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062 LCD Oscilloscope

Assembly Notes

Applicable Models: 06203KP, 06204KP

Important Notes

1. Some components shown in the schematic and PCB layout are for options or adjustments. They do not necessarily need to be installed. Components to be installed are listed in the part list. Please ignore those components that appear in the schematic but not in the part list.
2. Users should pay special attention to polarity and orientation for some components. These components include diodes, transistors, electrolytic capacitors, ICs, connectors, etc. Incorrect installation of such components may result in damage of parts and malfunction of the instrument.

Check Contents

Users are encouraged to check contents against the Part List before installation. If any missing/broken parts are found please report to your vender and JYE Tech (**support@jyetech.com**) **immediately.** Your email should include following information:

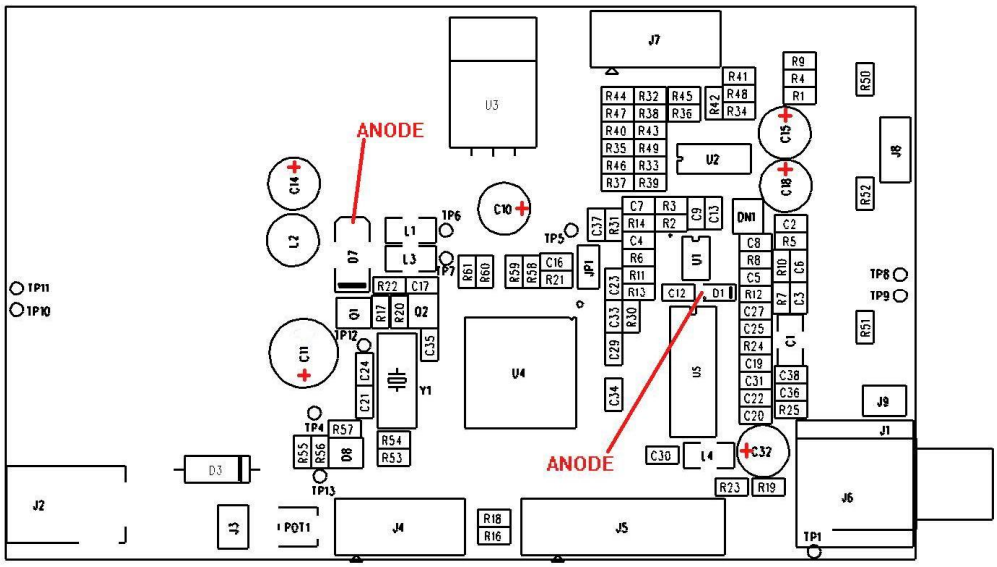
1) Your name and contact method
2) Vender's name
3) Copy of receipt (or order confirmation) that indicates the contents and date of your purchase.
4) List of missing/broken parts and quantity.

Note 1: Power adapter is not included in the kits. Users need to prepare a 9 – 12 V (>300mA capacity) DC power supply

Note 2: J6 (RCA jack) is included in the kit for jury-rig. If more professional feel is wanted there is a BNC Probe Kit (PN: 603-06201) available which includes J1 (BNC connector).

Identify PCB:

Look at the back side (the side with many footprints for surface mount devices). On its top-left corner you should see the PCB part number. It should be "**109-06200-00C**". If you see something else then it will not match this instruction.

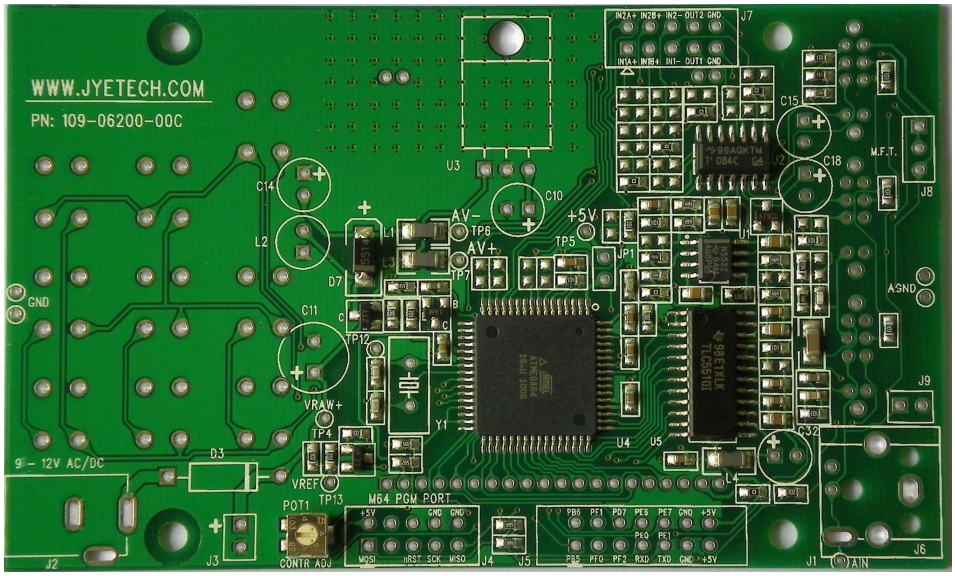


Component locations (back side)

SMD parts soldering

(To be completed)

[Note: This section only applies to kit 06203KP. Skip this section if the kit you purchased is 06204KP]



All SMD components soldered

Through-hole Component Soldering

Please following these steps to do the assembly.

