KIRISUN

COMMERCIAL TWO-WAY RADIO

PT260

PORTABLE RADIO SERVICE MANUAL

SHENZHEN KIRISUN ELECTRONICS CO.,LTD

Dangerous!

Do not connect AC power or DC power over 8.6V to any connector or terminal of the radio. Otherwise it will cause fire, electric shock or damage to the radio.

Warning!

Do not reverse the power polarity.

It may cause harm to the radio if signal input on the antenna connector is higher than 20 dBm (100mW).

Do not turn on the radio until the antenna or load connection is completed.

If the antenna has been damaged, do not use the radio. Damaged antenna may cause light burning on skin.

Though the radio is waterproof, it's better to avoid putting it in rain or snow, or any other liquid to ensure its life and performance.

Statement!

Contents

Chapter 1 Overview 2
Chapter 2 External View and Functional Keys 2
Chapter 3 Circuit Description 3
Chapter 4 Function Description and Parameter Setting 6
Chapter 5 Disassembly for Repair 9
Chapter 6 Adjustment 11
Chapter 7 Specifications 14
Chapter 8 Troubleshooting 15
Chapter 9 KBC-260 Charger 15
Appendix 1 Abbreviations 16
Appendix 2 Electronic Parts Lists 17
Appendix 4 Accessories Lists 21
Figure 1 PT260 Schematic Circuit Diagram 23
Figure 2 PT260 Top Layer Numeric Value Diagram 24
Figure 3 PT260 Bottom Layer Numeric Value Diagram 25
Figure 4 PT260 Top Layer Position Mark Diagram 26
Figure 5 PT260 Bottom Layer Position Mark Diagram 27
Figure 6 Charger Schematic Circuit Diagram 28

Chapter 1 Overview

1.1 Scope of Application

This manual applies to the service and maintenance of PT260 series of FM portable radios, and is intended for use by engineers and professional technicians that have been trained by Kirisun. Information that is needed in the maintenance all contain in this manual. In order to improve the performance and quality of this product, Kirisun owns the right to modify the structure and change electronic parameters without first notice. For the latest service manual, you can visit our website www.kirisun.com to download it, or ask us or the authorized agencies to get it.

Please read this manual carefully before servicing this product.

1.2 Attentions

Safety

Do not connect the antenna connector and PCB with your skin during the servicing.

Do not reverse the power polarity.

It may cause harm to the radio if signal input on the antenna connector is higher than 20 dBm (100mW).

Do not turn on the radio until the antenna or load connection is completed.

If the antenna has been damaged, do not use the radio. Damaged antenna may cause light burning on skin.

Electromagnetic Interference

Do not use or repair the radio in the following areas:

Hospital, health center, and airport.

Areas containing potentially explosive atmosphere, e.g. orlop deck of the ship, storage and transportation equipment for fuel and chemical.

Areas near blasting sites or with electrical blasting cap.

Avoid using or repairing the radio in the following areas:

In the moving car. Because the radio wave transmitted from this product may probably cause the car stopping to work.

Replacement Parts

Make sure that you are using the parts provided by Kirisun during the servicing.

Although you can purchase the parts with the similar type in the market, we are not sure that those can be used on our product, and we do not ensure the quality will not be changed.

If you require any replacement parts, please submit the blank with the following format.

Replacement Part Application

Product Type	Part Name	Part No.	Parameters	Material No.	Pcs
PT260	Field Effect Transistor	Q21	2SK3476	1TF1-2SK3476	1
PT260	Triode	Q41	2SC4181(L18)	1TT1-2SC4181	1
PT260	Belt clip		KBJ-09		1

1.3 Service

All the Kirisun products are subject to the service warranty.

The main unit of the radio is guaranteed for free service of 24 months. Accessories (such as battery pack, power adapter, antenna or charger) are guaranteed for free service of 6 months. Earphones are wearing parts and out of warranty.

In one of the following situations, charger free service will not be available.

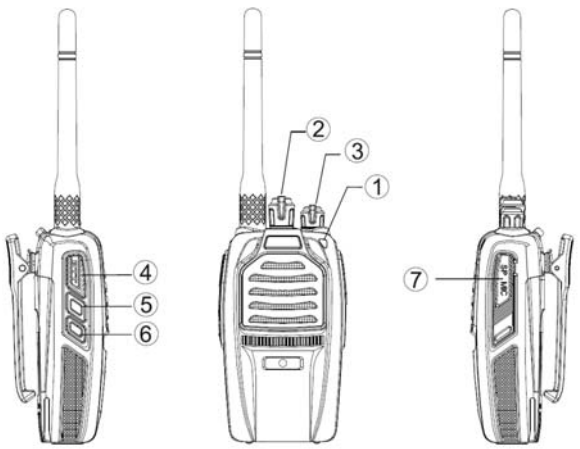
- No valid warranty card or original invoice.
- Malfunction caused by disassembling, repairing or reconstructing the radio by users without permission.
- Wear and tear or any man-made damages such as mechanical damage, burning or water leaking.
- Product's serial number has been damaged or the product trademark is difficult to identify.

After the warrant expires, lifetime service is still available. We also provide service components to service stations and staffs at favorable prices.

Chapter 2 External View and Functional Keys

2.1 External View

See figure below:



2.2 Functional Keys

① LED indicator

Red LED lights in transmitting; Green LED lights in receiving. Red LED flashes in low battery warning.

② Channel selector

Rotate it to select channel 1-16.

③ Power ON/OFF/Volume knob

Rotate it clockwise until a click is heard to power on the radio. Rotate it counterclockwise until a click is heard to power off the radio. Rotate it to adjust the volume.

④ PTT button

Press it and speak to the microphone to send a call. Release it to receive a call.

⑤ Monitor

Press it to turn off the squelch circuit, and then the user can hear the background noise. Release it to turn on the squelch circuit.

⑥ Voice annunciation

In standby state, press this key and the radio will annunciate the current channel number. Press it again to restart the radio and change the type of annunciation.

⑦ Emergency button

Press this key and an alert tone sends out. Press it again to turn off the alert tone. All the other switches and keys are invalid in this state.

⑧ Speaker/Microphone jack

Use it to connect the external speaker and microphone.

Chapter 3 Circuit Description

3.1 Frequency Configuration

The receiver adopts single mixing. The first IF is 9.375 kHz.

The first local oscillator signal of the receiver is generated by the frequency synthesizer. The transmitter signal is generated by the frequency synthesizer.

The reference frequency of the frequency synthesizer is produced by TXCO.

3.2 Principle of Receiver (RX)

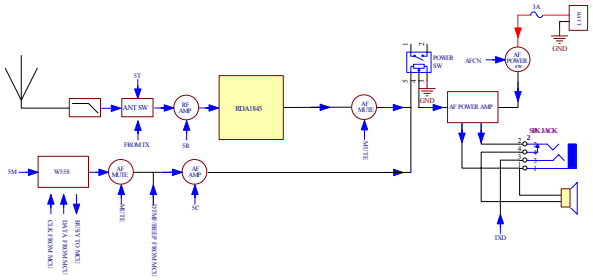


Figure 3.1 Receiver Diagram

Receiver Front End

The signal coming from the antenna passes through the RX/TX switch circuit (D11, D12, D21, D17), and sends into IC1 (RDA1845) to demodulate, and then output audio signal.

RX Audio Signal Process

The audio signal demodulated by IC1 (RDA1845) passes through the volume potentiometer, and comes to audio power amplifier U31 (TA7368F).

Squelch Circuit

The third pin of IC1 (RDA1845) sends out signal to MCU which can identify the noise level and control the squelch circuit.

Audio Power Amplifier

IC1 and the periphery components consist of BTL audio power amplifier circuit.

Base electrode of Q31is the control end. High level: On; low level: Off.

Receiving audio signal, voice annunciation signal, alert tone signal and emergency alarm signal gather together and are amplified by audio amplifier to drive the speaker. Among these signals, the emergency alarm cannot be adjusted by the volume key. The impedance of the speaker is 8 Ω.

CTCSS Process

The 33rd pin of IC1 (RDA1845) outputs CTCSS/CDCSS signal to MCU to decode.

3.3 Transceiver (TX) Principle

TX Amplifier

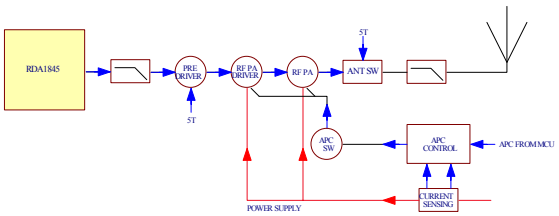


Figure 3.2 Power Amplifier and Antenna Switch Diagram

The modulated RF signal from IC1 (RDA1845) is amplified by Q19 and Q22, and then is sent to Q21 for power amplifier. The output power of Q21 is 4.5W.

Grid bias of Q21 and Q22 is controlled by the APC circuit. By changing the voltage of grid bias, the TX output power can be controlled conveniently.

APC (Automatic Power Control)

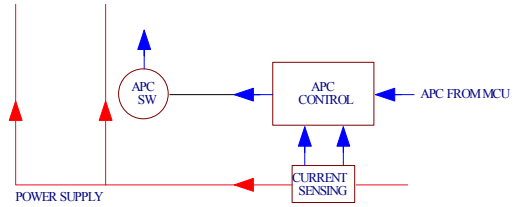


Figure 3.3 APC Circuit Diagram

R231, R232 and R233 are used to test the power amplifier current. IC3A is the sampling amplifier for the power amplifier current. IC3B is the power comparator amplifier.

If the TX output power is too high, the power amplifier current and IC5A output voltage increase; IC5B output voltage decreases, and the offset voltage added to Q21 and Q22 decreases, which cause the TX output power decreases and vice versa. Thus, the TX output power can keep stable under different working conditions.

By changing the voltage inputting to IC5B, the MCU can adjust the power.

TX Voice Signal Process

MIC signal passes through the inner and outer MIC Switch Circuit. This signal first is sent to U32U for filter and amplifier, and then is sent to the 5th pin of IC1 (RDA1845) for carrier modulation.

3.4 Principle of Frequency Synthesizer

13MHz reference frequency signal provided by X1 is sent to the internal reference divider of IC1 (RDA1845) for division, and then is sent to the internal discriminator and the internal VCO to be divided by decimal fraction divider, and then this signal comes to phase comparator. The internal VCO is controlled by the output control signal to make the frequency of VCO equals to the designed frequency.

3.5 Voice Annunciation Circuit

This product has voice annunciation function, which is especially useful at night or in the dark environment.

IC2 is the voice storage chip, which stores voices such as channel annunciation and so on. When switching to the next channel, the radio will annunciate the current channel number. When pressing “Voice Annunciation” Key, the radio will annunciate the channel number again.

If Voice Annunciation is enabled, press “Voice Annunciation” Key in the standby state, the radio will annunciate the current channel number. Press and hold that key to restart the radio and change the type of voice annunciation. When repressing the key to restart the radio, the radio will annunciate again and again in the order of “Chinese woman voice-English woman voice-no sound”.

