36536-TE

7-digit LCD Frequency Counter Module

PLJ-0802-A

V 1.0

SANJIAN STUDIO™

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PRECAUTIONS

- Two XH2.54-2P 20cm cables are included in the package. Please note That these 2 connectors are keyed in reverse to each other.
  Power: Red to + Symbol on board, Black to - Symbol
  Signal: Red to ~ Symbol on board. Black to "Gnd"
  Check the color polarity and connect correctly. Check the wiring polarity of the socket assembly before applying power, and read the manual before using the module to understand its operation.
- Do not place the instrument in hot, humid, or dusty environments, and mountings should prevent severe vibration.
- After module is manufactured; the reference frequency oscillator was aligned using a rubidium reference. The sensitivity adjustment has been optimized so do not adjust unless necessary.

OVERVIEW

PLJ-0802 intelligent frequency meter is a frequency measuring instrument specially designed for embedded applications. It's small, simple and reliable. Mainly used for DIY transceivers to display frequency value, and can also be used for conventional frequency measurement.

Main features of this frequency meter are as follows:

- Microchip PIC16F648A forms the core of the 2.4GHz frequency meter.
- Frequency reference using a temperature-compensated voltage controlled crystal oscillator (2.5 ppm VC-TCXO).
- Dual mode IF modes allow the offset value and the IF up / down mode to be separately preset.
- Using LCD0802 liquid crystal display, it can display up to 7 digits, and the zero is automatically blanked.
- Reverse power protected connection design, low power consumption battery power supply scheme.
- 2 Button Control
- Setting is automatically saved in EEPROM, and it will be recalled directly at next startup.

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TECHNICAL SPECIFICATIONS

1. GATE TIME

- 0.64sec

2. CHANNEL MEASUREMENT PERFORMANCE (CHANNEL LEVEL HIGH IMPEDANCE)

Measuring Range: 1 MHz ~ 1.2 GHz Accuracy: ± 100Hz

Channel sensitivity: (HM8134-2 Test Signal Generator)

Frequency (MHz)	5	10	30	60	100	150	200	300	450
mV RMS	35	20	10	3	3	4	8	15	12
Frequency (MHz)	500	550	600	700	800	900	1000	1100	1200
mV RMS	14	30	65	80	80	35	175	270	310

3. IF SETTINGS

Independent double-IF design allows the IF settings to be adjusted in minimum increments of 100 Hz.

- Intermediate frequency range: 0 - 999.9999 MHz
- Offset: It can be set to add to subtract from intermediate frequency

4. FREQUENCY REFERENCE

13.000MHz temperature compensated voltage controlled crystal oscillator (VC-TCXO) in 5032 package

- Frequency stability: ± 2.5 ppm

5. SUPPLY

- DC Input: 9V - 12V (Reverse polarity protected)
- Current: <55 mA max (Test conditions Backlight on)

6. DISPLAY

- Readout: 0802 2 line x 8 Character Backlighted LCD

8. Connections

- DC IN (Power Interface): JST-HX2.54-2P socket
- RF IN (signal input): JST-HX2.54-2P socket
- ICSP (programming interface): 2.54-6P Pin-Header

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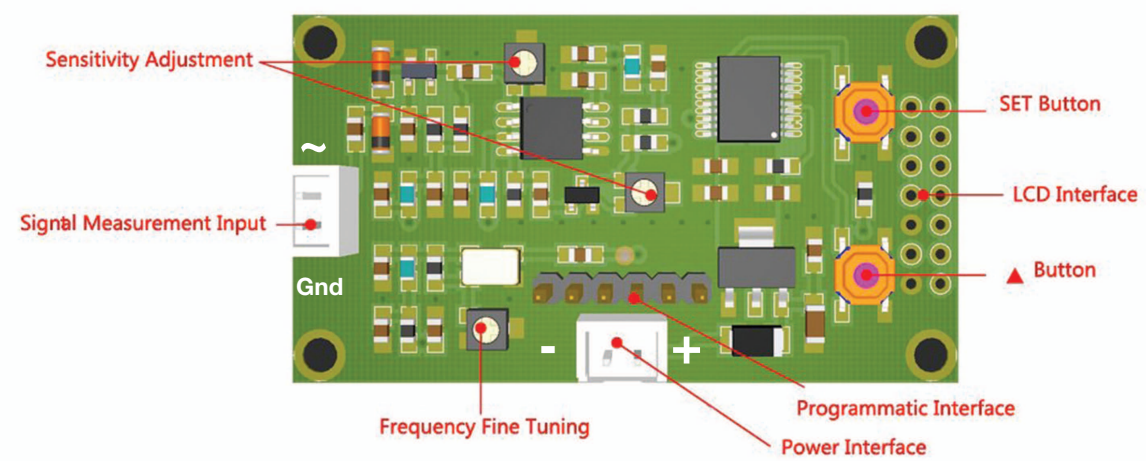
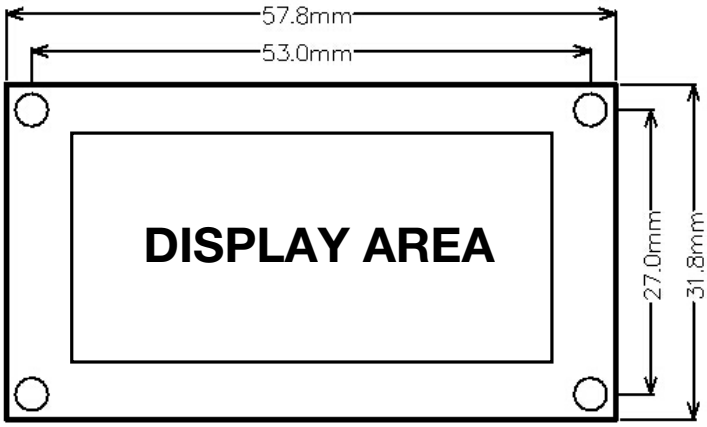
OPERATION AND USE

