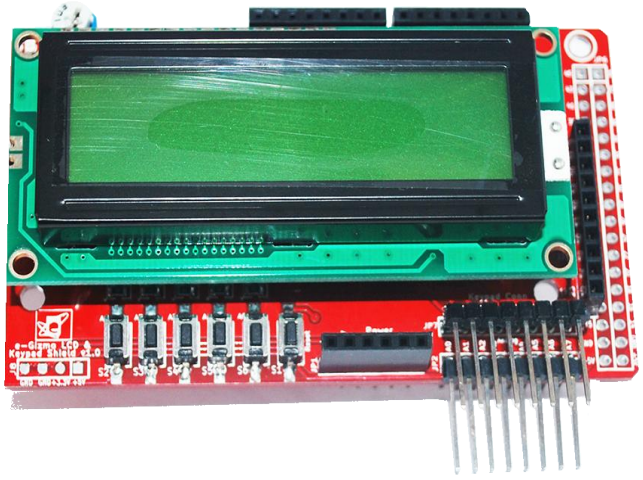
e-Gizmo

LCD & Keypad Shield

Hardware Manual Rev. 1r0



e-Gizmo LCD and Keypad Shield is a simple board that you can directly attached it on your favorite gizDuino MCU boards. Without manual wiring connection on your bread board. Less hassle to connect the right pin assignments. Additional on board components like 5 push buttons, +5V buzzer, extension connection for gizDuino + and X pins. This shield has a compatible keypad connection for 4x4 and 4x3 keypad matrix module or kit.

Features

- LCD shield compatible in all gizDuino board.
- Operating Voltage +5V
- 2x16 and 4x20 LCD display
- 5 Push buttons and 1 Reset button
- Keypad Connection header
- gizDuino + and X extension pins
- Power port (GND, +5V and +3v3)
- +5V Buzzer on-board.
- Jumper GS connection selection for using LiquidCrystal library.
- LCD with Green backlight
- 1 potentiometer for adjusting the contrast
- 16 pins for LCD module pins

