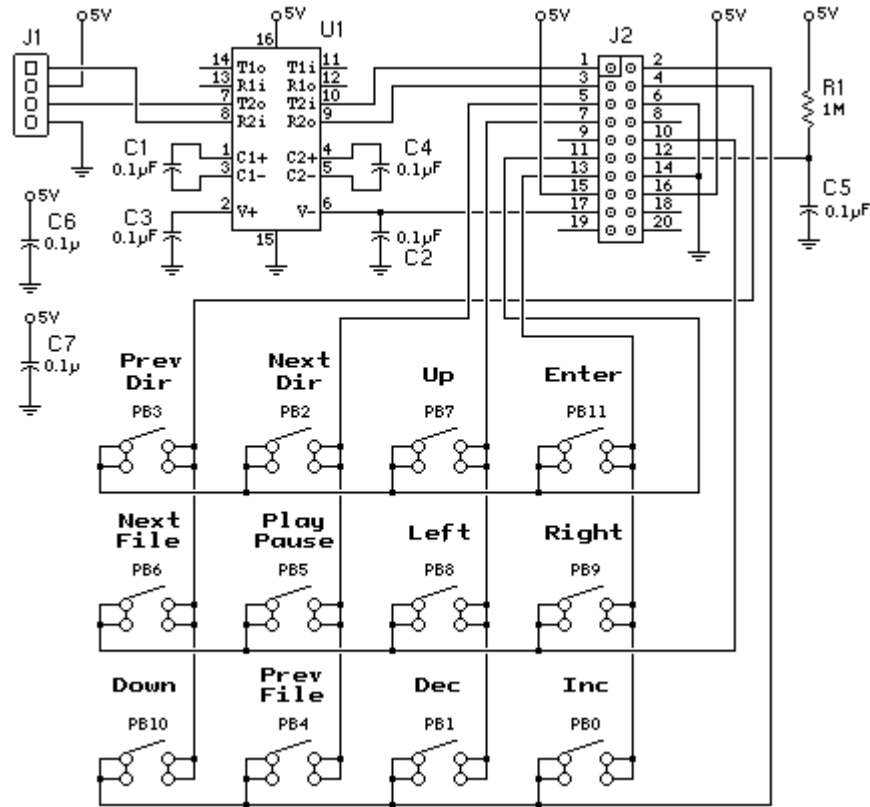


This Schematic is from [PJRC'S Website](http://www.pjrc.com/forums/topic/max232-circuit-for-rs-232-to-lcd/).

Pin 6 of the Max232 I.C. supplies the Negative (VEE) to the LCD

and should also be present on pin 17 of J2. (The Plug where the ribbon cable plugs in)
The Negative 6-7 Volts D.C. should also be present on pin 17 on the connector on the back of the LCD.

Pin Number	Description
1	TTL RS-232 Transmit Data from the 80C32 at 19200,8,N,1
2	80C32 Port pin P3.2
3	TTL RS-232 Receive Data to the 80C32 at 19200,8,N,1
4	80C32 Port pin P1.3
5	80C32 Port pin P1.2
6	0v
7	80C32 Port pin P1.4
8	Shift register
9	Pin 18 of PAL
10	80C32 Port pin P3.3
11	80C32 Port pin P1.7
12	Reset Input
13	80C32 Port pin P1.0
14	0v
15	+5v DC in
16	+5v DC in
17	-7v DC in for display

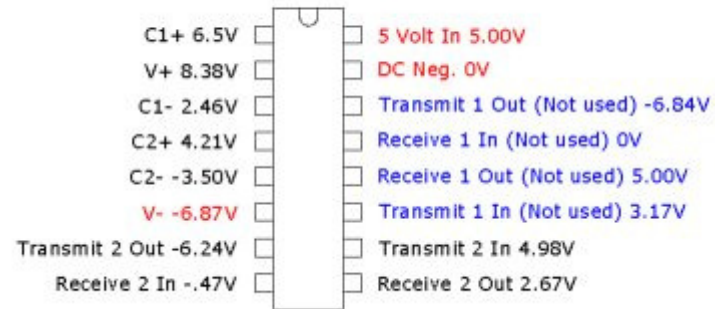


The pins marked in red are the critical voltages for the LCD to be visible. Pin 6 supplies the Negative (VEE) to the LCD for the contrast adjustment. The other 2 red pins are the main 5Volt DC supply pins.

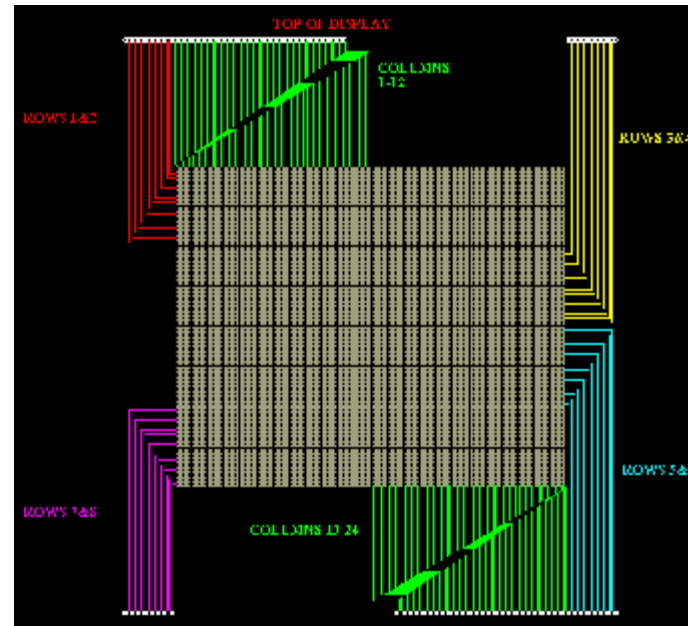
The Pins marked in blue are unused Transmit and Receive.

