KPC-9612

Getting Started
and Reference Manual

Table of Contents

Who should read this manual?

The Getting Started portion of this manual is intended as a quick reference guide to assist new users.

NOTE: The radio port wiring on the KPC-9612 is slightly different from other Kantronics TNCs as a result of added control signal capabilities. All users should review this Information before connecting the KPC-9612 to a radio.

Before You Start

Your KPC-9612 comes with one DB-9 (male) connector, one DB-15 (male) connector, 6 feet of 5-conductor shielded cable, a 3.5 mm phone plug, and a 2.1 mm power connector. You must supply the serial cable to connect the KPC-9612 to your Computer (DB-25 male required to connect to the KPC-9612), a source of regulated de power (12 V nominal), and the connectors to interface with your radio(s). Wring diagrams for some radios are included in this manual. If your radio is not shown, use the guide-lines on pages 14 and 19, along with your radio manual, to determine proper wiring.

To help you explore your KPC-9612, we've included a 3-½" disk with two terminal programs - Pacterm and GMON. These programs are not copy protected and you are free to make copies on 5-1/4" disks if necessary for your own personal use. The Pacterm program is no longer being updated; it is only provided as a simple program to get you started. The Pacterm documentation will be found at the end of this manual. The GMON program is a slightly more sophisticated program, but is not considered full-featured. Documentation for GMON is located on the disk in a file named GMON.DOC.

About your KPC-9612

Front Panel
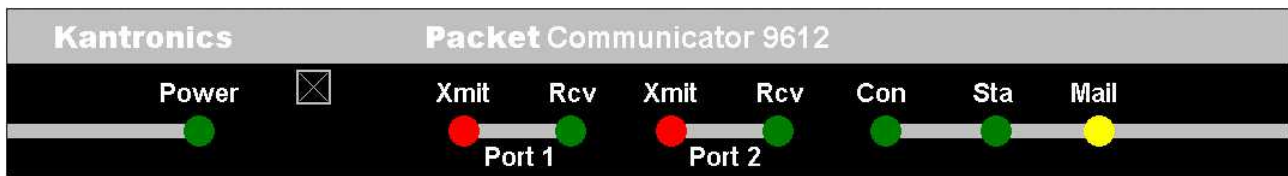
The front panel of the KPC-9612 has one switch and 8 LEDs. Seven of the LEDs are used to indi-cate status and one is used as a power indicator. The status indicators are divided into three groups. The left most LED is the power on indicator. Next to this is the power on switch. Following the power switch is a group of two LEDs for Port 1 (1200 baud), a group of two LEDs for Port 2 (9600 baud) and finally a group of three LEDs for status. All LEDs may be turned off with the LEDs command.

Controls/Indicators

Power   This green LED lights to indicate that the KPC-9612 is turned on.

ON/OFF switch   This push/push switch applies power to the KPC-9612. When depressed, the KPC-9612 is turned on.

Port 1

Xmit   This red LED lights when the KPC-9612 is transmitting on radio port 1 (1200 baud, DB-9 connector).

Rcv   This green LED lights when a signal is detected by the 1200 baud modem.

Port 2

Xmit   This red LED lights when the KPC-9612 is transmitting on radio port 2 (9600 baud, DB-15 connector).

Rcv   This green LED lights when a signal is detected by the 9600 baud modem.

Status

Con   This green LED lights to indicate that a connection exists on the currently selected I/O stream.

Sta   This green LED lights when your station has unacknowledged packets on the cur-rent I/O stream.

Mail   This yellow LED is lit when someone is connected to your PBBS (mailbox) and will flash any time there is unread mail for your in the PBBS.

Rear Panel

| Port 1 | Port 2 | Computer | Power |
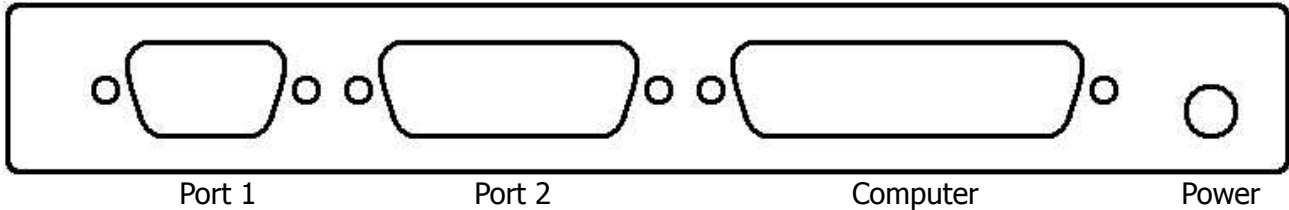
The rear panel of the KPC-9612 has four connectors. The purpose of each connector is described below:

Port 1   This DB-9 connector accepts the cable from your radio for 1200 baud packet operation.

Port 2   This DB-15 connector accepts the cable from your radio for 9600 baud packet operation. *NOTE: Your radio MUST be capable of operating 9600 baud. Refer to your radio manual to determine the exact connections required.*

Computer   This DB-25 connector accepts the cable from your computer serial port. The KPC-9612 communicates with RS-232 levels using standard ASCII characters for all commands.

Power jack (2.1 mm)   This connector is provided to apply external power (5.5 to 25 VDC) to the KPC-9612. The center post is the positive connection and the sleeve is negative (ground).

Setting up your KPC-9612

Power Cable

Using hookup wire, connect a 12 VDC power supply to the 2.1 mm plug (supplied) by connecting the positive wire to the center of the plug and the negative wire to the sleeve. Insert the power plug into the power jack at the rear of the KPC-9612.

KPC-9612 to Computer Cable

To connect your KPC-9612 to your Computer you will need to use a modem cable. The KPC-9612 requires a 25-pin male DB connector and your Computer will normally require either a 25-pin or a 9-pin female connector. As shipped from the factory, the KPC-9612 is configured so you may use a 25-wire cable. See the hardware section for details on reconfiguring the 25-pin serial connector on the KPC-9612.

Connect your serial cable to the 25-pin connector on the rear of the KPC-9612, and the female connector to your Computer serial port (COM port). We suggest you connect this cable to COM1 or COM2 on your Computer. The Pacterm program used in conjunction with the examples in this manual supports only these two COM ports.

For connection to other types of computers, refer to their software and hardware manuals. The KPC-9612 will communicate with a terminal with a minimum of three wires connected (Txd, Rxd, and SG). Your Software (terminal program) may require that other wires be connected. Refer to the hardware section of this manual for a complete description of the connections in the KPC-9612.

NOTE: _There is no selection in the KPC-9612 for COM ports – the correct COM port depends only on the physical connection you have made to your Computer serial port._

Initializing the KPC-9612

Now that the KPC-9612 is cabled to your Computer, the next step is to initialize it. Boot your Computer as you normally do. Place the PACTERM disk (shipped with your KPC-9612) in the A (or B) drive on your Computer and type A:PACTERM (or B:PACTERM) and press return, When the program starts you will see a menu. If you are using COM2, press F7 to select COM2. Press the backspace key on your Computer and you will be placed in the ONLINE mode of the Pacterm program.

Once the program is operating, turn on the KPC-9612 by depressing the ON/OFF switch on the front panel and observe that the power LED lights. At this point the KPC-9612 will begin sending you a message. Since Pacterm is set to communicate at 1200 baud, you may some garbage characters followed by the message:

```
PRESS (*) TO SET BAUD RATE
```

When you see this message, press the * (asterisk) key on your keyboard. Do not type the `()` characters, just the `*`. You must press the `*` within two (2) seconds of seeing the message printed. If you performed this properly, the KPC-9612 will prompt you to `ENTER YOUR CALLSIGN=>`. If you didn't press the `*` quickly enough, be patient and try again when you see the message.

Once you have pressed the `*` at the right time, the KPC-9612 prompts you to ENTER YOUR CALLSIGN=>. Type your amateur radio callsign and press return. The KPC-9612 then sends its sign-on message:

```
KANTRONICS KPC9612 VERSION x.x
(C) COPYRIGHT 1994 BY KANTRONICS INC. ALL RIGHTS RESERVED
DUPLICATION PROHIBITED WITHOUT PERMISSION OF KANTRONICS.
cmd:
```

At this point your KPC-9612 is set to the NEWUSER Mode with only a limited command set. To access all KPC-9612 commands you may want to give the command INTFACE TERMINAL.

Your First Connect

Now that you have initialized your KPC-9612, you are ready to try your first connect. Since you have not connected the radio to the TNC yet, you'll simply connect to your personal mailbox in the KPC-9612. This will help you to become comfortable with your KPC-9612 operation before connecting your radios. At the `cmd:` prompt, type `CONNECT call-1` (replace "call" with your amateur callsign) and press return. Your KPC-9612 will then connect you to the mailbox. Your screen should look something like this:

```
cmd:CONNECT N0GZZ-1
cmd:*** CONNECTED to N0GZZ-1
[KPC9612-5.2-HM$]
5000 BYTES AVAILABLE
THERE ARE NO MESSAGES
ENTER COMMAND B,J,K,L,R,S, or Help>
```

Now you can enter any of the mailbox commands shown (`B,J,K,L,R,S or Help`). Later you will want to read the PBBS section of this manual for more Information. If you type the HELP com-

mand and press return, you'll see the KPC-9612 mailbox help file and then the standard mailbox prompt:

```
ENTER COMMAND B,J,K,L,R,S, or Help>
```

Now disconnect (just like you will disconnect from any other station). First, return to Command Mode by typing CONTROL-C on your keyboard. To do this, hold down the control key (usually marked CTRL) and type the letter C. Release the control key. You should now see the `cmd:` prompt, Next you must type the DISCONNE command and press return. You will receive the massage `***'DISCONNECTED` and a new command prompt.

Congratulations! You have now completed your first connect.

KPC-9612 to 1200 baud Radio Cable

The next step in installing your KPC-9612 is to make the cable for the 1200 baud port (port 1) of your KPC-9612 to your radio. To transmit and receive data, you must make the following pin connections from the DB-9 connector to appropriate pins on your radio.

Pin1   (TXA) Transmit audio – This pin connects the microphone input of your radio. TXA is the data being sent by your TNC.

Pin 3   (PTT) Push-to-Talk – This pin connects to the PTT pin of your radio. The PTT signal causes the radio to transmit when the TNC has data to send. This pin on your radio may have a different name (e.g. STBY), but the function as described in your radio manual should indicate that a ground on this pin will cause the radio to transmit.

Pin 5   (RXA) Receive audio -This pin normally connects to the external speaker jack on your radio. The supplied 3.5 mm phone plug can be used by connecting the tip to pin 5 and the sleeve to pin 6. In some radios, receive audio is also available through the microphone connector. If your radio provides this feature, you will probably need to set the CD command to SOFTWARE since this audio is usually unaffected by the squelch or volume controls of your radio.

Pin 6   Ground -This pin connects to the ground pin of your radio. If your radio has a separate mic ground and PTT ground, we recommend that you connect the PTT ground and do not connect the mic ground.

The DB-9 connector supplied with your KPC-9612 is a male connector. When you look at the connector from the back (the point you will solder the wires) the pins are numbered as shown in the diagram.
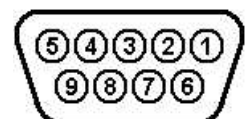
DB-9 Male wiring side

After you have completed this cable, connect it to your KPC-9612 and secure the DB-9 connector with the screws. Connect the other end to your radio.

Adjusting Receive Volume

To adjust the receiving volume on your 1200 baud radio properly, first turn on your computer, start you terminal program and turn on the KPC-9612. Be sure the CD command in the KPC-9612 is set to INTERNAL. Next turn on your radio and open the squelch control (fully counter-clockwise). Slowly turn the volume up until the RCV LED on the KPC-9612 lights. Increase the volume control slightly from this point. Next, turn the squelch control clockwise until the RCV LED goes out or until the noise in your speaker stops. Your radio is now properly adjusted for receive volume.

NOTE: If your RCV LED does not go out when you turn the squelch control clockwise, you will need to set the CD command to SOFTWARE. This may occur when receive audio is taken from the microphone connector or from a dedicated data jack.

Adjusting Transmit Drive Level

The drive level from the KPC-9612 to your radio can be adjusted by using potentiometer R22 and jumper J5. When J5 is placed on both posts, the drive may be adjusted through the high range (140 mV to 4 Vp-p) with R22. Placing J5 on one post only selects the low range (2 mV to 60 mVp-p). This jumper is set at the factory for the low range, which provides the proper drive level to most radios. If your radio requires a higher drive, move J5 and adjust R22. See the diagram at right for the location of these components. You should adjust the drive level to provide about 3 to 3.5 kHz deviation with your radio. If you don't have access to a deviation meter, adjust this so your packet transmissions sound about the same volume as most of the others you hear.

Back of KPC-9612
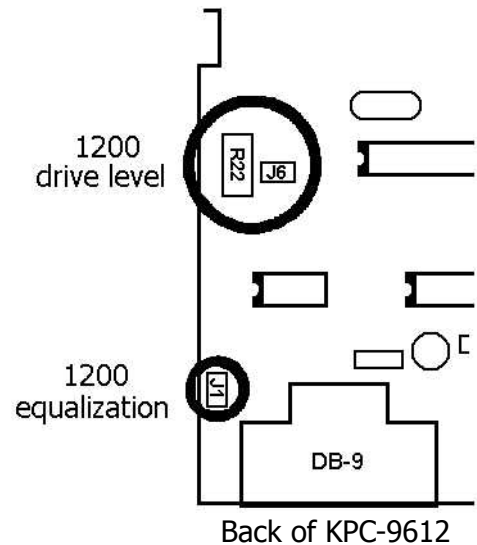
KPC-9612 Connector

DB-9
Male
(Looking at Pins)
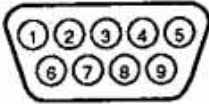
DB-9
Male
(Wiring Side)

8-pin Mic Connector

8-pin Mic
Female
(Looking at Holes)
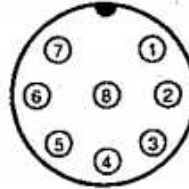
8-pin Mic
Female
(Wiring Side)
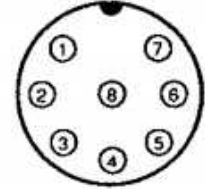
Yaesu Wiring for 1200 Baud
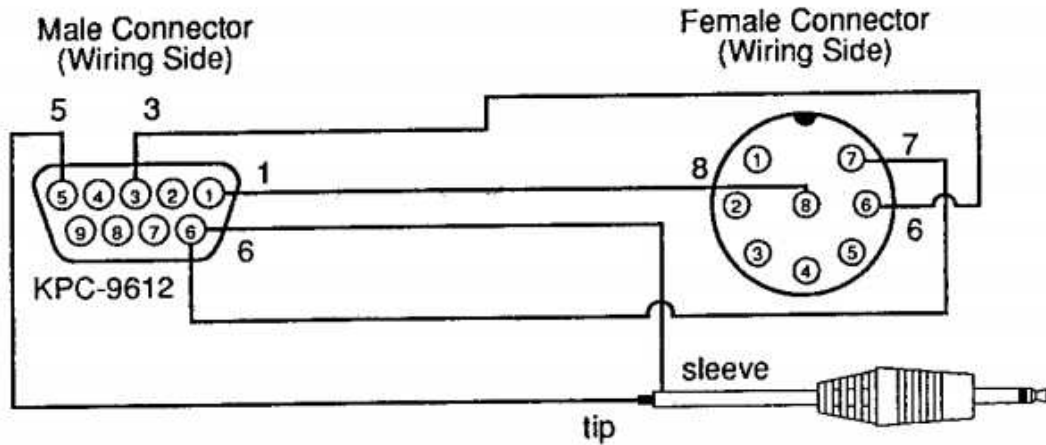
Male Connector
(Wiring Side)

Female Connector
(Wiring Side)

KPC-9612

sleeve

tip

Yaesu Hand-Held Radios

KPC-9612

0.1 µf

2.2 KΩ

tip

mic plug (2.5 mm)

sleeve

tip

speaker plug (3.5 mm)

Icom Wiring for 1200 Baud

Male Connector
(Wiring Side)

Female Connector
(Wiring Side)

2AT Style Hand-Held Radios

0.1 μf

3.9 KΩ

mic plug (2.5 mm)

speaker plug (3.5 mm)
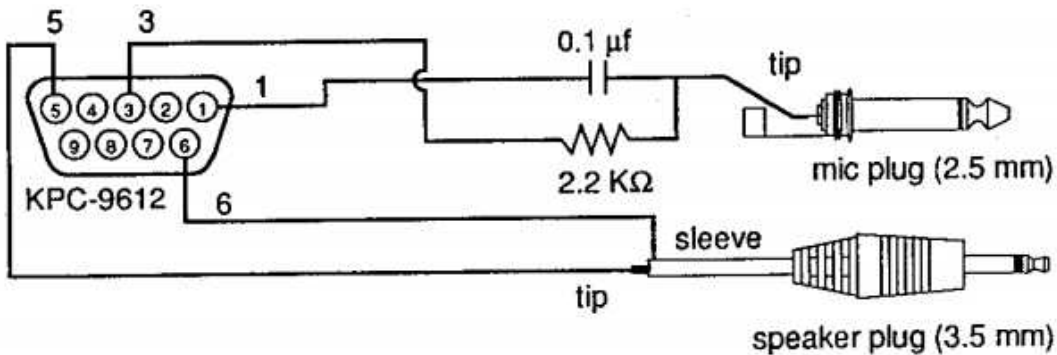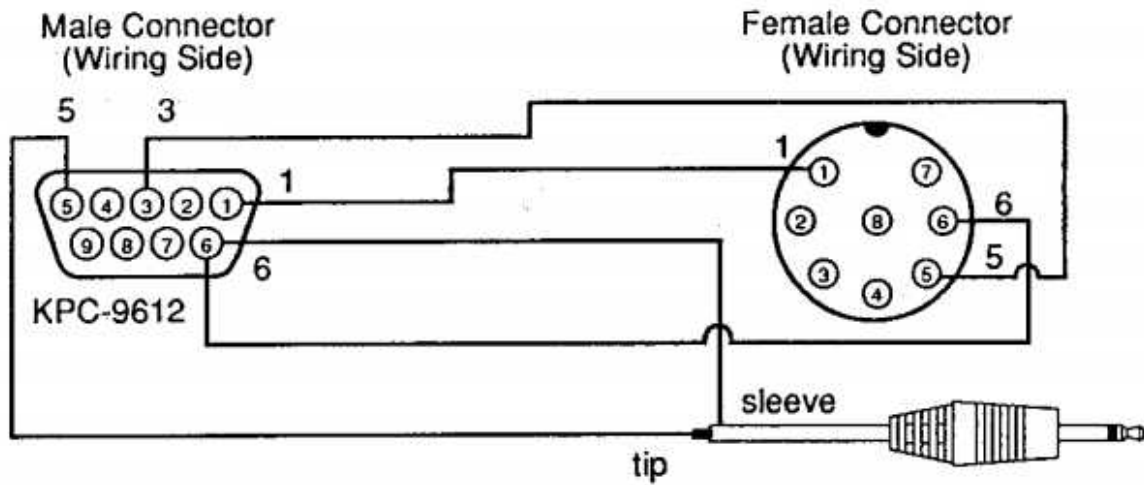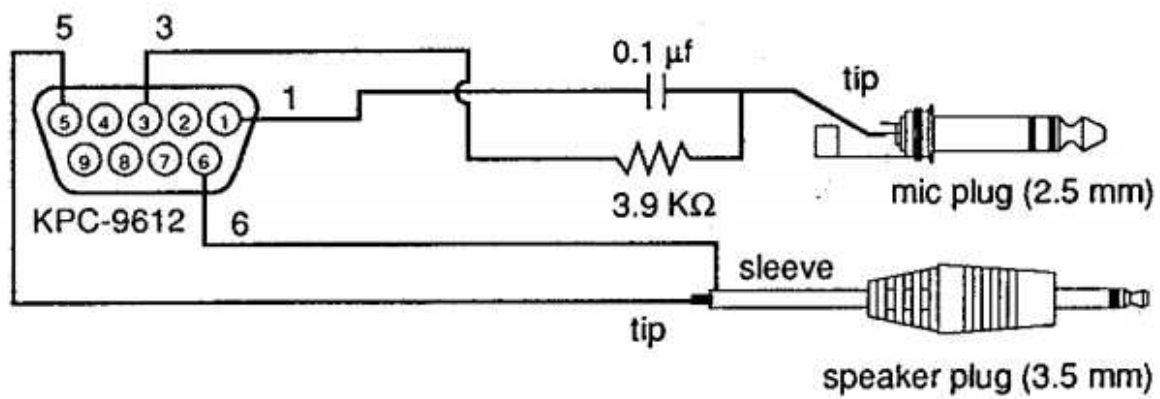
W2A Style Hand-Held Radios

0.1 μf

3.9 KΩ

(2.5 mm plug)
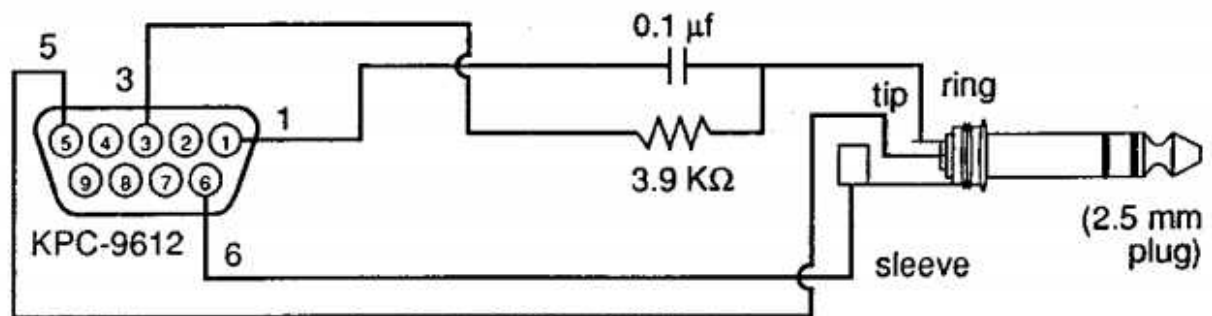
Kenwood Wiring for 1200 Baud

