RF-Remote Tx-Rx - SAW resonator (2262 Tx - LM358/3310 Rx)

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DF uses wireless data transceiver modules

Wireless data transmission widely used in vehicle monitoring, remote control, telemetry, small wireless network, wireless meter reading, access control systems, paging community, industrial data acquisition system, wireless tag, identification, non-contact RF smart card, a small wireless data terminals, security fire protection systems, wireless remote control systems, bio-signal acquisition, hydro-meteorological monitoring, robot control, wireless data communications 232, 485/422 wireless data communications, digital audio, digital image transmission and other areas.

This is DF transmitter module, size: 19x19x8 mm, the right is the equivalent circuit schematic diagram

Main technical indicators:

1. Means of communication: AM AM
2. Working frequency: 315MHZ (can provide 433MHZ, purchases when specified)
3. Frequency Stability: ± 75KHZ
4. Transmitting power: ? 500MW
5. Quiescent current: ? 0.1UA
6. Emission current: 3 ~ 50MA
7. Working Voltage: DC 3 ~ 12V

315MHz transmitter module 8 a 433MHZ Transmitter Module 8 a

DF data transmission module of the operating frequency is 315M, the use of SAW SAW resonator frequency stabilization, high frequency stability, when the ambient temperature at -25 ~ +85 degrees change, the frequency drift of only 3ppm / °. Particularly suitable for many hair close one wireless remote control and data transmission system. SAW resonator frequency stability after the crystal, and general LC oscillator frequency stability and consistency of poor, even with high-quality fine-tuning capacitance, temperature changes and vibration also has been difficult to ensure that the frequency points do not transfer well offset will happen.

DF does not have coded transmitter module integrated circuits, and an increase of a data modulation transistor Q1, such a structure makes it can easily and other fixed coding circuit, a rolling code circuit and single-chip interface, without having to consider coding circuit voltage and output range of the size of signal values. PT2262 encoding used such as integrated circuits, such as matching when their data directly to the output section 17 to the DF pin data input module can be.

DF data module has a wide operating voltage range 3 ~ 12V, when the voltage changes in firing frequency is essentially the same, and the transmitter module matching receiver module will be able to adjust without any stable reception. When the firing voltage of 3V, the open transmission distance to about 20 ~ 50 meters, the transmission power of smaller, when the voltage of 5V is about 100 ~ 200 meters, when the voltage of 9V is about 300 ~ 500 meters, when the firing voltage of 12V, for optimum operating voltage, has a good launch effects, emission current of about 60 milliamperes, open to the transmission distance of 700 ~ 800 meters, the transmit power of about 500 mW. When the voltage is greater than l2V when the power increase, effective radiated power is no longer markedly improved. This module is characterized by relatively large transmission power, transmission distance farther, more suitable to

communicate under adverse conditions. The best choice of antenna wire 25 centimeters long, the best long-distance transmission can be erected, because the radio signal transmission when the received a lot of factors, so generally useful only nominal distance from the 20% or even less, at this point required When considering the development of attention.

DF data module using ASK modulation mode to reduce power consumption when the data signals to stop when the emission current zero, the data signal with the DF input transmitter module can be directly connected resistors or capacitive coupling can not be resolved, otherwise module will not be able to launch DF normal job. Level data should be close to the actual DF data module operating voltage, in order to receive higher levels of modulation effects.

DF launch launch module preferably mounted vertically at the edge of the motherboard should be left around the device more than 5mm to the distribution parameters from noon shadow. DF module transmission distance and signal frequency and amplitude modulation, firing voltage and battery capacity, transmitting antenna, receiver sensitivity, transceiver environment. Generally in open areas away from the maximum emission of about 800 meters, in case there is an obstacle, the distance will be shortened, because of radio signal transmission in the process of refraction and reflection will form a number of die area and unstable region, a different environment would have different transceiver transceiver distance.

DF transmitter module can be assigned the use of two receiver modules

1. ???-style access module

???receiver module size: 30x13x8 mm between the two modules are the signal output pin, connected.

