

SavvyDISP V1.5

Display and Keys Addon Board for Savvy128.

SavvyDISP is sort of user interface for Savvy128 and SavvyCASE. It provides a 2x8 character LC-display, 4 push buttons, an LED and a slot for MMC/SD-cards.

Please Note – Version 1.5 of SavvyDISP provides an additional voltage inverter U1 for more stable operation of the LCD at 3.3V. The connection between the display and CPU have also been changed to a more common connection scheme.



Scope of Delivery – The SavvyDISP board is a simple two sided PCB with few solely conventional components, hence SavvyDISP is shipped as complete kit (including front panel). The following components are included:

- two sided PCB
- 2x8 character LC-display
- voltage inverter ICL7660 with two 10µF capacitors
- 4 push buttons
- red LED
- resistor network
- contrast potentiometer (cermet)
- pin header 2x14 90° (mates with Savvy128 female header CON6)
- front panel (readily worked for onboard components and matching for SavvyCASE plastic enclosure)

Assembly – The display, push buttons, LED, resistor network and contrast potentiometer have to be assembled on the front side of the PCB. The LED requires some space underneath for standing over the front panel. On the back side of the PCB the 2x14 pin header and the voltage inverter with capacitors have to be mounted, hence those components should be assembled first. It can be necessary to cut the thru-hole connector pin's ends shortly above the pcb surface, since the LC-display doesn't provide much room underneath.

The position print (see right) shows the location of all components and connectors.

Jumper J1 should be set to position 1-2 for normal operation. It is possible to supply the display with a different supply voltage (e.g. 5V) when operating the Savvy128 at 3.3V, to achieve even better contrast ratios. In that case the supply voltage has to be connected to the single pin CON2 with some wire connection.

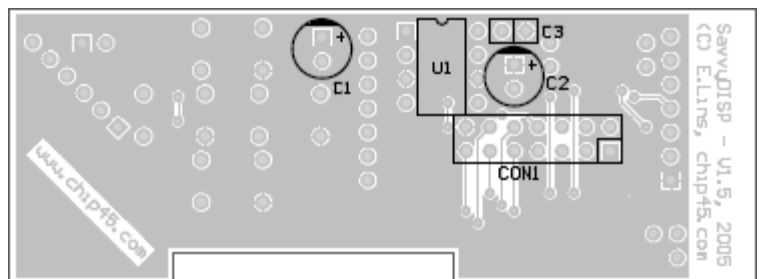
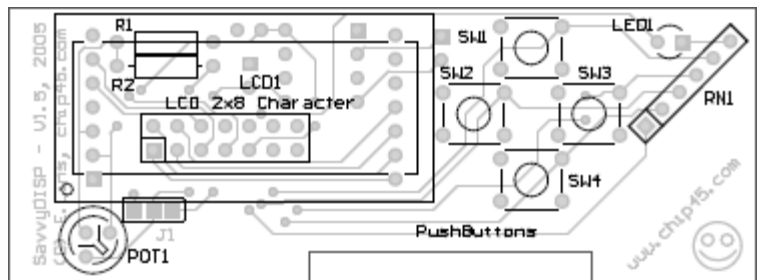
See the schematic for details (available at <http://www.chip45.com>).

Display Contrast – Internally the display contrast can be adjusted by potentiometer POT1 or by the fixed resistors R1/R2 alternatively. R1/R2 have to be assembled on the back side of the PCB.

CPU Connections – The onboard LCD, LED and push buttons are directly connected to the Savvy128 CPU ATmega128. The table on the right shows the mapping of the SavvyDISP signals to the ATmega128 pins. Push buttons and LED are low-active, i.e. the pin is read low, when the button is pressed and the LED flashes, when the pin is driven low.

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SavvyDISP Signal		ATmega128 Pin
LCD	RS	PC1
	R/W	PC2
	E	PC3
	D4..D7	PC4..PC7
Buttons	SW1	PD4
	SW2	PD5
	SW3	PG3
	SW4	PG4
LED	LED	PC0