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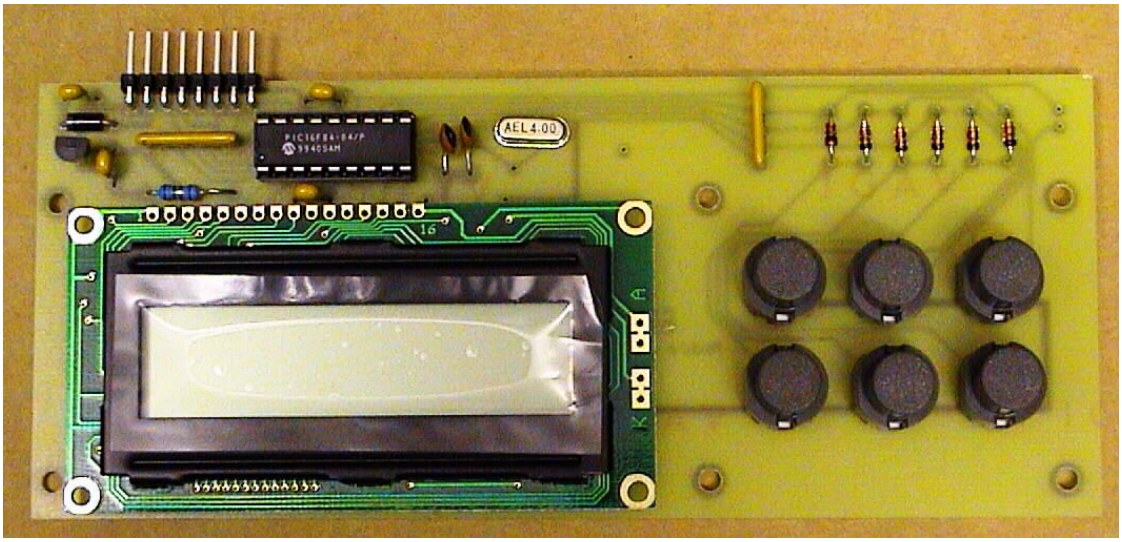
"10GHz" Tx-only LCD controller technical information
– unsupported software -

Important notice

This software is only supplied to special request, and is unsupported. This document provides information to assist using the controller with one of our transmitters. This information is provided on an 'as-is' basis and no representation is made that this information is complete or 100% accurate. This document is provided as-is, without any warranty.

You are reminded that it is an offence to use a transmitter outside the terms of your license.



The LCD controller

Specification

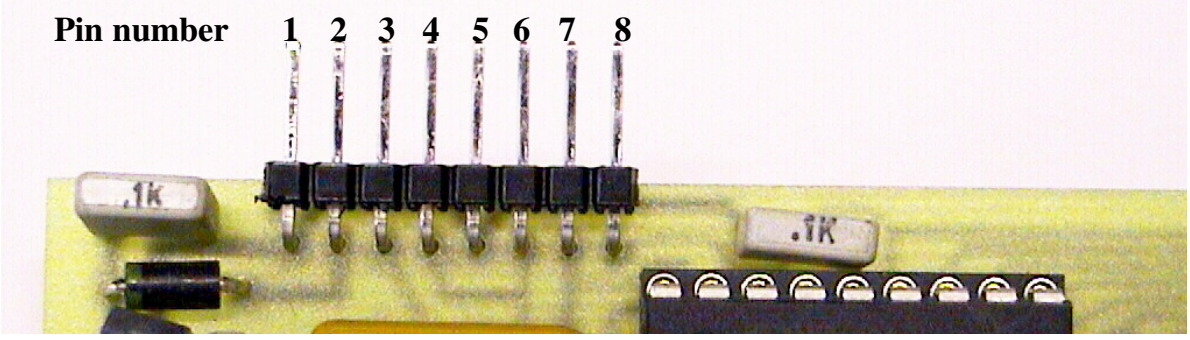
The controller is capable of driving a transmitter between 300MHz and 3GHz, and displays 4x the operating frequency (e.g. a transmitter actually operating at 2.5000GHz will be shown as 10.000GHz). Most of our "13cm" transmitters are capable of operating up to at least 2.6GHz (10.4GHz). It is intended to be used with a frequency quadrupler connected to the Tx output.