Male Connector
(Wiring Side)

Female Connector
(Wiring Side)

KPC-9612

sleeve

tip
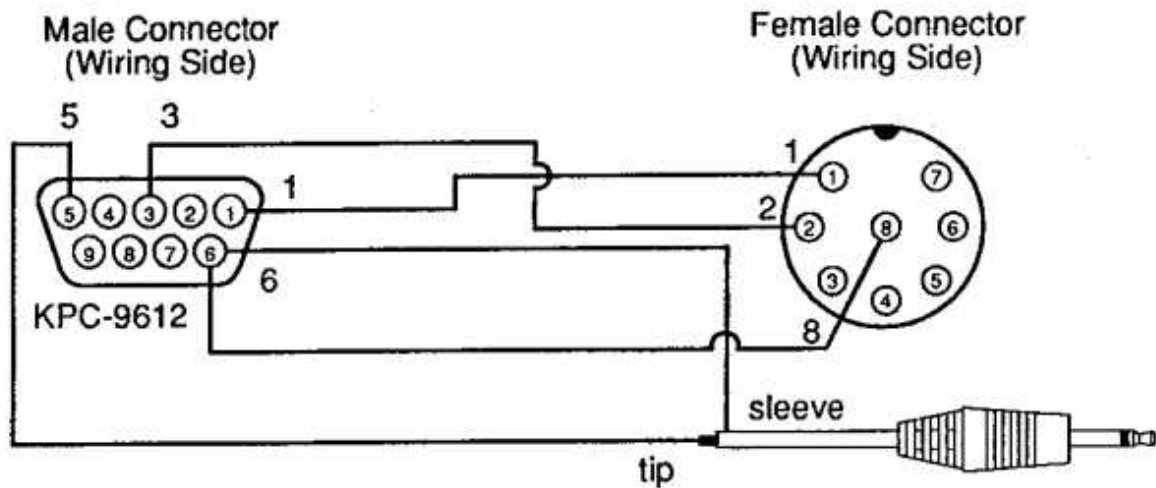
TR-2600 and later Hand-Held Radios

KPC-9612

0.1 µf

ring

sleeve

mic plug (3.5 mm)

sleeve

tip

speaker plug (2.5 mm)
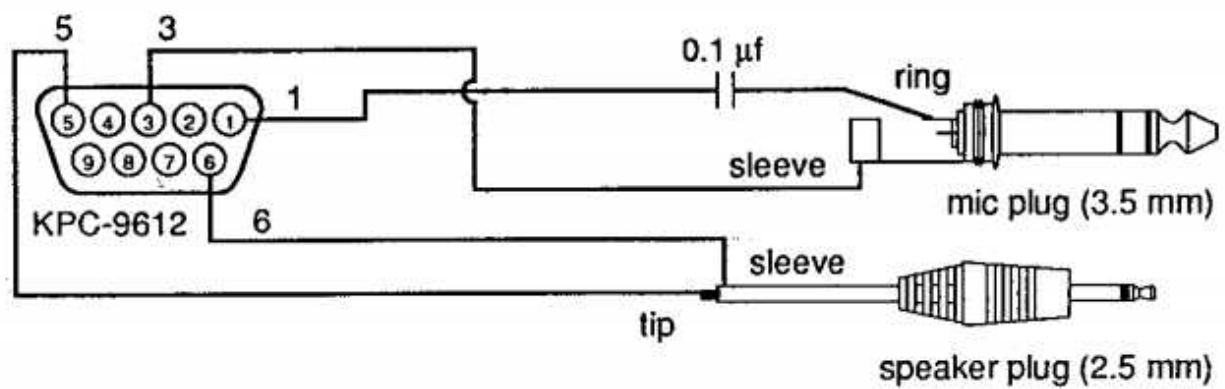
TR-2500 Hand-Held Radios

KPC-9612

0.1 µf

tip

sleeve

mic plug (3.5 mm)

sleeve

tip

speaker plug (2.5 mm)

12
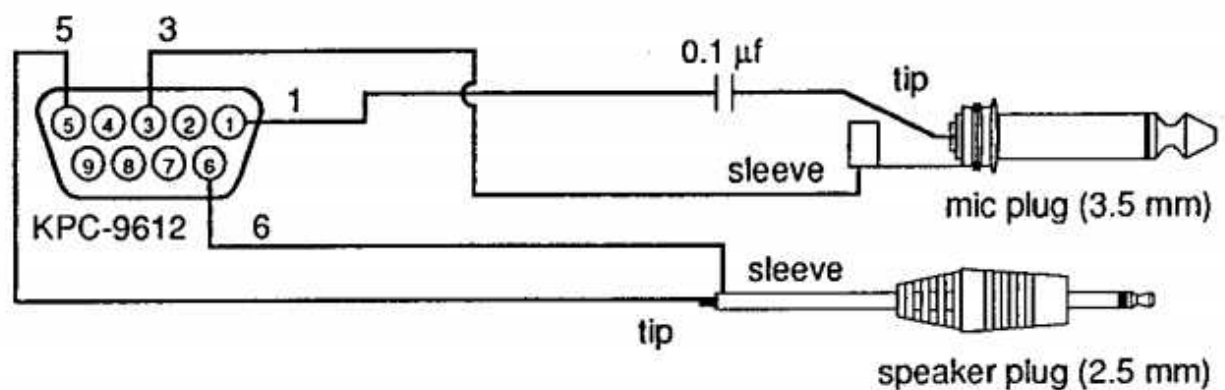
KPC-9612 to 9600 baud Radio Cable

The final step in connecting your KPC-9612 is to make the cable from the KPC-9612 to your 9600 baud radio. *NOTE that 9600 baud operation requires a radio that is specifically designed or modified for 9600 baud operation. Not all radios are capable of being modified for 9600 baud.*

Connections to a radio for 9600 baud operation are made through the DB-15 connector on the rear panel. In order to transmit and receive 9600 baud packet, you must connect the following pins to your radio:
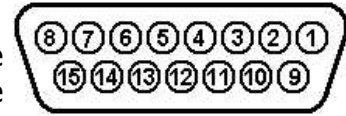
DB-15 Male
wiring side

Pin 1 (PTT) Push-to-Talk – This pin connects to the PTT pin of your radio. The PTT signal causes the radio to transmit when the TNC has data to send. This pin on your radio may have a different name (e.g. STBY), but the function as described in your radio manual should indicate that a ground on this pin will cause the radio to transmit.

Pin 2 (RXA) Receive Data – This pin connects to the 9600 baud data output pin of your radio.

Pin 3 (TXA) Transmit Data – This pin connects to the modulator stage of the radio. Those radios that are "9600-ready" will identify this pin as the 9600 baud input from your TNC.

Pin 11 Ground – This pin connects to the ground of your radio. (*NOTE: Pin 9 and 10 are also ground on the KPC-9612.*)

Adjusting Transmit Drive Level

The drive level of the 9600 baud modem in the KPC-9612 is adjusted using R32 and jumper J7. When J7 is placed on both posts, R32 will adjust the drive through the high range (80 mV to 4 Vp-p), This will be the normal setting for most radios. If you're using a Kantronics D4-10 or DVR2-2 radio, J7 will need to be placed on one post only, selecting the low range (2 mV to 100 mVp-p). Typically, the proper deviation for 9600 baud operation is about 3 kHz. If you don't have a deviation meter, you may have a difficult time in adjusting the level properly. However, start by setting the drive level as recommended for your brand of radio (see your radio manual). You may then have to adjust the drive control (R32) until you achieve acceptable performance.

If you have an existing 9600 baud node or other station operating in your area, we suggest you attempt to digipeat through that station (see the UNPROTO command) while making this adjustment.

Front of KPC-9612

Adjusting 9600 baud Receive

As shipped from the factory, the KPC-9612 is set for proper reception with many of the 9600-baud ready radios on the market. (J8 is on the center post and post 1.) Should you find that your KPC-9612 is not receiving well, or if you want to fine-tune your KPC-9612 for your specific radio, you will need to place the jumper J8 on the center post and the post marked 2. This enables R33 for variable equalization. (See the diagram at the right for component location.)
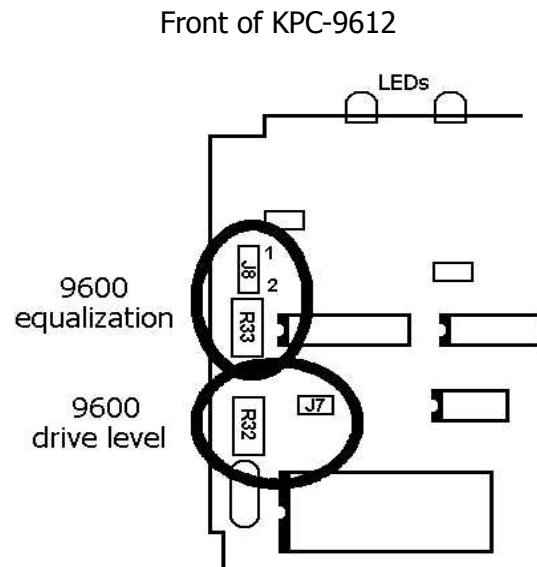
Adjusting the KPC-9612 for receive is fairly easy. Connect a voltmeter (analog preferred) to pin 8 of the DB-15 connector (RX S/N) or test point J on the PC board and pin 10 (ground) of the DB-15. Have another 9600 baud station transmit long packet bursts, and adjust R33 for a peak reading on your Voltmeter. (Maximum reading is approximately 3 VDC.) This is the signal quality line indicating how well the 9600 baud modem is decoding the received signal. This indication is more accurate than using the eye-pattern method (used with the G3RUH modems). (See the Calibration/Equalization section later in this manual for more information.)

Operating Packet

After you have connected the KPC-9612 to the radio(s), you will begin receiving packets. As packets are received, the KPC-9612 sends them to your terminal for display. A typical received packet might look like this:

```
W0XI>WK5M/1<<I00>>:
Good morning.
```

The first line is the header line which displays the callsigns of the stations talking. The **/1** indicates that this packet was received on the 1200 baud port. A packet received on the 9600 baud port would show **/2** at the end of the header line. The following line(s} are the actual transmitted message. You may see the RCV LED light at times, indicating that a signal is being received, although nothing displays on your screen. This is normal and is the result of the many monitoring commands that are discussed in detail in the Reference Manual.

As you monitor, you will begin to learn which stations are in your area and will then want to try to connect to one of them. To instruct your KPC-9612 to connect, disconnect or to change any of the operating parameters, you must be in the COMMAND Mode. To send data from your keyboard over the radio, you will need to be in the CONVERS Mode. The KPC-9612 automatically switches to the CONVERS Mode when you connect to someone and returns to the COMMAND Mode when a disconnect occurs. If you are in the CONVERS Mode and want to force your KPC-9612 back to the COMMAND Mode, type CONTROL-C. Remember, you must be in the COMMAND Mode in order to give instructions to your KPC-9612.

Connecting at 1200 baud

Suppose you want to connect to WD0EMR, a station you monitored on port 1 (1200 baud). First, be sure you have the KPC-9612 in the Command Mode. To do this, type a CONTROL-C and press return. You should see a command prompt (**cmd:**). Since this station was monitored on 1200 baud, you must make sure your KPC-9612 is ready to transmit packet at 1200 baud. Type the vertical bar (**|**) and the letter "**a**". This will set the KPC-9612 to transmit on port 1. Now use the CONNECT command to start the connection. To connect to WD0EMR, simply type **CONNECT WD0EMR** and press return, just as you did in the sample connect to your mailbox.

In some cases you may need to use a relay station, called a digipeater, to contact another station. This is similar to using a voice repeater when the station you want to talk to is out of simplex range. To connect to a station using digipeaters, you still use the CONNECT command, but you must also specify the callsigns (or aliases) of the digipeaters that must be used. For instance, if you need to use two digipeaters with callsigns of W0XI and KO0W in order to connect to KA5ZTX, you enter the command as:

```
CONNECT KA5ZTX VIA W0XI,KO0W
```

Once the connection has been made, you'll receive a message back on your screen from the KPC-9612 that says *****CONNECTED to WD0EMR** (or *****CONNECTED to KA5ZTX via W0XI.K00W**). At that point, you are ready to start talking to the other station since the KPC-9612 automatically switched to the CONVERS Mode.

After you have completed your conversation, simply press CONTROL-C to return your KPC-9612 to the Command Mode (**cmd:)** appears and then instruct your KPC-9612 to disconnect. From the **cmd:** prompt, type D and press return.

Connecting at 9600 baud

If the Station you want to connect to is operating 9600 baud (indicated by the **/2** in the monitored data) you must first switch your KPC-9612 to transmit at 9600 baud. To do this, type the tilde character (**~**) and then the letter "a" This sets the KPC-9612 to transmit packet on the A stream of the 9600 baud port. Once this is done you would then connect just as you did above, using the CONNECT command. When you are through with your conversation, you disconnect as you did in the previous examples.

Note that the vertical bar (**|**) and the tilde (**~**) are the streamswitch characters defined in the KPC-9612, with the vertical bar indicating 1200 baud and the tilde indicating 9600 baud. You switch back and forth between the two by simply typing the streamswitch character followed by the fetter of the stream you want to use. The KPC-9612 defaults to ten (10) streams for 1200 baud and ten for 9600 baud, identified by the letters A-J.

Introduction to Commands

Some Abbreviations

<Ctrl-x>:   This represents a single control character sent from your terminal program to the KPC-9612. To send this character, press and hold the control key and type the second key (x) while holding the control key down. If another letter follows this (i.e. <Ctrl-C>T) do not continue to hold the control key down while pressing the other letter. If your keyboard does not have a control key, consult your computer/terminal manual to determine which key performs the control key function. If your terminal does not have a key that performs this function, you will need to change the parameters in the KPC-9612 that define these special Ctrl key characters.

$ preceding a number denotes a hex number {base 16)

<CR>:   carriage return, $OD, decimal 13, <Ctrl-M>, ENTER key

<LF>:   line feed, $OA, decimal 10, <Ctrl-J> I/O: In put/Output

Entry

A command is entered to the KPC-9612 by typing the command name and its argument (setting or value) in the Command Mode. The prompt for the Command Mode is `cmd:`

The command name and the argument must be separated by a space, and the KPC-9612 takes action when a carriage return <CR> is typed. All commands may be abbreviated to the shortest string indicated by the CAPITAL letters in the command reference

You may examine the value of any parameter by typing the command name followed by a <CR>. The DISPLAY command allows you to display sets of related parameters as a group.

Format

All commands are listed alphabetically in this manual. A ✪ precedes a command from the NEWUSER set (when a unit is new, INTFACE is set to NEWUSER, or a hard reset has been performed). All other commands begin with a ●. On the first line of a command will be the command name followed by any arguments used with the command. Arguments shown in square brackets ([ ]) are optional. If a command accepts several different values, or a range of values, the permissible values will be shown in parentheses ( ). Arguments may also be shown separated by a vertical bar (|). This indicates that you may choose ONE of the items separated by the bar. The factory default value for the parameter or command is shown in curly braces ({ }).

Some of the commands in the KPC-9612 are dual-port commands, allowing you to set one value for the 1200 baud port of the KPC-9612, and a different value for the 9600 baud port. This is indicated by a dual-port default value (e.g. {192/63}). The value shown before the slash bar is the value used for the 1200 baud port of the KPC-9612, and the value after the slash is used for the 9600 baud port.

Parameter Types

n (range):   Any number within the range is permissible.

n ($00 - $FF): Any HEX number – normally used to define an ASCII character. When entering a HEX number, be sure to type the $ symbol to indicate a hex number follows. See the ASCII chart at the end of the manual to determine the code required.

flags (choiceA|choiceB): Many commands allow a choice of two or more possible entries (e.g. ON l OFF). For ON/OFF choices, you may also enter YES or NO. Other commands accept one of several choices (ON l OFF l TO l FROM). Enter the appropriate word to indicate your choice.

callsigns xxxxxx-n: Many commands require a callsign or alias as an argument. These parameters are normally set to Amateur callsigns, however any combination of 6 numbers and/or letters is permitted. You may optionally include an "extension" (SSID, Secondary Station Identifier) which is a decimal number between 0 and 15 (inclusive) used to distinguish two or more stations on the air with the same amateur call. SSIDs of 0 are not displayed by the KPC-9612.

Commands

- **8bitconv ON|OFF**   {OFF}

When ON, transmission of 8-bit data is allowed. When OFF, the 8th data bit is set to 0 before transmission and all data received will have the 8th bit set to 0.

- **AUtolf ON|OFF**   {ON}

When ON, a line feed is sent to the terminal after each carriage return. This parameter should be set ON when overprinting occurs and the terminal being used does not automatically supply its own linefeed after a carriage return. This command only affects the data sent to the terminal, not data sent to the radio.

See also: cr, lfadd

- **Ax25l2v2 ON l OFF**   {ON/ON}

This command provides compatibility with all known packet units implementing the AX.25 protocol. When ON, Level 2 Version 2 protocol is implemented and the TNC will automatically adapt to whichever version the connecting station is using. When OFF, Level 2 Version 1 is implemented. Set this command to OFF if you need to digipeat through other units which do not digipeat version 2 packets. You may also find benefit from setting this command OFF when using several digipeaters (not nodes) to send packets, or when conditions are marginal between the two stations involved. (NOTE: Changing this setting after connecting to another Station will have no effect on the current connection.)

The major difference in V1 and V2 protocol is the method used to handle retries. Version 1 will resend the entire packet and then disconnect if the RETRY count is reached. Version 2 will first send a poll, the response to this poll will determine if the packet was received. It is possible that the ack was collided with, and therefore the packet does not need to be resent. If the packet was not received it will be retransmitted. Each time a poll is answered the TRIES count is reset to 0. If the RETRY count is reached, Version 2 will attempt to reconnect unless RELINK is OFF. If the reconnect attempt is unsuccessful, then Version 2 will issue a disconnect.

See also: relink, retry, tries

For more Information, the book AX.25 Amateur Packet-Radio Link-Layer Protocol Version 2.0 October 1984. can be obtained from the ARRL.

- **AXDclay _n_**   (_n_ = 0 − 255)   {0/0}

This command specifies a period of time to wait, in addition to TXDELAY, after keying the radio before data is transmitted. If you operate through a voice repeater, this delay may be required to allow the repeater's transmitter to turn on. Each unit represents 10 milliseconds.

● **AXHang n**   (*n* = 0 − 255)   {0/0}

When operating through a voice repeater this command should be set to the hang time of the repeater. If the TNC has detected activity within this time interval, it will not use the AXDELAY setting since the repeater should still be transmitting. Each unit represents 10 milliseconds.

● **Beacon [Every | After] *n***   (*n* = 0 − 255)   {EVERY 0/EVERY 0}

When set to EVERY, a beacon packet will be transmitted every *n* minutes. When set to AFTER, a beacon packet will be transmitted ONCE after *n* minutes of no channel activity. Setting *n* to 0 will disable beacon transmissions.

See also: btext, unproto

✪ **BKondel ON|OFF**   {ON}

When ON, the KPC-9612 will echo a back space-space-back space sequence to your terminal when the DELETE character is received from the terminal. When OFF, the KPC-9612 echoes a backslash (\) character when the DELETE character is received.

● **BP96 ON|OFF**   {OFF}

When OFF, the 9600 baud transmit waveform filter provides the best eye pattern on the transmitted signal. The transmitted bandwidth is slightly wider than a G3RUH modem. When ON, the transmitted bandwidth is slightly narrower than the G3RUH modem, and the transmitted eye pattern is slightly distorted, but will work with most radios.

● **BText *text***   (up to 128 characters)   {blank}

Specifies the contents of a BEACON packet. To clear the BTEXT, enter a single % character (BTEXT %).

See also: beacon

● **BUDCalls [+|-]callsign(s)|NONE**   {NONE}

A list of up to 10 callsigns for use with BUDLIST or CONLIST. To delete or add individual entries, precede the callsign with a "-" or "+" respectively.

See also: budlist, conlist

● **BUdlist OFF|TO|FROM|ON**   {OFF/OFF}

When OFF, all packets are eligible to be displayed as monitored packets. When ON, only those packets TO or FROM stations listed in the BUDCALLS will be monitored When TO, only those packets addressed TO stations in the BUDCALLS will be monitored, and when FROM, only those packets FROM stations listed in BUDCALLS will be monitored.

See also: budcalls, monitor, suplist

● **CALibrat**   {immediate command}

The CALIBRAT command is used to generate a signal which maybe used as an aid in tuning the transceiver for operation. Use of this command is detailed in the Calibration/Equalization section of this manual. The letter X will return you to the Command Mode and perform a soft reset.

● **CAnline *n*** (*n* = $00 – $FF)   {$18 <Ctrl-X>}

When entering commands or data to the KPC-9612, you may cancel the current line you are typing (back to the last un-passed carriage return) by sending a <Ctrl-X> from your terminal.

See also: canpac, epactime, pass

● **CANPac *n*** (*n* = $00 - $FF)   {$19 <Ctrl-Y>}

When entering commands or data to the KPC-9612, you may cancel the entire packet (back to the last un-passed SENDPAC character) by sending a <Ctrl-Y> from the terminal. When in Command Mode, <CtrI-Y> acts as a cancel output character, turning off any output from the KPC-9612. Typing another <Ctrl-Y> re-enables output.

See also: canline, cpactime, sendpac

● **CD INTERNAL|EXTERNAL|SOFTWARE**   {INTERNAL/INTERNAL}

When set to INTERNAL, the KPC-9612 will detect a signal using the carrier detect built in to the modem. For port 1 (1200 baud) a signal is detected when any energy is present. The port 2 (9600 baud) modem detects a signal based on data transitions. When set to EXTERNAL, the signal detection is supplied by an external device, connected to the XCD pin of the radio port. When set to SOFTWARE, the firmware in the KPC-9612 will detect a signal based on the presence of Packet data on the audio input. The SOFTWARE option only applies to the 1200 baud port of the KPC-9612. This setting allows open-squelch operation. Proper equalization is important for correct operation of software carrier detection.

