

Programming Instructions for:
Kenwood TK-880, 980, 981
W/ KCT-19 Option Connector
For use with:
Pyramid Communications
Model 2012/2016/Merlin

Revision D
November 21, 2000

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Introduction

Before you begin, you will need to have a copy of KPG-49D and programming cable available to program the mobile radio. Also, you will need a copy of the Pyramid 2012 programming software and FY-1 programming cable to program the 2012.

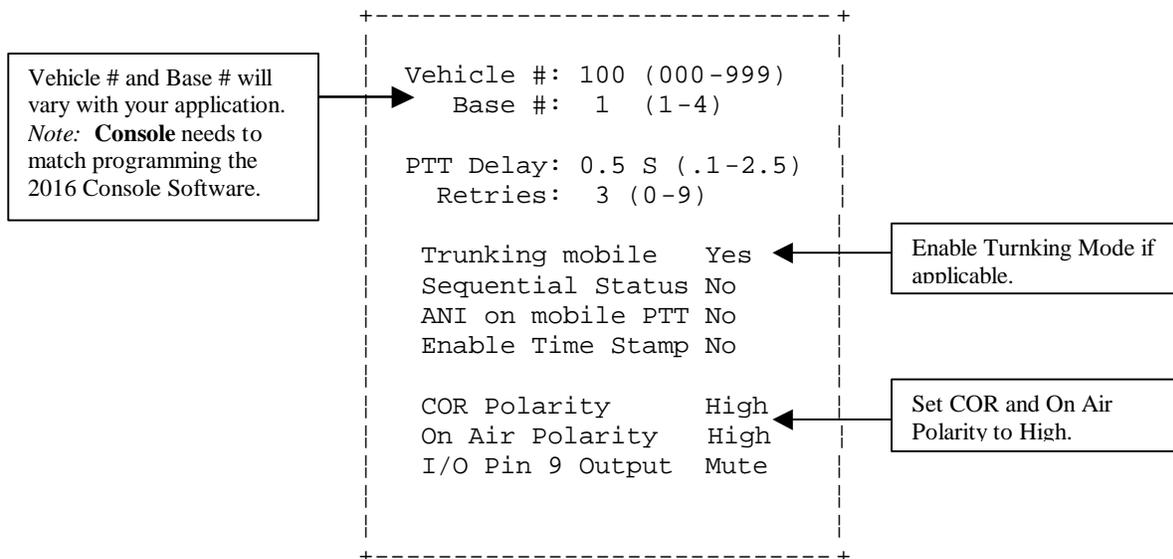
Your TK-x80 radio MUST be programmed with firmware version 8050 or newer for mobile data applications. To get a copy of version 8050 firmware please contact your Kenwood dealer.

Programming the Pyramid 2012/Merlin

The mobile data terminal needs to be programmed to accommodate the polarities of signal that the Kenwood mobile will provide it.

If you have not already done so, install the programming software on to your PC by following the instructions in the 2012/Merlin service manual.

Start running the Pyramid 2012/Merlin programming software on your PC. From the **Data** pull down menu, under the **System Data** screen, program the unit as shown the figure below.



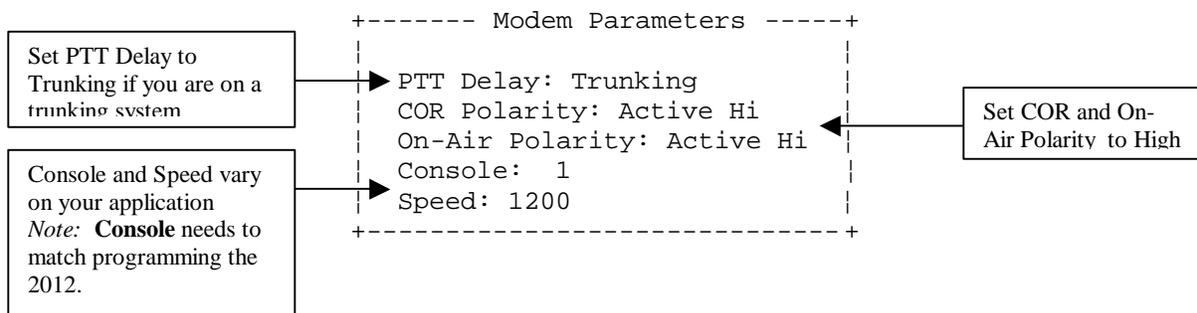
From the **Data** pull down menu, select your **Data Format** in the **Format Screen**. There are three signaling format choices. Chose the format to fit your application.

