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	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 (↑)

⑦ Direction key (↓)

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 (↑)" 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 (↑)	- - - -	GPS satellite status list
Direction key (↓)	- - - -	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 (↑)	Move Up	Move 10 characters in input state
Direction key (↓)	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.

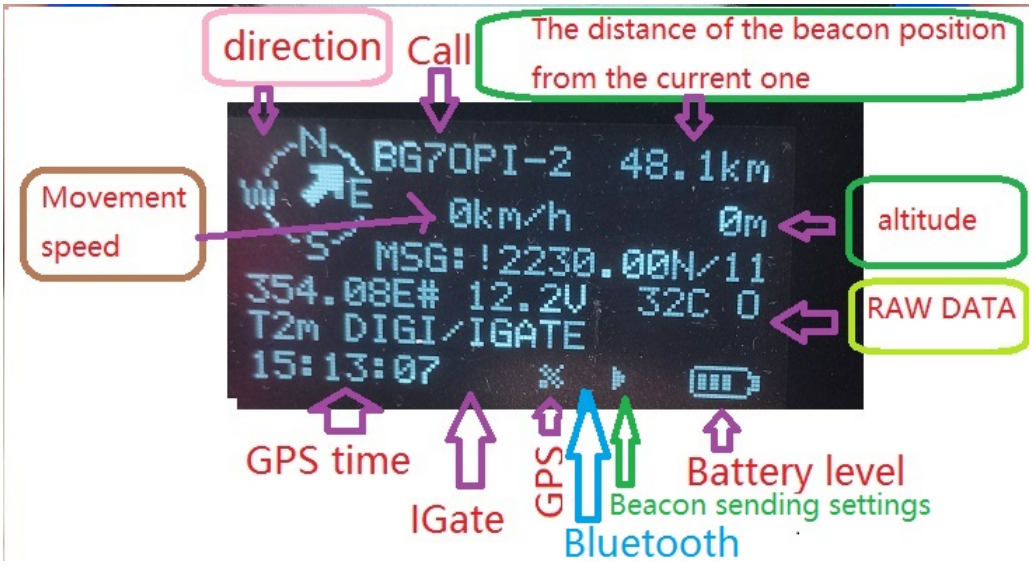
After all inputs are completed, press the "Confirm key" to save and exit!

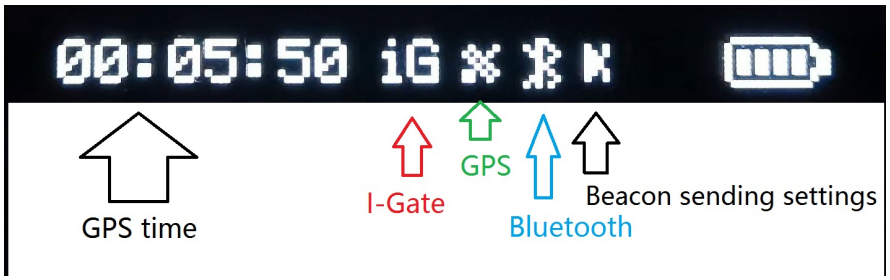
Note3: Please refer to the ASCII encoding table for the order of character arrangement.

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

1. 



 APRS gateway function is on, WIFI is connecting... Not connected to the server

 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

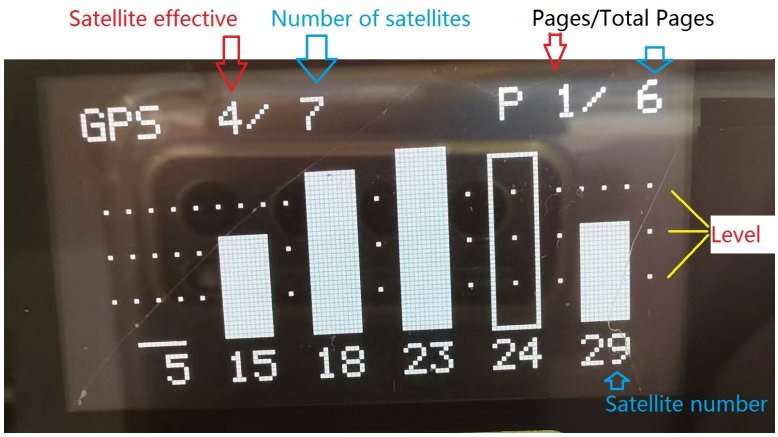
 Track launch is time interval mode or distance interval mode....