3.6 Power Supply

The radio uses 7.4V, 1100mAh Li-on battery as the power supply. The transmitter power amplifier circuit (Q21, Q22) and the receiver audio power amplifier (U31) directly adopt the battery for power supply. Other circuits are powered by 3V regulated voltage.

IC6: 3V low dropout, micro-power regulator, supplies 3V voltage for the radio.

Q12: 3T switch, controlled by MCU.

3T: Supplies power for front end of the TX.

Q27: 3R switch, controlled by MCU.

3R: Supplies power for RF amplifier, mixer, IF processing unit, and audio signal processing unit etc. of receiver.

3.7 MCU Unit

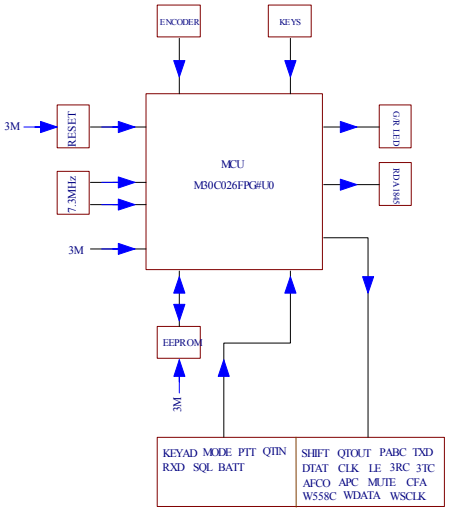


Figure 3.4 MCU Unit Principle Diagram

MCU unit controls the operation of each unit of the radio so as to realize all the functions.

Communicate with external PC.

Access the status data of the radio.

Control RDA1845 Rx and Tx.

Obtain the status of the current channel.

Control the status of LED indicator.

Control power supply of each unit.

Check the actions of each functional key.

Generate DCS signal.

Generate power control signal.

Perform CTCSS decoding.

Perform DCS decoding.

Test and control the squelch.

Control content of voice annunciation.

Memory (E^2PROM, AT24C08)

The memory stores the channel data, CTCSS/DCS data, other data for function setting and parameter adjusting data.

CTCSS/DCS Signal Encoding and Decoding

The CTCSS/DCS signal (output from pin 17, PWM wave) generated by MCU passes through R624, R623, C616 and C617 filter and is sent to RDA 1845 for modulation.

The CTCSS/DCS signal from the receiver is sent to MCU for modulation. The MCU will judge whether the CTCSS/DCS signal in the receiver matches with the preset CTCSS/DCS signal of the radio, and determines whether to turn on the speaker or not.

CTCSS

CTCSS（Continuous Tone Control Squelch System, CTCSSS for short）is the squelch control system which is modulated on the carrier, and uses the continuous sub-audio signal as the guide frequency. If CTCSS is set, the communication between the transmitting and receiving radios can be realized only when the two radios have set the same CTCSS frequency. In doing this, disturbance from other signals can be avoided.

This radio has 39 groups of standard CTCSS frequencies for your selection (these CTCSS frequencies are compatible with any of the CTCSS within 67-254.1Hz). See table 3.1.

The CTCSS signal (PWM wave) generated by MCU passes through the low pass filter consisted of by RC to remove high frequency components (above 300Hz). Then the resulting signal is sent to VCO for modulation.

Table 3.1 CTCSS Frequency List

No.	Frequency [Hz]	No.	Frequency [Hz]	No.	Frequency [Hz]	No.	Frequency [Hz]
1	67.0	11	94.8	21	131.8	31	186.2
2	69.3	12	97.4	22	136.5	32	192.8
3	71.9	13	100.0	23	141.3	33	203.5
4	74.4	14	103.5	24	146.2	34	210.7
5	77.0	15	107.2	25	151.4	35	218.1
6	79.7	16	110.9	26	156.7	36	225.7
7	82.5	17	114.8	27	162.2	37	233.6
8	85.4	18	118.8	28	167.9	38	241.8
9	88.5	19	123.0	29	173.8	39	250.3
10	91.5	20	127.3	30	179.9		

DCS

DCS (Digital Code Squelch), which is used to control squelch, is a series of continuous digital codes modulated on the carrier together with voice signal. If DCS is set, the speaker can only be opened when the radio receives signal with the same DCS to avoid disturbance of unwanted signals.

This radio has 83 standard codes (normal and inverse) for your selection. See table 3.2.

DCS signal (PWM wave) is generated by MCU. It passes through the low pass filter consisted of by RC to remove high frequency components (above 300Hz), and then the processed signal is sent to VCO and TCXO for modulation, with HF components of the DCS signal being modulated by VCO, and the LF components of the DCS signal being modulated by TCXO.

The DCS signal coming from the receiver is sent to MCU for decoding. MCU checks if the DCS code in the received signal matches the preset DCS of the radio, and determines whether to open the speaker or not.

Table 3.2 DCS Codes

023	114	174	315	445	631
025	115	205	331	464	632
026	116	223	343	465	654
031	125	226	346	466	662
032	131	243	351	503	664
043	132	244	364	506	703
047	134	245	365	516	712
051	143	251	371	532	723
054	152	261	411	546	731
065	155	263	412	565	732
071	156	265	413	606	734
072	162	271	423	612	743
073	165	306	431	624	754
074	172	311	432	627	

3.8 Semiconductor Components

MCU Description

Table 3.3 Description for Port of Microprocessor

(M30C026FPG#U0)

Pin No.	I/O	Port Name	Function
1.		NC	Null pin
2.	I	EDATA	E^2PROM data
3.	O	ECLK	E^2PROM clock
4.		NC	Null pin
5.	I	MODE	Used for downloading programs
6.		NC	Null pin
7.		NC	Null pin
8.	I	RESET	Reset
9.	O	X2	internal oscillator pin
10.		GND	GND
11.	I	X1	Internal oscillator pin
12.		VCC	Power supply
13.		NC	Null pin
14.		NC	Null pin
15.	I	CTCSSIN	CTCSS/CDCSS input
16.	O	3TC	Tx power control
17.	O	CTCSSOUT	CTCSS/CDCSS output
18.	O	CFA	Center frequency control
19.	O	APC	Automatic power control
20.	I	SQL	Squelch check
21.	O	RPDN	RDA1845 power saving enable
22.		NC	Null pin
23.	O	RDAEN	RDA1845 data lock and storage
24.	O	RDACLK	RDA1845 clock
25.	I/O	RDADATA	RDA1845 data
26.		NC	Null pin
27.	I	RINT	RDA1845 interrupt
28.	O	TXD	Serial port data Tx
29.	I	RXD	Serial port data Rx
30.	O	MUTE	Mute control
31.	O	MAXAF	Max. audio power control
32.	O	AFCO	Audio power amplifier power supply control
33.	O	BEEP	Alert tone output
34.	O	3RC	Rx power supply control
35.	I	ECO3	Channel encode switch
36.	I	ECO2	Channel encode switch
37.	I	ECO1	Channel encode switch
38.	I	ECO0	Channel encode switch
39.		NC	Null pin
40.		NC	Null pin
41.	O	GLED	Green LED control
42.	O	RLED	Red LED control
43.	AD	BATT	Battery voltage check
44.	I	VREF	ADC reference voltage
45.	I	PTT	PTT button check
46.		NC	Null pin
47.	O	W558C	Voice annunciation IC control
48.	I	KEYAD	Button check
49.		NC	Null pin
50.		NC	Null pin
51.	O	WDATA	Voice annunciation IC data
52.	O	WCLK	Voice annunciation IC clock

Chapter 4 Function Description and Parameter Setting

4.1 Main Functions

4.1.1 16 channels/15 channels + scan channel

This radio has 16 channels, and can be chosen to work as 15 channels + one scan channel.

4.1.2 Automatic scan channel (which can be prohibited by the program software)

When the channel selector rotates to the 16th channel, the radio comes to the scan mode. The scan will stop at one channel when the signal is received.

When the channel selector rotates to any of the channel in 1-15 channels, the scan is disabled.

Descriptions:

The methods to restart the scan are as follows:

1. Time control:

2. Carrier control:

Press PTT button when the radio is scanning, there are 8 options to select the working channel:

1. The last receiving channel

Press PTT button, the radio will transmit the signal on the last receiving channel.

2. The last receiving channel + the currently working channel

During the scan, press PTT button, the radio will transmit the signal on the last receiving channel; if the scan stops at one channel, press PTT button, the radio will transmit the signal on the currently working channel.

3. Selected channel

Press the PTT button, the radio will transmit the signal on the first channel of the scan list.

4. Selected channel + the currently working channel

During the scan, press the PTT button, the radio will transmit the signal on the last receiving channel; if the scan stops at one channel, press the PTT button, the radio will transmit the signal on the currently working channel.

5. Priority channel (The priority channel must be set first)

Press the PTT button, the radio will transmit the signal on the priority channel in the scan list.

6. Priority channel + the currently working channel (The priority channel must be set first)

During the scan, press the PTT button, the radio will transmit the signal on the priority channel in the scan list; if the scan stops at on channel, press the PTT button, the radio will transmit on the currently working channel.

7. The last transmitting channel

Press the PTT button, the radio will transmit on the last transmitting channel.

8. The last transmitting channel + the currently working channel

During the scan, press the PTT button, the radio will transmit the signal on the last transmitting channel; if the scan stops at on channel, press the PTT button, the radio will transmit on the currently working channel.

Note: The currently working channel is the channel at which the radio stops in the following situations:

1. The radio receives the signal and stays at the channel before the scan restarts. This channel is the currently working channel.
2. The radio receives the signal and stays at the channel before the signal disappears. This channel is the currently working channel.
3. Press the PTT button to transmit, the radio will stay at the channel. This channel is the currently working channel.
4. Release the PTT button to end the transmission, the radio will stay at the channel before the "Transmitting Pause" time is over. This channel is the currently working channel.

4.1.3 CTCSS and DCS

CTCSS/DCS is a kind of sub-audio and digital sub-audio signal, which can realize the function of call selection and group call. On one channel, the communication can only be realized when the radios have the same CTCSS/DCS code. CTCCS/DCS code is preset.

4.1.4 TOT Transmitting Timeout

TOT can prevent the user from continuously talking overlong and prevent the current channel from being occupied overlong so as to affect the group communication.

If you continuously transmit longer than the preset TOT time, the radio will stop transmitting and make an alert tone. To stop the warning tone, release the PTT button.

4.1.5 TOT Pre-alert

The radio will make an alert tone in advance before the TOT terminates the transmission. If the continuous transmitting time exceeds the time preset by the dealer, the radio will send out an alert tone, but the communication can be continuing until the TOT time is over.

4.1.6 TOT Repress

The function can be set to stop transmitting after the TOT time is over. When the TOT time is over, and press the PTT button again during the pre-set time, the radio will send out an alert tone and stop to transmit.

4.1.7 TOT Reset

This is the interval between the pre-set TOT time is over and the time to release the PTT button and reset the timer. If the time to release the PTT button is shorter than the reset time, the TOT continues to count down.

