

The Automatic Packet/ Position Reporting System (APRS®) is a software program and registered trademark of Bob Bruninga, WB4APR. He has made packet communications much more exciting than before. This program allows you to track mobile stations on a map which you recall on a computer screen. Imagine seeing one mobile station moving on the map which can be scaled from 0.5 to 2000 miles. You also may be tracked on the computer screen of another station.

Stations to be tracked must transmit beacons at certain intervals. To track other stations, you usually need a computer running the APRS, a transceiver, and a TNC. To have them track you, you also need a GPS receiver. It receives signals from the satellites to inform you of your current geographical position. GPS stands for Global Positioning System. The APRS interprets the National Marine Electronics Association (NMEA) data strings coming from the GPS receiver. For further information, consult Internet Web pages relating to the APRS. On one of the Internet search engines, you may use "APRS" or "Packet Radio" as a key word to find those Web pages.



This transceiver includes a TNC and a program for dealing with data formats supported by the APRS. That is, you need no other equipment to transmit, receive, or display APRS packets.

You do not need even a GPS receiver if you enter position data manually to transmit. For hams who want to fully enjoy APRS operations, this transceiver has connection ports with a personal computer and a GPS receiver. This manual, however, does not describe APRS operations which require a personal computer.

Using this transceiver, you can transmit a station icon, position data, position comment, and status text. With a GPS receiver, you can also transmit moving speed, moving direction, and altitude data. From any type of station you will receive information listed below:

Station icon	Position data/ Grid square locator	Position comment
Status text	Distance from station	Direction of station

Depending on the types of stations, you will also receive the following information:

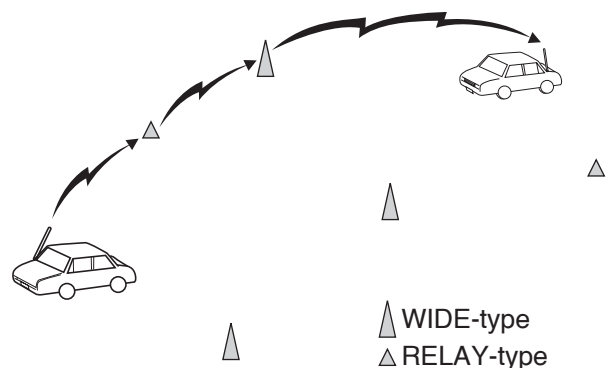
Mobile station	Moving direction/ Moving speed
Fixed station	Transmit power/ Height of antenna/ Antenna gain/ Antenna directivity
Fixed station (using compressed APRS data format)	Transmit range/ Altitude
Weather station	Wind direction/ Wind speed/ Temperature/ Rainfall in last hour

PACKET PATH AND DIGIPEATER

A packet path specifies how APRS packets should be transferred via one or more repeaters. A repeater, which is used for packet transfer, is commonly called a digipeater. This came from a "digital repeater". A digipeater is usually located on a mountain top or high building. Unlike a voice repeater, it operates on a simplex frequency. Each volunteer who installs a digipeater programs it either as a WIDE or RELAY type. Generally a WIDE transmits packets over much greater distances than a RELAY.

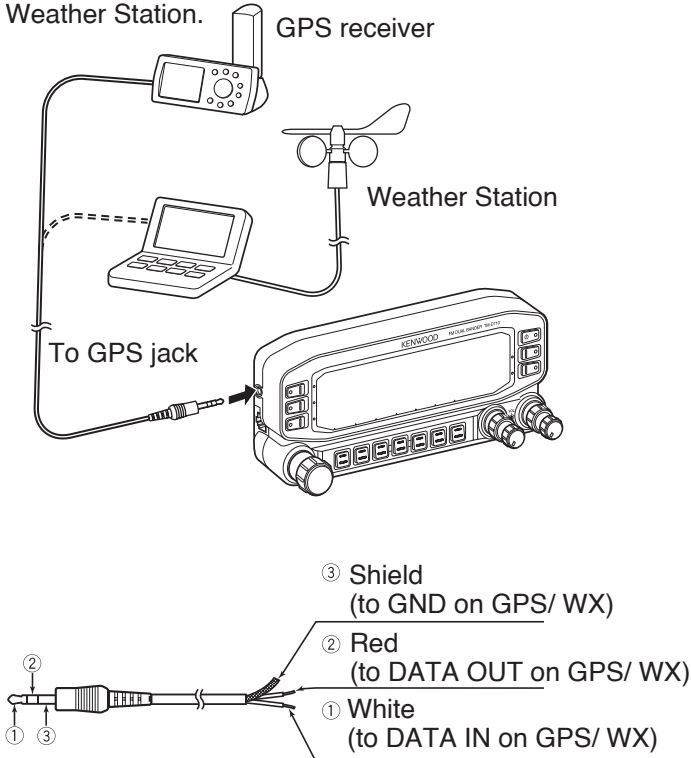
In any given area, there should be only one WIDE not to cause extra traffic or collisions on frequencies. A WIDE is capable of transferring packets from and to adjacent WIDEs. Like a WIDE, there should be only one RELAY in a given area; that area is usually much smaller than a WIDE. So, transmit packets to a RELAY when you cannot directly reach any WIDE. The RELAY then will transfer the packets to any accessible WIDE.

On this transceiver, you can edit a packet path using a maximum of 79 alphanumeric characters. The default is "RELAY,WIDE" that is one of the common settings. With this setting, packets will be transferred to a RELAY first, then to a WIDE.



CONNECTING WITH A GPS RECEIVER OR WEATHER STATION

The GPS jack on this transceiver accepts a 2.5 mm (1/10") 3-conductor plug. If necessary, use the supplied cable to modify the cable end of your GPS receiver or Weather Station.



- In order to use the connected GPS receiver, access Menu 602 (GPS PORT - INPUT) to select "GPS", "WEATHER ((Davis))" or "WEATHER (PeetBros.)".

ADJUSTING THE INTERNAL CLOCK

This transceiver has a clock to manage information on when APRS packets are received. Use Menu Set-up to correct the current time, date, and if necessary the UTC offset; UTC stands for Universal Time Coordinated.

Note: The battery for the clock backup is built into the unit. When the power source is connected, the battery begins to charge. It takes approximately 12 hours to become fully charged.

■ Setting Date

- 1 Enter Menu mode and access Menu 524.
 - The first 2 digits blink.



- 2 Rotate the **Tuning** control to enter the current month (K type) or day, then press the **Tuning** control.
 - The next 2 digits blink.
- 3 Rotate the **Tuning** control to enter the current day (K type) or month, then press the **Tuning** control.
 - The last 2 digits blink.
- 4 Rotate the **Tuning** control to enter the current year, then press the **Tuning** control.

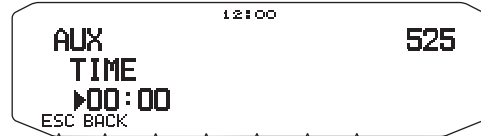
- 5 Press **[ESC]** to exit Menu mode.

Note:

- ◆ When used at room temperature (25°C), the error of the internal clock in a month is within one minute.
- ◆ The internal clock is effective until December 31, 2099.

■ Setting Time

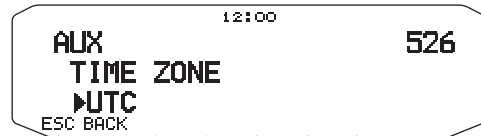
- 1 Enter Menu mode and access Menu 525.
 - The first 2 digits blink.



- 2 Rotate the **Tuning** control to enter the current hour, then press the **Tuning** control.
 - To set 1 o'clock PM for example, select 13.
 - The next 2 digits blink.
- 3 Rotate the **Tuning** control to enter the current minute, then press the **Tuning** control.
- 4 Press **[ESC]** to exit Menu mode.

■ Setting UTC Offset

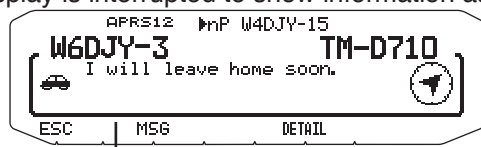
- 1 Enter Menu mode and access Menu 526.



