YAESU
The radio

FTM-400DR
144/430MHz 50W
DUAL BAND TRANSCEIVER

Instruction Manual
(APRS Edition)

C4FM FDMA/FM

Thank you for purchasing this Yaeau product.
This instruction manual explains information related to the "APRS Function".
For information on basic operation of the transceiver, please refer to the enclosed
FTM-400DR operating manual.

Using APRS® functions

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What is APRS®?

APRS (Automatic Packet Reporting System) is a packet communication protocol on amateur radios that is advocated by Bob Bruninga (WB4APR).
The APRS function of this device is a data communication system for messages and position data using the APRS format.
A partner amateur radio station using a GPS receiver can send an APRS message including GPS position information of the partner station. The direction, distance speed etc. of the partner station in relation to your own station will appear on the display of the FTM-400DR transceiver. The position information can be used in the same way by connecting the external GPS antenna unit or entering the position data manually.

APRS Initial Settings

This sets the various information of your own station prior to commencing APRS operation.
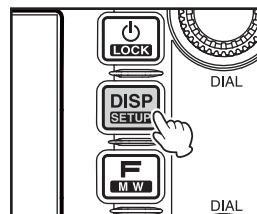
Setting the position information of your own station

The position information can be set automatically or manually depending on the situation and the location where the device is used.
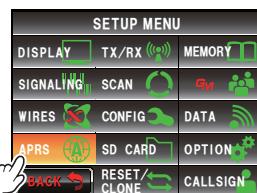
Using the GPS function

Data from the in-built GPS antenna unit or an external GPS device connected to the device can be downloaded automatically. The GPS function is recommended to be used when operating mobile.

1 Press 🔲 for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**
The menu list will be displayed.

3 Select and touch **[26 MY POSITION SET]**

The screen for selecting the setting method of the position information will be displayed.
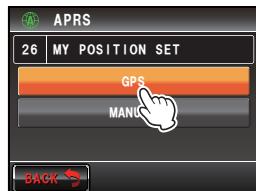
4 Press **[GPS]**

"GPS" will be selected, and the screen will return to the main menu list.

5 Press 🔲 for one second or longer

The display will return to the previous screen.

Tip

Using the GPS function, the time data received from a GPS satellite will be automatically used to correct the in-built clock of the main device.

Setting the function manually

The latitude and longitude of your own station can be entered by following the procedure below, when not using the GPS function. This may be necessary when the GPS satellites cannot be acquired or the radio is used in a fixed location.
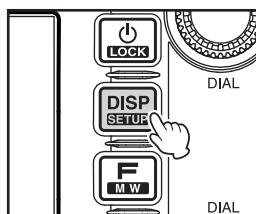
(1) Matching the time

Please refer to "Adjusting the date and time" (☞P.56) in the basic operating manual for the details.

(2) Registering position information

1 Press 🔲 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

The menu list will be displayed.

4

3 Select and touch **[26 MY POSITION SET]**
The screen to choose the setting method of the
position information will be displayed.

4 Touch **[MANUAL]**
"MANUAL" will be selected, and the screen will return
to the menu list.
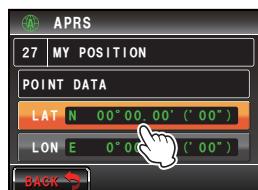
5 Select and touch **[27 MY POSITION]**
The screen for selecting the latitude and longitude
will be displayed.

6 Touch **[LAT]**
The screen for entering the latitude will be displayed.

7 Touch **[N]** or **[S]**
Select either northern latitude (N) or southern
latitude(S).
The cursor will shift to the right and only the number
keys can be selected.
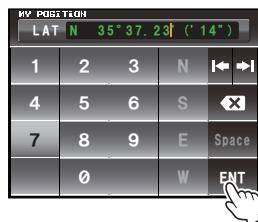
8 Touch the number keys to enter the "degrees", "minutes" and "1/100 minute"
The cursor will shift to the right each time a number
is touched.

9 Touch **[ENT]**
The display will return to the original screen, and the
set latitude will be displayed in **[LAT]**.

10 Touch **[LON]** twice

The screen for entering the longitude will be displayed.

11 Touch **[E]** or **[W]**

Select either the eastern longitude (E) or the western longitude (W).

The cursor will shift to the right and only the number keys can be selected.

12 Enter the "degree", "minute" and "1/100th minute" in the same way as Step 6.

13 Touch **[ENT]**

The display will return to the previous screen, and the set longitude will be displayed in **[LON]**.

14 Press 🔲 for one second or longer

The position information will be registered and the display will return to the previous screen.

Tips
- Please use the map of WGS-84 (world geodetic reference system) to find out the latitude and longitude.
- In this device, the position information is displayed using both second and 1/100th minute formats. Please check and enter the map display method to be used (second÷60×100=1/100 minute).

Setting your own station call sign
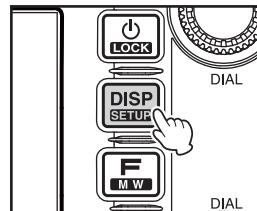
Register your own station call sign in order to send and receive messages and to send out beacons in APRS. Enter the call sign like "JA1ZRL-7". The "-7" in the call sign refers to the SSID (Secondary Station Identifier). There are 16 types of SSID signs available including one without SSID. Generally, the SSIDs shown in the table below are used in APRS.

SSID	Explanation	SSID	Explanation
NIL	Fixed stations that can exchange messages	-8	Marine mobile stations, land mobile stations
-1	1200 bps narrow-to-middle band digipeater	-9	Using the FTM-400DR etc. for mobile applications
-2	9600 bps digipeater	-10	I-Gate station, Internet connection station
-3	1200 bps broadband digipeater	-11	Balloons, aircraft, spacecraft, etc.
-4	Digipeater, mobile station, meteorological station, etc.	-12	1-way tracker station (messages cannot be exchanged)
-5	Operation station using mobile devices (smartphones etc.)	-13	Meteorological station (weather station)
-6	Operation station for satellite communications, events, etc.	-14	Tracking mobile stations
-7	Use of FT1DR etc. in handy terminals	-15	Digipeater, mobile station, meteorological station, etc.
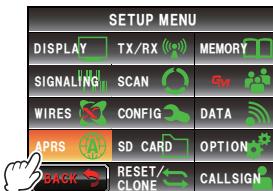
Caution

Use the dedicated call sign in APRS. Please make sure to set the call sign when the device is used for the first time.
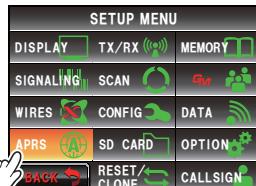
1 Press 🔲 for one second or longer
The set-up menu will be displayed.

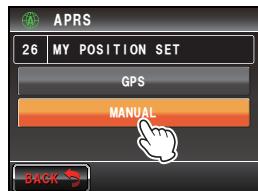**2** Select and touch **[APRS]**
The menu list will be displayed.

3 Select and touch **[23 CALLSIGN (APRS)]**
The screen for inputting the call sign will be displayed.

4 Touch the character keys to enter the call sign

5 Touch **[ENT]**
The entered call sign will be registered, and the screen will return to the menu list.

6 Press 🔲 for one second or longer
The display will return to the previous screen.

Tip

Please refer to http://aprs.org/aprs11/SSIDs.txt for the latest SSID information.
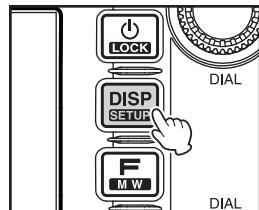
Setting the symbol of your own station

The station symbol and code combination used when sending data in APRS can be set using up to 4 patterns. The combination of symbol and code can be selected from the following 67 types. The preferred code can also be set for one pattern only.

Symbol	Code	Name	Symbol	Code	Name
	/#	DIGI		/X	Helicopter
	/&	HF Gateway		/Y	Yacht (sailboat)
	/'	Small Aircraft		/[	Human/Person
	/-	House QTH (VHF)		/\	Triangle (DF)
	/.	X		/^	Large Aircraft
	/0	Circle		/_	Weather Station
	/:	Fire		/a	Ambulance
	/;	Campground		/b	Bicycle
	/<	Motorcycle		/f	Fire Truck
	/>	Car		/g	Glider
	/C	Canoe		/j	Jeep
	/E	Eyeball		/k	Truck
	/I	TCP/IP		/m	Mic-E Repeater
	/K	School		/r	Repeater
	/O	Balloon		/s	Ship (powerboat)
	/P	Police		/v	Van
	/R	REC. vehicle		/y	Yagi @ QTH
	/T	SSTV		\#	Overlay DIGI
	/U	Bus		\&	Overlay Gate
	/V	ATV		\-	House (HF)
	/W	NWS Site		\.	Ambiguous

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Symbol	Code	Name		Symbol	Code	Name
	\0	Circle			KY	Kenwood Radios
	E0	EchoLink			YY	Yaesu Radios
	I0	IRLP			\^	Aircraft
	S0	Staging Area			_	WX Site
	W0	WIRES			\m	Value Signpost
	\;	Park/Picnic Area			\n	Overlayed Triangle
	\=	APRStt			\s	Overlayed Ship
	\>	Overlayed Car			\u	Overlayed Truck
	\K	Kenwood HT			\v	Overlayed Van
	\W	NWS Site			\x	Obstruction
	\Y	Radios & Devices			\u	Truck (18 wheel)
	AY	Alinco Radios			/=	Rail Engine
	IY	Icom Radios		–	–	–

1 Press ![DISP SETUP] for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**
The menu list will be displayed.

3 Select and touch **[28 MY SYMBOL]**

The screen for selecting the symbol will be displayed.

Tip When shipped from the factory, the following combinations are set in the 4 patterns.

Pattern	Code	Symbol and name
ICON1	/>	Car
ICON 2	/R	REC. vehicle
ICON 3	/-	House QTH (VHF)
USER	YY	Yaesu Radios
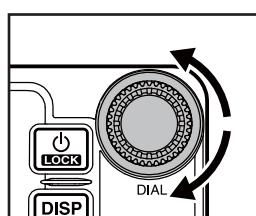
4 Select and touch **[ICON 1]**

The code displayed within the parentheses [ ] will blink.
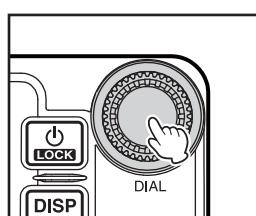
5 Turn A to display the combination of preferred symbols and codes.

6 Press A

The symbol will be confirmed.

Tip The symbol can also be confirmed by touching **[ICON 1]** one more time.

7 Repeat Steps 4 to 6 when setting **[ICON 2]** and **[ICON 3]** as well.

8 Among **[ICON 1]**, **[ICON 2]** and **[ICON 3]**, touch the pattern that you want to use immediately.

9 Touch **[BACK]**

The screen will return to the menu list, and the pattern last touched will be displayed in the setting field of **[28 MY SYMBOL]**.

10 Press DISP for one second or longer

The display will return to the previous screen.

10

● **Setting preferred symbols**

You can change the code and set your own symbol when the symbol that you want is not available.

The two characters of the code refer to the following contents.

• First character: Table ID

This indicates the classification of the symbol. It is a code used for classifying the symbols into basic symbols, substitute symbols and symbols with an overlay.

• Second character: Symbol character

This indicates the symbol pattern. A number and symbol is assigned to each pattern.

1 Press 🔲 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

The menu list will be displayed.

3 Select and touch **[28 MY POSITION]**

The screen for selecting the symbol will be displayed.

4 Select and touch **[APRS]**

The table ID enclosed within the parentheses [ ] will blink.
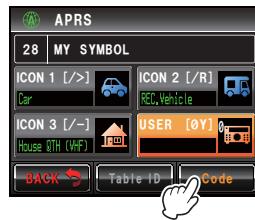
5 Turn 🔘A to display the target table ID

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6 Touch **[Code]**

The symbol character enclosed within the parentheses [ ] will blink.

7 Turn 🔘**A** to display the target symbol character

8 Press 🔘**A**

The symbol will be confirmed.

9 Touch **[BACK]**

The screen will return to the menu list, and the pattern set will be displayed in the setting field of **[28 MY SYMBOL]**.

10 Press 🔳 for one second or longer

The display will return to the previous screen.

Tip

Please refer to "http://aprs.org/symbols/symbolsX.txt" and "http://aprs.org/symbols/symbolsnew.txt" for the latest symbol table.
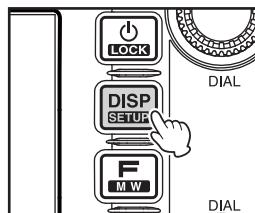
Setting the APRS baud rate

The APRS baud rate (communication speed) can be selected from the following two types.

- 1200 bps: APRS operations. can be carried out using AFSK 1200 bps packets.
- 9600 bps: APRS operations can be carried out using GMSK 9600 bps packets.

1 Press 🔳 for one second or longer

The set-up menu will be displayed.
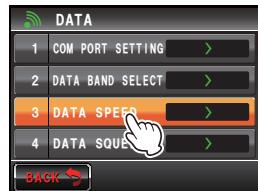
2 Select and touch **[DATA]**

The menu list will be displayed.
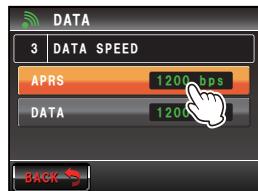
3 Select and touch **[3 DATA SPEED]**

4 Touch **[APRS]** to select the baud rate

The baud rate will switch between "1200 bps" and "9600 bps" each time it is touched.

Tips • Factory default value: 1200 bps
- When receiving a message, the baud rate will automatically match the baud rate of the partner station signal regardless of the value set.

5 Press 🔘 for one second or longer

The baud rate will be set and the display will return to the previous screen.

Other settings
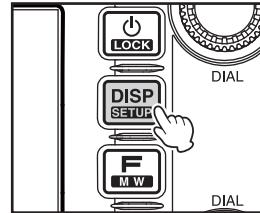
Besides these, other settings such as the mute setting for the receive audio sound of the APRS operating band can also be configured. Please refer to "Using the APRS Set-up Menu" (☞P.69) for the details.

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Starting APRS Operation

Activating the APRS function
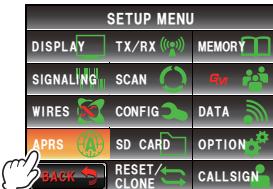
During APRS operation, communications are carried out via the built-in APRS modem in the radio. When shipped from the factory, the APRS modem is set to OFF. Before starting APRS operation, set the APRS modem to ON.

1 Press 🖵 for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**
The menu list will be displayed.

3 Touch **[5 APRS MODEM]** to select ON.
Each time this key touched, the setting will switch between "ON" and "OFF".
Tip   Factory default value: OFF

4 Press 🖵 for one second or longer
The APRS function will be set to ON and the display will return to the previous screen.

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Deciding the operating band
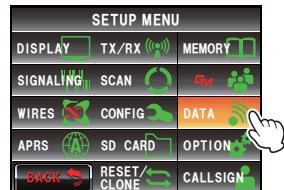
Although the APRS is set to operate in Band B when shipped from the factory, Band A and also separate operating bands can be used for sending and receiving.