4.1.8 Automatic Battery Saving

When the radio does not receive the signal or no operation is done above 8 seconds, the battery saving function will be enabled. This function will be disabled when the radio receives the signal and the transmission is going on. There are two means to save the battery: long time saving and short time saving. The long time saving will prolong the standby time.

4.1.9 Low Battery Warning

When the battery voltage is very low, the LED indicator flashes. If the battery voltage is lower than the pre-set value during the transmission, Red LED indicator flashed. When a sound of "Du Du" is heard, the radio stops transmitting.

4.1.10 Monitor

If no signal is received, the radio will enable the squelch circuit to mute the speaker. Thus, the user cannot hear the background noise.

Press the "Monitor" Key to disable the squelch circuit. Then the speaker will send out a continuous alert tone (regardless of the signal is received or not). The function is very useful when you adjust the volume or the receiving signal is very weak (The voice

will be intermittent when the signal is very weak).

Press the "Monitor" key, Green LED indicator lights, and the radio is in monitor state.

4.1.11 Busy Channel Lockout

If BCL is enabled, the radio cannot transmit on the busy channel. Press the PTT button on the busy channel, an alert tone sends out, and the transmission is disabled.

4.1.12 PC Program

The user can set the functions and adjust the parameters of the radio through the program software KSP260.

4.1.13 Wired Clone

The data stored in the radio can be transmitted to the radio with the same type with the wire.

4.1.14 Squelch Circuit Level

The squelch circuit is used to mute the speaker when no signal is received or the receiving signal is very weak. If enabled, the sound from the speaker will be heard; if disabled, no sound will be heard. The squelch level determines when the squelch can be turn on or off during the receiving. If the squelch level is set too high, the weak signal cannot be received completely; if it is set too low, your radio will often be interrupted by the noise or other irrelevant signals. The squelch level can be set to 0-9.

4.2 Functional Parameters Setting (PC mode)

The radio has set the factory settings before leaving the factory. However, due to the user's different needs to the radio, the user may reset the working frequency, channels, CTCSS/DCS and automatic scan etc, of the radio. Thus, Kirisun has specially designed a set of Chinese/English programming software KSP260 with friendly interface, convenient operation and visualized display for setting functional parameters of the radio.

Steps for setting the functional parameters of the radio by computer are as follows:

a. Install KSP260on the computer.

b. Connect the radio to the serial port of the computer with the special programming cable. The method refers to the figure 4.1.

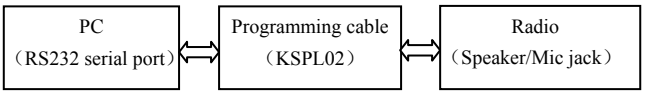


Figure 4.1

c. Turn the computer power ON.

d. Turn the radio power ON.

e. Double click KSP260.exe to run the software.

f. Click "Read" in the main menu of KSP260 to read parameters of the radio to the computer; click "Write" to write parameters in the computer to the radio.

g. The following parameters can be set by using KSP7800 according to requirements of the user:

1) The Rx and Tx frequency of each channel

2) The Rx and Tx signaling of each channel

3) Busy Channel Lockout

4) TOT

5) Squelch level

6) Battery saving

7) Monitor

8) Scan

9) Scan revert channel

10) Scan priority channel

Please refer to the "Help" document of KSP260 for details.

Note:

1. Before connecting, please turn the radio power OFF.

2. When the computer reads the data from the radio, Red LED indicator flashes and operation to the PTT button is forbidden; when the computer inputs the data to the radio, Green LED indicator flashes.

3. Before the edit, you should read out the data in the radio and backup them.

4. If the radio cannot work after the edit, please open the backup data and reedit them.

5. "Model Information" contains important information about the radio and is unchangeable.

4.3 Test Mode

Connect the radio to the serial port of the computer with the special programming cable (see figure 4.1).

Attention: Please connect 50Ω high frequency load to the antenna connector of the radio or connect the radio to the comprehensive test equipment before test.

The following parameters can be set under the test mode by KSP260:

1) Frequency tuning

2) Transmitting power

3) Low voltage threshold

4.4 Wired Clone Parameter

If there are many radios needing to be edited, and one radio has already been edited by the computer, the data in this radio can be cloned to other radio through the wire.

Steps are as follows:

a. Turn off the master radio which the parameters have been set. Press the "Monitor" Key on the radio to turn on the radio and hold this key until Red LED indicator flashes for 2 seconds and an alert tone sends out, the radio enters into wired clone mode.

b. Connect the radio (master radio) in wired clone mode to another radio which needs to be set with the special clone cable. See figure 4.2.

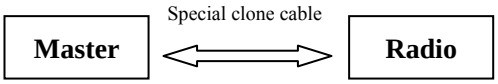


Figure 4.2

c. Press the "Monitor" Key on the master radio, the master radio starts to send data to the other radio. During the transmission, Red LED indicator of the master radio lights.

d. LED indicator of the receiving radio turns green.

Note: The clone data contain all the data under the "Functional parameter settings" menu, but not the data under the "Test mode" menu.

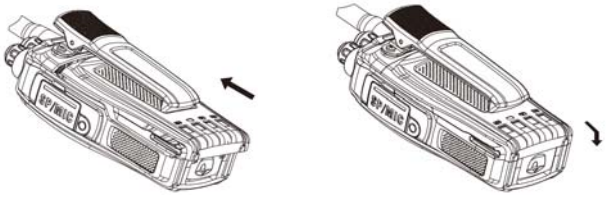
Chapter 5 Disassembly for Repair

The radio is a piece of precision communication equipment. Please be careful when disassembling the radio during service. The instructions for the disassembly are as follows.

5.1 Attaching and Removing the Battery

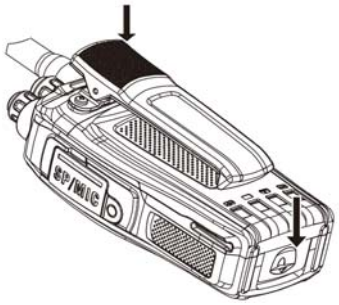
Attaching the Battery

Match the protrusions on the battery with the slots at the back of the radio. Press the battery pack and push it forward until a click is heard.



Removing the Battery

Press the belt clip, and then push backward until it separates from the radio.



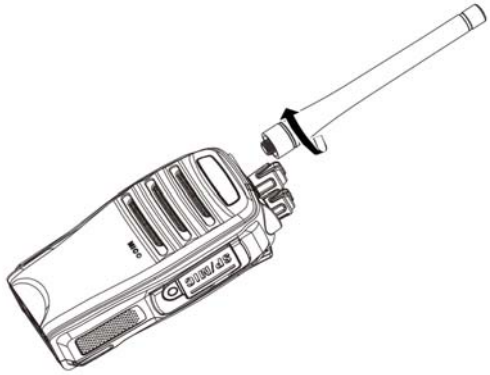
Note:

Please reverse the battery terminals or discard it in the fire.

Do not disassemble the cover of the battery by yourself.

5.2 Installing the Antenna

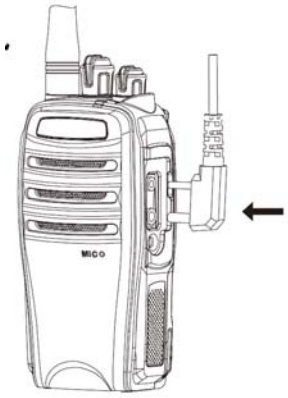
Hold the antenna at its base, and screw the antenna into the connector on the top of the radio clockwise until secure.



5.3 Installing the External Speaker/Microphone

Uncover the jack cover, and insert the external speaker/microphone into the jack.

Note: When using the external speaker/microphone, the radio cannot be waterproof.



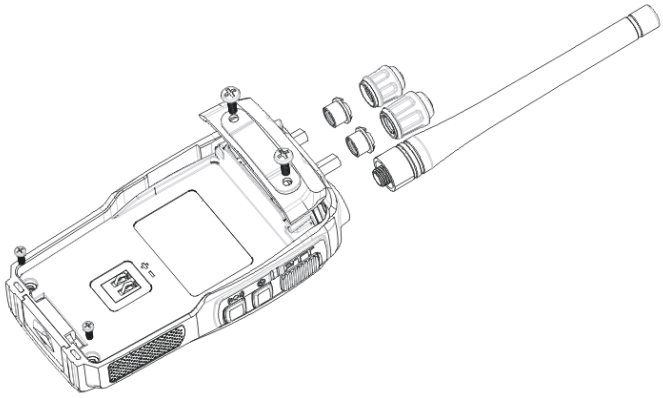
5.4 Installing/Removing the Belt Clip

Installing the belt clip: Match the belt clip to the two screw holes at the rear of the radio. Use two screws to fix the belt clip.

Removing the belt clip: Use the screwdriver to take off the screws and separate the belt clip from the radio.

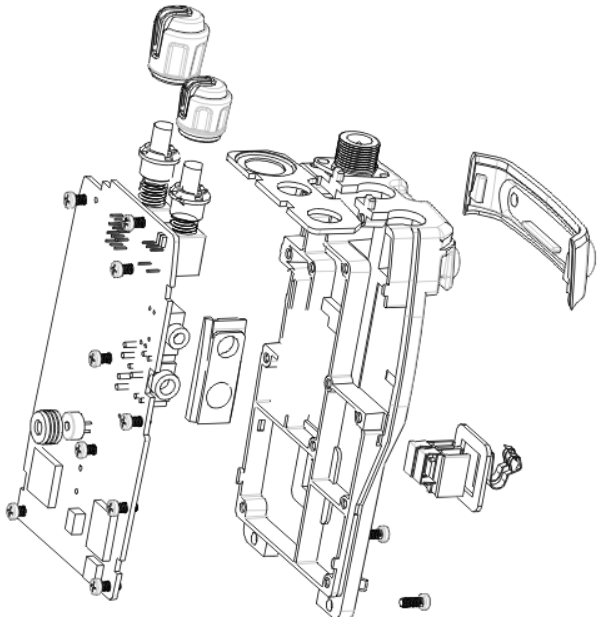
5.5 Removing the Cover from the Al bracket

1. Rotate off the Volume and Encoder Knob;
2. Screw off the screw on the knob and the antenna;
3. Screw off the two cross screws at the bottom of the Al bracket;
4. Turn over the radio; knock the radio on the desk with proper force so as to separate the cover from the Al bracket, and then hold at the bottom of the Al bracket and pull it out of the cover.