 Key lock function (quickly press the“ ④ Menu key”and “⑥ Direction key (↑)”to lock/unlock)

 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.

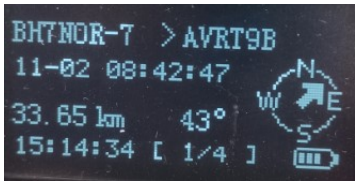
GPS satellite status list

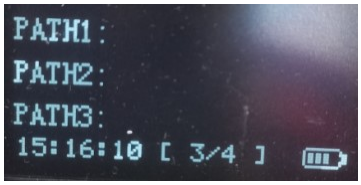


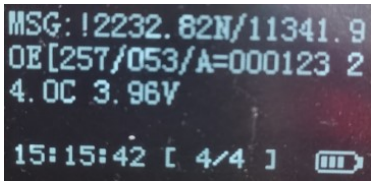
Note 7: The upper left corner shows the number of valid GPS satellites and the number of received GPS satellites. The upper right corner shows the page number, which can be turned to view.

GPS speed display

APRS List and Beacon Details







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
1.5	**GPS Map**		GPS map coordinate conversion 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/**2**/.../5
2.4	**Squelch**		Squelch	0/.../**5**/.../9
2.5	**TX Power**		Transmit power	**0.5W**/2W
2.6	**RX/TX enable**		Receive and transmit enable	RX TX **ON** / Will increase later **RX only / TX only / RX TX OFF**

APRS CFG				
3.1	**CALLSIGN**		Local call sign configuration	Manual input, default value:**NOCALL-7**
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
3.3	**MyPosition**		Custom GPS longitude and latitude 1-9	Manual input,Coordinate format 0000.00N/00000.00E
3.4	**Mic-E En**		Mic-E encode	**OFF**/ON
3.5	**MSG Type**	*	Mic-E Message Type	Emergency/Priority/Special/Committed/Returning/In Service/En Route/**Off Duty**
3.6	**MySymbol**		Site identification settings	Manual setting, main table + supplementary table
3.7	**TX Delay**		Delay before sending	OFF/200ms/300ms/500ms/**600ms**
3.8	**APRS Path**		Forwarding Routing	Manual Selection，WIDE1…3-[0 - 9]。默认 **WIDE1-1，WIDE2-1，WIDE3-0**
3.9	**MSG Text**		Additional information text selection	**OFF**/TEXT-1/TEXT-2/TEXT-3/TEXT-4/TEXT-5
3.10	**TextEdit**		Edit additional text content 1-5	Manual Input，Maximum number of characters: 20
3.11	**TEMP**	*	Motherboard temperature data	**OFF**/ON
3.12	**SPD/CSE**		GPS speed and heading data	OFF/**ON**
3.13	**Altitude**		GPS altitude data	OFF/**ON**
3.14	**Voltage**		Internal battery voltage data	OFF/**ON**
3.15	**DecodeOut**		Decoding format of serial port output	**OFF**/UI/KISS/WPL
Beaconing				
4.1	**BeaconMode**		Beacon mode selection	**OFF**/AUTO T/AUTO D/SMART
4.2	**TX Interval**	*	Time interval for scheduled sending	1min/3min/5min/**10min**/15min/20min/30min/60min/120min/180min
4.3	**Time Slot**	*	Specify time slot for scheduled transmission	**OFF**/0/1/…/59 sec.
4.4	**TX Distance**	*	Distance interval for fixed-distance transmission	0.1km/0.2km/0.3km/**0.5km**/1.0km/1.5km/2.0km/2.5km/3.0km/5.0km
4.5	**Speed DETE**	*	Speed determination for smart sending	Manual input, unit km/h
4.6	**Send Rate**	*	Automatic sending rate for Smart Send	Manual input, unit sec.
4.7	**Turn DETE**	*	Angle determination for intelligent transmission	Manual input
4.8	**Symbol DEF**	*	SmartSend Symbol Definition	Manual input
Digipeater				
5.1	**DIGI Mode**		APRS Repeater Enable	**OFF**/ON
5.2	**DIGI TX Delay**		Relay forwarding delay	100ms/300ms/**600ms**
5.3	**DIGI PATH**		Repeater forwarding routing	"**WIDE1**"/"WIDE1/2"/"WIDE1/2/3"
Gateway				
6.1	**iGate Mode**		WIFI and APRS server enabled	**OFF**/ON
6.2	**iGateFilter**		Gateway upload information type selection	Received :**ON**/OFF Sent:**ON**/OFF Beacon :**ON**/OFF
6.3	**Passcode**		APRS Login Code	Manual input, default:**12960**
6.4	**APRS Server**		APRS Server Selection	China/Japan/**Euro**/MyServer1/MyServer2
6.5	**MyServer1**		Custom APRS Server 1	Manual Input, URL or IP, no need to add port number after suffix
6.6	**MyServer2**		Custom APRS Server 2	Manual Input, URL or IP, no need to add port number after suffix
6.7	**WIFI SSID**		Wireless Fidelity Account	Manual Input:**bi7nor**
6.8	**WIFI PWD**		Wireless Fidelity Password	Manual Input:**abcd1023**
6.9	**WIFI INFO**		IP address obtained by Wireless Fidelity	——
Option				
7.1	**AutoLock**		Automatic key lock	**OFF**/30s/1min/5min/10min
7.2	**KeyLock SET**		Key lock advanced settings	Automatically lock when powered on, unlock the power button, unlock the send button