1 Press 📼 for one second or longer
   The set-up menu will be displayed.
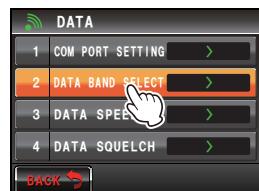
2 Select and touch **[DATA]**
   The menu list will be displayed.

3 Touch and select **[2 DATA BAND SELECT]**
   The screen for the detailed settings will be displayed.

4 Touch **[APRS]** to select the band to be used for APRS operation

   The band changes as follows each time [APRS] touched.

   "A-BAND FIX" → "B-BAND FIX" → "A=TX/B=RX" →
   "A=RX/B=TX" → "MAIN BAND" → "SUB BAND"

   "A-BAND FIX": Always send and receive using Band A.

   "B-BAND FIX": Always send and receive using Band B.

   "A=TX/B=RX": Send using Band A and receive using Band B.

   "A=RX/B=TX": Receive using Band A and send using Band B.
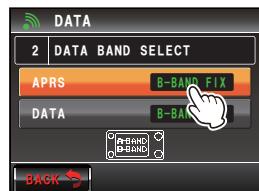
   "MAIN BAND": Send and receive using the operating band at that point.

   "SUB BAND": Send and receive using the sub-band at that point.

   Tip   Factory default value: B-BAND FIX

5 Press 📼 for one second or longer

   The operating band will be set and the display will return to the previous screen.

15
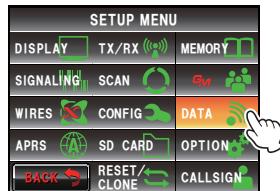
Setting the squelch detection condition

This sets the squelch detection condition during APRS (internal modem) operation.
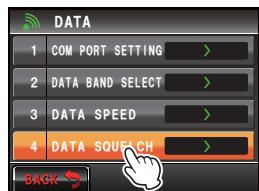
1 Press 🔲 for one second or longer
The set-up menu will be displayed.
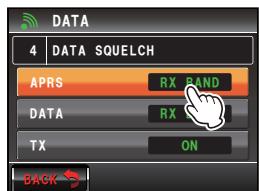
2 Select and touch **[DATA]**
The menu list will be displayed.

3 Touch **[4 DATA SQUELCH]**
The screen for the detailed settings will be displayed.

4 Touch **[APRS]** to select the squelch detection condition during APRS operation using the internal modem
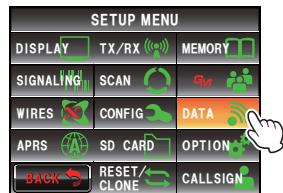
The squelch detection condition switches between "RX BAND" and "TX/RX BAND" each time it is touched.

"RX BAND": Transmission is not possible when the squelch of the reception band is open.

"TX/RX BAND": Transmission is not possible when the squelch of either the receive band or the transmit band is open.

Tip Factory default value: RX BAND

5 Press 🔲 for one second or longer
The squelch target will be set and the display will return to the previous screen.

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Matching the frequency

The frequency varies between regions and countries.
The frequency can be matched using the following methods.

(1) Turn 🎛 of the APRS operating band

Press 🎛 briefly and then turn it to change the frequency by 1 MHz units.

Press 🎛 for one second or longer and then turn it to change the frequency by 5 MHz units.

(2) Press 🔲 and touch **[▦]** in the function menu

The frequency value can be entered directly.
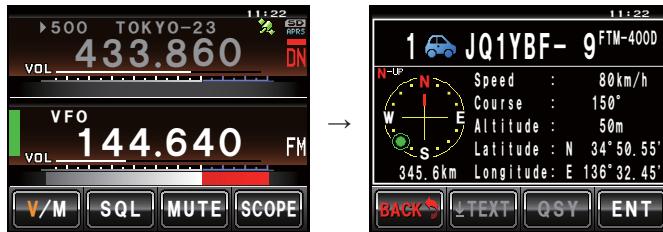
Please refer to "Tuning the radio" (☞P.40) in the basic operating manual for the details.

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Receiving APRS Beacons

The signal containing the position of the radio station, meteorological information, communication range, etc. that is transmitted in APRS format, is known as a "beacon" while the radio station that transmitted the beacon is called a "station".

A "ding dong" bell will sound when a beacon is received by the radio and the beacon information will be displayed for a fixed period of time. The information will continue to be displayed when a key or the touch panel is operated while the information is being displayed.

The received beacon will be downloaded into the radio memory. Up to a maximum of 100 beacons can be saved in the memory.

Tips
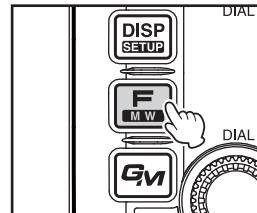
• When the compass is touched, the screen will switch between "Heading UP" where the direction of advance of your own station is always displayed at the top, and "North UP" where north is always displayed at the top. The display heading can also be changed using **[APRS] → [1 APRS COMPASS]** in the set-up menu.

• The display time of the beacon information can be changed using **[APRS] → [7 APRS POP-UP]** in the set-up menu. The detailed information can also be set not to appear even when a beacon is received by setting the display time to "OFF".

• The beacons to be saved into memory can be filtered using **[APRS] → [3 APRS FILTER]** in the set-up menu.

• The reception audio (beacon and voice etc.) of the APRS operating band can be muted using **[APRS] → [6 APRS MUTE]** in the set-up menu.

• A distinctive notification bell can be sounded when an APRS beacon is received by setting "RX BEACON" under **[APRS] → [9 APRS RINGER]** to "ON" in the set-up menu. The bell sound when a beacon is received can be muted by setting it to "OFF".

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Checking downloaded beacons

Beacons saved into the memory can be viewed in a list. A beacon can also be selected from the list to check its contents.

1 Press 🔲

The function menu will be displayed.

2 Touch **[S.LIST]**

Tip   When **[S.LIST]** is not displayed, touch **[BACK]** or **[FWD]** to switch the function menu.

The station list will be displayed.

The stations will be displayed starting from the oldest beacon received to the latest.

Tips • The list can be displayed according to the time, call sign or distance (☞P.91).
      • The stations displayed in the list can be filtered by the type of beacon (☞P.70).
      • Turn 🎛 to scroll the list.
      • Touch **[TOP]** to return to the top of the list.

3 Select and touch and the station whose details you want to view
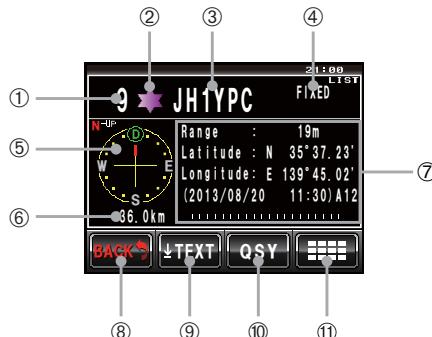
The detailed information screen will be displayed.

Tip   The station can also be confirmed by pressing 🎛.

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Viewing the contents of a beacon

The contents of the beacon will be displayed in the following screen.

Display explanation		
①	**Number**	Entry number in the station list
②	**Symbol**	Symbol of transmitting station
		For overlay symbols, the characters will be displayed at the top left.
③	**Station name**	Call sign, object name, or item name of a transmitting station
④	**Beacon type**	Tag showing the contents of the beacon (refer to the table on the following page)
⑤	**Compass**	Display the direction of the transmitting station as seen from your own station
		The direction of the compass panel will switch between "N-UP (with north shown at the top all the time)" and "H-UP (with the direction of advance of your own station shown at the top all the time)" every time it is touched.
⑥	**Distance**	Distance from transmitting station to your own station
⑦	**Transmitting station information**	Information and comments of transmitting station
⑧	**[BACK]**	The display will return to the previous screen when touched.
⑨	**[TEXT]**	The display will switch to the top of the comment list when touched.
	[TOP]	The display will switch to the top of the information list when touched.
⑩	**[QSY]**	When touched, the frequency information embedded in the target station can be set in a band separate from the APRS operating band.
⑪	**[▦]**	The expansion key screen will be displayed when touched.

Tips
- When the radio is first turned on, the position and distance will not be displayed if the detailed screen is displayed before the GPS is acquired.
- Turn ⊙ to change to another beacon display. Press ⊙ to remove the "LIST" displayed at the top right, and turn ⊙ to scroll the display contents one row at a time.

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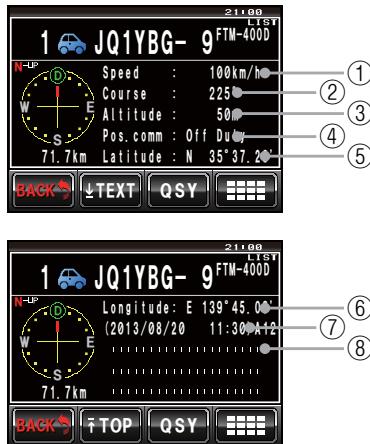
The beacons are classified as follows.

Type	Explanation	Page
Mic-E	Microphone encoder station beacon	22
FIXED	Fixed station beacon	23
fixed	Fixed station beacon (compression type)	23
MOVING	Moving station beacon	24
moving	Moving station beacon (compression type)	24
WEATHER	Meteorological station	25
weather	Meteorological station beacon (compression type)	25
OBJECT	Object station beacon	26
object	Object station beacon (compression type)	26
ITEM	Item station beacon	26
item	Item station beacon (compression type)	26
KILLOBJ	Killed Object: Deleted object station beacon	26
killobj	Killed Object: Deleted object station beacon (compression type)	26
KILLITEM	Killed Item: Deleted item station beacon	26
killitem	Killed Item: Deleted item station beacon (compression type)	26
STATUS	Status station beacon	27
GGA/GLL	RAW NMEA data station beacon	28
GPRMC	RAW NMEA data station beacon	28
OTHER	Data except APRS packet	29
!!EMG!!	Emergency signal from Mic-E station	30

● **Information display example of microphone encoder station beacon**

The following information is displayed when a Mic-E station on the frequency display screen is received, or when the list on the station list screen is touched.

①	**Speed**	The movement speed of the partner station will be displayed.
②	**Direction**	The movement direction of the partner station will be displayed.
③	**Altitude**	The altitude of the partner station will be displayed.
④	**Position comment**	The standard message from the partner station will be displayed.
⑤	**Latitude**	The current position of the partner station will be displayed in N (northern latitude) or S (southern latitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑥	**Longitude**	The current position of the partner station will be displayed in E (eastern longitude) or W (western longitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑦	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
⑧	**Comments**	Comments, if any, from a partner station will be displayed.

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● **Example of a beacon information display of a fixed station**

The following information is displayed when a FIXED station or a fixed station
(compressed type*) is received, or when the list on the station list screen is touched.

①	**Altitude**	The altitude of the partner station will be displayed.
②	**Latitude**	The position of the partner station will be displayed in N (northern latitude) or S (southern latitude). (DD degree MM.MM minute or DD degree MM minute SS second)
③	**Longitude**	The position of the partner station will be displayed in E (eastern longitude) or W (western longitude). (DD degree MM.MM minute or DD degree MM minute SS second)
④	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
⑤	**Comments**	Comments, if any, from a partner station will be displayed.

*: A beacon where part of the information is sent in a compressed format.

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● **Example of a beacon information display of a mobile station**

The following information is displayed when a MOVING station or a moving station (compressed type*) is received, or when the list on the station list screen is touched.

①	**Speed**	The movement speed of the partner station will be displayed.
②	**Direction**	The movement direction of the partner station will be displayed.
③	**Altitude**	The altitude of the partner station will be displayed.
④	**Latitude**	The current position of the partner station will be displayed in N (northern latitude) or S (southern latitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑤	**Longitude**	The current position of the partner station will be displayed in E (eastern longitude) or W (western longitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑥	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
⑦	**Comments**	Comments, if any, from a partner station will be displayed.

*: A beacon where part of the information is sent in a compressed format.

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● **Example of a beacon information display of a meteorological station**

The following information is displayed when a WEATHER station or a weather station (compressed type*) is received, or when the list on the station list screen is touched.

①	**Temperature**	Information on the temperature will be displayed.
②	**Rainfall (hour)**	Information on the rainfall per hour will be displayed.
③	**Rainfall (day)**	Information on the rainfall per day will be displayed.
④	**Rainfall (night)**	Information on the rainfall from midnight onwards will be displayed.
⑤	**Wind direction**	Information on the wind direction will be displayed.
⑥	**Wind speed**	Information on the wind speed will be displayed.
⑦	**Maximum wind speed**	Information on the maximum wind speed will be displayed.
⑧	**Atmospheric pressure**	Information on the atmospheric pressure will be displayed.
⑨	**Humidity**	Information on the humidity will be displayed.
⑩	**Latitude**	The current position of the partner station will be displayed in N (northern latitude) or S (southern latitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑪	**Longitude**	The current position of the partner station will be displayed in E (eastern longitude) or W (western longitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑫	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
⑬	**Comments**	Comments, if any, from a partner station will be displayed.

*: A beacon where part of the information is sent in a compressed format.

● **Example of a beacon information display of an object station or item station**

The following information is displayed when an OBJECT station, object station (compressed type*), ITEM station, item station (compressed type*), KILLOBJ station, killobj station (compressed type*), KILLITEM station, or killitem station (compressed type*) is received, or when the list is touched on the station list screen.

①	**Altitude**	The altitude of the partner station will be displayed.
②	**Latitude**	The position of the partner station will be displayed in N (northern latitude) or S (southern latitude). (DD degree MM.MM minute or DD degree MM minute SS second)
③	**Longitude**	The position of the partner station will be displayed in E (eastern longitude) or W (western longitude). (DD degree MM.MM minute or DD degree MM minute SS second)
④	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
⑤	**Comments**	Comments, if any, from a partner station will be displayed.

*: A beacon where part of the information is sent in a compressed format.

● **Example of a beacon information display of a status station**

The following information will be displayed when a STATUS station is received, or when the list on the station list screen is touched.
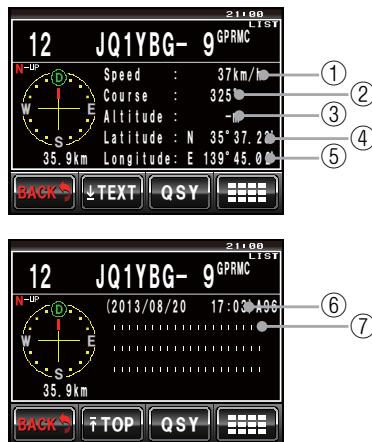
①	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
②	**Comments**	Comments, if any, from a partner station will be displayed.

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● **Example of a beacon information display of a RAW NMEA station**
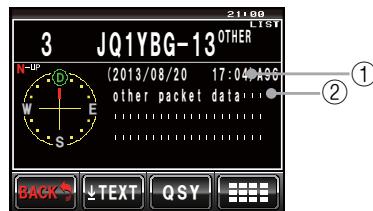
The following information will be displayed when a RAW NMEA data station (GGA/GLL or GPRMC) is received, or when the list on the station list screen is touched.

