

HAMBUILDER

RADIOWORK



RTC03B

HF Radio Transceiver Controller + Synthesizer

HAMBUILDER RADIOWORK

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RTC03B

HF Radio Transceiver Controller + Synthesizer

Hardware feature:

- *. HF Transceiver Controller + Synthesizer
- *. VFO frequency synthesizer
- *. BFO frequency synthesizer
- *. USB/LSB switch control
- *. Microcontroller ATmega128
- *. 3.2 Inch TFT (480×320 pixel) LCD 16bit parallel mode
- *. 8 band switch control using 74HC595 8 bit shift register and ULN2803 current driver
- *. 3 pin LSB/USB/CW digital I/O control pinout (active high)
- *. 1 bit RX/TX digital input pin for TR/RX status monitor
- *. LM386 mini audio amplifier for audioscope
- *. 8 push button menu
- *. Rotary Encoder with push button (step setting)



Firmware feature v3

- *. RX/TX indicator display
- *. Dual independent band VFO selection (VFO A-B)
- *. Rotary dial with 1-10-100-1K-10K-100K step option
- *. Split operation (cross band)
- *. Analog S-meter display
- *. AF Gain level display (volume and mic)
- *. RF Gain level display (RX and TX gain)
- *. RIT control
- *. Run Time IF value setting for each band
- *. Run Time BFO offset value setting
- *. Run Time SI5351 correction/calibration value setting
- *. 10 Programmable Band setting (you may setup your own band range)

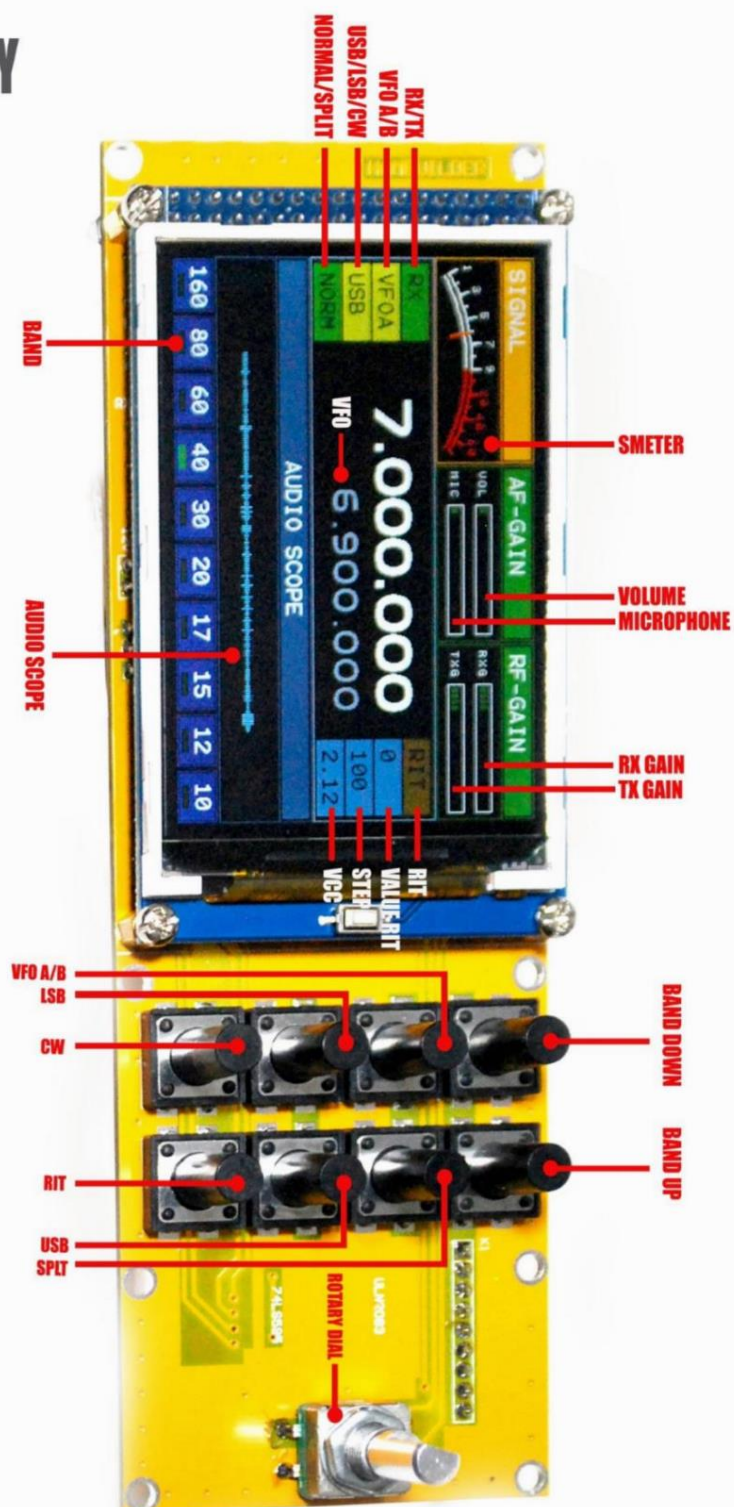
Standard band coverage (programmable)

