

PLL FM Exciter

Model: PLL-10805W



User Manual

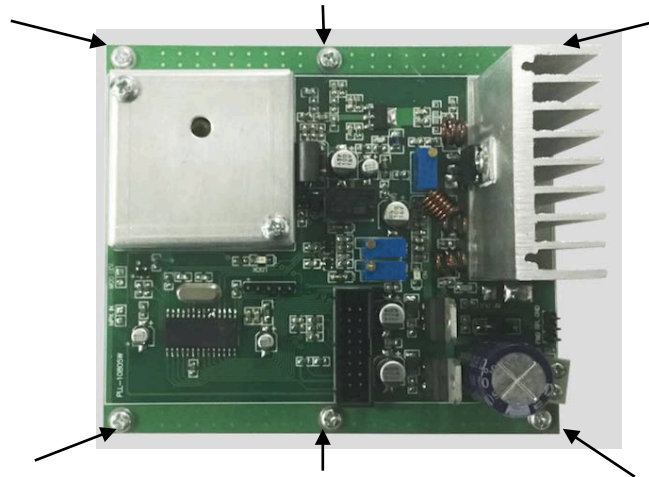
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General Information

The PLL-10805W is the new design for FM transmitter. It is especially suited for audio and data links, packet radio, and remote control. The PLL-10805W was designed to provide a single-channel FM transmitter for transmit in the VHF bands.

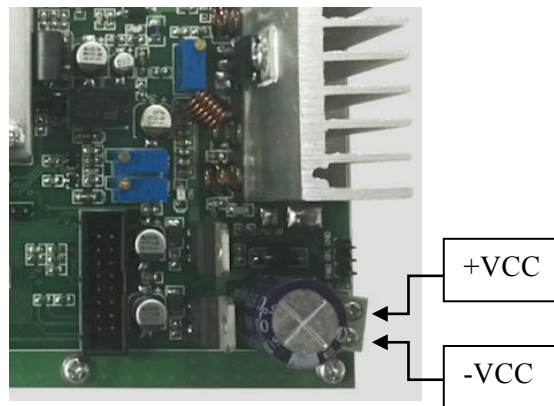
Installation Mounting

Some of support should be provided under the PC board, generally mounting the board with 6 holds. The transmitter board relies on the mounting hardware to provide the DC and RF output ground connections to the ground plane on the board.



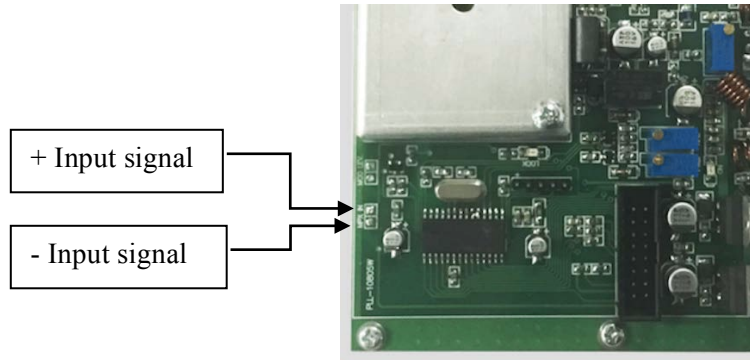
Electrical Connections

Power supply should be connected to the connector on the PC board with at least 22 AWG wire, which can be extended to a connector or feed through capacitors used on the cabinet in which it is installed. Be very careful not to route the wiring near RF components on the board, for instance underneath the board. The receiver operates on +12.0 to +15.0 VDC at about 2000 mA peak with full RF output. A well-regulated power supply should be used. Be sure that the power source does not carry high voltage or reverse polarity transients on the line, since semiconductors in the transmitter can be damaged.