Installation

Switch off the transmitter. Remove the 18 pin PIC chip (if fitted) from its socket on the transmitter PCB.

Identifying the connections

This is the pinout of the LCD controller. The Molex pins are an optional fitting.

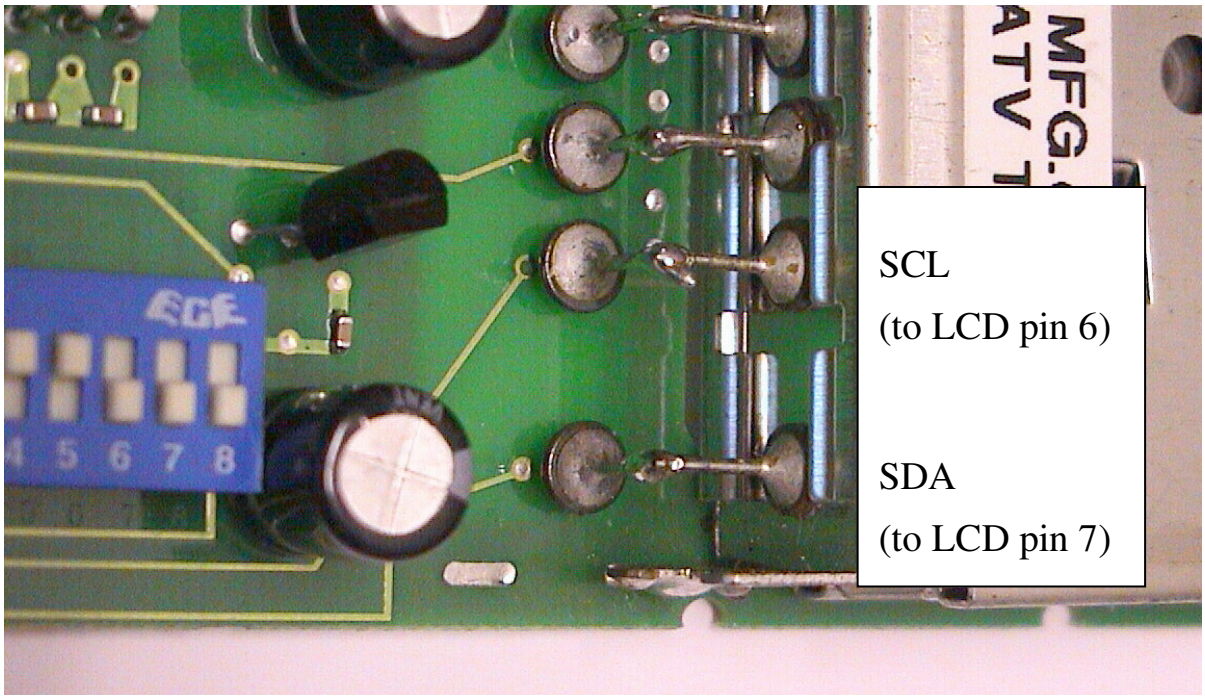


Identifying the controller pins

The pin assignments are as follows:

Controller pin	Function
1	0V (ground) from power supply – must also connect to Tx 0V line
2	+12V from power supply (14V maz, 9V min)
3	do not use
4	do not use
5	0V (ground) to transmitter
6	SCL (serial clock) to transmitter module
7	SDA (serial data) to transmitter module
8	do not use