- 2 Rotate the **Tuning** control to select the appropriate UTC offset, then press the **Tuning** control.
 - The selectable range is from +12:00 to -12:00 in steps of 15 minutes.
- 3 Press **[ESC]** to exit Menu mode.

RECEIVING APRS DATA

Each time a new APRS packet is received, the frequency display is interrupted to show information as below:



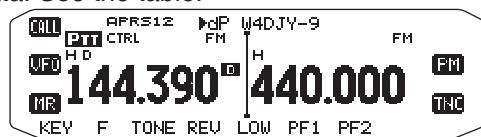
Position comment (or status text)

- The received APRS packet may include information on an object such as a hurricane or tornado. In this case, the name of the object appears instead of a call sign.
- Press **[DETAIL]** to access further information.
- To restore the frequency display, press **[ESC]** or just wait for approximately 10 seconds.

Note:

- ◆ When you receive an APRS packet including an “EMERGENCY” comment, a different format of display from the above will appear and a different beep will sound.
- ◆ When you receive an APRS position packet that you transmitted, the frequency display is not interrupted. “MY POSITION” will appear on the display. This could happen when one or more digipeaters are used. If you receive a message that you transmitted, “MY MESSAGE” will appear.

If a received packet does not include new (or proper) APRS data, the frequency display is not interrupted. An indicator such as “dP” appears depending on the types of data. See the table.



Indicator	Meaning
dP	Duplicate position comment
nP	New position data
oP	Other position
>P	Beyond position limit
aM	ACK message
dM	Duplicate message data
nM	New message data
oM	To other stations message data
rM	Rejected Message
dS	Duplicate status text
nS	New status
Q? ¹	Request for sending information
??	Packet that cannot be decoded
dD	Duplicated DX cluster data
nD	New DX cluster data

¹ The transceiver automatically transmits the appropriate information in approximately 2 minutes after receiving a request.

Note:

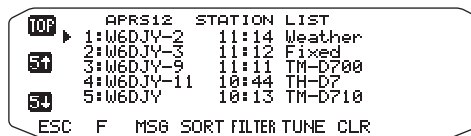
- ◆ The APRS programs for PCs have entry fields for a position comment and status text. The data entered to these two fields are transmitted as separate packets. This transceiver, however, includes both of a position comment and status text in one packet to transmit.
- ◆ This transceiver beeps each time it receives any type of APRS packet. You may access Menu 624 (AUDIO - RX BEEP) to change this setting. The default is “ALL”.

ACCESSING RECEIVED APRS DATA

This transceiver is capable of receiving and storing APRS data received from up to 100 stations in memory. You can easily recall the information of the desired station.

1 Press **[KEY]**, **[LIST]**.

- The list of stations appears.
- The numbers beside the call signs indicate the order in which data is received. The data received last is assigned 1.



[TOP]: Displays the list of the fast 5 stations.

[5↑]: Displays the list of the previous 5 stations.

[5↓]: Displays the list of the next 5 stations.

[ESC]: Restores the frequency display.

[SORT]: To select the sort function

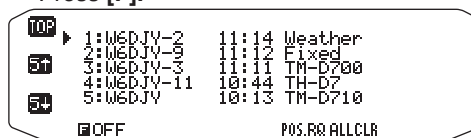
[FILTER]: To select the filter function

[MSG]: Allows message entry to the current station.

[TUNE]: Set the QSY frequency (APRS only).

[CLR]: Deletes the current station.

- Press **[F]**.



[POS.RQ]: Request position.

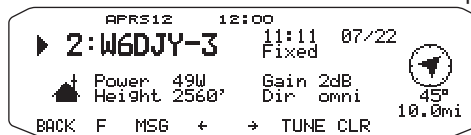
[ALLCLR]: Deletes all stations.

- When you press **[ALLCLR]**, “CLEAR ALL?” appears with the message. Press the Tuning Control to clear all.

2 Rotate the **Tuning** control to select the desired station using the cursor (⬅).

3 Press the **Tuning** control.

- The information of the selected station appears.



[BACK]: Restores the list of stations.

[MSG]: Allows message entry to the current station.

[←]: Displays the previous page.

[→]: Displays the next page.

[TUNE]: Set the QSY frequency (APRS only).

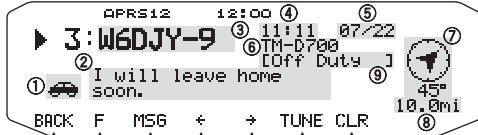
[CLR]: Deletes the entire information of the current station.

Note:

- ◆ When data from the 101st station is received, the oldest data in memory is replaced by that data.
- ◆ Each time a new APRS packet is received from the same station, the old data from that station (in memory) is replaced by new data.

DISPLAY EXAMPLE

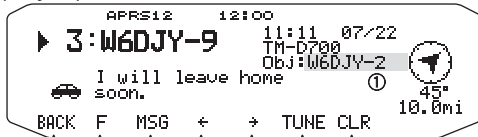
Page 1



- ①: Station icon
- ②: Status text
- ③: Call sign
- ④: Date
- ⑤: Time (packet received)
- ⑥: Situation
- ⑦: Direction of station
- ⑧: Distance from station (mile or km)
- ⑨: Position comment ¹

¹ For packets received from Mic-encoder stations including TM-D710s, TM-D700s and TH-D7s, position comments are displayed in the fourth line.

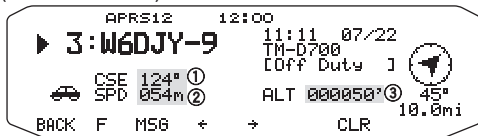
(Object)



- ①: Call sign

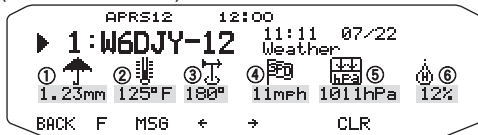
Page 2

(Mobile station)



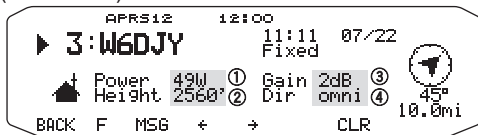
- ①: Moving direction
- ②: Moving speed (m: Mile/hour or k: km/hour)
- ③: Altitude (' :Feet or M: Meter)

(Weather station)



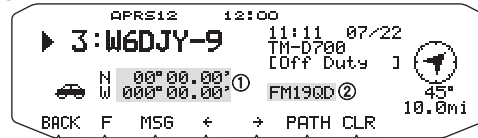
- ①: Rainfall (" or mm)
- ②: Air temperature
- ③: Wind direction
- ④: Wind velocity (mph: Mile/hour or kph: km/hour)
- ⑤: Atmospheric pressure
- ⑥: Humidity

(Fix station)

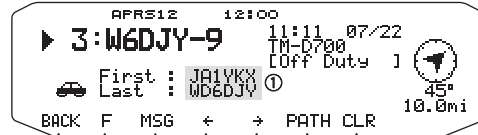


- ①: Transmit power
- ②: Height of antenna (elevation) (' : Feet or M: Meter)
- ③: Antenna gain
- ④: Antenna directivity omni : Omnidirectional

Page 3



- ①: Position data
 - ②: Grid square locator
- (Packet path)



- ①: Call sign

This transceiver is capable of displaying the following icons as station IDs.

<APRS>



<NAVITRA>



Some icons may appear with overlay characters as below if the received icon data includes them.



The following icons show the directions of stations relative to your position. For example, "↗" indicates the other station is located at the northeast relative to your position.



0.0 to 9999 miles (or km) are shown for distances from other stations. "xxxxmi" (or "xxxxkm") is shown for distances over 9999 miles (or km). If you do not change the position data in Menu 626 (DISPLAY UNIT 1 - SPEED, DISTANCE) from the default, "----mi" (or "----km") is shown.

The default units for distance and temperature differ depending on market versions; mile/ °F for the U.S.A./ Canada version, and kilometer/ °C for the other market versions. If necessary, access Menu 626 (DISPLAY UNIT 1 - SPEED, DISTANCE) and/or Menu 626 (DISPLAY UNIT 1 - TEMPERATURE) to change the setting(s).