More programming instructions are available in the 2012/Merlin Service Manual.

Programming the Pyramid 2016

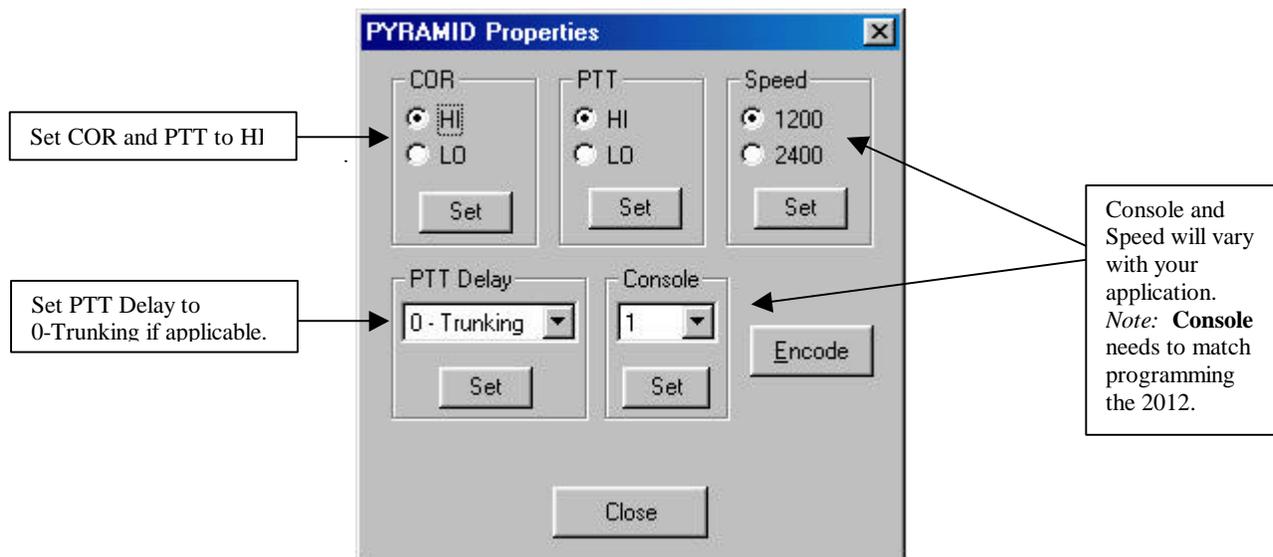
Programming of the Pyramid 2016 base modem is done through the console interface. Typically, the parameters are set in the Pyramid Console software, and then automatically sent to the 2016. If you are using Manning NavComp Inc's RasTrac MX software for your console interface, all configuration is done within the RasTrac I/O processor that runs on your PC simultaneously with the RasTrac mapping software. Consult your RasTrac manual for more information.

The figure below shows how a typical Pyramid Console software would be set up when connected to a 2016 and TK-x80 series radio. To access the **Modem Parameters** menu, select **Configure** from the pull down menu.



See the Pyramid 2016 service manual for further Pyramid Console software information.

The figure below shows how a typical RasTrac I/O processor will be set up when connected to a 2016 and TK-x80 series radio. To access the I/O configuration, select the **Edit** pull down menu from the RasTrac I/O Processor. From the **Input/Output Configuration** screen, select the **Protocol** to be **PYRAMID**. Then click **Properties** to configure the 2016.