DF???This is the equivalent circuit receiver module

Main technical indicators:

1. Means of communication: AM AM
2. Working frequency: 315MHZ (can provide 433MHZ, purchases when specified)
3. Frequency Stability: ± 200KHZ
4. Receiver sensitivity:-106DBM
5. Quiescent current: ? 5MA
6. Current job: ? 5MA
7. Working Voltage: DC 5V
8. Output mode: TTL Level

315MHz receiver module??? a 7 yuan 433MHZ???receiver module 7 yuan a

DF receiver module of the operating voltage of 5 V, quiescent current of 4 mA for the receiving circuit???, receive sensitivity of-105dbm, the best antenna for the 25 ~ 30 cm of wire, preferably erected. Receiver module itself, without decoding IC, the receiver circuit is just a component, only the application specific circuit in the second development in order to play its due role, this design has many advantages, it can and decoding circuit or single-chip with the circuit design flexibility.

The advantages of this circuit:

1. Antenna has selected frequency input circuit, rather than relying on 1 / 4 wavelength antenna frequency-selective role in controlling the distance can be short or even close to removing an external antenna
2. Output waveform is relatively clean, interference signal for a short needle-like pulse, so a strong anti-interference ability.
3. DF module's own radiation is extremely small, together with the circuit module back mesh grounding the role of copper foil shielding can reduce the self-oscillation signal leakage and the intrusion of outside interference.
4. Skeleton with a copper inductor to adjust the frequency of the 315M after??, which adjust the use of adjustable capacitance of the circuit compared to the receiving frequency, temperature, humidity mechanical stability and anti-vibration performance have greatly improved. Adjustable precision capacitance adjust lower, only 3 / 4 laps of the

adjustment range, and adjustable multi-turn inductor can adjust. Adjustable capacitor can not adjust after??, because regardless of conductor or insulator, various media around or invasive capacity will cause the capacitance changes, thereby affecting the receiving frequency. In addition, without the adjustable capacitance??by vibration and dynamic boards boards displacement between; temperature changes will????boards and dynamic changes in the distance between film; humidity changes due to changes in changes in media capacity; long-term Working in wet environments but also due to boards and dynamic changes in the capacity of oxide films, which will seriously affect the stability of the receiving frequency, and using adjustable inductance can solve these problems, because the inductor can be carried out after the adjust??, insulator??agent inductance will not change.

2. Superheterodyne receiver module RX3310

Superheterodyne receiver module size: 35x13x8 mm

Main technical indicators:

1. Means of communication: AM AM
2. Working frequency: 315MHZ (SAW on tagging for 316.8) (can provide 433MHZ, SAW marked up for the 436, when you purchase specified)
3. Frequency Stability: ± 75KHZ
4. Receiver sensitivity:-102DBM
5. Quiescent current: ? 5MA
6. Current job: ? 5MA
7. Working Voltage: DC 5V
8. Output mode: TTL Level

315MHz superheterodyne receiver module 14 per a 433MHZ superheterodyne receiver module 14 per a

Here superheterodyne receiver module provided by the use of imported high-performance wireless remote control and digital ASIC RX3310A, and using 316.8M SAW resonator, so stable and reliable job for relatively poor business environment in all weathers.

Superheterodyne receiver antenna impedance matching requirements of the higher requirements of an external antenna must be 50 ohm impedance, otherwise on the receiver sensitivity has a great impact, so if we use 1 / 4 wavelength of the common wire should be 23 centimeters for best, it is necessary to minimize the antenna to the transmitter module antenna roots Welding Department Lead length, if not reduce, you can use the characteristic impedance of 50 ohm RF coaxial cable connection (the right side of the antenna solder joint has a dedicated grounding solder joint)

3. RX3400 superheterodyne receiver module

315MHZ 3400 superheterodyne receiver module 25 yuan a 433MHZ 3400 superheterodyne receiver module 25 per a

Superheterodyne receiver module RX3400 performance higher than the RX3310, mainly to achieve higher sensitivity-106DB, demanding suitable system.

4. RX3600 highly reliable high-sensitivity superheterodyne receiver module

315MHz High-reliable high-sensitivity receiver module 29 yuan a 433MHZ highly reliable high-sensitivity receiver module 29 yuan a

This is used RX3600-chip high-reliable high-sensitivity superheterodyne receiver module, are currently the best performance of the receiver module.

5. ???low-voltage micro-power receiver module

315MHz low-voltage micro-power receiver module 10 per a

This is the 315M???dedicated low-voltage low-power receiver module, the other receiver module operating voltage above 5V can generally have a better receiver sensitivity, and this module operating voltage as long as 3V, quiescent current is less than 220 microamperes receiver sensitivity of-93DB, size 25X10X3 mm .

