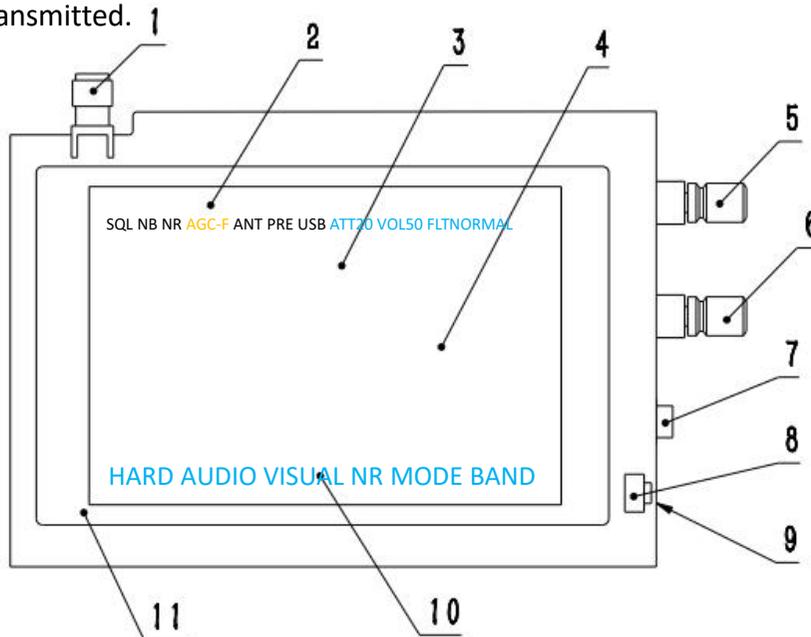


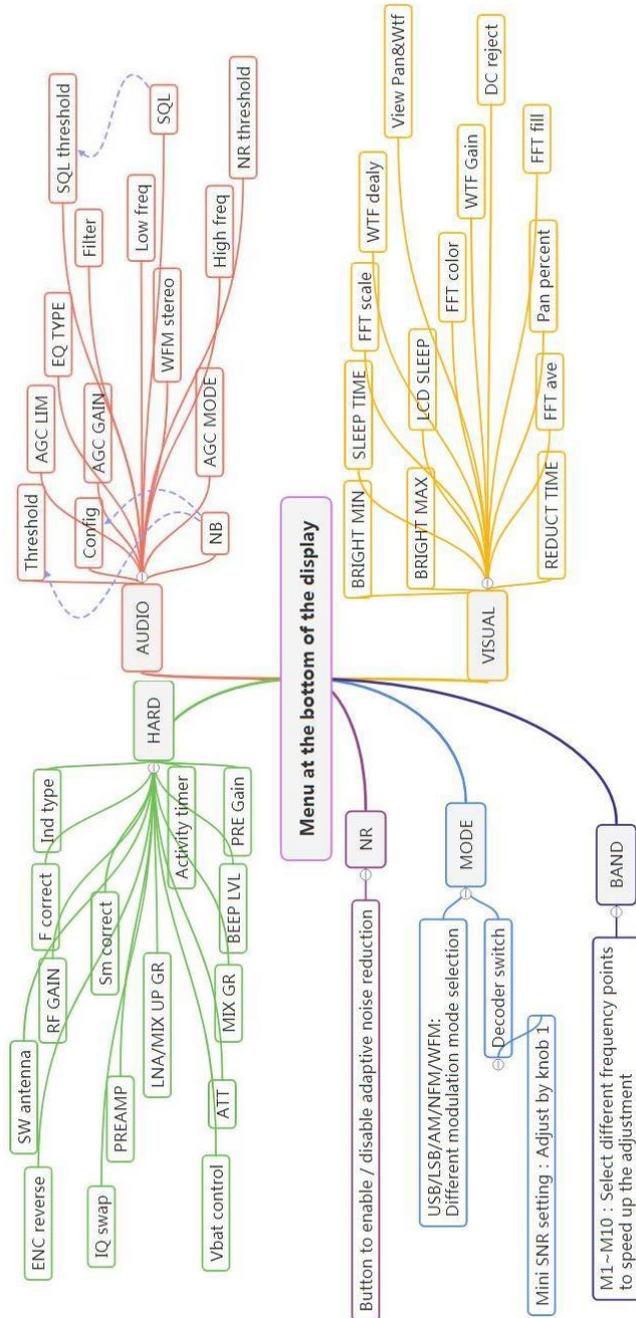
# User Manual

## CHARACTERISTIC:

- **SDR:** The function is determined by the loaded software.
- **Frequency value:** Range 50KHz~250MHz,400MHz~2000MHz.
- **Demodulation: AM,SSB,NFM,WFM,CW.**
- **Powerful functions:** Variable filter width,Adaptive noise suppressor,Threshold noise suppressor, Noise blazer, AGC,Equalizer.
- **Demodulation chip:** Use the chip msi001 with complete functions, high integration and high reliability.
- **Mcu:** The powerful stm32h743 with 480mhz clock frequency is applied.
- **LCD:** 3.5-inch display with touch screen.
- **Battery:** Built in battery and USB power supply, charged by USB. Built in battery capacity up to 2000 MA / h.
- **Connected:** USB connected to the computer, cat, IQ and audio can be transmitted.