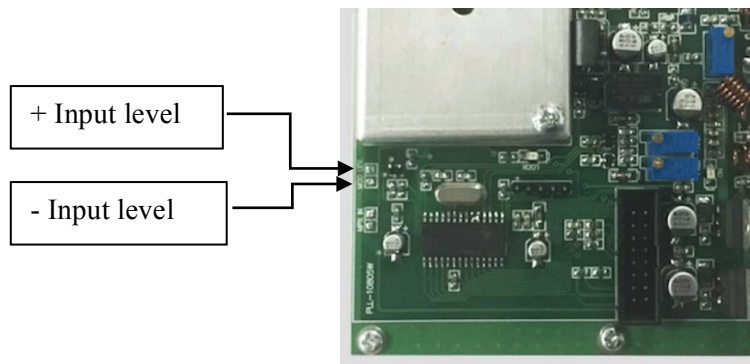
Input signal Connections

Be sure to observe polarity! Signal. You can connect audio or MPX signal to this module.



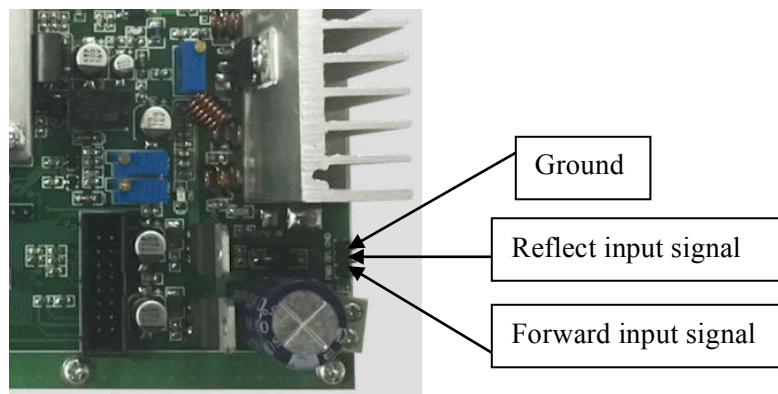
Modulation level input Connections

This connection suitable the signal from model : STE 10012 stereo encoder board. It can be display the modulation level on LCD screen.



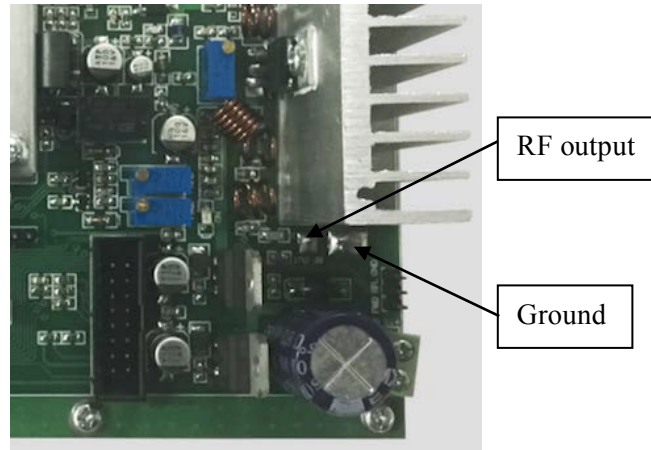
Forward and Reflect monitor Connections

The point connection should be reading from the amplifier module. This input signal support for VDC only and input maximum to +5 VDC. (**!!! Please carefully for MCU damage if the over signal input**). It mean this exciter can be monitoring the rf power both forward and reflect on LCD screen.



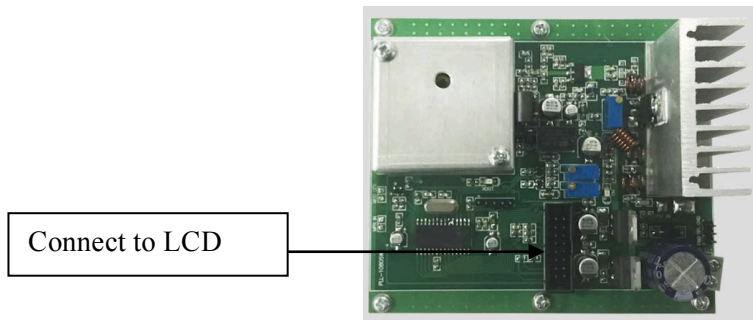
RF Output Connections

The RF output connection should be made to the transmitter with a solder pad on module. If you want to extend the RF output connection, we recommend using a short length of RG-316 coax with the plug and keep the pigtailed very short.



