PLJ-1601-C

Frequency display components

Product category Frequency display components

Product model PLJ-1601-C

Document production Three sword Studios

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Version information V1.0

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Profile

Product description

PLJ-1601-C Frequency display module is designed for HAM Design of frequency measurement instruments. Its compact, easy operation, reliable work, mainly for the DIY transceiver frequency value displayed can also be used for normal frequency measurement. The frequency meter's main features are as follows:

- Master United States micro-core (Microchip) PIC16F648A At the core of 65MHz Frequency meter.
- Reference Japan KDS Temperature-compensated voltage-controlled Crystal oscillator (± 2.5 ppm VC-TCXO)。 More high performance external reference, the software supports 13.000 MHz, and12.800 MHz, and10.000 MHz and 4.000 MHz four external reference sources.
- Uses a unique algorithm of gate control and precise time (unscheduled interruption).
- Time gate (display refresh) 0.01 Seconds /0.1 Seconds /1.0 Second optional third gear.
- Enter the three-channel single-ended (low channel / High channel / Automatic channel) is optional.
- Add or subtract frequency function, if value can be adjusted, and / Reduction mode is optional.
- LCD1601/1602 Character LCD display frequency, the maximum display 9 Digit frequency value invalid zero blanking, invalid frequency value display filtering is optional.
- Four-button control, human-machine interface is good.
- The settings are automatically saved in EEPROM In the next time you boot program.

Technical parameters

1. gate time (**Gate time**)

- 0.01 Seconds
- 0.10 Seconds
- 1.0 Seconds

2. measurement (**Measurement channels**)

- The low road (high impedance)

Measuring range (Measuring range): 0.1 MHz ~ 60 MHz

Measurement accuracy (Accuracy): 100Hz (0. 01 second gate Shi)

± 10Hz (0.10 seconds at the gate)

± 1Hz (1.00 seconds at the gate)

Low channel sensitivity (Sensitivity):

HM8134-2 Test data (for reference only)

Testing frequency(MHz)	0.1	1	5	10	30	40	50	60	65
Sensitivity (mV RMS)	5	5	6	6	14	19	24	29	33

- High channel (High impedance)

Measuring range (Measuring range): 1 MHz ~ 1.2 GHz

Measurement accuracy (Accuracy): ± 6400Hz (0.01 seconds at the gate)

± 640Hz (0.10 seconds at the gate)

± 64Hz (1.00 seconds at the gate)

High channel sensitivity (Sensitivity):

HM8134-2 Test data (for reference only)

Testing frequency(MHz)	5	10	30	60	100	150	200	300	450
Sensitivity (mV RMS)	11	7	3	3	2	3	3	7	13
Testing frequency(MHz)	500	550	600	700	800	900	1000	1100	1200
Sensitivity (mV RMS)	12	21	21	43	125	60	32	51	70

- Automatic Channel

According to the frequency of the input signal automatically selects the channel high or low Channel, frequency of recognition is60 MHz 。 If input is greater than 60

MHz signal amplitude of less than higher channel cannot be selected automatically, you should manually select frequency measurement with high pass road.

3. frequency setting (**Frequency offset**)

Mid frequency step 100 Hz Adjust range 0 ~ 999.9999 MHz Can be set to add MF or MF mode reduction manufactured frequency value defaults to zero (the displayed value is the frequency).

4. the frequency baseline (**Frequency reference**)

Onboard 5032 Package 13.000MHz Temperature compensated voltage-controlled Crystal oscillator (VC-TCXO), The frequency stability is ±2.5 ppm。 With an external frequency standard interfaces, software currently supports the frequency baseline:13.000 MHz, and12.800 MHz, and10.000 MHz and 4.000 MHz Four reference.