①	**Speed**	The movement speed of the partner station will be displayed.
②	**Direction**	The movement direction of the partner station will be displayed.
③	**Altitude**	The altitude of the partner station will be displayed.
④	**Latitude**	The current position of the partner station will be displayed in N (northern latitude) or S (southern latitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑤	**Longitude**	The current position of the partner station will be displayed in E (eastern longitude) or W (western longitude). (DD degree MM.MM minute or DD degree MM minute SS second)
⑥	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
⑦	**Comments**	Comments, if any, from a partner station will be displayed.

● **Display example of non-APRS packet data**

The following information will be displayed when an OTHER station is received, or when the list on the station list screen is touched.

①	**Date / Time / Communication Speed**	The date the beacon is received (MM month / DD day) / time the beacon is received (HH hour: MM minute) / the baud rate A12 (1200 bps) or A96 (9600 bps) will be displayed.
②	**Comments**	Only packet data that cannot be decoded will be displayed as it is.
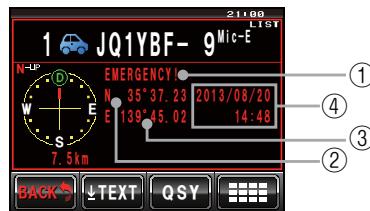
Tip

Other types of packets will not be displayed in the list if "OTHER" is not set to ON under **[APRS]** → **[3 APRS FILTER]** in the set-up menu (factory default value: OFF).

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● **Example of an emergency information display from a microphone encoder station**

The following information is displayed when emergency information is received from a Mic-E station.

①	**Position comment**	"Emergency!" will be displayed and a "dong" bell sound will be repeated 12 times.
②	**Latitude**	The current position of the partner station will be displayed in N (northern latitude) or S (southern latitude). (DD degree MM.MM minute or DD degree MM minute SS second)
③	**Longitude**	The current position of the partner station will be displayed in E (eastern longitude) or W (western longitude). (DD degree MM.MM minute or DD degree MM minute SS second)
④	**Date / Time**	The date (MM month / DD day) and time (HH hour:MM minute) the beacon was received will be displayed.

Emergency pop-up screen

When an emergency signal is received from a Mic-E station, the following pop-up screen will appear on the frequency display screen.

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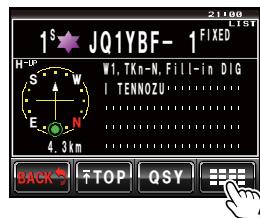
Viewing the beacon information using packet data (RAW display)

Received beacons can be displayed in packet data form before being decoded.

1 Display the beacon details screen

2 Touch **[▦]**

The expansion key screen will be displayed.

3 Touch **[RAW]**

The information display will change.

Tip Turn ⊙ to scroll the display.

4 Touch **[TOP]**

The display will switch to the text portion of the
packet data.

Tip

When a 3rd Party Header Beacon (beacon from I-Gate and others) is received, the route information
included in the text of the 3rd Party Header Beacon will be displayed instead of the information
obtained from the AX.25 packet signal.

Convenient functions

A special notification bell can be rung when a beacon from an APRS station or one within a specific range is received.

● **Notification of incoming beacon from a specified station (call sign ringer)**
Register the call sign under **[APRS]** → **[10 APRS RINGER (CALL)]**, and set the bell ring ON/OFF under **[9 APRS RINGER]** → **[CALL RINGER]**.
By registering the call sign of an APRS station that you want to check, a special bell will ring when a beacon is received from that station.
A maximum of up to 8 stations can be registered.
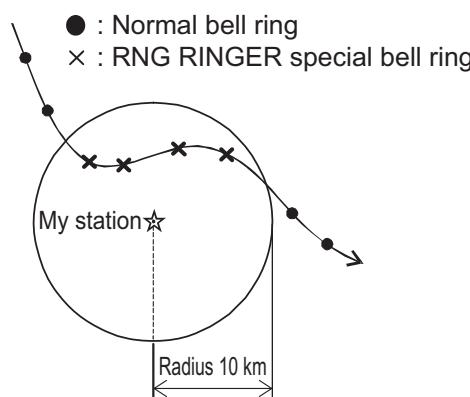
● **Checking if there are other stations within the specified range (range ringer)**
The range to be checked and the bell ring can be set ON/OFF under **[APRS]** → **[9 APRS RINGER]** → **[RNG RINGER]**.
A special bell will ring when an APRS station in the station list enters the set range.
A special bell will also ring when a beacon from an APRS station lying within the set range is received.
The checking range can be set at a radius between 1 km and 100 km from your own station. The range ringer function will be turned off when the range is set at 0 km.

● : Normal bell ring
× : RNG RINGER special bell ring

My station☆

Radius 10 km

Tip
The call sign ringer bell will ring when the call sign ringer and range ringer functions are in operation at the same time and a partner station that satisfies both conditions is detected (the call sign ringer function takes priority).

Sorting the station list

Sorting a list

The station list can be sorted in different display orders.

1 Press [F]

The function menu will be displayed.

2 Touch **[S.LIST]**

Tip When **[S.LIST]** is not displayed, touch **[BACK]** and **[FWD]** to switch the function menu.

The station list will be displayed.

3 Touch **[▦]**

The expansion key screen will be displayed.

4 Touch **[SORT FILTER]**

The detailed setting screen will be displayed.

5 Touch **[SORT]** to select the sorting condition

The sorting condition will switch between "TIME", "CALLSIGN" and "DISTANCE" each time it is touched.

"TIME": Sort the list starting from the latest beacon received.

"CALLSIGN": Sort the list in ascending order of the call sign.

"DISTANCE": Sort the list starting from the station nearest to your own station.

Tip Factory default value: TIME

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6 Touch **[BACK]**

The screen will return to the station list.

7 Touch **[SORT]**

The display order will change following the condition set in Step 5.

Tip

The sorting condition can also be selected using **[APRS]** → **[31 SORT FILTER]** in the set-up menu.

Filtering the list

The type of beacon to be displayed in the station list can be selected.

1 Press 📻

The function menu will be displayed.

2 Touch **[S.LIST]**

> Tip When **[S.LIST]** is not displayed, touch **[BACK]** and **[FWD]** to switch the function menu.

The station list will be displayed.

3 Touch **[▦]**

The expansion key screen will be displayed.

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4 Touch **[SORT FILTER]**

The detailed setting screen will be displayed.

5 Touch **[FILTER]** to select the filter condition

The filter changes as follows each time the key is touched.
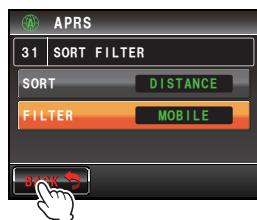
ALL	All the received beacons will be displayed.
MOBILE	Only mobile stations will be displayed.
FREQUENCY	Only stations with frequency information will be displayed.
OBJECT/ITEM	Only object stations/item stations will be displayed.
DIGIPEATER	Only digipeater stations will be displayed.
VoIP	Only VOIP stations such as WIRES stations will be displayed.
WEATHER	Only meteorological stations will be displayed.
YAESU	Only stations using Yaesu wireless transceivers will be displayed.
OTHER PACKET	Only RAW NMEA data station, status station, and packet information that could not be analysed (non-APRS format) will be displayed. Please set "OTHER" to ON under **[APRS] → [3 APRS FILTER]** in the set-up menu to display non-APRS packets that cannot be analyzed.
CALL RINGER	Only stations whose call signs are set using **[APRS] → [10 APRS RINGER (CALL)]** in the set-up menu are displayed.
RANGE RINGER	Only stations that are close to the distance set using **[APRS] → [9 APRS RINGER]** in the set-up menu are displayed.
1200 bps	Only stations received using 1200 bps (A12) packets are displayed.
9600 bps	Only stations received using 9600 bps (A96) packets are displayed.

Tip   Factory default value: ALL

6 Touch **[BACK]**

The screen will return to the station list.

Only stations that match the condition selected in Step 5 will be displayed in the list.
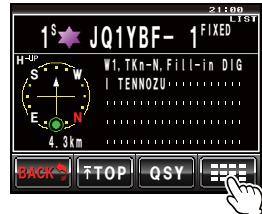
Deleting information from a list

Beacon information that is no longer required can be selected and deleted from a list.

● Deleting using the beacon details screen

1 Display the details of the beacon that you want to delete

2 Touch **[▦]**

The expansion key screen will be displayed.

3 Touch **[DEL]**

The delete confirmation screen will be displayed.
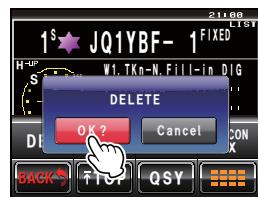
4 Touch **[OK?]**

The screen will return to the function menu once deletion is completed.

Tip Touch **[Cancel]** to cancel the deletion.

5 Touch **[▦]**

The beacon information in the list will be moved up one at a time.
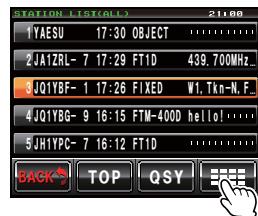
● Deleting a beacon on the station list screen

1 Display the station list

2 Touch and select the beacon information to be deleted

Tip Turn 🔘 to select as well.

3 Touch **[▦]**

The expansion key screen will be displayed.

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4 Touch **[DEL]**
The delete confirmation screen will be displayed.

5 Touch **[OK?]**
The screen will return to the function menu once
deletion is completed.

6 Touch **[▦]**
The beacon information in the list will be moved up one
at a time.

Tip Touch **[Cancel]** to cancel the deletion.

● **Deleting all information in the station list**
All information saved in the memory can be deleted in one batch

1 Display the station list
2 Touch **[▦]**
The expansion key screen will be displayed.

3 Touch **[DEL]** for one second or longer
The delete confirmation screen will be displayed.

4 Touch **[OK?]**
The screen will return to the function menu once
deletion is completed.

5 Touch **[▦]**
All the fields in the list will become empty.
Tip Touch **[Cancel]** to cancel the deletion.

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Transmitting APRS Beacons

Your own station information in the device can be transmitted as a beacon.
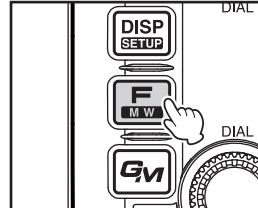
Manually transmitting APRS beacons

Beacons can be manually transmitted where required.

● Transmitting from the frequency displays screen

1 Press 🔲

The function menu will be displayed.

2 Touch **[BEACON TX]**

Tip When **[BEACON TX]** is not displayed, touch **[BACK]** and **[FWD]** to switch the function menu.

The APRS beacon will be transmitted.

● Transmitting from the station list screen or beacon details screen

1 Display the station list screen or the beacon details screen

2 Touch **[▦]**

The expansion key screen will be displayed.

3 Touch **[BEACON TX]**

The APRS beacon will be transmitted.
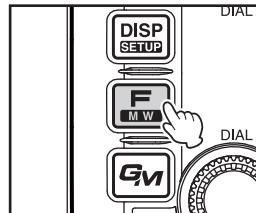
Tip

A "ding dong dong..." bell ring will sound when a beacon of your own station relayed by the digipeater is received.

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Sending an APRS beacon automatically

An APRS beacon can be sent automatically at a fixed interval.

1 Press [F] on the frequency display screen
   The function menu will be displayed.

2 Touch **[BEACON]**
   Tip   When **[BEACON]** is not displayed, touch **[BACK]** and
   [FWD] to switch the function menu.

   Then "📡" icon will be displayed at the top right of the
   screen and automatic beacon transmission will start.
   Tips • The "○" icon will be displayed when SmartBeaconing™ is
   in operation (☞P.40).

   • This will also be reflected under **[APRS]** → **[15 BEACON TX]** → **[AUTO]** in the set-up menu.
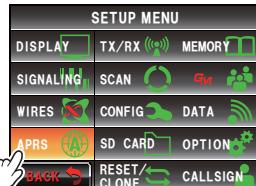
Tips
   • A beacon will be sent following the settings except **[AUTO]** that are set under **[APRS]** → **[15 BEACON TX]** in the set-up menu.
   • The delay time of the data transmission can be changed using **[APRS]** → **[11 APRS TX DELAY]** in the set-up menu.

Setting the APRS beacon automatic transmission interval

The time interval for automatically sending an APRS beacon can be set.

1 Press [DISP] for one second or longer
   The set-up menu will be displayed.
2 Select and touch **[APRS]**
   The menu list will be displayed.

3 Select and touch **[15 BEACON TX]**
   The detailed setting screen will be displayed.

4 Touch **[INTERVAL]** twice

The screen for setting the transmission interval will be displayed.
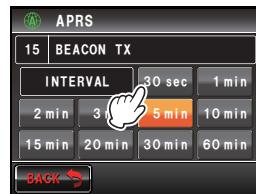
5 Press the time interval

The transmission interval can be selected from the following times.

30 sec/1 min/2 min/3 min/5 min/10 min/15 min/ 20 min/30 min/60 min

Tip   Factory default value: 5 min

6 Press 🔲 for one second or longer

The automatic transmission time of the APRS beacon will be set and the display will return to the previous screen.

Caution   The default DECAY setting (function to extend the transmission time automatically when stationary) is set to ON. When operating in a stationary state all the time, turn the DECAY setting off if you do not wish to extend the transmission interval. The transmission interval will no longer be affected by the stationary state.

Using SmartBeaconing™

The SmartBeaconing™ function efficiently sends out a beacon with your own station position with information data such as movement speed and direction of advance derived from a GPS antenna unit.

This APRS function supports automatic beacon transmission using SmartBeaconing™. The SmartBeaconing™ function in the radio has three different types settings (TYPE 1 - TYPE 3) from which you can choose to operate.

The SmartBeaconing™ setting assumes that the device is used for mobile operation in town and residential areas. Normally, operation in the TYPE 1 default factory setting when shipped is recommended. However, when using the SmartBeaconing™ function along meandering roads such as mountain paths, many multiple beacons may be transmuted in a short period of time and be the cause of frequency congestion.

When testing operations at a different timing, TYPE 2 and TYPE 3 settings can be selected and adjusted to change the method beacon transmissions according to the situation. In order to ensure that beacons are transmitted in an appropriate manner, adjust the SmartBeaconing™ parameters and DIGI PATH settings to prevent frequency congestion.

Caution

The SmartBeaconing™ function can only be used when **[APRS]** → **[26 MY POSITION SET]** in the set-up menu is set to "GPS".

1 Press 🔲 for one second or longer
   The set-up menu will be displayed.

2 Select and touch **[APRS]**
   The menu list will be displayed.

3 Select and touch **[30 SmartBeaconing]** twice
   The detailed setting screen will be displayed.

4 Touch **[1 STATUS]** to select "TYPE 1"
   Each time this is touched, the setting will switch
   between "OFF", "TYPE 1", "TYPE 2" and "TYPE 3".

   Tip   When "TYPE 1", "TYPE 2" and "TYPE 3" is selected,
         settings from **[2 LOW SPEED]** to **[8 TURN TIME]** are
         enabled.

5 Press 🔲 for one second or longer
   The SmartBeaconing™ operating method will be set
   and the display will return to the previous screen.

