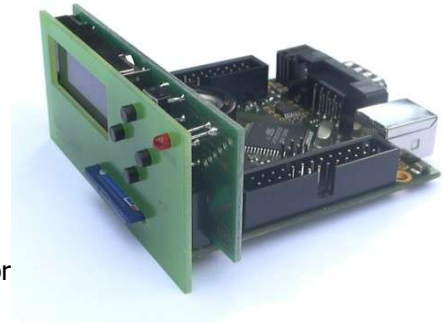
SavvyDISP

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.

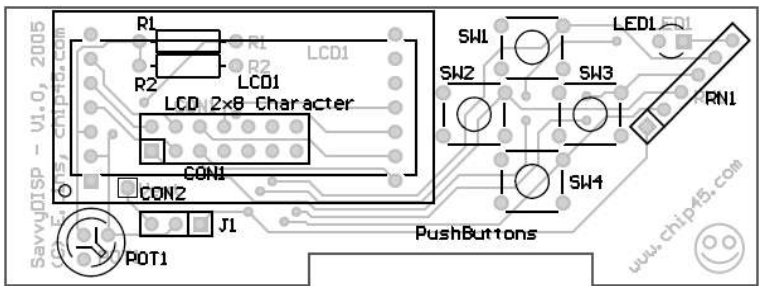


Complete Kit – The SavvyDISP board is a simple two sided PCB with few solely conventional components, hence SavvyDISP is shipped as complete kit (including front panel). The following components are included:

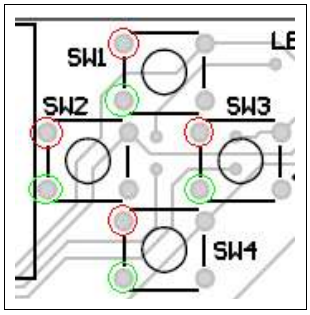
- two sided PCB
- 2x8 character LC-display
- 4 push buttons
- red LED
- resistor network
- contrast potentiometer (cermet)
- pin header 2x14 90° (mates with Savvy128 female header CON6)
- front panel (readily worked for onboard components and matching for SavvyCASE plastic enclosure)

Assembly – The display, push buttons, LED, resitor 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 have to be assembled, hence it 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.



Note: The current version of the SavvyDISP PCB has a minor layout bug concerning the push button footprints. It is necessary to only solder three of the four pins and cut off the fourth one. The picture on the right shows the cut-off pins marked with a red circle. The remaining three pins provide enough mechanical stability for the push buttons. Additionally the lower left (marked green in the picture) pin has to be soldered to the GND copper area on the back side. Remove some of the solder resist surrounding the pins. This layout bug will be fixed in the next layout revision of SavvyDISP (by end of this year).



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 www.chip45.com/SavvyDISP).

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.

SavvyDISP Signal		ATmega128 Pin
LCD	RS	PC5
	R/W	PC6
	E	PC4
	D4..D7	PC0..PC3
Buttons	SW1	PD4
	SW2	PD5
	SW3	PG3
	SW4	PG4
LED	LED	PC7