Superheterodyne receiver???and performance differences:

? ??superheterodyne circuit performance and the advantages and disadvantages of each, receiver???cheap, affordable, and high receiver sensitivity, but the disadvantage is also apparent that the frequency by temperature drift, and bad anti-jamming ability. Merits superheterodyne receiver are frequency stability, good anti-interference ability, and when single-chip performance with relatively stable, the sensitivity of disadvantage than???are low, the price is much higher than???receiver, and close-up signal may have obstructive phenomenon.

DF wireless module developed NOTES:

DF signal modulation module must use to work, a common coding devices such as fixed PT2262/2272, as long as the direct connection can be very simple, because it is a dedicated encoder chips, so the effect of transmission distance is very far from good. Module at module output pin internal pull up through a 39K resistor to +5 V, the use of the time required to consider decoding device input impedance. There is also a DF module uses is essential to achieve with single-chip data communications, at this time must have skills.

1. Reasonable rate of communication

DF data modules for the maximum transmission data rate 9.6KBs, general control at about 2.5K, it should be run is very low. High data rate will lower the receiver sensitivity and bit error rate increases simply can not even work, so if necessary, add delay necessary to reduce transmission rate, you can send in the data after the completion of artificial delay of 11 milliseconds or so, some customers expect the DF module to transmit voice, images or documents are the basic mission impossible, DF modules are mainly used for data transmission are very small remote control signal.

2. Reasonable information code format

Single-chip modules and DF job, they usually define their own transmission protocol, whatever modulation, the information to pass on the code format is very important, it will directly affect the reliability of data transceivers.

Code group format recommend programs: pre-code + code + data frame synchronization

Pre-code length should be large so 10ms, to avoid background noise, because the receiver module to receive data from the first to be vulnerable to interference (that is, zero-level interference) caused by the received data error. CPU codec can be so used in the data before the recognition of some garbled to contain zero-level interference. Mainly used for synchronous code and data from pre-Code. Must have the characteristics, so that the software algorithm must be able to identify through a synchronous code, at the same time ready to receive data. Data frame NRZ unsuitable, and it can not long 0 and a long one. The use of Manchester encoding or POCSAG codes, such as the following data format must have error functions:

3. Single-chip receiver module for interference

Singlechip 2262 when analog is generally normal, but the 2272 single-chip analog decoders are usually found when the distances have been shortened by a lot of remote control, This is because single-chip clock frequency multiplier of the receiver module will produce interference

51 Series MCU job, we will have a relatively strong electromagnetic radiation, frequency range at 9MHZ-900MHZ, so it will affect any of the frequencies within the sensitivity of the wireless receiving equipment, the solution is to reduce the CPU crystal frequency. Test showed that: 1M crystals at the radiation intensity, 12M Crystal only when 1 / 3, therefore, if the crystal frequency selection at 500K below the CPU can effectively reduce the radiation interference. Another good method of comparison are: the receiver module through a 3-core shielded cable (and, +5 V, DATA, Ground wire shielded line left) will leave the single-chip module leads to 2 meters outside, regardless of the frequency of use 51CPU the crystal, such interference will be basically eliminated. For the PIC microcontroller, there is no interference with the above-mentioned radiation. Can be used.

Can also switch to a higher frequency of the receiving frequency, such as 433MHz remote control distance can be increased, or require the use of some anti-jamming measures to reduce the interference. Such as single-chip and remote control receiver circuit, respectively, with two 5-volt power supply will be a separate DF receiver board 78L05 with a power supply, single-chip clock zone away from the DF receiver module, reducing single-chip operating frequency, between add shielding and so on.

Simulation of single-chip decoder 2272 are interested in online friends can see at the end of this page devoted to U.S. data.

DF receiver module work in general are high pulse output is not DC-ping, so can not use a multimeter to test, debug can be used when a light emitting diode series resistance of a 3K to monitor DF module output state.

DF wireless data modules and other special PT2262/PT2272 codec chip when used as long as the connection is very simple direct connection to, transmission distance more ideal, the general can achieve more than 600 meters, if and single-chip microcomputer or used in conjunction, they will receive Single-chip microcomputer clock or interference, resulting in decreased transmission distance, the general practical distance at less than 200 meters.