Note: Some stations transmit APRS packets through TNCs connected to GPS receivers. If you receive packets from those stations, "GOOD" (satellites tracked) or "LAST" (satellites not tracked) will be shown as the situation, with GLL, GGA, or RMC which designates \$GPGLL, \$GPGGA, or \$GPRMC format.

SORT FUNCTION

This function allows you to sort the station list according to the call sign, date time, or distance.

1 Display the station list.

```

TOP  APRS12 STATION LIST
  1:W4DJV-2  11:14 Weather
  2:W6DJV   11:12 Fixed
  3:W4DJV-9  11:11 TM-D700
  4:W6DJV-11 10:44 TH-D7
  5:W6DJV-3  10:13 TM-D710
ESC F MSG SORT FILTER TUNE CLR
  
```

2 Press [SORT].

- The sort type list appears on the display.

```

<SORT> APRS12 STATION LIST
  BY CALL SIGN
  BY DATE/TIME
  BY DISTANCE
ESC
  
```

3 Select a sort type.

- “SORTING” appears on the display and sorting begins.

```

APRS12 STATION LIST
SORTING!
ESC
  
```

CALLSIGN	All call signs are compared and arranged in ascending order.
DATE/TIME	All received dates and times are compared and arranged in descending order, with the last received message listed first.
DISTANCE	The distance between the other station and My station when selecting the sorting method is calculated, then compared and arranged in ascending order, with the closest station listed first.

4 The newly sorted station list appears on the display.

```

TOP  APRS12 STATION LIST
  1:W6DJV-3  10:13 TM-D710
  2:W6DJV-11 10:44 TH-D7
  3:W4DJV-9  11:11 TM-D700
  4:W6DJV   11:12 Fixed
  5:W4DJV-2  11:14 Weather
ESC F MSG SORT FILTER TUNE CLR
  
```

- After sorting, when new station data is received, it is added to the station list without resorting.

FILTER FUNCTION

This function allows you to select only the specified types of data from the station list.

1 Display the station list.

```

TOP  APRS12 STATION LIST
  1:W4DJV-2  11:14 Weather
  2:W6DJV   11:12 Fixed
  3:W4DJV-9  11:11 TM-D700
  4:W6DJV-11 10:44 TH-D7
  5:W6DJV-3  10:13 TM-D710
ESC F MSG SORT FILTER TUNE CLR
  
```

2 Press [FILTER].

- The filter type list appears on the display.

```

<FILTER> APRS12 STATION LIST
  BY ALL (OFF)
  BY DIGIPEATER
  BY WEATHER
  BY MOBILE
  BY OBJECT
  BY KENWOOD
  BY NAVITRA
  BY FREQUENCY(QSY)
  BY OTHERS
ESC
  
```

3 Select a filter type.

- “FILTERING” appears on the display and filtering begins.

```

APRS12 STATION LIST
FILTERING!
ESC
  
```

DIGIPEATER	All icons are searched and those for digipeaters are displayed.
WEATHER	All icons are searched and those for the weather bureau are displayed.
MOBILE	All icons are searched and those for mobile bureaus are displayed.
OBJECT	DTI information is verified and only object bureaus are displayed.
KENWOOD	DTI information is verified and only Kenwood TH-D7, TM-D700, and TM-D710 bureaus are displayed.
NAVITRA	Received data is verified and only Navitra bureaus are displayed, starting from \$PNTS.
FREQUENCY (QSY)	The status list is searched and only bureaus containing frequency (QSY) information are displayed.
OTHERS	Bureaus other than those listed above are displayed.
ALL(OFF)	The filtering function is cancelled.

4 The newly filtered station list appears on the display.

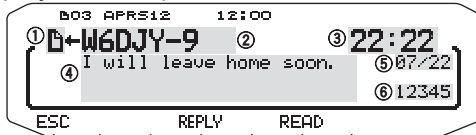
```

TOP  APRS12 STATION LIST
  1:W6DJV-2  11:12 Weather 144.010
  2:W6DJV-5  10:44 Weather 144.020
  3:W6DJV-7  11:11 Weather 144.030
  4:W6DJV   11:14 Weather 144.100
  5:W6DJV-8  10:13 Weather 144.150
ESC F MSG SORT FILTER TUNE CLR
  
```

- After the filter function is turned ON, received data is added to the list but will not be displayed if it matches the filter type selected.
- For example, with the station list displayed and the filter selection set to “WEATHER”, all bureaus not relating to weather are no longer displayed. If mobile station data is received at this time, the new data will also not be displayed as long as the weather filter is active.
- DTI (Data Type Identifier) is a 1 byte code which shows the packet data classification.

RECEIVING A MESSAGE

Each time a proper message is received, the frequency display is interrupted to show information as below:

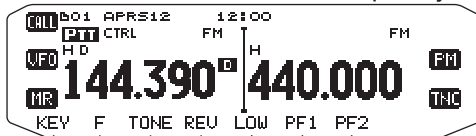


- ①: Indicator
- ②: Call sign (TX)
- ③: Receive time
- ④: Message
- ⑤: TX/RX date
- ⑥: Line number

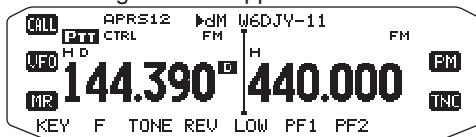
- The display shows up to 67 characters of the message.
- "01" will appear to indicate the number of messages not yet read.
- The following indicators appear depending on the types of received messages:

Indicator	Meaning
	Message addressed to you
B	Bulletin
!	Report by the National Weather Service
*	Reception acknowledgment (or rejection) to your message
G	Message group

To restore the frequency display after reading the message, press the **Tuning** control "01" will disappear. If you do not read the message at this time, press **[ESC]**. "01" will remain on the restored frequency display.



- The number increments if you press **[ESC]** for newly received messages. Checking them with the List function causes the number to decrement. If "01" was shown, both the number and message icon disappear.



When a duplicate message from the same station is received, an error beep sounds; however, an acknowledgment is returned. "dM" and a call sign appear on the display.

- When a message to other stations is received, "oM" appears.

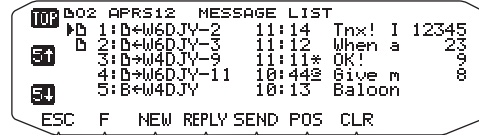
Note:

- ◆ This transceiver allows you to receive a message also when the SSID does not match. However, it will not return a reception acknowledgment.
- ◆ The dedicated memory is used for storing both incoming and outgoing messages. Receiving a new message when the memory is full causes the oldest message to be deleted. A message not yet transmitted 5 times may be unexpectedly deleted. If the oldest message has not been accessed using the List function when memory is full, a new message does not replace the oldest message. This transceiver will return a reject command and display "rM".
- ◆ This transceiver beeps each time it receives any type of APRS packet. You may access Menu 624 (SOUND-RX BEEP) to change this setting. The default is "ALL".

ENTERING A MESSAGE

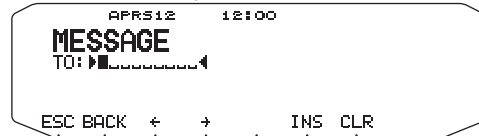
To transmit a message, first enter the call sign of the target station. To transmit a bulletin, enter "BLN#" instead; where # must be 0 to 9 or A to Z. When the length of your bulletin exceeds 64 digits, you may transmit more than one packet to send the entire bulletin. Use # to indicate the sequence of the bulletin portions. For example, enter "BLN0" (or "BLNA") to send the first packet, then "BLN1" (or "BLNB") to send the second packet.

- 1 Press **[KEY]**, **[MSG]**.



- 2 Press **[NEW]** or **[REPLY]**.

- The display for entering a call sign appears; the first digit blinks. (When you press **[REPLY]**, not necessarily)



[BACK]: Cancels entry of a call sign.

[←]: Causes the cursor to move backward.

[INS]: Inserts the currently selected character.