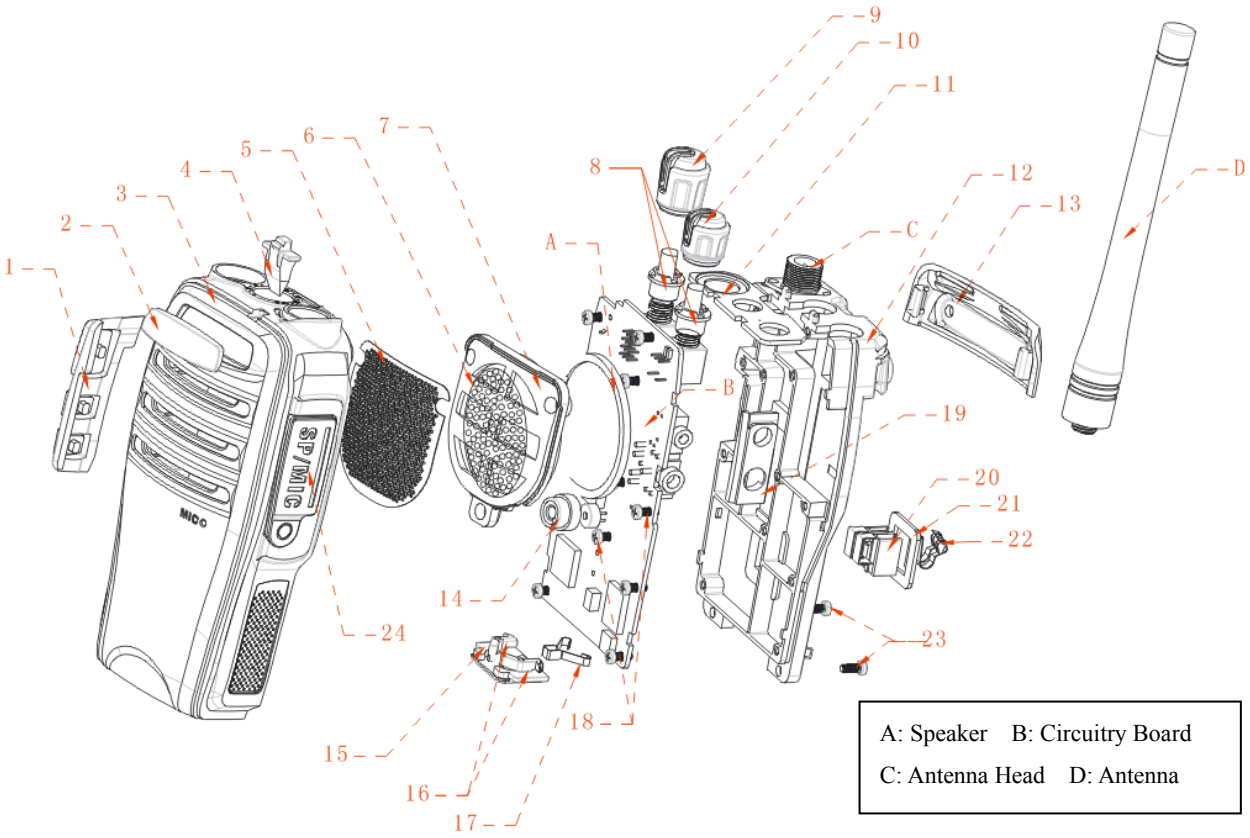


5.6 Removing the Main Board from the Chassis

1. Screw off the screws on the PCB board;
2. Remove the main waterproof gasket from the Al bracket;
3. Remove the solder of the speaker and the antenna terminal with a soldering iron. Then separate the main board from the Al bracket;
4. Screw off the two screws and take off the antenna connector.



5.7 Exploded View



No.	Part No.	Description	Psc	Note
1	7MHR-7134-01A-WO	PT260 PTT button	1	Material: 50 degree silica gel, black
2	7MHP-7134-06A-WCA	PT260 LOGO	1	Material: PMMA, silk-screen, black background, argent logo
3	7MHP-7134-01A-W0A	PT260 Front cabinet	1	Material: ABS, black, silk-screen
4	7MHP-7134-07A-WC	PT260 Light guide	1	Material: PMMA, translucence
5	7MHS-7134-01A-W	PT260 Stainless steel net	1	Material: steel, hardness: 0.2mm, aperture: ø0.8mm
6	7GCB-360001-W0	φ36 waterproof net of the speaker	1	Material: black waterproof cloth, diameter φ36mm* depth 0.1mm(558)
7	7MHP-7134-04A-WO	PT260 Speaker base	1	Material: ABS, black
8	7NRC-060090058-W1	Screws of VOLUME/CHANNEL SELECTOR Knob localizer	2	Material: copper, M6mm*φ9mm, 5.8mm (Depth)
9	7MHP-7025-02A-WOB	PT260 Channel selector	1	Material: ABS, black, argent
10	7MHP-7025-03A-WOB	PT260 Volume knob	1	Material: ABS, black, argent
11	7MHR-7025-03B-WO	PT-3500S Waterproof gasket	1	Material: silica gel, black, hardness: 55°
12	7MHL-7025-01A-LA	PT260 Al alloy cabinet	1	Material: Al alloy, surface process, silvery white
13	7MHP-7134-02A-WO	PT260 Back cover	1	Material: ABS, black
14	7MHR-7033-04A-W2	330 Speaker gasket	1	Material: silica gel, rose red
15	7MHP-7134-03A-WO	PT260 Battery latch	1	Material: ABS, black
16	7MHP-7025-08A-WO	PT-3500S Battery hook (left)	1	Material: POM, black, anneal process
16	7MHP-7025-13A-WO	PT-3500S Battery hook (right)	1	Material: POM, black, anneal process
17	7MHF-7025-01A-N	PT-3500S Battery hook spring sheet	1	Material: manganic steel, depth: 0.3mm, white

				Ni-plated
18	7SMF-020040M-SZYB-N	M2*4 Cross round head machine screw	13	Material: steel hardened, Φ2mm*4mm, cross round head machine screw, metric coarse thread, nylon patch
19	7MHR-7025-05A-WO	PT-3500S Earphone jack gasket	1	Material: silica gel, black, hardness: 55°
20	7MHP-7025-09A-WO	PT-3500S Battery touch sheet bracket	1	Material: ABS, black
21	7GCM-145158010-J	PT-3500S Battery waterproof gasket	1	Material: black PORON, mill finish, 14.5mm＊15.8mm ＊1mm, adhesive tape with 3M glue
22	7MHC-1175-01B-N	3200 Battery touch sheet	2	Material: 0.25mm phosphor copper, Ni-plated
23	7SMF-020050M-MHHT-N1	M2*5 Torx thick head machine screw	2	Material: Steel hardened, Φ2mm*5mm torx thick Ni-plated machine screw, metric coarse thread. Head diameter: Φ3.6*1.5
	7SMF-025080M-SZYB-Z1	M2.5*8 Cross round head machine screw	2	Material: steel hardened, Φ2.5mm*8mm cross round head black Zn-plated machine screw, metric coarse thread (belt clip)

Chapter 6 Adjustment

Make sure that all the equipments are grounded completely before test/adjustment!

Make sure that the antenna connector is correctly connected to the equipment or load.

The output of the transmitter must connect to the standard signal source/cymometer/deviation meter/frequency spectrum meter with the RF power attenuator!

Make sure that the receiver does not transmit when tested!

Make sure that the engineers and the equipments have the reliable anti-static measurement during the adjustment/test/maintenance.

6.1 Equipments and Software Needed for the Adjustment

The following table lists the equipments and software needed for the adjustment and test.

Table 6.1: Equipments and software needed for the adjustment and test

No.	Name	Parameter Requirement
1	PC	P2 above, compatible with IBM PC WINDOWS 98/ME/2600/XP
2	Programming software	KSP260
3	Programming cable	KSPL-02
4	Clone cable	KCL-01
5	DC regulated power supply	Output voltage： 7.5V， output current：≥ 5A
6	RF power meter	Test range: 0.5 - 10W Frequency range: 100MHz - 500MHz Impedance: 50Ω SWR ≤ 1.2
7	Frequency meter	Frequency range: 0.1 - 600MHz Frequency precision: better than $\pm 1\times10^{-6}$ Sensitivity: better than 100mV
8	Deviation meter	Frequency range: DC - 600MHz Test range: 0 - ±5kHz
9	Digital multimeter	Input impedance: 10MΩ/V DC above, capable of testing voltage, current and impedance
10	Audio signal generator	Frequency range: 2 - 3000Hz Output level: 1 - 500mV
11	RF power attenuation	Attenuation: 40dB or 50dB Power: ＞10W
12	Standard signal source	Frequency range: 10MHz - 1000MHz Output level: 0.1uV - 32mV (-127dBm~-17dBm)
13	Oscilloscope	Frequency range: DC~20MHz Test range: 10mV~20V
14	Audio voltage meter	Test range: 10mV~10V

Recommendation: The equipments of number 6, 7, 8, 10, 11, 12 can be replaced by HP8920 Comprehensive test equipment.

6.2 Adjustment Items

During the maintenance, the radio's technique parameters need to make some necessary test and adjustments after the components are changed. The following part describes the adjustment of the circuits.

Some of the parameters can be adjusted (PC mode) by Kirisun's program software. These parameters include:

1) Frequency error

2) Transmitting power

3) Low battery warning threshold

4) CTCSS frequency deviation

5) DCS deviation

Steps of the adjustment are as follows:

a. Enter into the PC test mode. The method refers to 4.2.

b. Select "Test mode" in the main menu of the program software, and enter into PC test mode.

c. Select the items you want to test in the menu, and adjust the parameters with the keyboard.

d. After finished, exist the test mode.

6.3 Adjustment

6.3.1 PLL frequency adjustment

Select "Frequency Tuning" under the "PC test" mode, click【Adjustment】, and adjust the value within the range of 0~255 to make the transmitting frequency equal to the rated value (The error is less than 200Hz).

6.3.2 Transmitting power adjustment

Select "High power & low frequency point" under the "PC test" mode, click【Adjustment】, and adjust the value within the range of 0~255 to make the transmitting power equal to 4W while observe the working current, to keep it less than 1.8A.

Adjust "High power & intermediate frequency point" and "High power & high frequency point" with the method the same as the above, and the transmitting power of these two situation are all 4W.

6.3.3 Transmitting low voltage warning

Set the voltage of the power supply to 6.8V.

Select "Low voltage threshold" under the "PC test" mode, click【Adjustment】, and adjust the value within the range of 0~255 to make Red LED indicator just flash.

6.3.4 Deviation adjustment

Input 120mV, 1000Hz of the audio signal to the MIC jack, adjust the deviation value to make it to be ±4.0kHz.

6.3.5 DCS transmitting signal waveform and deviation adjustment

Select "Digital sub-audio board band modulation" under the "PC test" mode, click【Adjustment】, and observe the demodulated signal. The waveform should be smooth (near to square wave). Then adjust the deviation within the range of 0~255 to make it to be 0.75 ±0.25kHz。

6.3.6 CTCSS deviation adjustment

Select "Sub-audio board band modulation" under the "PC test" mode, click 【Adjustment】, and adjust the value to make it to be 0.75kHz ± 0.25 kHz.

6.4 Adjustment Description

The description of the above adjustment, please refer to the table 6.2 and table 6.3.

Table 6.2 Rx part

Item	Test conditions	Test equipments	Test point	Test mode	Requirement	Remarks
Audio level	Test frequency: Intermediate frequency point Input from the antenna connector; RF OUT: -47dBm (501μV) MOD: 1kHz DEV: ±3.0kHz Audio load: 8Ω	RF signal generator; Oscilloscope; Audio voltage meter; Distortion test equipment; Comprehensive test equipment	Speaker jack		(Rotate the VOLOME Knob clockwise to the end) audio power is higher than 0.7W.	

