« **Return to Tools & Documents**
« **Return to Documents & HOW-TOs**

XTS5000 TMS HOWTO
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Introduction

TMS, or Text Messaging Service, is a feature that was released by Motorola in Astro25 products CPS/firmware major revision R09. As initial information about this capability is sketchy at best, this document is intended to provide some basic theory and instructions on setting up TMS in subscriber units.

Disclaimer

This document is intended as a basic HOWTO illustrating basic concepts and operation. It is not all-inclusive in scope. Various terms used in this document are copyrighted by and/or trademarks of, Motorola, Inc.

Scope of Document

This document covers the configuration and usage TMS in a radio to radio, or peer to peer, environment. This document does not cover configuration and/or usage of TMS in a ARS server-based or infrastructure-based environment.

This document convers configuration on a XTS5000 portable radio. Configuration of different radios may not exactly conform to the instructions herein.

Requirements

In order to use TMS, the radio firmware must be R09.00.00 or higher, and you must use CPS R09.00.00 or higher. The radio must have the **W947/Q947 APCO Packet Data** option enabled in the FlashCode.

Basic Theory

APCO Packet Data is the basis for capabilities such as TMS. Essentially, APCO Packet Data establishes a data packet layer over the APCO 25 data frame layer, apparently in a manner that is compatible with the TCP/IP protocol.

The ARS system is a method of automatically registering APCO Packet Data capable subscriber units in a APCO Packet Data network. In the presence of an ARS server and infrastructure, each radio would register with the server, and the server would inform each subscriber unit on the system how to contact any other unit, etc. In the radio to radio mode we will be discussing in this document, each radio discovers other radios directly, it is thought, in a manner similar to computers discovering each other in a peer to peer network.

Configuring the Radio

There are several pages in the codeplug where data must be configured in order to use TMS in the radio to radio mode.

Step 1: Configure Radio Wide ARS Settings

Figure 1: Radio Wide > General tab (excerpt)

In the Radio Configuration > Radio Wide > General tab, checkmark the "ARS User Login Enable" checkbox. Enter in a username in the "SoftID/Username" field, and pin in the "PIN" field. These values, as long as they use legal characters, can be anything you want, since in this example we are not actually going to be talking to an ARS server. As is mentioned in the documentation, this field supercedes the Astro system SoftID field that was used in previous CPS/firmware revisions.

Note: Within any group of radios operating in the absence of infrastructure, the radio wide SoftID/ARS Username is advised

to be unique.

Step 2: Configure Radio Wide Data Settings

In the Radio Configuration > Radio Wide > Data tab, configure an IP address in each of the "Subscriber IP Address" and "Mobile Computer IP Address" fields. These values can be any properly formed IP address, with the caveat that each address must be unique within an individual radio's programming. As we will see in later steps, not only are there radio-wide IP address settings, there are also IP address settings associated with each seperate Astro system. You should be able to use the example values in Figure 2.

Step 3: Configure the Data Button

In the Radio Configuration > Controls > Buttons window, configure the "Data Button" for "TMS" from the dropdown list. It may already be selected for both conventional and trunking.

There are various ways to access the TMS system. You can also enable the "TMS" menu item in the display controls if you like, but I've found the Data Button to be the easiest. Plus, you finally get to use it!

Astro System Configuration

Note: Steps 4 and 5 will need to be done on each Astro system that is used on a channel that TMS is to be used on. In practice most people usually only have one Astro system, so this is not much of a concern. Also note, as mentioned in Step 2, that each Astro system will need to have IP addresses assigned to it that are unique radio-wide.

Step 4: Configure Astro System Data Settings

In the Conventional > Astro Systems > Astro System branch, open the window for the Astro system you wish to configure TMS on. On the Data tab, checkmark the "Packet Data Capable System" checkbox. Make sure all items have the same settings as in Figure 4. At this time, configure suitable IP addresses in the "Subscriber IP Address" and "Mobile Computer IP Address" fields.