160m	= 1.800 MHz - 1.999 MHz
80m	= 3.500 MHz - 3.999 MHz
60m	= 5.000 MHz - 5.500 MHz
40m	= 6.900 MHz - 7.249 MHz
30m	= 10.100 MHz - 10.149 MHz
20m	= 14.000 MHz - 14.349 MHz
17m	= 18.068 MHz - 18.168 MHz
15m	= 21.000 MHz - 21.449 MHz
12m	= 24.890 MHz - 24.890 MHz
10m	= 28.000 MHz - 29.699 MHz

BUTTON & DISPLAY

Labels and components shown in the image:

- RX/TX
- VFO A/B
- USB/LSB/CW
- NORMAL/SPLIT
- BAND
- AUDIO SCOPE
- SMETER
- AF-GAIN
- VOLUME
- MICROPHONE
- RF-GAIN
- RX GAIN
- TX GAIN
- RIT
- VALUES/RIT
- STEP
- VFO 1
- BAND DOWN
- BAND UP
- ROTARY DIAL
- VFO A/B
- LSB
- CW
- RIT
- USB
- SPLIT





There's 4x2 button in this RTC03B + 1 rotary encoder with push button
 4 on the left are BAND DOWN, VFOA/B, LSB, CW
 4 on the right BAND UP, SPLIT, USB, RIT

LEFT :

- BAND DOWN : this button be used to move down to the lower band
- VFO A/B : this button be used to change active VFO A or B (there's indicator VFOA-VFOB)
- LSB : this button be used to change active LSB or USB (there's indicator LSB-USB)
- CW : this button be used to change active CW

RIGHT :

- BAND UP : this button be used to move down to the higher band
- SPLIT : this button be used to turn on split operation, RX freq will work o VFO A and TX freq will work on VFO B. SPLIT ON indicator will appear on screen during split operation is activated. Press SPLIT button again to deactivated split operation.
- USB : this button be used to change active LSB or USB (there's indicator LSB-USB)
- RIT : this button be used to set up RIT value



SET MENU #1 :