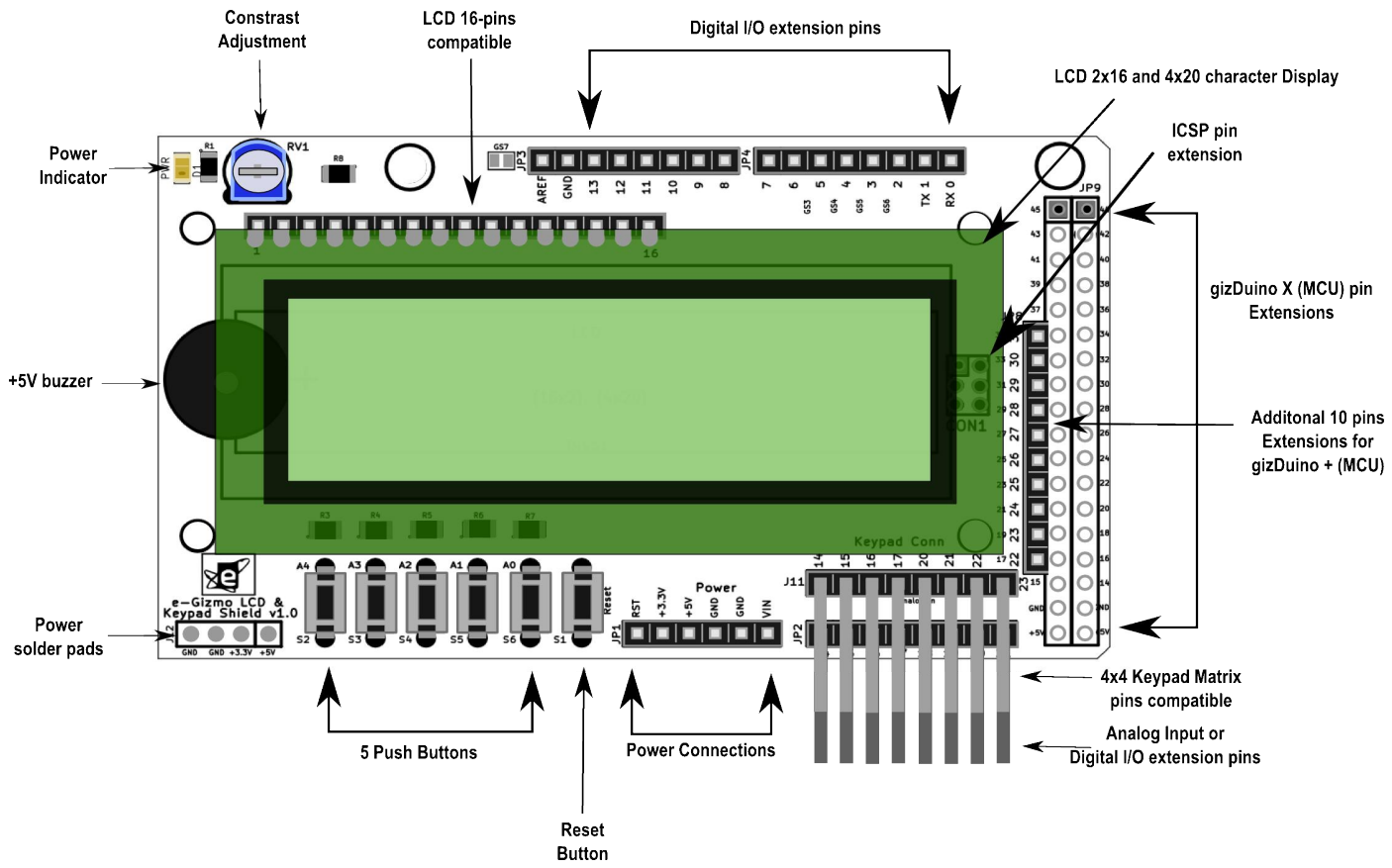


Figure 1. *Major Parts of e-Gizmo LCD & Keypad Shield.*

Table 1. PIN DESCRIPTIONS

JP1	Power connections
JP2	Analog Input connections
JP3	Digital I/O connections
JP4	Digital I/O connections
JP8	Digital I/O connections (Addtional 10 pins extension for gizDuino +)
JP9	I/O pin extension Connections (for gizDuino X)
J11	For Keypad connections (Keypad Matrix Module)
J12	Power port solder pads
RV3	Constrast Adjustment for LCD Display

On Board Components

LCD 16pins on board 2x16 and 4x20 character LCD Display compatible, +5V Buzzer , 5 Push Buttons and 1 Reset button, 1 Potentiometer for Contrast adjustment. With power port (GND, +5V, +3v3) and keypad connections for 4x4 and 4x3 module. (See Figure 1)

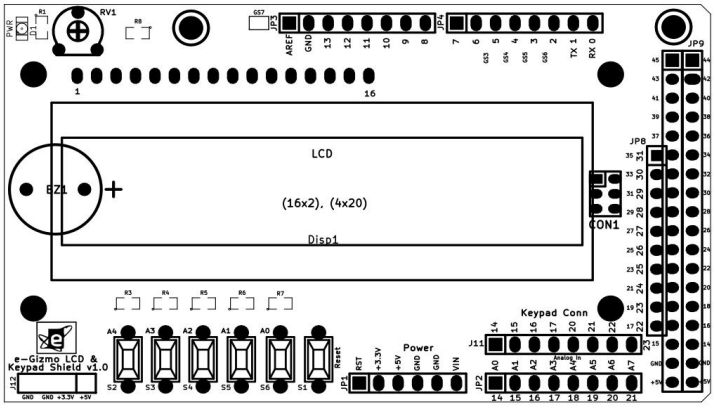


Figure 2. *Silkscreen Guide*

gizDuino + and gizDuino X pins extension shield

Additional female header connector for gizDuino + pin extension. Also it has a selected pin for LiquidCrystal Library. So that you can use the PWM pins on MCU and for other purposes of your project.