LCD Connections

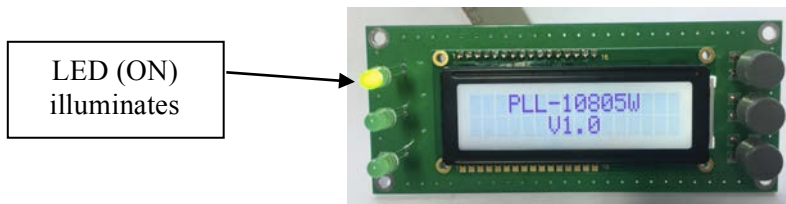
The LCD can display as 16x2 typical. You can connect to transmitter board.



Operation

Turn on

Be sure that the power source does not carry high voltage or reverse polarity transients on the line, since semiconductors in the transmitter can be damaged. After you turn on, The LCD can be displayed as:



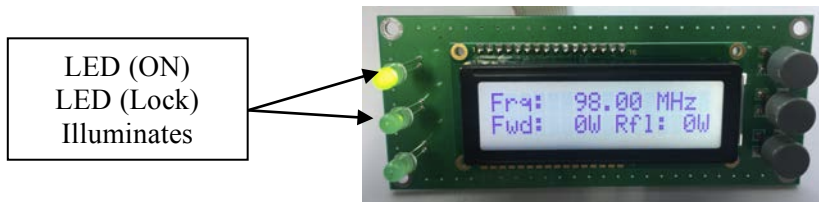
Then the LCD will displayed as:



The PLL of transmitter will tune. After the PLL is locked to the frequency, LCD will be displayed as:



If no input signal from Forward and Reflect, LCD will be displayed as:



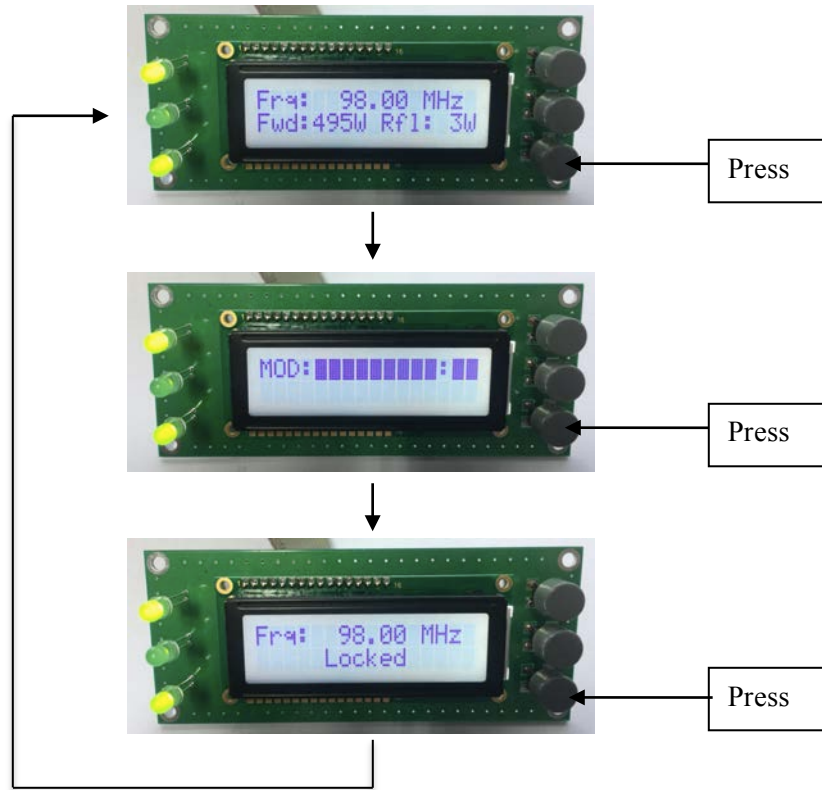
Display

After the module turn on, the exciter can be change the menu display. Such as frequency, modulation level and RF power monitor.