5. operating voltage (**Operating voltage**)

DC input: DC 9V ~ 12V (Power supply reverse polarity protection)

6. operating current (**Current**)

Turn on backlight: ≤ 70 mA

Disable the backlight: ≤ 55 mA(disconnect the backlight power supply)

7. display digits (**Display digits**)

The highest 9 -Digital display

8. the physical dimensions (**Physical Dimensions**)

Long × Width × Height: 95mm×37mm×27mm

9. Component Quality (**Weight**)

65 g (Approximately)

10. Onboard connectors (**Schnittstellen**)

RF INPUT (Signal input): XH2.54-2P Bent pin square socket

ICSP INPUT (MCU Programming interface): XH2.54-6P Bent pin square socket

INPUT INPUT (External clock input): XH2.54-2P Bent pin square socket

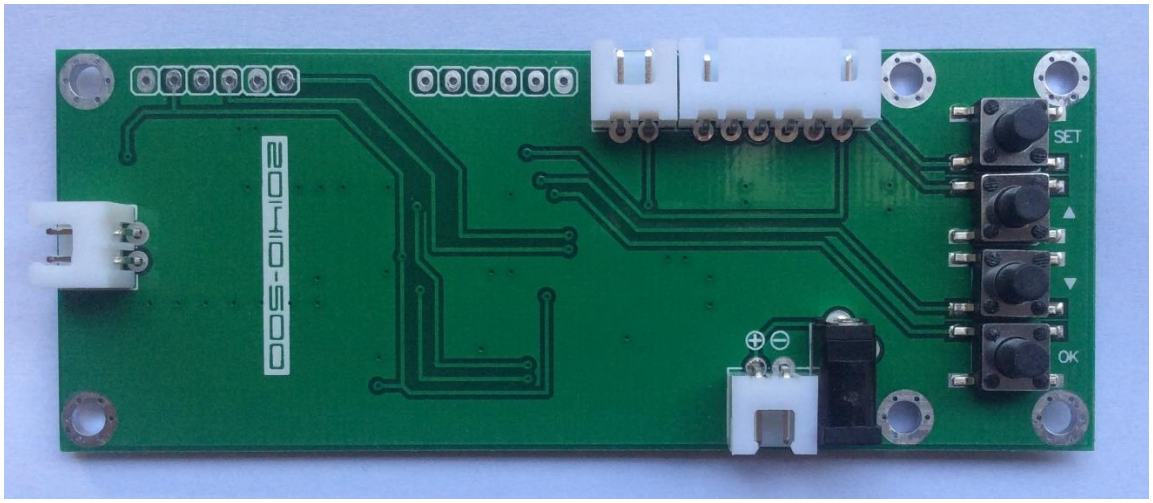
POWER INPUT (Power interface): ①Φ3.5mm DC Socket (Uchimasa negative)