See also: oneradio, swp

● **CHeck *n*** (*n* = 0 – 255)   {0/0}

This command specifies the time interval, in 10 second increments, used to check the condition of a packet connection if no data is passing between the connected stations. If AX25L2V2 is ON, the KPC-9612 will send a "cheek" packet every $n \times 10$ seconds to insure the other station is still responding. If AX25L2V2 is OFF and $n \times 10$ seconds has passed with no data being transferred, the KPC-9612 will send a disconnect to the other station. Setting CHECK to 0 disables the automatic check function.

See also: ax25l2v2, relink, rnrtime

● **CMdtime *n* (*n* = 0 – 15)**   {1}

This command sets the permissible time (in 1 second increments) between characters when attempting to exit from the Transparent Mode. WARNING: Setting CMDTIME to 0 will prevent you from exiting the Transparent Mode.

● **CMSg ON|OFF|DISC|PBBS**   {OFF}

When OFF, the custom text stored in CTEXT will not be sent to a connecting station. When ON, the custom text will be sent. When set to DISC, the custom text will be sent, and then the KPC-9612 will disconnect from that station. When set to PBBS, the custom text will be sent to the connecting station, and then the connection will automatically be transferred to your PBBS, if it is available. If the PBBS is not available, the KPC-9612 will disconnect from the station.

See also: ctext, pbbs

● **COMmand *n*** (*n* = $00 – $FF)   {$03 <Ctrl-C>}

This command sets the character used to enter the Command Mode from the Convers Mode, or to exit from the Transparent Mode.

● **CONList ON|OFF**   {OFF|

When ON, the KPC-9612 will recognize only those packets received with a callsign that appears in the BUDCALLS list. All other packets are completely ignored. When OFF, packets originating from any station are accepted.

See also: budcalls

● **CONMode [CONVERS|TRANSPARENT]**   {CONVERS}

This command sets the mode the KPC-9612 will be placed in AUTOMATICALLY when a connect occurs if NOMODE is OFF.

See also: connect, convers, nomode, trans

✪ **Connect call1 [VIA call2,call3,...,call9]**   {Immediate command}

This command is used to initiate a packet connection to another station. Each callsign may have an optional SSID specified as *-n* where *n* = 1 to 15. Call2 through call9 are used to specify digipeaters required to connect to a distant station.

This command can also be used to reconnect through a different set of digipeaters to a distant station you are already connected to.

See also: conmode, conok, maxusers, nomode, retry, ring, streamsw, xmitok

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● **CONOk ON|OFF**   {ON/ON}

When ON, connect requests from other TNCs will automatically be acknowledged. When OFF, a connect request from a distant station will be answered with a <DM> packet, causing that station to get a busy message from you. When this occurs you will see a "connect request" message on your terminal.

See also: conmode, connect, intface, maxusers, monitor, nomode, users

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✪ **CONVers**   {immediate command}

This command will place your KPC-9612 in the Convers Mode on the current I/0 stream.

See also: k, command, stat

● **CPactime ON|OFF**   {OFF}

When OFF and in the Convers Mode, packets are transmitted when the SENDPAC character is entered, or when PACLEN is exceeded. When ON, packets are sent at periodic intervals determined by PACTIME.

See also: convers, cr, paclen, pactime, sendpac, trans

● **CR ON|OFF**   {ON}

When ON, the SENDPAC character (normally carriage return) is appended to packets sent in Convers Mode. When OFF, the SENDPAC character is not transmitted as part of the packet.

See also: lfadd, sendpac

● **CRSup ON|OFF**   {OFF}

When ON, every other carriage return will be suppressed when two or more carriage returns are received with no data between them. When OFF, no carriage return suppression occurs.

See also: autolf, lfsup

● **CStamp ON|OFF**   {OFF}

When ON, the daytime stamp is printed with all `***CONNECTED TO` and `***DISCONNECTED` messages. When OFF, no daytime stamping of connects and disconnects occurs

See also: connect, daystr, daytime, disconne, mstamp

● **CText *text***   (up to 128 characters)   {blank}

This command sets a custom text message to be sent to any user who connects to your MYCALL. To clear the CTEXT, enter a single % character (CTEXT %).

See also: cmsg, connect

● **CTRl [A|B] [n|ON|OFF|LONG]**   (*n* = 1 − 20)   {immediate command}

This command causes the KPC-9612 to activate the specified output line to the radio port as indicated. You should specify which output (A or B) for each port. If A or B output is not specified, both outputs are affected; if the / indicating which port is not specified, both ports are affected. For instance, to pulse the A output (CTRL A) of the 1200 baud port 3 times, and the A output of the 9600 baud port 5 times, you would give the command `CTRL A 3/A 5`. You may optionally specify the number of times to pulse the output (*n*), or to turn the output ON, or OFF. Each pulse on the output line lasts approximately 100 milliseconds (0.1 seconds). Specifying LONG results in one pulse of the output line, lasting approximately 1.5 seconds. These are open drain outputs and are pulled to ground when active. See the "Connecting to your Radios" section later in this manual for more information.

● **CWid [Every|After] *n***   (n = 0 − 255)   {EVERY 0/EVERY 0}

This command will cause a CWID to be transmitted periodically. When set to EVERY, a CWID will be transmitted every *n* minutes. When set to AFTER, a CWID will be transmitted ONCE after *n* minutes of no channel activity.

See also: cwidtext

● **CWIDText *text***   (up to 15 characters)   {DE mycall}

This command sets the text to be sent during a CWID.

See also: cwid

● **DAYStr dayform**   (*mm/dd/yy hh:mm:ss*)

The DAYSTR command is used to set the FORMAT of your date/time display. DO NOT enter an actual date or time, simply enter the form of the display you would like, using the lower case letters m, d, h, y, and s as described below.

The format you enter is used for all time stamps, including the PBBS, KA-Node, Mheard list, etc. The lower case characters *m, d, y, h,* and *s* have special meaning to this command and will be replaced with data from the software clock. The lower case in will be replaced with the minutes the first time it appears after a lower case *h*. If *h, m, y, d,* or *s* is specified as a single character, the corresponding date/time element will be displayed as a single digit if the value is less than 10. Entering two characters will force a two digit display for values under 10. You may also enter any other text you wish, allowing you to add such things as your time zone. Remember ALL lower case *m, d, y, h,* and *s* will be replaced by actual values.

Some examples of setting the DAYSTR command and the resulting time/date display are:

DAYSTR setting	DISPLAYED Date/Time
`mm/dd/yy hh:mm:ss`	`05/12/93 14:13:34`
`d.m.y h:mm:ss`	`12.5.93 14:13:34`
`d.mm.yy h:mm`	`12.05.93 14:13`
`mmm d 19yy h:mm CST`	`MAY 12 1993 14:13 CST`
`TIME hh:mm DATE: mmm dd, 19yy`	`TIME 14:13 DATE MAY 12, 1993`

CAUTION: If you enter an actual date/time with the DAYSTR command, your clock will appear to stop. Do NOT enter a real date/time using this command.

See also: daytime

✪ **DAytime yymmddhhmm[ss]**   {01/01/93 00:00:00}

This command sets or reads the real-time clock and software clock in the KPC-9612. The clock determines date and time display in conjunction with CSTAMP, MHEARD, MSTAMP and PBBS/Node messages. When entering the daytime digits to set the clock, enter in pure number sequence .with no spaces, dashes, or slashes. Entering the seconds digits is optional, and if not entered, the seconds will be set to 00.

See also: cstamp, daytweak, daystr, mheard, mstamp

● **DAYTWeak *n***   (*n* = 0 − 15)   {8}

This command is used to tweak the software clock for accurate time keeping. Increasing the value will slow the clock, decreasing the value will speed up the clock. Each count corresponds to 0.85 seconds increase or decrease per day. Ambient temperature will affect the clock to some degree.

● **DBldisc ON|OFF**   {OFF}

When OFF, only one disconnect command needs to be given to terminate an unsuccessful connect attempt. If you are actually connected, the normal disconnect sequence will occur. When ON, a normal disconnect sequence will always occur. A second disconnect command would be required to force a local disconnect independent of the retry counter.

See also: disconne, retry

✪ **DElete *n***   (*n* = $00 − $FF)   {$08 <Ctrl-H>}

This command sets the character to be used as the delete character. When this character is typed, the last input character is deleted. The most common settings are $08 (backspace) and $7F (delete).

See also: bkondel

● **DIGipeat ON|OFF**   {ON/ON}

When ON, any packet received that has MYCALL or MYNODE in the digipeat list of its address field will be retransmitted. Each station included in the digipeat list relays the packet in the order specified in the address field. Digipeating takes place concurrently with other KPC-9612 operations and does not interfere with normal connected operation of the station. To disable digipeat operations (via MYCALL or MYNODE) turn this command OFF.

See also: hid, myalias, mycall, mygate, mynode

✪ **Disconne**   {immediate command}

This command will initiate an immediate disconnect request on the current I/O stream. When an acknowledgment is received, your KPC-9612 will display the message *****DISCONNECTED**. If you issue a second disconnect command before receiving the acknowledgment, your KPC-9612 will immediately enter the DISCONNECTED state, but this may leave the other station thinking it is still connected.

If a user is connected to your PBBS and you want to disconnect that user, give the command DISC MYPBBS. If a user is connected to you your KA-Node, you can disconnect that user and the station he is talking to with the command DISC MYNODE *x* where *x* is the node circuit in use.

See also: dbldisc

✪ **DISPlay [class]**   {immediate command}

This command will display a list of parameters in the KPC-9612. If you do not specify a class, all parameters will be displayed. You may display one specific class of related parameters by specifying the class with the display command. The classes of parameters are:

(A)sync	asynchronous port parameters (TNC to computer)
(C)haracter	special characters
(I)d	ID parameters
(L)ink	parameters affecting packet link (to other TNC)
(M)onitor	monitor parameters
(P)bbs	mailbox parameters
(T)iming	timing parameters

Individual parameters may be displayed by entering the command name followed by a carriage return.

✪ **Echo ON|OFF**   {ON}

When ON, characters received from the terminal are echoed back to the terminal. If you are seeing double printing of characters you type, set this command OFF. The KPC-9612 will not echo the XOFF or XON characters to your terminal. ECHO is automatically disabled when in the Transparent Mode.

See also: bkondel, flow

- **EScape ON|OFF**   {OFF}

When OFF, an escape character ($1B) will be sent to the terminal when one is received in a packet. When ON, the KPC-9612 will send a dollar sign ($) to the terminal instead of the escape character.

- **Filter ON|OFF**   {OFF/OFF}

When ON, this command will inhibit the printing of control characters (hex $00 - $1F) which may be present in monitored packets. All control characters except carriage return ($0D) and line feed ($0A) will be filtered. This command does not affect receipt of control characters in packets received from a connected station when MONITOR or MCON is OFF.

See also: monitor

- **Flow ON|OFF**   {ON}

When ON, any character entered from the terminal will stop output from the KPC-9612 to the terminal until the current line or packet is completed (by SENDPAC, PACLEN, or PACTIME). Canceling the current input or typing the REDISPLA character will also cause output to resume. When OFF, received data will be interleaved with keyboard entry. If you use a split screen terminal program you should have FLOW OFF and ECHO OFF to allow received data to be displayed while you type into the KPC-9612 type-ahead buffer.

See also: canline, canpac, cpactime, echo, paclen, redispla, sendpac

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- **FRack *n***   (*n* = 1 − 15)   {4/4}

After transmitting a packet requiring an acknowledgment, the KPC-9612 waits FRACK seconds before incrementing the retry counter and sending the packet again. If the retry count is exceeded, the current operation is aborted. If the packet address includes relay requests (digipeaters), the time between retries is adjusted to FRACK×((2×*n*)+1) where m is the number of intermediate relay stations. The FRACK timer begins when PTT is released (the packet has been sent) and is suspended when data carrier from the radio is present, or when your station is transmitting.

See also: connect, resptime, retry

- **FUlldup ON|OFF**   {OFF/OFF}

When OFF, the presence of a received signal will prevent the KPC-9612 from transmitting to avoid collisions. When ON, the modem is run full-duplex, and the presence of a received signal will not inhibit transmission. Full-duplex may be especially useful for split-frequency operations.

- **HBaud *n***   (*n* = 300, 400, 600, 1200, 4800, 9600, 19200)   {1200/9600}

This command sets the baud rate used by the KPC-9612 for transmission of data over the radio link. It is not related to the terminal baud rate (set by MODE). Although port 1 may be set for 300 baud, the tone pair used for transmission is not compatible with HF operation. Selecting 300, 400, 600, or 1200 sets port 1 and selecting 4800, 9600, or 19200 sets port 2.

- **HEAderln ON|OFF**   {ON}

When ON, a carriage return is output to the terminal between the header and text of monitored packets. This allows the packet header and time stamp (if on) to be displayed on one line, with the packet text displayed below it on the next line(s). When receiving connected packets, no header is displayed if MONITOR or MCON is OFF. See also: cstamp, meon, monitor, mstamp

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- **Help [cmd]**   {immediate command}

The HELP command will display a table of all available commands. If you specify a command name after the HELP command (e.g. **HELP TXDELAY**) the KPC-9612 will display a one-line description of the command. The command HELP HELP will display a one-line description of ALL commands.

- **HId ON|OFF**   {ON/ON}

When ON, an ID packet will be sent every 9.5 minutes if packets are being digipeated through your station or routed though your KA-Node, or if your PBBS is used. When OFF, no periodic ID packets will be transmitted.

See also: digipeat, id, myalias, mygate, mynode, mypbbs, numnodes, pbbs

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- **HText haddr**   (up to 128 characters)   {blank}

This command is used to set the hierarchical portion of your packet address. It is used by the PBBS when forwarding/reverse forwarding messages. You should contact your local full-service BBS system operator (SYSOP) to determine proper setting of your hierarchical address. Your PBBS will not forward messages if PBPERSON is OFF and the HTEXT is empty. To clear your HTEXT, enter a single % character (HTEXT %). See the PBBS section for more information.

See also: pbperson, pbforwrd, pbrevers, pbbs section

- **Id**   {immediate command}

When this command is entered an identification packet will be transmitted on the current port. The ID packet consists of your station identification as set in MYCALL. The MYCALL will be appended with **/R**, MYALIAS callsign (if any) appended with **/D**, MYGATE (if any), with **/G**, MYNODE (if enabled), with **/N**, and the MYPBBS callsign (if enabled) with **/B**.

See also: hid, unproto

- **INtface NEWUSER|TERM|BBS|KISS|HOST|XKISS**   {NEWUSER}

When set to NEWUSER, a basic set of about 25 commands is available to simplify operation. When set to TERM, the full command set of the KPC-9612 is available (over 140 commands). Setting this command to BBS will prevent certain messages from being sent to the terminal (*****connect request, ***FRMR**, etc). This is provided for those running a full-service BBS to prevent these messages from appearing in received text. Setting this command to KISS will enable the KISS code as specified by Phil Karn (KA9Q) for use with TCP/IP or other KISS programs in your computer. Setting this command to HOST will enable the Kantronics Host Mode for use with special programs

such as Host Master. When set to XKISS, the Extended KISS protocol as defined by G8BPQ is implemented.

Note: *After changing the INTFACE command, you may need to do a soft reset for the new mode to take effect.*

✪ **K**   {immediate command}

This command will place the KPC-9612 in Convers Mode on the current I/O stream. It is synonymous with the CONVERS command.

● **KNtimer *n***   (*n* = 0 − 255)   {15}

If there is no activity through a KA-Node circuit for *n* minutes, the KA-Node will disconnect both the input and output sides of the circuit. Setting KNTIMER to 0 disables this feature.

See also: rnrtime

● **KNXcon** ON|OFF   {OFF}

When OFF, the KA-Node will not allow the Xconnect command (cross connecting). When ON, the Xconnect command is enabled, allowing users to cross-connect from one port of the KPC-9612 to the other port.

See also: numnodes, mynode

● **LCok ON|OFF**   {ON}

When ON, upper and lower case characters will be sent to the attached terminal. When OFF, lower case characters are translated to upper case before being sent to the terminal. This case translation is disabled in Transparent Mode.

● **LCStream ON|OFF**   {ON}

When ON, lower case characters may be used in streamswitching. When OFF, stream switching requires upper case characters.

See also: status, streamsw

● **Leds ON|OFF**   {ON}

When OFF, the software controlled Front panel LEDs will not light in order to conserve power.

● **LFadd ON|OFF**   {OFF}

When OFF, no line feeds will be added to the transmitted data. When ON, the KPC-9612 will append a line feed to every carriage return transmitted over the radio.

See also: autolf, cradd

- **LFSup ON|OFF**   {OFF}

When ON, received line feeds are removed from the data and a attached terminal. When OFF, received line feeds are sent to the terminal.

See also: autolf, crsup

- **LList ON|OFF**   {OFF}

When ON, stations in the SUPCALLS list attempting to connect or digipeat through your station will be ignored.

See also: supcalls

- **MAIl ON|OFF**   {ON/ON}

When ON, monitored packets include "connected" packets between other stations. If OFF, other stations' connected packets will not be monitored.

See also: monitor

- **MAXframe _n_**   ($n = 1 - 7$)   {4/4}

MAXFRAME sets an upper limit on the number of unacknowledged packets which can be outstanding at any one time. The KPC-9612 will send MAXFRAME number of packets in a single transmission, if they are available.

See also: paclen

- **MAXUSERS _n_**   ($n = 0 - 26$)   {10/10}

This command sets the maximum number of streams (channels) available for packet connections. Each stream is designated by a stream letter, beginning with "A", With the default value of 10, streams are lettered A-J for each port. In order to change the value of MAXUSERS, you must spell out the complete command name. This will cause the KPC-9612 to perform a soft reset. If either port value is 0, that port will be disabled.

Setting MAXUSERS to 0/0 is a special case which will allow only ONE connect at a time, but the connect may be on either port. This is provided as a special case for those using BBS systems on two frequencies, but can only accept one connect at a time.

See also: status, streamsw, users

- **MBeacon ON|OFF**   {ON/ON}

When ON, packets addressed to BEACON or ID will be monitored. When OFF, these packets will not be monitored.

See also: beacon, id, monitor

- **MCOM ON|OFF**   {ON/ON}

When ON, monitored packets include connect frames <C>, disconnect frames <D>, disconnected mode frames <DM>, and unnumbered acknowledgments <UA>. In addition, the following information will be added to monitored information frames as appropriate:

> <UI>   Unconnected information frame
> <Is>   Information frame (connected); s = send sequence number

See also: ax25l2v2, monitor, mresp

- **MCon ON|OFF**   {OFF/OFF}

When OFF and connected to another station, you will see only data being sent to you by the other station. When OFF and not connected, normal monitoring will occur based on the settings of other "monitor" commands. When ON, all eligible packets will be monitored whether you are connected or not.

See also: monitor, streamca, streamev

- **MHClear**   {immediate command}

This command clears the stations heard log.

See also: mheard

- **MHeard [*S*|*L*]**   {immediate command}

This command will display a list of stations heard by your KPC-9612 recently. An asterisk (*) indicates that the station was heard through a digipeater. The date/time the station was last heard is also displayed. If the *S* option is used (**MHEARD S**) only the callsigns of the stations heard will be displayed. If the *L* option is used, all call-signs contained in the received packet, including digipeater paths, will be displayed.

NOTE: MHEARD logging will be disabled if PASSALL is ON.

See also: daytime, mhclear

- **MODe [*b*][,[*p*],[*d*],[*s*]]**   (b = 1200, 1800, 2400, 4800, 9600, 19200;
                                            p = EVEN, ODD, NONE; d = 7, 8; s = 1, 2)

The MODE command is used to set the serial port parameters of the KPC-9612 for communication with the attached terminal. The *b* parameter sets the terminal baud rate, *p* sets the parity, *d* is the number of data bits, and *s* is the number of stop bits. Entering only a baud rate (*b*) will change the baud rate, leaving the other parameters unchanged. When *b* is set to 0, the KPC-9612 will perform an autobaud routine when powered up. To change the parity without any other changes, you must either enter the baud rate and the parity or enter the comma before the parity. For example, to change only the number of data bits, you could enter the command **MODE ,,7**.

✪ **Monitor ON|OFF** {ON/ON}

When ON, unconnected packets will be monitored unless prohibited by SUPLIST, BUDLIST, CON-LIST, LLIST, or PID. The MONITOR command acts as a master switch for the MALL, MCOM, MCON, MRESP, MRPT, and MXMIT commands. The addresses in the packet are displayed along with the data portion of the packet. Callsigns are separated by a > and the Secondary Station Identifier (SSID) is displayed if it is not 0. If any data is contained in a monitored packet which is not de-scribed in the AX.25 protocol, it is displayed in curly braces on the header line. All monitor func-tions are disabled in the Transparent Mode.

When OFF, you will only receive data from stations connected to you.

See also: budlist, conlist, headerln. llist, mall, mbeacon, mcom, mcon, mresp, mrpt, mstamp, mxmit, pid, streamca, strearnev, supllst

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● **MResp ON|OFF** {ON/ON}

When ON, monitored packets will include the following AX.25 response packets, if MONITOR and MCOM are ON. If connected, MCON must also be on. The bracketed information will appear at the end of the header information. The < and << characters are used to bracket and denote packets received as version 1 or version 2 respectively. Upper case characters denote command frames, and lower case characters denote response frames.

<FRMR>	Frame reject
<REJr>	Reject; r = receive sequence number
<RNRr>	Device busy; r = receive sequence number
<RRr>	Receive ready; r = receive sequence number

In addition, the following bracketed information will be added to information frames as appropri-ate:

  <Isr>   Information frame (connected);
      s = send sequence number, r = receive sequence number

See also: ax25l2v2, mcom, monitor

● **MRPt ON|OFF** {ON/ON}

When ON, the callsigns of all digipeaters listed in a packet will be displayed in the headerline of a monitored packet. An asterisk will be shown next to the call sign of the digipeater that transmitted this frame. When OFF, only the callsigns of the originating station and the destination station will be displayed.