C1 and C2 are the capacitor connections for the Charge pump power supply of the Max232 I.C.

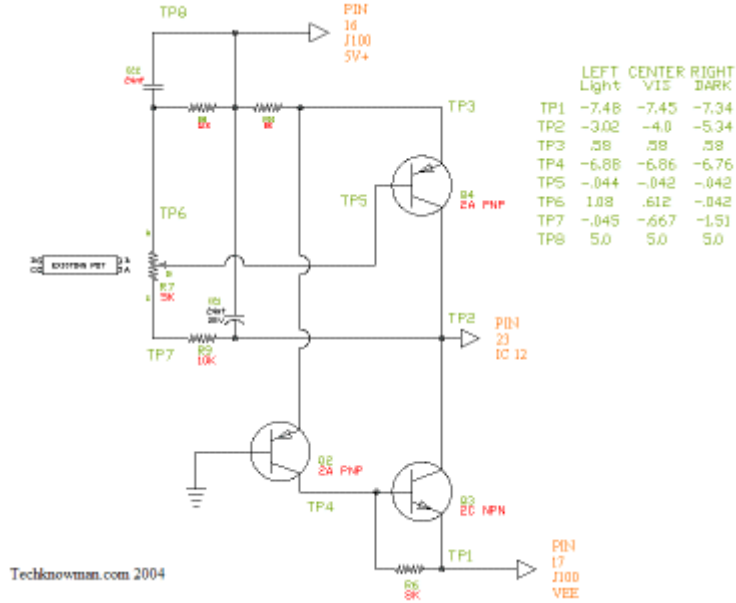
MAX232
VOLTAGE LEVELS FOR PJRC BUTTON BOARD AND LCD
NO SERIAL COMMUNICATIONS



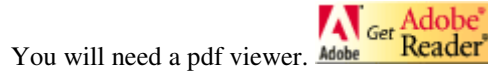
The layout to the right is the schematic of how the LCD's Glass screen is connected to the PC Board. This was done to help troubleshoot garbage or missing pixels in rows or columns or both.



The Schematic to the right shows the Contrast Control section of the HG12603-A Display. It also includes some Test points and Test Voltages.



To the right is a breakdown of the I.C.'s used on the HG12603 and HG12603-A. A pdf file of the I.C. is stored on this site, Click on the links to view them.



You will need a pdf viewer.

IC#	Part #	Description
1&2	74HC00D	Quad 2 Input Nand Gate
3	80C30 80C31 80C32	80C51 family 8 Bit Micro-controller
4	74HC573D	Octal D-Type Transparent Latch 3 state
5	74HC299D	8 Bit universal shift register 3 state
6	404735472 / V2210	PAL (Programmable Array Logic)
7&8	HY62256A	32K X 8Bit CMOS SRAM
9	SST39SF512 9727NNQ	512K (X8) Multi-purpose Flash (From PJRC.COM Original PROM with AT&T Software (Unusable))
10	BA10324AF	Quad ground sense Op- Amp
11&13	KS0108B	64 Channel Segment driver for LCD
12	KS0107B	64 Channel Common Driver for LCD



Here it is!

One of the most looked for Schematics on the net.
The HG12603 Schematic.

The schematic is in the following formats.

[AutoCAD V14 DWG](#) ...238K

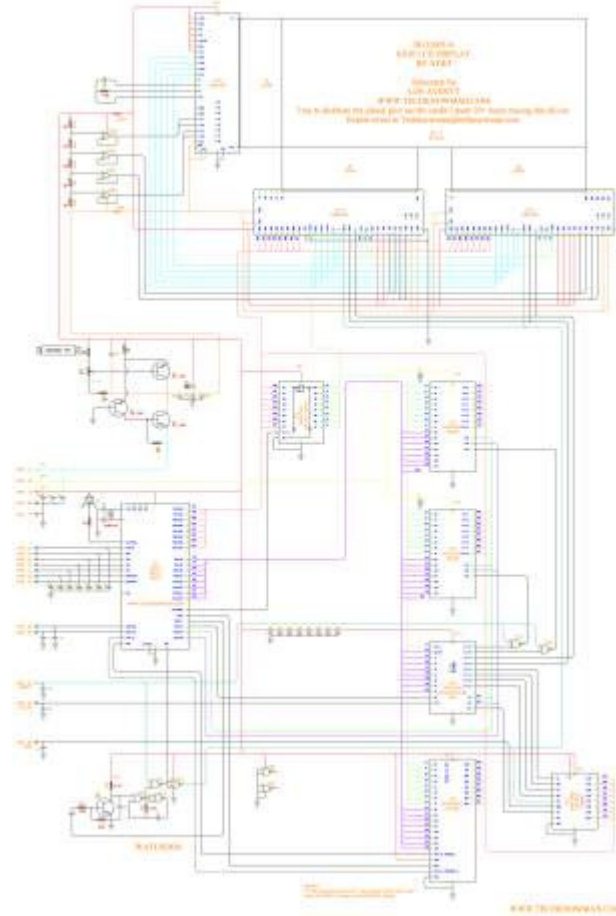
[AutoCAD V14 DXF](#) ...651K

[PDF](#) 495K

[100 DPI GIF](#) ... 212K

[120 DPI GIF](#) ... 301K

Special thanks to Paul at [PJRC](#) for converting my Autocad drawings into PDF and GIF files.



Additional information can be found below

http://www.pjrc.com/tech/mp3/pushbutton_info.html

<http://www.btinternet.com/~markd833/LCD/intro.htm>

Last Updated on 5/21/2004

By Len Averyt

Email: Techknowman@techknowman.com