Table 6.3 Tx part

Item	Test conditions	Test equipments	Test point	Test mode	Requirements	Remarks
Tx frequency		Frequency counter; Comprehensive test equipment	Antenna	PC test mode	Within ±200Hz	
DCS waveform (balance)		Oscilloscope; Comprehensive test equipment		PC test mode	Waveform: near to flat square waveform	
Power		Power meter; Comprehensive test equipment; Ammeter		PC test mode	Adjust to 4W	Within ±0.2W
Max. modulated deviation	CH: Frequency point of the Tx center AG: 1kHz/220mV	Deviation meter; Comprehensive test equipment		Check	Adjust to ±4.5kHz	±200Hz
CTCSS DEV	CTCSS: 67Hz			PC test mode	Adjust to ± 0.75kHz	±250Hz
DCS DEV	DCS: 023N			PC test mode	Adjust to ± 0.75kHz	±250Hz
Battery warning	Battery terminal: 6.8V			PC test mode	LED indicator flashes after adjustment	

Chapter 7 Specifications

7.1 General Specification

Model	PT260
Frequency	400 – 470MHz
Type of Modulation	16K0F3E
Number of Channel	16 channels（15 + S）
Channel spacing	25 kHz/12.5KHz
Intermediate frequency	None
Operating voltage	7.5V cathode grounded
Operating temperature	-25℃~ +55℃
Antenna impedance	50Ω
Microphone impedance	1.8kΩ
Battery (Standard configuration)	Type: KB-260, Li-ion battery: DC 7.4V, 1100mAh
Size (W*D*H)	60 mm×210 mm×34mm
Weight (g)	223 (with battery and antenna)

7.2 Rx Part

Usable sensitivity (12dB SINAD)	≤ 0.25μV
Squelch On sensitivity	≤ 0.18uV @ squelch level 3
Rx residual output	≤ -45dB
Rx modulation bandwidth	±7kHz
Adjacent channel selectivity	≥ 65dB
Intermodulation rejection	≥ 60dB
Spurious response rejection	≥ 60dB
Audio output power	Internal speaker: 500mW, balance @ distortion ≤ 5%，8Ω External speaker: 125mW, imbalance @ distortion ≤ 5%，8Ω
Rx current consumption	≤ 250mA
Standby current (Average)	≤ 20mA

7.3 Tx Part

Tx power	4.5W @7.4V DC
Frequency stability	≤ ±2.5×10-6
Max. modulation deviation	±5kHz
Modulation sensitivity	12mV
Modulation distortion （300-3000Hz）	≤ 3%
Adjacent channel Tx power	≤-70dB
Spurious Tx	≤ -70 dB
Residual FM	≤ -45 dB
Tx current consumption	≤1.8A @ 7.5V DC

Chapter 8 Troubleshooting

No.	Problems	Causes and solutions
1	Power On failure	A. The batter pack may be out of power. Please charge it or change a new one. B. Power switch in failure. Change a new one. C. CPU in failure. Change the IC. D. Zener diode is broken. Change a new IC.
2	Cannot talk to or hear other radios	A. The frequency of the radio's current channel is not the same as that of the other radio. Please reselect a channel. B. The CTCSS/DCS is not the same. Please reset it. C. The radio is out of the effective communication range.
3	No signal	A. The antenna is in poor contact. Please fasten it. B. The HF amplifying tube is broken. Please change it. C. The squelch level is too high, so that the squelch cannot be open. Please reset the squelch level.
4	The indicator lights red while transmitting, but no voice is heard by the recipient.	A. The power amplifying tube Q11 is broken, and no power is output. Please change it. B． The microphone is broken. Please change it.
5	The indicator lights green while receiving, but no sound is heard.	A. The speaker is broken. Please change it. B. The audio power amplifier is broken. Please change it.
6	The programming is abnormal.	A. The programming cable connection is wrong. Please check the cable connection. B. The Computer's RS-232 serial port output is abnormal. Please check the computer. C． The earphone/microphone jack of the radio is in poor contact. Please check the jack. If it is abnormal, please change it.

Chapter 9 KBC-260 Charger

9.1 Operating Conditions and General Specifications of the Charger

a) Battery type: Li-ion battery (2*3.7v), battery capacity 1~2.4AH.

b) Adapter specifications: DC11V~16V, 500~1500mA, voltage (Standard configuration): 12V.

c) Input current (Without battery): ≤15mA

d) Pre-charge charging current: 75mA±10mA

e) Pre-charge time: 15Min

f) Constant charging current: 400mA±40mA

g) Max. charging voltage of the battery: 8.32~8.42V

9.2 Functions Introduction

1. This is an intelligent charger, which charges quickly, stably, safely, and saturatly.

2. Charging state indication: Red LED indicator flashes in pre-charging; Red LED indicator lights in charging; Green LED indicator lights in finishing charging, no battery and battery protection state; Yellow LED indicator flashes in short circuit.

3. The external port can identify Li-ion battery and Ni-H battery.

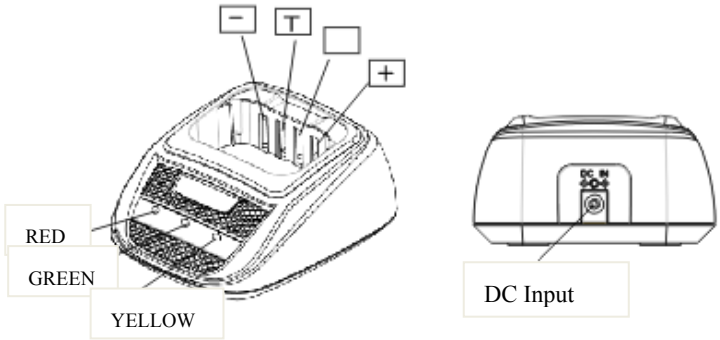
4. Battery short circuit protection: When the charger has reversed the anode and the cathode, Yellow LED indicator flashes, and the charging current is cut off. The power supply will automatically recover after the problem is solved.

5. Identify the fully charged battery: When the Ni-H battery is inserted into the charger again after the charging finishes, the charging will continue, and the charger will judge whether the battery is fully charged or not according to $-\Delta V$; When the Li-ion battery is inserted into the charger again after the charging finishes, the charger will judge the battery is fully charged and do not charge it if its voltage is above 8.25V; the charging will continue if the battery's voltage is below 8.25V.

6. Temperature protection: About the Li-ion battery, if the temperature of the battery is above 55° during the charging, the charging stops, and Yellow LED indicator lights; When the temperature decreases to 45° , the charging starts again. About the Ni-H battery, if its temperature id above 60° , the charging stops, and Yellow LED indicator lights; When the temperature decreases to 50° , the charging continues.

7. If the battery is in standby state and is inserted in the charger base, the charging will automatically start when the battery's voltage is below 8.2V.

8. In automatic protection state, Yellow LED indicator lights; when the problems are solved, the protection is over.



RED LED Indicator: Charging

GREEN LED Indicator: Power on/Charging completes

YELLOW LED Indicator: Abnormal

Appendix 1 Abbreviations

AMP: Amplify, Amplifier

ANT: Antenna

APC: Automatic Power Control

BPF: Band Pass Filter

CTCSS: Continuous Tone Control Squelch System

DCS: Digital Code Squelch

DEMOD: Demodulation

E^2PROM: Electrical Erasable Programmable Read Only Memory

HPF: High Pass Filter

IDC: Instantaneous Deviation Control

IF: Intermediate Frequency

LED: Light-Emitting Diode

LNA: Low Noise Amplifier

LPF: Low Pass Filter

MCU: Micro Control Unit

MIC: Microphone

MOD: Modulation

MONI: Monitor

PLL: Phase Lock Loop

PTT: Push-To-Talk

RX: Receiver

SPK: Speaker

TCXO: Temperature Control X' Oscillator

TX: Transmitter

UL: Un-Lock

VCO: Voltage Control Oscillator

Appendix 2 Electronic Parts Lists

No.	Part No.	Descriptions	Position Mark	QTY
1	1IP1-M30C026FPGP	MCU/CPU,R8C/24,M30C026FPGP#U0,52PIN,8 bits chip,FLASH,ROHS	IC3	1
2	1IM1-AT24C08BN-SH	Memory IC/AT24C08AN-SU27,ROHS	IC2	1
3	1IS1-RDA1845	IC/RDA1845,PLL&IF&AF&TX&RX,ROHS	IC1	1
4	1IS1-TA7368PLA	TA7368PL,SSOP-10	U31	1
5	1IS1-NA019	Voice annunciation of Channel NA019,SOP8	IC4	1
6	1IS1-XC62FP3002PR	Regulator IC/FP3002,SOT-89,ROHS	IC6	1
7	1IL1-RC4558DR	Double operation amplification RC4558DR,SOIC-8	U32	1
8	1IS1-LM358G-2	LM358G-2,SOP8	IC5	1
9	1DS1-BA592	BA592(S),SOD323	D21	1
10	1DS1-HSC277	Wave band switch,HSC277(HITACHI),ROHS	D12 D11	2
11	1DS1-DAN222	Duodiode,SOT-423	D42	1
12	1DS1-1SS372	Duodiode,SOT-323	D41	1
13	1DS1-1SS362	Duodiode,SOT-423	D17	1
14	4PE1-16-F5-UG	1608, verdancy, ultrahigh bright,(TW-190UG)	D61	1
15	4PE1-16-F2	0603,Red,19-21SURC/S530-A2/TR8,ROHS	D62	1
16	1TT1-DTA144EE	Chip fixed triode /DTA144EE(ROHM),ROHS	Q25	1
17	1TT1-DTC144EE	Chip fixed triode /DTC144EE(ROHM),ROHS	Q62 Q28 Q61 Q33 Q31 Q24	6
18	1TT1-2SC3356-R24	Chip fixed triode /2SC3356,R24,ROHS	Q19	1
20	1TT1-KTA1298-Y	Chip fixed triode /KTA1298(Y),ROHS	Q12 Q51	2
21	1TT1-2SC4181-L18	2SC4181-L18,SOT323	Q5	1
22	1TF1-2SK1588	Chip fixed FET/2SK1588(NEC),ROHS	Q34	1
23	1TF1-2SK1824	Chip fixed FET/2SK1824,ROHS	Q26	1
24	1TF1-2SK3475	Chip fixed FET/2SK3475,ROHS"	Q22	1
25	1TF1-2SK3476	Chip fixed FET/2SK3476,ROHS	Q21	1
26	3ST3-SKHLLBA010	Button switch/SKHLLBA010, ROHS	K1	1
27	3ST3-IT-1101VLA-3260	Touch switch IT-1101VLA-3260,ROHS	K4 K2	2
28	3SE3-RE08140AX-V01-A	None	SW3	1
29	2RS1-10-000O	Sheet resistor /0402,0R±5%,ROHS	R28 R61 R67 R619 L33 R92 C115 C114 R122 R117 C8 R52	12
30	2RS1-10-100J	Sheet resistor /0402,10R±5%,ROHS	R617 R319 R199 R214 R75	5
31	2RS1-10-101J	Sheet resistor /0402,100R±5%,ROHS	R412 R234 R49	3