See also: monitor

● **MStamp ON|OFF** {OFF}

When ON, this command enables the display of a date/time stamp on all monitored packets in the header information. The date and time are set with the DAYTIME command, and the format of the date/time display is set with the DAYSTR command.

See also: cstamp, daytime, daystr, monitor

- **MXmit ON|OFF**   {ON/ON}

When ON, the KPC-9612 will display transmitted packets as monitored data on your terminal. Repeated packets will be displayed as they are sent over the radio. The frames to be displayed will be controlled by the MONITOR, MCOM, MCON, and MRESP commands, and will obey the settings of TRACE, MSTAMP, HEADERLN, 8BITCONV, CRSUP, LFSUP, and FILTER commands.

- **MYAlias xxxxxx-*n***   {none/none}

This command sets the alias to be used as a digipeater. The alias may be up to 6 characters (plus optional SSID) which are different than those used for MYCALL, MYNODE, MYPBBS, MYREMOTE, and MYGATE. To disable the alias function, give the command **MYALIAS %**.

See also: hid

- ✪ **MYcall xxxxxx-*n***

This command tells the KPC-9612 what callsign to use for operation. When the KPC-9612 is first turned on, or after a hard reset or a **RESTORE D**, it asks you for your callsign. The callsign you enter is placed in this parameter. All packets originated by the KPC-9612 will contain this callsign in the FROM address field. Any packets received by the KPC-9612 with this callsign in the TO address field or digipeat fields will be responded to appropriately (connect, disconnect, ack, digipeat, etc).

See also: digipeat, id, myalias, mygate, mynode, mypbbs, myremote

---

- **MYDrop *n***   (*n* = 0 − 15)   {0/1}

This command sets the Extended KISS address recognized by the KPC-9612 when used with the G8BPQ multi-drop KISS Mode. The value before the slash identifies the 1200 baud port, and the value after the slash identifies the 9600 baud port.

See also: intface, xkchksum, xkpolled

- **MYGate xxxxxx-*n***   {mycall-3}

Setting this parameter to a callsign or character string enables cross-port digipeating by using the MYGATE. Enter up to six characters (plus optional SSID) which are different than those used for MYCALL, MYALIAS, MYPBBS, MYREMOTE, and MYNODE. You may disable the gateway digipeating with the command **MYGATE %**.

See also: hid

- **MYNode xxxxxx-*n*** {mycall-7}

Setting this command to a callsign or character string enables the KA-Node in the KPC-9612. Enter up to six characters (plus optional SSID) which are different than those used for MYCALL, MYALIAS, MYPBBS, MYREMOTE, and MYGATE. You must also have the NUMNODES command set to a non-zero value. You may disable the KA-Node by setting MYNODE to the same as MYCALL, or setting NUMNODES 0.

See also: digipeat, hid, ndwild, numnodes

✪ **MYPbbs xxxxxx-*n*** {mycall-1}

Enter up to six characters which will be used as the operating address for your Personal mailbox. Enter up to six characters (plus optional SSID) which are different than those used for MYCALL, MYALIAS, MYNODE, MYREMOTE, and MYGATE.

See also: hid, pbbs

- **MYRemote xxxxxx-*n***

This command sets the callsign used for remote access to the command set of the KPC-9612. Enter up to six characters (plus optional SSID) which are different than those used for MYCALL, MYALIAS, MYNODE, MYPBBS, and MYGATE. In addition the RTEXT must be programmed with a text string. A station that connects to the MYREMOTE will be sent a series of numbers that must be decoded according to the RTEXT.

See also: rtext

- **NDHClear** {immediate command}

This command clears the list of nodes heard by the KPC-9612.

See also: ndheard

- **Ndheard [*S*|*L*]** {immediate command}

This command displays a list of nodes whose ID packets have been heard by the KPC-9612. The list includes KA-Nodes, Net/Rom nodes, and G8BPQ nodes. An asterisk (*} indicates that the node was heard through a digipeater. The date/time stamp is also displayed indicating the last time this station was heard. If the *S* options is used **(NDHEARD S)** only the callsigns of the nodes will be displayed. If the *L* option is selected, all callsigns contained in the received packet are displayed.

See also: mynode, ndhclear

- **NDWild ON|OFF**   {OFF}

When OFF, the KA-Node will only recognize connect requests directed to the MYNODE call. When ON, connect requests to any SSID of the MYNODE call will be recognized as connects to the KA-Node, if that SSID is not being used for any other ID in the KPC-9612.

See also: my alias, my call, my gate, mynode, mypbbs, myremote

---

- **Newmode ON|OFF**   {ON}

When ON, the KPC-9612 will return to Command Mode if the station on the current I/O stream disconnects. The KPC-9612 will not return to Command Mode if the station disconnecting is on a different stream. When OFF, a disconnect will not cause the KPC-9612 to change modes.

See also: connect, disconne, status

- **NOmode ON|OFF**   {OFF}

When OFF and a connection takes place, the KPC-9612 will change to the mode specified by the CONMODE command. When ON, the KPC-9612 does not change modes when a connect occurs.

See also: conmode, connect

- **NText *text*   (up to 128 characters)**   {blank}

This entry specifies the customized text sent with the initial KA-Node sign-on message (when a remote station connects to the KA-Node). Enter any combination of characters and spaces, up to a maximum of 128 characters. To clear the NTEXT, give the command `NTEXT %`.

See also: mynode, numnodes

- **NUMNODES *n*   (*n* = 0 – 26 [depending on RAM])   {0}**

This command sets the number of allowable circuits through the KA-Node. The maximum number allowed will depend on the amount of RAM that is available for node circuits, and will vary based on the values you specify for PBBS and MAXUSERS. It will also depend on whether or not you have the MYREMOTE enabled.

See also: mynode

- **Oneradio ON|OFF**   {OFF}

When ON, the presence of carrier detect on either of the two radio ports will prevent both ports from transmitting (if FULLDUP is OFF). This can be used to operate two different speeds on one frequency. When OFF, each port of the KPC-9612 detects presence of a signal independent of the other port.

See also: cd

- **Paclen _n_**   (_n_ = 0 − 255)   {128/128}

This command specifies the maximum length of the data portion of a packet. The KPC-9612 will automatically send a packet when the number of input characters reaches _n_. This setting applies to both the Convers and Transparent Modes. Setting a value of 0 will allow a maximum of 256 data characters in a packet.

See also: maxframe

- **PACTime [Every|After] _n_**   (_n_ = 0 − 255)   {AFTER 10}

The time specified by this command is used in Transparent Mode to cause packets to be transmitted periodically. When set to `AFTER n`, a packet will be transmitted when input from the terminal stops for _n_×100 milliseconds or when PACLEN is reached. When `EVERY n` is specified, a packet will be transmitted every _n_×100 milliseconds or when PACLEN is reached. The KPC-9612 will not transmit a packet that contains no data. If CPACTIME is ON, this command will have the same function in Convers Mode.

See also: cpactime, trans

- **PASs _n_**   (_n_ = $00 − $FF)   {$16 <Ctrl-V>}

The PASS command sets the characters used to transmit those characters which normally have special meaning to the KPC-9612 when operating in the Convers Mode. A list of the special characters can be displayed with the command `DISPLAY C`. In order to transmit any of these, you must precede that character with the PASS character. For instance, if you want to send a <Ctrl-C> to the station you are talking to, you must type <Ctrl-V><Ctrl-C> since a <Ctrl-C> would normally return you to the Command Mode.

- **PASSAll ON|OFF**   {OFF/OFF}

When OFF, packets will only be displayed if the CRC (error checking) is correct, and according to the monitor commands. When this command is ON, the KPC-9612 will print packets to your terminal regardless of whether or not the CRC is correct. A complete packet, determined by the beginning and ending flags, must be received before an attempt is made to decode. If both flags are not received, the data will not be decoded MHEARD, ND HEARD, and PHEARD logging are disabled when this command is on.

NOTE: _Turning PASSALL ON will not cause your TNC to acknowledge connected packets if the CRC is incorrect, it simply displays them on your terminal._

✪ **PBBS *n*** (*n* = 0 – 500 [depending on RAM])   {5 (32 K version); 100 (128 K version)}

This command sets the size of the KPC-9612 Personal mailbox (in Kilobytes). The maximum value will depend on the amount of RAM available for the mailbox. The amount of RAM will also depend on the settings of MAXUSERS and NUMNODES, and will be affected by enabling the MYREMOTE. Changing the size of the PBBS will not affect the contents of the mailbox as long as suffcent memory remains allocated to store the existing messages.

To renumber the messages in your PBBS, give the PBBS command with *n* being the same as the current size of the PBBS.

See also: mypbbs, setting up other functions section

● **PBForwrd bbscall**   [VIA calll, call2,..., call8] [PORT 1|2] [Every *n*|After *n*]
                          [NONE PORT 1 EVERY 0]

This command will cause your PBBS to attempt to initiate a forward of any eligible mail to another BBS system periodically. Any message in your PBBS which contains an @BBS field and is not being HELD (H) or has not previously been FORWARDED (F) is eligible to forward. If the keyword EVERY is used, the PBBS will attempt to forward once every *n* hours. If you specify the keyword AFTER, the PBBS will attempt to forward whenever a user disconnects from the PBBS and every *n* hours after that. Setting the time interval will cause the PBBS to attempt to forward immediately. After the PBBS has forwarded any messages, it will request a reverse forward if the PBREVERS command is ON.

NOTE: If PBPERSON is OFF, the PBBS will not forward or reverse forward forward unless HTEXT is set.

See also: htext, pbperson, pbrevers, pbbs section

● **PBHeader ON|OFF**   {ON}

When ON, the routing headers received from a BBS will be stored in the PBBS mailbox. When OFF, these headers are not stored in the mailbox, allowing messages to require considerably less space. The routing headers are those lines you normally see in messages beginning with R: until it sees the first line that does not have R: in column one. From that point on, all of the message. The PBBS will ignore all lines beginning with R: until it sees the first line that does not have R: in column one. From that point on, all of the message will be stored, even if a line begins with an R:.

NOTE: If you have your PBBS set to initiate forwarding or you are polled by another BBS for reverse forwarding, we recommend leaving PBHEADER ON.

● **PBHOld ON|OFF**   {ON}

When ON, any message received over the radio will automatically be held by your PBBS for you to review. You may then release the message for forwarding by editing it and changing the H flag (for example, to edit message number 4: E 4 H). When OFF, messages received over the radio are not held, but may immediately be forwarded from your PBBS. (Note that any message addressed TO or @ your MYCALL or MYPBBS call will be held regardless of the setting of PBHOLD.)

See also: pbbs sysop functions section

- **PBKillfw ON|OFF**   {ON}

When ON, private and traffic messages will be killed (deleted) from your PBBS automatically after they have been forwarded to another BBS. When OFF, these messages will not be killed, but will be marked with the forwarded flag (F) to prevent them from forwarding again.

- **PBLo [OLD|NEW][FIXED|VARIABLE]**   {NEW VARIABLE}

When set to NEW, the PBBS will list messages to a user with the newest message (highest number) listed first When set to OLD, the oldest message will be listed first When the second parameter is set to VARIABLE, the user may change the order of the listing by using the LO command in the PBBS. When set to FIXED, the user cannot change the listing order.

- **PBPerson ON|OFF**   {OFF}

When OFF, the personal mailbox will allow messages to be sent to any callsign. These messages may be forwarded to another BBS by the PBFORWRD command or as the result of being polled by another BBS if the HTEXT is set in your KPC-9612. When this occurs, the PBBS will add an R: line to the message indicating that it has been relayed by your station. When ON, only messages addressed to your MYCALL or MYPBBS callsign will be accepted in the mailbox. Messages entered from the attached terminal may be addressed to any callsign. With PBPERSON ON, forwarding and reverse forwarding will not include an R: line in the message, but only messages from your MYCALL will be sent, and only messages to your MYCALL or MYPBBS call will be accepted.

See also: htext

- **PBRevers ON|OFF**   {OFF}

When ON, the KPC-9612 will request a reverse forward after it has initiated a forward to another BBS and sent its messages. When OFF, no reverse forward will be requested after initiating a forward.

See also: pbforwrd

- **PERsist *n***   (*n* = 0 – 255)   {63/63}

This command sets the value used to determine the probability of transmitting a packet after SLOTTIME expires. This method of determining access to the radio channel has proven more Efficient in sharing the frequency than using the DWAIT method. The higher the PERSIST value, the more likely it is that your station will transmit when the channel is clear. A reasonable rule-of-thumb for selecting the PERSIST value is to divide 256 by the number of users on the channel at the same time. Using this method allows many users to share the channel and still be successful in passing their data.

See also: slottime

- **PHClear**   {immediate command}

This command will clear the list of stations who have connected to the PBBS.

- **PHeard**   {immediate command}

This command will display a list of stations that have recently connected to your KPC-9612 PBBS. The list will show the callsign of the connecting stations and the time they connected and disconnected.

- **PId ON|OFF**   {OFF}

When OFF, only those packets with a protocol ID of $F0 (pure AX25) are displayed. When ON, all packets are displayed. Some of the information in non-AX.25 packets (Net/Rom, TCP/IP, etc) can cause strange displays on monitoring stations. The header line of monitored frames will show the PID in curly braces.

- **POrt 1|2**   {1}

This command will select which port is currently active when the KPC-9612 is first turned on. Port 1 is the 1200 baud port, and port 2 is the 9600 baud port. To change ports during operation, you must use the streamswitch characters.

See also: streamsw

- **PText** *text*   (up to 128 characters)   {blank}

This entry specifies the customized text sent with the initial PBBS sign-on message when a user connects. Enter any combination of characters and spaces up to a maximum length of 128. Entering a single **%** character (PTEXT %) will clear PTEXT. You should not use the **>** character in your PTEXT, as this is reserved by BBS systems for their prompt. If you forward to another BBS, or if another BBS forwards to you you MUST NOT have the **>** character in your PTEXT.

See also: pbbs, pbforwrd

- **Redispla** *n*   (n = $00 – $FF)   {$12 <CtrI-R>}

This command is used to change the REDISPLAY-packet input editing character. The parameter *n* is the ASCII code for the character you want to type in order to redisplay the packet currently being entered. You can use the REDISPLAY-packet character to see a "clean" copy of your input if you are using a printing terminal (or have BKONDEL OFF) and you have deleted characters. The redisplayed packet will show the corrected text.

See also: bkondel, canline, canpac, flow

- **RELink ON|OFF**   {OFF/OFF}

When AX25L2V2 is ON and this command is OFF, the KPC-9612 will not attempt to automatically reconnect when data has not been acknowledged and a disconnect occurs. When ON, the KPC-9612 will attempt to reconnect if the RETRY count has been exceeded while outstanding data remains.

See also: ax25l2v2

✪ **RESET**   {immediate command}

This command performs a soft reset of the KPC-9612. Any existing connections will not be recognized, but your parameter settings and messages in the mailbox will not be disturbed. The Kantronics sign-on message will be displayed.

See also: intface, maxusers, myremote, numnodes, pbbs, restore

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- **RESPtime *n***   (*n* = 0 − 255)   {5/5}

When connected to another packet station, your KPC-9612 will send an acknowledgment for a received information packet after $n \times 100$ milliseconds. This command is useful in avoiding collisions during such activity as file transfers using full-length packets. If operating half-duplex, this timer is suspended whenever the PTT line is active, or when carrier detect is present.

See also: frack

- **RESTORE Defaults**   {immediate command}

This command will completely restore your KPC-9612 to factory defaults. The KPC-9612 will return all parameters to factory values, and will run the autobaud routine, asking you to PRESS (*) TO SET BAUD RATE. Any messages in the mailbox will be deleted.

See also: reset

- **RETry *n***   (*n* = 0 − 15)   {10}

This command specifies the number of packet retries. Packets are retransmitted *n* times before the operation is aborted. The time between retries is specified by the command FRACK.

See also: ax25l2v2, frack, relink, tries

- **Ring ON|OFF**   {ON}

When ON, three bell characters ($07) are sent to the terminal with each *****CONNECTED TO** message when another station initiates the connect. When OFF, no bell characters are sent with the connect message.

- **RNrtime *n*** (*n* = 0 − 255) {0}

If a packet connection stays in a remote device busy state (continues to receive RNR frames) for *n*×10 seconds, the KPC-9612 will disconnect that station. If a KA-Node connection stays in a remote device busy for *n*×10 seconds, the KA-Node will disconnect the input and output sides of that KA-Node circuit. Setting RNRTIME to 0 disables this function.

See also: mresp

- **RTtext *text*** (up to 128 characters) {blank}

This command sets the password string for use when accessing the MYREMOTE or when performing SYSOP functions in the PBBS remotely. When you connect to the MYREMOTE or attempt to enter the SYSOP Mode of the PBBS, the KPC-9612 will send three sets of numbers, one of which must be properly decoded using this string.

See also: myremote, remote access section

- **SCreenln *n*** (*n* = 0 − 255) {0}

This value is used to format data sent to your terminal. A carriage return sequence is sent to the terminal at the end of a line after n characters have been printed. A value of 0 inhibits this actions.

See also:autolf

- **SEndpac *n*** (*n* = $00 − $FF) {$0D <Ctrl-M>}

This command specifies a character that will force a packet to be transmitted in Convers Mode. In the Convers Mode, packets are sent when the SENDPAC character is entered or when PACLEN is achieved.

See also: cpactime, cr

- **SLottime *n*** (*n* = 0 − 255) {10/10}

Sets the time between successive tries of the persistence algorithm to *n*×10 milliseconds.

See also: persist

- **STart *n*** (*n* = $00 − $FF) {$11 <Ctrl-Q>}

This command specifies the character sent by the terminal to the KPC-9612 to restart data flow from the TNC. If set to $00, only hardware flow control will be used. For software flow control, set this parameter to the character the computer will send to restart data flow and be sure XFLOW is ON.

See also: stop, xflow, xoff, xon

- **STATshrt ON|OFF**   {ON}

If ON, entry of the STATUS command will display only the current I/O Stream and any other streams having a connected status. If OFF, entry of the STATUS command will display all streams allowed by MAXUSERS, PBBS, NUMNODES, and MYREMOTE.

See also: status

✪ **Status**   {immediate command}

This command displays the identifier and link state of all allowed streams. The current input and output stream is indicated with I/O. A pound sign (#) indicates that there is unacknowledged data in the buffers For that stream. The number immediately following the It is the number of bytes outstanding. The number in parentheses is the number of packets not yet acknowledged.

See also: maxusers, myremote, numnodes, pbbs, statshrt, streamsw

---

- **STOp _n_**   (_n_ = $00 − $FF)   {$13 <Ctrl-S>}

This command specifies the character sent by the terminal to the KPC-9612 to stop data flow from the TNC. If set to $00, only hardware flow control will be used. For software flow control set this parameter to the character the terminal will send to stop data flow and be sure XFLOW is ON.

See also: start, xflow, xoff, xon

- **STREAMCa ON|OFF**   {OFF}

When receiving packets addressed only to you, setting this command ON will enable the display of the callsign of the connected-to station following the stream identifier of the connections (controlled by STREAMEV). This is especially useful when operating with multiple connections.

See also: mcon, monitor, streamev

- **STREAMEv ON|OFF**   {OFF}

When OFF, the stream indicator is displayed only when a change in streams occurs. When ON, the stream indicator will be displayed with every incoming packet. This command applies only when MONITOR or MCON is OFF and you are connected to another station.

See also: mcon, monitor, strearnca, streamsw

- **STReamsw _n_**   (_n_ = $00 − $FF)   {$7C (|)/$7E (~)}

This command selects the characters used to signify that a new "stream" or connection channel is being addressed. To change streams, or to change from port 1 to port 2, type the streamswitch character for the port you want, followed, immediately by the letter of the stream you want to use.

See also: maxusers, pass, status

- **SUPCalls [+|-]callsign|NONE**   {NONE}

A list of up to 10 callsigns for use with SUPLIST or LLIST. To delete or add individual entries, pre-cede the callsign with a "-" or "+" respectively.

See also: llist, suplist

- **SUplist OFF|TO|FROM|ON**   {OFF}

When OFF, allows monitoring of all eligible packets (according to the other monitor commands) even if the SUPCALLS list has callsigns in it. When ON, packets addressed TO or FROM those sta-tions listed in SUPCALLS will not be monitored. When set to TO, those packets addressed TO sta-tions in the SUPCALLS will not be monitored, and when set to FROM, those packets FROM stations in the SUPCALL list will not be monitored.

See also: monitor, supealls

- **SWp *u,d,t***   {17,17,108}

This command sets the parameters used by the KPC-9612 for software carrier detect with the 1200 baud modem. The first number (u) is used to increment a counter when a valid mark/space or space/mark transition occurs in the received signal (i.e. transition occurs at the beginning of a bit time). The second number (d) is a penalty subtracted from the counter when a transition oc-curs in the middle of a bit time. The t value is the threshold value - when the counter total reaches this value, the carrier detect will be set true. Once carrier detect is active, the counter must drop to 0 before carrier detect is made false. The sum of u and t must not exceed 127.

See also: cd

- **TRACe ON|OFF**   {OFF/OFF}

When ON, frames received are displayed in their entirety, in hexadecimal, including all header in-formation. All packets which are also eligible for monitoring will be displayed in normal text.

- **Trans**   {immediate command}

This command places the KPC-9612 in Transparent Mode. The current link state is not affected. If parity is set to none, you may send all 8 bits from the computer in this mode. There are no special editing characters, all characters are sent over the radio as received. To exit Transparent Mode, send the KPC-9612 a modem break, or send three COMMAND characters rapidly to the KPC-9612.

See also: cmdtime, mode

- **TRFlow ON|OFF**   {OFF}

This command allows the KPC-9612 to respond to software flow control from the terminal when in the Transparent Mode.

- **TRIes *n***   (*n* = 0 − 15)   {1}

The TRIES command will display and optionally set, the number of attempts which have been made to re-send a packet (on the current stream).