The circuit: (default pins + and X)
LCD RS pin 26
LCD EN pin 27
LCD D4 pin 28
LCD D5 pin 29
LCD D6 pin 30
LCD D7 pin 31

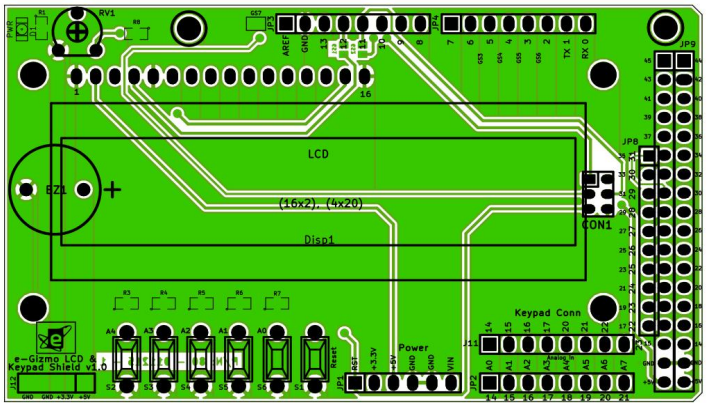


Figure 3. *Bottom PCB Layer*

Jumper pins GS

In LiquidCrystal library the selection of pins for Arduino example. Put a lead on the jumper pads to shorted the pins if you are using UNO / gizDuino with ATmega 168P or 328P MCU board.

The circuit:
LCD RS pin 12 (GS1)
LCD EN pin 11 (GS2)
LCD D4 pin 5 (GS3)
LCD D5 pin 4 (GS4)
LCD D6 pin 3 (GS5)
LCD D7 pin 2 (GS6)
(See Figure 4)

