

# Graphical LCD v1.0



Document version 1.0

## PRODUCT OVERVIEW

This graphical LCD screen is 128x64 pixels in blue/white. The module has a rotary encoder with push button, a SD card slot and a button. The board is compatible with Minitronics, Megatronics, Ultratronics and RAMPS. The LCD and SD card are controlled using SPI, while the buttons are wired to digital i/o's.

We provide a test firmware for the board to test your setup on the supported electronics.

Wiring is sold separately.

## Requirements

You need either a Ultratronics, Megatronics, Minitronics or RAMPS board. See the hardware setup section for the required wiring.

The LCD can be controlled using the U8glib library (<https://github.com/olikraus/u8glib/wiki>) for Arduino. See the documentation of that library for examples.

The SD card can be controlled using the standard SD card library included with Arduino.

## DOCUMENT HISTORY

|                    |          |
|--------------------|----------|
| <b>Version 1.0</b> | Creation |
|--------------------|----------|

## PRODUCT CHANGE HISTORY

Version 1.0 revision E

- First public release

## TECHNICAL SPECIFICATION

|                          |               |
|--------------------------|---------------|
| <b>LCD chip</b>          | ST7920        |
| <b>LCD resolution</b>    | 128x64 pixels |
| <b>LCD type</b>          | 12864B v2.0   |
| <b>Operating Voltage</b> | 5V            |

## MAJOR FEATURES



- Rotary encoder with switch for menu selection
- General purpose button, function defined by firmware
- You can control the contrast of the LCD screen using the trimpot 'contrast'.



- Support for Megatronics, Minitronics, Ultratronics and RAMPS
- SD card reader on available
- Sdout header to connect to an external SD card
- SD card detection pin

| Name   | Description                                                                                                                                                                                                                                                                                                |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AUX1   | Header for connection to Minitronics AUX1 header<br>1. Encoder A (SCL pin)<br>2. Encoder Switch (D25)<br>3. Encoder B (SDA)<br>4. Tactile button (D26)<br>5. CS LCD (D19)<br>6. SD Detect (D30)<br>7. GND<br>8. 5V                                                                                         |
| MTICSP | Header for connection to Minitronics ICSP header<br>1. N/C (D1)<br>2. 5V<br>3. SCK (SCK pin)<br>4. N/C (D0)<br>5. N/C (RESET)<br>6. GND<br>7. MISO (MISO pin)<br>8. MOSI (MOSI pin)<br>9. CS SD (D53)<br>10. CS LCD (D15)                                                                                  |
| UT     | Header for connection to Ultratronics analog header<br>1. N/C (+3v3)<br>2. Encoder A (SDA0)<br>3. N/C (A8)<br>4. Encoder B (SCL0)<br>5. Encoder Switch (A10)<br>6. Tactile button (A9)                                                                                                                     |
| Keypad | Header for connection to Megatronics keypad header, RAMPS aux-2 header<br>1. 5V<br>2. GND<br>3. Encoder A (D45, D59)<br>4. Encoder Switch (D33, D63)<br>5. Encoder B (D44, D64)<br>6. Tactile button (D34, D40)<br>7. N/C (D43, D44)<br>8. SD Detect (D35, D42)<br>9. N/C (D42, D66)<br>10. N/C (D36, D65) |
| SPI    | Header for connection to Megatronics SDOUT header, Ultratronics SDOUT1 header, RAMPS aux-3 header<br>1. 5V                                                                                                                                                                                                 |

|       |                                                                                                                                                    |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|       | 2. CS LCD (A2, A2, D49)<br>3. MISO (MISO pin)<br>4. MOSI (MOSI pin)<br>5. SCK (SCK pin)<br>6. CS SD (D53)<br>7. GND<br>8. SD Detect (N/C, A6, N/C) |
| SDOUT | Same as SPI, except for pin 2 (CS LCD) which is not connected                                                                                      |
| IN5V  | External 5V input                                                                                                                                  |

This section will help you connect the board to your electronics.

### Ultratronics

For Ultratronics you need a 6way wire including connectors and a 8way wire including connectors.

Connect the UT header using the 6way wire to the analog header on the Ultratronics board. Make sure pin 1 on the silkscreen matches pin 1 on the Ultratronics board.

Connect the SPI header to the SDOUT1 header using the 8way wire. Make sure pin 1 on the silkscreen matches pin 1 on the Ultratronics board.

### Megatronics

For Megatronics you need a 10way wire including connectors and a 8way wire including connectors.

Connect the Keypad header using the 10way wire to the Keypad header on the Megatronics board. Make sure pin 1 on the silkscreen matches pin 1 on the Megatronics board.

Connect the SPI header to the SDOUT header using the 8way wire. Make sure pin 1 on the silkscreen matches pin 1 on the Megatronics board.

### RAMPS

For RAMPS you need a 10way wire including connectors and a 8way wire including connectors.

Connect the Keypad header using the 10way wire to the aux-2 header on the RAMPS board. Make sure pin 1 on the silkscreen matches pin 1 on the RAMPS board.

Connect the SPI header to the aux-3 header using the 8way wire. NOTE: The header connector on the RAMPS must be inversed, so connect pin 1 of the board to pin 8 on the aux-3 header.

### Minitronics

For Minitronics you need a 10way wire including connectors and a 8way wire including connectors.

Connect the MTICSP header using the 10way wire to the ICSP header on the Minitronics board. Make sure pin 1 on the silkscreen matches pin 1 on the Minitronics board.

Connect the AUX1 header to the AUX1 header using the 8way wire. Make sure pin 1 on the silkscreen matches pin 1 on the Minitronics board.