See also: retry

✪ **TXdelay *n***   (*n* = 0 − 255)   {30/30}

Sets the transmitter key-up delay to *n*×10 milliseconds. Packet data will be transmitted *n*×10 milliseconds after the PTT line has been activated.

- **TXFlow ON|OFF**   {OFF}

This command allows the KPC-9612 to send software flow control signals to your computer when operating in Transparent Mode.

See also: trans, trflow, xflow

✪ **Unproto call1 [VIA call2, call3,.... call9]**   {CQ/CQ}

This command sets the destination callsign (call1) and the digipeaters (call2 − call9) used when transmitting unconnected packet data. Each callsign may have an optional Secondary Station Identifier (SSID) specified as *-n* where *n* = 1 − 15. When a BEACON or ID packet is transmitted, the destination address will be set to BEACON or ID and the digipeaters specified in the UNPROTO command will be used.

See also: beacon, id, monitor, mrpt, xmitok

- **USers *n***   (*n* = 0 − 26)   {1/1}

This command specifies the channels (streams) which may be available to incoming connect requests. If USERS is 5, an incoming connect request will connect to the lowest stream A-E, if any of these streams are not currently connected. If none of the 5 streams is available, a <DM> packet will be sent back to the requesting station and the message *****connect request:** *(call)* will be output to your terminal. If USERS is set higher than MAXUSERS, the extra is ignored and the message `USERS LIMITED BY MAXUSERS` will be displayed.

See also: intface, maxusers, streamsw

✪ **Version**   {immediate command}

Displays the current firmware version number installed in your KPC-9612.

- **Xflow ON|OFF**   {ON}

When ON, software flow control will be used between the terminal and the KPC-9612. When OFF, software flow control is not used, and the only flow control possible is hardware flow control using the RTS and CTS lines from the KPC-9612.

See also: start, stop, trfiow, txflow, xflow, xoff, xon

- **XKChksum ON|lOFF**   {OFF}

When ON, enables the checksum mode of the G8BPQ Extended KISS protocol.

NOTE: Intface must be set to XKISS to enable this function.

See also: intfce, xkpolled

- **XKPolled ON|OFF**   {OFF}

When ON, enables the polled mode of the G8BPQ Extended KISS protocol.

NOTE: Intface must be set to XKISS to enable this function.

See also: intface, xkchksum

- **XMitok ON|OFF**   {ON/ON}

When ON, transmitting functions are enabled. If OFF, transmitting is inhibited (except for Calibrate Mode) while all other functions of the KPC-9612 are unchanged.

- **XOff *n***   (*n* = $00 – $FF)   {$13 <Ctrl-S>}

This command selects the character sent by the KPC-9612 to the terminal to stop data flow from the terminal.

See also: xflow, xon

- **XON *n***   (*n* = $00 – $FF)   {$11 <Ctrl-Q>}

This command selects the character sent by the KPC-9612 to the terminal to restart data flow from the terminal.

See also: xflow, xoff

Operation of the KPC-9612

This section of the manual describes KPC-9612 operation. You will benefit most from this section if you read from it while you are at your station with your KPC-9612 connected to your computer and radio, therefore you may follow the examples and experiment with the unit. Start with your KPC-9612 in the Command Mode. When you first turn the KPC-9612 on, it sends its sign-on message (**KANTRONICS PACKET COMMUNICATOR 9612...**) and then the prompt **cmd:**. This is the Command Mode of your KPC-9612.

The operational examples we use assume a standard terminal communications program such as the Pacterm program provided with the KPC-9612, or a telephone communications program such as Procomm Plus is in use. If you are using a specialized ham-radio program, or a Host Mode program (Host Master}, these examples will not apply. Host programs typically communicate with the KPC-9612 for you, simplifying your operation. Refer to your software manual if you are using these specialized programs.

Packet Operation

When you first turn your KPC-9612 on, it sends you a sign on message and then a command prompt (**cmd:**).

After you first turn on your KPC-9612 it will monitor packet data received on Port 1 and Port 2. As packets are received, the KPC-9612 displays them on your terminal. After a period of monitoring, your screen may took like the following:

```
N0ULD>N0GRG/1:<<D>>:
WK5M>KA5ZTX/2:<<I12>>:
Hello there... how are you today?
WD0EMR>W0XI,KSLAW*/2:<<I32>>:
Are you there Phil?
N0GRG>N0APJ/1:<<DM>>:
KA5ZTX>WK5M/2:<<rr2>>:
N0GRG>K00W/1:<I4>:
Hi Ken, yes I received my KPC-9612 last week and it really is work-
ing well.
```

These are all monitored packets. The line with the callsigns separated by **>** symbols is the header line, which shows the callsigns of the stations talking and the port of the KPC-9612 that received the information. The **/1** indicates this packet was monitored on the 1200 baud port of the KPC-9612, and **/2** indicates the 9600 baud port heard the packet. The line above showing KSLAW in the header indicates that WD0EMR is transmitting to W0XI, and is using a digipeater (KSLAW). The ***** in front of the KSLAW name means that your KPC-9612 actually received this packet as it was being transmitted by KSLAW, and not when it was being transmitted by WD0EMR.

Suppose you want to connect to N0GRG. Since this station was monitored on 1200 baud, you must be sure your KPC-9612 is set to transmit on Port 1. Type the **|** character and the letter A. The **|** character is your Port 1 streamswitch character, and the letter A means you will transmit on the A stream. Now type **C N0GRG** and press return. Your KPC-9612 will transmit a connect frame addressed to N0GRG and start the connection. When N0GRG responds to your connect request, the KPC-9612 will send a message to your terminal saying *****CONNECTED to N0GRG**. You are now ready to start talking to this station. You simply type your message and press return. Each time you press return, you will send a packet to N0GRG.

While you are talking to N0GRG, you decide you want to talk to KA5ZTX. This station was heard on 9600 baud, so you must set your KPC-9612 to operate on Port 2. You may do this even though you are still connected (and talking) to N0GRG. To start the new connection you must be in the Command Mode, so type **<Ctrl-C>** to leave the Convers Mode and get the **cmd:** prompt. Next, type the **~** character and the letter A. This makes your current Input/Output (I/O) addressed to Port 2, A stream. (The **~** is your Port 2 streamswitch character, and the A is the stream letter.) Now type **C KA5ZTX** and press return. Your KPC-9612 keys your 9600 baud radio and attempts to connect to KA5ZTX. When this station responds, you receive the message *****CONNECTED to KA5ZTX**. Your KPC-9612 switches to the Convers Mode, and you may now type your messages to KA5ZTX.

Since you are now connected to two different stations, you will be receiving packets from both of them. As they talk, your screen will display data similar to the following:

```
|AHi. You've connected to Don!
Hope all is going good there. I see you have the KPC-9612.
~AHello. Name here is Gloria. Nice to meet you.
```

What you see above is the 1A (indicating that this information was received from Port 1, stream A), followed by the text. The second line came from the same station as the previous line (since you don't see a streamswitch displayed). The third line starts with ~A and then some text. The KPC-9612 displays the streamswitch character (| or ~) and the letter of the stream for every received packet unless the packet is from the same station as the last displayed packet.

To talk back to any of these stations (remember you are already in the Convers Mode) you simply type the |A or ~A and then your text (press return when you are through).

After you have finished your conversation with a station, you will need to disconnect from that station. To do this, first make sure you are on the stream for the station from which you wish to disconnect. For instance, if you want to disconnect from KA5ZTX, type the ~A characters. Next, type **<Ctrl-C>** to get the command prompt, then type **DISCONNE** and press return. The KPC-9612 sends a disconnect packet to the other station, and when that station acknowledges the disconnect, the KPC-9612 sends *****DISCONNECTED** to your terminal.

Suppose that the station you want to talk to is one that you cannot hear from your location. In the example above, WD0EMR is talking to W0XI, but we can't hear WD0EMR. We noticed in the monitored packet that we did hear a packet from WD0EMR as it was being relayed by KSLAW. If you then want to connect to WD0EMR, you need to use a relay station (called a digipeater). To connect to a station this way, use the CONNECT command as before, but specify the relay stations along with the callsign of the station you want to connect to. In this case the command would be **C WD0EMR VIA KSLAW**, and the KPC-9612 will send a connect request to WD0EMR, routing all data through the relay station.

If your terminal or computer program does not allow you to type the | or ~ characters required for stream switching, you can change the characters used with the STREAMSW command. This command defines the characters used to switch to Port 1 (1200 baud) or Port 2 (9600 baud), and the stream letters will always be the letters A-Z, depending on the setting of MAXUSERS.

Kantronics PBBS

Your Kantronics TNC includes a Personal Bulletin Board System (PBBS) which is capable of storing and forwarding messages for you and other users. This PBBS provides the same message facilities as a computer based BBS (normally referred to as a full-service BBS), including the forwarding of Bulletins, Private mail, and NTS traffic.

Before explaining details of your Kantronics PBBS, it is important that you understand the basics of a full-service BBS system. Each user should select one (and only one) full-service BBS that will normally be used to send and receive mail. This BBS is then called your "HOME BBS" and should not be changed unless you move to a new location. When you connect to your home bulletin board system and list the messages (using the L command), you will see a list containing information about each message on the system. A list of messages on a local system might look like this:

```
Msg#   TSL   Size  To     @ BBS    From    Date/Time  Subject
=====  ===   ====  =====  =======  ======  ====/====  =======
59765  B$    1491  NASA   @ALLUS   N5IST   1004/1529  GALILEO STATUS
59764  BNL    468  WX              N0NEJ   1012/1017  KC Forcast 10/12
59763  BNL    659  WX              N0NEJ   1012/1017  MO Forcast 10/12
59759  B$    2240  NASA   @ALLUS   N5IST   1004/1529  MARS OBSERVER Pt1
59758  B$    1642  NASA   @ALLUS   N5IST   1004/1529  MARS OBSERVER Pt2
```

This list shows the message number, type and status information, size of the message, the addressee (TO field), distribution (@BBS field), and originator (FROM field). In addition the list shows the date and time the message was received at this BBS and a short subject for the message.

Under current FCC requirements, BBS systems that can store and forward messages without an operator being present must have the capability to provide a record of the path the message has taken from its origination. To accomplish this, BBSs include a routing line, beginning with `R:`. This `R:` line includes the date/time the message was received, message number, BBS call, and hierarchical routing information.

When you read a message using the R command (e.g. R 59765) you see the header displayed. For example:

```
From         : MS 1ST
To           : NASA   @ALLUS
Type/status  : B$
Date/time    : 04-Oct 15:29
Bid          : NASA093Q.GAL
Message #    : 59765
Title        : GALILEO STATUS 09/30/93
Path: !WK5M!NOLLY!NOOER!NOOBMJNXOR!AGON!N7MMC!KTOH!KAOWIN!
```

The Path: statement in the header lists the most recent BBS systems that have been used to relay this message from its origin to the BBS you read it from. This path information is required by the FCC to allow them complete traceability for any message in the system. What you see in the PATH statement is not the complete information on the routing, but simply a summary of the systems that have handled the message To see the complete information, BBS systems allow a second version of the READ command (RH or V) that will display more routing information. A routing list from a bulletin appears below.

```
R:931012/1107 27268@WK5M.SNEKS.KS.USA.NOAM
R:931012/1025 16433@N0LLY.#NEKS.KS.USA.NOAM
R:931011/2021 928@N0OER.#NEKS.KS.USA.NA
R:931008/1814 20728@N0OBM.#NCKS.KS.USA.NA
R:931008/2003 195208NX0R.#NKS.KS.USA.NA
R:931008/1153 3079@AG0N.#WNE.NE.USA.NA
R:931007/1147 35B50@N7MMC.#SEWY.WY.USA.NA
R:931007/1712 49403@KT0H.#NECO.CO.USA
R:931007/1639 63792@KA0WIN.#SECO.CO.USA.NA
R:931004/1529 46383@N5IST.#WTX.TX.USA.NOAM
```

By examining this list from the bottom up, we may see that the message entered the system on October 4, 1993 at 15:29 (`R:931004/1529`). It was message number `46383` on the N5IST BBS (`@N5IST`) which is located in West Texas (`#WTX`), which is in Texas (`TX`), which is in the United States (`USA`) which is in North America (`NOAM`). From this station, it was relayed on October 7 at 16:39 to the KA0WIN BBS in Southeastern Colorado. By following this information it is possible to determine where the message traveled and when it was relayed from each station. The information following the @BBS callsign is called the hierarchical routing information (in this case `#WTX.TX.USA.NOAM`).

When you connect to your local BBS and send a message, that BBS automatically generates an `R:` line. As the message is sent to its destination, each BBS adds its own `R:` line to the message. Besides the requirement of the FGC, the `R:` line provides a method for any user, anywhere in the world, to send a reply or respond to your message. As the message is passed through the many BBSs, each BBS will add you into its White Pages - a directory of packet users. Each BBS makes note that you (the originator of the message) sent the message, and that you entered the message at the BBS listed in the last `R:` line in the message.

Because of this, a distant user can simply send a reply using the send reply (SR) command of his local BBS. That BBS will then address the message to you using the @BBS and hierarchical routing information in the last `R:` line of the message you sent. A user may also simply use the send private command (SP) to send a message to you. If the user does not enter complete addressing on his SP command, the BBS will attempt to look up your call in its White Pages and add the routing automatically. However, if the user supplied complete addressing information, the BBS would normally assume it is correct and not check the White Pages.

BBSs use this hierarchical information to send the message back to you. The message someone sent to you (using the above example) would be addressed to `URCALL@N5IST.#WTX.TX.USA.NOAM`. As the message passes through the BBS system for forwarding, the BBS first looks at the callsign of the addressee (`URCALL`). If that BBS doesn't know how to forward the message to you, it then looks at the @BBS field (`N5IST`). If it doesn't have any information on how to forward to N5IST, it looks at the first part of the hierarchical address (`#WTX`), not knowing that, it would then look at the next part of the hierarchical address (`TX`). Assuming this BBS is in the United States, it knows TX means Texas and knows that this message needs to be relayed to a station in that area. Once the message reaches the first BBS in Texas, that system must use the previous field for forwarding (`#WTX`). Once it reaches a system in West Texas, the forwarding occurs based on the @BBS.

When the message reaches the BBS specified in the @BBS field, it can forward the message directly to you, since you are using that system as your HOME BBS.

When you enter a message into your Kantronics PBBS and supply the routing information, that message may be forwarded automatically to another BBS. When the message is forwarded from your Kantronics mailbox, an `R:` line is included as the originating BBS. This line includes the same

information as any other BBS. This `R:` line consists of the date/time the message was entered into your PBBS, the message number, your MYCALL (`URCALL`), and the HTEXT you have set For instance, your `R:` line might be:

```
R:931008/1255 23@URCALL.#WTX.TX.USA.NOAM
```

Some BBS operator groups are insisting that your system is NOT a BBS, and therefore should not include `R:` lines. Their reasoning is that in the above example, EVERY BBS in West Texas would have to know how to send messages to your callsign - not just to your HOME BBS. One solution to this is to include the callsign of your HOME BBS as part of your HTEXT. This would change your R: line to:

```
R:931008/1255 23@URCALL.N5IST.#WTX.TX.USA.NOAM
```

As this forwards through the system, all West Texas BBSs can still forward the message to N5IST because his call is a part of the hierarchical routing.

As of this writing, there seem to be at least two groups with strong opinions on the use of, or prohibition of, `R:` lines by TNC based PBBSs. Some think the volunteer BBS network may be overloaded by personal boards including the `R:` lines; others insist that the `R:` lines are required by regulations. We suggest you adapt to "local custom" by turning the `R:` line feature ON or OFF accordingly.

If your local SYSOP demands that you not add `R:` lines to your messages, you must set the PBPERSON command ON. This will limit your PBBS to receiving messages addressed ONLY to your MYCALL or your MYPBBS call. In addition, your PBBS will only forward messages from YOU (no third-party messages) and will not add the `R:` line to the routing.

Setting Up Other Functions of your KPC-9612

PBBS

Your KPC-9612 automatically configures your Personal Mailbox when you first sign on to it. The PBBS is initially set with a callsign including your call and an SSID of -1 (e.g. DC7XJ-1) and a size of 5 kBytes (100 k for 128 k units). To change the callsign, use the MYPBBS command; to change the size, use the PBBS command.

You may at times, want to set up your KPC-9612 so that a user who connects to your MYCALL will automatically be switched into the mailbox. For instance, if you are not at your station, the user who tries to connect to you would end up connected to the mailbox to leave you a message. To do this set the CMSG command to PBBS.

You can set a customized text to be sent to any user that connects to your PBBS with the PTEXT command. Some users are also required to allow the PBBS to only accept personal messages (i.e. no third-party traffic). This can be done by setting the PBPERSON command ON.

Your KPC-9612 PBBS is capable of forwarding messages to, and receiving messages from, another BBS system automatically. To set up your mailbox to forward to another BBS, use the PBFORWRD command. To receive messages from another BBS, contact that BBS's SYSOP and ask him to set up his system to forward to you. Note that many SYSOPS do not forward mail to personal mailboxes.

For details on SYSOP functions available in your PBBS, see the PBBS SYSOP section of this manual.

KA-Node

Your KPC-9612 contains a KA-Node which allows users to connect to the node and then connect to other users, either on the same port or on the other port of your KPC-9612. To activate the KA-Node function, set the NUMNODES command to a non-zero value. This value sets the number of users who may simultaneously use the node, and allocates node "circuits" for each user. The circuits will be designated as Channel A through Channel E, depending on the number of circuits allocated. The callsign used by the node is initially set to your callsign with an SSID of -7 (e.g. DC7XJ-7). You can change the node callsign with the MYNODE command. In order to allow connections to the opposite port of the KPC-9612, the KNXCON command must he ON.

Gateway

The Kantronies gateway serves as a cross-port digipeater, allowing a user to digipeat through your KPC-9612 from 1200 baud to 9600 baud or from 9600 baud to 1200 baud. The gateway is activated by setting the MYGATE callsign. To disable the gateway, give the command **MYGATE %**. Note that users cannot CONNECT to the MYGATE callsign, it is used just like a digipeater (i.e. C W0XI VIA mygate).

PBBS SYSOP Functions

Some functions in your KPC-9612 PBBS are restricted, allowing only you, the owner, or a trusted individual to access them. These functions are called SYSOP functions and allow editing of the message headers (who the message is addressed to, who it is from, and so on). Suppose a user put a message in your mailbox addressed to ALL, and you want to change it so it is addressed to SAT. You must have SYSOP privileges in order to do this, and it is accomplished by using the EDIT command in the PBBS.

There are two methods of gaining SYSOP status, the first is simply connecting to your own PBBS from the terminal attached to your KPC-9612. The second method is to connect to your KPC-9612 from another station over the radio and provide the proper validation. Once connected to the PBBS, the very first command you enter must be SYSOP. The KPC-9612 PBBS will then respond with three lines of six numbers each. Choose one of these three lines and decode the RTEXT using these numbers.

For example, assume your KPC-9612 has the RTEXT set to "This is a sample rtext." When you connect to this KPC-9612 PBBS from a remote station and give the SYSOP commend, it will send you:

```
1 12 3 18 6 9
2 10 22 5 7 18
13 16 4 9 1 20
```

To simplify this, let's re-write the RTEXT as:

```
         1         2
1234567890123456789 0123
This is a samle rtext.
```

Using the first line of numbers to decode this, the number **1** means the letter "T", the number **12** means "a", **3** means "i", **18** means "r", **6** means "i", and **9** means "a". The proper response is therefore Tairia - note that this is case sensitive, so you must properly use upper and lower case characters to gain SYSOP access.

Once you have gained SYSOP status, a new command is available through the PBBS – Edit The Edit command is used to change information contained in the message, and also to change the message header.

Each message will have a TYPE indicated by the letter P (private), B (bulletin), or T (traffic). To change the message type, enter the edit command with the message number and the new type (i.e. E 2 P would edit message number 2 to become a private message). Messages may also have a STATUS which is indicated by the letters shown below:

Y   (yes it has been read) – Private messages only
N   (no it has not been read) – Private messages only
F   (this message has been forwarded to another BBS)
H   (this message is being HELD)

If a message is marked as HELD, you can "unhold" it by using the EDIT command followed by the number of the message, and the letter H. The letter H acts as a toggle: it will hold an unheld message or unhold a held message (e.g. E 2 H).

A message marked with F means that this message has already been forwarded to another BBS. You should NOT change this flag, as this could cause duplicate messages to be introduced into the BBS system. If you absolutely MUST change it, use the Edit command with the message number and F (e.g. E 3 F).

A private message may have the Y or N flag set. This indicates whether or not the addressee has read the message. You can change this using the Edit command, message number, and either Y or N (e.g. E 6 Y).

As SYSOP, you can also change the TO field, @BBS field, FROM field, or even the subject/text of the message. The following commands are used for these purposes:

E # >callsign	Changes the TO field to a new callsign
E # <callsign	Changes the FROM field to a new callsign
E # @bbscall	Changes the @BBS field to bbscall
E # "string1" "string2"	Changes the FIRST occurrence of string1 to string2, starting with the subject of the message.

The EDIT command will also permit you to edit the text of a message. The format to edit text is:

    e #"string1""string2"

Specify the message number in place of #. The KPC-9612 will then replace the FIRST occurrence of string1 with string2. You may use either double quotes (") or single quotes (') to delimit the strings. Be careful when editing a message. For instance, if you try to replace "the" with "those" and the first occurrence of "the" happens to be in the word *thermal*, you would end up with *thosermal*. It may be wise to search for " the " if you want to replace the word "the".

Remote Access to your KPC-9612

Your Kantronics KPC-9612 includes the ability to connect from a remote station and change the parameters in the KPC-9612. This allows you to add or delete stations from the LLIST, change the size of the PBBS, change the MYCALL and so on. Extreme caution must be used when you are accessing your KPC-9612 from a remote location. There is no built-in safeguard, and as such it is possible for you to change parameters such that the remote KPC-9612 will no longer communicate.