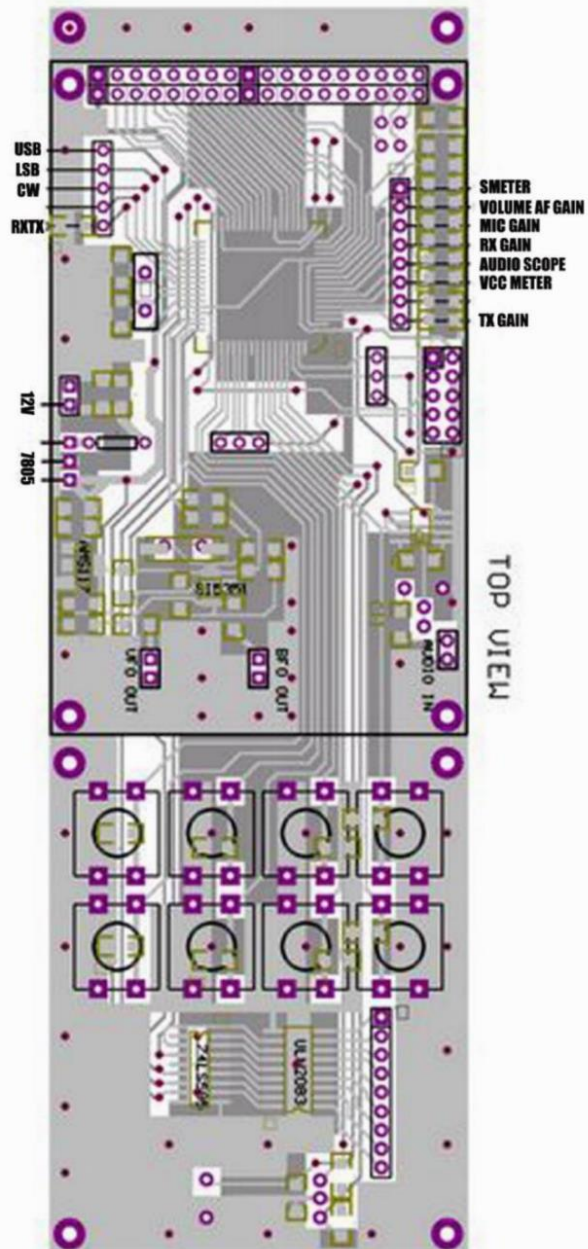
- CW BUTTON + RIT BUTTON
 - CALLIBRATION Si5351
 - BFO LSB
 - BFO USB
 - BFO CW
 - (LEFT BUTTON + ROTARY DIAL as menu value)

SET MENU #2 : SETTING CURRENT BAND

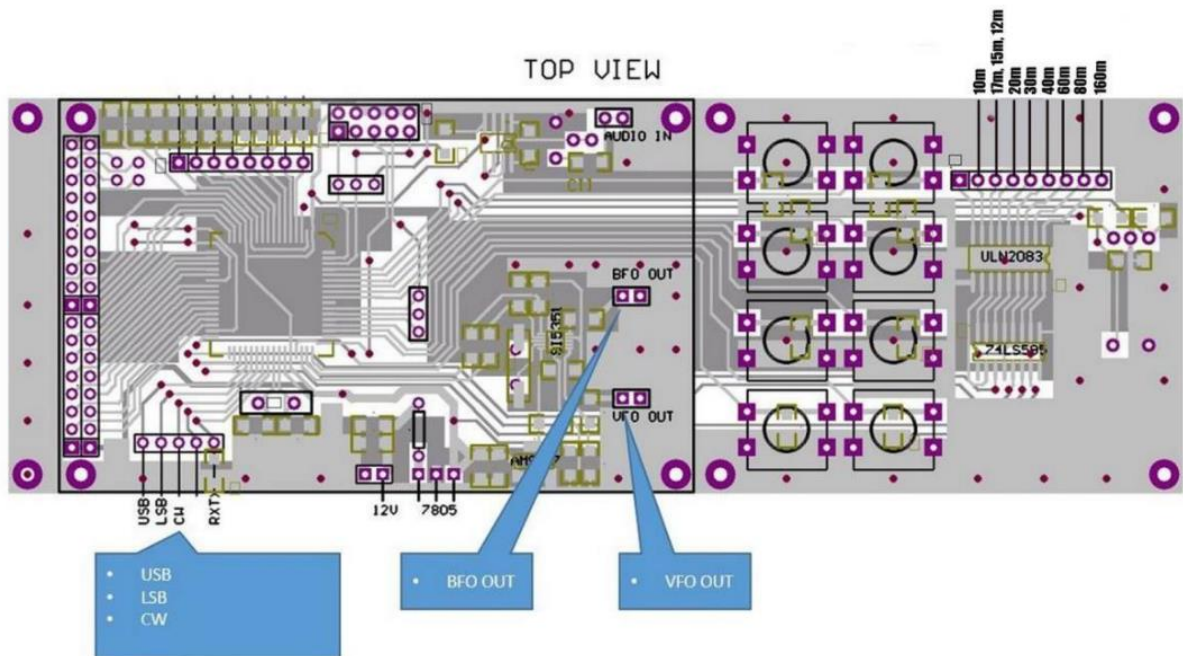
- BAND DOWN BUTTON + RIT BUTTON
 - IF SSB
 - IF CW
 - BAND MAX
 - BAND MINN
 - (RIGHT BUTTON + ROTARY DIAL as menu value)

