AVRT9 VHF User Manual

Version 1.0 (Continuously updated)



The AVRT9 is a portable APRS (Automatic Packet Reporting System) unit that supports APRS Track/Digi (router)/iGate (gateway). Menu parameter values are entered or selected via the built-in selector input method, no programming software is required. The built-in OLED display allows viewing of contents in darkness or sunlight. Suitable for outdoor use. If you have never used APRS, simply enter your callsign and set the APRS frequency to start using APRS. Ease of use was the inspiration for the design of the AVRT9 unit!

The first sale shell is black and the display characters are white. Other colors can be customized by placing orders.

Features:

A. Built-in VHF module, receiving and transmitting frequency range 136-174MHz.

B. Built-in independent APRS decoding chip, hardware decoding protocol AX.25, rate 1200BPS,

C. Built-in GPS module, receive GPS and Beidou satellite signals to obtain coordinates.

D. Built-in Bluetooth module, can connect to app via Bluetooth to run APRS client program: aprsdroid/aprsfi...

E. Built-in WIFI module, can receive APRS data packets, decode and upload to the server, also supports the local GPS track directly uploaded to the server.

F. Built-in temperature sensor detects the temperature of VHF module, can also be moved to the outside to detect the ambient temperature.

G. Built-in buzzer, can be set to output buzzer sound prompt when receiving decoding/transmitting. **H.** OLED display, the display content can be clearly read in the dark night without moon or in the sun.

I. Built-in lithium battery 3.7V/2500MAH. Use mini USB serial port to charge. The maximum charging current is 1 A.

J. Size: 160MM*60MM*20MM, weight: 150g

AVRT9 Receive Decode and Encode Transmit Compatibility Test:

Kenwood	TH-D72E	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
Yaesu	FTM-400XDR	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
Yaesu	FT-3D	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
SainSonic	C AP510	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
NOR	AVRT5	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
NOR	AVRT6 + ALINCO DR-635T	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
NOR	AVRT7	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
NOR	AVRT8 + Baofeng 5R	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS
NOR	AVRT11 + FT-7800	APRS-1200 BPS Decoding(MIC-E)	RX/TX frequency	144.640 MHz	PASS

AVRT9 key operation



(1) RX LED (blue)/TX LED (red)

(2) OLED Display

- (3) Power key
- (4) Menu key
- (5) Confirm key
- (6) Direction key (\uparrow)
- (7) Direction key (\downarrow)

1. Basic functions of keys (main page, power on status)

Note 1: A long press on the "Power key" **turns on/ off** the device. (> 2 seconds)

Note 2: Short press the "Menu key" first, and then immediately short press the "Directional key (\uparrow)" to switch the key lock state.

KEY	Short press	Long press	
Power key	Send Track	Turn on / Turn off	
Menu key	Setup Menu		
Confirm key	APRS Message List		
Direction key (个)		GPS satellite status list	
Direction key (\downarrow)		GPS Speed Display	

Setup Menu

KEY	Short press	Long press	
Power key	Switch editing position	Switch data	
Menu key	Return/Exit without Saving		
Confirm key	Confirm/Save and Exit		
Direction key (个)	Move Up	Move 10 characters in input state	
Direction key (\downarrow)	Move Down		



(1) Project selection category: (e.g., Back Light Setting) After entering the menu, press the "Directional key" move to the selected value, press the "Confirm key" to save and exit, or press the "Menu key" to return if no modifications are needed.

The option is marked with an asterisk (*) to indicate the current selected value.

(2) Custom input content: (e.g., Additional Comments Text Edit)

Short press the "Directional key" to switch input characters, long press the "Directional key" to switch 10 input characters.

Short press the "Power key" briefly to switch to the next editing position.

After all inputs are completed, press the "Confirm key" to save and exit!

Note3: Please refer to the ASCII encoding table for the order of character arrangement.

Note4: Long press the "Power key" to switch to another set of data, if present.

Note5: When customizing GPS location, long press the "Confirm key" to copy GPS real-time data.

Standby decoding beacon display



- APRS gateway function is on, WIFI is connecting... Not connected to the server
- **i6** The WIFI is connected to the APRS server
- The Bluetooth icon flashes when there is no connection to a Bluetooth device.



Track launch is smart beacon mode



Track launch is time interval mode or distance interval mode....



Battery power icon: 4 grids = 100%, 3 grids = 75%, 2 grids = 50%, 1 grid = 25%. When the battery is empty, the power is less than 5%. When the battery voltage is lower than the limit value, it will automatically shut down.

The battery icon scrolls 1 to 4 grids in a cycle while charging.