[CLR]: Deletes the digit at which the cursor is blinking.

- 3 Rotate the **Tuning** control to select the first digit.

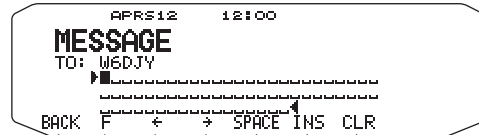
- You can enter 0 to 9, A to Z, and -.

- 4 Press **[→]**.

- 5 The cursor moves to the next digit.

- 6 Rotate the **Tuning** control to complete the setting.

- The display for entering a message appears; the first digit blinks.



[SPACE]: Inserts a space

- To copy a message, enter message compilation mode, press **[F]** to enter function mode, then press **[PASTE1]**, **[PASTE2]**, **[PASTE3]**, or **[PASTE4]** to copy the message that has been set up for each key.



[ALLCLR]: Clears all digits and backs the cursor to the first digit.

- 7 Rotate the **Tuning** control to select the first digit.

- You can enter alphanumeric characters plus special ASCII characters.

- 8 Press **[→]**.

- The cursor moves to the next digit.

- 9 Repeat steps 7 and 8 to enter up to 67 digits.

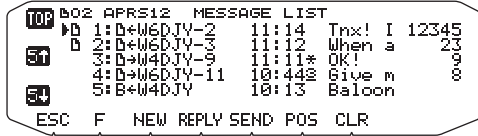
- 10 Press the **Tuning** control to complete the setting.

The keypad on the microphone also is available to enter alphanumeric characters in steps 3 and 7.

ACCESSING RECEIVED APRS MESSAGES

This transceiver is capable of storing a maximum of 100 messages in memory. You can easily access one of those.

1 Press [KEY], [MSG].



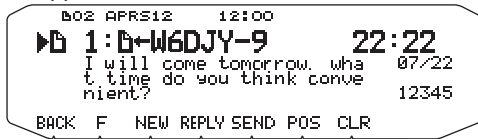
- The newer message the smaller number assigned; the latest message is assigned 1.

[POS]: Displays the latest position data of the current station, if stored in memory.

2 Rotate the **Tuning** control to select the desired message using the cursor (s).

3 Press the **Tuning** control.

- If you select an incoming message, the following display appears:



[BACK]: Restores the list of messages.

[NEW]: Create a new message.

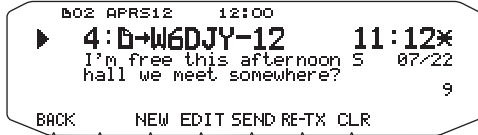
[REPLY]: Responds to the party from whom you received. Enters into message setting.

[SEND]: Messages in the list that have not been sent are transmitted.

[POS]: The position data of the transmitting station is displayed (if the station data is available).

[CLR]: Deletes the current message.

- If you select one of your outgoing messages, the following display appears:



[BACK]: Restores the list of messages.

[NEW]: Create a new message.

[EDIT]: Responds to the party from whom you received. Enters into message setting.

[SEND]: All messages which can be transmitted will be sent 1 time.

[RE-TX]: When pressed for a message assigned a period (.), resets the retry counter to 5 more transmissions.

[CLR]: Cancels further transmissions of the current message.

The table below shows the meanings of the symbols to be shown in step 2.



Not-yet-read indicator

Time (message received)

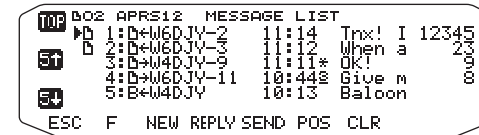
Sequence

① Meaning	
b	Message addressed to you
B	Bulletin
!	Report by the National Weather Service
② RX or TX?	
←	Received message (or bulletin)
→	A message (or bulletin) for transmitting
③ Status	
n ¹	"n" indicates the remaining number of times for transmitting the message (or bulletin).
* ¹	A message for which a reception acknowledgment was returned
. ¹	A message (or bulletin) transmitted 5 times (For a message, a reception acknowledgment was not returned.)

¹ These indicators appear for outgoing messages (or bulletins).

TRANSMITTING A MESSAGE

When you press **[SEND]** on the "MESSAGE LIST" display, the remaining messages on the Message List will be transmitted.



After entering a message on the message display, pressing the **Tuning** Control will cause it to transmit every minute.



BASIC SETTING

Enter Menu mode and access Menu 600.



■ My Call Sign <MY CALLSIGN>

Program your call sign using a maximum of 9 alphanumeric characters. You may include SSID characters in the string. Unless you program a call sign, you cannot transmit APRS packets.

- 1 Select MY CALLSIGN.
 - The display for entering a call sign appears; the first digit blinks. The default is "NOCALL".
- 2 Rotate the **Tuning** control to select the first digit.
 - You can enter 0 to 9, A to Z, and –.
- 3 Press the [→].
 - The cursor moves to the next digit.
- 4 Repeat steps 2 and 3 to enter up to 9 digits.

■ Beacon Type <BEACON TYPE>

[APRS]: Select to APRS beacon.

[NAVITRA]: Select to NAVITRA beacon.

SETTING INTERNAL TNC

Enter Menu mode and access Menu 601.



■ Data Band <DATA BAND>

On this transceiver you can select data band for APRS mode independent of the selection for Packet mode. Select band A or B as the data band for receiving or transmitting APRS packets. The default is band A. "D" indicates the current data band.

Note: In Menu 601, the selection switches among A-BAND, B-BAND, TX:A-BAND RX:B-BAND, and RX:A-BAND TX:B-BAND. Select TX:A-BAND RX:B-BAND or RX:A-BAND TX:B-BAND if APRS networks which use two separate frequencies become available in the future.

■ Packet Transfer Rate <DATA SPEED>

The default APRS packet transfer rate set on the built-in TNC is 1200 bps which is the standard among the current APRS networks. If APRS networks which use 9600 bps transfer rate become available in the future, select "9600 bps"

■ DCD Sense <DCD SENSE>

You can also select the method for inhibiting the built-in TNC from transmitting. Select one of the two methods. The default is "D or Rxd Band".

[D or Rxd Band]: The TNC does not transmit when signals are present on the data band (D) or RX data band (RxD)

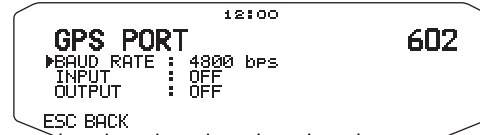
[Both Band]: The TNC does not transmit when signals are present on band A or B.

■ TX delay <TX DELAY>

This function allows you to set a transmission delay time between transmitting the APRS data and transmitting a flag code prior to the APRS data. When the other station has activated their Save Mode, the selected delay time is increased.

SETTING GPS PORT

Enter Menu mode and access Menu 602



■ Baud Rate <BAUD RATE>

Set the communication speed of the external GPS or other equipment that is connected to the GPS terminal. The speed is set to 4800 bps (NMEA)/ 9600 bps (IPS format: SONY) when a GPS receiver is connected.

- It does not correspond to the Gamin-TXT format.

■ Input Type <INPUT>

[OFF]: When using the GPS receiver

[GPS]: When not using the GPS receiver

[WEATHER (Davis)]: When using the weather observation device (Davis).

- Operation verification model (currently July 2007)
Vantage PRO2

[WEATHER (PeetBros.)]: When using the weather observation device (PeetBros.).

- Operation verification model (currently July 2007)
ULTIMETER® 2100 (Packet mode)

■ Differential Information Output <OUTPUT>

When set to ON, can send the differential information from the GPS terminal to the GPS receiver.

SETTING WAY POINT

Enter Menu mode and access Menu 603.

```

12:00
WAYPOINT 603
▶FORMAT : NMEA
NAME : 6-CHAR
OUTPUT : ALL
ESC BACK
  
```

■ Way Point Format <FORMAT>

Select the type of Way point Format that is sent.

[NMEA]: The data which is output from the GPS terminal using the NMEA-0183 "\$GPWPL" format.

[MAGELLAN]: The data which is output from the GPS terminal using the "\$PMGNWPL" format.

