

TMAA04-04 Crossband Linking Cable Installation Instructions



Introduction

The TMAA04-04 crossband linking cable is used to connect the auxiliary connectors of two radios configured as a crossband repeater. Components in the TMAA04-04 are optimized for voice applications.



Important: The radio does not meet the IP54 protection standard once the auxiliary connector rubber bung has been removed and a crossband linking cable has been installed. Care must be taken when the radio is being operated in an environment where there is water, dust or other environmental hazards.



Installation

1. Remove the rubber bung that covers the auxiliary connector on each of the radios.
2. Plug each end of the crossband linking cable into the auxiliary connector on each radio.

Radio Programming

After the transmit and receive channels have been programmed for both radios, settings in the following forms must also be configured:

- PTT form (refer to [Table 1](#))
- Programmable I/O form — Digital tab (refer to [Table 2](#))
- Programmable I/O form — Audio tab (refer to [Table 3](#)).

If a repeater transmit tail is required, settings in the following forms must be configured in both radios:

- PTT form (TM8100 radios only) (refer to [Table 4](#))
- Basic Settings form—Subaudible Signalling tab (TM8200 radios and optional for TM8100 radios) (refer to [Table 5](#) and [Table 6](#)).

Some of the settings shown in the tables are default settings and may not need to be changed. In all cases, refer to the online help of the programming application for more information.

Crossband Settings in the PTT Form

The following table shows the crossband linking settings required in the External PTT (1) tab of the PTT form.

Table 1 Crossband settings in the PTT form, External PTT (1) tab

Field		Setting
Advanced EPTT1	PTT Transmission Type	Voice
	Audio Source	Audio Tap In

Programmable I/O Form—Digital Tab

The following table shows the crossband linking settings required in the Digital tab of the Programmable I/O form.

Table 2 Crossband settings in the Programmable I/O form, Digital tab

Pin	Direction	Label	Action	Active	Debounce	Signal State	Mirrored To
AUX_GPI1	Input	PTT_INS	External PTT 1	Low	10	None	None
AUX_GPIO5	Output	BUSY	Busy Status ^a	Low	None	None	None

a. To transmit only when the signalling is valid, set this field to Signalling Audio Mute Status.

Programmable I/O Form—Audio Tab

The following table shows the crossband linking settings required in the Audio tab of the Programmable I/O form.

Table 3 Crossband settings in the Programmable I/O form, Audio tab

Pin	Tap In	Tap In Type	Tap In Unmute	Tap Out	Tap Out Type	Tap Out Unmute
Rx	None	A-Bypass In	On PTT	R7	D-Split	Busy Detect ^a
EPTT1	T5	A-Bypass In	On PTT	None	C-Bypass 0	On PTT

a. This can be set to **Busy Detect + Sub** if the mute is to open only when valid subaudible signalling is present with the transmission.

Repeater Transmit Tail Settings

TM8100 Radios

If the transmitter requires a “tail”, then this can be set in the External PTT (1) tab of the PTT form. During the PTT deactivation delay period, any signalling, such as CTCSS or DCS, is still present.

Table 4 Transmit tail settings in the PTT form, External PTT (1) tab (TM8100)

Field		Setting
Advanced EPTT1	PTT Deactivation Delay	up to 1000ms

If a **further** transmitter tail is required, then this can be configured in the Subaudible Signalling tab of the Basic Settings form. During the lead-out delay period, no signalling, such as CTCSS or DCS, is present.

Table 5 Additional Transmit tail in the Basic Settings form, Subaudible Signalling tab (TM8100)

Field		Setting
CTCSS Settings	Lead-Out Delay	any duration, up to 1000ms
DCS Settings	Lead-Out Delay	any duration, up to 1000ms

TM8200 Radios

If the transmitter requires a “tail”, then this can be configured in the Subaudible Signalling tab of the Basic Settings form. During the lead-out delay period, no signalling, such as CTCSS or DCS, is present.

Table 6 Transmit tail in the Basic Settings form, Subaudible Signalling tab (TM8200)

Field		Setting
CTCSS Settings	Lead-Out Delay	any duration, up to 1000ms
DCS Settings	Lead-Out Delay	any duration, up to 1000ms

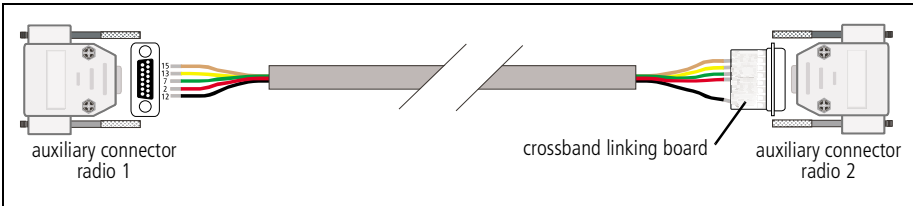
Operational Testing

1. On the receiving radio, inject an on-channel RF signal at a level of -70 dBm, modulated to ± 3 kHz deviation (wide bandwidth channel) or ± 1.5 kHz (narrow bandwidth channel), at 1 kHz AF.
2. On the transmitting radio, the resulting deviation should be:
 - ± 3 kHz (with a tolerance of ± 200 Hz) on a 25 kHz wide bandwidth channel.
 - ± 1.5 kHz (with a tolerance of ± 200 Hz) on a 12.5 kHz narrow bandwidth channel.

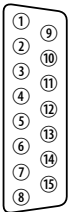
Interface Specification

The following table and diagram summarizes the signals used for the crossband linking cable on the radios' auxiliary connectors and shows the interface between the cable and the radios.

TMAA04-04 crossband linking cable



Auxiliary connectors—pins and signals

	Pin	Signal name	Description
 rear view	2	AUX_GPIO5	busy (output)
	7	AUD_TAP_IN	audio tap input
	12	AUX_GPI1	PTT (input)
	13	AUD_TAP_OUT	audio tap output
	15	AGND	analogue ground

More Information

Refer to your radio provider for more information about this product.