32	2RS1-10-470J	Sheet resistor /0402,47R±5%,ROHS	R22	1
33	2RS1-10-102J	Sheet resistor /0402,1K±5%,ROHS	R713 R714 R715 R712 R79 R710 R38 R414 R41 R73 R78 R54 R218 R223 R626	15
34	2RS1-10-103J	Sheet resistor/0402,10K±5%,ROHS	R48 R416 R621 R42 R313 R236 R120 R413 R310 R610 R91	11
35	2RS1-10-104J	Sheet resistor/0402,100K±5%,ROHS	R55 R220 R35	3
36	2RS1-10-105J	Sheet resistor/0402,1M±5%,ROHS	R219	1
37	2RS1-10-750J	Sheet resistor/0402,75R±5%,ROHS	R322	1
38	2RS1-10-123J	Sheet resistor/0402,12K±5%,ROHS	R623 R238	2
39	2RS1-10-152J	Sheet resistor/0402,1.5K±5%,ROHS	R314	1
40	2RS1-10-153J	Sheet resistor/0402,15K±5%,ROHS	R45 R624 R224 R237	4
41	2RS1-10-181J	Sheet resistor/0402,180R±5%,ROHS	R26	1
42	2RS1-10-184J	Sheet resistor/0402,180K±5%,ROHS	R46	1
43	2RS1-10-122J	Sheet resistor/0402,1.2K±5%,ROHS	R411	1
44	2RS1-10-203J	Sheet resistor/0402,20K±5%,ROHS	R68	1
45	2RS1-10-221J	Sheet resistor/0402,220R±5%,ROHS	R628	1
46	2RS1-10-222J	Sheet resistor/0402,2.2K±5%,ROHS	R36 R316 R121 R9	4
47	2RS1-10-223J	Sheet resistor/0402,22K±5%,ROHS	R74 R43	2
48	2RS1-10-224J	Sheet resistor/0402,220K±5%,ROHS	R53	1
49	2RS1-10-271J	Sheet resistor/0402,270R±5%,ROHS	R21	1
50	2RS1-10-272J	Sheet resistor/0402,2.7K±5%,ROHS	R612	1
51	2RS1-10-273J	Sheet resistor/0402,27K±5%,ROHS	R221 R611	2
52	2RS1-10-334J	Sheet resistor/0402,330K±5%,ROHS	R616	1
53	2RS1-10-393J	Sheet resistor/0402,39K±5%,ROHS	R27	1
54	2RS1-10-333J	Sheet resistor/0402,33K±5%,ROHS	R320	1
55	2RS1-10-471J	Sheet resistor/0402,470R±5%,ROHS	R410	1
56	2RS1-10-472J	Sheet resistor/0402,4.7K±5%,ROHS	R69 R213 R72 R613 R71 R311	6
57	2RS1-10-473J	Sheet resistor/0402,47K±5%,ROHS	R620 R630 R629 R37 R39 R315 R44 R62 R64 R63 R65 R33 R34	13
58	2RS1-10-474J	Sheet resistor/0402,470K±5%,ROHS	R317	1
59	2RS1-10-561J	Sheet resistor/0402,560R±5%,ROHS	R212	1
60	2RS1-10-563J	Sheet resistor/0402,56K±5%,ROHS	R321 R222	2
61	2RS1-10-682J	Sheet resistor/0402,6.8K±5%,ROHS	R47	1
62	2RS1-10-822J	Sheet resistor/0402,8.2K±5%,ROHS	R625 R627	2
63	2RS1-10-823J	Sheet resistor/0402,82K±5%,ROHS	R25 R24 R23	3
64	2RS1-16-000O	Sheet resistor/0603,0R±5%,ROHS	L72 L117	2

65	2RS1-20-000O	Sheet resistor/0805,0R±5%,ROHS	R510	1
66	2RE1-10-1503	Sheet resistor/0402,150K±1%,ROHS	R32 R229 R230 R227 R228 R226 R225	7
67	2RS1-10-154J	Sheet resistor/0402,150K±5%,ROHS	R31	1
68	2RS1-16-364J	Sheet resistor/0603,360K±5%,ROHS	R622	1
69	2RS1-20-683J	Sheet resistor/0805,68K±5%,ROHS	L11	1
70	2RS1-32-R36J	Sheet resistor/1206,0.36R±5%,ROHS	R231 R232 R233	3
71	2RW3-RP08110SNAX-B	R08710NS	SW1	1
72	2CC1-10-C0G500-100D	0402,10P±0.5P,50V,C0G,ROHS	C232	1
73	2CC1-10-C0G500-101J	0402,100P±5%,50V,C0G,ROHS	C226 C229 C66 C65 C716 C621 C67 C715 C717 C718 C320 C242 C59 C10 C34 C317	16
74	2CC1-10-X7R500-102K	0402,1000P±10%,50V,X7R,ROHS	C415 C221 C215 C51 C41 C414 C55 C56 C238 C9 C91 C113	12
75	2CC1-10-X7R500-103K	0402,0.01uF±10%,50V,X7R,ROHS	C213 C321 C30 C74 C311 C63 C64 C62 C61 C2	10
76	2CC1-10-X7R500-105K	0402,1uF±10%,50V,X7R,ROHS	C412 C720 C80 C714 C68 C724 C223 C411	8
77	2CC1-10-X5R100-104K	0402,0.1uF±10%,10V,X5R,ROHS	C615 C410 C123 C48 C75 C70 C39 C82 C723 C719 C318 C244 C50 C79 C43 C37 C45 C247	18
78	2CC1-10-C0G500-121J	0402,120P±5%,50V,C0G,ROHS	C710 C711	2
79	2CC1-10-C0G500-1R5C	0402,1.5P±0.25P,50V,C0G,ROHS	C14 C231	2
80	2CC1-10-C0G500-2R0C	0402,2P±0.25P,50V,C0G,ROHS	C12 C17 C16 C233	4
81	2CC1-10-C0G500-220J	0402,22P±5%,50V,C0G,ROHS	C610 C611	2
82	2CC1-10-C0G500-221J	0402,220P±5%,50V,C0G,ROHS	C324	1
83	2CC1-10-X7R160-223K	0402,0.022uF±10%,50V,X7R,ROHS	C46 C44 C71 C92	4
84	2CC1-10-X7R500-222K	0402,2200P±10%,50V,X7R,ROHS	C33	1
85	2CC1-10-X7R500-332K	0402,3300P±10%,50V,X7R,ROHS	C617 C245 C35	3
86	2CC1-10-X7R160-333K	0402,0.033uF±10%,16V,X7R,ROHS	C72	1
87	2CC1-10-COG500-430J	0402,43P±5%,50V,COG,ROHS	C211	1
88	2CC1-10-X7R500-471K	0402,470P±10%,50V,X7R,ROHS	C218 C54 C217 C618 C76 C28 C220 C228 C225 C250 C212 C21 C47 C620 C235 C52 C236 C81 C316 C721 C327 C69 C124 C315 C619 C712 C722 C22 C248 C227 C20 C239 C243 C60 C3 C5 C32	37
89	2CC1-10-X7R500-682K	1005,6.8nF±10%,50V,X7R	C49	1

90	2CC1-10-X7R160-473K	0402,0.047uF±10%,16V,X7R,ROHS	C713 C31 C4	3
91	2CC1-10-X5R100-474K	0402,0.47uF±10%,10V,X5R,ROHS	C326 C29 C219 C319 C322	5
92	2CC1-10-COG500-6R0C	0402,6P±0.25P,50V,COG,ROHS	C110	1
93	2CC1-10-COG500-5R0C	0402,5P±0.25P,50V,COG,ROHS	C13 C15 C234 C230	4
94	2CC1-10-X7R160-682K	0402,6800P±10%,16V,X7R,ROHS	C38 C616 C246	3
95	2CC1-16-COG500-8R0C	0603,8P±0.25P,50V,COG,ROHS	C24	1
96	2CC1-16-C0G500-220J	0603,22P±5%,50V,C0G,ROHS	C214	1
97	2CC1-16-C0G500-200J	0603,20P±5%,50V,C0G,ROHS	C27	1
98	2CC1-16-C0G500-130J	0603,13P±5%,50V,C0G,ROHS	C26	1
99	2CC1-16-C0G500-101J	0603,100P±5%,50V,C0G,ROHS	C23	1
100	2CC1-16-X7R500-102K	0603,1000P±10%,50V,X7R,ROHS	C313 C240	2
101	2CC1-16-X7R500-104K	0603,0.1uF±10%,50V,X7R,ROHS	C1	1
102	2CC1-16-X7R500-471K	0603,470P±10%,50V,X7R,ROHS	C18	1
103	2CC1-16-C0G500-5R0C	0603,5P±0.25P,50V,C0G,ROHS	C19	1
104	2CC1-16-Y5V100-225Z	1608,2.2uF+80%/-20%,16V,Y5V	C249	1
105	2CC1-20-X7R6R3-106K	2012,10uF±10%,6.3V,X7R,GRM21BR60J106KE19L	C307 C42 C83 C78 C73 C614	6
106	2CC1-20-X7R160-475K	2012,4.7μF±10%,16V,X7R,GRM21BR61C475KA88L	C325 C314	2
107	2CT1-TP20-6R3-220M	2012,22uF±20%,6.3V,F920J226MPA	C413	1
108	2CC1-16-X7R100-335K	1608,3.3μF±10%,10V,X7R,GRM188R61A335KE15D	C222	1
109	2CT1-TS60-100-101M	6032,100μF±20%,10V,TSSerial(Size C)	E9	1
110	2LW1-16UC-180J	C1608CB-18NJ, Ceramic chip 18NH±5%,0603,ROHS	L212 L211	2
111	2LW1-16UC-680J	C1608CB-68NJ, Ceramic chip 68nH±5%,0603,ROHS	C122	1
112	2LL1-10-12NJA	1005,12nH,5%,0402(CH100505-12NJ)	L210	1
113	2LL1-16-1N5S	1608,1.5nH±0.3nH, (CH160808-1N5S)	L25	1
114	2LL1-10-R12J	1005,0.12μH±5%, (CH100505-R12J)	L29	1
115	2LL1-16-R22JA	1608,0.22μH±5%	L21	1
116	2LH1-R351R6-R03-00	φ0.35*φ1.6*3TL,coil clockwise, low pin	L22	1
117	2LH1-R401R5-R03-05	0.4*1.5*3TL,coil clockwise, high pin, ROHS	L12 L14	2
118	2LH1-R401R5-R04-05	0.4*1.5*4TL, coil clockwise, high pin ROHS	L13 L15	2
119	2LH1-R501R5-L05-05	0.5*1.5*5T,coil counterclockwise, high pin, ROHS	L26	1
120	2LH1-R401R5-R08-05	0.4*1.5*8TL, oil clockwise, high pin, ROHS	L23	1
121	5FE1-CB160808-601	1608,600Ω±25%	L51	1