1. MODULE ARRANGEMENT and MOUNTING





2. USING THE MODULE

(A) PREPARATION

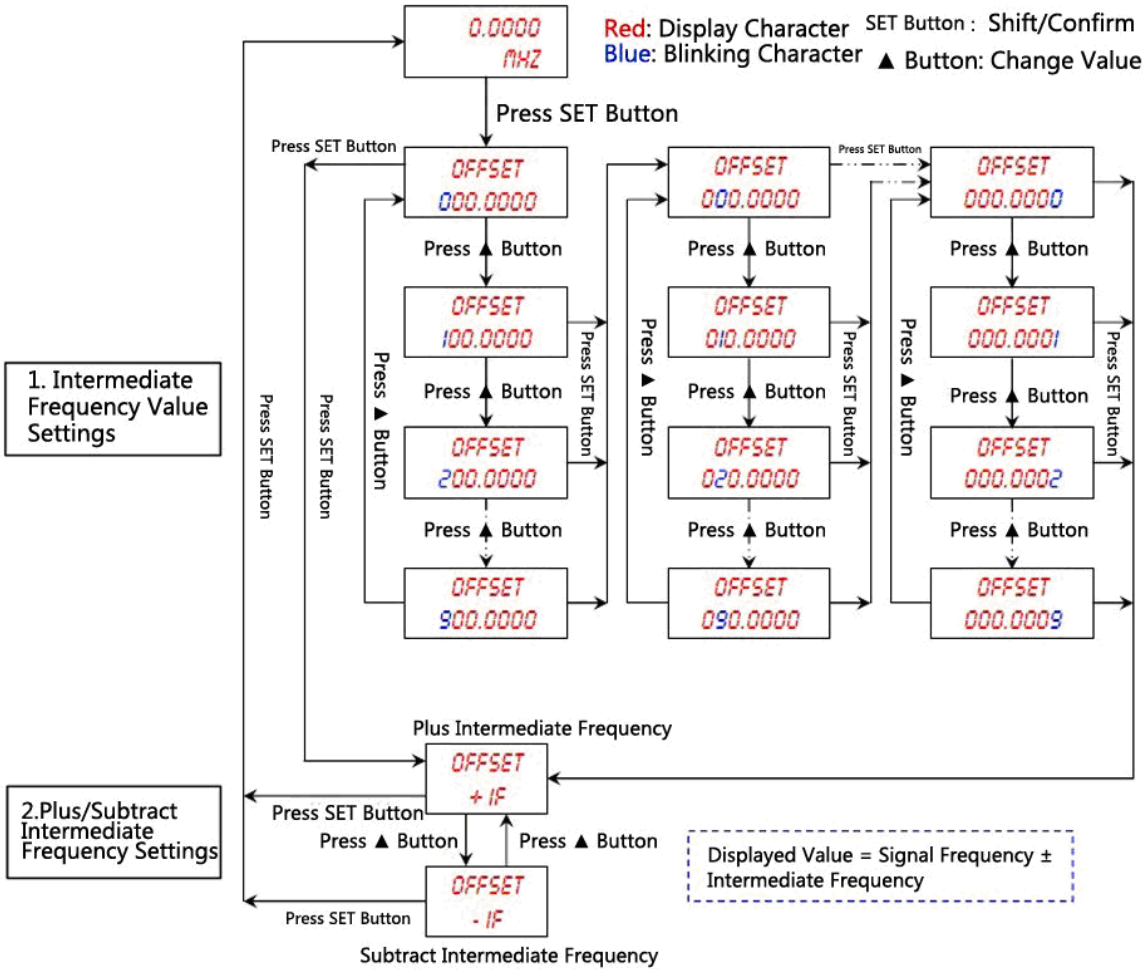
1. Please check the power supply voltage (DC 9V-12V) and confirm the power supply polarity before use. The power supply circuit in the module has a series diode fitted to prevent operation when the power supply is inadvertently connected with reverse polarity. This protects the module from devastating consequences.

