USER MANUAL

VHF 5W Transceiver

Models : TX125 Transceiver

WARNING

This Machine is a high-power and high-radiation product. When user installs the antenna and operates this product , It must be 2-3 meters or above the distance far away form the human body.

Transmitter

Be aware at following situations ,which will help to extend the life cycle of transmitter:

☠ Don't change transmitter or tamper with its original appearance.

☠ Don't put transmitter close to a heat source or in light direct sun.

☠ Don't put transmitter in dust , moisture or on uneven surface.

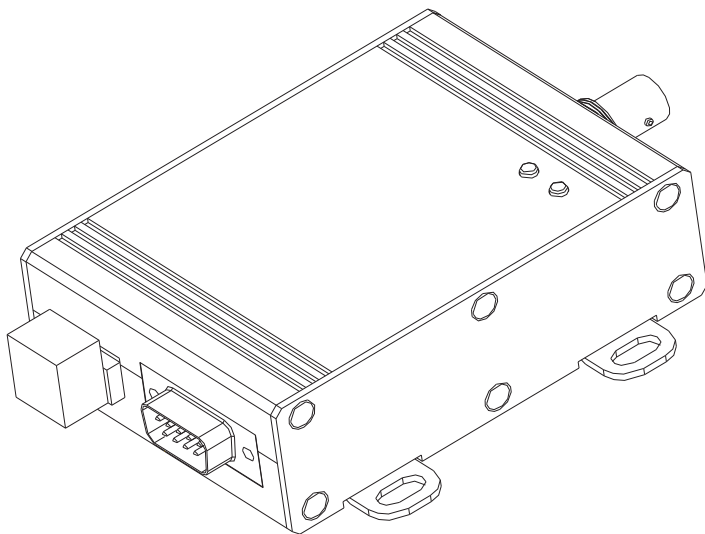☠ Don't soak transmitter into the water.