In order to change parameters in a remote KPC-9612. the RTEXT in the remote KPC-9612 must be set to a text string that will be used as the password string. For instance, you might set your RTEXT to:

    RTEXT This system belongs to W0ABC in Lawrence, Kansas 66046

The remote KPC-9612 must also have its MYREMOTE set to a unique callsign (i.e. W0ABC-4, or XYZREM). If these two parameters are not set as indicated, remote access to the command set of this KPC-9612 is not possible. When these parameters are set, you can connect to the MYREMOTE callsign of the remote KPC-9612.

```
cmd: CONNECT XYZREM

 ┌──────────┐                    ┌──────────┐
 │          │                    │          │
 │  Your    │                    │  Remote  │
 │  Station │                    │  Station │
 │          │                    │          │
 └──────────┘                    └──────────┘

                          MYCALL WØABC
                          MYREMOTE XYZREM
                          RTEXT This system belongs to
                          WØABC in Lawrence, Kansas
                          66046
```
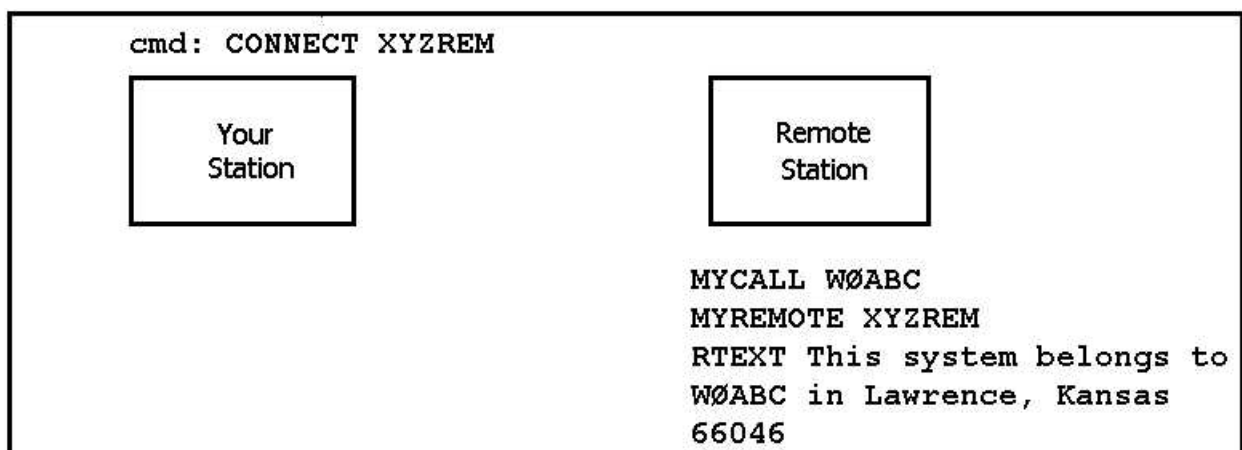
When the connection is made, the remote KPC-9612 will send three lines of number The numbers would look like:

```
5 20 43 36 18  3
37  1 44 14 28 19
48 26  8 52 22  1
```

You must then pick ONE of these lines and decode the password string. Let's say 1 choose to decode line 3 (`48 26 8 52 22 1`). Rewriting my RTEXT string to make this easier I would have:

```
        1         2         3         4         5
12345678901234567890123456789012345678901234567890901234
This system belongs to W0ABC in Lawrence, Kansas 66046
```

To decode the string, character 48 is "s", character 26 is "A", character 8 is "s", character 52 is "0", character 22 is "o". and character 1 is T. I must send the following in response to my remote access attempt:

```
SAs0oT
```

Note that case is significant and spaces are considered valid characters. If you fail to properly decode the password, the KPC-9612 will send three new lines of numbers. You will be given a maximum of three attempts to properly decode the password string. If you fail in three attempts, the KPC-9612 will disconnect you and disable connects to the MYREMOTE for 15 minutes. Also, if you connect to the MYREMOTE and start the password sequence but then disconnect, the penalty timer is in effect for 15 minutes.

Be careful when using the remote access feature. You can change ANY command in the KPC-9612 without restriction, but this can lead to problems. For instance, if you change the INTFACE command to KISS and then send a RESET command, the remote KPC-9612 will be placed into the KISS Mode and will completely quit talking to the radio! Also, if you connect to the MYREMOTE of a KPC-9612 and then issue a command like CONNECT W1ABC, the remote KPC-9612 will indeed connect to the station, but there will be no data sent to you from that connection. The connected data would be sent to the serial port of that remote KPC-9612. We urge EXTREME caution when using the remote access! Note also that any command that causes a reset (i.e. NUMNODES, PBBS, MAXUSERSJ will disconnect all current users (PBBS, NODE, and YOU).

One minor limitation applies to receiving data from the remote KPC-9612. When you give any command, the response is limited to 300 character so some commands will not fully display their response. If you give the command DISPLAY, the full list will begin, but you will not receive the entire list because of the size limitation of this output buffer.

Host Mode Operation

Your KPC-9612 provides a Host Mode for communication with more sophisticated computer software. If your software supports this mode, it will place the KPC-9612 in the Host Mode of operation automatically.

When operating a standard terminal program like Pacterm or a telephone communications program like Procomm Plus, you will never need to place the KPC-9612 in the Host Mode; however, you may find that your KPC-9612 has been left in Host Mode accidentally by another program. If you can not communicate with your KPC-9612, first be sure your terminal program is set for the baud rate you have used with your host program. Turn the KPC-9612 off and on. If you see ╘╘s00╙, this means your KPC-9612 is in Host Mode. To exit Host Mode, hold the ALT key down and type the numbers `192` on the numeric keypad of your keyboard (NOT THE NUMBER KEYS ABOVE THE KEYBOARD). Release the ALT key. Type the letter `Q` and then repeat the ALT `192` se-

quence. Your KPC-9612 will now reset, sending you the sign-on message and the command prompt (`cmd:>`.

KISS Mode Operation

Some special software requires that your KPC-9612 be placed in KISS Mode. TCP/IP programs (NET, NOS, JNOS, and others) and some networking software (G8BPQ) require this mode of operation. To place your KPC-9612 in KISS Mode, you must first have the command prompt (`cmd:`). Type **INTFACE KISS** and press return. You will not see a message or any prompt back from the KPC-9612. It is now in KISS Mode.

To force your KPC-9612 out of the KISS Mode from a standard terminal program, hold the ALT key down and type the numbers **192** on the numeric keypad of your keyboard (NOT THE NUMBER KEYS ABOVE THE KEYBOARD). Release the ALT key. Press and hold the ALT key and type the numbers **255** on the numeric keypad. Release the ALT key. Repeat the ALT 192 sequence. Your KPC-9612 will now reset, sending you the sign-on message and the command prompt (`cmd:`).

Hardware Information

Precautions

The KPC-9612 is grounded through its connections to your transceiver, computer, and power sup-ply. Make sure your transceiver is properly grounded and your computer has equal ground poten-tial. Follow the grounding instructions in your transceiver manual.

Cables provided with your KPC-9612 are shielded. If you use other cabling, be certain it is shielded. We do not recommend the use of unshielded RS-232 ribbon cable in an amateur radio environment.

Lithium batteries can explode or leak if heated, disassembled, recharged, exposed to fire or high temperature, or inserted incorrectly.

Connecting to the Computer

The KPC-9612 communicates to the computer using RS-232 signaling. This is compatible with PC compatible computers, Macintosh, dumb terminal, and most other terminal devices. If your com-puter or terminal uses TTL levels (such as the Commodore 64J, you will need an after-market con-verter to supply the RS-232 signals required by the KPC-9612.

Cable Wiring

All Kantronics software requires five wires between the computer and the KPC-9612. The pins that must be connected from your KPC-9612 to the computer for these programs are Txd, Rxd, SG, RTS, and CTS. If you are using other software, you should refer to that documentation to deter-mine the cable requirements for proper operation. Some software does not support hardware flow control and will fail to operate if the RTS and CTS lines are connected.

The KPC-9612 serial port connector has 25 pins, which are configured at the factory as:

Pin Name	KPC-9612 Pin Number	Computer Pin Number (DB-9)	(DB-25)
FG	1	N/A	1
Txd	2	3	2
Rxd	3	2	3
RTS	4	7	4
CTS	5	8	5
DSR	6	6	6
SG	7	5	7
DCD	8	1	8
DTR	20	4	20

NOTE: FG (Frame Ground) and SG (Signal Ground) are tied together in the KPC-9612.

The purpose of the pins (by name) is:

FG   FRAME GROUND: This pin is attached to the chassis of the equipment as a safety ground.

Txd   TRANSMIT DATA: This line carries the data from your computer to the KPC-9612.

Rxd   RECEIVE DATA: This line caries the data from the KPC-9612 to your computer.

RTS   REQUEST TO SEND: The KPC-9612 checks this line to see if it is permitted to send data to your computer. This pin is controlled by your computer software program to provide this information to the KPC-9612. This pin is used for hardware flow control.

CTS   CLEAR TO SEND: The KPC-9612 uses this line to signal your computer when it can no longer accept data from the computer, or to signal that it is again ready to accept data. This pin is used for hardware flow control.

DSR   DATA SET READY: This line is connected to the DTR line inside the KPC-9612. Some software may require a positive voltage on this pin in order to detect the presence of a modem. If your computer supplies a positive voltage on its DTR pin when operating, this voltage will also appear as a return signal to your computer on the DSR pin. if your computer does not supply a positive voltage on the DTR pin, you may install a 10K ohm resistor at R-l on the KPC-9612 to supply this signal.

DCD   DATA CARRIER DETECT: The KPC-9612 uses this pin to signal the status of the current I/O stream to your computer. If you are currently connected to another packet station, this line will have a positive voltage on it. If you are disconnected, the voltage on this line will be negative.

DTR   DATA TERMINAL READY: This line is connected to the DSR line inside the KPC-9612 and is not used by the KPC-9612 for any purpose.

Options

There are several options provided for wiring the KPC-9612 serial port through the use of internal jumpers. See the section on Junipers in this manual for details on these options.

Software settings

When using a standard terminal program to communicate with the KPC-9612, we recommend you set the serial port configuration in your program for 8 data bits, no parity, and one stop bit. The baud rates supported by the KPC-9612 are 300, 600, 1200, 2400, 4800, 9600 and 19200. In general you should use the fastest baud rate your terminal program supports (up to 19200). The KPC-9612 defaults with ECHO ON, so you should set your terminal program for "full-duplex" operation.

If you are using a baud rate above 4800 baud, we strongly recommend that you consider installing special high-speed, buffered UARTS in the serial port of your computer. These UARTS are available through many parts suppliers and will improve the reliability of high-speed communications. You should ask for the "high-speed buffered UARTS" (part number 16550 or equivalent) when ordering from your supplier.

Connecting to your Radios

1200 Baud

The 1200 baud radio connector on the KPC-9612 rear panel is a 9-pin DB style connector. The pin layout is shown on the FCC label on the bottom of the unit, and the purpose of each pin is:

Pin number	Pin name	Function
1	TXA	Transmit audio (AFSK out)
2	XCD	External carrier detect
3	PTT	Push-to-Talk
4	CTLB	Control line B
5	RXA	Receive audio
6	GND	Ground
7	EXT_IN	Jumper selectable input - See Jumper section for details
8	CTLA	Control line A
9	GND/RESET	Ground (may be configured for external hard reset. See Jumper section for details)

Pin 1   Connects to your microphone input of your radio, providing the audio signal to be transmitted.

Pin 2   When a ground is applied to this pin and the KPC-9612 CD command is set to EXTERNAL, the KPC-9612 will not transmit packet. This is normally used as an external means of supplying carrier detect to the KPC-9612.

Pin 3   When the KPC-9612 needs to key your transmitter, it will apply a ground to this pin. This is an open-drain circuit and requires a positive voltage from your radio (not to exceed 50 volts and 200 mA).

Pin 4   This pin is the CONTROL B output from the KPC-9612 which may be used as a control line to your radio or other devices. It is an open-drain circuit, and will apply a ground on this pin when controlled by the CTRL command in your KPC-9612 (not to exceed 50 volts and 200 mA).

Pin 5   Receive audio from your radio connects to this pin. This normally will connect to the external speaker jack on your radio, but may connect to the receive audio pin on your microphone connector (if available).

Pin 6   This pin connects to the ground of your radio mic connector.

Pin 7   This pin is not connected in the KPC-9612, but may be configured for an external hard reset or to supply power to the KPC-9612 using jumpers J16 and J17. See the Jumper section for details.

Pin 8   This pin is the CONTROL A output from the KPC-9612 which may be used as a control line to your radio or other devices. It is an open-drain circuit, and will apply a ground on this pin when controlled by the CTRL command in your KPC-9612 (not to exceed 50 volts and 200 mA),

Pin 9   This pin is connected to ground as shipped from the factory. You may re-configure this pin to perform an external hard reset by using jumper J21. See the Jumper section for details.

9600 Baud

The 9600 baud radio connector on the KPC-9612 rear panel is a 15-pin DB style connector. The pin layout is shown on the FCC label on the bottom of the unit and the purpose of each pin is:

Pin number	Pin name	Function
1	PTT	Push-to-Talk
2	RXA	Receive signal
3	TXA	Transmit signal
4	RXD	Receive signal (digital)
5	TXD	Transmit signal (digital)
6	CTLA	Control line A
7	CTLB	Control line B
8	RX S/N	Receive quality
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	RXC	Receive clock
13	XCD	External carrier detect
14	N/C	No connection
15	N/C	No connection

Pin 1   When the KPC-9612 needs to key your transmitter, it will apply a ground to this pin. This is an open-drain circuit and requires a positive voltage from your radio (not to exceed 50 Volts and 200 mA).

Pin 2   This pin connects to the discriminator output from your radio (9600 baud receive data).

Pin 3   This pin connects to the modulator (normally to the varactor) of your radio for transmitting 9600 baud packet.

Pin 4   This pin can be used to receive 9600 baud data from those radios that provide TTL level voltages for receive (such as the Kantronics D4-10 radio). This pin would normally only be used to operate 19,200 baud packet. Normally, this pin will not be used.

Pin 5   This pin can be used for transmit data for those radios that accept TTL level transmit signals (such as the Kantronics D4-10 radio). This pin would normally only be used to operate 19,200 baud packet.

Pin 6   This pin is the CONTROL A output from the KPC-9612 which may be used as a control line to your radio or other devices. It is an open-drain circuit, and will apply a ground on this pin when controlled by the CTRL command in your KPC-9612 (not to exceed 50 volts and 200 mA).

Pin 7   This pin is the CONTROL B output from the KPC-9612 which may be used as a control line to your radio or other devices. It is an open-drain circuit, and will apply a ground on this pin when controlled by the CTRL command in your KPC-9612 (not to exceed 50 volts and 200 mA).

Pin 8   This line is used to adjust the receive equalization of the 9600 baud modem in the KPC-9612. Connect a DC voltmeter to this pin and adjust R-33 for maximum reading while you are receiving another station. (Note: J8 must be on the center post and 2 for this adjustment.)

Pin 9   This pin connects to the ground of your 9600 baud radio.

Pin 10 This pin is connected to ground (same as pin 9).

Pin 11 This pin is connected to ground (same as pin 9).

Pin 12 This pin is the receive clock signal. You may use this pin to connect to an oscilloscope trigger input to observe the eye-pattern of a 9600 baud signal. The RXA signal (pin 2) would connect to the vertical input to the scope.

Pin 13 When a ground is applied to this pin and the KPC-9612 CD command is set to EXTERNAL, the KPC-9612 will not transmit packet. This is normally used as an external means of supplying carrier detect to the KPC-9612.

Pin 14 Not connected.

Pin 15 Not connected.

Transmit level adjustment

1200 Baud

The AFSK drive level from the KPC-9612 may be adjusted using potentiometer R-22 and jumper J5. When the J5 jumper is placed on one post only, the output level may be adjusted from 2 mVp-p to 60 mVp-p. Placing the jumper on both posts allows adjustment from 140 mVp-p to 4 Vp-p. This level should be adjusted to provide approximately 3.5 kHz deviation on your radio.

9600 Baud

The 9600 baud drive level from the KPC-9612 may be adjusted using potentiometer R-32 and jumper J7. When the J7 jumper is placed on both posts, the output level may be adjusted from 80 mVp-p to 4 Vp-p. Placing the jumper on one post only allows adjustment from 2 millivolts p-p to 100 millivolts p-p. This level should be adjusted to provide approximately 3.0 kHz deviation on your radio. If your radio will transmit properly with J6 on both posts (dc coupled), we recommend this setting.

Watchdog Timer

The KPC-9612 has a push-to-talk watchdog timer for both ports. These timers are both enabled at the factory with jumpers J4 (1200 baud) and J3 (9600 baud) on just one post. If the KPC-9612 attempts to keep your radio transmitting continuously for over 2-½ minutes on the 1200 baud port or more than 30 seconds on the 9600 baud port, the watchdog timer will activate and release the PTT line to your radio. Current FCC regulations require a watchdog timer to detect such a failure and stop the transmission.

Microprocessor Watchdog Timer

The KPC-9612 includes a watchdog tinier for the microprocessor. In the unlikely event that your TNC firmware gets in a loop, the watchdog timer will detect the failure and force a soft reset of the KPC-9612. No parameters will be lost due to this reset.

Assembly and Disassembly of the KPC-9612

Should you require access to the KPC-9612 to reposition jumpers or for other purposes, disassemble as follows:

1. Turn off power to your KPC-9612 and remove all cables from the unit.

2. Using a small Phillips screwdriver, remove the two (2) case screws (located on each side of the case) completely.

3. Remove the top cover from the unit.
    NOTE: In most cases, no further disassembly of the unit is necessary. Only if you need to change a wire jumper or solder connections to the PC board should you continue with disassembly of the KPC-9612.

4. Remove the six (6) hex nuts on the rear panel that secure the connectors to the case.

5. Remove the two (2) screws securing the front panel to the case.

6. Remove the front panel.

7. Observe proper static protection precautions and gently lift the front edge of the PC board to clear the front of the case.

8. Pull the PC board forward to remove the PC board from the case. To reassemble, reverse the above procedure.

To reassemble, reverse the above procedure.

Hard Reset

The hard reset process is provided to re-initialize the KPC-9612 to its default values. This process may become necessary should operational problems be encountered or when upgrading your firmware to a new version. The readout specified in step 5 below will be legible only if your terminal baud rate is 1200. At other terminal baud rates, a reset will occur, however no display readout will be observed. This procedure is performed as follows:

1. Open the KPC-9612 by removing the two (2) case screws on the sides of the unit and lifting the cover.
2. Locate the Hard Reset jumper (J15). Refer to the parts diagram for help in locating this jumper.
3. Place the jumper on both posts.
4. Apply power to the KPC-9612.
5. Observe on the computer display (your terminal program must be set at 1200 baud):
    ```
    CHECKSUM OK
    RAM OK 32K BYTES(or 128K)
    REPLACE TEST JUMPER
    ```
6. Turn power off.
7. Return jumper J15 to the normal position (one post only).
8. Reassemble the KPC-9612 and return to operation.

Calibration/Equalization

The CALIBRAT command is used to assist in adjusting the transmitter deviation and also in adjusting the receive equalization of your KPC-9612. The procedures listed below are a guideline for using the calibration command to adjust the 1200 baud port and 9600 baud port for optimum performance.

1200 baud adjustment

You must have your current I/O stream on the 1200 baud port. When you issue the CALIBRAT command, the following options will appear on your terminal screen:

```
1200 CALIBRATE MODE: PRESS M,R,S,T, OR X
```

Pressing **M** will transmit a constant MARK until a key is pressed. Pressing **R** will measure a received square wave. Pressing **S** will transmit a constant SPACE until a key is pressed. Pressing **T** will transmit a square wave (space/mark) until a key is pressed. Pressing **X** will exit the Calibrate Mode and reset the KPC-9612.

After entering CALIBRAT Mode for the 1200 baud port, you should use the **T** option to transmit a square wave and adjust the APSK drive (R-22 and J5) for approximately 3.5 kHz deviation from your radio. This will set the proper drive level for your transmitted signal.

If you have another Kantronics user close to you, have that station transmit a CALIBRAT square wave and choose the R option in your Calibrate Mode to adjust your receive equalization. You will see two numbers displayed each time you press R.

The KPC-9612 is measuring the space/mark square wave generated by the other station. For best equalization on your receive signal, these two numbers should be as close to equal as possible.

In most instances when the ratio of the numbers is within a 40/60 or 60/40 range, the packet station will function normally. A larger disparity in the tones may cause additional retries during packet operation. The ratio may be determined by the following formula:

$$(N1 \times 100)/(N1 + N2)$$

where N1 is the number to the left of the displayed slash, and N2 is to the right of the slash. For instance, if the displayed numbers are 1400/1800, the ratio can be determined by:

$$(1400 \times 100) / (1400 + 1800) \text{ or } 140000/3200 = 44$$

Since the total is 100, the ratio is then 44/56 and is within the 40/60 criteria. If the ratio of the numbers exceeds the 40/60 or 60/40 value, you should move the internal equalization jumper (Jl). This jumper is shipped from the factory on both posts for no equalization. Placing the jumper on one post only enables partial equalization. Use the setting that gives the closest to 50/50 ratio.

9600 Baud Calibration

You must have your current I/O stream on the 9600 baud port. When you issue the CALIBRAT command, the following options will appear on your terminal screen:

```
9600 CALIBRATE MODE: PRESS B,R,T, OR X
```

Pressing B will transmit a 4800 Hz square wave which can used to check for proper transmit/receive filtering.

Pressing R allows adjustment of the receive equalization using the Signal Quality output (pin 8 on the DB-15 connector).

Pressing T will transmit a scrambled signal until a key is pressed to allow another station to adjust its receiver. This may also be used to adjust your transmit deviation using R-32 and J7.

Pressing X will exit the Calibrate Mode and reset the KPC-9612.

After entering the Calibrate Mode for the 9600 baud port, you should use the T option to transmit a continuous signal, and adjust R-32 for approximately 3 kHz deviation. Press any key to stop transmitting.