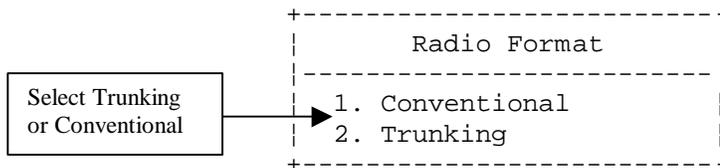


Programming the Kenwood TK-x80 Series Mobile

To begin programming your TK-x80 series mobile for use with the Pyramid Communications Model 2012/Merlin/2016 mobile data terminal system, you will need to first create a new profile using your KPG-49D programming software.

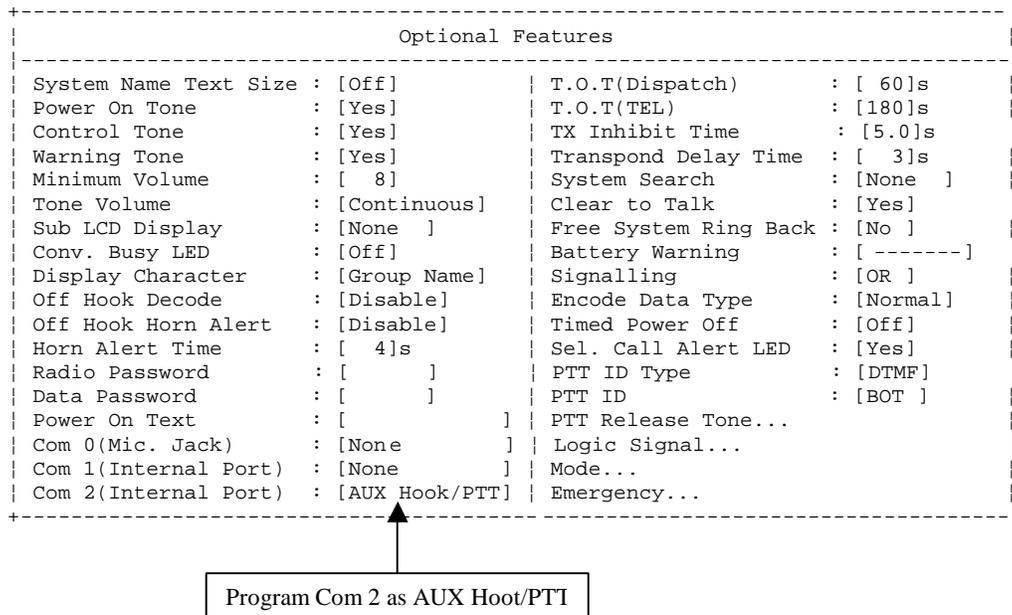
Radio Format

When programming the radio select trunking or conventional, make sure that you set the Radio Format correctly upon creation of your new profile. See figure below.



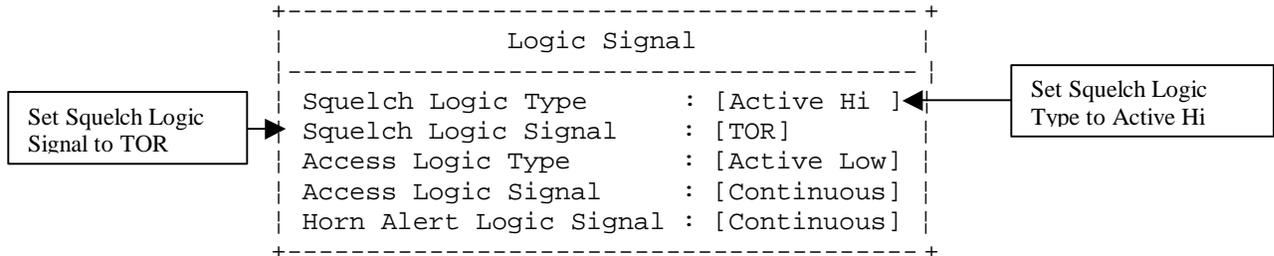
Programming Optional Features

From the *Edit* pull down menu, select *Optional Features*. Depending on your application, most of the parameters in the *Optional Feature* menu will be left at default. Although this may be the case, in order to enable a data terminal interface you must program Com 2 (Internal Port) as AUX Hook/PTT. This enables the external PTT from the data terminal. See the figure below for more information.