EXIT press RIT BUTTON

PIN OUT



OUTPUT PIN



1. Band control pin

160m	= 1.800 MHz - 1.999 MHz
80m	= 3.500 MHz - 3.999 MHz
60m	= 5.000 MHz - 5.500 MHz
40m	= 6.900 MHz - 7.249 MHz
30m	= 10.100 MHz - 10.149 MHz
20m	= 14.000 MHz - 14.349 MHz
17m	= 18.068 MHz - 18.168 MHz
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12m	= 24.890 MHz - 24.890 MHz
10m	= 28.000 MHz - 29.699 MHz

2. USB pin, be used to control USB filter/mode

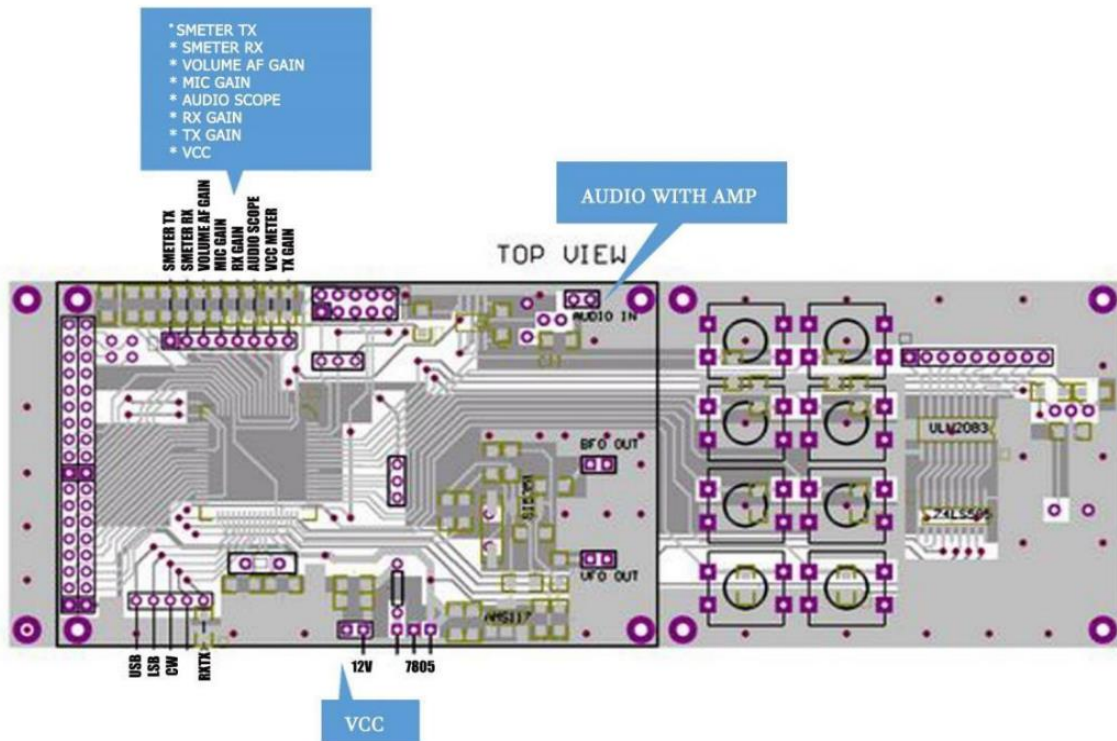
3. LSB pin, be used to control LSB filter/mode