If you have another KPC-9612 user close to you, have that station transmit a calibrate signal to you. Measure the dc voltage on pin 8 of the DB-15 connector (or test point J). It should show nearly 3 VDC if the receive equalization is correct

If you do not read nearly 3 Volts, place jumper J8 on the center post and post 2, then adjust R-33 for the maximum reading on your voltmeter.

KPC-9612 Jumpers

There are several junipers in the KPC-9612 which can be used to configure various options. The jumpers are listed below in sequential order as a reference.

J1 (1200 baud equalization) This two-pin jumper is used to set the equalization for the 1200 baud modem. When placed on both posts, no equalization is selected, and when placed on one post, partial equalization is used. See the CALIBRATION/EQUALIZATION section for details. (DEFAULT: no equalization)

J2 (NOR/HT) When placed on the center post and the post marked NOR, this configures the AFSK output line of port 1 (1200 baud) for use with base radios. When placed on the center post and the post marked HT, this configures the AFSK output line to also serve as the PTT line for HT radios. (DEFAULT: nor)

J3 (9600 watchdog) This jumper enables/disables the watchdog timer for the 9600 baud modem. When placed on one post, the watchdog timer is active, and when placed on both posts, the timer is disabled. (DEFAULT: enabled)

J4 (1200 watchdog) This jumper enables/disables the watchdog timer for the 1200 baud modem. When placed on one post, the watchdog timer is active, and when placed on both posts, the timer is disabled. (DEFAULT: enabled)

J5 (1200 baud AFSK drive) This two-pin jumper selects the hi-range or low-range for the 1200 baud AFSK output level. Placing the jumper on one pin only selects the low range, and placing the jumper on both pins selects the high range. (DEFAULT: low)

J6 (9600 dc coupling) This two-pin jumper allows the transmit signal from the 9600 baud modem to be dc coupled to your radio. When placed on both pins, the transmit signal is dc coupled, and when placed on one pin only, the signal is ac coupled. (DEFAULT: ac)

J7 (9600 baud drive) This two-pin jumper selects the hi-range or low-range for the 9600 baud output level. Placing the jumper on one pin only selects the low range, and placing the jumper on both pins selects the high range. (DEFAULT: hi)

J8 (9600 equalization) This three-pin header selects fixed or variable equalization for the 9600 baud modem. When placed on the center post and 1, fixed equalization is used. When placed on the center post and 2, equalization is adjusted using resistor R-33. (NOTE: The KPC-9612 will not operate 9600 baud if this jumper is on one post only.) (DEFAULT: fixed)

J9 (9600 receive level) This two-pin jumper sets the 9600 baud modem receive level for a high-level signal from the radio or a low level signal. When placed on both pins, a low level signal is expected from the radio, and when placed on only one pin, a high level signal is expected. (DEFAULT: hi)

J10 (9600 loopback) This two-pin jumper allows you to perform a loopback test on the 9600 baud modem. When placed on both pins, the transmit signal from the 9600 baud modem is connected to the receive input of the 9600 baud modem. When placed on one pin only, the loopback is disabled. You should be sure the loopback is disabled for normal operation. NOTE: Transmit level and receive equalization have no effect in loopback mode. (DEFAULT: disabled)

J11 (RAM +5 V) This jumper is not installed in amateur units. If the clock chip (U22) is not installed, this jumper must be installed to provide +5V to the RAM.

J12 (Chip Enable) This jumper is not installed in amateur units. If the clock chip (U22) is not in-stalled, this jumper must be installed to provide the chip enable signals.

J13 (ROM size) This three-pin jumper permits the installation of different size ROMS. When placed on the center post and 1, ROMs up to 1 megabits (128K Bytes) may be installed in socket U19. When placed on the center post and 2, ROM sizes above 1 megabits can be installed in U19. (DEFAULT: 1 megabit and smaller)

J14 (RAM size) This three pin jumper allows the installation of various size static RAMs in the KPC-9612. When placed on the center post and 1, the KPC-9612 can accept up to 128K static RAM. When placed on the center post and 2, the KPC-9612 accepts a 512K static RAM. (DE-FAULT: 128K or less)

J15 (Hard Reset) When this jumper is placed on both posts and power is applied to the KPC-9612, a hard reset is performed. This resets all parameters to the factory defaults and completely erases the RAM contents. When placed on one post, the KPC-9612 is set for normal operation. (DEFAULT: normal)

J16 (Serial configuration) This three-pin juniper, in conjunction with J17, provides an alternate means to supply dc power to the KPC-9612 or to perform a hard reset without opening the case. See the section on Connector Configuration for more details. (DEFAULT: center post and 2)

J17 (RESET/INPUT) This three-pin jumper, in conjunction with jumper J16, provides an alternate means to supply dc power to the KPC-9612 or to perform a hard reset without opening the case. See the section cm Connector Configuration for more details. (DEFAULT: one post only)

J18 (Serial configuration) This jumper is not installed. It may be used to connect the CTS pin of the RS-232 port with the DSR pin and the DTK pin. See the section on Connector Configura-tion for more details.

J19 (Serial configuration) This jumper is not installed, but a PC board trace connects the two pads for this jumper. It is used to connect the DTR pin to the DSR pin of the RS-232 serial port.

J20 (Serial configuration) This jumper in not installed. It may be used to connect the RTS pin to the DTR pin on the RS-232 serial port See the section on Connector Configuration for more details.

J21 (DB-9 GND/RESET) This three-pin juniper connects pin 9 of the 1200 baud radio port to ground or to the reset function. When placed on the center post and 1, pin 9 of the DB-9 con-nector is connected to ground. When placed on the center post and post 2, pin 9 is connected to the reset circuit in the KPC-9612. This allows you to perform a hard reset by applying a ground to pin 9 and turning on the KPC-9612. (DEFAULT: ground)

J22 (BATT disconnect) This jumper is not installed, but a PC board trace connects the pins. Cut-ting the PC board trace disconnects the lithium battery from the KPC-9612, disabling all bat-tery backup functions.

Connector Configuration

1200 baud radio port (DB-9)

The DB-9 connector (1200 baud radio port) may be configured to allow you to perform a hard reset on your KPC-9612 without opening the case. To do this, place jumper J21 on the center post and the post marked 2. This connects pin 9 of the DB-9 connector to the KPC-9612 reset circuit. In this configuration, you may hard reset the KPC-9612 by placing a ground on pin 9 of the DB-9 connector and applying power to the KPC-9612.

You may also configure the KPC-9612 to receive dc power from the 1200 baud radio port. To do this, place jumper J16 on the center post and-2, and J17 on the center post and 2. Your KPC-9612 may now be powered for operation by applying 12 VDC to pin 7 of the DB-9 connector.

WARNING: _If you set jumpers J16 and JI7 to provide power through the serial port or through the 1200 baud radio port, you must be very careful that this voltage is not applied to the RESET pin (jumper J17 pin 1). Failure to observe this warning will result in damage to the DS1232 reset chip._

Serial port (DB-25)

The DB-25 serial port of the KPC-9612 is configured for a standard RS-232 interface as shipped from the factory. There are several options available by using the internal junipers as described below:

Applying power to the KPC-9612

By placing jumper J16 on the center post and 1, and juniper J17 on the center post and 2, you may power the KPC-9612 by applying 12 volts dc to pin 25 of the DB-25 serial connector.

WARNING: _If you set jumpers J16 and J17 to provide power through the serial port or through the 1200 baud radio port, you must be very careful that this voltage is not applied to the RESET pin (jumper J17 pin 1). Failure to observe this warning will result in damage to the DS1232 reset chip._

DTR/DSR/RTS/CTS connections

Normally the KPC-9612 has the DTR pin (pin 20) connected to the DSR pin (pin 6) on the serial port. This is a loopbaek of the DTR signal from your computer to provide the DSR signal. Many computer require this for proper serial port operation. If your computer requires DSR but does not supply DTR, you should install a 10 kOhm, 1/4 Watt resistor at R1.

If you need to isolate the DTR/DSR connection, cut the metalized trace between the two pads of J19. It is also possible to connect the RTS input to the KPC-9612 to the DTR signal from your computer by placing jumper J20 on both posts.

The CTS line from the KPC-9612 may also be connected to the DSR line by placing jumper J18 on both posts.

Example

One possible use for these jumpers would be to allow the use of a low-speed Macintosh modem cable with the Host Master Mac software and your KPC-9612. The low speed modem cable uses the DTR line and the CTS line for hardware handshaking, and the KPC-9612 uses the RTS and CTS line. In this case, placing jumper J20 on both posts would connect the DTR and RTS lines together so the cable would work properly.

Specifications

Size:	0.8 in. × 6.2 in. × 6.1 in. (2.1 cm × 15.8 cm × 15.5 cm)	
Weight:	less than 16 oz. (<0.45 kg)	
Input Voltage Requirements:	5.5 VDC − 25 VDC	
Current Requirements:	45 mA (max.), <20 mA (idle)	
Power plug polarity:	Center pin positive	
External Carrier detect:	Pulldown to ground	
PTT and Control Outputs:	Open drain (+50 VDC max. and 200 mA max.)	

	Port 1	Port 2
Watchdog timer:	2.5 min.	30 sec.
Audio Output:		
Drive level (lo)	2–60 mV p-p	2-100 mV p-p
Drive level (hi)	140 mV - 4 V p-p	80 mV - 4 V p-p
Impedance	600 Ohm (ac coupled)	600 Ohm (ac or dc coupled)
Audio Input:		
Input Impedance	600 ohm single-ended	100 kOhm ac coupled
Sensitivity	5 mV p-p	lo: 25 mV − 450 mV p-p
		hi: 80 mV − 1.6 V p-p
Dynamic range	70 dB	26 dB
Maximum input V	35 V p-p (±12 VDC)	25 V p-p (±25 VDC)

1200 Modulation Port 1:	1200 BPS FSK (Bell 202 - 1200/2200 Hz standard, CCITT V.23 optional)
9600 Modulation Port 2:	Gaussian Filtered DFSK
Modes of operation:	Packet, KISS, Host, XKISS
Other features:	PBBS, KA-Node, Gateway, cross-connect, remote access

ASCII Chart

Ctrl	Dec	Hex	Code	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
@	0	00	NUL	32	20	SP	64	40	@	96	60	`
A	1	01	SOH	33	21	!	65	41	A	97	61	a
B	2	02	STX	34	22	"	66	42	B	98	62	b
C	3	03	ETX	35	23	#	67	43	C	99	63	c
D	4	04	EOT	36	24	$	68	44	D	100	64	d
E	5	05	ENQ	37	25	%	69	45	E	101	65	e
F	6	06	ACK	38	26	&	70	46	F	102	66	f
G	7	07	BEL	39	27	'	71	47	G	103	67	g
H	8	08	BS	40	28	(	72	48	H	104	68	h
I	9	09	HT	41	29	)	73	49	I	105	69	i
J	10	0A	LF	42	2A	*	74	4A	J	106	6A	j
K	11	0B	VT	43	2B	+	75	4B	K	107	6B	k
L	12	0C	FF	44	2C	,	76	4C	L	108	6C	l
M	13	0D	CR	45	2D	-	77	4D	M	109	6D	m
N	14	0E	SO	46	2E	.	78	4E	N	110	6E	n
O	15	0F	SI	47	2F	/	79	4F	O	111	6F	o
P	16	10	DLE	48	30	0	80	50	P	112	70	p
Q	17	11	DC1	49	31	1	81	51	Q	113	71	q
R	18	12	DC2	50	32	2	82	52	R	114	72	r
S	19	13	DC3	51	33	3	83	53	S	115	73	s
T	20	14	DC4	52	34	4	84	54	T	116	74	t
U	21	15	NAK	53	35	5	85	55	U	117	75	u
V	22	16	SYN	54	36	6	86	56	V	118	76	v
W	23	17	ETB	55	37	7	87	57	W	119	77	w
X	24	18	CAN	56	38	8	88	58	X	120	78	x
Y	25	19	EM	57	39	9	89	59	Y	121	79	y
Z	26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
[	27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
/	28	1C	FS	60	3C	<	92	5C	\	124	7C	|
]	29	1D	GS	61	3D	=	93	5D	]	125	7D	}
^	30	1E	RS	62	3E	>	94	5E	^	126	7E	~
_	31	1F	US	63	3F	?	95	5F	_	127	7F	DEL

Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
128	80	160	A0	192	C0	224	
129	81	161	A1	193	C1	225	E0
130	82	162	A2	194	C2	226	E1
131	83	163	A3	195	C3	227	E2
132	84	164	A4	196	C4	228	E3
133	85	165	A5	197	C5	229	E4
134	86	166	A6	198	C6	230	E5
135	87	167	A7	199	C7	231	E6
136	88	168	A8	200	C8	232	E7
137	89	169	A9	201	C9	233	E8
138	8A	170	AA	202	CA	234	E9
139	8B	171	AB	203	CB	235	EA
140	8C	172	AC	204	CC	236	EB
141	8D	173	AD	205	CD	237	EC
142	8E	174	AE	206	CE	238	ED
143	8F	175	AF	207	CF	239	EE
144	90	176	B0	208	D0	240	EF
145	91	177	B1	209	D1	241	F0
146	92	178	B2	210	D2	242	F1
147	93	179	B3	211	D3	243	F2
148	94	180	B4	212	D4	244	F3
149	95	181	B5	213	D5	245	F4
150	96	182	B6	214	D6	246	F5
151	97	183	B7	215	D7	247	F6
152	98	184	B8	216	D8	248	F7
153	99	185	B9	217	D9	249	F8
154	9A	186	BA	218	DA	250	F9
155	9B	187	BB	219	DB	251	FA
156	9C	188	BC	220	DC	252	FB
157	9D	189	BD	221	DD	253	FC
158	9E	190	BE	222	DE	254	FD
159	9F	191	BF	223	DF	255	FE

Pacterm Manual

To Start Pacterm

It is best to leave your TNC off until you have Pacterm set up and in the Terminal Mode. Having the TNC on early will cause data to be backed up between the computer and TNC. Then when Pacterm is put in the Terminal Mode, what is in the TNC will dump rapidly to the screen.

Have your computer logged onto the drive and directory where you have stored the Pacterm files and type PACTERM at the DOS prompt. When Pacterm starts, its help menu is displayed on the screen. This menu can be accessed at anytime by pressing the F1 key.

Setup

It is important that you first set the communication port and baud rate. Pacterm must know what port to use to talk to the TNC, and how fast to talk.

F7 increment communication port number

Pressing F7 causes Pacterm to toggle between the communication ports: COM1 and COM2. The port that is in use is shown near the bottom of the screen. COM1 is default and must be reset, if necessary, each time you begin the program.

F8 increment baud rate

Pressing F8 will cause Pacterm to step through the available baud rates. The default is 1200 baud and must be reset, if necessary, each time you begin the program. Available rates are: 300, 600, 1200, 2400, 4800, and 9600.

This rate corresponds to the MODE command in the TNC. Until the baud rate is set, the TNC will run an autobaud routine to determine how fast the computer is talking.

F3 toggle KPC / UTU-XT selection

Pressing F3 toggles between the KPC (packet) Help Menu and the UTU-XT (other modes) Help Menu. Leave this toggle in the KPC selection.

F3, F7, and F8 work only while the Help Menu is on the screen. Other commands work only while in the Terminal Mode.

Exiting Pacterm

Pressing F10 will exit to DOS from any screen. The TNC power must remain on when exiting this way because commands are being sent to the TNC.

The Escape key or a Ctrl-C will also exit to DOS from the Help Menu.

Terminal Mode

PRESS BACKSPACE TO CONTINUE.

Pressing the backspace key will put Pacterm in the terminal mode. This is the mode used to talk to the TNC. The top part of the screen will display data received from the TNC. Data typed on the keyboard will display between the two lines. The bottom line is the status bar.

If you are just starting, now is the time to turn on the TNC. At any time the F1 key can be pressed to display the help menu. The backspace key will return you to Terminal Mode.

Autobaud Routine

If the MODE command in the TNC has not been set, the TNC will run an autobaud routine to determine the baud rate of the computer. The TNC will send the same message over and over again at different baud rates. This will look like a lot of garbage until the baud rate of the TNC matches the baud rate set in Pacterm. Then the screen will display:

```
PRESS (*) TO SET BAUD RATE
```

At this time you should press the asterisk, *. Then the TNC wilt send its sign-on message, ask you for your callsign, and then the cmd: prompt will appear. See your TNC Operations Manual for more information.

F5 toggle type ahead / Transmit Mode

Pressing F5 causes Pacterm to toggle between an immediate Transmit Mode (to TNC), or a type ahead buffer. You will see either ONLIN or OFLIN in the status bar.

When ONLIN appears, everything you type will go immediately to the TNC.

When OFLIN appears you are in the type ahead mode - what you type will be stored in the computer's memory; it will be sent to the TNC when you press another F5, and Pacterm will return to ONLIN at this time. F5 does not add a carriage return to the data In packet you must remember to end what you have to say with the return key, or the TNC will not transmit it.

Alt-R can also be used to go OFLIN to the type ahead buffer. And Alt-T can be used to go ONLIN. Alt-T sends a return before sending the data.

The type ahead buffer can hold up to 1,000 characters.

F9 exit to `cmd:` mode

Pressing F9 will return the TNC to Command Mode. When using the KPC menu this will send three Ctrl-Cs to the TNC. The screen will be cleared (except for the two lines and status bar), and the `cmd:` prompt will appear (unless you were already in Command Mode). The status bar is reset to its default and many software variables are reset.

Flow Control

Pacterm uses hardware flow control. RTS and CTS status are shown on the right side of the status bar. RTS indicates the TNC is allowed to talk to the computer. CTS indicates the computer is allowed to talk to the TNC.

F6 toggle RTS

Pressing F6 will toggle Request To Send (RTS). By default, XON and RTS show in the status bar. This indicates that data is allowed to flow from the TNC to the computer Pressing F6 will turn RTS off and XON will change to XOFF. This will stop the flow of data from the TNC to the computer. Pressing F6 again, will restart the flow of data from the TNC.

Saving Data to Disk

Alt-B buffer control

The Alt-B command toggles the buffer on and off. When the buffer is on, data that appears in the receive section (top) of the screen will be saved in your computer's memory. `BUFF` appears in the status bar when the buffer is on. Using F9 will also turn the buffer off.

The size of the buffer depends on the amount of memory in your computer.

Alt-C clear holding buffer

Pressing Alt-C will erase all information stored in the buffer.

F2 save holding buffer to file

Pressing F2 brings up 3 request to enter file name. After entering the file name, press return. The file will be saved and Pacterm will return to Terminal Mode. Pacterm supports drive designators when saving files, but does not support directories.

If the information is stored with a normal file name, carriage return/line feeds will be added as needed. To save data exactly as received use a .bin suffix following the file name (binary file).

Sending a File from Disk

Alt-F file transmit

Pressing Alt-F will display a · ($FA) on the screen. Then type the file name followed by another Alt-F. The file name must be exact. Do not add spaces between the Alt-Fs and the file name. Pacterm supports drive designators as part of the file name, but does not support directories.

Printer

The Alt-P command toggles the printer on and off. When the printer is on, data that appears in the receive section (top) of the screen will also be sent to your printer. PRINT appears in the status bar when the printer is on. Using F9 will also turn the printer off.