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Technical Q & A:

? question: high-frequency firing line circuit PCB layout better how? (2003.05.05)

Designed printed circuit boards should pay attention to: the need to provide a low impedance power supply and

minimum noise radiation Ground wire. Require the use of double-sided PCB board, and put on the bottom ground plane to reduce the radio radiation and crosstalk; bypass capacitor should be as close as possible to each power supply pin VDD; Do not put PCB through-hole and Complex Ground wire connected Minamata; for reduce distributed capacitance circuit to avoid the emergence of parallel lines; lines should be as short as possible; to prevent the coupling, should be independent of its various components; the use of grounding line enable signal isolation; transmission antennas can be printed on PCB.

? question: superheterodyne and???What is the difference between modules? ----(2002.12.26)

First, the receiving circuit???

? ??demodulation circuit, also known as???detector circuit, which are in fact job at a state of intermittent renewable oscillation detector circuit. General renewable detector circuit in the high sensitivity of band work, so commonly used to produce simple transistor radio. For the job in the short-band wireless remote control or communications equipment, renewable sources of detector sensitivity and stability do not meet the requirement. But in the short-band???detector has a high sensitivity to receive weak signals at up to several hundred thousand times magnification. Therefore, I hope Circuit simple with high sensitivity and selectivity and signal to noise ratio for less demanding easy wireless remote communications equipment (such as anti-theft devices, etc.), or???detector circuit is quite practical value.

???receiver sensitivity is usually about -85 ~ 95DBM, used in many devices, stability, bad, processing complex.

Second, superheterodyne receiver circuit

Superheterodyne superheterodyne radio demodulation circuit and the same, it is set up a machine generated oscillation signal oscillation circuit with the received carrier frequency signal after the mixer, the intermediate frequency (typically 465kHz) signal, the IF amplification and demodulation, demodulation of data signals. Because of set frequency are fixed, so its simpler circuit than the radio.

Superheterodyne receiver sensitivity up to -100 ~ 104DBM, and fewer external components, integrated high degree of fit large-scale production. Superheterodyne receiver has SAW frequency stabilization and frequency stabilization of two types of LC, LC frequency stabilization using high sensitivity up to-104DBM, but less stability, and the SAW frequency stabilization of the sensitivity of about-100DBM, good stability .

Superheterodyne receiver antenna impedance matching requirements of the higher requirements of an external antenna must be 50 ohm impedance, otherwise on the receiver sensitivity has a great impact, it is necessary to minimize the antenna to the transmitter module antenna roots Welding Department Lead length, if not reduce, you can use the characteristic impedance of 50 ohm RF coaxial cable connection (the right side of the antenna solder joint has a dedicated grounding solder joint).

IC RX3310A Introduction:

RX3310A are manufactured by Taiwan HMARK devoted to ASK amplitude shift keying modulation for wireless remote control and digital signal receiver circuits, including low-noise high-frequency amplification, mixers, the local oscillation, IF amplifier, IF filter, comparator and so on, for a frequency conversion superheterodyne circuit, double row 18 feet wide thoughtful film package, the main technical indicators are as follows:

Operating frequency: 150 ~ 450MHZ
Operating voltage: 2.7 ~ 6V
Current job: 2.6 milliamperes (3V power)
Receiver sensitivity:-105DBM (1K data rate and antenna match)
The maximum data rate: 9.6KBPS

Superheterodyne receiver chip RX3310A the use of the development of information

From the external antenna to receive signals by C10 coupled to L2, C11, composed of selected frequency network input impedance transformed RX3310 internal high-frequency amplifier input 14 feet, by the chip's high-frequency amplification (gain of 15 ~ 20DB) signal to be passed by this mixer with the local oscillation signal (316.8M) mixer, resulting in 1.8M of intermediate frequency signal, the intermediate frequency signal amplified by the internal IF 3 feet

from the first output, re-entering the comparator to enlarge shaping the final data from the Section 8-pin output.

Three,???compared with superheterodyne

Receiver has a circuit???easy, low-cost advantages so widely used, while higher prices superheterodyne receiver, temperature adaptability and higher receiver sensitivity, and the job is stable and reliable anti-interference ability, product consistency, and the receiver local oscillator radiation low, no secondary radiation, performance indicators, and easy to pass, such as FCC or CE standards for testing, in line with industry norms.