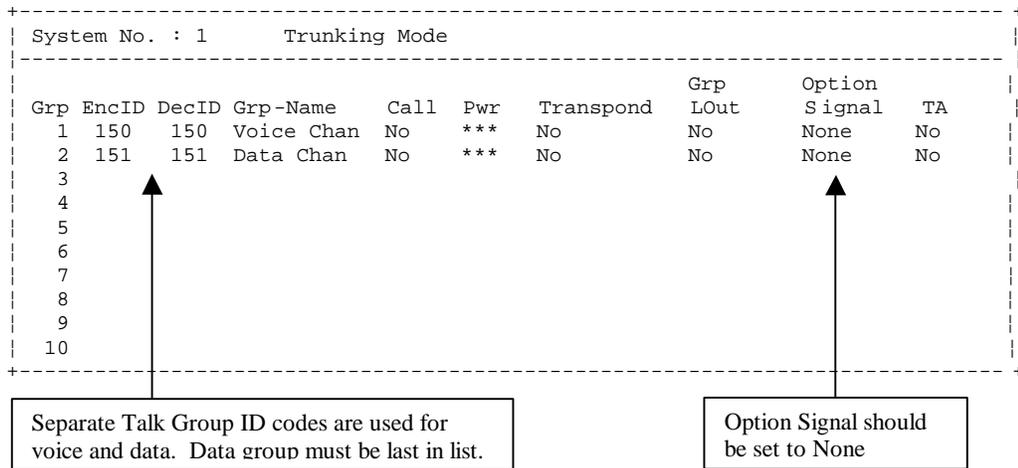
Programming the Logic Signalling

From the *Optional Features* screen, use your cursor to select **Logic Signalling**. In order for the radio to provide proper signaling polarities to the 2012/Merlin and 2016 data terminal interface on the KCT -19, it is necessary to program the Logic Signalling I/O as shown in the figure below.



Programming the Talk Group information for a 2012/Merlin MDT

When using the TK-x80 series radio in mobile operation along with a Pyramid 2012/Merlin, it is desirable to use a separate talk group for data aside from voice communication. In order to do this, it is necessary to add a talk group for data to the system. The figure below depicts a typical talk group configuration.



Defining a Talk Group for Data Use

There are two places in the system information screen that you have to define a talk group as being a data talk group.

First, select the data talk group with your cursor, and press the **F9 Key**. This will bring up the **System Data** screen as shown in the figure below. Program the **Data System/Group** for the system and group number in your radio. This value will vary based on how many systems and groups are programmed into your radio.

System Data	
System Name	: [1]
System Lockout	: [***]
Scan Weight	: [*]
Auto TEL Search	: [No]
TA Busy Ch LOut	: [No]
Wide/Narrow	: [*****]
Fix ID	1st 2nd
ID	: [] []
Call Indicator	: [***] [***]
Horn Alert	: [***] [***]
Opt Signalling	: [****] [****]
Block ID's	Start Stop
Telephone	: [-]
TX Inhibit	: [-]
Decode	: [-]
Data System/Group	: [1 - 2]
Data Delay Time	: [15]ms

Program the appropriate System/Group for the data group

Second, you must define the talk group as data in the group information screen. To access the group information screen, select the data talk group with your cursor and press the **F10 key**. The figure below shows how to define the talk group as data.

Group Data 2	
Encode ID	: [151]
Decode ID	: [151]
Group Name	: [Data Chan]
TX Power	: [****]
Call Indicator	: [No]
Horn Alert	: [No]
Option Signalling	: [None]
Group-Lockout	: [No]
Transpond	: [No]
Talk Around	: [No]
Compander	: [***]
Home Group	: [***]
PTT ID	: [Off]
Data	: [Yes]

Set Data to Yes

Programming the Talk Group information for a 2016 Base

The 2016 base modem operates differently than the 2012/Merlin mobile unit. As the 2012/Merlin changes talk groups for data and voice, the 2016 requires the radio to be only programmed with the data talk group. This makes the base TK-x80 radio into a stand-alone data radio. No voice is to be used on the base TK-x80 connected to the 2016.