[KENWOOD]: The data which is output from the GPS terminal using the "\$PKWDWPL" format.

■ Way Point Name <NAME>

Select the length of the Way Point Name. The length can be set as [6-CHAR], [7-CHAR], [8-CHAR] or [9-CHAR].

■ Way Point Output <OUTPUT>

[ALL]: All Way point information is sent.

[LOCAL]: If the position limit is ON, all the data within the position limit is sent. If the position limit is OFF, all Way point data is sent.

[FILTERED]: Information that is permitted using the packet filter is output as Way point information.

COM PORT ON/OFF

Enter Menu mode and access Menu 604.

```

12:00
COM PORT 604
▶OUTPUT : OFF
ESC BACK
  
```

■ Output <OUTPUT>

This function outputs data from the COM port after receiving packet and TNC command data from the APRS data communications. Use this function to verify the received data from the transceiver.

PROGRAMMING POSITION DATA

Enter Menu mode and access Menu 605.

```

12:00
MY POSITION 605
▶*1 NAME :
LATITUDE : N 00°00.00'
LONGITUDE : W 000°00.00'
JJBAAA
ESC BACK USE
  
```

■ Select Position channel

This transceiver has 5 memory channels for storing position data. Program latitude and longitude data for up to 5 locations from which you will often transmit APRS packets. You can also name the 5 memory channels.

■ Name Entry <NAME>

You can enter alphanumeric characters plus special ASCII characters (up to 8 digits).

■ Latitude Entry <LATITUDE>

The north/ south latitude is entered.

■ Longitude Entry <LONGITUDE>

The east/ west longitude is entered.

Note: When selecting GPS in Menu 602 (GPS PORT), the position information where it is set is not used.

SETTING BEACON INFORMATION

Enter Menu mode and access Menu 606.

```

12:00
BEACON INFORMATION 606
▶SPEED : ON
ALTITUDE : ON
POSITION AMBIGUITY : 2-DIGIT
ESC BACK
  
```

■ Speed Information <SPEED>

Select whether or not to transmit speed information when using APRS data communications.

■ Altitude Information <ALTITUDE>

Select whether or not to transmit altitude information when using APRS data communications.

- When the beacon type is "NAVITRA", this information will not appear on the display.

■ Position Ambiguity <POSITION AMBIGUITY>

There may be cases where you do not know or do not want to report your precise locations. For position data, you can select the number of digits not to be included in your packets. Select 1 to 4, or OFF (default). The table shows how the digits are cleared.

OFF	1-DIGIT	2-DIGIT	3-DIGIT	4-DIGIT
35°31.84	35°31.8	35°31.	35°3 .	35° .
139°37.42	139°37.4	139°37.	139°3 .	39° .

- When the beacon type is "NAVITRA", this information will not appear on the display.

SELECTING A POSITION COMMENT

Enter Menu mode and access Menu 607.



The APRS data which you transmit always includes one of the 15 predetermined position comments. Select an appropriate comment depending on your situation.

The selectable comments are listed below:

[Off Duty] [Enroute] [In Service] [Returning] [Committed]
 [Special] [PRIORITY] [CUSTOM 0 ~ CUSTOM 6]
 [EMERGENCY!]

- If you select "Emergency!", a confirmation message appears. Press the Tuning control again.



STORING STATUS TEXT

Enter Menu mode and access Menu 608.



Status text is another comment to transmit with position data. Unlike a position comment, you can make any desired comment using a maximum of 42 alphanumeric characters. This transceiver has 5 memory channels for preprogramming.

Note: Attaching a long comment can double the size and length of the packet. Transmit a comment only if necessary.

Text Transmit Frequency <TX RATE>

Select the frequency on which to transmit the status text when the APRS beacon is transmitted. You can select [OFF], or [1/1] ~ [1/8] (APRS only).

- 1/X means the status text will be transmitted X number of times.

QSY Function

This function imbeds the frequency of the audio channel to the first character of the status text message.

Operation when Receiving a QSY

1 Select text setting number 5.

- Frequency information is imbedded to the first 10 characters of the status text message.

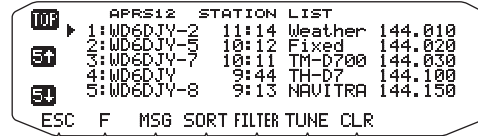


2 Enter the status text message.



Operation when Receiving a QSY

When QSY (frequency) information is received, the station list appears (list summary and details) with the verified frequency. Press the **Tuning** control.



- The QSY (frequency) is set to the non data band.
- When using 6.5 kHz or 12.5 kHz step values, the display does not indicate values for 100 Hz and lower.

SETTING PACKET FILTER

Enter Menu mode and access Menu 609.



Position Limit <POSITION LIMIT>

If APRS is popular in your area, you may receive too many APRS packets for a short period. If this disturbs your APRS activities, specify a distance from your location. You will not receive APRS packets from stations beyond this distance.

Select the range from 10 to 2500 in steps of 10, plus OFF (default). The unit is mile or kilometer depending on the selection in Menu 626 (DISPLAY UNIT 1).

Packet Filter Type <TYPE>

The APRS position data is filtered.

- Check the type(s) you want to receive.
- If all types are checked, you will receive all types of data.

SELECTING YOUR STATION ICON

Enter Menu mode and access Menu 610.



Select an icon which will be displayed on the monitors of other stations as your ID. You may select an icon depending on your current location.

• The following 29 icons are selectable for APRS:



KENWOOD/ Home/ Portable / Sailboat/ SSTV/ Aircraft/ Boat/ Car/ Motorcycle/ Jeep/ RV/ Truck/ Van/ Truck(18-wheeler)/ Digipeater/ GATEway/ WX/ Person/ Triangle/ Fire/ Eyeball/ Police/ DF station/ Mic-E Repeater/ QSO Repeater/ Big Question Mark/ IRLP/EchoLink/ Speedpost/ Wreck

• The following 15 icons are selectable for NAVITRA:



APRS supports approximately 200 icons. It allows users to select each icon by specifying a combination of two ASCII codes, for example, ! and /. One is a symbol code, and the other is a table identification code (either / or \). If you select "OTHERS", use the following procedures:

1 Rotate the **Tuning** control to select a symbol code, then press the **Tuning** control.



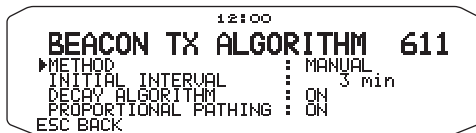
2 Rotate the **Tuning** control to select a table identification code, then press the **Tuning** control.



Note: Because the icon code table is occasionally revised, download the latest icon code table from Mr. Bruninga's Web page ([http:// web.usna.navy.mil/~bruninga/aprs.html](http://web.usna.navy.mil/~bruninga/aprs.html)). Click on "DOWNLOAD APRS" on its home page, then download APRSnnn.zip from the FTP directory where nnn is a 3-digit number. After uncompressing the zip file, you will find a created README directory. Open and see Symbols.txt under this directory.

SETTING BEACON TX ALGORITHM

Enter Menu mode and access Menu 611.



■ Packet Transmit Method <METHOD>

Select the operation method for transmitting APRS packets. The table concludes how operations differ depending on the selection.

[MANUAL]:

Each press of **[KEY]**, **[BCON]** transmits your APRS packet.

[PTT]:

- 1 Press **[KEY]**, **[BCON]** to switch the function ON.
 - "BCON" appears and blinks.
- 2 Press and hold the microphone **[PTT]**, then speak into the microphone.
- 3 Release the microphone **[PTT]**.
 - Releasing the switch transmits your APRS packet.
 - You cannot retransmit an APRS packet unless the time selected in <TX INTERVAL > passes. Wait until "BCON" starts blinking to indicate transmitting is ready.
- 4 To switch the function OFF, press **[KEY]**, **[BCON]** again.

[AUTO]:

- 1 Press **[KEY]**, **[BCON]** to switch the function ON.
 - "BCON" appears.
 - Switching the function ON transmits your APRS packet once. After that, APRS packets are automatically transmitted at intervals of the period selected in <TX INTERVAL >.
- 2 To switch the function OFF, press **[KEY]**, **[BCON]** again.