②XH2.54-2P Bent pin square socket

Operation

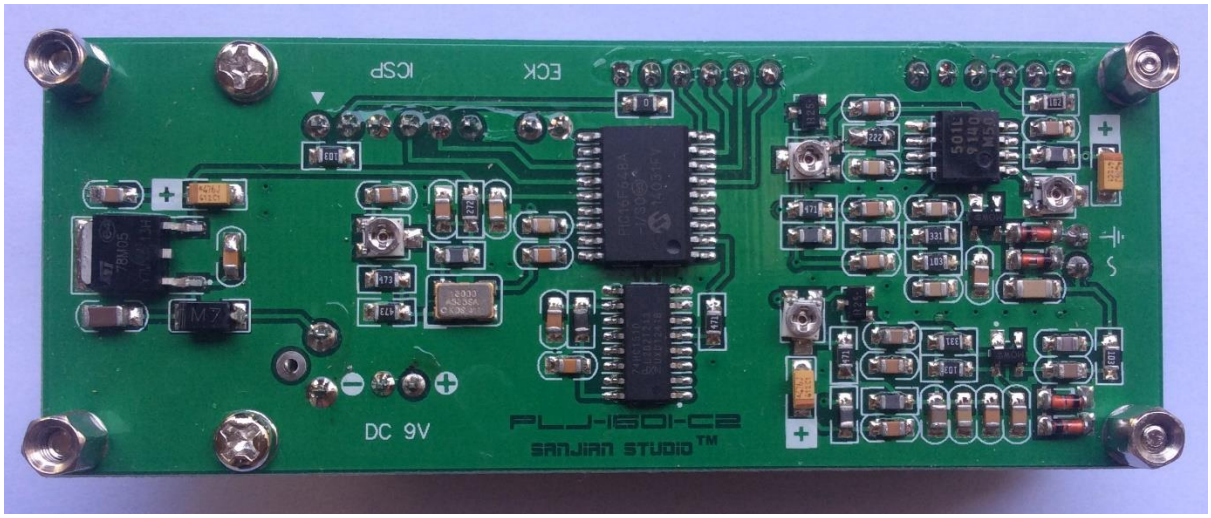
Display Press button

LCD Interface External Clock Interface | Programming Interface



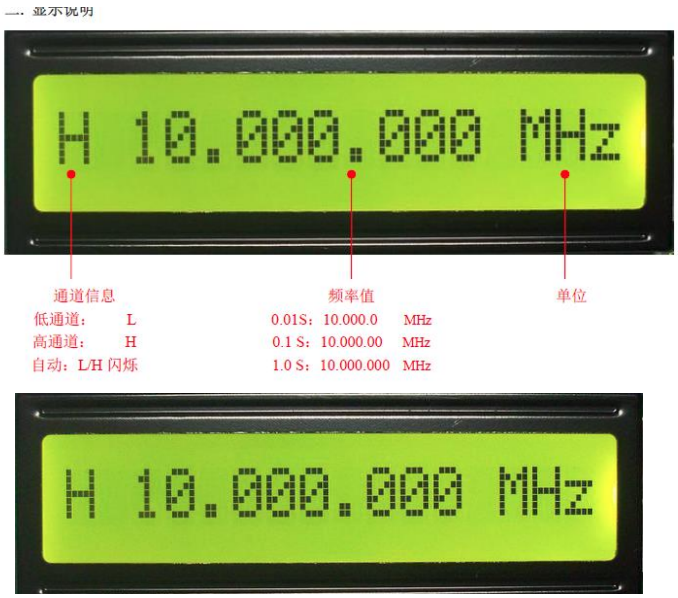
Signal input External power connector

High channel sensitivity adjustment



Frequency fine- tuning

Low channel sensitivity adjustment



Channel information	The frequency value	Work unit
The low road : L	0.01S : 10.000.0 MHz	
High channel : H	0.1 S : 10.000.00 MHz	
Auto: L/H Flashing	1.0 S : 10.000.000 MHz	

Three. Action steps

(A) preparatory work

1. Before use, please check the power supply voltage (DC 9V-12V) and polar, confirmed the power plug is inserted into the instrument ф 3.5mm DC Socket (Uchimasa negative), and ф 3.5mm DC Next to the socket 2P Socket input 9V-12V DC

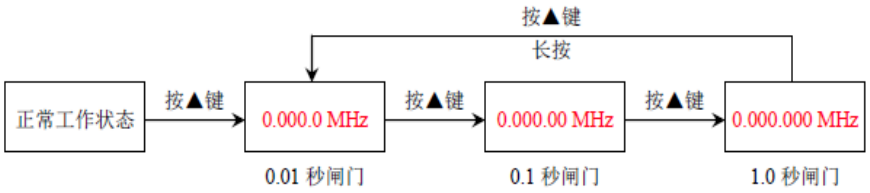
voltage。 Foolproof design of this machine, power supply polarity reversed the machine does not work, but will not have devastating consequences.

2. Measuring signal input 2P port access testing line (wire) or antenna (induction).

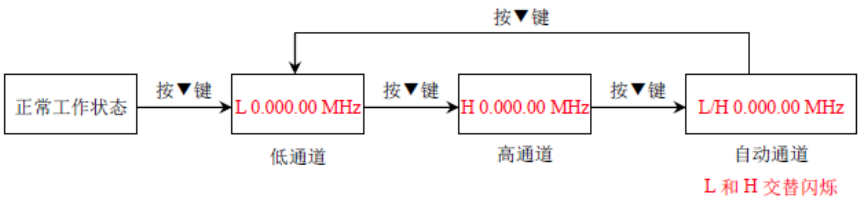
3. Instrument power Preheat for several minutes after the frequency baseline stability measuring operation again.