Note 1: Packet Data Mode: Direct vs. Repeated

This field chooses the mode of Packet operation, essentially, Direct (talkaround) or Repeated. It was found that if this setting was Repeated, even if a repeated channel was temporarily set to talkaround, that the packets would still go out through the repeater. So, if you need to send TMS messages variously through a repeater, and also on the talkaround of that repeater, you would be advised to configure two seperate Zone Channels referencing two seperate Astro systems.

All testing for this document was done on a simplex channel using the Direct setting.

Note 2: Within any group of radios operating in the absence of infrastructure, the each Astro system "Subscriber IP Address" is advised to be unique. The IP address do not apparently even have to be in the same subnet - in fact there is evidence that if the radios are operating in the absence of infrastructure, that these fields are not in fact used at all. However, this note still stands. You can see Figure 4 for an example.

Step 5: Configure Astro System ARS Settings

In the Conventional > Astro Systems > Astro System branch, open the window for the Astro system you wish to configure TMS on. On the ARS tab, checkmark the "Automatic Registration Service Enable" checkbox. Set the "ARS Mode" dropdown to "Non-Server".

Final Configuration

At this time, if you wish, you can optionally configure the following entries:

Under the Radio Configuration > Data User List table, you can enter the SoftID/ARS Username of other radios you commonly communicate with, to save having to type in their SoftID/ARS Username every time you want to send a message to them.

Under the Radio Configuration > Quick Text Message table, you can enter in commonly used text messages, such as "Meet me at the bar", or "I'm out on a hamabout, Code 4". Go ahead and compose one or two Quick Text Message entries for use during testing.

Once you have verified all the settings in the above steps, program the radio. If you wish to conduct testing between two seperate radios, configure them both appropriately and program.

Using TMS

There are many capabilities of the TMS on the XTS5000. We will go over the basic concepts of sending, recieving, and replying to, a TMS message.

Sending a Message

Step 1: Select an appropriately configured Astro digital channel using the channel knob and/or keypad.

Note that the radio has a new icon near the top if the display. It should be a small block of black with "iP" written in it in white. This indicates you are on a channel configured for APCO Packet Data.

Step 2: Hit the "Data" button to enter the TMS menu. This is the button to the right of the directional pad, that has a computer icon on it.

This will bring you to the TMS home screen. It should list your SoftID/ARS Username, and Astro ID for the current system, as well as have "INBX" (Inbox) and "COMP" (Compose) as the first two softkey menu items.

Step 3: Choose the "COMP" menu item.

Step 4: Choose a new or existing message to send to your recipient.

Choosing the "NEW" menu item will allow you to type in a new message using the radio keypad.

Choosing the "LIST" menu item will allow you to choose from existing messages you previously configured in the Quick Text Message table.

Go ahead and choose "LIST". The first message in the list will be shown on the screen. You can use the left/right pad to scroll between messages.

Step 5: Address the message.

Once you have chosen the appropriate message, choose the "ADDR" menu item. This will bring you to the "ADDR:" prompt on screen, at which point you can type in a new recipient's SoftID/ARS Username, or use the left/right pad to choose from existing recipients you previously configured in the Data User List table.

Step 6: Send the message.

Once you have chosen a recipient, go ahead and press the PTT. The display will show "SENDING MSG", and if the message is recieved by the recipient, and reciept is acknowledged, the display will indicate so.

Recieving a Message

When your radio recieves a message, it will beep, and and an envelope icon near the top of the display will begin to flash.

Step 1: Hit the "Data" button to enter the TMS menu.

Step 2: Choose the "INBX" menu item to go to your inbox.

Once you have entered the inbox, you will be able to scrol through the list of recieved messages in your inbox using the left/right pad.

Replying to a Message

Once you have recieved a message, and have gone into the inbox to view it, you can reply to it.

Step 1: Choose the "RPLY" menu item to reply to the message.

This will bring up the option to compose a new message or choose an existing message, similarily to when initially sending a TMS message to a recipient.

Once you have chosen a message to send, simply press the PTT. This will send the pre-addressed message back to the original sender of the message.

Further details on TMS can be found in the XTS5000 Model 3 English User Guide, Motorola part number 6881094C27, starting on page 111 of that manual.

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