☠ Never operate the device with out the correct Gold Apollo antenna , or a suitable artificial load , connected.
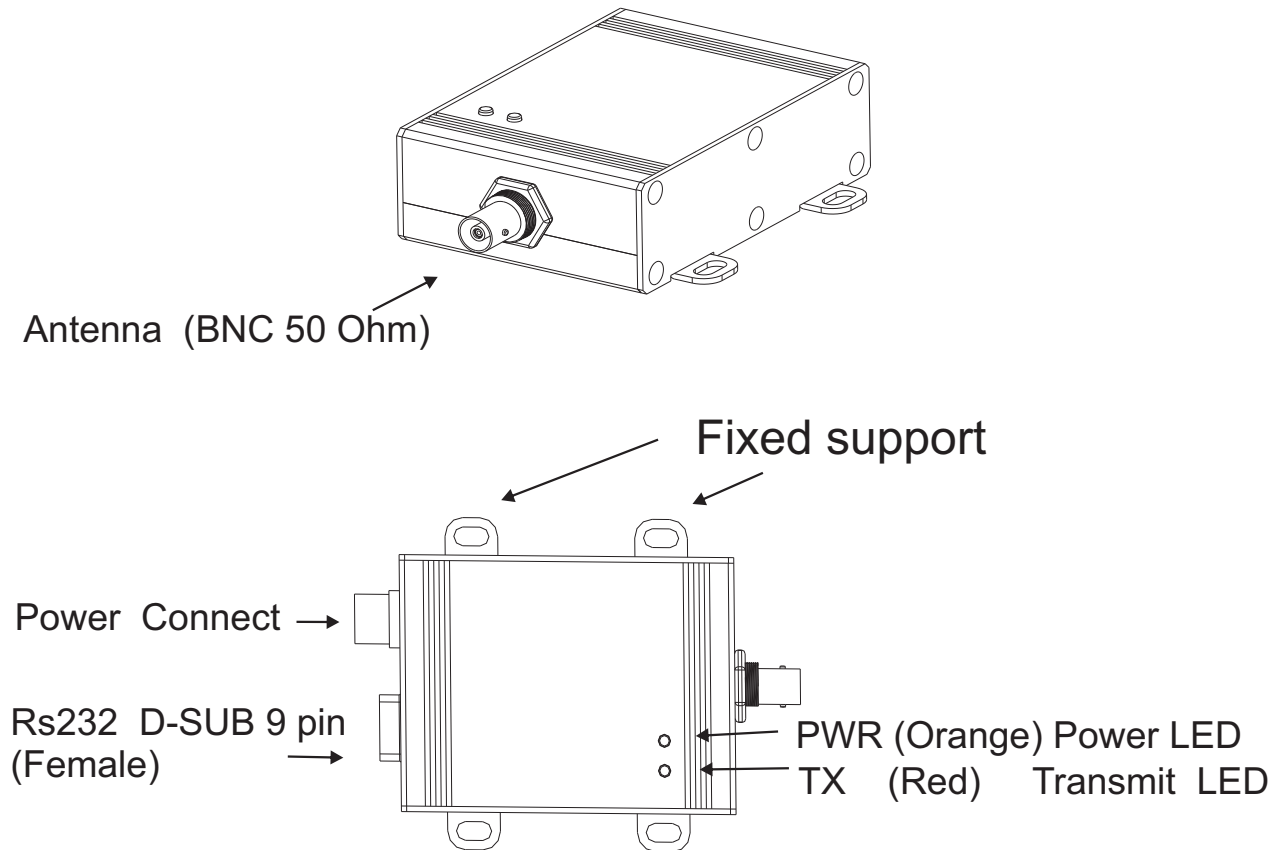
☠ Do not operate this equipment in environments containing explosive materials or vapor. This includes Petrol service stations .
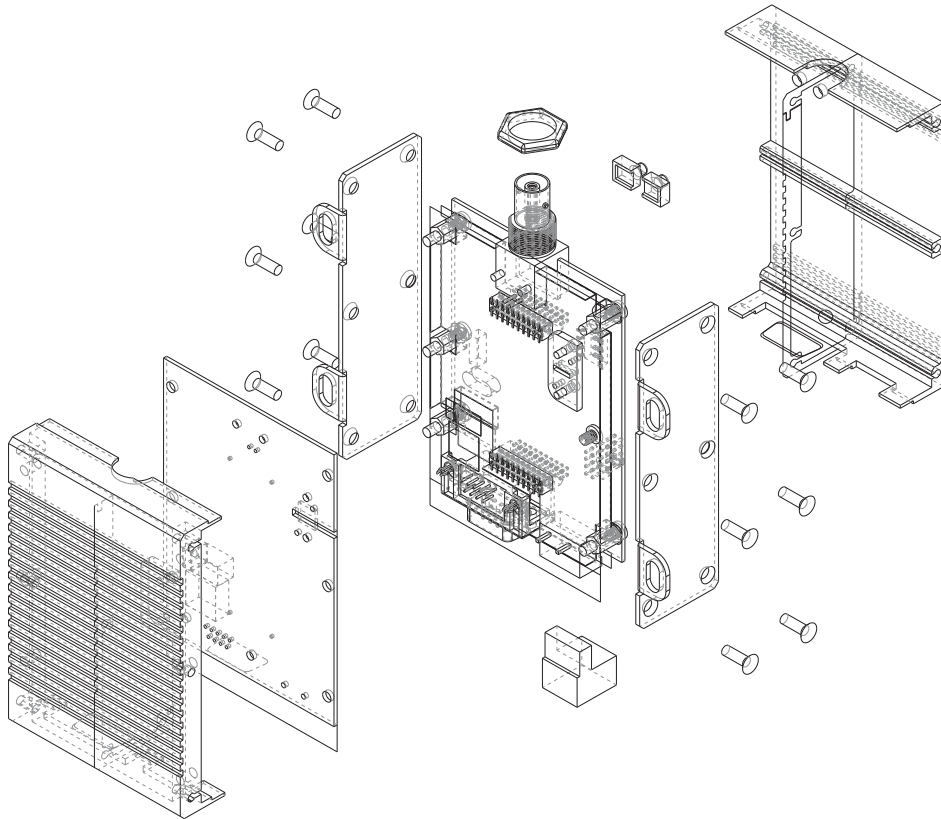
Attention

TX125　Outlook

Function \ Location

Antenna (BNC 50 Ohm)

Fixed support

Power Connect →

Rs232 D-SUB 9 pin
(Female) →

PWR (Orange) Power LED
TX   (Red)   Transmit LED

TX125 Internal structure

System Specifications :