(B) feature set

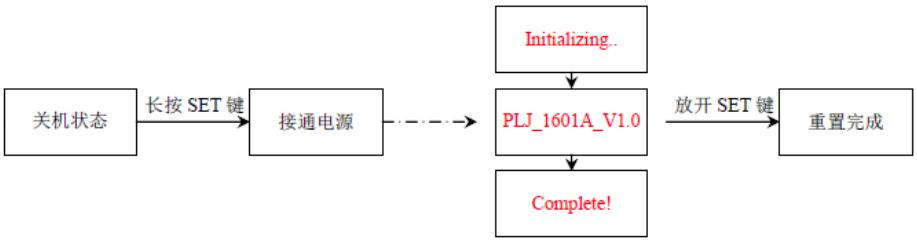
Working Gate Setting



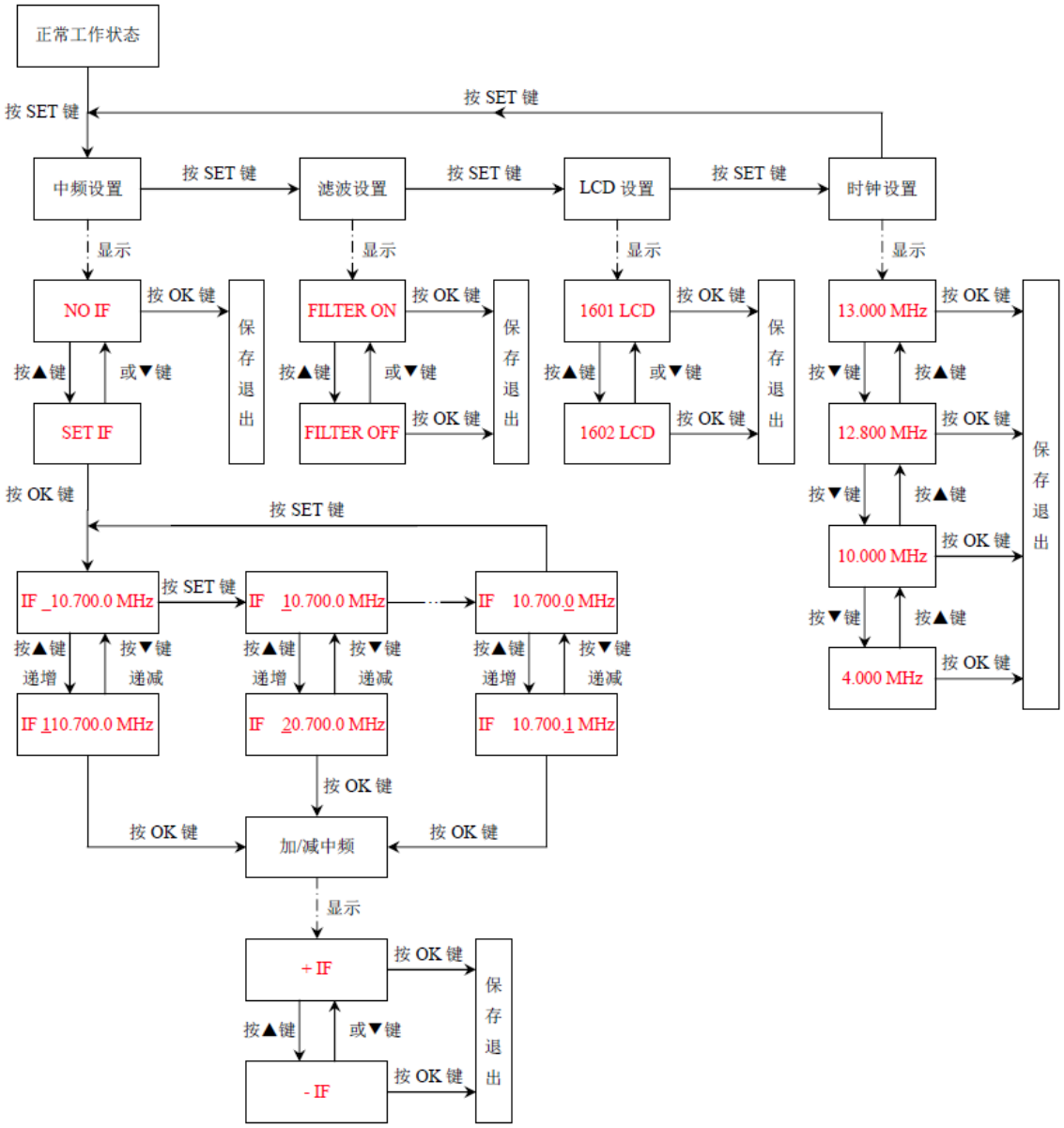
Working channel settings



System Reset



Advanced Settings



Note: actually displayed in red text to display information.