To program the talk group data for a 2016 interface simply add one system and one group to the radio, and do not define any talk group for data. The figure below illustrates a typical talk group setup for a 2016 base unit.

System No. : 1 Trunking Mode										
Grp	EncID	DecID	Grp-Name	Call	Pwr	Transpond	Grp LOut	Option Signal	TA	
1	151	151	Data Chan	No	Hi	No	No	None	No	
2										
3										
4										
5										
6										
7										
8										
9										
10										

Single talk group operation. This talk group is for data only

Option Signal should be set to None

In programming the 2012/Merlin mobile data terminal, it was required that you define the talk group as a data talk group. When programming for a 2016 base unit, data definition should be turned **off** in both the **F9** and **F10** (*System* and *Group Information*) screens.

Use your cursor to select the talk group and press the **F9** key. The figure below shows a typical configuration of the **F9** (*System Data*) screen.

System Data	
System Name	: [1]
System Lockout	: [***]
Scan Weight	: [*]
Auto TEL Search	: [No]
TA Busy Ch LOut	: [No]
Wide/Narrow	: [Wide]
Fix ID	1st 2nd
ID	: [] []
Call Indicator	: [***] [***]
Horn Alert	: [***] [***]
Opt Signalling	: [****] [****]
Block ID's	Start Stop
Telephone	: [-]
TX Inhibit	: [-]
Decode	: [-]
Data System/Group	: [-]
Data Delay Time	: [15]ms

Data System/Group should be left blank

Use your cursor to select the talk group and press the **F10** key. The figure below shows a typical configuration of the **F10 (Group Information)** screen.

Group Data 1	
Encode ID	: [151]
Decode ID	: [151]
Group Name	: [Data Chan]
TX Power	: [High]
Call Indicator	: [No]
Horn Alert	: [No]
Option Signalling	: [None]
Group-Lockout	: [No]
Transpond	: [No]
Talk Around	: [No]
Comander	: [***]
Home Group	: [***]
PTT ID	: [Off]
Data	: [No]

Data should be set to No



Connecting the Pyramid to the Kenwood TK-x80

Once all of the programming has been completed, it is time to connect the units to the radios.

Connecting the 2012/Merlin MDT to the TK-x80 radio

The following are the pin outs for the KCT-19 option connector of the TK-x80 series radios. These connections must be made to the corresponding color-coded cable from the 2012/Merlin. Install the KCT-19 "E" plug into CN-2.

Connections: 2012/Merlin	Function	Radio
Black/Shield	Ground	KCT-19 Pin 6
White	Tx Audio Out	KCT-19 Pin 9
Blue	On-Air Detect	KCT-19 Pin 5
Green	PTT Out	KCT-19 Pin 8
Red	Switched B+	KCT-19 Pin 7
Yellow	Rx Audio In	KCT-19 Pin 4
Violet	COR	KCT-19 Pin 11
Grey	Mic Mute/Channel Select	N/C
Brown	Audio Mute Out	N/C

Jumper Settings in the 2012/Merlin

- J1 [Out] Tx audio level
- J2 [Out] Local PTT Loop

Connecting the 2016 base to the TK-x80 radio

The following are the pin outs for the KCT-19 option connector of the TK-x80 series radios. These connections must be made to the corresponding color-coded cable from the 2016. Install the KCT-19 "E" plug into CN-2.

Connections: 2016	Function	Radio
Black/Shield	Ground	KCT-19 Pin 6
White	Tx Audio Out	KCT-19 Pin 9
Blue	On-Air Detect	KCT-19 Pin 5
Green	PTT Out	KCT-19 Pin 8
Red	Switched B+	KCT-19 Pin 7
Yellow	Rx Audio In	KCT-19 Pin 4
Violet	COR	KCT-19 Pin 11
Grey	Mic Mute/Channel Select	N/C
Brown	Audio Mute Out	N/C