6 Press 🔲
   The function menu will be displayed.

7 Select and touch **[BEACON]**

   Tip   When **[BEACON]** is not displayed, touch **[BACK]** and
         [FWD] to switch the function menu.

   The "🔵" icon will be displayed at the top right of the
   screen, and automatic transmission using
   SmartBeaconing™ will start.

   Tip   This will also be reflected under **[APRS]** → **[15 BEACON
         TX]** → **[AUTO]** in the set-up menu.

Tips
- The default TYPE 1 - TYPE 3 settings are the same when shipped from the factory. When operating
  SmartBeaconing™ under a different setting, select "TYPE 2" or "TYPE 3" in Step 4 and then change
  the setting under **[2 LOW SPEED]** - **[8 TURN TIME]**.
- When SmartBeaconing™ is in operation, all INTERVAL, PROPORTIONAL, DECAY, LOW SPEED
  and RATE LIMIT settings under **[APRS]** → **[15 BEACON TX]** in the set-up menu will become void.

   *SmartBeaconing™ is a function provided by HamHUD Nichetronix.

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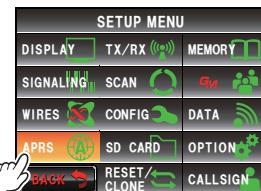
Attaching status text to a beacon

Pre-registered comments can be appended to your own station beacons as status text.
5 types of text containing a maximum of 60 characters including embedded information
can be registered.

Caution

When entering a long text that exceeds 21, 29 or 43 characters, the text may not be displayed in
certain model radios. The beacon transmission time will also become longer for each transmission,
increasing the frequency occupation time and congestion. Please keep the text as short as possible.

1 Press 🔘 for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**
The menu list will be displayed.

3 Select and touch **[14 BEACON STATUS TEXT]**
The detailed setting screen will be displayed.

4 Select and touch **[TEXT 1]**
The screen for selecting the embedded information in
the status text will be displayed.
NONE:
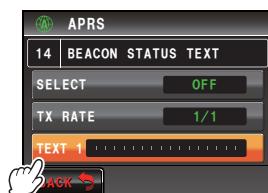
No data will be embedded in the status text.

FREQUENCY:

The frequency on the band opposite from the APRS operating band will be
automatically embedded in the status text.

FREQ & SQL & SHIFT:

The band frequency on the band opposite from the APRS operating band and
information such as the tone (squelch), shift, etc. will be automatically embedded
in the status text.

5 Select and touch **[NONE]**, **[FREQUENCY]** or **[FREQ & SQL & SHIFT]**

The character input screen will be displayed.

When either **[FREQUENCY]** or **[FREQ & SQL & SHIFT]** is touched, it will be displayed at the beginning of the edit field at the top of the screen.

6 Touch a character key to enter that character

Tip Numbers and symbols can be entered. Katakana characters cannot be used.

7 Touch **[ENT]**
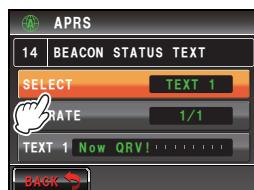
Tip Repeat Steps 4 to 7 to continue entering TEXT 2 to 5.

8 Touch **[SELECT]** to select the status text number

The status text number will switch between "OFF" and "TEXT 1" to "TEXT 5" each time the key is touched.

Tips • Select "OFF" when you do not wish to append any status text.
• Factory default value: OFF

9 Press 📟 for one second or longer

The status text will be registered and the display will return to the previous screen.

Subsequently, the status text will be appended to the beacon and then transmitted.

Tip

The frequency of appending the status text when sending an APRS beacon can be set under **[APRS]** → **[14 BEACON STATUS TXT]** → **[TX RATE]** in the set-up menu.

Selecting a position comment

A position comment (standard message) can be selected to be included in your own station beacon.

1 Press 📟 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

The menu list will be displayed.

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3 Touch **[29 POSITION COMMENT]**

The screen for selecting the position comment will be displayed.

4 Touch the position comment

The position comment can be select from among the following.

Off Duty/En Route/In Service/Returning/Committed/ Special/Priority/Custom 0 - Custom 6/Emergency!

Tip   Turn 🔘 to scroll the screen.

Caution   The confirmation screen will be displayed when "Emergency!" is selected. Please touch "Cancel".

5 Touch **[BACK]**

The screen will return to the menu list and the selected comment will be displayed in the setting field under **[29 POSITION COMMENT]**.

6 Press 🔲 for one second or longer

The display will return to the previous screen.

⚠️
> Never select "Emergency!" unless emergency aid is required e.g. accidents and disasters etc.
>
> In the event an emergency message is sent out by mistake, select a position comment other than "Emergency!" and send another packet. Do not turn the radio OFF.

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Setting the digipeater route

A digipeater is a station that relays packets such as beacons. The following 8 types of digipeater routes can be selected for use in the device.

Route	Number of relay steps	Address	Format
OFF	0	–	–
WIDE 1-1	1	Configured (settings cannot be changed)	New-Paradigm format*
WIDE 1-1, WIDE 2-1	2	Configured (settings cannot be changed)	New-Paradigm format*
PATH 1	Maximum 2	Any	Any
PATH 2	Maximum 2	Any	Any
PATH 3	Maximum 2	Any	Any
PATH 4	Maximum 2	Any	Any
FULL 1	Maximum 8	Any	Any
FULL 2	Maximum 8	Any	Any

When "WIDE 1-1, WIDE 2-1" is selected, the beacon is initially relayed to the digipeater station at the first location as specified in WIDE 1-1, and then it is relayed to the digipeater at the second location as specified in WIDE 2-1.

As of 2013, digipeater stations used in APRS are recommended to operate in the New-Paradigm format*. As the number of supporting digipeater stations is the largest, the default setting of this radio is therefore set to "WIDE 1-1, WIDE 2-1" when shipped from the factory on the assumption of a digipeater station operating in the New-Paradigm method. It is recommended that you operate the transceiver without changing the setting.
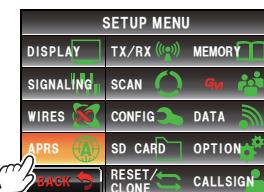
When using other relay methods, select either PATH 1 to PATH 4, FULL 1 or FULL 2, and enter the address of the digipeater used for that route.

* Please refer to the following website for the description of the New-Paradigm format.
  http://aprs.org/fix14439.html

Caution
When too many relay steps are set, multiple transmission beacons from the same station are relayed, resulting in congestion among the channels.
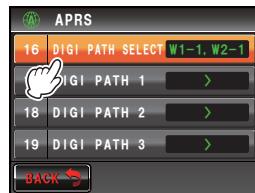
1 Press 🔳 for one second or longer
   The set-up menu will be displayed.
2 Select and touch **[APRS]**
   The menu list will be displayed.

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3 Select and touch **[16 DIGI PATH SELECT]**

The screen for selecting the digipeater route will be displayed.

4 Touch and select the route

Tip   The route can also be selected by turning ◎.
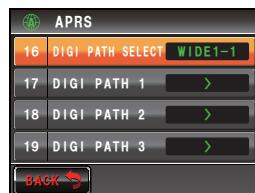
Caution   The packet will not be relayed when "OFF" is selected.

5 Touch **[BACK]**

The screen will return to the menu list and the selected route will be displayed in the setting field under **[16 DIGI PATH SELECT]**

6 Press ◻ for one second or longer

The display will return to the previous screen.

● **Setting the address of the digipeater route**

After selecting PATH 1 - PATH 4/FULL 1 - FULL 2 under **[APRS]** → **[16 DIGI PATH SELECT]** in the set-up menu, enter the specific address information (call sign and ALIAS).

A maximum of 2 addresses for PATH 1 - PATH 4, and a maximum of 8 addresses for FULL 1 - FULL 2 can be registered.
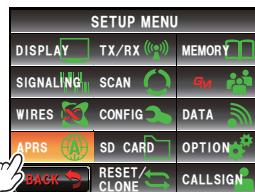
Example: Enter the address information of PATH 1

1 Press ◻ for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

The menu list will be displayed.

3 Select and touch **[17 DIGI PATH 1]**

The address selection screen will be displayed.

4 Select and touch **[ADDRESS 1]**

The address input screen will be displayed.

5 Touch the character keys to enter the call sign

Tip Numbers and symbols can be entered. Katakana characters cannot be used.

6 Touch **[ENT]**

The entered call sign will be displayed in the setting field under **[ADDRESS 1]**.

Tip Repeat Steps 4 to 6 to continue entering ADDRESS 2.

7 Press 🔲 for one second or longer

The address of the digipeater route will be set and the display will return to the previous screen.

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Sending and Receiving APRS Messages
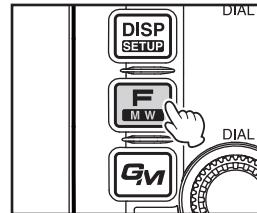
Text messages can be sent and received separately from beacons in APRS.
Replies can be sent in response to messages received, and standard messages saved in the memory can also be selected to be sent as replies.
A maximum of up to 100 sent and received messages can be saved in a common list in the memory.

Checking messages

Sent and received messages can be viewed in a list. A message can also be selected from the list to check its contents.

1 Press 🔳

The function menu will be displayed.

2 Touch **[MSG]**

Tip   When **[MSG]** is not displayed, touch **[BACK]** and **[FWD]** to switch the function menu.

The message list will be displayed.

The messages will be displayed in a chronological order starting from the last one sent or received.

Tips • Turn 🎛 to scroll the list.

• Touch **[TOP]** to return to the top of the list.
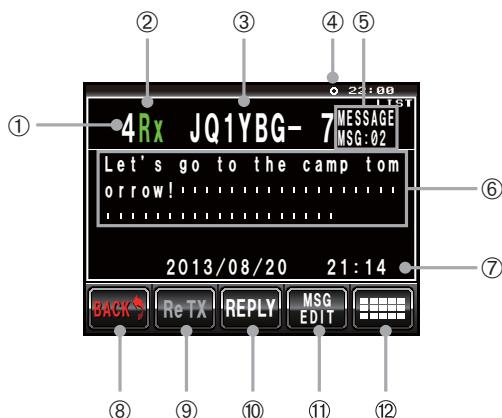
3 Touch the message twice to view the message details

The detailed information screen will be displayed.

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Viewing the message contents

The message contents will be displayed as shown in the following screen.

		Display explanation	
①	**Number**	Entry number in the message list
②	**Sending and receiving**	Displaying either sent or received messages
③	**Station name**	Call sign, object name, or item name of a transmitting station
④	**Beacon icon**	During automatic beacon transmission, "●" is lighted. During SmartBeaconing™ operations, "○" is lighted.
⑤	**Message type and number**	This displays the message type (MESSAGE, GROUPMSG, BULLETIN, QUERY) and the message number.
⑥	**Text**	Main text of message
⑦	**Date / Time**	Date and time message is received or sent
⑧	**[BACK]**	The display will return to the previous screen when touched.
⑨	**[Re TX]**	When touched, TX OUT messages (those with no ACK receipt) will be resent.
⑩	**[REPLY]**	When touched, the screen for writing the reply message is displayed.
⑪	**[MSG EDIT]**	When touched, the message input screen is displayed.
⑫	**[▦]**	When touched, the function menu is displayed.

Tips
- For transmitted messages, information on DIGI (First) and DIG (Last) will not be displayed (- will be displayed) as the digipeater information is not saved.
- A different message can be displayed by pressing 🔘 to light up "LIST" at the top right and then turning 🔘.

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Receiving APRS messages

A bell will ring when an APRS message is received and the details will be displayed for a period of time. The information will continue to be displayed if a key or the touch panel is operated while the information is being displayed.

 →

Tips

- The display time of the detailed information can be changed using **[APRS]** → **[7 APRS POP-UP]** in the set-up menu. The detailed information can also be set not to appear even when a message is received by setting the display time to "OFF".
- The receive audio (message and voice etc.) of the APRS operating band can be muted using **[APRS]** → **[6 APRS MUTE]** in the set-up menu.
- Press [QUERY] to delete the main text and automatically enter the command "?APRSP".
- When [POS] is pressed while the cursor is selected, the beacon information of the messaging station is searched and displayed.

▌ Convenient functions

● **Listening to audio read out from a message**
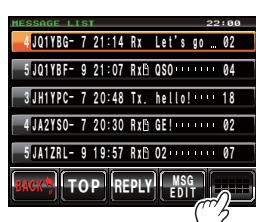
An audio announce read out of a message can be heard when the optional voice guide unit "FVS-2" is installed in the transceiver. This is convenient while driving, when looking at the screen is not advisable.

1 Display the message list

2 Select the message tag whose contents you want to hear

3 Touch **[▦]**

The function menu will be displayed.

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4 Touch **[VOICE]**

The message will be read out loud.

Tip

The audio can also be heard by touching **[VOICE]** on the
screen showing the message details.

● **Returning a read message to unread status**

A " " icon is displayed next to the tag of a message that has been read once. The icon
disappears when the message is read but the icon can be displayed again. This can be
used to mark messages to be read and replied later.

1 Display the message list

2 Select the message tag that you would like to
append the " " icon to.

3 Touch **[ ]**

The expansion key screen will be displayed.

4 Touch **[UNREAD]**

The " " icon will be displayed in the tag.

Tips

The " " icon can only be appended to received messages. The " " will not be displayed even if a
transmitted message is selected in Step 2.

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Sending APRS messages
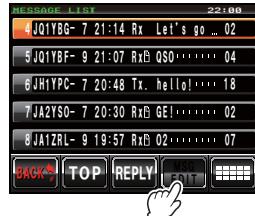
Text containing a maximum of 67 characters can be sent as an APRS message in this device. Numbers and symbols can be used.

Creating and sending a new message

1 Display the message list
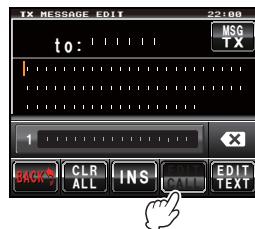
2 Touch **[MSG EDIT]**

The message input screen will be displayed.

3 Touch **[EDIT CALL]**

The screen for entering the call sign of the transmitting partner station will be displayed.

4 Touch the character keys to enter the call sign

Tip   Numbers and symbols can be entered. Katakana characters cannot be used.

5 Touch **[ENT]**

The display will return to the screen for checking the transmission contents.

6 Touch **[EDIT TEXT]**

The message text input screen will be displayed.

7 Touch the character keys to enter the text

Tip Numbers and symbols can be entered. Katakana characters cannot be used.

8 Touch **[ENT]**

The display will return to the screen for checking the transmission contents.
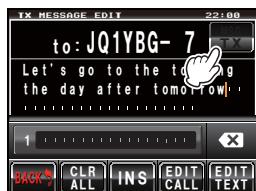
Tips • Turn ⊙ to move the cursor within the text.

• Touch **[INS]** to insert a space on the right hand side of the cursor and shift the text after the cursor to the right.

• Touch **[✕]** to delete the character to the left of the cursor.

9 Touch **[MSG TX]**

The message will be transmitted.

The transmitted message will be displayed at the top of the list.

