

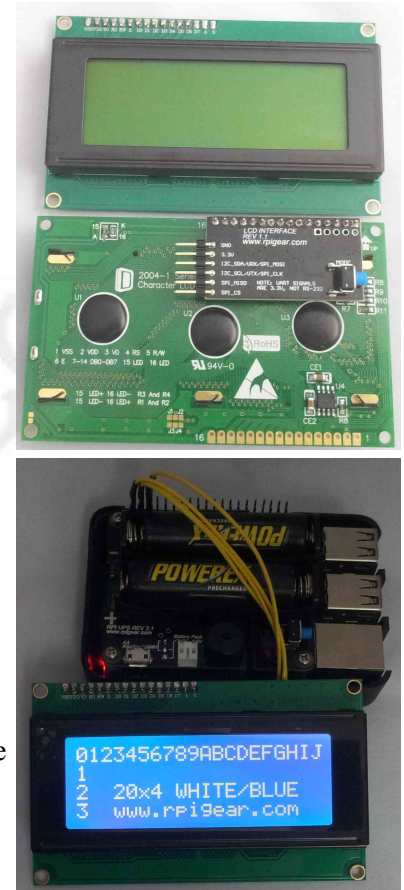
## 20x4 Character LCD Datasheet

### Overview

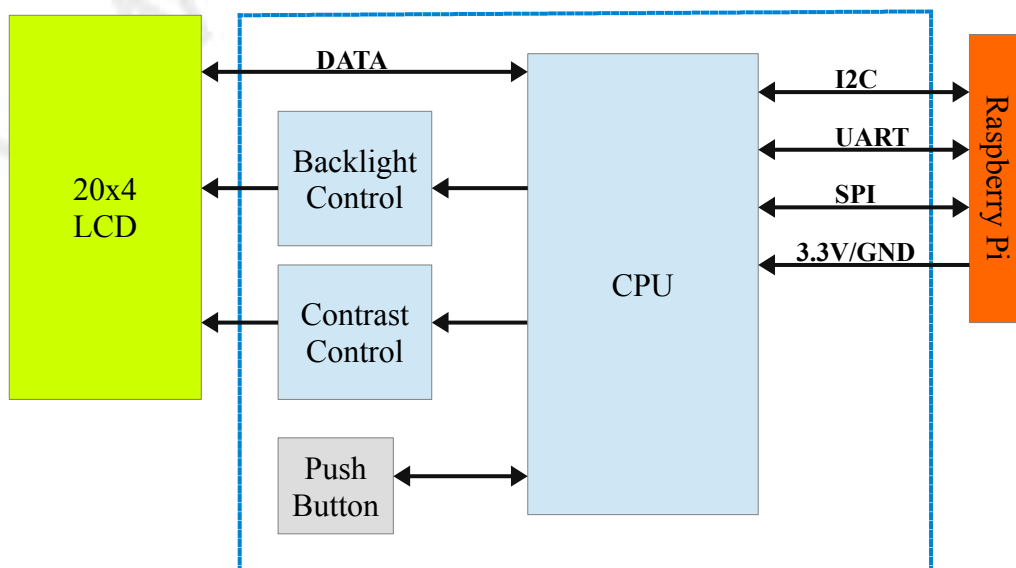
This is a large 20x4 character LCD module with selectable interface modes(I2C, UART, SPI). Some of the other unique features include software control of backlight brightness as well as contrast, allowing for quick adjustments depending on ambient light conditions or user preference.

### Main Features

- Large size, 20x4 layout, comes in four colors
- Backlight brightness and contrast controlled by software commands
- I2C mode up to 400Khz, configurable slave address.
- Two pin 3.3V UART mode, baud rates {9600, 19200, 38400, 57600, 115200}.
- 4-pin SPI mode, supports all 4 standard SPI modes, up to 3Mhz clock.
- Simple command line Raspberry Pi software included
- Source code examples for custom applications, showing how to interface with the LCD from any I2C/UART/SPI hardware.



### Block Diagram



**Part Numbers**

Part Number	Layout	Color Text / Background	LCD Type	Operating Temp(C)
LCD-3.3V-20x4-BLK/YEL-0 	20x4	BLACK/YELLOW	STN	0-70
LCD-3.3V-20x4-WHT/BLUE-1 	20x4	WHITE/BLUE	STN	0-70
LCD-3.3V-20x4-BLK/WHT-2 	20x4	BLACK/WHITE	FSTN	0-70
LCD-3.3V-20x4-WHT/BLK-3 	20x4	WHITE/BLACK	FFSTN	0-70

**Communications**

Mode	Max Speed	Notes
I2C	400Khz	I2C slave address is configurable
UART	115200	Supported Baud rates include 9600,19200,38400,57600,115200. Two pin(Rx/Tx) interface, 8 data bits, 1 stop bit, no flow control.
SPI	3Mhz	All four standard SPI modes(0,1,2,3) are supported.

## Pinout

Pin	Notes
GND	Ground
3.3V	3.3V power supply
I2C_SDA/URX/SPI_MOSI	SDA in I2C mode Uart Rx input in UART mode, <b>Note 1</b> SPI data input in SPI mode
I2C_SCL/UTX/SPI_CLK	SCL in I2C mode Uart Tx output in UART mode, <b>Note 1</b> SPI clock input in SPI mode
SPI_MISO	SPI data output in SPI mode
SPI_CS	SPI chip select input in SPI mode



**Note 1:** The Uart requires 3.3V logic levels, not RS232.

**Note 2:** 2.54mm pitch male header connector.

**Note 3:** Holding the MODE push button cycles through the interface modes

## Electrical

Voltage	3.3V, <b>Note 1</b>
Max Current	40mA, <b>Note 2</b>

**Note 1:** Logic  $V_{ih}$  is 0.5V and  $V_{ol}$  is 2.6V.

**Note 2:** Measured with the backlight brightness set to the max, turning off the backlight reduces current to around 6mA.

## Mechanical

Outside Dimensions, Width x Height x Depth	98mm x 60mm x 30mm
Display Dimensions, Width x Height	76.0mm x 25.0mm
Character Size, Width x Height	2.95mm x 4.75mm, 5x8 dots
Weight	85g
Mounting Hole Pitch	93mm x 55mm, 3.3mm diameter holes