Step 1. Install diode D3

Diode is a polarized device. Before soldering make sure its cathode (the end with white strip) goes into the hole with white bar as shown on PCB.

Step 2. Install electrolytic capacitors

Electrolytic capacitors are polarized devices. The electrolytic capacitors used in the kit are aluminum electrolytic capacitors. Usually their longer leads (if have not been cut before) denote positive pole. The white strip on their body denote negative pole. The correct installation for these electrolytic capacitors is to put their positive pole into the holes with square pad.

Step 3. Install inductor L2

This inductor is not a polarized device so you can install it either way. Users are reminded to handle this component with care and avoid bending its leads. This is because the magnetic wires inside are rather thin and fragile. It is easy to get opened if bended.

Step 4. Install header J4

J4 is the header for programming MCU ATmega64.

Step 5. Install connector J2

J2 is the DC power supply input connector.

Step 6. Install connector J6 (or J1)

J6 (or J1 if BNC connector is chosen) is the connector for measurement signal input.

Step 7. Install test signal terminal J8

J8 is for test signal output. It is not a real connector. Use a small piece of wire (the leads cut off the diode D7 are good for this) and make it a U shape. Solder it to the upper two holes (the middle hole and the hole with square pad) and to the height of about 0.3". Then bend it outward to form a small ring.

Step 8. Install voltage regulator U3 and its heat sink

First mount heat sink (it is threaded) to PCB with provided M3 x 10mm pan head screw. Bend the leads of U3 properly so that the leads go through the three soldering holes and the hole at the tab fit the pan head screw. Tight U3 with the M3 nut firmly. Solder its three leads at the other side.

Step 9. Check +5V power supply

Now we have finished all through-hole part installation on the component side (oscilloscope back side). Before proceeding to the rest installation we should power the board and check if there are any major errors. You need a 9 – 12V DC power supply. Please note that the center conductor of its plug should be positive. Plug it into J2 and measure voltage at TP5 with a multi-meter. The multi-meter should +5V +/- 0.2V. If it is far from this value something is wrong. Please check D3, C11, C10, and U3 soldering.

If voltage at TP5 tested ok then continue.

Step 10. Connect JP1

JP1 serves as a safeguard. It separates power supply from the rest circuits to avoid abnormal power supply burns every thing. Now that power supply is tested good JP1 can be hard connected with a piece of wire. After connecting JP1 check voltage at TP5 again. There should be not much difference from its previous value. If you find it changed significantly that indicates something is wrong with the rest circuits. You need to find out the causes before proceeding.

If the voltage at TP5 stays at +5V then you can continue to install components at the front side of board

Step 11. Install tact switches

It is important to install all tact switches upright and evenly sit on PCB. Otherwise you will have trouble in putting up the front panel later. We strongly recommend that for each switch only solder two across pins the first time. Then check and if you find switch position is uneven adjust it by touching the soldered legs with an iron while push it by hand on the other side. After you satisfy yourself with that all switches are located properly solder all the rest legs.

You need to be a little cautious when soldering SW11 and SW12 since two of the legs are pretty close to C11. Try to avoid damaging the coat of C11.

Step 12. Install slide switches

Again you need to make sure the three slide switches are soldered upright and sit evenly to avoid trouble in front panel installing. After inserting switch into PCB solder only two pins first. Then check and adjust until no uneven is seen. Solder all the rest pins.

Step 13. Install LCD module

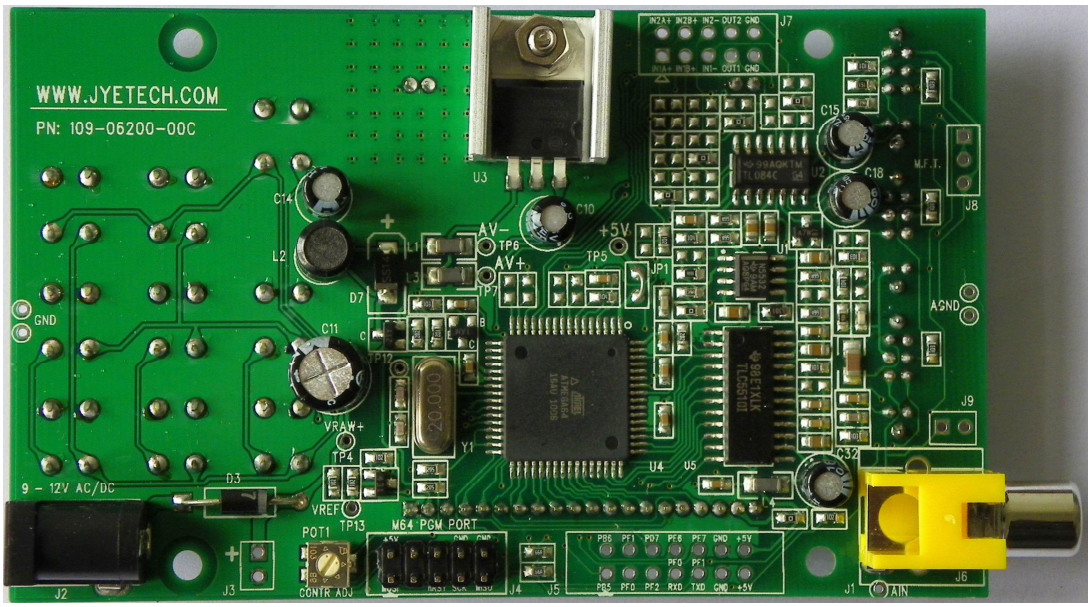
First solder the long SIP pins (the 20x pin strip) to LCD module. Look at the LCD module. You will see same number holes at two sides. Look for the holes with labels. These are where the long SIP pins should go. **[Do not solder it on the side without labels!]** Insert the shorter ends of the long SIP pins into LCD module from the side opposite to the glass and solder its two end pins first. By only soldering two end pins it will allow you have chance to check and adjust. The SIP pins need to be installed perpendicular to the LCD board. Otherwise it will not fit the main board. After you are sure of perpendicularity is guaranteed you can solder all the rest pins.