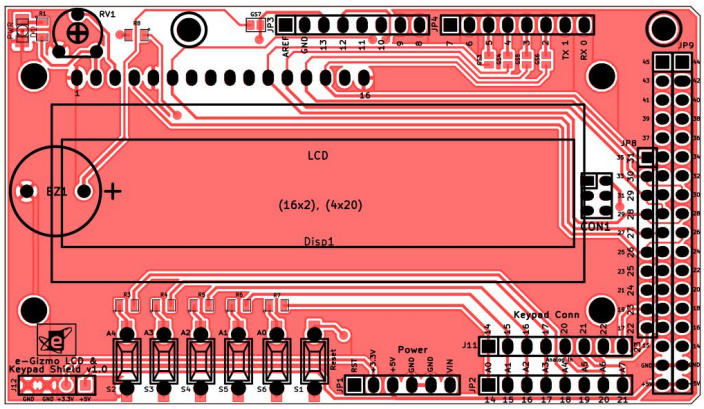


Figure 4. *Top PCB Layer*

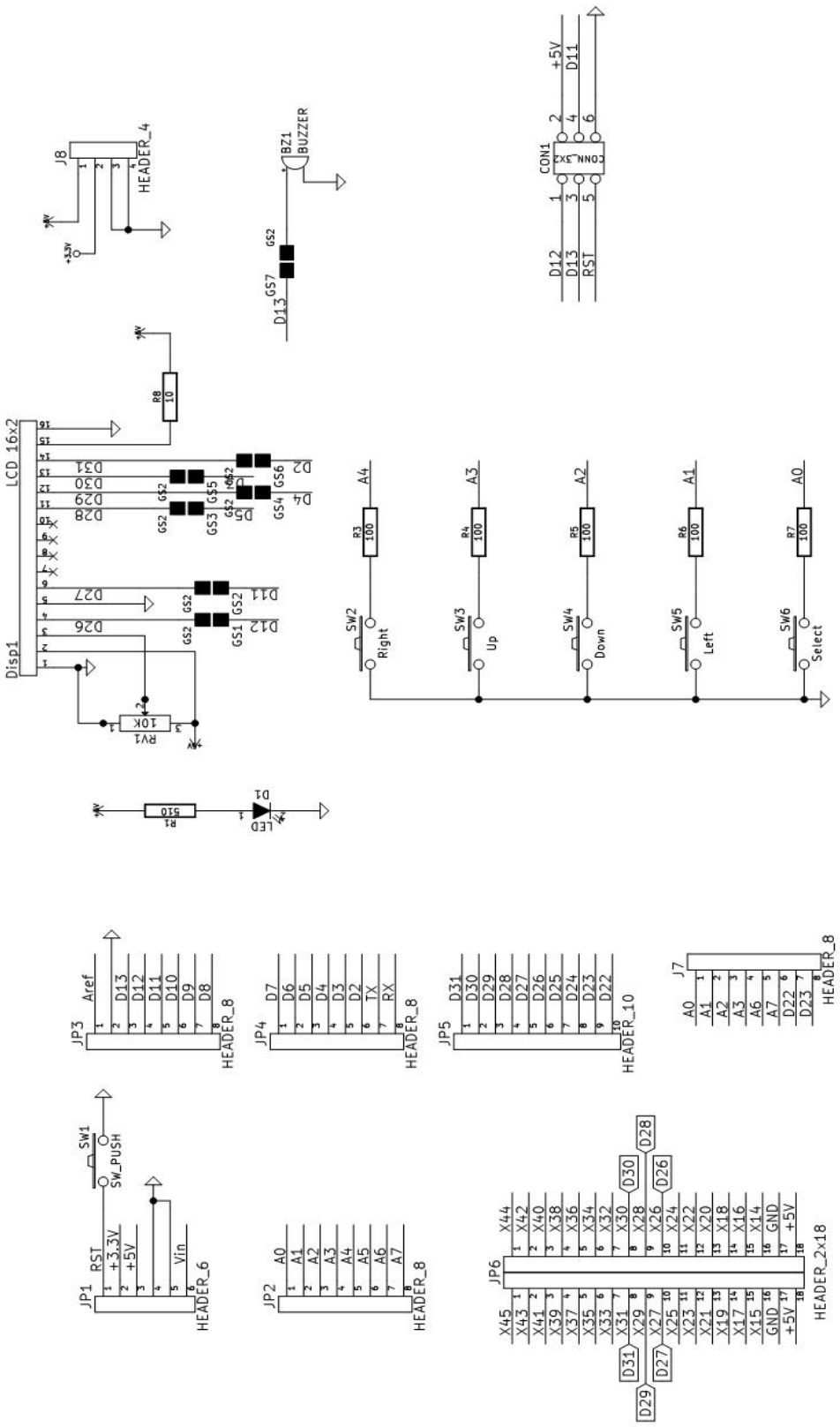