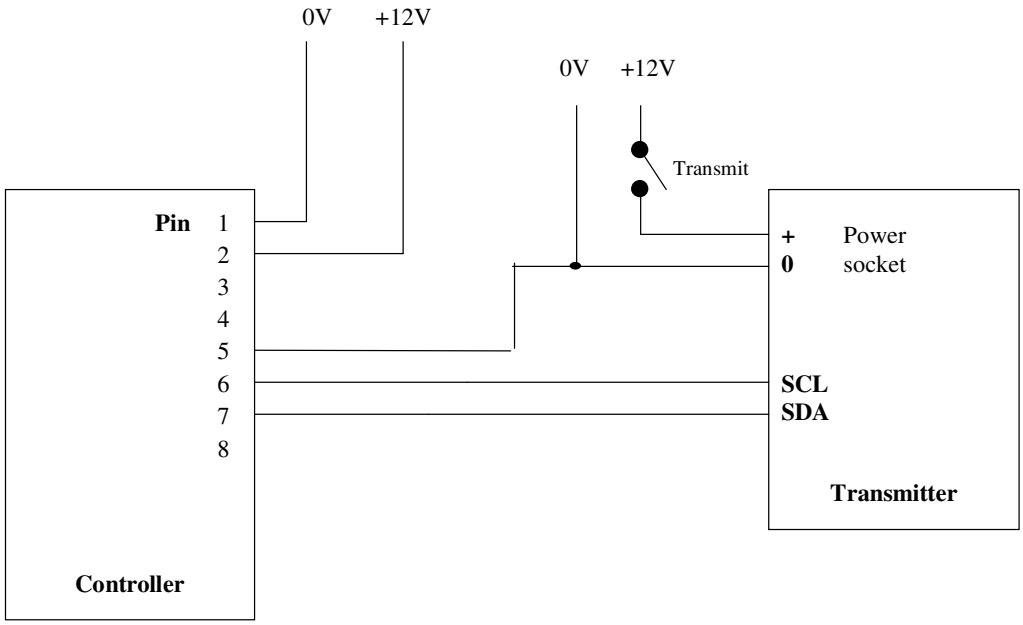
Identify the SCL and SDA pins on the transmitter module. The SDA pin is the bottom one, and SCL is the next one up.



Transmitter pin identification

Wiring diagram

Wire up the LCD controller and transmitter as shown in the following diagram.



Wiring diagram

The controller is designed to be used fairly close to the transmitter modules. We recommend that the connections between the controller and transmitter are no more than about 1m (40") maximum. The actual maximum for reliable operation depends on the capacitance of the cable. The capacitance to ground and to each other of the SCL and SDA wires should not exceed about 200-300pF. You may be able to get away with longer interconnections by using low-capacitance cabling but we cannot guarantee success. If you need significantly longer connections, you can use Philips I^2C Bus Extender ICs, P82B715, to drive the lines. You will need two ICs – one at the controller end and one at the transmitter end. We have heard reports of people running up to 30m of control cable using these ICs, which are available from Farnell and other suppliers. At the time of writing (April 2001) the ICs cost about £5.

Important notes about your transmitter

Power supply

The transmitter requires a supply of supply of 12 to 15V DC, tip positive. Reverse polarity will cause very serious damage. The transmitter gives best output power at 13.8V or more. Do NOT use less than 12V.

Video and audio connections

Video and audio connections are as follows:

