

5 Channel Multifunctional PWM Controller *HomLiCon LCH5T*

ASSEMBLY INSTRUCTIONS

We highly recommend that you read the instructions in their entirety before you start assembly. When assembling a circuit board, start with the shortest components first. This way, when the board is turned over to solder, the parts rest on the table and don't fall out.

1. RESISTORS

The colored bands on the resistors indicate the resistance using a color code. This table indicates how to convert each color to its numerical equivalent. To read a resistor code, first locate the gold band and read the colors in order from the other end. (All resistors in this kit have a gold band indicating 5% tolerance.) The first two bands indicate digits in the resistance, the third band (called the multiplier) indicates the number of zeroes to be added to the digits to obtain the resistance.

To prepare a resistor for insertion into the board, bend the two leads so that they form a right angle to the resistor body. Resistor locations on the component side of the PCB are indicated with the "R" number from the parts list. Direction for these does not matter. After the resistors are soldered in place, inspect the solder joints then trim the leads to be nearly flush with the PCB.

Brown	±1%
Red	±2%
Gold	±5% ✓
Silver	±10% *

0	×1
1	×10
2	×100
3	×1000
4	×10000
5	×100000
6	×1000000
7	×10 Gold
8	×100 Silver
9	9

4 Band Resistors

2. DIODE

Install the diode D1. Polarity is very important in the installation of diodes. D1 is black cylinders with a silver stripe near one end. On the PCB, the D1 location are shown as a rectangle with a stripe near one end. Align the striped end of the diode with the striped end of the PCB symbol. Press the diode firmly against the component side of the PCB and solder the other side.

3. CERAMIC CAPACITORS

Install the ceramic capacitors. These capacitors may be inserted in any orientation.

Designator	Description	Value	Marked
C2, C3, C4	Ceramic Capacitor	100nF	104
C8	Ceramic Capacitor	2.2nF	222
C7	Ceramic Capacitor	1uF	105

4. 14 PIN SOCKET

Solder the 14 pin socket, onto the spot marked "U1".

NOTE: Fit the chip socket matching the notch in the socket against the notch in the symbol on the board. Care should be taken when soldering this component to avoid solder bridges between the pins. It is not recommended that the chip is soldered directly to the board.

5. STEREO AUDIO JACK

Solder the 3.5 mm stereo audio jack in the place marked "JA1".

6. LEDs

LEDs are polarized, the long leg is positive. Inside the LED the anvil shape is typically negative. Be careful of the orientation, match up the flat side of the LED with the flat side of the PCB footprint. Solder the LEDs (LED1 to LED6) matching the shorter leg (also flat on the rim) to the hole with the line.

7. VOLTAGE REGULATOR

Open the pins of the voltage regulator (U2) a little and fit them to the board matching the half-circle shape of the voltage regulator to the half-circle shape on the board. Push the voltage regulator half way down and solder its pins.

8. TERMINAL BLOCKS

Arrange the three screw terminal blocks by sliding the edge of one into the edge of the next. Solder the terminal blocks into the PCB in the places marked J1 (2 pin) and J2 (6 pin).

9. PIN HEADERS

Install the pin headers in the places marked J4 (6 pin) and J5 (3 pin).

10. ELECTROLYTIC CAPACITORS

These elements are polarized, meaning it only goes in one way. The polarity is indicated on the body of the capacitor with a stripe with a minus (-) sign located on the negative side of the capacitor. Also, the shorter lead is the negative lead.

Match the “-” on the capacitor with the “-” on the PCB, slid it in all the way and solder it.

11. INFRARED RECEIVER

This is the receiver for infrared remote signals, it contains some demodulation circuitry and a window filter around 38Khz. The part number is VS1838B. Install the infrared receiver in the place marked U3.

12. MOSFET

Install the MOSFET N-channel transistors.

NOTE: The back, metal part of the MOSFET matches the small rectangle into transistor shape printed on the PCB.

Make a final check of all the parts and solder joints – make sure everything is in the right spot and there aren't any shorts. For the first power-up, you can leave the microcontroller out. Plug in power and check to make sure nothing gets hot (especially the voltage regulator). Measure the voltage on the regulator with a meter if you have one: the 7805 should output 5V. Unplug power and insert the microcontroller (watch the orientation). Plug power back in and a Status LED should be flashes with short pulse (0.01s) and a long pause (2s).

STEPS FOR SOLDERING COMPONENTS

1. Clean the tip of the iron by wiping it on the wet sponge. Place a small amount of solder on the tip.
 2. Press the tip down against the circuit contact and against the component lead and hold for 1-2 seconds.
 3. After the lead and the contact have heated, apply the solder to the lead and contact (NOT directly to the iron) until the solder melts and flows around the lead and into the contact. Apply enough solder to allow it to run down along the lead. Do not apply so much solder that it runs across the PCB surface.
 4. After enough solder has been applied (1-2 seconds), remove the solder wire but hold the iron in place for another 1-2 seconds.
 5. Remove the iron, allow the joint to cool and inspect the joint.
 6. Trim the excess lead wire just above the solder joint.
- Repeat this process for the remaining components.

NOTE: Use a soldering iron with constant temperature 320 - 350°C.

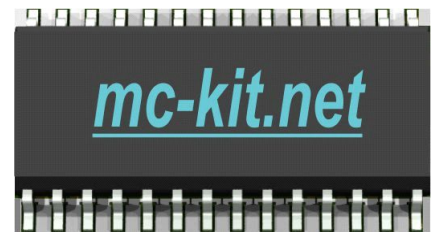
Component List

Project: **Homlicon LCH5T**

Variant: **1.1**

www.mc-kit.net

www.homlicon.com



#	Designator	Description	Comment	Quantity
1	R1, R3, R5, R7, R9	Resistor	470	5
2	R2, R8, R14	Resistor	10K	3
3	R4, R6, R10, R17	Resistor	2.2K	4
4	R13, R15, R16	Resistor	39K	3
5	R11, R12	Resistor	4.7K	2
6	R18	Resistor	100	1
7	D1	1A General Purpose Diode	1N4007	1
8	C2, C3, C4	Ceramic Capacitor	100nF	3
9	C8	Ceramic Capacitor	2.2nF	1
10	C7	Ceramic Capacitor	1uF	1
11	U1-Socket	Socket DIP14	Socket DIP14	1
12	JA1	Jack Socket, 3.5mm	JACK AUDIO 3.5mm	1
13	LED1	LED Diode	LED WHITE	1
14	LED2, LED6	LED Diode	LED RED	2
15	LED3	LED Diode	LED YELLOW	1
16	LED4	LED Diode	LED GREEN	1
17	LED5	LED Diode	LED BLUE	1
18	U2	3-Terminal 0.1 A Positive Voltage Regulator	78L05	1
19	J1	Terminal Blocks 5mm 2PIN	CON_2P	1
20	J2	Terminal Blocks 5mm 6PIN	CON_6P	1
21	J4	Single Row Pin Header 6 pin	Header_6P	1
22	J5	Single Row Pin Header 3 pin	Header_3P	1
23	C5, C6	Electrolytic Capacitor	100uF	2
24	C1	Electrolytic Capacitor	330uF	1
25	U3	Infrared Receiver Module	VS1838B	1
26	Q1, Q2, Q3, Q4, Q5	MOSFET N-channel transistor	MOSFET-N1	5
27	U1	8-Bit CMOS Microcontroller, 14-Pin DIP14	PIC16F1824-IP	1

Approved

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