■ TX Interval Time <TX INTERVAL>

You can change the interval for automatically transmitting APRS packets. Access <TX INTERVAL > and select 0.2, 0.5, 1, 2, 3, 5, 10, 20, or 30 minutes. The default is 3 minutes.

Note:

- ◆ With "AUTO" in <METHOD > and Beacon ON, pressing the **Tuning** control to complete the setting causes the APRS packet to be immediately transmitted. After that, APRS packets are transmitted at intervals of the selected period.
- ◆ While signals are present, an APRS packet is not transmitted after the interval. Approximately 2 seconds after signals drop, transmitting is executed.

■ Decay Algorithm <DECAY ALGORITHM>

This function continuously extends the packet transmission interval in the case that there is no change of position information.

- When the set time elapses and transmission is performed but a busy signal is present, the transceiver does not transmit. When there is no longer a busy signal, the transceiver attempts to transmit after 2 seconds.
- While transmitting by pressing the [PTT] switch, beacon transmission is reserved.
- If My station call sign is not set, My station data will not be transmitted.
- Depending on this interval, the transmission of the message will become a 1 minute interval.
- When My station position data changes, the data is transmitted using an interval time based on the set Initial Interval or Proportional Pathing. When the position data does not change, the data is transmitted based on a Decay Algorithm (1 minute, 2 minutes, 4 minutes, 8 minutes, 16 minutes, 32 minutes, 32 minutes, 32 minutes, etc.)

■ Propotional Pathing <PROPOTIONAL PATHING>

This function automatically changes the transmit packet path with the elapsed time.

Operation example for when PROPORTIONAL PATHING = ON

Transmission interval is 1 minute. (When the DECAY ALGORITHM = ON, the decay transmission interval takes precedence.)

The packet path changes with each transmission as shown below (when the packet path is set as WIDE1-1,WIDE2-2).

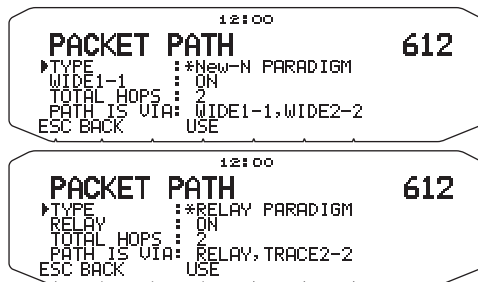
- [1 minute] : DIRECT
- [2 minutes] : WIDE1-1 (1 Hop)
- [3 minutes] : DIRECT
- [4 minutes] : WIDE1-1, WIDE2-1 (2 Hops)
- [5 minutes] : DIRECT
- [6 minutes] : WIDE1-1 (1 Hop)
- [7 minutes] : DIRECT
- [8 minutes] : WIDE1-1, WIDE2-2 (3 Hops)

This is repeated.

When jointly using a Decay Algorithm, if the speed is 1 knots or slower, a Decay Algorithm pattern is used for transmitting, but if the speed is 3 knots or faster, it changes to Proportional Pathing.

PROGRAMMING A PACKET PATH

Enter Menu mode and access Menu 612.



Select the packet path type from [New-N PARADIGM], [RELAY PARADIGM], [STATE/SECTION/REGION], or [OTHERS].

When you press [USE], the “*” indicator appears on the left side of the packet path type, showing the current used information.

- [TOTAL HOPS]: You can select 1 to 7.
- [ABBR]: You can enter up to 5 characters for abbreviated state names, etc.



- When selecting [OTHERS], enter a packet path.



- You can enter 0 to 9, A to Z, , (comma), and –.
- Below are five basic methods for editing a packet path. Methods 3 to 5 are supported only by advanced APRS networks.

Method 1 (Specific Path):

Program the call signs of one or more digipeaters in the sequence of transfer relay; ex. “KD6ZZV,KF6RJZ”.

Method 2 (Generic Path):

Program RELAY and/or WIDE; ex. “RELAY,WIDE” (or simply “R,W”). In this example, your APRS packet is transferred to any RELAY digipeater near your position first, then to any WIDE digipeater. You can also program more than one WIDE. If you enter “WIDE,WIDE” for example, your APRS packet will be transferred to any WIDE near your position first, then to another WIDE.

Method 3 (WIDEN-N Path):

Program WIDEN-N, where N-N indicates the number of WIDE digipeaters to be used for relay. If you enter “WIDE3-3” (or simply W3) for example, your APRS packet will be relayed by three WIDEs in any direction.

Method 4 (TRACEN-N Path):

The operation is the same as WIDEN-N except that digipeaters add their call signs to your packet before forwarding. You may program “TRACE3-3” (or simply T3) for example.

Method 5 (SSID Path):

Program a single number 1 to 15. You can easily specify the number of digipeaters that will be used for relay. You can also specify which directions of digipeaters relative to your position will be used. Refer to the following table.

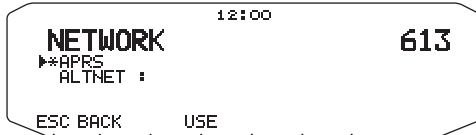
Parameter	Number of digipeaters	Direction
1	1	All
2	2	All
3	3	All
4	4	All
5	5	All
6	6	All
7	7	All
8	2 (or more) ¹	North
9	2 (or more) ¹	South
10	2 (or more) ¹	East
11	2 (or more) ¹	West
12	Many ²	North
13	Many ²	South
14	Many ²	East
15	Many ²	West

¹ The first digipeater which receives your APRS data specifies the entire route to the destination before forwarding; often 2 digipeaters are used in total.

² The digipeater which receives your APRS data specifies the call sign of the next digipeater before forwarding. This is repeated until your APRS data reaches the destination.

NETWORK

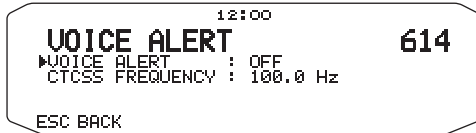
Enter Menu mode and access Menu 613.



To transmit the meteorological data, you must set the unprotocol. Using this setting, you can limit the data that is received. Use this when you are in a group. Select either "APRS(APK102)" or "ALTNET". When selecting "ALTNET", enter the ALTNET.

VOICE ALERT

Enter Menu mode and access Menu 614.



This function alerts you as to whether or not a station is active when attempting to perform voice communications with that station.

You can set Voice Alert to "OFF", "ON", or "RX ONLY". When using this function, you must also set up a CTCSS frequency.

[ON]: The "VA" icon appears on the display, above the frequency.

[RX ONLY]: The "VAR" icon appears on the display, above the display.

Note:

- ◆ When the built-in data band is set to cross band, the Voice Alert function does not operate.
- ◆ Voice alert takes precedence even when TONE, CTCSS and DCS are set.
- ◆ When Voice alert is ON, TONE or CTCSS frequency scan and DCS code scan will not operate.
- ◆ When Voice alert is ON, you cannot perform TONE or CTCSS frequency selection and DCS code selection.

WEATHER STATION DATA OUTPUT

Enter Menu mode and access Menu 615.



■ Transmit <TX>

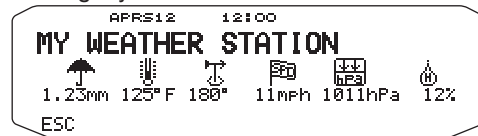
This setting determines whether or not to transmit the meteorological data obtained from the weather observation device, with the APRS data communication.

■ Transmit Interval Time <TX INTERVAL>

Set the interval at which the meteorological data is transmitted with the APRS data communication.

The interval can be set to 5, 10, or 30 minutes.

- The weather observation device outputs the meteorological data at a time interval of approximately 5 minutes.
- The following meteorological data is transmitted:
 - Rainfall
 - Air temperature
 - Wind direction
 - Wind velocity
 - Atmospheric pressure
 - Humidity
- This data is transmitted with the APRS standard format (latitude/longitude and time information).
- You can verify the meteorological data being output by viewing My station weather observation device icons.