Cancelling a message resend

When a message is sent to a specific partner station and an ACK packet to acknowledge receipt of the message is not returned by the partner station one minute after the message is sent, the same message will be resent up to 5 times. The resend may be cancelled by pressing [TxCLR] midway through the process.

Remaining transmission count   Display after resend is cancelled

● **Using sent and received messages**

A previously edited message can be used to write a new message. This can be used to forward a received message.

1 Display the message list

2 Touch **[MSG EDIT]**

The message input screen will be displayed.

> Tip   Delete the previous screen contents when writing/editing a new message as the previous written/edited message will be displayed on the screen. (press [CLR ALL] to delete).

3 Edit the call sign and text according to Steps 4 to 9 to create and send a new message

● **Clear the resend timer and resend the message by force**

This clears the resend timer when an ACK packet is not returned from the partner station and resends the message by force.

1 Display the message list
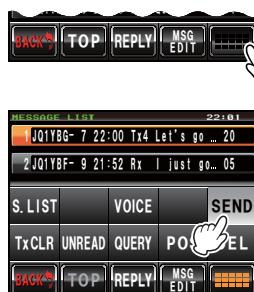
2 Select the message tag to be sent by force or display the message details

3 Touch **[▦]**

The expansion key screen will be displayed.

4 Touch **[SEND]**

The message will be transmitted by force.
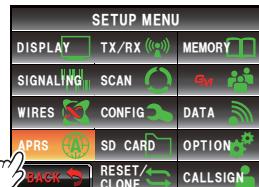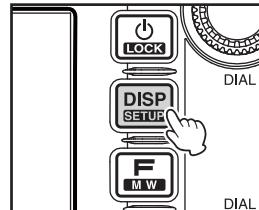
Using standard text
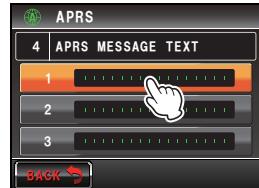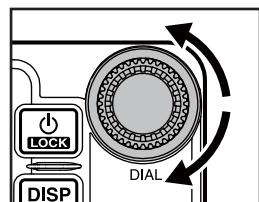
A pre-registered character string can be appended to the message text. Up to 8 types of text containing a maximum of 16 characters can be registered.

(1) Registering standard text

1 Press 🔲 for one second or longer
   The set-up menu will be displayed.
2 Select and touch **[APRS]**
   The menu list will be displayed.

3 Select and touch **[4 APRS MESSAGE TEXT]**
   The text selection screen will be displayed.
4 Turn 🎛 to select the text number (1 to 8)
5 Press 🎛 or touch the text number
   The character input screen will be displayed.

6 Touch a character key to enter that character

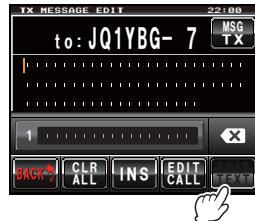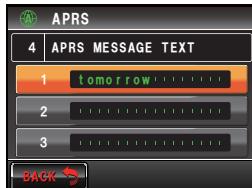Tip Numbers and symbols can be entered. Katakana characters cannot be used.

7 Touch **[ENT]**

The display will return to the text selection screen and the entered text will be displayed in the setting field of the selected text number.

Tip Repeat Steps 4 to 7 to continue entering the additional text.
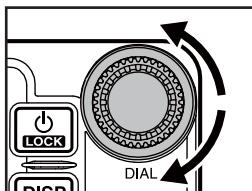
(2) Appending standard text

1 Edit the call sign and text following 1 to 9 in "Creating and sending a new message" (☞P.52)

2 Turn ◎A to move the cursor to the position where you would like to insert the standard text

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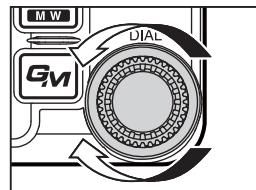
3 Turn 〰️B to display the text number and text of the standard text you would like to use at the bottom of the screen

4 Touch a standard text

The standard text to the right of the cursor will be copied.

> Tip The character string to the right of the cursor will be overwritten.

Replying to a received message

1 Display the message list

2 Select the message tag that you would like to reply to or display the message details

3 Touch **[REPLY]**

The screen for checking the transmission contents will be displayed.
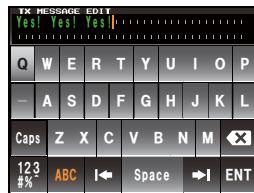
4 Touch **[EDIT TEXT]**

The message text input screen will be displayed.

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5 Touch the character keys to enter the text

6 Touch **[ENT]**

The display will return to the screen for checking the transmission contents.

7 Touch **[MSG TX]**

The message will be transmitted.

The transmitted message will be displayed at the top of the list.

Sorting the APRS message list

Deleting a message from the list

Messages that are no longer required can be deleted from the list.

● **Deleting using the message details screen**

1 Display the details of the message that you would like to delete

2 Touch **[▦]**

The expansion key screen will be displayed.

3 Touch **[DEL]**

The delete confirmation screen will be displayed.

4 Touch **[OK?]**

Tip   Touch **[Cancel]** to cancel the deletion.

The display will return to the function menu screen when the deletion is completed.

The messages in the list will be moved up one at a time.

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● **Deleting a message using the message list screen**

1   Select the message that you would like to delete from the message list

2   Touch **[▦]**

The expansion key screen will be displayed.

3   Touch **[DEL]**

The delete confirmation screen will be displayed.

4   Touch **[OK?]**

Tip   Touch **[Cancel]** to cancel the deletion.

The display will return to the function menu screen when the deletion is completed.

The messages in the list will be moved up one at a time.

● **Clearing the message resend counter and canceling the resend**

When a message is sent to a specific partner station and an ACK packet to acknowledge receipt of the message is not returned by the partner station within one minute after the message is sent, the same message will be resent up to 5 times. However, the resend may be cancelled.

1   Display the message list

2   Select the message that you would like to cancel the resend

3   Touch **[▦]**

The expansion key screen will be displayed.

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4 Touch **[TxCLR]**

The resend will be cancelled.
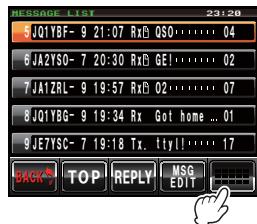
● **Deleting all APRS messages**

1 Display the message list

2 Touch **[░░░░]**

The expansion key screen will be displayed.

3 Touch **[DEL]** for one second or longer

The delete confirmation screen will be displayed.

4 Touch **[OK?]**

Tip Touch **[Cancel]** to cancel the deletion.

The display will return to the function menu screen

when the deletion is completed.

All the fields in the list will become empty.

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Message receipt acknowledgement (ACK)

When a message is sent to a specific partner station, an ACK packet (receipt acknowledgement) will be returned to acknowledge receipt of the message by the partner station. The transmission process ends when an ACK packet is returned by the partner station. When an ACK packet is not returned by the partner station within one minute after the message is sent, the same message will be resent up to 5 times. When an ACK packet is not returned even after 5 times, the transceiver will go into the "TX OUT" state. The remaining transmission count of the message is displayed as shown below. The remaining transmission count can also be checked from the transmission details screen.

Remaining count display

Displaying the remaining transmission count

Message list screen
(when the number of transmissions remaining is four)

Displaying the remaining transmission count

Message list screen
(when the number of transmissions remaining is four)

"*" is displayed when an acknowledgement is received
"." is displayed during TX OUT

No display when an acknowledgement is received
"OUT" is displayed during TX OUT

- A maximum of 100 messages can be registered in the message list. However, since this is used for both sent and received messages, the oldest message is automatically deleted when the number of messages exceed 100 (unread messages and sent messages will be deleted).
- When the frequency display screen is displayed, a receipt confirmation sound is heard when an ACK packet is returned from a partner station, and the pop-up screen in the figure on the right will be displayed at the same time (when "MESSAGE" under "APRS" → "7 APRS POP-UP" in the set-up menu is set to anything except OFF).

APRS Set-up Menu List

Menu / Item	Explanation of function	Available settings (Default values shown in BOLD)
1 **APRS COMPASS**	APRS compass operation settings	NORTH UP / **HEADING UP**
2 **APRS DESTINATION**	Display of model code Cannot be edited	**APY400**
3 **APRS FILTER**	Filter function setting	Mic-E: **ON** / OFF POSITION: **ON** / OFF WEATHER: **ON** / OFF OBJECT: **ON** / OFF ITEM: **ON** / OFF STATUS: **ON** / OFF OTHER: ON / **OFF** RANGE LIMIT: 0 mi - 3000 mi / **OFF** ALT.NET: ON / **OFF**
4 **APRS MESSAGE TEXT**	Standard message text input	1 to 8 messages
5 **APRS MODEM**	Turning the APRS function ON/OFF	**OFF** / ON
6 **APRS MUTE**	Switches the AF mute of the APRS ON or OFF	**OFF** / ON
7 **APRS POP-UP**	Display time setting for pop-up display beacons and messages	BEACON: OFF / 3 sec / 5 sec / **10 sec** / HOLD MESSAGE: OFF / 3 sec / 5 sec / **10 sec** / HOLD MYPACKET: **OFF** / ON

8 **APRS POP-UP COLOR**	Screen color setting for pop-up display beacons	1 BEACON:
		    CHECK OFF / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE
		2 MOBILE:
		    CHECK OFF / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE
		3 OBJECT/ITEM:
		    CHECK OFF / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE
		4 CALL RINGER:
		    CHECK OFF / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE
		5 RNG RINGER:
		    CHECK OFF / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE
		6 MESSAGE:
		    CHECK OFF / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE

Menu / Item	Explanation of function	Available settings (Default values shown in BOLD)
		7 GRP/BULT: **CHECK OFF** / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE 8 MY PACKET: **CHECK OFF** / GREEN / BLUE / ORANGE / PURPLE / SKY-BLUE / YELLOW / AMBER / WHITE
9 APRS RINGER	Bell sound setting at beacon arrival	TX BEACON: **ON** / OFF TX MESSAGE: **ON** / OFF RX BEACON: **ON** / OFF RX MESSAGE: **ON** / OFF MY PACKET: **ON** / OFF CALL RINGER: ON / **OFF** RNG RINGER: 0 mi - 100 mi / **OFF** MSG VOICE: ON / **OFF**
10 APRS RINGER (CALL)	Call sign setting for CALL RINGER	1 - 8 stations
11 APRS TX DELAY	Data transmission delay time setting	100 ms / 150 ms / 200 ms / **250 ms** / 300 ms / 400 ms / 500 ms / 750 ms / 1000 ms
12 APRS UNITS	APRS display unit setting	1 POSITION: **dd°mm.mm'** / dd°mm'ss'' 2 DISTANCE: km / **mile** 3 SPEED: km/h / **mph** / knot 4 ALTITUDE: m / **ft** 5 BARO: hPa / **mb** / mmHg / inHg 6 TEMP: °C / **°F** 7 RAIN: mm / **inch** 8 WIND: m/s / **mph** / knot
13 BEACON INFO SELECT	Transmission beacon information setting	AMBIGUITY: **OFF** / 1 - 4 digit SPEED/COURSE: **ON** / OFF ALTITUDE: **ON** / OFF
14 BEACON STATUS TEXT	Status text input settings	SELECT: TEXT 1 - 5 / **OFF** TX RATE: **1/1** - 1/8 / 1/2 (FREQ) - 1/8(FREQ) TEXT 1 - 5: **NONE** / FREQUENCY / FREQ & SQL & SHIFT
15 BEACON TX	Automatic beacon transmission / Switching of manual transmission	AUTO: **OFF** / ON INTERVAL: 30 sec - 60 min **5 min** PROPORTIONAL: **ON** / OFF DECAY: **ON** / OFF LOW SPEED: 1 mph - 99 mph **5 mph** RATE LIMIT: 5 sec - 180 sec **30 sec**
16 DIGI PATH SELECT	Digipeater route settings	OFF / WIDE 1-1 / **WIDE 1-1,WIDE 2-1** / PATH 1 - PATH 4 / FULL 1 / FULL 2
17 DIGI PATH 1	Digipeater route address settings	ADDRESS 1: – ADDRESS 2: –
18 DIGI PATH 2		ADDRESS 1: – ADDRESS 2: –
19 DIGI PATH 3		ADDRESS 1: – ADDRESS 2: –
20 DIGI PATH 4		ADDRESS 1: – ADDRESS 2: –

Menu / Item	Explanation of function	Available settings (Default values shown in BOLD)
21 **DIGI PATH FULL 1**	Digital repeater route address setting	ADDRESS 1: – ADDRESS 2: – ADDRESS 3: – ADDRESS 4: – ADDRESS 5: – ADDRESS 6: – ADDRESS 7: – ADDRESS 8: –
22 **DIGI PATH FULL 2**		ADDRESS 1: – ADDRESS 2: – ADDRESS 3: – ADDRESS 4: – ADDRESS 5: – ADDRESS 6: – ADDRESS 7: – ADDRESS 8: –
23 **CALLSIGN (APRS)**	My call sign setting	–
24 **MESSAGE GROUP**	Group filter setting for received messages	GROUP 1: ALL✱✱✱✱✱✱ GROUP 2: CQ✱✱✱✱✱✱✱ GROUP 3: QST✱✱✱✱✱✱ GROUP 4: YAESU✱✱✱✱ GROUP 5: – GROUP 6: – BULLETIN 1: BLN?✱✱✱✱✱ BULLETIN 2: BLN? BULLETIN 3: BLN?
25 **MESSAGE REPLY**	Automatic response setting of received messages	REPLY: **OFF** / ON CALLSIGN: ✱✱✱✱✱✱-✱✱ REPLY TEXT: –
26 **MY POSITION SET**	My position setting	**GPS** / MANUAL
27 **MY POSITION**	Manual setting of your own station position	LAT: N 0°00. 00' (' 00'') LON: E 0°00. 00' (' 00'')
28 **MY SYMBOL**	My symbol setting	**ICON 1: [/>]** Car ICON 2: [/R] REC.Vehicle ICON 3: [/-] House QTH (VHF) USER: [YY] Yaesu Radios
29 **POSITION COMMENT**	Position comment setting	**Off Duty** / En Route / In Service / Returning / Committed / Special / Priority / Custom 0 - 6 / Emergency!
30 **SmartBeaconing**	Smart beaconing setting	1 STATUS: **OFF** / TYPE 1 / TYPE 2 / TYPE 3 2 LOW SPEED: 3 - 30 mph **5 mph** 3 HIGH SPEED: 3 - 90 mph **70 mph** 4 SLOW RATE: 1 - 100 min **30 min** 5 FAST RATE: 10 - 180 sec **120 sec** 6 TURN ANGLE: 5 - 90° **28°** 7 TURN SLOPE: 1 - 255 **26** 8 TURN TIME: 5 - 180 sec **30 sec**

Menu / Item	Explanation of function	Available settings (Default values shown in BOLD)

31 SORT FILTER	Sort function / filter function setting	SORT: **TIME** / CALLSIGN / DISTANCE
		FILTER:
		    ALL / MOBILE / FREQUENCY / OBJECT/
		    ITEM / DIGIPEATER / VoIP / WEATHER /
		    YAESU / OTHER PACKET / CALL RINGER /
		    RANGE RINGER / 1200 bps / 9600 bps

32 VOICE ALERT	Voice alert function setting	VOICE ALERT:
		    NORMAL / TONE SQL / DCS / RX-TSQL /
		    RX-DCS
		TONE SQL: 67.0 Hz - 254.1 Hz **100.0 Hz**
		DCS: 023 - 754 **023**

APRS set-up menu basic operations

1 Press 🔲 for one second or longer

The set-up menu will be displayed.