? question: superheterodyne receiver module at close range should not receive? ----(2002.12.20)

A: RX3310A, RX3400 assembly at the core of the superheterodyne receiver has a disadvantage is the strong signal, a short distance when the plug should not decode, it is normally 3 meters away from the transmitter does not belong to the normal decoding. In contrast,???receiver does not exist the problem.

Receiver modules are operating voltage range of 3 ~ 6V, but the best for the job at 5V. Voltage deviation from the best job, though can be a normal job, but it will lead to decrease receiver sensitivity. Superheterodyne receiver for antenna impedance matching requirements for a higher deviation from 50? will lead to dramatically lower the sensitivity. Therefore, the receiving antenna must also impedance is 50?, and as far as possible to shorten the antenna to the receiver module root welding antenna connection between the length and, if necessary, can be used for the 50? characteristic impedance of the RF coaxial cable connection.

? question: remote control distance of about ----(2002.12.20)

We are talking about are remote from the Tx / Rx module alone, and are then allocated a quarter of the wavelength whip antenna, and in a vertical state rated job in a straight line under the conditions of open land at the maximum measured distance decoding, if The two sides are in a higher position, it will be farther away from the remote control.

Because of the work at UHF band, the electromagnetic wave along the straight-line transmission, encountered obstacles will dramatically attenuated, remote control distance was significantly shorter, so the use should be avoided as far as possible obstacles, or as much as possible and use aircraft high antenna high gain antenna for fixed use is also available in high-gain directional antenna to improve its communication effects.

Data rate of communication distance has a greater impact, generally speaking, the higher the rate, the greater the near distance, the proposed data rate from 1.2 ~ 2.4K better. On the other hand, computer systems (including single-chip) on the RF components of the electromagnetic interference must exist, if not handled properly will lead to wireless transmission distance variable near, or even should not work correctly.

A: The way to resolve: To compare satisfaction with the solution of electromagnetic interference, we must begin by Singlechip selection, software design, PCB board layout and structural design and many other aspects to address.

? question: 51 single-chip (including a variety of brands) on the use of the 315MHz frequency will be very close distance? ----(2002.12.20)

Because of 51 are normally used for single-chip 12MHz crystal as the start-up, so that the vibration of its own on nearly has 300MHz of the vibration frequency by the I / O port of the electromagnetic radiation from outside sources of interference, resulting in 315MHz receiver in close proximity, and even should not receive.
A: The way to solve: It is recommended to switch to a higher frequency of the receiving frequency, such as 433MHz remote control distance can be increased; or put up single-chip shielding.

How to use single-chip simulation software decoder 2272 rare information:

At the field of wireless remote control, PT2262/2272 are currently one of the most commonly used chip, but because of the use of chip matching requirement, to a large extent affected the use of the chip, and the author PT2262 waveform characteristics from the start, combined with practical applications, the software decoder methods and specific measures.

First, an overview of

PT2262/2272 process is a CMOS low-power low-cost generic codec circuit, are currently in the wireless communication circuit for encoded address to identify one of the most commonly used chips. PT2262/2272 up to 12 (A0-A11) end a three-state address pins (left, then high, then low-level), any combination of available 531441 Address Code, PT2262 has a maximum of six (D0 - D5) data end pin, set the address code and data code 17 feet from the serial output.

PT2262/2272 must use the same address code matching using, when necessary to add a communication machine, the user has to resort to technical personnel or manufacturers to set up the same address code, customers set up their own relatively trouble, especially for people who do not know how electron . As the operators have become increasingly demanding, PT2262/2272 this pairing is seriously restricting the use of ease of use, people continue to require the use of a no need to consult professionals, without the use of special tools, anyone can operate convenient means to make up for deficiencies PT2262/2272 This is PT2262 software decoder.

Second, decoding principle

Section above are PT2262 waveform, we can see a group of a group of code, each code has synchronization between the code separated so that if we use single-chip microcomputer software decoder, the program as long as the judge the synchronized code, and then on behind the code word to identify the pulse width.

2262 launch for each group fired at least 4 characters code, 2272 is only detected at twice the same address code will be added when the data code data code of "1" drive the corresponding data for the high output and drive VT for high-end synchronization. Since the characteristics of wireless transmitters, the first code group is very vulnerable to zero-level interference, often error, so the procedure can handle discarded.