SETTING AS A DIGIPEATER

■ DIGIPEAT

Enter Menu mode and access Menu 616.

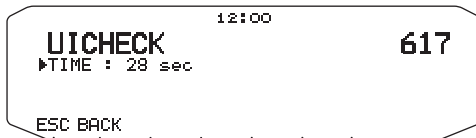


This transceiver with a built-in TNC may also be used as a digipeater. As described in "PACKET PATH AND DIGIPEATER", a volunteer who installs a digipeater is supposed to program it either as a RELAY or WIDE depending on various conditions.

Note: This transceiver is capable of setting up to 4 path segments (aliases); each path segment must have less than 10 characters. However, it is common to program either "RELAY" or "WIDE" as mentioned above.

■ UICHECK

Enter Menu mode and access Menu 617.

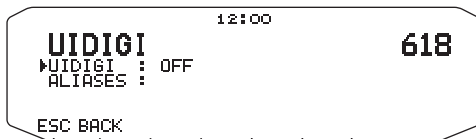


Does not forward the same UI packet as one received within the time specified. The unit of the parameter is 1 second.

- The counterpart of UIDIGI is valid.

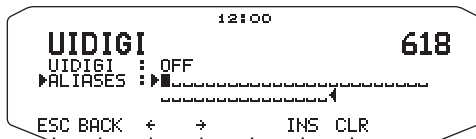
■ UIDIGI

Enter Menu mode and access Menu 618.



When receiving a UI packet which includes the parameter specified, replaces the parameter with the MYCALL parameter and forwards the packet.

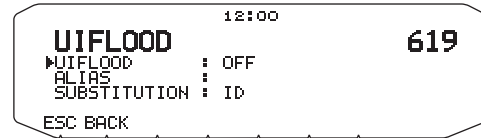
- 1 Rotate the **Tuning** control to switch the function ON, then press the **Tuning** control.
- 2 Rotate the **Tuning** control to select "ALIASES", then press the **Tuning** control.
 - The display for entering a path appears; the first digit blinks.



- You can enter 0 to 9, A to Z, , (comma), and -.

■ UIFLOOD

Enter Menu mode and access Menu 619.



Specifies how received UI packets, which include WIDEN-N or TRACEN-N parameters, are processed. Enter WIDE or TRACE before ID, NOID, or FIRST; ex. WIDE,FIRST. With ID selected deletes the relayed digipeaters and adds the MYCALL parameter. Using NOID decrements N-N; ex. 4-3 to 4-2. Using FIRST adds the MYCALL parameter only when serving as the first digipeater.

- You can enter 0 to 9, A to Z.

■ UITRACE

Enter Menu mode and access Menu 620.



The command name must be followed by up to 5 alphanumeric characters; normally WIDE or TRACE. This causes the TNC to forward received UI packets which include WIDEN-N or TRACEN-N parameters.

- You can enter 0 to 9, A to Z.

STORING USER PHRASES

Enter Menu mode and access Menu 621.



This function (clipboard image) allows you to paste phrases into the APRS message compilation mode. You can create up to 4 phrases each of which can consist of up to 32 characters.

- The user phrase function can only be used in the message compilation mode.
- Before a message is copied, the number of letters cannot be guaranteed. Only the number of letters available will be copied, the remainder will be truncated.
- To copy a message, enter message compilation mode, press [F] to enter function mode, then press [PASTE1], [PASTE2], [PASTE3], or [PASTE4] to copy the message that has been set up for each key.
- If the user messages [PASTE1], [PASTE2], [PASTE3], and [PASTE4], are not set up, they cannot be used.

STORING AUTO MESSAGE REPLY

Enter Menu mode and access Menu 622.



■ Auto Answer Reply <REPLY>

While you are driving, for example, you cannot immediately answer to received messages. On this transceiver, you can program the message to be automatically returned when a message is received.

- 1 Rotate the **Tuning** control to select “ON”, then press the **Tuning** control.
- 2 Rotate the **Tuning** control to select “TEXT”, then press the **Tuning** control.

- The display for entering a message appears; the first digit blinks.



- You can enter alphanumeric characters plus special ASCII characters.

■ Reply To Call Sign <REPLY TO>

When there is a message you would like to reply to for the specific call sign, preset that call sign for automatic responses.



PROGRAMMING A MESSAGE GROUP CODE

Enter Menu mode and access Menu 623.



Use a message group code to exchange messages only among your group members. With one or more message group codes programmed, you will receive messages that include the same group code(s), besides messages addressed to you. If you program one or more bulletin group codes, you will not receive bulletins addressed to other specific groups. You can program any desired code using alphanumeric characters; up to 9 characters for messages, and up to 4 characters for bulletins. You can also program up to 6 codes at the same time; each code must be separated by a comma (.). If you program 3 message group codes, for example, you will receive all messages that include one of the 3 codes. If you program 3 bulletin group codes, you will reject bulletins addressed to specific groups which do not use any of the 3 codes.

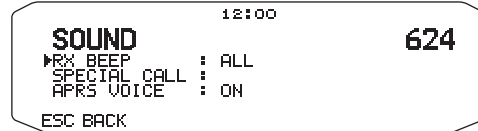


- You can enter 0 to 9, A to Z, , (comma), and -. For messages, “*” is also selectable.
- The keypad on the microphone also is available to enter alphanumeric characters.
- In order to include a message group code in your outgoing packet, enter a group code in place of a call sign. To include a bulletin group code, enter it following BLN#; for example, “BLN#ABC” where ABC is a group code. Use up to 9 characters for a message group code or up to 4 characters for a bulletin group code.

Note: Unlike a message, a bulletin including a group code will be received by stations who do not program any bulletin group code.

SETTING SOUND

Enter Menu mode and access Menu 624.



■ RX Beep Type <RX BEEP>

This transceiver beeps each time it receives any type of APRS packets for further description, refer to “RECEIVING APRS DATA”.

Selection	Operation
OFF	The APRS/NAVITRA beep tone does not sound.
MESSAGE ONLY	Beep sounds only when a message is received at your station address.
MINE	Beep sounds when a message is received at your station address and your transmitted data is received by a digipeater.
ALL NEW	Beep sounds when a message is received at your station address and new packet data is received.
ALL	Beep sounds when a message is received at your station address and duplicate data or invalid data is received.

■ Special Call Sound <SPECIAL CALL>

This function emits a special call sound when data is received at My station address. Set the call sign of the stations from which you want to receive special call notifications.

■ APRS Voice Announce <APRS VOICE>

When using an optional VGS-1 unit, you may select ON. Each time you receive a message addressed to you, the transceiver announces the call sign of the sender. If the initial character of the message is %, the transceiver announces the subsequent characters one by one.

SETTING INTERRUPT DISPLAY

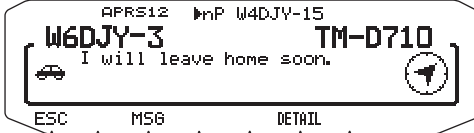
Enter Menu mode and access Menu 625.



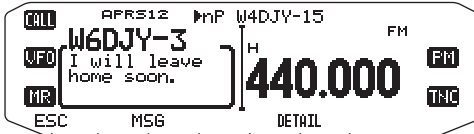
■ Display Area <DISPLAY AREA>

Selects the Display area.

[ENTIRE]:



[HALF]:



■ Automatic Brightness <AUTO BRIGHTNESS>

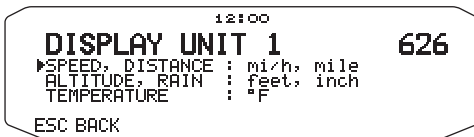
When ON is selected and My station address message is received, the backlight turns on.

■ Change Color <CHANGE COLOR>

When ON is selected and My station address message is received, the backlight color changes.

SELECTING A DISPLAY UNIT (1)

Enter Menu mode and access Menu 626.



■ Speed, Distance <SPEED, DISTANCE>

Select to [mi/h, mile], [km/h, km], or [knots, nm].