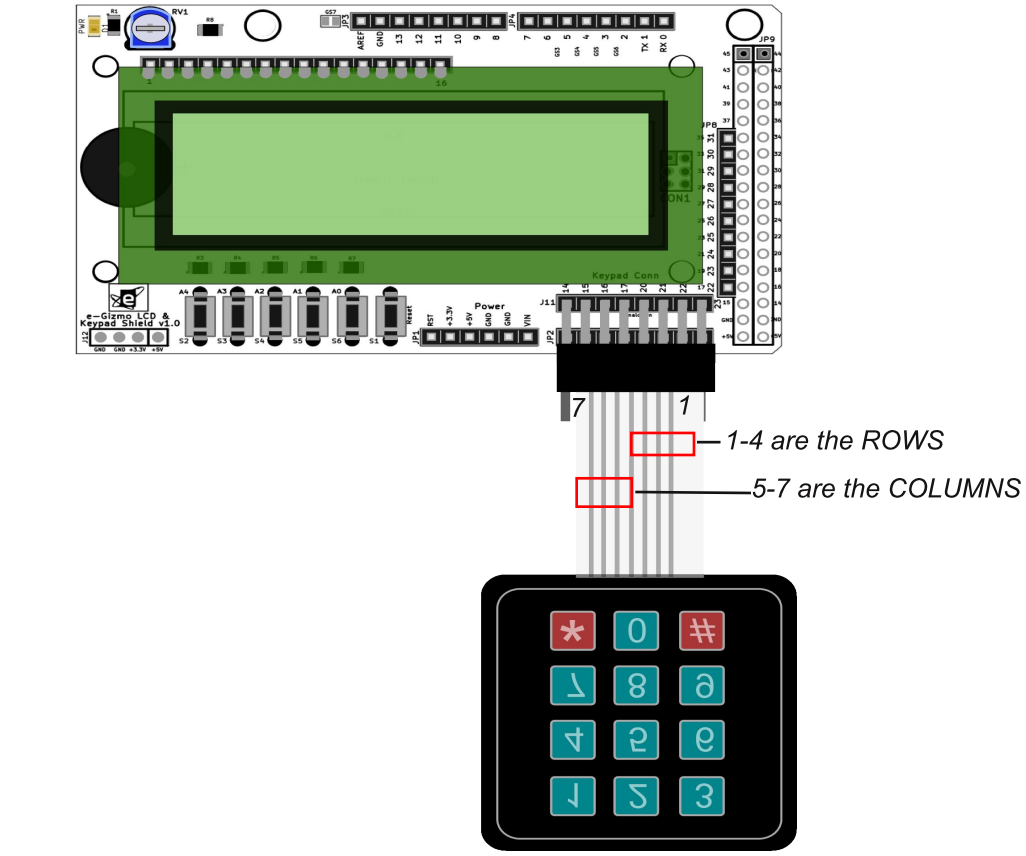
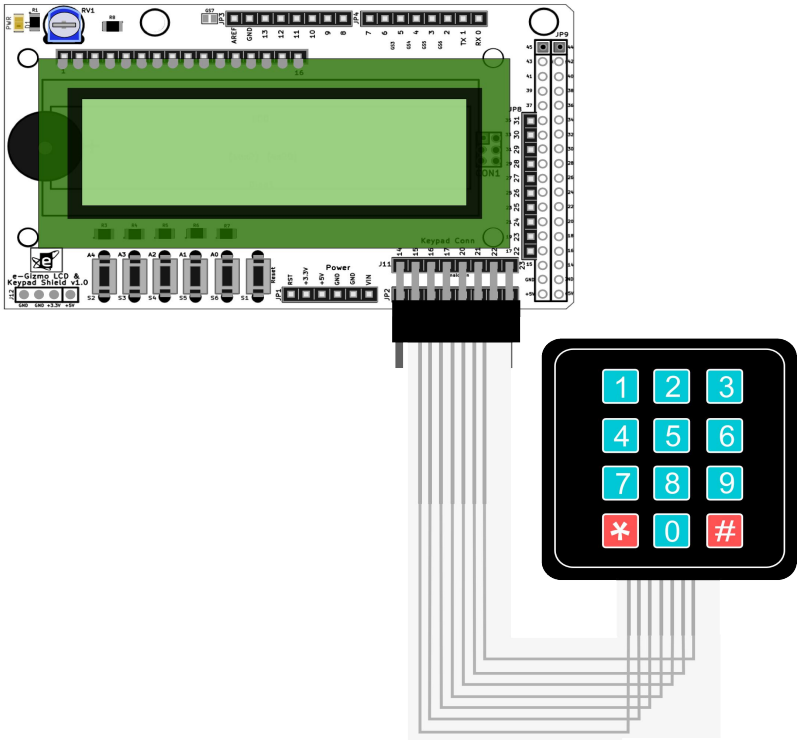
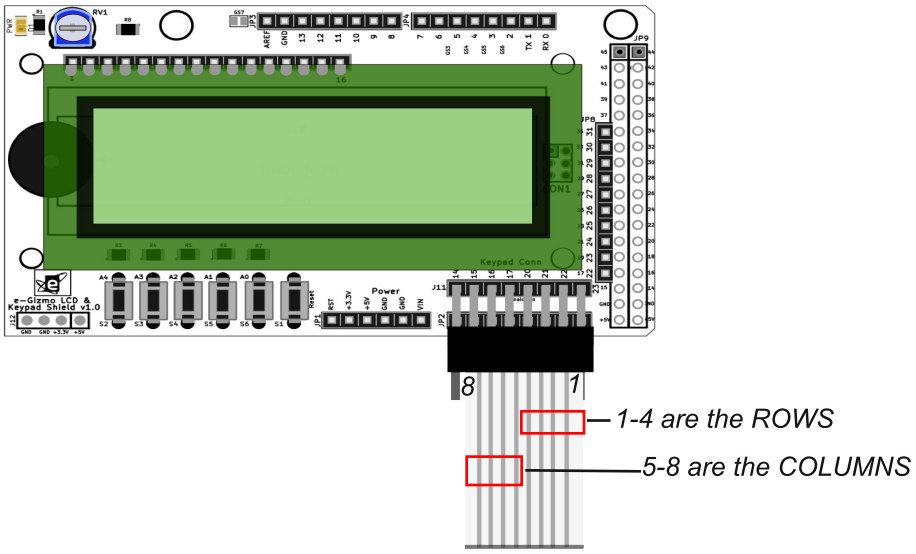