122	5FE1-BLM11A221SPT	EMI,FILTER, SMT,BLM11A221S,0603,ROHS	L41 L61 L71 L73 L60	5
123	5FE1-BLM21P300S	EMI,FILTER, SMT,BLM21P300S,0805,ROHS	L27 L31 L24	3
124	4SM3-6027-A56B	Microphone, Φ=6.0mm,H=2.7mm,-56dB±2dB, with terminal (aside)，ROHS	MIC1	1
125	5OD1-13R0-DBF3-0302	Chip fixed temperature compensation transistor /NT5032SC,13±2.5PPM,3.0*2.5*1.6mm,ROHS	X1	1
126	5XT1-CSTCR-7R30G53	CSTCR7M30G53-R0,7.3M,ROHS	X2	1
127	3CE3-ST212-35K	3.5mm Microphone jack/SP/MIC,ST-212,ROHS	J2	1
128	3CE3-EJ-2507-CCPAK	2.5mm Earphone jack /SP/MIC,EJ-2507-CCPA,ROHS	J1	1
129	3CR7-SMA-50JFB-4	SMA-J, Flange (3208, aperture 14mm,core length 10.5mm)	CN1	1
130	4SS7-3605-008-100	Φ=36mm,H=5.0mm,impedance 8Ω,rated power 1.0W(FCE Company)	SP1	1
131	3WLP-30070-0	Plastic cable, cable no. 30,cable length 7cm, black		1
132	3WLP-30070-2	Plastic cable, cable no. 30, cable length 7cm, red		1
133	6PD7-7058-HMD	G3280 PCB/U, two layers of turmeric, 0.8mm, ROHS		1
134	6PS7-7025-HSA	PT3500S Small board of volume knob，board with one side, 1.2mm (Depth)		1
135	6PS7-7025-HSB	PT3500S Small board of encoder switch, board with one side, 1.2mm (Depth), ROHS		1

Appendix 4 Accessories Lists

Name	Type	Specifications	Picture
Battery	KB-260	7.4V 1000mAH Li-ion Battery	
Belt clip	KBJ-09		
Hand strap	KGS-01		

Earphone	KME-008		
	KME-010		
Charger Base	KBC-260	4 hours standard charger base	
Adapter	KTC-24C	DC OUT 12V 500mA	
Antenna	Rubber antenna		