■ Altitude, Rainfall <ALTITUDE, RAIN>

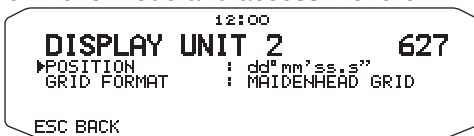
Select to [feet/inch] or [m/ mm].

■ Temperature <TEMPERATURE>

Select to [°F] or [°C].

SELECTING A DISPLAY UNIT (2)

Enter Menu mode and access Menu 627.



■ Latitude longitude <POSITION>

Select to [dd°mm. mm'], or [dd°mm' ss. s"].

■ Grid Format <GRID FORMAT>

Select to [MAIDENHEAD GRID], [SAR GRID (CONV)], or [SAR GRID (CELL)].

SELECTING A NAVITRA GROUP

Enter Menu mode and access Menu 628.



■ Group Mode <GROUP MODE>

Select to Group mode ON or OFF.

■ Enter Group Code <GROUP CODE>

- You can enter 0 to 9, A to Z.

STORING NAVITRA MESSAGE

Enter Menu mode and access Menu 629.

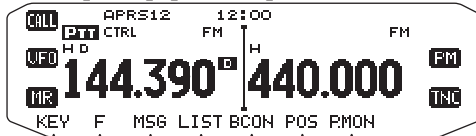


You can create up to 5 phrases each of which can consist of up to 20 characters.

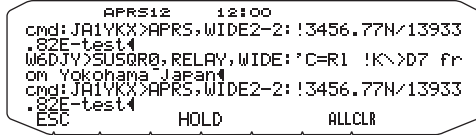
PACKET MONITOR DISPLAY

This transceiver presents Terminal Window mode to display raw data of received APRS packets. It displays up to 155 characters per page and holds up to 10 pages.

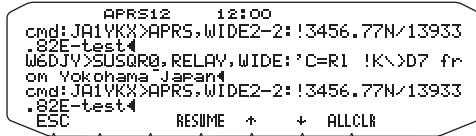
1 Press [KEY], [P.MON].



- To enter Terminal Window mode.



2 To access old pages, press [HOLD].



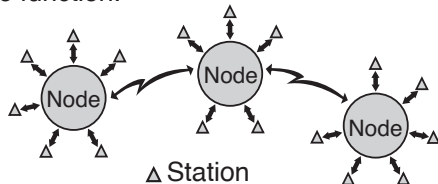
- Rotate the **Tuning** control or press [**↑**] or [**↓**] to change the page.
- Press [**RESUME**] to quit the Hold function.
- While using the Hold function, newly received packets will not be stored in buffer.
- When press [**ALLCLR**], packet monitor display is cleared.

Note:

- The terminal window is not available for sending a command to the TNC.
- The terminal window is available in APRS mode (not in Packet mode).
- The data in buffer is cleared when the transceiver power is turned OFF.

DX PACKETCLUSTERS MONITOR

DX PacketClusters are networks which consist of nodes and stations who are interested in DXing and contesting. If one station finds a DX station on the air, he (or she) sends a notice to his (or her) node. Then this node passes the information to all its local stations besides another node. This transceiver can display received DX information and hold the latest information on up to 10 DX stations. Use this function to monitor the latest DX information in your local area. You cannot send DX information to a node, using the function.



1 Access Menu 601 (INTERNAL TNC - DATA BAND) to select band A or B.

- If the common transfer rate in your local PacketCluster network is 9600 bps, access Menu 601 (INTERNAL TNC - PACKET SPEED) and select "9600 bps".

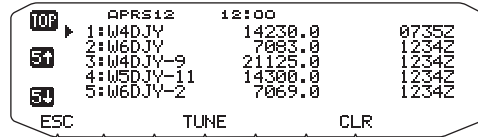
2 Tune to the frequency of the target PacketCluster node.

3 Press [TNC] to enter APRS mode.

- "APRS" should appear.

4 Press [F], [DX].

- Each time new DX cluster data is received, a call sign, frequency, and time are displayed.
- Information of up to 5 DX stations are displayed at the same time.
- When a duplicate DX cluster data is received, "dD" and a call sign are displayed.



[TOP]: Displays the list of the fast 5 stations.

[5↑]: Displays the list of the previous 5 stations.

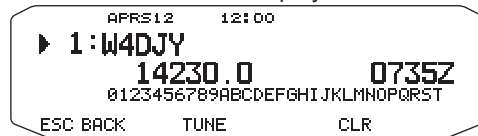
[5↓]: Displays the list of the next 5 stations.

[ESC]: Restores the frequency display..

[TUNE]: Outputs the PCT data.

[CLR]: Deletes the current DX station.

- DX station detailed display mode



[ESC]: Restores the frequency display.

[BACK]: Returns to the DX station list

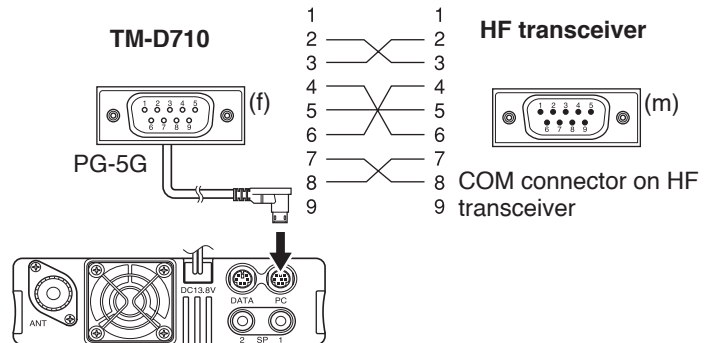
[TUNE]: Outputs the PCT data.

[CLR]: Deletes the current DX station.

Connecting TM-D710 with the HF Transceiver

In order to connect TM-D710 to the HF transceiver, you need to prepare three cables by yourself. For the connection between the PC/ COM connectors on the two transceivers, you may use a commercially available RS-232-C cross-wired cable.

- A D-SUB female/male conversion adapter is required.



TROUBLESHOOTING

Problem	Probable Cause	Corrective Action
Packet operation results in no connects with other stations.	<ol style="list-style-type: none"> 1 The squelch is open. 2 You did not correctly set the data length and parity bit. 	<ol style="list-style-type: none"> 1 Select the correct squelch level so that the squelch is opened only when signals are present. 2 Use HBAUD command to select the appropriate transfer rate.
You did not receive any DX cluster data.	You did not select the APRS mode.	Press [TNC] to enter APRS mode; "APRS" should appear.
You cannot transmit any APRS data.	<ol style="list-style-type: none"> 1 Beacon is OFF. 2 The squelch is open. 3 The data band is inactive. 4 You did not select APRS mode. 5 You selected Packet mode. 6 You did not correctly program your call sign. 	<ol style="list-style-type: none"> 1 Press [KEY], [BCON] to switch Beacon ON. 2 Select the correct squelch level so that the squelch is opened only when signals are present. 3 If you have blanked the data band, press the appropriate [BAND SEL] (1 s) to active it. 4 Press [TNC] to enter APRS mode; "APRS" should appear. 5 Press [TNC], then [TNC] again; "APRS" should appear. 6 Use Menu 600 (BASIC SETTING – CALLSIGN) to correctly program your call sign.
You did not receive any APRS packet.	<ol style="list-style-type: none"> 1 You did not correctly set the data length and parity bit. 2 You did not select the appropriate packet transfer rate. 	<ol style="list-style-type: none"> 1 Select Packet mode, send the following commands to the TNC, then select APRS mode: AW 8 [ENTER], PAR 0 [ENTER], then RESTART [ENTER]. 2 Use Menu 601 (INTERNAL TNC – DATA SPEED) to select the appropriate packet transfer rate (generally 1200 bps).
When using a GPS receiver with "AUTO" selected in Menu 611 (BEACON TX ALGORITHM - METHOD), you did not transmit any position data.	The GPS receiver did not yet start correct measurement.	With "AUTO" selected, the transceiver must first receive any NMEA data in order to transmit your position data.
You cannot activate Visual Scan, Remote Control (K type), nor Repeater (K type).	You selected APRS or Packet mode.	Press, [TNC] repeatedly so neither "APRS" nor "PACKET" is visible.