1. Frequency Rang   : VHF=150MHz~174MHz

2. Channel Spacings   : 12.5KHz , 25KHz
3. RF Output Power   : 5W , 1W
4. Modulation Type   : F1D , F3E
5. Frequency Source   : Synthesizer
6. Power Supply   : DC 10V~14V
7. Temperature Range   : -30c~60c
8. Current Consumption   :
                    Standby : 100mA,
                    TX(5W) : <2A,
                    TX(1W) : <1A,

Transmitter :

1. Carrier Power

           Hi : 5W+/-1.0dB ,

          Low : 1W+/-1.0dB .

2. Frequency Error : +/-2.5ppm@VHF ,

3. Frequency Deviation

   25KHz Channel Spacing : 5KHz~3.8KHz(Peak)

  12.5KHZ Channel Spacing : 2.5KHz~1.8KHz(Peak)

4. Audio Frequency Response : 300KHz~2.5KHz-6dB

5. Adjacent Channel Power   : <70dBc

6. Conducted Spurious Emission : -57dBc

Receiver

1. Sensitivity (@12dB SINAD) : <-118dBm
2. Adjacent Channel Selectivity
    25KHz Channel Spacing : >60dB
    12.5KHZ Channel Spacing : >52dB
3. Spurious Response Rejection :70dB
4. Image Response : >70dB
5. IF Response :>70dB
6. Intermodulation Response Rejection
    +/-25kHZ/50kHZ   : 65dB
    +/-50kHZ/100kHZ : 65dB

7. AF Distortion :<5%
8. LO Frequency Temperature Stability : <2.5ppm

1.I /o PORT : DB-9 Connector

  PIN 1.-----PTT   PIN 2.-----TXD

  PIN 3.-----RXD   PIN 4.-----Audio MOD IN

  PIN 5.-----GND   PIN 6.-----Carrier DET OUT

  PIN 7.-----Digital MOD IN   PIN 8.-----RTS

  PIN 9.-----Audio OUT

2.PTT Input Level   : 0-5V (TTL)

3.Digital Modulation Input Level : 0-5V (TTL)

4.Audio Modulation Input Level   : 1Vp-p@1kHz

5.Audio Output Level   : 1vp-p@8 OHM Load
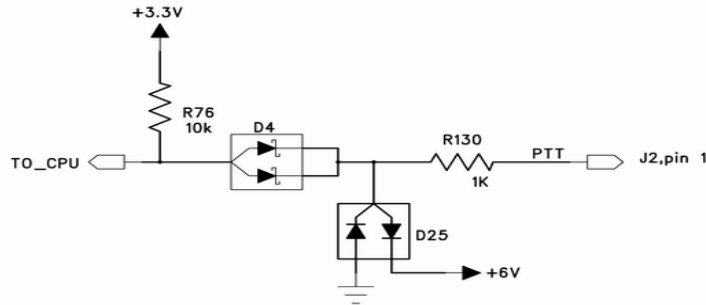
6.Carrier DET Output Level   : 0-5 V (TTL)

7.TX IND Output Level   : 0-5V (TTL)
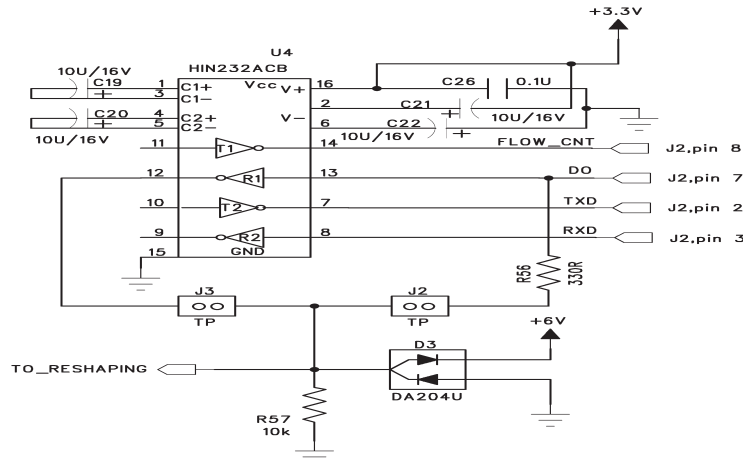
8.TXD & RXD Level   : +/-12V (RS-232)