2 Touch **[APRS]**
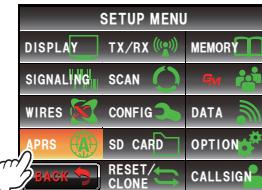
[APRS] will be selected.

Tip The menu item can also be selected by turning 🔘A.

3 Touch **[APRS]** again

The menu list will be displayed.

Tip You can also press 🔘A to choose the menu item.
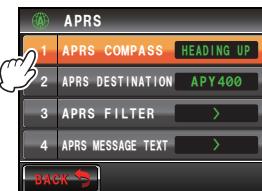
4 Select the item to be set

Turn 🔘A or touch the item.

The item will turn orange in color.

Tip Turn 🔘 to select the items that are not visible on the screen.

5 Touch the selected items

Tip You can also press 🔘A to choose on the item.

6 Changing the set values

Press 🔘A briefly or touch the item.

The set value will change each time it is pressed or touched.

Tip When ">" is displayed in the setting value field, a screen for the detailed settings will be displayed upon pressing 🔘A and touching the items.

7 Press 🔲 for one second or longer

The amended set value will be confirmed and the display will return to the previous screen.

Tips • The amended set value can also be confirmed by pressing the microphone PTT or the 🔘 key.

   • To continue setting the other items, touch **[BACK]**. The set value will be confirmed and the display will return to the menu list screen.

   • Touch **[BACK]** on any of the screens to return to the previous screen.

Tip
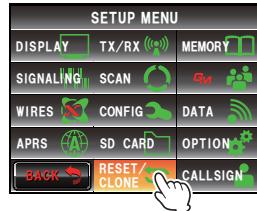
When a set menu item is touched again and the menu list is displayed, a screen in which the previously set item has already been selected state (in orange color) will be displayed.

Resetting the APRS settings

The APRS settings can be restored to the default factory settings.

1 Press 🔲 for one second or longer

The set-up menu will be displayed.

2 Touch **[RESET/CLONE]**

[RESET/CLONE] will be selected.

Tip The menu item can also be selected by turning 🔘.

3 Touch **[RESET/CLONE]** again

The menu list will be displayed.

Tip You can also press 🔘 to choose the menu item.

4 Select **[6 APRS RESET]**

Turn 🔘 or touch the item.

5 Touch **[6 APRS RESET]**

Tip You can also press 🔘 to choose the menu item.

A confirmation screen for resetting the APRS settings will be displayed.

6 Touch **[OK?]**

The APRS settings will be reset and restored to the default factory settings when shipped.

Tip Touch **[Cancel]** to cancel the reset.

Using the APRS Set-up Menu

APRS compass setting

This sets the direction of the compass panel on the APRS screen.

1 Press 📟 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Touch **[1 APRS COMPASS]** to select the direction of the compass panel
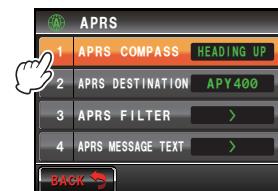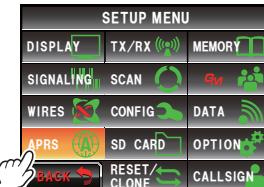
The compass needle will switch between "Heading UP" and "North UP" each time it is touched.

HEADING UP: This displays the direction of advance of your own station at the top all the time.

NORTH UP: This fixes the north direction of the compass scale at the top of the screen.

Tip   Factory default value: Heading
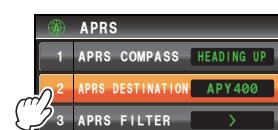
4 Press 📟 for one second or longer

The direction of the compass panel will be set and the display will return to the previous screen.

Model code display

The model code can be checked (but it cannot be changed).

1 Press 📟 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select **[2 APRS DESTINATION]**

The model code will be displayed.

4 Press 📟 for one second or longer

The display will return to the previous screen.

Filter function setting

This sets the filter for the downloading of various types of beacons.

1 Press 🔲 for one second or longer

The set-up menu will be displayed.
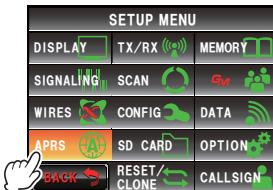
2 Select and touch **[APRS]**

3 Select and touch **[3 APRS FILTER]**

The filter setting screen will be displayed.

When the item is not displayed, turn 🎛️ to scroll the display.

- Mic-E: Download and display the microphone encoder beacon.
- POSITION: Download and display the position beacon and RAW NMEA data.
- WEATHER: Download and display the meteorological beacon.
- OBJECT: Download and display the object beacon.
- ITEM: Download and display the item beacon.
- STATUS: Download and display the status beacon.
- OTHER: Download and display the non-APRS packets
- RANGE LIMIT: This restricts the reception to only beacons that lie within the specified range from your own station. There will be no limit on the distance when this is set to OFF. The unit follows the setting under "2 DISTANCE" of "12 APRS UNITS".
- ALT.NET: Download and display the packets that are specified by the Destination Address in the Alternate Nets.

4 Touch **[Mic-E]** to select ON/OFF

Each time this key touched, the setting will switch between "ON" and "OFF".

ON: Download the beacon.

OFF: Do not download the beacon.

5 Touch **[POSITION]**, **[WEATHER]**, **[OBJECT]**, **[ITEM]**, **[STATUS]**, **[OTHER]** and **[ALT.NET]** and select ON/OFF for each of them

Each time this key is touched, the setting will switch between "ON" and "OFF".

6 Touch **[RANGE LIMIT]**

The number input screen will be displayed.

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7 Enter the distance to restrict the beacon reception

The entered distance will be displayed at the top of the screen.

A distance between 0 mi and 3000 mi can be set.

Tips • The function will be turned off when a distance of 0 mi is set.

• Use **[APRS]** → **[12 APRS UNITS]** in the set-up menu to change the display unit of the distance.

8 Touch **[ENT]**

The display will return to the filter setting screen and the entered distance will be displayed in the setting field.

"OFF" will be displayed when this is set to 0 mi.

9 Press 🄳🄸🅂🄿 for one second or longer

The filter will be set and the display will return to the previous screen.

Tip Factory default value: Mic-E: ON
POSITION: ON
WEATHER: ON
OBJECT: ON
ITEM: ON
STATUS: ON
OTHER: OFF
RANGE LIMIT: OFF
ALT.NET: OFF

Inputting standard message text

Eight types of standard messages containing a maximum of 16 characters can be created and registered. These can be pasted from the message editing screen and then transmitted.

Please refer to "Using standard text" (☞P.55) for the details.

Turning the APRS function ON/OFF

This sets the APRS function ON or OFF.

Please refer to "Activating the APRS function" (☞P.14) for the details.
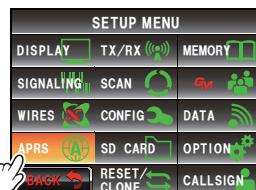
APRS operating band mute setting

The receive audio (beacon and voice etc.) of the APRS operating band can be muted.

1 Press 🄳🄸🅂🄿 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Touch **[6 APRS MUTE]** to turn it on or off

Each time this key is touched, the setting will switch between "ON" and "OFF".

ON: Mute the reception audio of the APRS band.

OFF: The receive audio can be heard by adjusting the volume setting of the APRS band.

Tip Factory default value: OFF

4 Press 🔲 for one second or longer
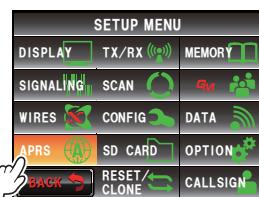
The AF MUTE of the APRS operating band will be set and the display will return to the previous screen.

APRS reception pop-up setting

This sets the display time of the pop-up that appears when a APRS beacon and message is received.

1 Press 🔲 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[7 APRS POP-UP]**

The screen for setting the pop-up display time will be displayed.

4 Touch **[BEACON]** to select the pop-up time when a beacon is received

The pop-up time changes in the following order each time this key is touched.

"OFF", "3 sec", "5 sec", "10 sec", "HOLD"

Tip Factory default value: 10 sec

5 Touch **[MESSAGE]** to select the pop-up time when a message is received

The pop-up time changes in the following order each time this key is touched.

"OFF", "3 sec", "5 sec", "10 sec", "HOLD"

Tip Factory default value: 10 sec

6 Touch **[MY PACKET]** to select the pop-up ON/OFF of your own station's transmission beacon (relayed signal) Each time this key touched, the setting will switch between "ON" and "OFF".

Tip Factory default value: OFF

7 Press 🔲 for one second or longer

The APRS reception pop-up action will be set and the display will return to the previous screen.

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Setting the display color of the pop-up for each APRS packet

This sets the display color of the pop-up for each APRS packet.
- Since the beacon may be matched to multiple conditions, the packets will be checked in the following priority order and lighted up in the first corresponding color specified.
  MY PACKET > CALL RINGER > RNG RINGER > MOBILE > OBJ/ITEM > BEACON
- The conditional matching of the beacon concerned will not be determined for items that are set to OFF. For this reason, the color does not change even if the conditions match. When none of the conditions match, the display color of the pop-up will not change and will be displayed in white.

1 Press 🔲 for one second or longer

2 Select and touch **[APRS]**

3 Select and touch **[8 APRS POP-UP]**

The screen for setting the display color of the pop-up will be displayed.

- 1 BEACON: When all the APRS beacon stations are received, the pop-up will be displayed in the specified color.

- 2 MOBILE: When an APRS mobile station is received, the pop-up will be displayed in the specified color.

- 3 OBJECT/ITEM: When an APRS object/item station is received, the pop-up will be displayed in the specified color.

- 4 CALL RINGER: When a call sign ringer specified station (a station registered in APRS RINGER (CALL) is received, the pop-up will be displayed in the specified color.
  Even when the CALL RINGER of the APRS RINGER is set to OFF, the pop-up will be displayed in the specified color when it is set to anything other than OFF here.

- 5 RNG RINGER: A pop-up will be displayed in the specified color when a message is received from a nearby station of the range ringer (when there is a station closer than the set distance of the RNG RINGER of the APRS RINGER).
  No station will be a detection target when the RNG RINGER of the APRS RINGER is set to OFF.

- 6 MESSAGE: When a message is received, the pop-up will be displayed in the specified color.

- 7 GRP/BULT: When a group message or a bulletin message is received, the pop-up will be displayed in the specified color.

- 8 MY PACKET: When a transmission beacon of your own station (relayed signal) (effective only when MYPACKET in APRS POPUP is set to ON) is received, the pop-up will be displayed in the specified color.

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4 Touch **[1 BEACON]** to select the display color of the pop-up.

The display color of the pop-up changes in the following order each time the key is touched.

"CHECK OFF", "GREEN", "BLUE", "ORANGE", "PURPLE", "SKY-BLUE", "YELLOW", "AMBER", "WHITE"

5 Similarly, touch Item 2 to 8 to select the display color of the pop-up

6 Press 🔲 for one second or longer

The display color of the pop-up will be set and the display will return to the previous screen.

Tip   Factory default value: All items are set to "CHECK OFF"

Setting the bell ring when a message or beacon is transmitted/received

This sets the bell ring and the conditions for the bell ring when an APRS beacon is received/sent.

1 Press 🔲 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[9 APRS RINGER]**
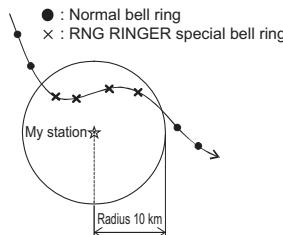
The screen for setting the bell ring will be displayed.

When the item is not displayed, turn 🎛A to scroll the display.

- TX BEACON: This sets the bell ring when your own station is sending a beacon. When set to ON, a bell will ring prior to the transmission.

- TX MESSAGE: This sets the bell ring when your own station is sending a message. When set to ON, a bell will ring prior to the transmission.

- RX BEACON: This sets the bell ring when a beacon is received from another station. When set to ON, a bell will ring when a beacon is received.

- RX MESSAGE: This sets the bell ring when a message is received from another station. When set to ON, a bell will ring when a message is received.

- MY PACKET: This sets the bell ring when your own station transmit beacon (relayed signal) is received.

- CALL RINGER: A bell will ring when a beacon from a station whose call sign is set using **[APRS]** → **[10 APRS RINGER (CALL)]** in the set-up menu is received.

- RNG RINGER: A special bell will ring when a beacon located close to your own station is received. When distance is selected, a special bell

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will ring when a beacon from a station closer than the distance set is received. When OFF is selected, the distance will not be determined.

Example: When the distance is set at a radius of 10 km

• MSG VOICE: Read out the message content. When set to ON, the message contents (call sign and main text) are read out when a message is received (the optional voice guide unit FVS-2 is required).

4 Touch **[TX BEACON]** to select ON/OFF

Each time the key is touched, the setting will switch between "ON" and "OFF".

5 Touch **[TX MESSAGE]**, **[RX BEACON]**, **[RX MESSAGE]**, **[MY PACKET]**, **[CALL RINGER]** and **[MSG VOICE]** to select ON/OFF for each of them

Each time the key touched, the setting will switch between "ON" and "OFF".

6 Touch **[RNG RINGER]**

The number input screen will be displayed.

7 Enter the distance below which the bell will ring when a beacon is received

The entered distance will be displayed at the top of the screen.

A distance between 0 mi and 100 mi can be set.

Tips • The function will be turned off when a distance of 0 mi is set.
• Use **[APRS]** → **[12 APRS UNITS]** in the set-up menu to change the display unit of the distance.

8 Touch **[ENT]**

The display will return to the screen for setting the bell ring and the entered distance will be displayed in the setting field.

"OFF" will be displayed when this is set to 0 mi.

9 Press 🔲 for one second or longer

The bell ring will be set and the display will return to the previous screen.

Tip Factory default value: TX BEACON: ON
                            TX MESSAGE: ON
                            RX BEACON: ON
                            RX MESSAGE: ON
                            MY PACKET: ON
                            CALL RINGER: OFF
                            RNG RINGER: OFF
                            MSG VOICE: OFF

Call sign setting for CALL RINGER
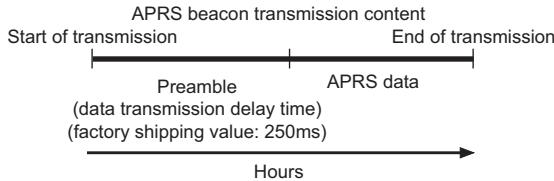
Turn "CALL RINGER" under **[APRS] → [9 APRS RINGER]** in the set-up menu to ON to set the call sign of the station which will ring the special bell. A maximum of up to 8 call signs can be set.