Menu details

(1) If set

① NO IF (If free)

Displays the frequency of the measured frequency.

② SET IF (MF)

Displays the frequency is measured by the frequency and/After reduction-if frequency.

Selecting this item displays the current frequency value, one of the digits are underlined below for current changes, press ″ ▲】Or the key ″ ▼】Key to change the value, press the ″ SET】Keys underline moves to the next digit, then press ″ ▲】Or the key″ ▼】Keys to change the values, and so on until the frequency value is set, press ″ OK】Key after entering/Medium frequency reduction settings, press ″ ▲】Or the key ″ ▼】Key change plus or minus, and then press ″ OK】Button to complete the intermediate frequency interface settings and return to work. If adjustment, press ″▲″or key ″″-digital connection, you can speed up the set speed.

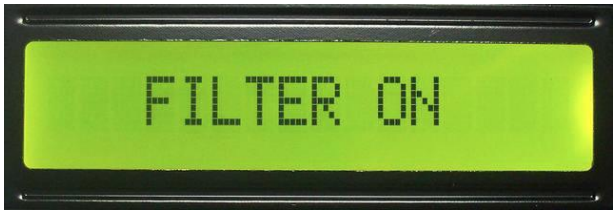
(2) Showed filtering

① FILTER ON (Filter enabled)

In order to avoid illusion caused when there is no signal input clutter signal count Filter frequency < 3MHz Signal frequency display the main page 0.00000 MHz 。

② FILTER OFF (Filtering disabled)

Frequency < 3MHz Filter processing of signals. Measuring frequency <3MHz signal should choose this setting, otherwise the display 0.00000 MHz.



（3）LCD Type

① 1601 LCD

1601 Character LCD screen.

② 1602 LCD

1602 Character LCD screen.

Note: according to the actual use of LCD Type settings, error setting will display exception, such as 1602 Appeared in two line display, 1601 After the 8 Characters are not displayed.

（4）Datum selection

① 13.000 MHz

The machine onboard Benchmark (The default).

② 12.800 MHz

12.800 MHz External Benchmark Settings.

③ 10.000 MHz

10.000 MHz External Benchmark Settings.

④ 4.000 MHz

4.000 MHz External Benchmark Settings.

Note: If using an external Benchmark, Please cut off the built-in Base power supply or output Pathways, such as removing bead B4And so on.

Supplementary Explanation

- Key Function

work under the interface button function

【SET】Key: to enter the menu

【▲】 Key: change the gate

【▼】 Key: to change the channel

【OK】 Key: None

Menu interface under the button function:

【SET】Key: Sets the next bit of the IF value

【▲】 Key: Previous item / Numeric increments

【▼】 Key: the next item / digit decrement

【OK】 Key: to confirm and exit the menu

- Press each function【OK】

Button to exit the menu to return to the instrument work interface, the settings are automatically saved, the next boot directly call, without re-setting。

Restore factory settings: press and hold in the shutdown state【SET】 Button, turn on the power to LCD
The screen backlight lights up and is displayed
Restore factory settings: press and hold in the shutdown state【SET】 Button, turn on the power to
LCD The screen backlight lights up and is displayed **Complete!** Then release 【SET】button, the instrument can be restored to factory settings, the instrument should not perform this operation is not normal.

(E) frequency measurement

1. Cable way

RF INPUT (Signal input) connection port and the signal measured by the test line frequency. Measurement of the vibration signal.

2. Induction methods

RF INPUT (Measuring input) port connected to the test antenna, induction measurement frequency of the transmitted signal. Wireless transmitting equipment such as radio frequency measurements.

Measurement of high voltage and high frequency radiation signal, cable should be threaded resistance, Induction Frequency meter should be far away from the radiation source, so as not to damage the instrument.

Ordering products

To facilitate testing, **Three sword Studios** provides small volume production, procurement or agents please enter the main page search Taobao "Studio three sword" or "PLJ-1601" keyword, or contact the Studio directly. Scan the QR code on the product packing bag and sealing label into the Web site to obtain product related technical support.