TX125 I/O PORT DESCRIPTION

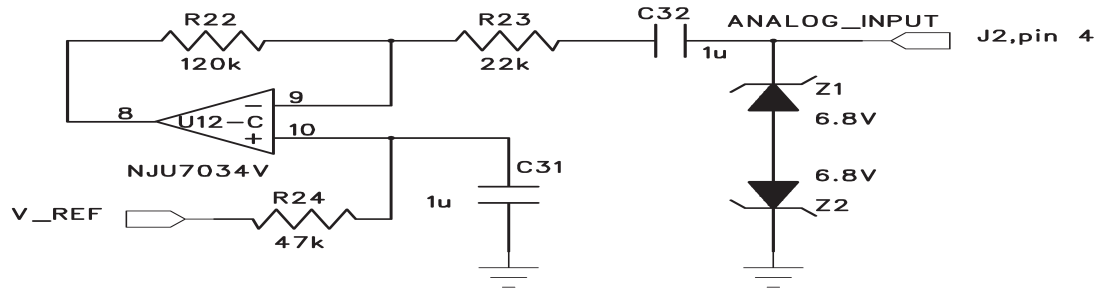1. CONNECTER J2 PIN 1. PTT control input. TTL level ,active low.

2. PIN 2,3,7,8. Digital modulation signal input (pin7) and RS-232 input (pin2,3,8). Digital modulation signal use TTL level or +/-12v , change by J2 and J3 setting.
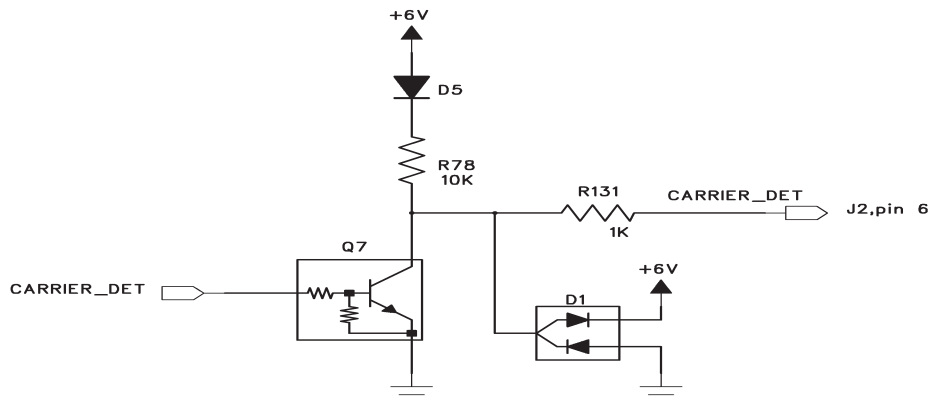
3. PIN 4. Analog input .

!   Analog modulation input , 1V p-p for +/-4kHz deviation.
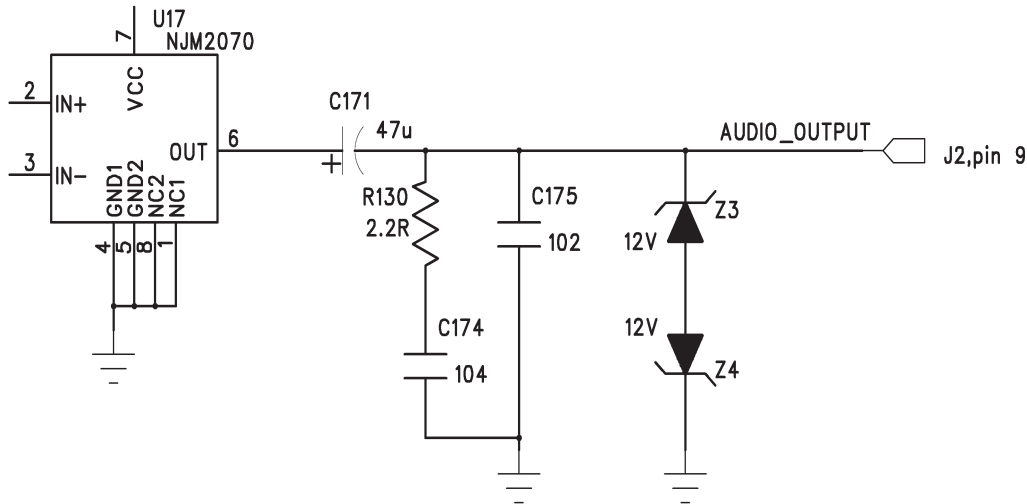