4. CW pin, be used to control CW filter/mode

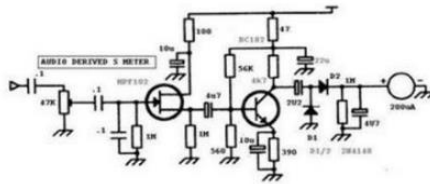
5. BFO pin be used as BFO frequency out

6. VFO pin be used as VFO frequency out

INPUT PIN



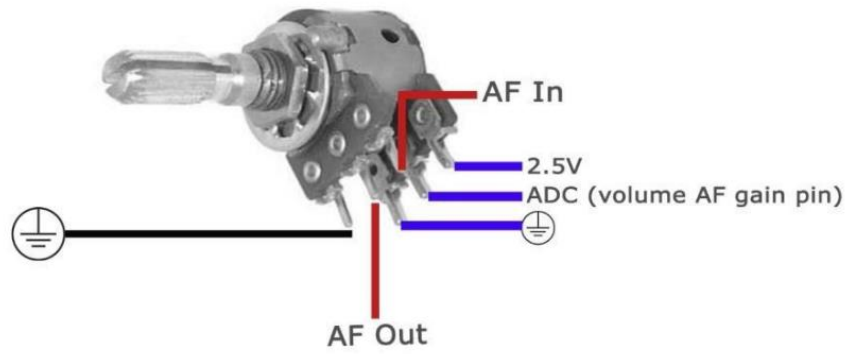
1. VCC pin, 12V- 13.8 V
2. S-METER, signal meter pin, voltage level 0-2.56V
Connect this pin to S-Meter buffer/amplifier



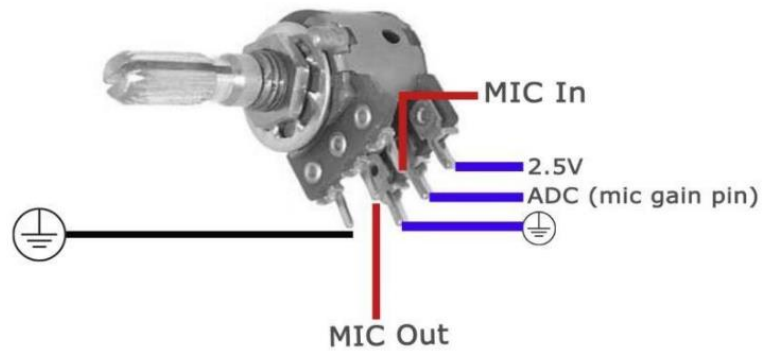
3. Volume AF gain
4. Mic Gain
5. TX Gain, To adjust TX signal level
6. RX Gain, To adjust RX signal level
7. Audio Scope in 0-0.1V, connect this pin to audio source such as a mic line or headphone line.

INPUT PIN

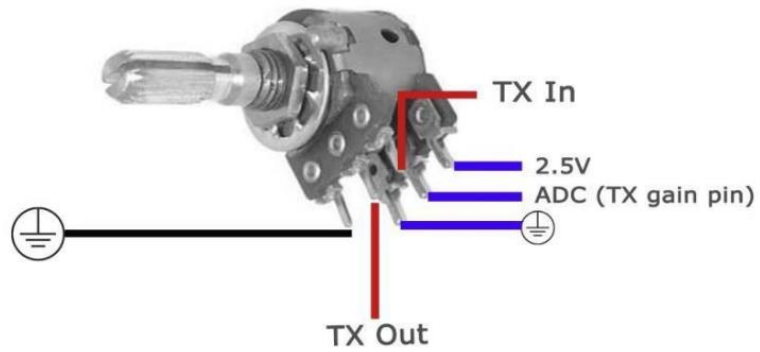
AF GAIN



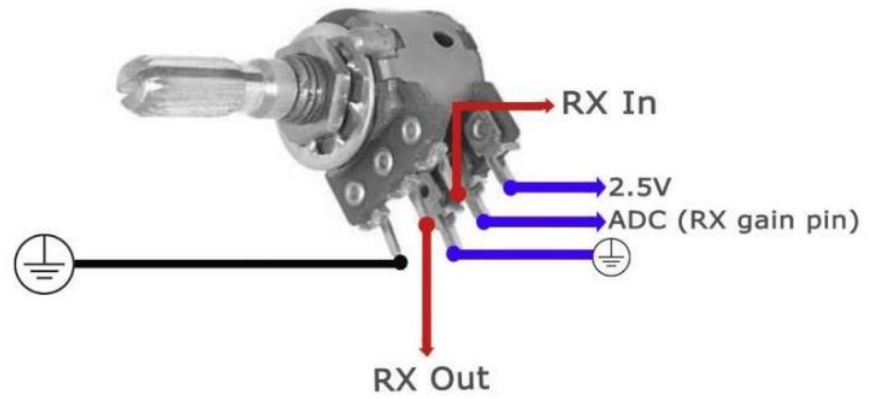
MIC GAIN



TX GAIN



RX GAIN



VCC/VBAT