Figure 1 PT260 Schematic Circuit Diagram

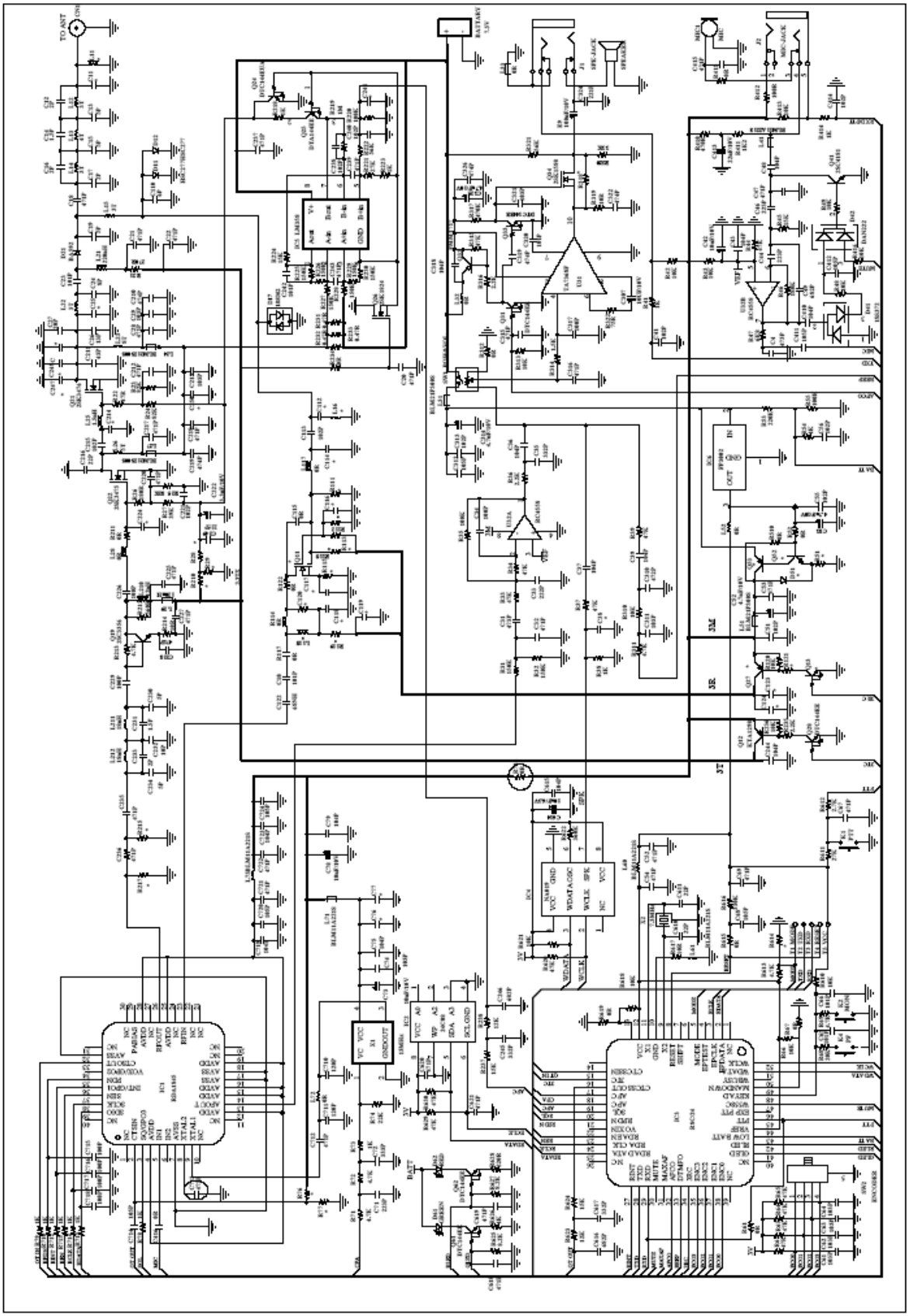


Figure 2 PT260 Top Layer Numeric Value Diagram

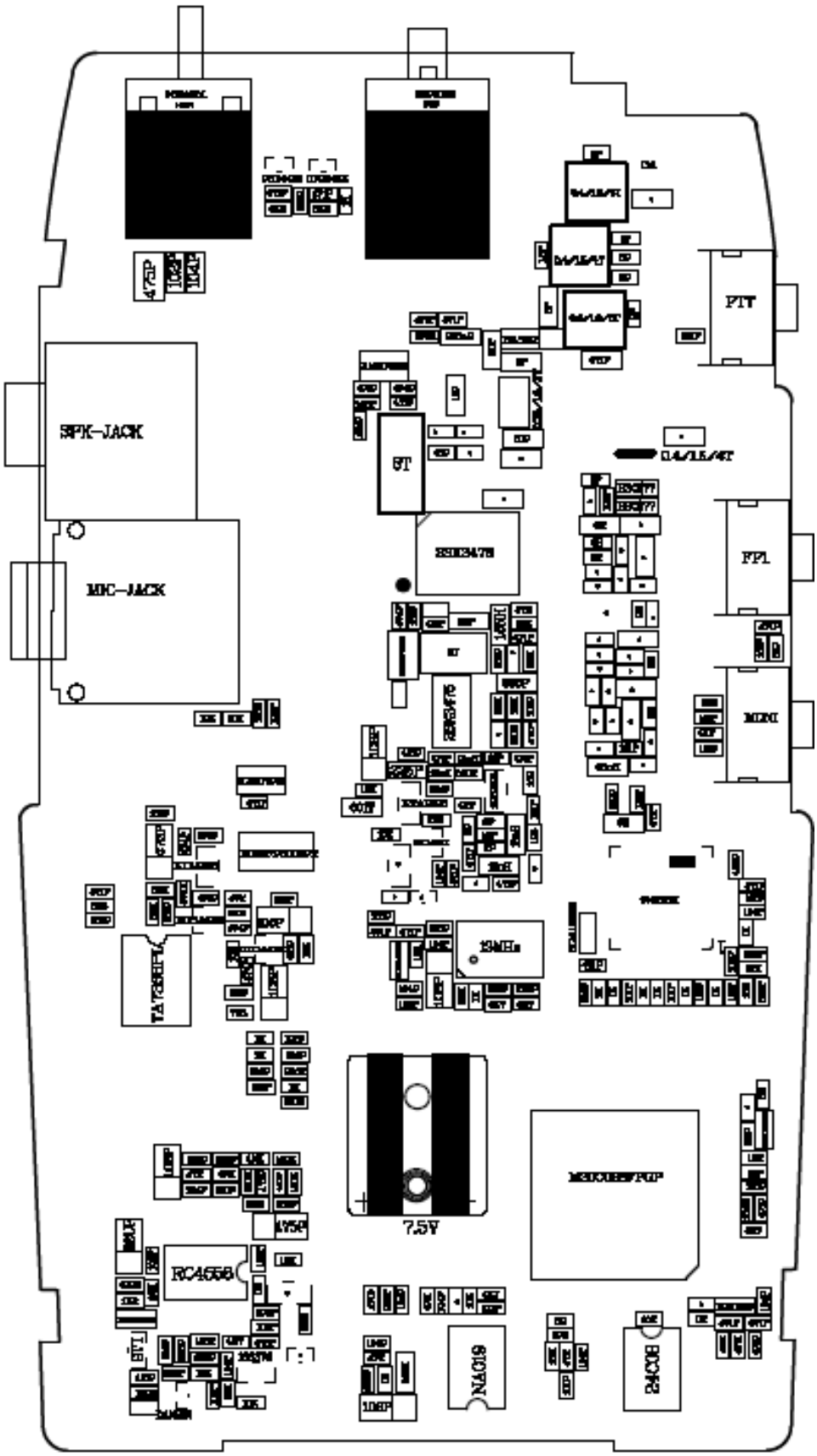


Figure 3 PT260 Bottom Layer Numeric Value Diagram

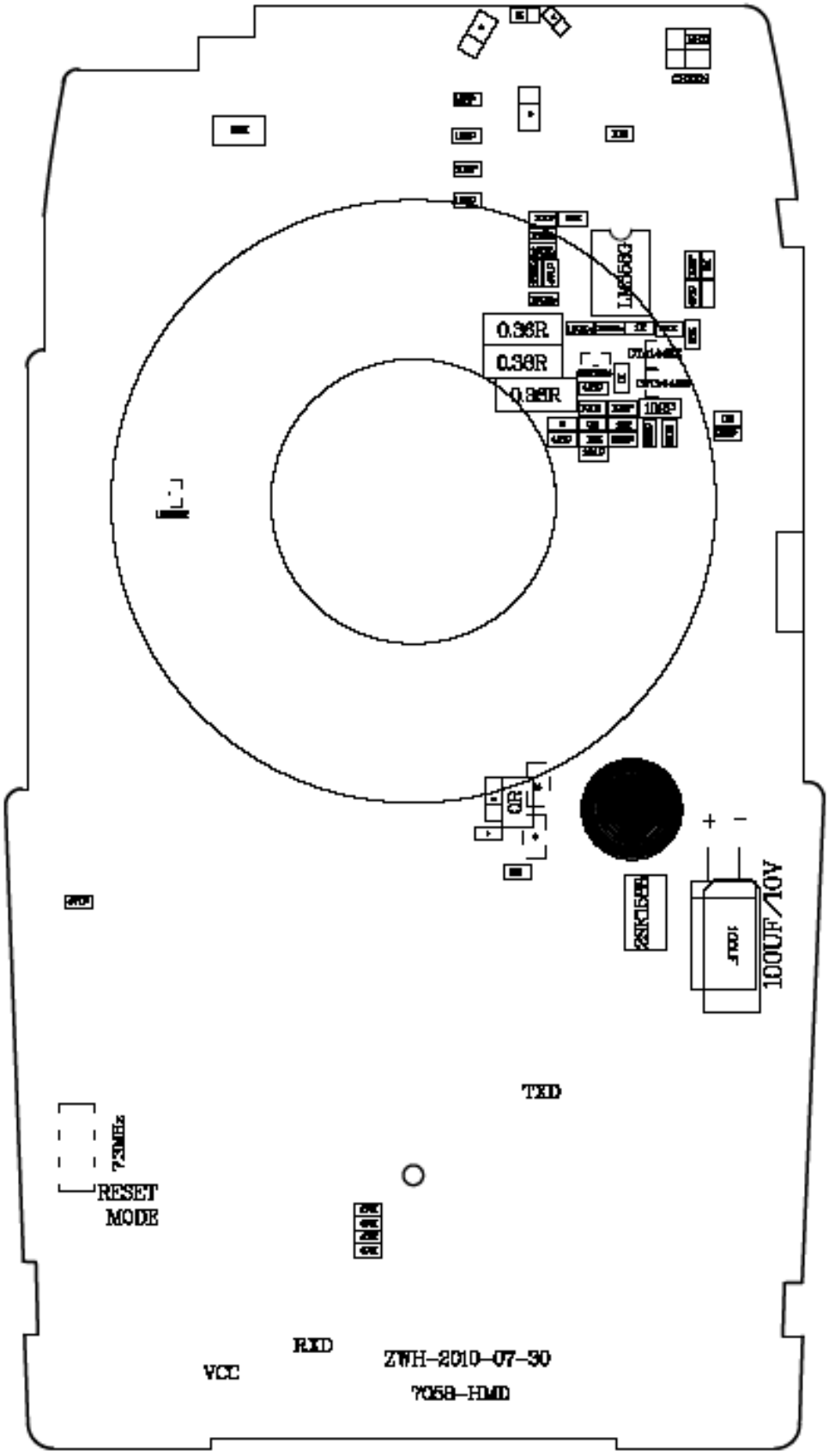


Figure 4 PT260 Top Layer Position Mark Diagram

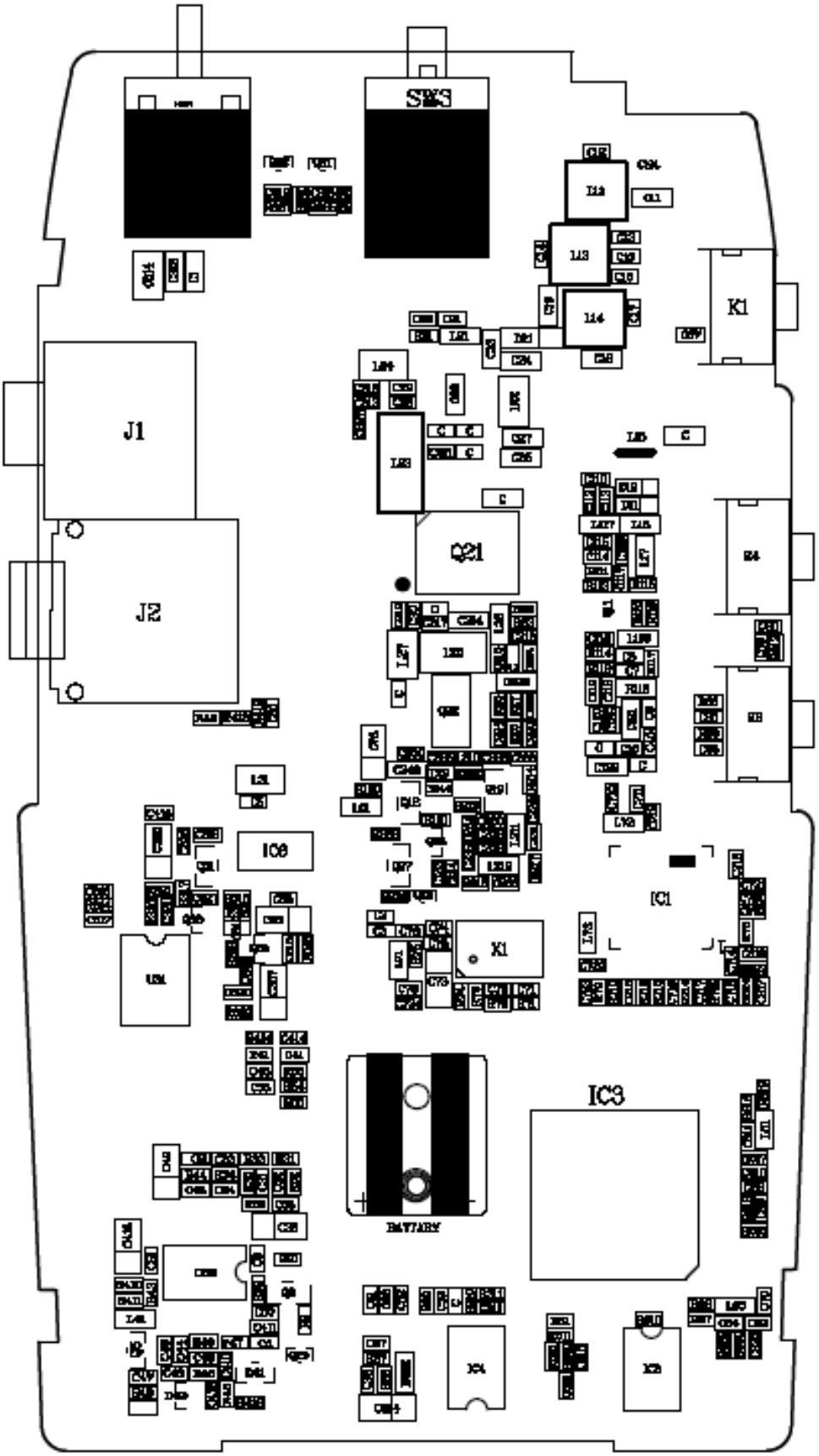


Figure 5 PT260 Bottom Layer Position Mark Diagram

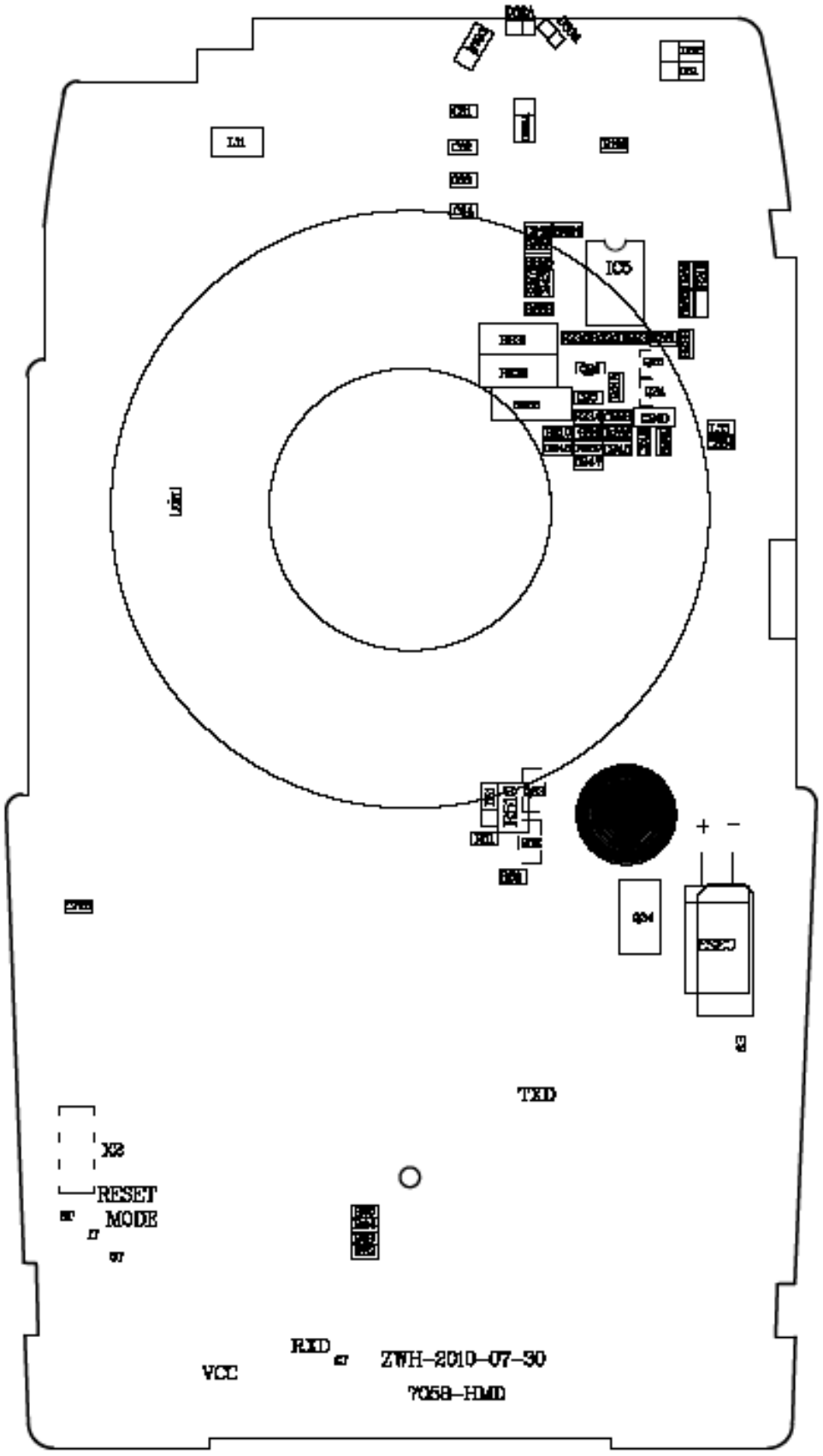


Figure 6 Charger Schematic Circuit Diagram