Product description:

- SMD devices installed
- Reflow soldering process
- LCD 1601
- Nickel plated copper post installation
- No power, no case
- Debugging product

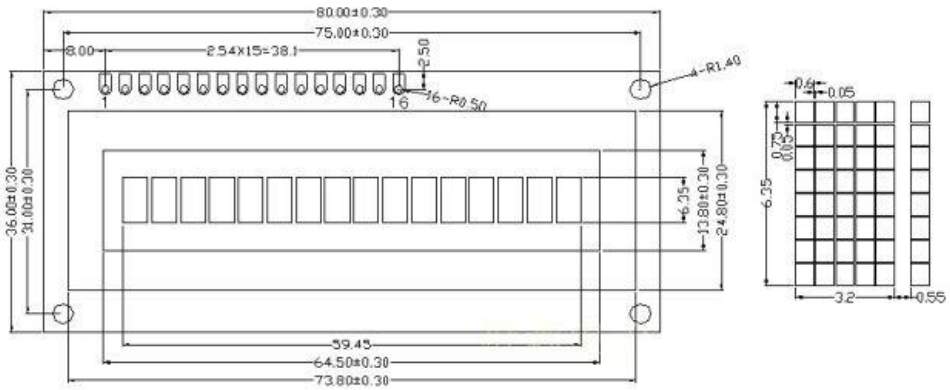
Packing list:

- Host
- XH2.54-2P 20cm Single line Two
- Anti-static bags

Notes:

- Suite two distribution XH2.54-2P 20cm Single line, please do not use color as the polarity of the judgment, outlet before accessing the host to determine the polarity, read the contents of the operation section of this manual for details。
- Power entry has two ports, host bottom Φ3.5mm DC Socket (Uchimasa negative) and next to it 2P Square socket, please enter according to actual situation 9-12V Power supply.
- Market LCD Mounting hole size differences, such as configure LCD Screen shall comply with the specifications of the drawings.
- LCD Screen with four stainless steel screws, if panel mounting is required, please go into four 8 mm Copper cylinders, or notify us prior to shipment to replace.
- LCD Without backlight broken backlight power supplies (unsolder Board top 0 European resistance).
- If an external reference is required, please switch off the onboard clock channel, and ECK Socket input specification of reference signal.
- Native display no signal input may be zero, this is normal and does not affect the normal measurements and accuracy.

- Do not place the instrument in hot, humid and dusty conditions and should avoid using by violent vibrations.
- Native built into the clock reference used rubidium atomic clock correction, sensitivity to the best, do not adjust.
- In the warranty period under normal use conditions for one year. Warranty does not apply to misuse, modification, such as under abnormal conditions cause damage to the product.



1	2	3	4	5	6	7	8
VSS	VCC	VEE	RS	R/W	E	DB0	DB1
9	10	11	12	13	14	15	16
DB2	DB3	DB4	DB5	DB6	DB7	LED+	LED-

About DIY

MB501 MB506 Instead, 74HC151 Can also be used instead of other similar products, but higher working frequency of the series should be selected, PIC16F648A Cannot be used instead of other devices, these devices can be found on the net.

Commercially available LCD1601/1602 Backlight current difference is very big, I do the screen backlight power consumption 20 mATo 200 mA Range, at the time of the evaluation version ASM1117-5V As a regulator, the backlight turns off power 200 mA Cases, fever seriously, eventually switching to larger 78M05 。

Programming has been set up in the download file, most of the programming is read into the programming function, without manual intervention. If your programming device is not recognized, crystal type select HS, the remaining option is turned off.

Summary version before all the conditions included in the programming document released by the Forum was limited to use, start up25 When displayed "BETA VERSION" Restrictions continue to use Reset method as using the system in operation at this time (by holding down the SET Key to boot) can be back to normal. In addition, the hardware and software without any technical pitfalls.

PS: all in **hellocq.net** Publishing frequency data

2008-11-03：http://www.hellocq.net/forum/read.php?tid=189583

2008-11-04：http://www.hellocq.net/forum/read.php?tid=189696

2008-11-05：http://www.hellocq.net/forum/read.php?tid=189718

2009-03-30：http://www.hellocq.net/forum/read.php?tid=200868

2011-04-27：http://www.hellocq.net/forum/read.php?tid=264417

2011-12-14：http://www.hellocq.net/forum/read.php?tid=282626

2013-03-22：http://www.hellocq.net/forum/read.php?tid=312288