GPS satellite status list



Note 7: The upper left corner shows the number of valid GPS satellites and the number of received GPS satellites. The upper right corner shows the page number, which can be turned to view.

GPS speed display



APRS List and Beacon Details

00#00:05:49	BH7NOR-14
01#10:58:40	BH7NOR-14/
02#10:58:44	BH7NOR-14
03#00:35:35	BH7NOR-14
04#00:35:43	BH7NOR-07



Menu functions

Menu/Items		Functional Description	Optional settings (default values are in bold)
Display			
1.1	BackLight	Backlight duration	LONG/10s/30s/300s
1.2	Test UI	Test interface	OFF/ON
1.3	DIST Unit	Distance unit display settings	km/mile
1.4	ALTI Unit	Altitude unit display setting	m/ft
		GPS map coordinate conversion	
1.5	GPS Map	options	WGS84/GCJ02/BD09
RX/TX			
2.1	APRS Freq	APRS receive/transmit frequency	Manual input, default value:144.640 Mhz
2.2	RX Vol	Receive audio gain	1//7/8
2.3	TX Vol	Transmit Audio Gain	1/ <mark>2</mark> //5
2.4	Squelch	Squelch	0//5//9
2.5	TX Power	Transmit power	0.5W/2W
	RX/TX		
2.6	enable	Receive and transmit enable	RX TX ON / Will increase later RX only / TX only / RX TX OFF

1.1 CALSIGN Colat all sign configuration Manual input. default value: NOCAL-7 3.1 ICAS Calstone GPS instruct and iong/tude velocities OFF/GPF-/Popi 0/Posi 1/Posi 3/Posi	APRS	CFG			
12 DC source □ CP bit Nutue and longitude and activude 10 33 MyPosition □ Custom GPS longitude and latitude 10 Minual input.Coordinate format 0000.000/0000.000 34 Mice Te Mice Te code OFF/ON 35 MSS Type • Mice Te code OFF/ON 36 MSS Type • Mice Metage Type Emergency/brioth/Spacial/Committed/Returning/in Service/En Route/Off Duty 37 TX Delay 0 Delay before sending OFF/DOM/ADDM/SDOM/SDOM/SDOM/SDOM/SDOM 38 APRS Path Forwarding Routing Manual Selection, WDEL 3-(0 - 9), 9(1) WDE1-1, WDE2-1, WDE2-1 310 TEMP • Motherboard temperature data OFF/ON 311 TEMP • Motherboard temperature data OFF/ON 312 SPD/CE GPS setting data OFF/ON 313 TEMP • Motherboard temperature data OFF/ON 314 Voltage 0 Decoding format of scheduled and or OrF/ON 315 Decodout Decoding format of scheduled and or OrF/ON 316 Unternal Enternal Not Scheduled and OrF/ON 317 Decoding format of scheduled and or OFF/ONTO T/AUTO 3/AUTO 3/AU	3.1	CALLSIGN		Local call sign configuration	Manual input, default value:NOCALL-7
3.3 MyPosition Custom GP Iongitude and latitude 1-9 Manual Input. Coordinate format 0000.001/00000.00E 3.4 Mic E En Mic f encode OFf/ON 3.5 MSG Type Mic f encode OFf/ON 3.6 MyS Text Additional Information text selection OFf/ON 3.7 TX Delay Delay before sending OFf/ON 3.8 APRS Part Additional Information text selection OFf/CN 3.9 MSG Text Additional Information text selection OFf/CN 3.10 TextPart Additional Information text selection OFf/ON 3.11 TEMP Mutherbaard temperature data OFf/ON 3.12 Strop/CSE GFS speed and heading data OFf/ON 3.13 Mitude Grs additude data OFf/ON 3.14 Voltage Internal bettery voltage data OFf/ON 3.14 Voltage Internal bettery voltage data OFf/ON 3.14 Internal bettery voltage data OFf/ON 3.15 Decodering termet of scheduled sending Imin/3 min/Smin/10min/15min/20min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120min/30min/60min/120m	3.2	LOC source		GPS latitude and longitude selection	OFF/-GPS-/Posi-0/Posi-1/Posi-2/Posi-3/Posi-4/Posi-5/Posi-6/Posi-7/Posi-8/Posi-9
14. MK-E En MK-E stronge OFF/ON 15. MKS Type * MK-E Horsage Type Emregency/Miority/Specific/Committed/Returning/in Service/En Route/Off Duty 16. MKS Type * MK-E Horsage Type Emregency/Miority/Specific/Committed/Returning/in Service/En Route/Off Duty 17. TX Delay Delay before sending OFF/200m/3200m/	3.3	MyPosition		Custom GPS longitude and latitude 1-9	Manual input,Coordinate format 0000.00N/00000.00E
13. MSS Type McE & Message Type Emergency/Priority/Spacial/Committed/Heturing/In Service/#n Hout/Off Duty 13. MySymbol Ste identification settings Manual setting, and table + supplementary table 13.8 MPS Path Foreign Device before sending. Manual Setting, and table + supplementary table 13.8 MPS Text Additional Information text selection OPT/EXT-1/EXT-2/TEXT-3/TEXT-4/TEXT-4/TEXT-3/ 13.0 TextEdM Edit diaditional text center 1-3 Manual mapy. Maximum number of characters: 20 13.1 TEMP Moherboard temperature data OPF/ON 13.1 TEMP Moherboard temperature data OPF/ON 13.2 SPO/SE GPS speed and heading data OPF/ON 13.1 Beacodeut Decodeut Decoding format of serial part output OPF/ON 13.1 Beacodeut Beacomy for use lators of bried distance Imm/amin/fami/fami/fami/fami/fami/fami/fami/fami	3.4	Mic-E En		Mic-E encode	OFF/ON
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6.9 WIFI INFO IP address obtained by Wireless Fidelity Option 7.1 AutoLock Automatic key lock OFF/30s/1min/5min/10min 7.1 AutoLock Automatic key lock OFF/30s/1min/5min/10min 7.2 KeyLock SET Key lock advanced settings button	6.8	WIFI PWD		Wireless Fidelity Password	Manual Input:abcd1023
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7.2 KeyLock SET Key lock advanced settings Automatically lock when powered on, unlock the power button, unlock the send button	7.1	AutoLock		Automatic key lock	OFF/30s/1min/5min/10min
7.2 KeyLock SET Key lock advanced settings button					Automatically lock when powered on, unlock the power button, unlock the send
	7.2	KeyLock SET		Key lock advanced settings	button