1 Press 🖾 for one second or longer
       The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[10 APRS RINGE (CALL)]**
       A list of call signs will be displayed.

4 Select and touch the list number where the call sign is to be registered
       The character input screen will be displayed.

5 Touch a character key to enter the call sign
       Please register the call sign as follows.
       ✳✳✳✳✳✳-NN
       ✳: Call sign (a maximum of 6 characters)
       NN: SSID (a number between one and 15 or nil)
       The touched character will be displayed at the top of the screen.

6 Touch **[ENT]**
       The screen will return to the list of call signs and the registered call sign will be displayed.

7 Press 🖾 for one second or longer
       The display will return to the previous screen.

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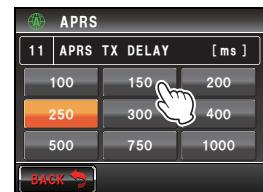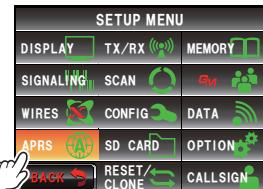
Data transmission delay time setting

The following preamble (data transmission delay time) can be set when sending APRS data.

APRS beacon transmission content
Start of transmission — End of transmission

Preamble — APRS data
(data transmission delay time)
(factory shipping value: 250ms)

Hours

1 Press 🔲 for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[11 APRS TX DELAY]**
The screen for setting the data transmission delay time will be displayed.

4 Touch the desired delay time
The delay time can be selected from the following 9 steps.
"100", "150", "200", "250", "300", "400", "500", "750", "1000"

Tip　Factory default value: 250

5 Press 🔲 for one second or longer
The data transmission delay time is set and the display returns to the previous screen.

Setting the display units of the APRS data

This sets the units for the latitude / longitude (POSITION), distance (DISTANCE), speed (SPEED), altitude (ALTITUDE), atmospheric pressure (BARO), temperature (TEMP), rainfall (RAIN) and wind (WIND).

1 Press 🔲 for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[12 APRS UNITS]**
The unit setting screen for the APRS display will be displayed.

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4 Touch **[1 POSITION]** to select the display unit

The display unit for the latitude / longitude minute and below (DD°MM.MM') can be changed.

Every time the key is touched, the display unit will switch between "dd°mm.mm'" and "dd°mm'SS"".

dd°mm.mm': Displayed in 1/100th minute format.
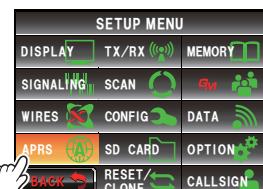
dd°mm'SS": Displayed in minute and second format.

Tip Factory default value: dd°mm.mm'

5 Touch **[2 DISTANCE]** to select the distance unit

The distance unit switches between "km" and "mile" each time the key is touched.

Tip Factory default value: mile

6 Touch **[3 SPEED]** to select the speed unit

The speed unit will switch between "km/h" and "mph" each time the key is touched.

Tip Factory default value: mph

7 Touch **[4 ALTITUDE]** to select the altitude unit

The altitude unit will switch between "m" and "ft" each time the key is touched.

Tip Factory default value: ft

8 Touch **[5 BARO]** to select the atmospheric pressure unit

The atmospheric pressure unit will switch between "hHa", "mb" and "mmHg" each time the key is touched.

Tip Factory default value: mb

9 Touch **[6 TEMP]** to select the temperature unit

Each time this key touched, the temperature unit will switch between "°C" and "°F".

Tip Factory default value: °F

10 Touch **[7 RAIN]** to select the rainfall unit

The rainfall unit will switch between "mm" and "inch" each time the key is touched.

Tip Factory default value: inch

11 Touch **[8 WIND]** to select the wind speed unit

The wind speed unit will switch between "m/s", "mph" and "knot" each time the key is touched.

Tip Factory default value: mph

12 Press 🔲 for one second or longer

The unit of the APRS display will be set and the display will return to the previous screen.

Transmission beacon information setting

The transmission information can be set when transmitting an APRS beacon.

1 Press 🔲 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[13 APRS BEACON INFO SELECT]**

The screen for setting the transmission information will be displayed.

4 Touch **[AMBIGUITY]** to select the display method for the position information of your own station

This function masks the lower digits of the position information (latitude, longitude) when you do not want your own station position information to be known.

The function changes in the following order each time the key is touched.

"OFF", "1 digit", "2 digits", "3 digits", "4 digits"

OFF: The accurate position information of your own station will be transmitted without being masked.

1 digit: The position information will appear with the lower 1 digit onwards masked from the "OFF" value.

2 digits: The position information will appear with the lower 2 digits onwards masked from the "OFF" value.

3 digits: The position information will appear with the lower 3 digits onwards masked from the "OFF" value.

4 digits: The position information will appear with the lower 4 digits onwards masked from the "OFF" value.

Example: Masking your own station position with a latitude of 35°37.23' and a longitude of 139°45.02'.

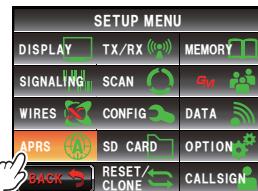| OFF	1 digit	2 digits	3 digits	4 digits
35°37.23'	35°37.2	35°37.	35°3 .	35° .
139°45.02'	139°45.0	139°45.	139°4 .	139° .

Tip   Factory default value: OFF

5 Touch **[SPEED/COURSE]** to select ON/OFF

Each time this key touched, the speed/course will switch between "ON" and "OFF".

ON: Information on the speed and movement direction are transmitted.

OFF: Information on the speed and movement direction are not transmitted.

Tip   Factory default value: ON

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6 Touch **[ALTITUDE]** to select ON/OFF

Each time this key is touched, the altitude will switch between "ON" and "OFF".

ON: The altitude information is transmitted.

OFF: The altitude information is not transmitted.

Tip Factory default value: ON

7 Press DISP for one second or longer

The transmission information when sending a beacon will be set and the display will return to the previous screen.

Status text input

This sets the status text used when sending an APRS beacon

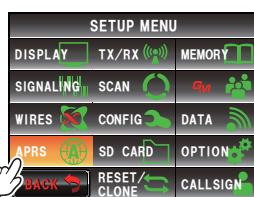5 types of status text containing a maximum of 60 characters can be entered.

Please refer to "Attaching status text to a beacon" (☞P.42) for the details.

Beacon automatic transmission setting

The interval when automatically sending an APRS beacon can be set.

1 Press DISP for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[15 BEACON TX]**

The screen for the various settings when automatically sending a beacon will be displayed.

4 Touch **[AUTO]** to select the automatic transmission method of the beacon

The method changes in the following order each time the key is touched.

"OFF", "ON", "SMART"

OFF: Your own station beacon will not be sent automatically.

ON: Your own station beacon will be sent automatically. Send at a transmission interval set using "INTERVAL". However, when "DECAY" is set to ON, the transmission interval will be gradually extended when your own station is not moving (stationary).

SMART: Perform automatic transmission using the SmartBeaconing™ function. This setting can be selected only when the status setting of **[APRS]** → **[30 SmartBeaconing]** in the set-up menu is set to TYPE 1 - TYPE 3, and **[26 MY POSITION SET]** is set to GPS.

Tip Factory default value: OFF

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5 Touch **[INTERVAL]**

The setting screen for selecting the time interval for automatically sending an APRS beacon will be displayed.

6 When "AUTO" is set to ON (FIX), your own station APRS beacon will be automatically sent at the time interval specified here.

The transmission operation will be delayed when the specified time has passed and the squelch is open at the beacon transmission timing. The beacon will be automatically sent when the squelch is closed.

Tip   Factory default value: 5 min

7 Touch **[BACK]**

This returns the screen to the various settings for automatically sending a beacon.
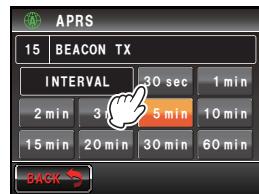
8 Touch **[PROPORTIONAL]** to select ON/OFF

Set the function for automatically changing (thinning out) the specified digipeater address during transmission.

Each time this key is touched, the function will switch between "ON" and "OFF".

ON: The address selected under **[APRS]** → **[16 DIGI PATH SELECT]** in the set-up menu will be automatically changed (refer to the following example).

OFF: The transmission will be in accordance with the address selected under **[APRS]** → **[16 DIGI PATH SELECT]** in the set-up menu.

```
(Example) DIGI PATH SELECT = "WIDE 1-1, WIDE 2-1"

    BEACON TX AUTO=ON (FIX) /
    INTERVAL = 5 min/
    When PROPORTIONAL = ON
    (a)  (5 min)   WIDE 1-1, WIDE 2-1
    (b)  (10 min) (none)
    (c)  (15 min) WIDE 1-1
    (d)  (20 min) (none)
    (e)  (25 min) WIDE 1-1, WIDE 2-1
    Repeat (b) to (e).
```

When this function is set to ON, packet update will be carried out in detail for close distances while relay steps are spread out to reduce frequency congestion for long distances.

The settings will become void when **[APRS]** → **[16 DIGI PATH SELECT]** is set to OFF, FULL 1 and FULL 2.

Tip   Factory default value: ON

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9 Touch **[DECAY]** to select ON/OFF

This sets the function for extending the APRS beacon transmission time interval when your own station is stopped.

Each time this key touched, the function will switch between "ON" and "OFF".

ON: Extends the APRS beacon transmission time interval when your own station is stopped.

When DECAY is set to ON and your own station enters into the stop mode, the "INTERVAL" setting will shift to a higher value one step at a time and the interval will gradually be extended (to a maximum of 30 minutes).

> (Example) When stopping with the INTERVAL set at 1 min
>
> The interval will be extended in the following order: 2 min → 3 min → 5 min → 10 min → 15 min → 20 min → 30 min → 30 min…

When movement starts again, a beacon is automatically sent out once, at which point the interval will automatically return to the "INTERVAL" setting.

When the "INTERVAL" setting reaches 30 min / 60 min, the transmission time interval will not be extended further.

OFF: The APRS beacon transmission time interval is not extended.

Tip   Factory default value: ON

10 Select and touch **[LOW SPEED]**

The number input screen will be displayed.

Set the cut-off value for determining the stationary state of the station when "DECAY" is set to ON. When the speed is lower than the value set, the station will be deemed to have stopped.

11 Enter the cut-off value

The entered value will be displayed at the top of the screen.

A speed between 1 mph and 99 mph can be set.

Tips • The speed unit can be set under **[APRS]** → **[12 APRS UNITS]** in the set-up menu.
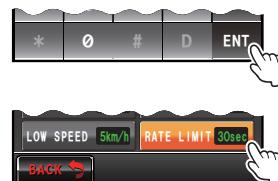   • Factory default value: 5 mph

12 Touch **[ENT]**

13 Touch **[RATE LIMIT]**

The number input screen will be displayed.

Set the timer for limiting automatic transmission from the last beacon transmission to a certain period of time.

This prevents the beacon from being sent out twice repeatedly within a short period

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of time. When "DECAY" is set to ON in the stationary state, and movement is detected very soon after the beacon has automatically transmitted, the beacon will be delayed and not automatically transmitted within this period of time. Only when the set time has passed will the beacon be automatically sent out again.

14 Enter the period of time

The entered time will be displayed at the top of the screen.

The time can be set between 5 sec and 180 sec.

 Tip Factory default value: 30 sec

15 Touch **[ENT]**

16 Press 🔲 for one second or longer

The beacon automatic transmission will be set and the display will return to the previous screen.

Tip

The various settings under INTERVAL, PROPORTIONAL, DECAY, LOW SPEED and RATE LIMIT will become void when the SmartBeaconing function is in operation.

Selecting the digipeater route

This selects the call sign and ALIAS of the digipeater used.
Please refer to "Setting the digipeater route" (☞P.45) for the details.

Setting the digipeater route PATH 1 to PATH 4 addresses

After selecting PATH 1 under **[APRS]** → **[16 DIGI PATH SELECT]** in the set-up menu, enter the specific address information (call sign and ALIAS).
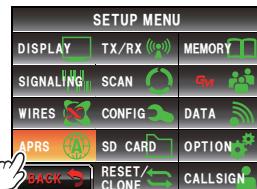A maximum of two addresses can be specified.

 Tip The addresses for [18 DIGI PATH 2] to [20 DIGI PATH 4] can also be set in the same way as follows.

1 Press 🔲 for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[17 DIGI PATH 1]**
A list of the specific address information will be displayed.

83

4 Select and touch the specific address number to be registered

The character input screen will be displayed.

5 Touch the character keys to enter the information
The touched character will be displayed at the top of the screen.

6 Touch **[ENT]**
7 Press 🖵 for one second or longer

The specific address information of the digipeater

route PATH 1 will be set and the display will return to the previous screen.

Setting the digipeater route FULL 1 and FULL 2 addresses

After selecting FULL 1 under **[APRS]** → **[16 DIGI PATH SELECT]** in the set-up menu, enter the specific address information (call sign and ALIAS).

A maximum of up to 8 addresses can be specified.

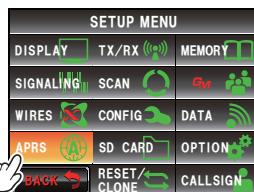> **Tip** The address for [22 DIGI PATH FULL 2] can also be set in the same way as follows.

Tip
This will become void even when "PROPORTIONAL" is set to ON under **[APRS]** → **[15 BEACON TX]** in the set-up menu.

1 Press 🖵 for one second or longer
The set-up menu will be displayed.
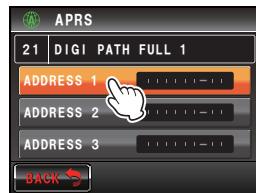**2** Select and touch **[APRS]**

3 Select and touch **[21 DIGI PATH 1]**
A list of the specific address information will be displayed.

84

4 Select and touch the specific address number to be
registered

The character input screen will be displayed.

5 Touch the character keys

The touched characters will be displayed at the top of
the screen.

6 Touch **[ENT]**

7 Press 📟 for one second or longer

The specific address information of the digipeater

route FULL 1 will be set and the display will return to the previous screen.

My call sign setting

This registers your own station call sign that is required for APRS communications.
APRS data cannot be sent when your own station call sign is not registered. Please
make sure to register your own station call sign.
Refer to "Setting your own station call sign" (☞P.6) for the details.

Filter setting for messages received

The group filter for receiving messages and bulletin messages from specific groups
(ALL, CQ, QST, YAESU etc.) can be set.
A maximum of up to 9 characters can be entered.
"GROUP 1 ALL", "GROUP 2 CQ", "GROUP 3 QST", "GROUP 4 YAESU", "GROUP 5
(any)" and "GROUP 6 (any)" can be set for the group code.
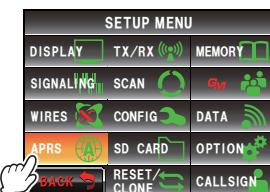For bulletin, "BULLETIN 1" to "BULLETIN 3" can be set.

1 Press 📟 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[24 MESSAGE GROUP]**
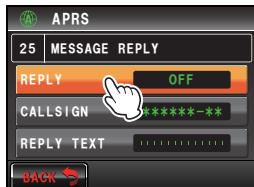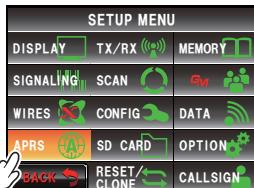
A list of the message groups will be displayed.