SN	Introduction
1	Ant: Antenna Port, SMA-K.
2	SQL,NB,NR,AGC-F,ANT,PRE,USB,ATT20,VOL50,FLT NORMAL, functions of the switch prompt display. Light means on, gray means off. Battery power indicator: Green is ok, red means low battery. When low battery,please charge in time.
3	Signal strength indication. Signal-to-noise ratio indication function. Frequency value: Frequency value,range 50KHz~250MHz, 400MHz~2000MHz.250MHz~400MHz not include. Step value: frequency step value,range 1KHz~1MHz. Audio indicator: one for headset, one for back speaker. green for enable, grey for disable.press indicator to change status.
4	Spectrum analyzer window. Time: Long press HARD menu 3 seconds then release, go into time edit.Use volume encoder to adjust time. At last,long press to confirm. waterfall chart window.
5	Volume: Volume encoder, up and down to adjust volume value,short press to other parameters. Short press to go out the menu edit page.
6	Frequency: Frequency encoder,up and down to adjust frequency value,short press to adjust step value. Short press to go out the menu edit page.
7	Audio: Audio Port for headset.
8	Start: Short press to startup or close the screen. Long press to go to sleep mode.
9	Usb: Type-c Usb, Charging Port.
10	Menu lists:HARD,AUDIO,VISUAL,NR,MODE,BAND. Detailed description see below.
11	LCD: 3.5-inch display with touch screen.



Menu button function table:

HARD	Short press HARD menu into or out of edit. Time Setting: Long press HARD menu 3 seconds then release, go into time edit. Turn volume encoder to adjust time, short press to change position. At last, long press volume encoder to confirm.
ENC reverse	En1 reverse: reverse frequency encoder direction. Default is disable, turn down to add frequency and step value. Reverse, when enable, turn up to add value. En2 reverse: reverse volume encoder direction. Default is disable, turn down to add volume value. Reverse, when enable, turn up to add value.
IQ swap	IQ signal swap
Vbat control	Power consumption mode control
SW antenna	Impedance matching selection of shortwave antenna
PREAMP	Preamplifier Tianguan setting
ATT	Attenuator settings: Select by touching, then adjust knob 1 to set numerical value.
RF GAIN	RF gain setting: Select by touching, then adjust knob 1 to set numerical value.
LNA/MIX UP GR	Press LNA/MIX UP GR to enable or disable LNA/MIX UP GR function.
MIX GR	Press MIX GR to enable or disable MIX GR function.
F correct	Receiving frequency error correction
Sm correct	Receiving sm error correction.

BEEP LVL	Adjust BEEP LVL by volume encoder.	
Ind type	Touch switch Ind type.	
Activity timer	Adjust activity timer by volume encoder.	
PRE Gain	Adjust PRE gain value by volume encoder.	
<b>AUDIO</b>	<b>Short press AUDIO menu into or out of edit.</b>	
NB	Threshold	Adjust noise balancer threshold by volume encoder.
	Config	Adjust noise balancer config value by volume encoder.
	NB	Noise balancer
AGC	AGC LIM	Adjust AGC LIM value by volume encoder.
	AGC GAIN	Adjust AGC gain value by volume encoder.
	AGC MODE	AGC has OFF,FAST,MIDDLE,SLOW,LONG mode. Adjust selection AGC MODE by volume encoder.
EQ WFM	EQ TYPE	This machine has VOICE,POP,JAZZ,BASS,ROCK, CLUB, LIVE,SOFT,OFF equalizer mode. Adjust selection EQ TYPE by volume encoder.
	WFM stereo	Press WFM stereo to enable or disable WFM stereo function.
FILTER	Filter	audio filter,narrow for 8000Hz, normal for 12000Hz, wide for 15000Hz.
	Low freq	Frequency regulation of lower cut off of filter
	High freq	Frequency regulation of upper cut off of filter
SQL NR	SQL threshold	When SQL is enabled, SQL threshold can be adjusted by encoder.
	SQL	Press SQL to enable or disable SQL function.
	NR threshold	When NR is enabled, the NR threshold can be adjusted by the encoder.
<b>VISUAL</b>	<b>Short press VISUAL menu into or out of edit.</b>	
BRIGHT MIN	Adjust the minimum brightness by volume encoder.	
BRIGHT MAX	Adjust the maximum brightness by volume encoder.	
REDUCT TIME	The machine does not operate the LCD to enter the	

	low brightness delay time.
SLEEP TIME	When LCD SLEEP enable, after this value, screen will close to save battery.
LCD SLEEP	When enable, after the SLEEP TIME, screen will close to save battery.
FFT ave	Average speed of spectrum analyzer
FFT scale	Display range of spectrum analyzer
FFT color	FFT display color selection.
Pan percent	FFT shows Pan percent.
WTF delay	WTF delay
WTF Gain	WTF Gain
FFT fill	FFT display fill.
View Pan&Wtf	Pan&Wtf display switch settings
DC reject	Adjust DC rejection threshold by volume encoder.
<b>NR</b>	<b>Press NR to enable or disable NR function.The NR indicator will be grey for disable or red for enable.</b>
<b>MODE</b>	<b>This machine has USB, LSB, AM, NFM, WFM mode. Decoder can enable or disable CW decoder.</b>
<b>BAND</b>	<b>Band menu has 5 pages and total 50 choices. Turn the frequency encoder to change page index.</b>

### Quick frequency setting:

Press the frequency indicator to go into the quick frequency setting page. Quick input the frequency then select the right Unit.

### Waterfall:

Waterfall Press the waterfall to change Spectrum range.

## Register:

All machine have been registered at factory. Do not need to input serial numbers again. If needed,turn volume encoder to change value, short press volume encoder to change position. At last long press frequency encoder to confirm.

## Reset:

Long press both volume encoder and frequency encoder at the same time to reset. All setting will restore to initial factory setting. The registered info will keep.

## Antenna:

The Antenna come with machine is a 433MHz antenna. Select the WFM mode and set frequency to 90~110MHZ to enjoy the WFM radio. If you need to receive AM or LSB radio, please buy the right Antenna.

## First time to use:

Connect the antenna to machine , select WFM mode, and set frequency to 90MHz~110MHz. Enjoy it.