Parts List

Part Desig.	Part Description	Layout Locat.	Schem. Locat.
BT	CR2032	C4	A6
C1	µ001	A2	C1
C2	µ001	A2	D1
C3	47µ al	A2	C2
C4	47µ al	Al	B3
C5	µ001	A2	B1
C6	µ001	A2	D1
C7	µ001	A2	C1
C8	µ001	A1	B1
C9	µ01	A1	C2
C10	µ001	A1	C2
C11	µ01	A1	C2
C12	µ1	A1	B2
C13	68p	B1	B2
C14	1µ tant	B1	B2
C15	µ1	B1	C2
C16	68p	B1	C2
C17	1µ tant	B1	B2
C18	22p	B1	B3
C19	22p	B1	B3
C20	10µ tant	B1	D1
C21	µ1	B1	A5
C22	22p	B1	D3
C23	22p	B1	D3
C24	µ1	C1	D1
C25	100p	C1	D2
C26	1µ tant	C1	D2
C27	1µ tant	C1	D2
C28	µ01	C1	D2
C29	µ01	C2	D2
C30	22p	C2	D5
C31	µ1	C2	A1
C32	µ0022	D1	D2
C33	22µ	D1	D2
C34	µ1	D1	D3
C35	µ1	D1	D3
C36	µ1	D2	A1
C37	µ1	D4	A1
C38	10µ nonpolar	D4	A5
C39	10µ tant	D4	A5
C40	µ1	D4	A6
C41	µ1	C4	A1
C42	µ1	B4	C6
C43	µ1	B4	A1
C44	µ1	B4	A1
C45	µ1	B4	B5
C46	µ1	A4	A6
C47	µ1	A4	A6
C48	µ001	A4	A2
C49	µ1	A4	A6
C50	µ001	A4	A2
C51	µ001	A4	A2
C52	µ1	A4	A4
C53	1µ tant	A3	A4
C54	1µ tant	A3	A4
C55	µ1	A3	A4
C56	µ1	A3	A4
C57	µ001	A3	A5
C58	µ1	B3	A1
C59	22p	A3	B5
C60	22p	B2	B5
CR1	1N914	A1	C2
CR2	1N914	A1	B2
CR3	1N914	A2	C2
CR4	1N914	A2	B3
CR5	1N914	A3	A2
CR6	1N914	A3	A4
CR7	1N914	A3	A4
CR8	1N914	A3	A4
CR9	1N914	A3	A4
CR10	1N914	A3	A4
CR11	1N914	A4	A6
J1	2P header	A1	C2
J2	3P header	A1	B1
J3	2P header	A2	C2
J4	2P header	A2	B3
J5	2P header	B1	B3
J6	2P header	B2	D1
J7	2P header	C1	D2
J8	3P header	D1	D2
J9	2P header	D1	D2
J10	2P header	D1	D2
J11	Not installed	C2	B6
J12	Not installed	C2	B6
J13	3P header	C4	C6
J14	3P header	B4	C6
J15	2P header	B4	A5
J16	3P header	A4	B1
J17	3P header	A4	B1
J18	Not installed	A4	A2
J19	Not installed	A3	A2
J20	Not installed	A3	A2
J21	3P header	A2	B1
J22	Not installed	C4	B6
L1	LED green	D4	D6
L2	LED red	D3	D6
L3	LED green	D3	D6
L4	LED red	D2	D5
L5	LED green	D2	D5
L6	LED green	D2	D5
L7	LED green	D1	D5

Ref	Description			Ref	Description		
L8	LED yellow	D1	D5	R34C	100k ×5 SIP		D2
P1	DB9F	A1	B1	R34D	100k ×5 SIP		D2
P2	DB15F	A2	C1	R34E	100k ×5 SIP		D2
P3	DB25F	A3	A2	R35	100k	C2	D5
P4	2.1mm pwrja	A4	A6	R36	330k	D1	D2
Q1	PN2222	D3	D6	R37	47k	D1	D2
Q2	PN2907A	B1	B3	R38	4k7	D1	D2
Q3	2N7000	A2	C1	R39	620R	D1	D2
Q4	2N7000	A2	B2	R40	180k	D1	D2
Q5	2N7000	B2	D2	R41	330k	D1	D3
Q6	2N7000	B2	C2	R42	330k	D1	D3
Q7	2N7000	D1	C1	R43	470k	D1	D3
Q8	2N7000	D1	C1	R44	10k	D1	C3
R1	Not installed	A3	A2	R45	100k	D1	D3
R2	10k	A3	A2	R46	470k	D1	D2
R3	680k	A3	C2	R47	68k	D1	D2
R4	3M3	A2	B3	R48	180k	D1	D2
R5	620R	A1	C2	R49	1k5	D2	D5
R6	100k	A1	C2	R50	1k5	D2	D5
R7	470k	A1	C2	R51	1k5	D2	D5
R8	100k	B1	C2	R52	1k5	D2	D5
R9	4k7	A1	B1	R53	1k5	D2	D5
R10	620R	A1	B1	R54	1k5	D3	D6
R11	1M	B2	D2	R55	1k5	D2	D6
R12	100k ×5 SIP	B1		R56	1k5	D4	D6
R12A	100k ×5 SIP		B3	R57	100k	C4	C6
R12B	100k ×5 SIP		A2	R58	620R	B4	B6
R12C	100k ×5 SIP		A3	R59	100k	B4	B5
R12D	100k ×5 SIP		C2	R60	100k	B4	C6
R12E	100k ×5 SIP		C1	R61	100k	B4	C6
R13	8k45 1%	B2	C3	R62	100k	B4	C6
R14	10k	B2	C3	R63	100k	B4	B5
R15	10k	B1	B3	R64	1M	B4	A4
R16	22k	B1	B3	R65	10k	A4	A2
R17	100k	B1	B2	R66	100k	B4	C5
R18	220k	B1	B2	R67	100k	A3	A3
R19	47k	B1	B2	R68	75k	B3	A5
R20	47k	B1	C2	R69	100k	A3	A2
R21	620R	B1	C3	RFC1	10μ	A4	A6
R22	10k Variable	B1	B2	SW1	DPDT switch	D4	A6
R23	680k	B1	B3	U1	14C88	A4	
R24	330R	B1	B2	U1A	14C88		A1
R25	9k1	B1	C3	U1B	14C88		A3
R26	33k	B1	C3	U1C	14C88		A3
R27	620R	B1	D1	U1D	14C88		A3
R28	Not installed	B1	D1	U1E	14C88		A4
R29	1M	B1	D3	U2	74HC14	A3	
R30	220R	C1	D1	U2A	74HC14		A1
R31	2k7	C1	D2	U2B	74HC14		A5
R32	10k Variable	C1	D2	U2C	74HC14		A5
R33	10k Variable	C1	D2	U2D	74HC14		A3
R34	100k ×5 SIP	C1		U2E	74HC14		A2
R34A	100k ×5 SIP		D1	U2F	74HC14		A5
R34B	100k ×5 SIP		D1	U3	74HC14	A2	

U3A	74HC14		C2
U3B	74HC14		D1
U3C	74HC14		C2
U3D	74HC14		C2
U3E	74HC14		D1
U3F	74HC14		C3
U4	74HC14	A1	
U4A	74HC14		B3
U4B	74HC14		B3
U4C	74HC14		B3
U4D	74HC14		C2
U4E	74HC14		A4
U4F	74HC14		B3
U5	LMC60321N	A1	
U5A	LMC60321N		B2
U5B	LMC60321N		B2
U5C	LMC60321N		B2
U6	3105	B1	B3
U7	MX589	B1	D3
U8	LMC60321N	C1	
U8A	LMC60321N		D1
U8B	LMC60321N		D2
U8C	LMC60321N		D2
U9	LMC60341C	C1	
U9A	LMC60341C		D1
U9B	LMC60341C		D2
U9C	LMC60341C		D3
U9D	LMC60341C		D3
U9E	LMC60341C		D1
U10	74HC30	D3	C6
U11	74HC259	D2	C5
U12	74HC259	D2	D6
U13	74HC30	D3	C6

U14	74HC14	C1	
U14A	74HC14		A1
U14B	74HC14		D4
U14C	74HC14		D5
U14D	74HC14		D4
U14E	74HC14		A1
U14F	74HC14		C3
U15	74HC10	C2	
U15A	74HC10		D6
U15B	74HC10		C6
U15C	74HC10		D4
U16	74HC00	C3	
U16A	74HC00		D4
U16B	74HC00		C6
U16C	74HC00		C6
U16D	74HC00		D4
U17	74HC138	C3	D6
U18	74HC597	C2	D4
U19	27C512	C4	C6
U20	74HC161	C2	D5
U21	84256 (32k)	C4	B6
	or 628128 (128k)		
	or 628512 (512k)		
U22	DS1215	B2	A6
U23	63C03Y	B2	B5
U24	DS1232	A4	A5
U25	Not installed	B4	B4
U26	Not installed	B4	A5
VR1	LM2936-5	D4	A5
X1	12.288 MHz	B2	B5
X2	4.4336 MHz	B1	B3
X3	2.4576 MHz	C1	D3
X4	32.768 kHz	B2	A6
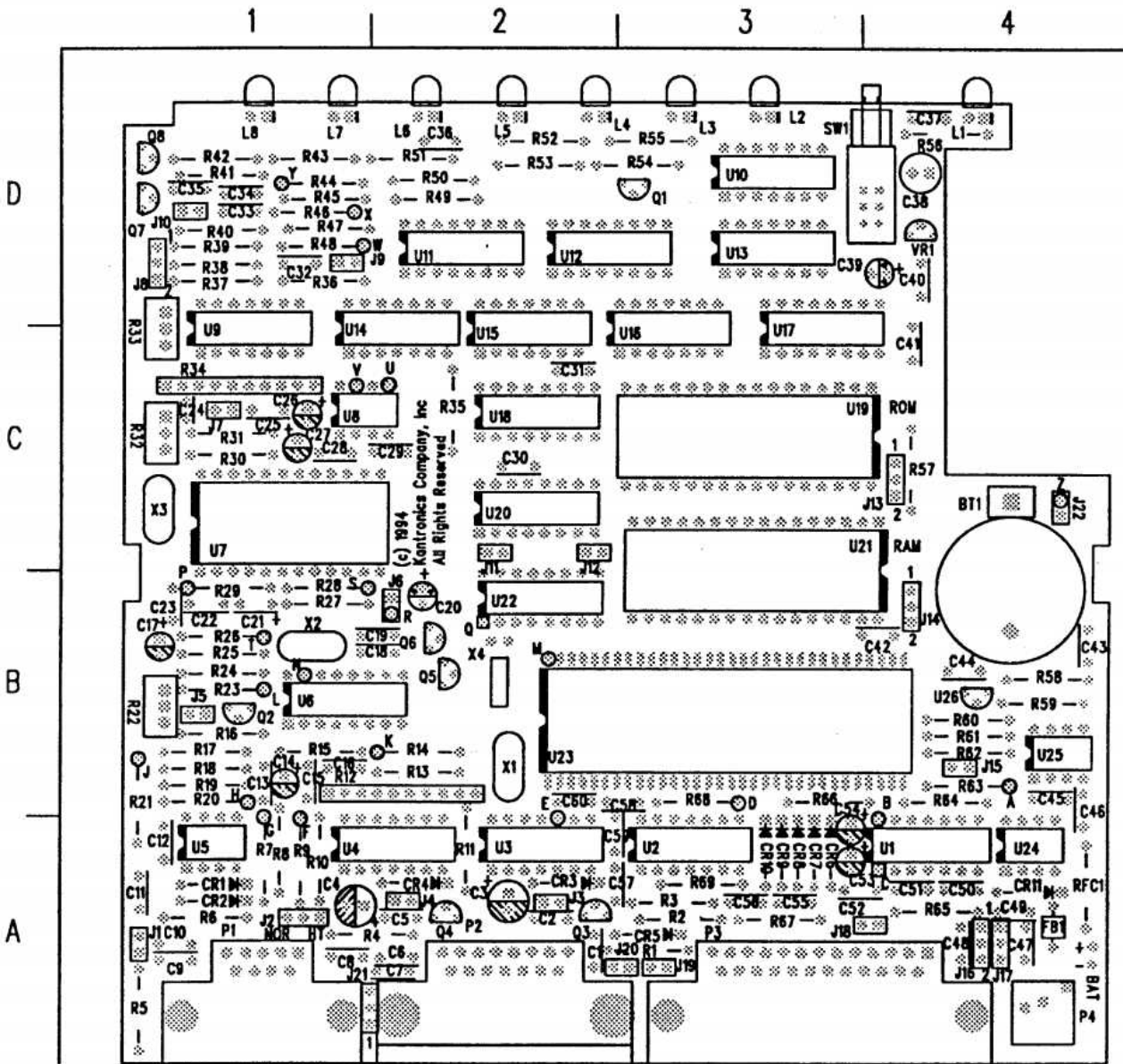
KPC-9612
Parts Layout
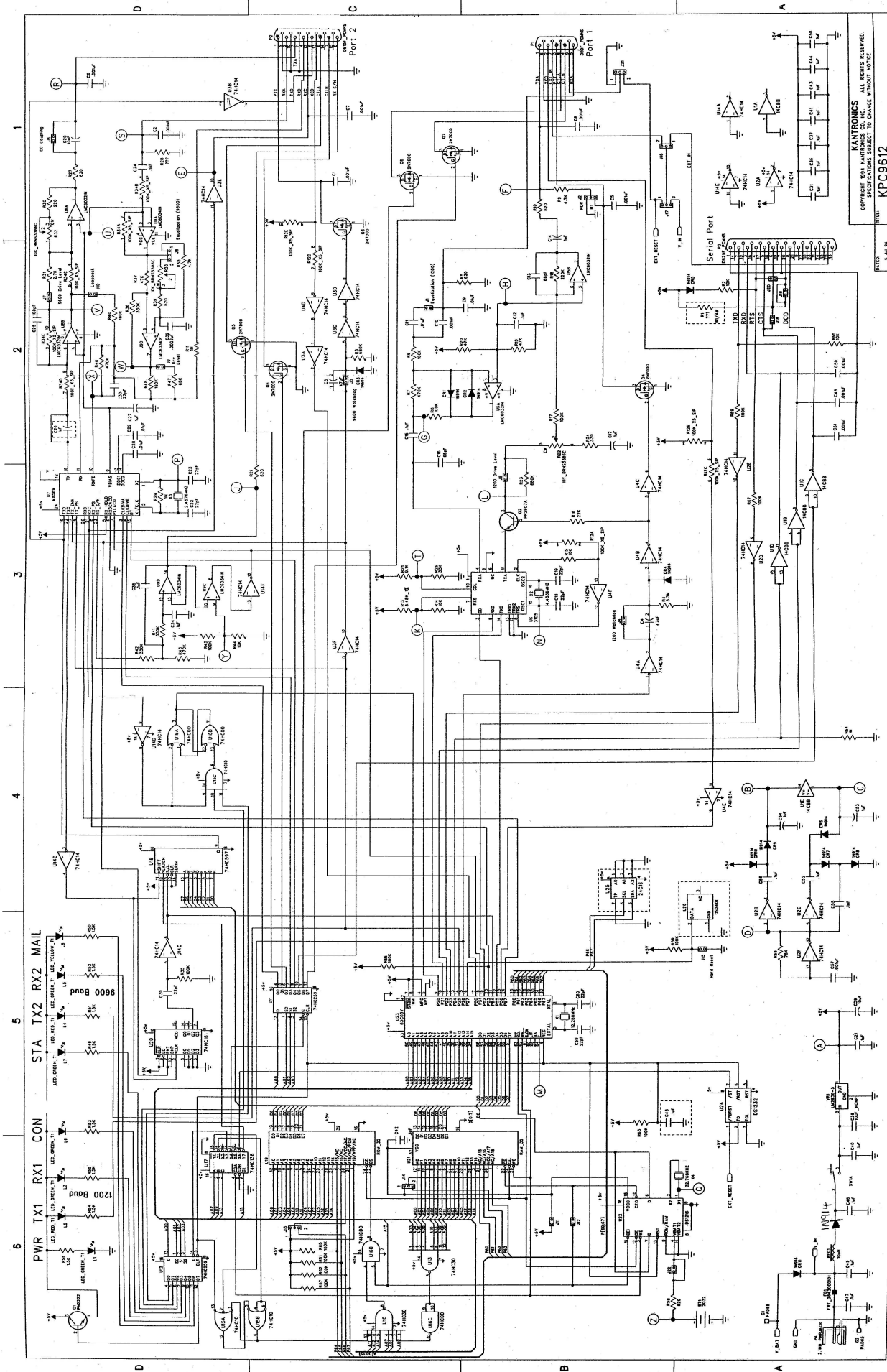
KPC-9612
Manual
Addendum

KPC-9612 Version 6.0 Firmware

with DAMA (slave mode) capability included

Firmware for the KAM Plus, KPC-3, KPC-9612 and KAM Enhancement Board now includes support for the DAMA protocol (slave mode) as used by many amateur radio operators in Germany, Belgium, Luxembourg, the Netherlands, France, Switzerland and other parts of Europe. To the best of our knowledge there are **no DAMA nodes in the US or anywhere else outside of Europe.**

What is DAMA?

Anyone who has used packet radio has, from time to time, experienced problems in communicating through the packet network. Problems vary from place to place and tend to be related to the types of nodes being used, the amount of traffic in a given area, and other factors.

DAMA (Demand Assigned Multiple Access) is a network protocol for regulating packet traffic to eliminate or dramatically reduce collisions among users on the crowded channels available to amateurs in densely-populated northern Europe. It was developed in Germany by NORD><LINK. (References to more information on DAMA are provided in the bibliography section of this addendum.)

In the DAMA system, a "master" node is set up in each local area to control transmissions from all stations connected to the node. By local agreement, users do not connect directly to each other; they connect only through the master.

What does a DAMA system look like?

The DAMA master node requires a computer running specialized DAMA software. TheNetNode (TNN) software, developed by NORD><LINK, is one such specialized program which is used in the computer of a DAMA master along with one TNC with a special EPROM for each radio frequency used on the system. RMNC/FlexNet software is another program which is very popular in Germany. Within each Local Area Network (LAN), end users set themselves up as DAMA "slaves," using specially equipped TNCs which contain firmware (EPROM) that can operate in a DAMA "slave" mode (such as the Kantronics TNCs with DAMA slave mode support). The slaves may use a standard terminal or host mode program or any of a variety of specially written European programs, such as SP, Grafik Packet and ESKAY, some of which make use of the KISS Mode feature of the TNC.

To use the DAMA system, the user connects to the DAMA master with a normal connect frame. When the master responds to the connect frame, the TNC is automatically placed into DAMA slave mode. The DAMA master polls each slave within the LAN in a "round-robin" fashion (somewhat like the token passing method) and the slave TNCs transmit packets when the master has granted permission to do so.

The slave TNCs continue to he polled with priority among the slaves assigned according to the number of times each responds with information frames (as opposed to IT frames - i.e., no data to send). Priority is dynamically assigned so that those stations that are sending information are polled more frequently than idle stations. However, once an "idle" station responds with information, its priority is upgraded.

Communication over the wider area is handled between the DAMA master nodes which are connected to each other using the standard NET/ROM™ type protocol. For the DAMA system to work effectively, each slave associates with only one master node and connects only to that master. If an end user is connected to more than one master, each master will poll the slave TNC according to its polling schedule. When polled, the slave TNC will transmit all frames it has available to whichever master polls it. This would increase the probability of collisions with other users, thus defeating the purpose of the DAMA system.

Why DAMA in Kantronics units?

Kantronics units have long been popular TNCs in Europe. As the European channels have become more and more crowded and more and more DAMA systems have been established, it has become a necessity for TNCs to be equipped with the DAMA slave protocol in order to use the local networks. DAMA was added to our TNCs to enable our European customers to continue to use and enjoy their Kantronics TNCs.

How is DAMA implemented in Kantronics TNCs?

Only the DAMA slave mode has been implemented. Two commands have been added to the firmware to enable users who need to work within a DAMA system to do so. All other commands and operations remain unchanged.

New Commands:

- **DAMA ON|OFF**   {default OFF}

When ON the TNC can operate as a DAMA slave station once connection is established with a DAMA master station. When OFF the TNC operates in standard CSMA (Carrier Sense Multiple Access) mode.

- **DAMACHCK n**   (n = 0 to 225)   {default 18}

This command sets a DAMA timeout timer in 10-second increments. If the TNC is connected to a DAMA station (that is, operating in DAMA slave mode) and the master does not poll the TNC for data before the DAMACHCK timer expires, the TNC will revert to CSMA operation and disconnect from the DAMA master. This command was added to allow the user to regain CSMA connect capability in the event the DAMA master fails to poll because of a node failure - lightning strike, power outage, etc.

KPC-9612 – Additional commands in V6.0

- **BLt** *n* **E**very|**A**fter hh:mm:ss [START hh:mm:ss]   (*n* = 1 – 4)
  {Default EVERY 00:00:00/EVERY 00:00:00}

This command sets the interval between beacons for the associated string. *n* identifies which LT is used (1–4). If **E**very is specified, the LT will be transmitted at the interval specified by the hh:mm:ss parameter. This is set in hours:minutes:seconds, and all characters must be specified. The values before the / apply to the HF port and the values after the / apply to the VHF port. If the optional key word START is given followed by a time (in 24 hour format), the beacons will not be transmitted until the specified time. The beacon will then be transmitted according to the setting of the **E**very parameter. (NOTE: If the current time is past the start time, the beacon will start at the next scheduled interval based on the start time.)

If AFTER is specified, the beacon will be transmitted once after no activity is detected on the channel for hh:mm:ss time. Selecting AFTER does not allow the optional START parameter.

For example, setting **BL**t3 **E**very 00:15:00 START 03:30:00 would cause the third string (LT 3) to be transmitted every 15 minutes, with the first transmission each day occurring at 03:30:00.

- **BUFfers**   MIKES DEBUG AID

- **CONPErm ON|OFF**   {Default OFF}

Forces connection present stream to be permanent.

- **DAMa ON|OFF**   {Default OFF}

DAMA Slave protocol used when ON and connected to DAMA Master.

- **DAMAChck** *n*   (*n* =)   {Default 18 (180 sec}

No activity time before protocol checks on DAMA link (10 sec).

- **GPShead *n*** *string*   (*n* = 1 – 4) (*string* up to 8 characters) {Default blank}

This command determines which GPS NMEA sentences will be stored in the LT buffers. *n* determines which which buffer will be used to store the data (1 – 4) and *string* is a NMEA sentence header.

When the string is received, the KAM Plus will store the up to 128 characters in the associated LT.

- **GPSInit** *string*   Initial text sent to terminal in GPS Mode (string up to 128 characters)
  {Default blank}

This command establishes a string which will be sent to the attached GPS unit upon power-up. This may be useful to configure your GPS unit to provide only the information you require. Some GPS units may require more then one sentence; consult your GPS unit manual. To send more than one, enter a [Ctrl-N] at the end of each sentence and the KAM Plus will send a CR/LF sequence to the GPS unit.

- **LT *n***   (*n* = 1 − 4) (*text* up to 128 characters) {Default blank}

This command fills the specified Locate Text (LT) buffer with text. n specifies which buffer to use (1 − 4). If GPSHEAD is set for this buffer and if the INTFACE command is set to GPS, the buffer contents will be updated automatically by the GPS data.

- **LTP *n*** dest [via call1[,call2,...]]   (*n* = 1 − 4)   {Default GPS/GPS}

This command sets the destination callsign and the digipeaters used to transmit the LT strings. *n* specifies which string (1 − 4). The destination callsign defaults to GPS; however, you may want to change it to APRS, LOCATE, POSIT or some other destination. Up to 8 digipeater callsigns may be specified. The values before the / apply to the HF port and the values after the / apply to the VHF port.

- **MYD**rop   0/1   KISS port address

- **NE**tcall *call*   Callsign used for node access

- **NETA**lias *call*   Alternate callsign used for node access

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- **NETB**uffers *n*   Number of data buffers available to network

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- **NETCI**rcs *n*   Maximum number of circuits

- **NETD**ests *n*   Maximum number of destination entries

- **NETL**inks *n*   Maximum number of level 2 connects to network

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- **NETR**oute *n*   Maximum number of routing entries

- **NETU**sers *n/n*   Maximum number of network uplinks and downlinks

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- **PMode** CMD | CONVERS | TRANS   {Default CMD}

The **PM**ode command controls the mode your KPC-9612 will be in when it is first powered up or reset. When set to CMD, the KPC-9612 will produce a sign-on message followed by the command prompt (`cmd:`). When set to CONV, the unit will be in Convers Mode. Setting PM TRANS sets the KPC-9612 in Transparent Mode. Exiting Transparent Mode with three [Ctrl-C]s will set the **PM**ode command to the default value (CMD).

- **RESSP**time   Not applicable in V6.0

- **RP**rint *text*   Sends *text* to RS232 port