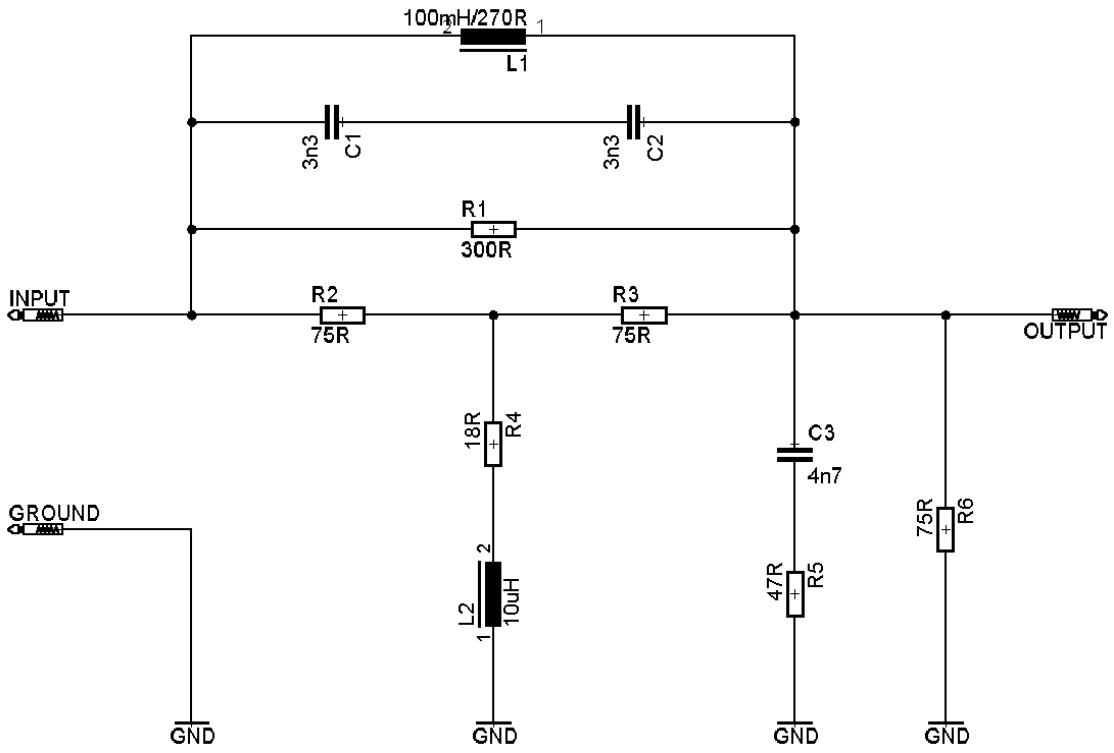
- Yellow phono socket - composite video
- White phono socket - audio for 6.0MHz subcarrier
- Red phono socket - audio for 6.5MHz subcarrier

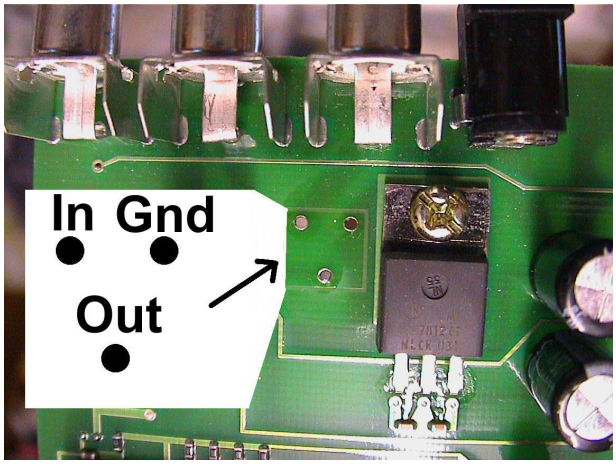
Setting up the transmitter

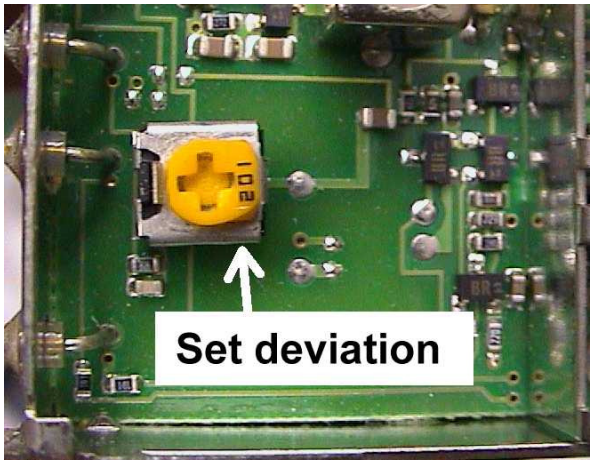
As supplied, the transmitter has an input impedance in the region of 220 ohms, and the video gain (deviation) is set using the pre-set pot on the board.