				Power on/off/receive message/send message:ON/OFF 2.7K/1K/600hZ (Audio
7.3	Buzzer		Buzzer setting	frequency selection)
7.4	GPS Power		GPS power enable	OFF/ON
7.5	BT Power		Bluetooth power enable	OFF/ON
			Automatic shutdown when USB cable	
7.6	USB Power		is unplugged	OFF/ <mark>30s</mark> /120s/300s/900s
7.7	TimeZone		Time zone settings	AUTO/UTC-14//UTC+0//UTC+13
7.8	TEMP Unit	*	Temperature display unit selection	° ℃ /°F
7.9	Reset		System/Configuration Item Reset	Clean/Reset
7.10	Version		Software version information	

Note 8: Menu table "*" is Shown by other projects

Note 9: Menu function software version 0.75, Menu function software version 0.75, future new versions of firmware may increase or decrease menu functions based on user feedback

AVRT9 firmware upgrade steps

Tips: Please use the accessory USB serial cable, which contains a USB serial chip. You cannot use an ordinary USB cable to upgrade the firmware.

A, Download the flash software **Ymodem** from the website avrtx.cn, run **Ymodem**, install the USB serial port driver. Insert the USB serial port cable into the PC

B, AVRT9 first press and hold the "(4) Menu key" (keep pressing), then press and hold the "(3) Power key"

. When the red and blue LED lights light up at the same time, release the "4 Menu key"

C, In the Ymodem interface, click arrow C to "refresh" the serial port

D, Click arrow D at position "OPEN" on the Ymodem interface to enable the serial port.

E, In the Ymodem interface, click the "folder icon" at the arrow E position and load the firmware to be upgraded. The extension name

is "binx", for example: avrtx_t9_v0.75.binx;

F, In the Ymodem interface, click the arrow F position "download". At this time, the firmware upgrade begins. When the progress bar at the bottom increases from 0% to 100%, it prompts "Update process completed". The firmware upgrade is completed. When the AVRT9 starts up, the display and beep sound prompts that the firmware upgrade is complete. You can release the upper left corner button...

!!! If the firmware upgrade fails and the machine cannot boot normally, please repeat the above steps;



BossenYu BH7NOR (OLD call : BI7NOR)

Unit manual and firmware download URL:: <u>http://avrtx.cn/</u>

After-sales service mailbox: yupopp@gmail.com ; yupopp@163.com ; yupopp@163.com ; yupopp@163.com ; yupopp@163.com ; yupopp@163.com ; yupopp@163.com ; yupopp@163.com ; yupopp@163.com ; yupopp@163.com ; yupopt@163.com ; yupopt@163.com ; yupopt@163.com ; yupopt@163.com ; <a href="mailto:yupopt@163.c

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