Now we come to carefully look at the waveform PT2262 features:

Oscillation frequency f = 2 * 1000 * 16/Rosc (k?) kHz oscillation resistor for one of rosc Here we selected is a relatively common frequency of f ? 10 kHz, Rosc = 3.3M? (following the same). The chart is oscillation frequency with the corresponding code-bit waveform relationship: synchronized terminal waveform:

There are three encoding PT2262: 0,1, and suspended (expressed as f).
1, data "0" to send the code points are as follows:
2, data "1" to send the code points are as follows:
3, data "f" to send the code points are as follows:

With more than a specific waveform, we can conduct a software decoder. T2262 send at least 4 times each time encoding, first of all, we can detect the width of 11ms sync terminals, terminals have only begun codec, no terminals will continue to wait. Upon receiving terminals, but also detect whether the terminal has been received, and if not, discard first encoded signal, in order to prevent error.

Figure from the coding can be seen, every codeword from low beginning to high to low and then high. Detected for convenience, we put at the receiving end of the encoded signals 180 ° phase reversal, so that the rising edge of the beginning of code points into a falling edge, so that when we use MCS51 series single-chip decoder can be intercepted and timely manner, the use of interrupted coding. From the encoding map also can be seen, every codeword can be divided into two sections, each of us to level the width to describe the code-bit:

Code points in the first paragraph of the second paragraph of the numerical code that express anti -
0 narrow 00 11
1 broad 11 00
f narrow wide 01 10
Invalid code width 10 01

Software decoding method 1 (Anti-code):
Started from the first falling edge delay of about 700us to detect low-level, recorded as A1, and then the second falling edge detection, delay of about 700us to detect low-level recorded for the A2, such a code points can be translated by a continuous 12 yards Detect bit.

Software decoder Ways 2 (Anti-code):
From the first falling edge at the beginning of mind, and continue to Detect level changes, have one-level change, immediately width Record Level B1, to continue to remember when the falling edge until the emergence of a second,

recording the interval between two falling edge B2, Repeat the above steps, the B3, B4, to determine B1, B2, B3, B4 whether the permit in their respective range of error, are the preservation of B1, B3, translated one yards, and otherwise consider error, discarded. Consecutive correct bit Detect 12 yards.

Two kinds of decoding methods have advantages and disadvantages are as follows:
Advantages disadvantage Decode methods
Easy one procedure, CPU overhead decoding accuracy less bad
2 the complexity of the procedure, CPU overhead large decoding accuracy

Decoder in order to obtain a higher accuracy, we recommend the use of Method 2, in order to avoid many misunderstandings interference signal code.

Three reference decoder software

Description: ADD1, ADD2 for 8-bit address, DAT0 for 4-bit data
REMOTE: CLR TR2; probe signal detection subroutine
CLR RECEIVE;
MOV DETE_LOOP, # 12; receive 12 encoding
REMO0: CLR DETE_T_OVER;
MOV TH2, # 0FEH; test section width of a level
MOV TL2, # 041H;
SETB TR2;
REMO1: JB REM, REMO2; Wait for emerging high
JB DETE_T_OVER, REMO3; limit 1500us, overtime will consider error
AJMP REMO1;
REMO2: MOV A, TH2; measuring low-level width, 0FF for wide pulse, 0FE for narrow pulse
CJNE A, # 0FFH, REMO4;
MOV A, TL2;
CLR C;
CJNE A, # 098H, $ +3;
JNC REMO3; level too (more than 1150us), exit
CLR C;
CJNE A, # 020H, $ +3;
JC REMO3;-level narrow (less than 780us), exit
SETB C;
AJMP REMO5;
REMO3: AJMP REMOTE_END;
REMO4: CJNE A, # 0FEH, REMO3;
MOV A, TL2;
CLR C;
CJNE A, # 0C7H, $ +3;
JNC REMO3; level too (more than 450us), exit
CLR C;
CJNE A, # 060H, $ +3;
JC REMO3;-level narrow (less than 210us), exit
CLR C;
REMO5: MOV A, DAT0; store-level value
RLC A;
MOV DAT0, A;
MOV A, ADD1;
RLC A;
MOV ADD1, A;
REMO6: JNB REM, REMO7; Wait for emergence of low-level
JB DETE_T_OVER, REMO3; pulse falling edge interval limit 1500us, overtime will consider error
AJMP REMO6;
REMO7: CLR TR2;
CLR DETE_T_OVER;
MOV A, TH2; CJNE A, # 0FFH, REM13; pulse interval is too small MOV A, TL2; CLR C; CJNE
A, # 050H, $ +3; JC REM13;-level narrow (less than 1200us), exit MOV TH2, # 0FEH; measuring the first two-level width MOV