LCD display as default page after the frequency is locked:

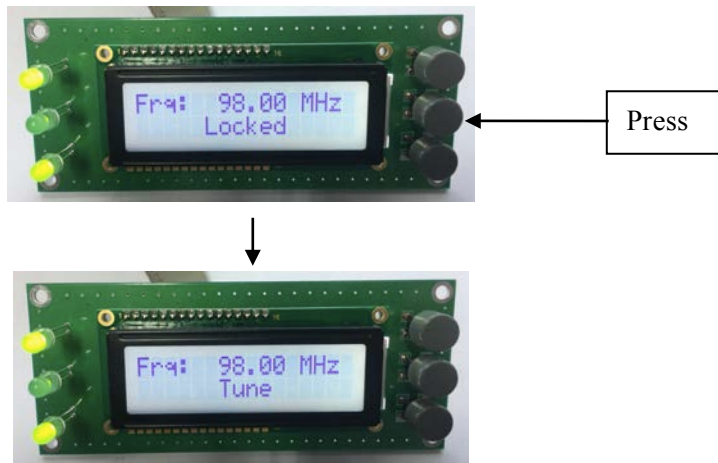


Press the bottom on right panel, the LCD will be displayed as:

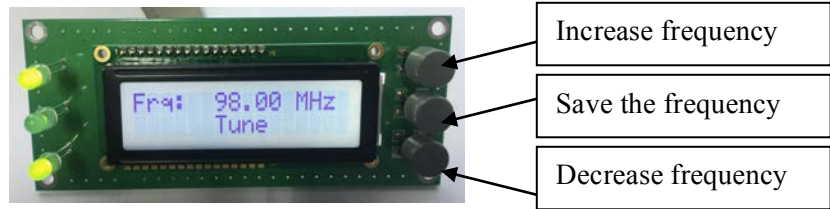


Frequency Setting

This menu lets you read and set the operating frequency.



You can modify the set frequency using the UP (the frequency increases) and DOWN (the frequency decreases) push buttons. After having set a new frequency value, the exciter will release from the current frequency and it will latch onto the new operating frequency.



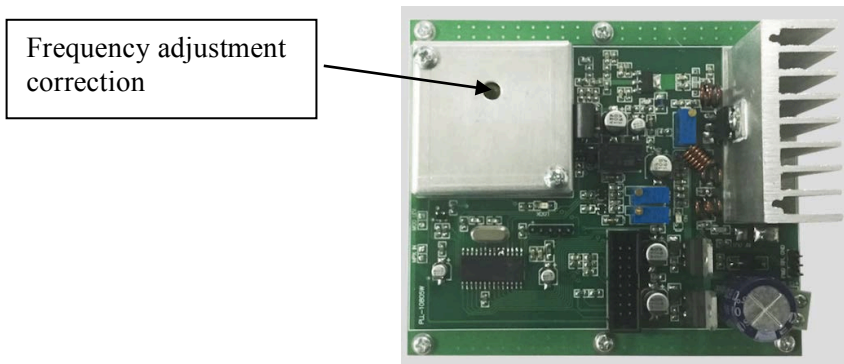
After save the frequency, the display can be show as:



Adjustments

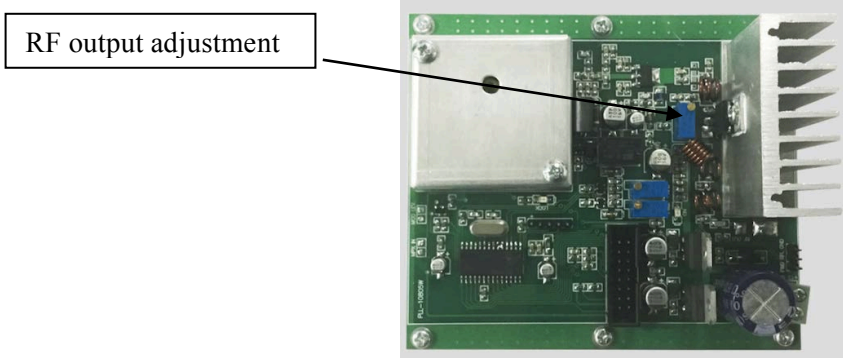
Frequency correction

The frequency from VCO will oscillator as frequency setting. The frequency can be error in the long time in use. You can adjustment to frequency correction by varicap as the picture as below.