2. The signal input (2-pin) port may be connected directly to the measured signal (wired) or to an antenna (inductive mode).

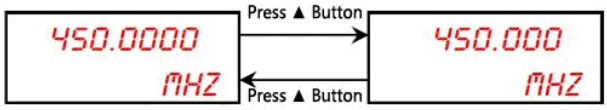
3. Turn on the instrument and warm it up for a few minutes, and then perform the measurement operation after the frequency reference is stable. After the measurement, perform the measurement operation.

3. MENU STRUCTURE

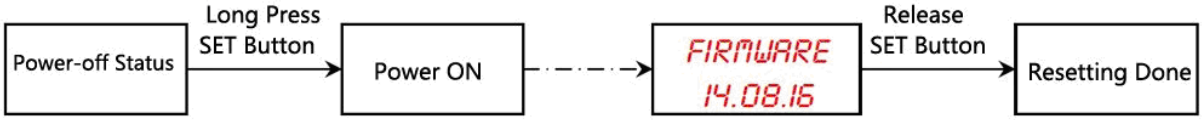
Intermediate Frequency Settings



Display Adjustment(Right Shift Single Bit)



System Resetting



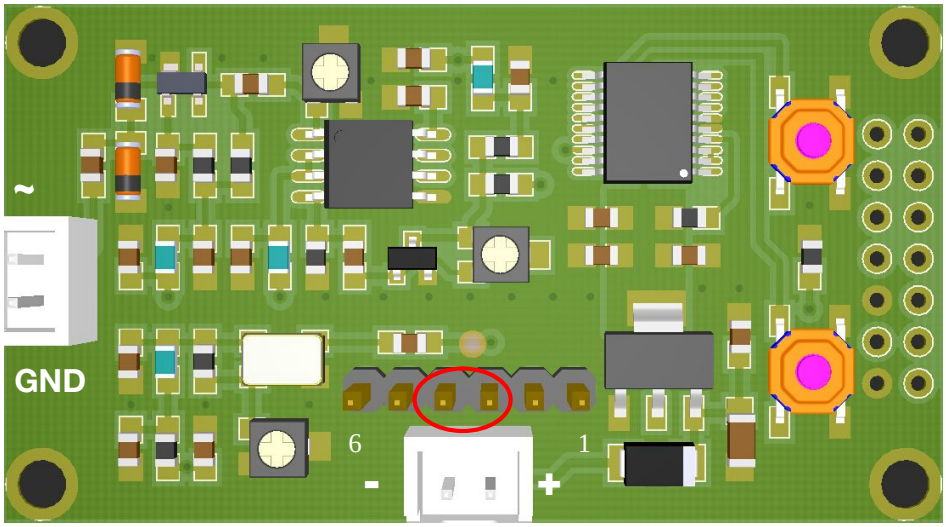
4. SELECTION OF IF FREQUENCY

1. One of two IF frequencies may be selected by using pin 4 of the ICSP programming interface. If pin 4 is pulled High or left floating, then the first IF frequency is used. If pin 4 is pulled to ground, then the second IF frequency is selected.

2. Each IF frequency can be independently programmed with IF frequency and offset (Add or subtract). The first IF settings are programmed when pin 4 is pulled High or left floating, and. the second IF settings are programmed when pin 4 is pulled to ground.

3. The default factory programming sets the floating pin 4 as the first IF configuration. If the IF is zero, then the Up/Down setting is ignored.

4. In practice, pin 3 (GND) and pin 4 of the ICSP programming interface ICSP can be connected to a 2P DuPont connector immediately adjacent or on the pins (See location circled in red below). A switch can then be connected to select the appropriate IF setting.



ICSP：

Pin	1	2	3	4	5	6
Function	VPP	5V	GND	PGD/IF SELECT	PGC	AUX

5. Meausurment Connection

1. Hard Wired:

Connect Test Meter to the signal measurement point with an appropriate test cable. Direct connection to Transmitter antenna port requires impeadence matching & may require the use of attenuator(s). Excessive signal will damage meter.

2. Sensing Method

Connect Test Meter using inductive coupling to the transmitter under test.
Due to the high impedance input of meter; High power Radio frequency transmitting devices may require the use of attenuator(s).
Strong radation fields may require meter shielding and moving meter away from source as well as attenuator(s).

NOTE: Signal level < 50mV RMS may cause unstable readings.)