TL2, # 041H; SETB TR2; REM11: JB REM, REM12; Wait for emerging high JB DETE_T_OVER, REM13
; Limit 1500us, overtime will consider error AJMP REM11; REM12: MOV A, TH2; measuring low-level width, 0FE for wide pulse, 0FF for narrow pulse
CJNE A, # 0FFH, REM14; MOV A, TL2; CLR C; CJNE A, # 098H, $ +3; JNC REM13
; Level too (more than 1100us), exit CLR C; CJNE A, # 020H, $ +3; JC REM13;-level narrow (less than 1000us), exit
SETB C; AJMP REM15; REM13: AJMP REMOTE_END; REM14: CJNE A, # 0FEH, REM13;
MOV A, TL2; CLR C; CJNE A, # 0C7H, $ +3; JNC REM13; level too (more than 450us), exit CLR C;
CJNE A, # 060H, $ +3; JC REM13;-level narrow (less than 210us), exit CLR C; REM15: MOV A, TEMP
; Store-level value of RLC A; MOV TEMP, A; MOV A, ADD2; RLC A; MOV ADD2, A; REM16: JNB
REM, REM18; Wait for emerging low JB DETE_T_OVER, REM13; pulse falling edge interval limit 1500us, overtime will consider error AJMP
REM16; REM17: AJMP REMO0 REM18: CLR TR2; CLR DETE_T_OVER; MOV A, TH2
CJNE A, # 0FFH, REM13; pulse interval is too small MOV A, TL2; CLR C; CJNE A, # 050H, $ +3; JC REM13
; Electric ping too narrow (less than 1200us), exit DJNZ DETE_LOOP, REM17; REM19: MOV DETE_LOOP, # 4
; Put the left to receive the encoding four REM20: CLR C; will be on the same 8-byte password on MOV A, DAT0; RLC A; MOV DAT0, A;
MOV A, ADD1; RLC A; MOV ADD1, A; CLR C; MOV A, TEMP; RLC A; MOV TEMP, A
; MOV A, ADD2; RLC A; MOV ADD2, A; DJNZ DETE_LOOP, REM20;; put 4-bit data encoded by high-4
Displacement of up to 4 low; MOV A, DAT0; SWAP A; MOV DAT0, A; MOV A, TEMP; SWAP A; MOV
TEMP, A; ANL DAT0, # 0FH; SETB RECEIVE; REMOTE_END:; CLR TR2 CLR REMOTING
; RET;

Four, hardware anti-jamming

At the use of single-chip wireless communication system will cause serious disruption, I believe that many technical staff must have had the same upset. If poorly designed hardware, this will result in the original hardware decoding communication distance of 200 meters, while the use of software decoder may only ten meters, so to solve the hardware problem at a large extent, anti-jamming software decoder can reduce the error rate.

1, transceiver modules: Early commonly used frequency of 47MHz, at this frequency, it is difficult to have good solutions; recommended by the current country permit the use of wireless remote control of frequency 315 MHz.

2, single-chip oscillation frequency: MCS51 many textbooks recommend the use of the U.S. are 12 MHz and 11.0592MHz crystal, these crystals do not always be used in the general problem, but can not, they are still at around 300MHz can produce more large disturbance, in order to solve the single-chip operating speed and electromagnetic interference conflicts, recommended frequency of 4MHz or 3.58MHz crystal.

3, isolation: in order to effectively control the single-chip receiver module for electromagnetic interference, power isolation recommended ?; ? port isolation; port isolation can be transistor or comparator. Practice shows that the effect of the use of isolation is very obvious.

V. Conclusion

PT2262 software decoding in practical applications have a better arena. The use of software decoding system, manufacturers no longer need to send and receive ancillary equipment to facilitate production in custody; of customers using a software decoder there is no need to seek help, manufacturers only need to add software automatically re-study, users are free to use this feature only touch of the button to learn new study of communications equipment, such as remote controls and so on. At present, the software decoder has been in a wireless alarm devices, reflecting the customers easy to use to good effect.