

CROSS MODES

WHAT IT IS, AND WHAT YOUR BOX CAN DO

WHAT CROSS MODE MEANS

ONE RADIO, ANY NETWORK

Your radio speaks one digital mode. The network you want to join speaks another. **Cross mode is the openSPOT4 converting between them in real time** — you keep using the radio you own, and the far end never knows.

The Pro does this in hardware, with a genuine AMBE vocoder chip. That is why the Pro supports D-STAR cross modes and the standard openSPOT4 does not, and why the Pro sounds better doing it.

Two conversions are done in software on both models: **C4FM ↔ P25**.

SETTING ONE UP

THREE STEPS, ALWAYS THE SAME

- 1 · CONNECTOR

Set up and activate the connector for **the network you want to reach** — not for your radio's mode.
- 2 · MODEM

Switch the modem to **your radio's mode**.
- 3 · DESTINATION

Point **Route cross mode calls to ID** at the talkgroup you want. From a DMR or NXDN radio it follows whatever ID you call. From a callsign-based radio — D-STAR or C4FM — set it by DTMF, quick call, or URCALL.
- That is the whole recipe. Everything else on this card is detail about identity and where the audio lands.

WHAT REACHES WHAT

YOUR RADIO DOWN THE SIDE · THE NETWORK YOU WANT ACROSS THE TOP

YOUR RADIO	D-STAR	DMR	C4FM	NXDN	P25
DMR	PRO	—	YES	YES	—
D-STAR	—	PRO	PRO	PRO	—
C4FM	PRO	YES	—	YES	YES
NXDN	PRO	YES	YES	—	—
P25	—	—	YES	—	—

YES works on both the openSPOT4 and the Pro. **PRO** needs the openSPOT4 **Pro** — every D-STAR cross mode does, in both directions, because they need the AMBE hardware.

DN OR VW

C4FM RADIOS · GETS PEOPLE EVERY TIME

Your C4FM radio must be in **DN (Digital Narrow)** for every cross mode — *except* to a **P25** network, which needs **VW (Voice Wide)**.

Wrong mode is not an error. **The far end simply hears silence**, and so do you when they answer.

Same rule inbound: C4FM traffic sent in any other mode arrives at your radio as silence.

CROSS MODES — BY YOUR RADIO

Find your radio, then read what it takes to reach each network
— and where the incoming audio will land.

PICK YOUR TRANSCEIVER — THEN SET THE CONNECTOR TO THE NETWORK AND THE MODEM TO YOUR MODE

DMR RADIO

REACHES D-STAR (Pro), C4FM, NXDN

LISTEN ON	TG9 from D-STAR and C4FM. Set TG9 as TX contact or put it in the RX group list, or the squelch never opens.
NXDN	IDs pass through as-is unless you force defaults.
YOUR CALLSIGN	from your DMR ID; falls back to Default callsign for cross mode calls , then the ID as text.
C4FM network traffic reaches you only if the sender used DN .	

D-STAR RADIO

PRO ONLY · REACHES DMR, C4FM, NXDN

LISTEN ON	nothing to set — D-STAR is callsign-based, calls just arrive.
YOUR ID	looked up from your callsign; if none, the callsign is parsed as a number; else Default cross mode source DMR ID — set it to your DMR ID.
NICE TOUCH	C4FM callers found in the database arrive with name and country in the D-STAR message.
To NXDN, all your calls go to the Default cross mode destination ID .	

C4FM RADIO

REACHES D-STAR (Pro), DMR, NXDN, P25

RADIO MODE	DN for D-STAR, DMR and NXDN. VW for P25.
HALF DEVIATION	use C4FM Half Deviation modem mode if your radio needs it.
D-STAR	set the radio's callsign to exactly what you registered , or REF/XRF servers may refuse or mute you.
Steer with DTMF: #3100 group, *4770 private. Wires-X button works too.	

NXDN & P25 RADIOS

THE TWO NARROWEST

NXDN REACHES	D-STAR (Pro), DMR, C4FM.
NXDN LISTENS ON	Default cross mode destination ID — put it in SelCall or set as TX contact.
P25 REACHES	C4FM only, and listens on TG9 .
Private DMR calls arrive at an NXDN radio as group calls. P25 ↔ C4FM needs VW at the C4FM end.	

THE THREE SETTINGS THAT DECIDE WHO YOU APPEAR TO BE — AND ONE WARNING

IDENTITY ACROSS THE GAP

NUMBERS ON ONE SIDE, CALLSIGNS ON THE OTHER

DMR, NXDN and P25 route on **numbers**; D-STAR and C4FM route on **callsigns**. Crossing between them, the openSPOT4 looks the other up in its callsign–ID database. When that fails it falls back, in order:

- Parse the callsign as a number, or the ID as text
- **Default callsign for cross mode calls** — set this to your callsign
- **Default cross mode source DMR / NXDN / P25 ID** — set these to your DMR or CCS7 ID

Fill these in once and you never show up as a bare number.

IF YOU HAVE THE NON-PRO

WORTH KNOWING BEFORE YOU BLAME THE RADIO

No D-STAR cross modes at all. The standard openSPOT4 converts in software and cannot do them in either direction.

Audio levels cannot be matched. Without transcoding hardware it cannot adjust the converted stream's level — you may hear everyone loudly while they hear you faintly, or the reverse. That is the hardware, not your mic gain.