After the long SIP pins have been done follow the same way to install the two short SIP pins (2x pin strips). These two SIP pins are to be installed at the opposite ends of other side. These pins are for holding the LCD module to the main board only and are not part of the circuit. Again, they must be perpendicular to the LCD board so that the LCD can fit into the main board.

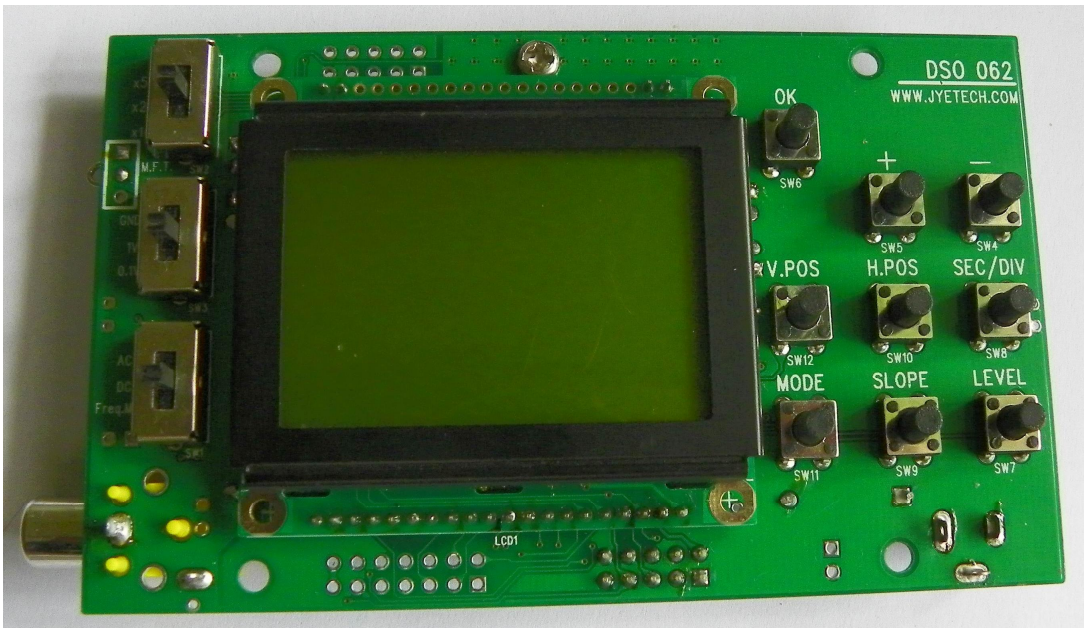
Important Note: Cut all C10 and U3 leads flash to PCB to avoid short to LCD module.

Now place the assembled LCD module into the main board. Solder the four corner pins first. Check to make sure the LCD assembly is fully inserted into the main board.

If not touch the corner pins with iron while pushing the module firmly with hand to make it fully in place. Solder all the rest pins after.



All on-board components soldered (back side)



All on-board components soldered (front side)

Verification

You can now verify your installation by powering the unit the first time. Before doing so double check your soldering. Check and make sure no leftovers (like cut-off pins) on PCB. Plug in power supply. You should see the boot sequence that briefly displays JYE Tech web address and firmware part number and enters normal operation. If LCD backlight is on but nothing displayed it could be the LCD contrast is not correct. You can change it by adjusting POT1 with a small screw driver.

Panel Installation

First install the four sets of standoffs. Then install back panel (its cut-out should align to the side where power connector locates) with four screws. Place the caps on the push-buttons and install the front panel with the rest screws. If you find some button don't work you may need to release the screws a little bit.

Revision History

Version	Date	Summary
v01	2010.04.22	First created
v02	2010.07.09	Rewrote with more detailed instructions
V03	2011.02.14	Added a note under "Check Contents" section for BNC connector J1.