4. PIN5. GND. Input signal reference point. PIN6.Carrier detect output.
Indicate on the receiver frequency have a signal . TTL level active low.
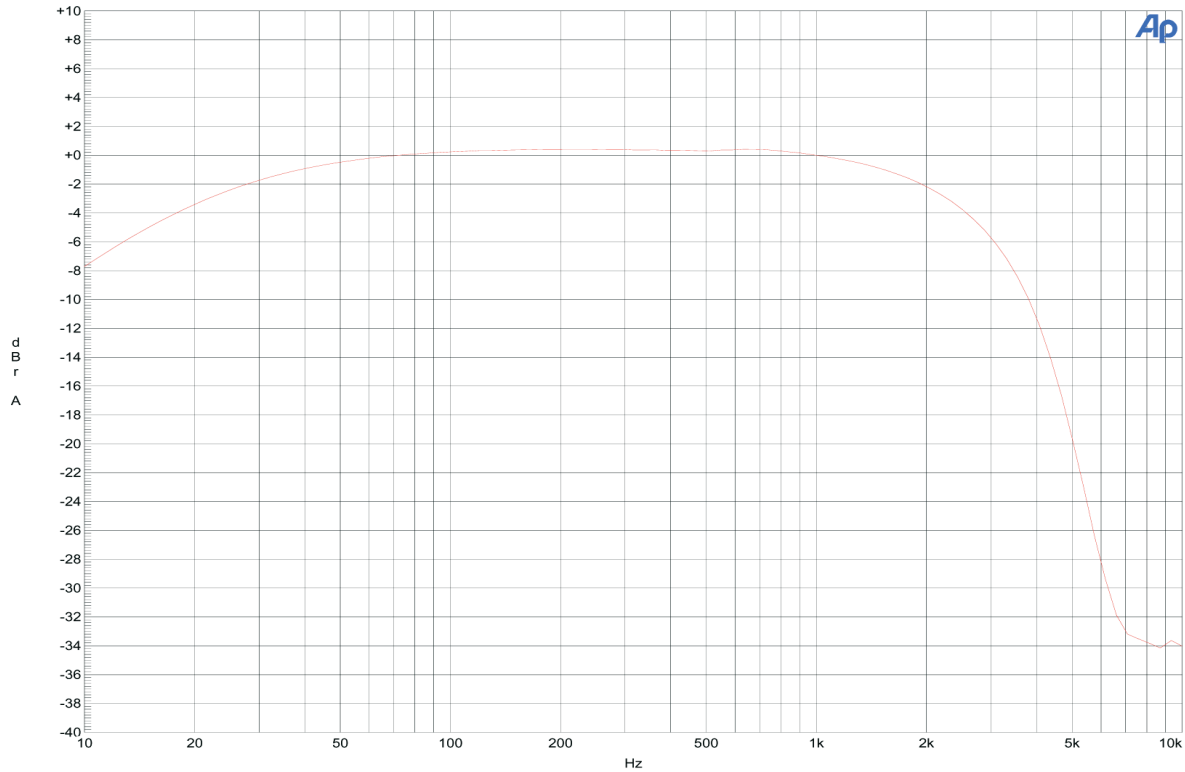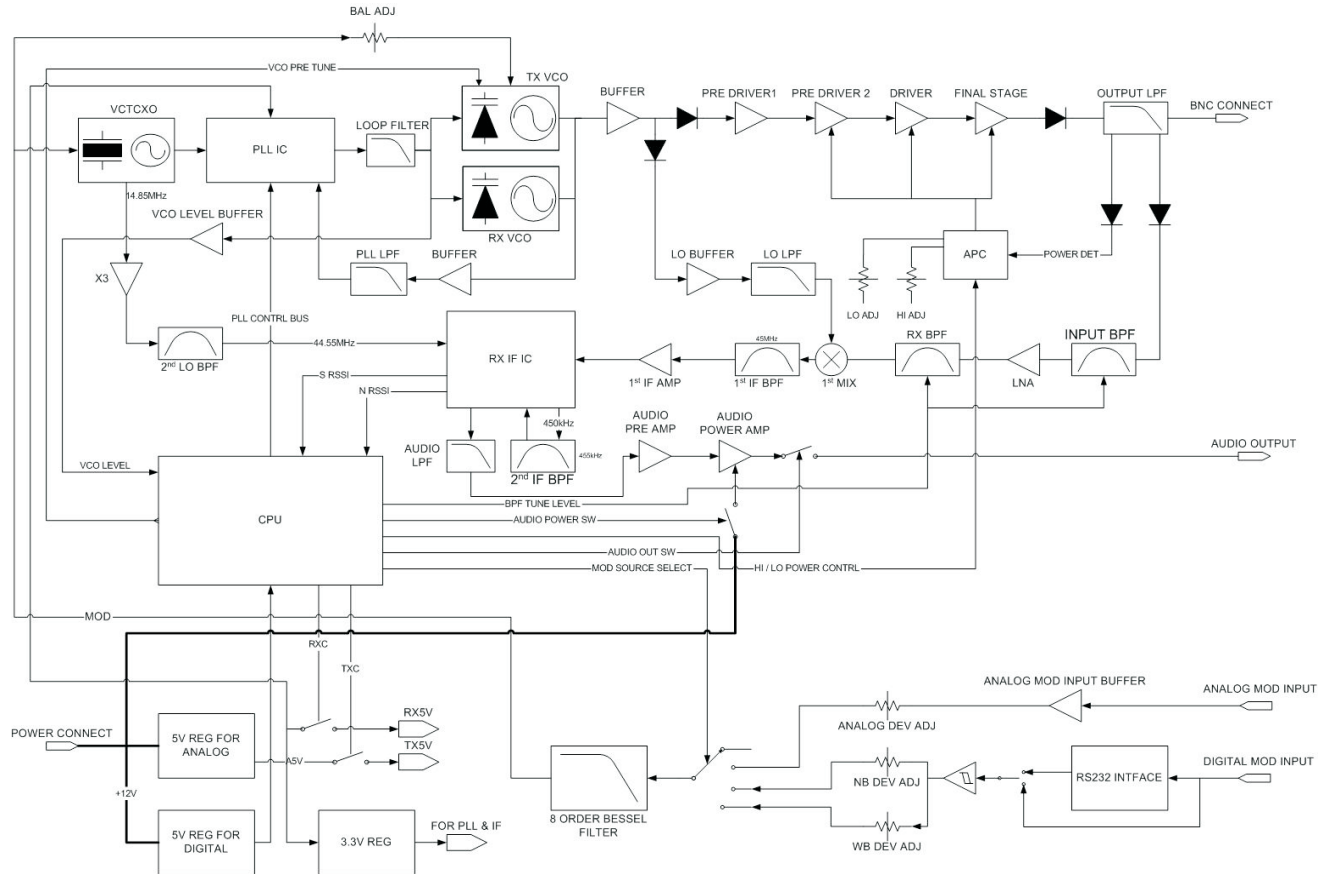The trigger level can setting by programmer software.

