DA-7X2 transmits	Frequency plan
Live Cross-Band Repeater	While the incoming signal is still active	One VHF channel and one UHF channel
Store-and-Forward	After the incoming call ends	Selected analog FM or DMR simplex channel

Troubleshooting

Symptom	Check
Repeater will not enable	Both main and sub channels are visible; one is VHF and one is UHF; Digital Monitor is Off
No live audio in one direction	Channel A/B placement, receive/transmit frequencies, analog tones or DMR color code/contact, and the destination terminal
DMR source does not relay	Incoming frequency, color code, talkgroup, and DMR mode; input time slot alone should not block the relay
DMR destination cannot decode	Destination frequency, color code, talkgroup/contact, and DMR mode; verify these before changing slot controls
A delayed replay occurs	Turn Simplex Repeater Off; the Store-and-Forward control is separate from Repeater Mode
Radio will not exit immediately	Wait until the active call finishes, then press the upper-right key above P2 marked with two red lines
NXDN path does not relay	NXDN is not available for DA-7X2 Cross-Band Repeater operation