

# Remote and Microphone Extension Cables for the FTM-400

Information on building extension cables for the FTM-400 microphone and remote control head.

Thanks to Chuck, K0ORK for contributions to this document!

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## General Comments

The cable and connector quality is extremely important. A poor connection or a poor crimp can cause the cable not to work. You must use the correct crimp tool or you will have problems.

The connectors must also fit tightly into the plugs. If they are loose you will have intermittent connections. Both the control head and the microphone are extremely sensitive to marginal connections. Most extension adapters are cheap and do not make adequate contact. If the extension can be pulled apart or if either RJ-45 connector is loose, you will have problems.

## Crimping the Connectors

Explain XPYC and RJ notation

TBD - instructions and photos on how to crimp the connectors

## Control Head Extension Cable

The control head cable uses a 4-conductor cable with an RJ-11 4P4C at each end. Be careful, the RJ-11 6P4C's are very common but they are too wide for the plug. This is the same connector used in a wired phone headset - but with only two conductors (4P2C).

The cable carries power and serial digital data which travels between the remote display panel and the radio. The radio will not operate without a connection to the remote display.

The length of the cable is limited by IR voltage drop on the cable and by increasing distortion of the digital signal. It is suggested that the cables be made as short as practical for your installation. Lengths greater than about 7 meters (20 feet) may be problematic. If you see erratic behavior on the remote display, immediately shut down and verify that your cable is good. Operating with an erratic display may result in returning the radio to Yaesu.

You can build your own custom-length cables or buy them. (See links below)

It is recommended that you never attach or detach the remote display while the radio is powered on.

## Microphone Extension Cable

The microphone uses RJ-11 6P6C connectors. This is not the same as an Ethernet connector. You'll also need a double-female to extend the cable. We have never found an Ethernet adapter that works!

You can either buy pre-assembled cables or make your own to your custom length. This may be necessary if you need to feed the cable through an opening bigger than the RJ-11/12 connector.

To make a microphone extension cable you will need:

- An RJ-11 crimping tool with a 6P6C die (fortunately more common than 4P4C)
- RJ-11 6P6C crimp connectors
- Six conductor cable, flat cable is easier to cut, strip, and crimp

To build the microphone extension adapter:

- Two RJ-11 6P6C modular jacks
- Surface mount modular housing for the modular sockets
- Two RJ-11 6P6C modular sockets

Put two RJ-11 6P6C sockets in the modular housing and wire them together with the provided tool. It is very important that there be minimal resistance added by the sockets. The microphone transmits keypad presses by generating two different voltages. If the voltage is wrong, the keypad will not work.

An RJ-45 Ethernet crimp tool won't work. RJ-45 jacks won't work - they do not provide a tight fit and result in intermittent connections.

## Pre-made Components

It's possible to save some money and buy pre-made cables, however the choice of lengths is limited.

### 4-conductor RJ-11 4P4C cables

7' RJ-11 4P4C Straight Wired Cable

15' RJ-11 4P4C Straight Wired Cable

25' RJ-11 4P4C Straight Wired Cable

### 6-conductor RJ-11/12 6P6C cables

7' RJ-11/12 6P6C Straight Wired Cable

15' RJ-11/12 6P6C Straight Wired Cable

25' RJ-11/12 6P6C Straight Wired Cable

## Where to get parts

Some of the hardware you need won't be available locally, so you might as well plan on making an Internet order. Once your friends know you can make extension cables, you may find new friends and achieve great popularity, so order enough to make a bunch of cables.

The following parts are available on Amazon by following the provided links:

[Crimp tool for 4P4C](#) (one)

[RJ-11 4P4C jacks](#) (two)

[Flat, 4-conductor wire](#) (500')

[Crimp tool for 6P6C](#) (one)

Even if you buy pre-made cables, you will need the following

[RJ-11 6P6C jacks](#) (two)

[RJ-11 6P6C Keystone Jacks](#) (two)

[Modular Housing](#) (one)

[Flat, 6-conductor wire](#) (100')

[Flat, 6-conductor wire](#) (1000')

PS If you type these numbers into Amazon you can get the parts premade.

#019927 RJ12-6 pin mod inline coupler straight This connects the mic to the extension cable

#X000N8BLB7 RJ12-6 conductor straight telephone cable 7ft extension cable.

I used the 7 ft long cable on my Tacoma install and found it a little short. You want to measure and get the length you need. Please remember that the Yaesu mic uses different resistances to get the different functions so keep the cable as short as you can.

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