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4 Select and touch the group number to be registered
The character input screen will be displayed.

5 Touch a character key
The touched character will be displayed at the top of the screen.

6 Touch **[ENT]**
The screen will return to the list of message groups and the registered group filter will be displayed.

7 Press ▦ for one second or longer
The group filter will be set and the display will return to the previous screen.

Automatic response setting of received messages

A reply message set up beforehand can be automatically sent out upon receiving a message.

1 Press ▦ for one second or longer
The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[25 MESSAGE REPLY]**
The automatic reply setting screen will be displayed.

4 Touch **[REPLY]** to select ON/OFF
Each time this key is touched, the function will switch between "ON" and "OFF".

ON: A reply message is returned automatically when a message is received.

OFF: A reply message is not returned when a message is received.

Tip Factory default value: OFF

5 Touch **[CALLSIGN]**

Tip Set this only when you want to reply to a specific station. Proceed to Step 8 if this is not required.

The character input screen will be displayed.

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6 Touch a character key

Register the call sign as follows:

✶✶✶✶✶✶-NN

✶: Call sign (a maximum of 6 characters)

NN: SSID (a number between 1 and 15 or nil)

The touched characters will be displayed at the top of the screen.

7 Touch **[ENT]**

8 Select and touch **[REPLY TEXT]**

The character input screen will be displayed.

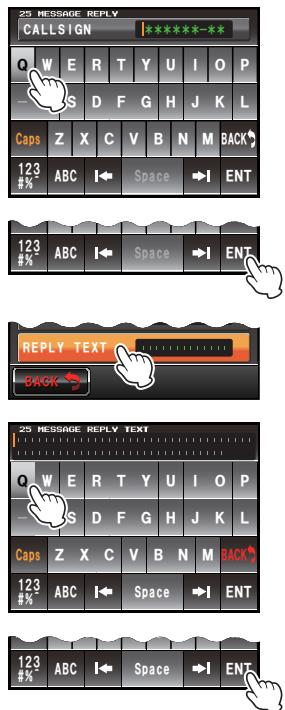**9** Touch the character keys

Enter the automatic reply message.

The touched characters will be displayed at the top of the screen.

10 Touch **[ENT]**

The automatic reply setting screen will be displayed.

11 Press 🔳 for one second or longer

The automatic reply for messages received will be set and the display will return to the previous screen.

My position setting

The position information of your own station can be obtained from the GPS or entered manually.

Refer to "Setting the position information of your own station" (☞P.3) for the details.

Entering your own station position

This manually sets your own station position.

Refer to "Setting the function manually" (☞P.4) for the details.

Setting your own station symbol

This sets the transmission symbol of your own station. The symbol can be selected from 67 types of symbols.

Refer to "Setting the symbol of your own station" (☞P.8) for the details.

Position comment setting

This selects the position comment (standard message to be incorporated into your own station beacon.

Refer to "Selecting a position comment" (☞P.43) for the details.

Smart beaconing setting

The SmartBeaconing™ function continually transmits beacons with your own station position information, movement speed and direction of advance. using data derived from a GPS antenna unit..

SMART (SmartBeaconing) can be selected using the "AUTO" setting under **[APRS]** → **[14 BEACON TX]** in the set-up menu when STATUS is set to TYPE 1 - TYPE 3.

1 Press ▣ for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[30 SmartBeaconing]**

The screen for setting SmartBeaconing parameters will be displayed.

4 Touch **[1 STATUS]** to select the SmartBeaconing method

The method will change in the following order each time the screen is touched.

"OFF", "TYPE 1", "TYPE 2", "TYPE 3"

OFF: SmartBeaconing™ is active.

TYPE 1/TYPE 2/TYPE 3:

SmartBeaconing™ is not active.

Three different types of setting (TYPE 1 - TYPE 3) can be selected for operation.

Normally, TYPE 1 (where all the parameters remain in their initial values) is recommended.

When testing operations at a different timing, TYPE 2 and TYPE 3 settings can be adjusted and selected to use the parameters differently for different purposes depending on the situation. In order to ensure that a beacon can be transmitted properly, adjust the SmartBeaconing parameters and digipeater route settings so as prevent frequency congestion.
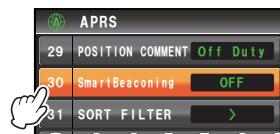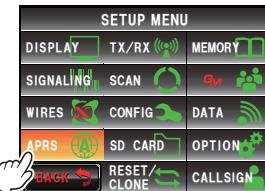
Tip Factory default value: OFF

When "TYPE 1", "TYPE 2" and "TYPE 3" is selected, settings from **[2 LOW SPEED]** to **[8 TURN TIME]** are enabled.

5 Select and touch **[2 LOW SPEED]**

The number input screen will be displayed.

When the speed drops below the speed set, the beacon is sent at a time interval that has been set under "SLOW RATE".

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6 Enter the speed

The entered speed will be displayed at the top of the screen.

A speed between 2 mph and 30 mph can be set.

Tips • The speed unit can be changed under **[APRS] → [12 APRS UNITS]** in the set-up menu.

   • Factory default value: 5 mph

7 Touch **[HOME]**

8 Select and touch **[3 DATA SPEED]**

The number input screen will be displayed.

When the speed exceeds the speed set, the beacon is sent at a time interval that has been set under "FAST RATE".

9 Enter the speed

The entered speed will be displayed at the top of the screen.

A speed between 3 mph and 90 mph can be set.

Tips • The speed unit can be changed under **[APRS] → [12 APRS UNITS]** in the set-up menu.

   • Factory default value: 70 mph

10 Touch **[ENT]**

11 Select and touch **[4 SLOW RATE]**

The number input screen will be displayed.

Set the beacon transmission time interval when the speed drops below the speed set under "LOW SPEED".

12 Enter the time

The entered time will be displayed at the top of the screen.

A time between 1 min and 100 min can be set.

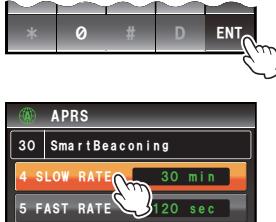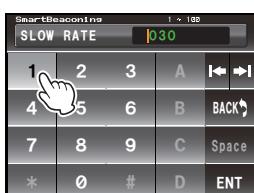Tip Factory default value: 30 min

13 Touch **[ENT]**

14 Select and touch **[5 FAST RATE]**

The number input screen will be displayed.

Set the beacon transmission time interval when the speed exceeds the speed set under "HIGH SPEED".

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15 Enter the time

The entered time will be displayed at the top of the screen.

A time between 10 sec and 180 sec can be set.
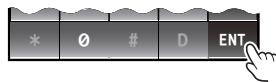
Tip   Factory default value: 120 sec

16 Touch **[ENT]**

17 Select and touch **[6 TURN ANGLE]**

The number input screen will be displayed.

Set the minimum angle for determining whether the direction of advance has changed.

18 Enter the angle

The entered angle will be displayed at the top of the screen.

An angle between 5° and 90° can be set.

Tip   Factory default value: 28°

19 Touch **[ENT]**

20 Select and touch **[7 TURN SLOPE]**

The number input screen will be displayed.

Set the coefficient for dynamically changing the angle that is used to determine changes in the direction of advance depending on the movement speed. The larger the coefficient value, the larger is the criteria angle at low speeds.

1 - 255 (X10)°/speed

(the unit for the rotating tilt is set to one-tenth of the real number so it will be consistent with the unit used in the HamHUD series from HamHUD Nichetronix).

21 Enter the coefficient

The entered coefficient will be displayed at the top of the screen.

A value between 1 and 255 can be set.

Tip   Factory default value: 26°

22 Touch **[ENT]**

23 Select and touch **[8 TURN TIME]**

The number input screen will be displayed.

Set the time limit until the next beacon can be sent after a beacon has been transmitted due to a change detected in the time (Variable Rate Beaconing) and direction of advance (Corner Pegging).

24 Enter the time limit

The entered time limit will be displayed at the top of the screen.

A time between 5 sec and 180 sec can be set.

Tip　Factory default value: 30 sec

25 Touch **[ENT]**

26 Press 📟 for one second or longer

The SmartBeaconing will be set and the display will return to the previous screen.

Tips

- This device is equipped with settings (common TYPE 1 - TYPE 3) for car-mounted mobile use in town and residential areas.
- When using the SmartBeaconing™ function along meandering roads such as mountain paths, frequency congestion may result as multiple beacons are transmitted within a short period of time. In order to ensure that beacons can be transmitted in an appropriate manner, adjust the parameters and digipeater route settings of the SmartBeaconing™ so as to prevent frequency congestion.
- SmartBeaconing™ is a function provided by HamHUD Nichetronix.

Software functions and filter settings

This sets the sorting condition for the display order of the station list and selects the type of beacon to be displayed in the station list.

1 Press 📟 for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[31 SOFT FILTER]**

The screen for setting the sorting condition and filter will be displayed.

4 Touch **[SORT]** to select the sorting condition for the display order of the station list

The sorting condition will change in the following order each time the screen is touched.

"TIME", "CALLSIGN", "DISTANCE"

TIME: Sort the station list starting from the latest one received.

CALLSIGN: Sort the station list in ascending order of the call sign.

DISTANCE: Sort the station list starting from the one closest to your own station.

Tip　Factory default value: TIME

5 Touch **[FILTER]** to select the type of beacon to be displayed in the station list

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Each time the screen is touched, the beacon type will change as follows. The beacon type can be selected from the following 13 types of beacons.

"ALL", "MOBILE", "FREQUENCY", "OBJECT/ITEM", "DIGIPEATER", "VoIP", "WEATHER", "YAESU", "OTHER PACKET", "CALL RINGER", "RANGE RINGER", "1200 bps" and "9600 bps"

ALL: All the received beacons will be displayed.

MOBILE: Only the mobile stations will be displayed.

FREQUENCY: Only station with frequency information will be displayed.

OBJECT/ITEM: Only object stations and item stations will be displayed.

DIGIPEATER: Only digipeater stations will be displayed.

VoIP: Only VOIP station such as WIRES will be displayed.

WEATHER: Only meteorological stations will be displayed.

YAESU: Only stations which are using Yaesu wireless transceivers will be displayed.

OTHER PACKET: Only RAW NMEA data stations, status stations and non-APRS packet information that cannot be analyzed are displayed. Set "OTHER" to ON under **[APRS] → [3 APRS FILTER]** in the set-up menu to display non-APRS packets that cannot be analyzed.

CALL RINGER: Only information of call sign ringer stations set under **[APRS] → [10 APRS RINGER (CALL)]** in the set-up menu will be displayed.

RANGE RINGER: Only information of stations deemed as nearby stations according to "RNG RINGER" settings that are set under **[APRS] → [9 APRS RINGER]** in the set-up menu will be displayed.

1200 bps: Only stations received using 1200 bps packets will be displayed.

9600 bps: Only stations received using 9600 bps packets will be displayed.

Tip Factory default value: ALL

6 Press 🖭 for one second or longer

The beacon type and sorting condition for the station list will be set and the display will return to the previous screen.

Tips
- Touch **[SORT]** in the function menu of the station list to sort the station list.
- When a new beacon is received after sorting, it will be added to the top of the list without being sorted. The sorting order will be restored to the initial setting when the radio is turned OFF. Touch **[SORT]** one more time after the radio is turned on.

Voice alert function setting

This is an audio notification function that will announce the presence of other stations which can communicate via voice communications.

1 Press ⟦DISP⟧ for one second or longer

The set-up menu will be displayed.

2 Select and touch **[APRS]**

3 Select and touch **[32 VOICE ALERT]**

The screen for setting the voice alert function will be displayed.

4 Touch **[VOICE ALERT]** to select the voice alert action

The voice alert action changes in the following order each time the key is touched.

"NORMAL", "TONE SQL", "DCS", "RX-TSQL", "RX-DCS"

NORMAL: The voice alert function will be turned off.

TONE SQL: A tone squelch will be used for sending and receiving voice signals. A tone signal will also be appended when sending APRS data.

After selecting "TONE SQL", the tone frequency to be set next will be used as the squelch target.

DCS: DCS will be used in sending and receiving voice signals. The DCS code will also be appended when sending APRS data.

After selecting "DCS", the DCS code to be set next will be used as the squelch target.

RX-TSQL: Although a tone squelch is used in sending and receiving voice signals, a tone signal is not appended when sending APRS data.

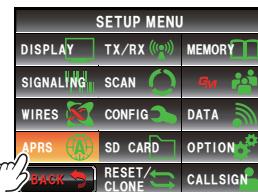After selecting "RX-TSQL", the tone frequency to be set next will be used as the squelch target.

RX-DCS: Although DCS is used in sending and receiving voice signals, the DCS code is not appended when sending APRS data.

After selecting "RX-DCS", the DCS code to be set next will be used as the squelch target.

Tip Factory default value: NORMAL
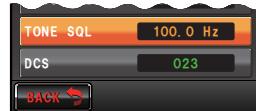
5 Touch **[TONE SQL]** twice

The characters of the set value will turn orange in color.

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6 Turn 🎛️ to select the tone frequency

A frequency between 67.0 Hz and 254.1 Hz can be set.

Tip Factory default value: 100.0 Hz

7 Touch **[TONE SQL]**

The characters of the set value will turn green in color.

8 Touch **[DCS]** twice

The characters of the set value will turn orange in color.

9 Turn 🎛️ to select the DCS code

A value between 023 and 754 can be set.

Tip Factory default value: 023

10 Touch **[DCS]** twice

The characters of the set value will turn green in color.

11 Press 📟 for one second or longer

The voice alert function will be set and the display will return to the previous screen.

Tips

- APRS data will be received regardless of the voice alert setting.
- When voice alert is in operation, the setting in this menu will be prioritized for the APRS band squelch.
- The voice alert function will not work when APRS data is set to be received and sent in different bands (this will be the same state as the "NORMAL" setting).

List of APRS bell rings

When a beacon is received (APRS filter: ON)	When a self-addressed message is received
(ding dong)	(ding ding ding dong)
When a beacon is received (APRS filter: OFF)	When a message from another station is received
(ding...)	(ding...)
When your own station beacon relayed to the digipeater is received	When your own station message relayed to the digipeater is received
(ding ding dong)	(ding ding dong)
When a beacon is received (RANGE RINGER)	When a group/bulletin message is received
(ding ding dong)	(ding ding ding ding ding dong)
When a beacon is received (CALLSIGN RINGER)	When a message ACK is received
(ding ding dong)	(ding...)
When sending a beacon	When sending a message
(ding...)	(ding...)
When an "EMERGENCY!" message is received	When a message REJ is received
× 12 times (dong will sound 12 times)	(ding...)
When setting the position comment "EMERGENCY!"	When replying a message REJ
× 3 times (dong...dong...dong...)	(ding ding ding)
When duplicate beacons are received	When duplicate messages are received
(ding)	(ding ding)

YAESU
The radio

1309-A0