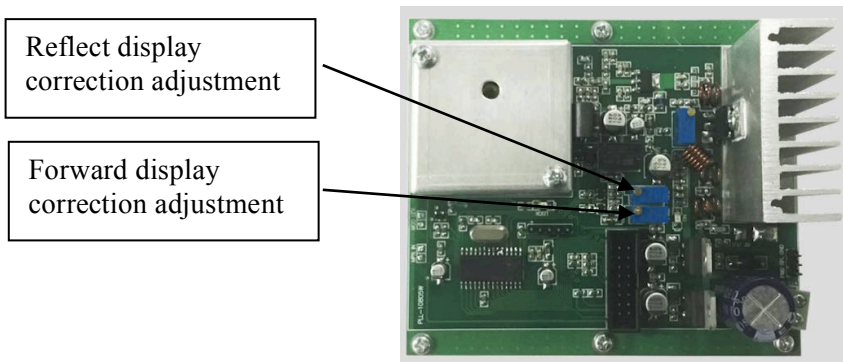
RF output adjustment

You can adjust to RF output from 0 to 5 watt by potentiometer.



Forward and Reflect display adjustment

You can adjust to correction of forward and reflect display value by potentiometer.



TROUBLESHOOTING

General

The usual troubleshooting techniques of checking dc voltages and signal tracing with an RF voltmeter probe, oscilloscope and spectrum analyzer will work well in troubleshooting the PLL-10805W. DC voltage charts and a list of typical RF output levels are given to act as a guide to troubleshooting. Although voltages may vary widely from set to set and under various operating and measurement conditions, the indications may be helpful when used in a logical troubleshooting procedure. The most common troubles in all kits are interchanged components, cold solder joints, and solder splashes. Another common trouble is blown transistors and IC's due to reverse polarity or power line transients. Remember if you encounter problems during initial testing that it is easy to install parts in the wrong place. Don't take anything for granted. Double check everything in the event of trouble.

Alarm over reflect

In case of LCD display is **over reflect**.



It mean, the reflect of the load or antenna (reading from amplifier sensor) more than 30 W. In this case, you must turn off this exciter. Please check the load or antenna, be sure that the load and antenna is ok. Then, turn on the exciter.

Current Drain

Power line current drain normally is about 2000 mA with full RF output. If the current drain is approximately 2000 mA with no RF power output, check to see if voltage regulator is hot. If so, and the voltage on the 12V and 5V line is low, there is a short circuit on the somewhere. If you clear the short circuit, the voltage should rise again

Hum and Noise

The VCO and loop filter are very sensitive to hum and noise pickup from magnetic and electrical sources. Some designs use a shielded compartment for VCO's. We assume the whole board will be installed in a shielded enclosure, so we elected to keep the size small by not using a separate shield on the VCO. However, this means that you must use care to keep wiring away from the VCO circuit at the right side of the board. Having the board in a metal enclosure will shield these sensitive circuits from florescent lights and other strong sources of noise. Because the frequency of a synthesizer basically results from a free running LC oscillator, the tank circuits very sensitive to microphones from mechanical noise coupled to the coil. You should minimize any sources of vibration that might be coupled to the transmitter, such as motors. Excessive noise on the dc power supply that operates the transmitter can cause noise to modulate the synthesizer output. Various regulators and filters in the Receiver are designed to minimize sensitivity to wiring noise. However, in extreme cases, such as in mobile installations with alternator whine, you may need to add extra filtering in the power line to prevent the noise from reaching the transmitter. Other usual practices for mobile installations are recommended, such as connecting the + power and ground return lines directly to the battery in-stead of using cigarette lighter sockets or dash board wiring.