7.3	**Buzzer**		Buzzer setting	Power on/off/receive message/send message:ON/OFF 2.7K/1K/600hZ (Audio frequency selection)
7.4	**GPS Power**		GPS power enable	OFF/**ON**
7.5	**BT Power**		Bluetooth power enable	**OFF**/ON
7.6	**USB Power**		Automatic shutdown when USB cable is unplugged	OFF/**30s**/120s/300s/900s
7.7	**TimeZone**		Time zone settings	**AUTO**/UTC-14/.../UTC+0/.../UTC+13
7.8	**TEMP Unit**	*	Temperature display unit selection	**℃**/℉
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"

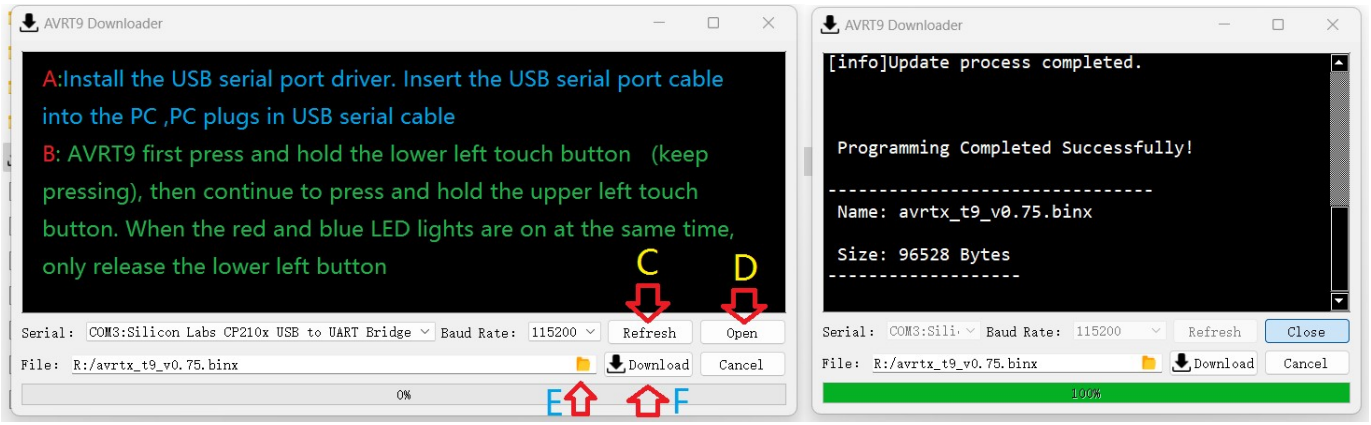
C, In the Ymodem interface, click arrow C to "refresh" the serial port

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:: http://avrtx.cn/

After-sales service mailbox: yupopp@163.com ; yupopp@gmail.com

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