CCIR pre-emphasis

The following circuit can be used to add CCIR pre-emphasis. Remove the existing deviation preset pot to fit the circuit. Deviation can be set using the pre-set pot inside the RF module.







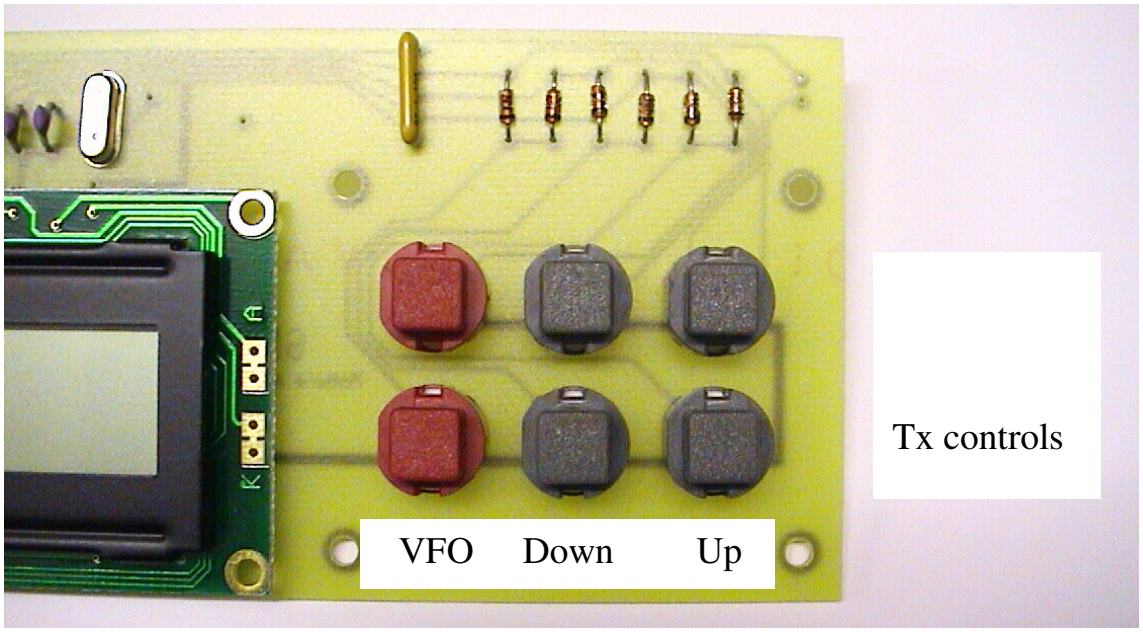
Left : remove dev. pot to fit circuit

Right: deviation pot inside module

Operating instructions

When you switch on the controller, a sign-on display will appear briefly, which will then be replaced by a display of the transmit frequency (4x actual operating frequency).

Note that it is possible to drive the transmitter at frequencies it is not capable of operating at (e.g. 12 GHz). The normal limit for 13cm transmitters is about 2.6GHz (10.4GHz) but some will go a little higher than this.



Identifying the pushbuttons

The Up and Down buttons increase and decrease the frequency. The VFO button swaps between the three Tx VFOs. Frequency changes are immediately sent to the transmitter. The tuning rate is initially quite slow, and it speeds up if you keep a button pressed.

The controller stores the Tx frequencies in internal memory after a short delay. An underscore (_) is shown on the display beside "Tx" while the controller is waiting to store the frequencies.

- The reason for this delay is that the memory only survives a few million write cycles and is relatively slow. If the memory was written every time the frequency gets changed, it would reduce the maximum scan speed and the memory would be destroyed after a few weeks of continuous scanning.
- **Do NOT switch the controller off while the underscore (–) is showing or the controller may be damaged.**