5. PIN 9. Audio output.

Demodulation signal output. Output level is 1vp-p @1kHz sin wave, 4kHz deviation.

ANALOG MODULATION FREQUENCY RESPONSE

System Block Diagram

BAL ADJ

VCO PRE TUNE

TX VCO

VCTCXO

14.85MHz

PLL IC

LOOP FILTER

BUFFER

PRE DRIVER1   PRE DRIVER 2   DRIVER   FINAL STAGE   OUTPUT LPF

BNC CONNECT

VCO LEVEL BUFFER

RX VCO

X3

PLL LPF   BUFFER

LO BUFFER   LO LPF

APC   POWER DET

LO ADJ   HI ADJ

PLL CONTRL BUS

2nd LO BPF

44.55MHz

RX IF IC

45MHz

1st IF AMP   1st IF BPF   1st MIX

RX BPF

INPUT BPF

LNA

S RSSI

N RSSI

VCO LEVEL

AUDIO LPF

450kHz

2nd IF BPF   455kHz

AUDIO PRE AMP

AUDIO POWER AMP

AUDIO OUTPUT

CPU

BPF TUNE LEVEL

AUDIO POWER SW

AUDIO OUT SW

MOD SOURCE SELECT

HI / LO POWER CONTRL

MOD

RXC

TXC

POWER CONNECT

5V REG FOR ANALOG

A5V

RX5V

TX5V

+12V

5V REG FOR DIGITAL

3.3V REG

FOR PLL & IF

8 ORDER BESSEL FILTER

ANALOG MOD INPUT BUFFER

ANALOG MOD INPUT

ANALOG DEV ADJ

NB DEV ADJ

RS232 INTFACE

DIGITAL MOD INPUT

WB DEV ADJ

HARDWARE SETTING DESCRIPTION

TX125 HARDW ARE SETTING DESCRIPTION

1.Jump setting for digital modulation.

J2	J3	J5	J6	Description
O	X	O	X	For external modulation signal and digital input level 0 ~ 5V (TTL level)
X	O	O	X	For external modulation signal and digital input level -12V~ +12V (RS232 level)
O	X	X	O	For internal encode (TAP MODE)
X	O	X	O	For internal encode (TAP MODE)

2.External analog modulation.
Analog modulation sensitivity : 8kHz deviation (=/-4KHz)@ 1Vp-p 1kHz sine wave.

3.Carrier detective active level (S_RSSI setting)

for reference

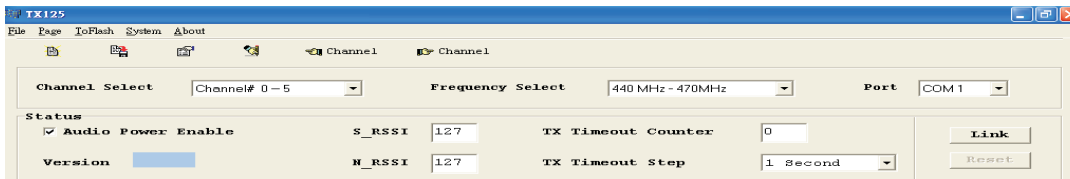| Receive signal level	S_RSSI value
-70dBm	170
-75dBm	159
-80dBm	148
-85dBm	140
-90dBm	127
-95dBm	119
-100dBm	110
-105dBm	100
-110dBm	90
-115dBm	83
-120dBm	75

Instruction for Software Programming

1. Button of the tool bar

Click the Button of
1. Open File
2. Save File
3. Read Data
4. Transfer Data
5. Previous Channel Page
6. Next Channel Page

Instruction for Software Programming

1. Channel Select : total 16 channels (channel 0~15)

2. Frequency Select : options of VHF

3. Port : RS-232 Port of com 1~5.

4. Audio Power Enable : Need   voice Transmission.

5. S_RSSI : detection for transmission wave, when receive the transmission wave   signal is stronger then set-up value , Carrier Det. Output high .

6. N_RSSI : when noise signal is stronger then the set-up value , then power off voice transmission.

7. TX Timeout Counter :(0-255) "0" means the feature of Timeout disable.

8. TX Timeout Step : PTT Timeout (TX Timeout Counter) * (TX Timeout Step) sec .when PTT triggers, RF signal remains "ON" during this period, then, it comes "OFF" until PTT works RF signal comes "ON" again.

9. Link : press "Link" to wait for the connection between TX125 and PC and start programing (TX125 and PC are connected   RS-232 Port to power on TX125).

2.Channel devise

Channel page 1:
1. RX : Receiver Frequency.
2. TX : Transmit carrier Frequency .
3. MOD Source : Select 3 Type : WB_MOD\ NB_MOD \ ANALOG.
4. Hi_Lo Power : Select High Power (5W) or Low Power (1W)

3. About Box

CAUTION:

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm

from all persons and must not be co-located or operating in conjunction with any other antenna or

transmitter. Installed and end-users must be provided with antenna installation instructions and transmitter

operating conditions for satisfying RF exposure compliance.

Product Name: Transceiver
Model NO: TX125, TX125-EN
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