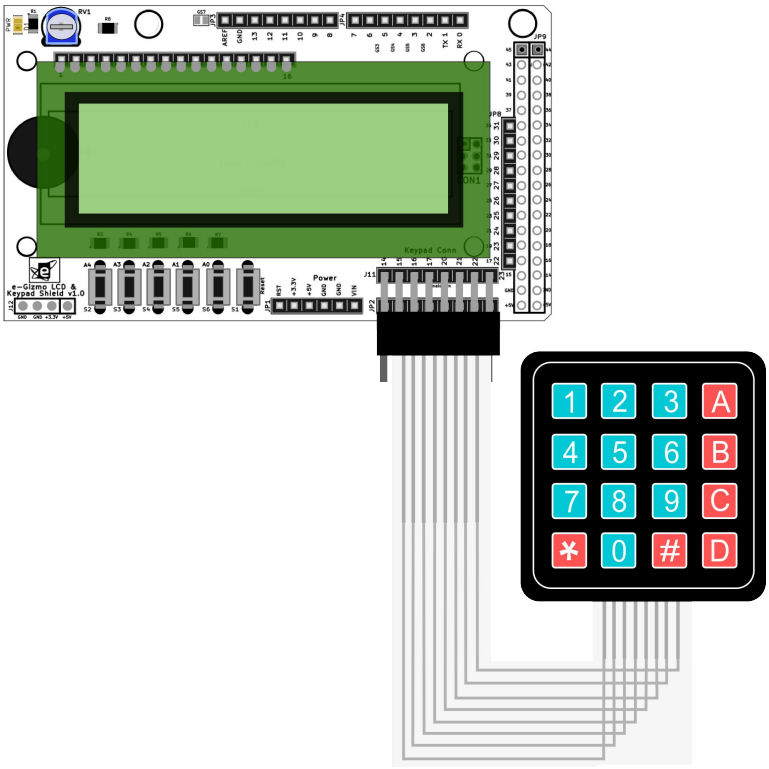


Figure 5. *Schematic of e-Gizmo LCD and Keypad Shield*

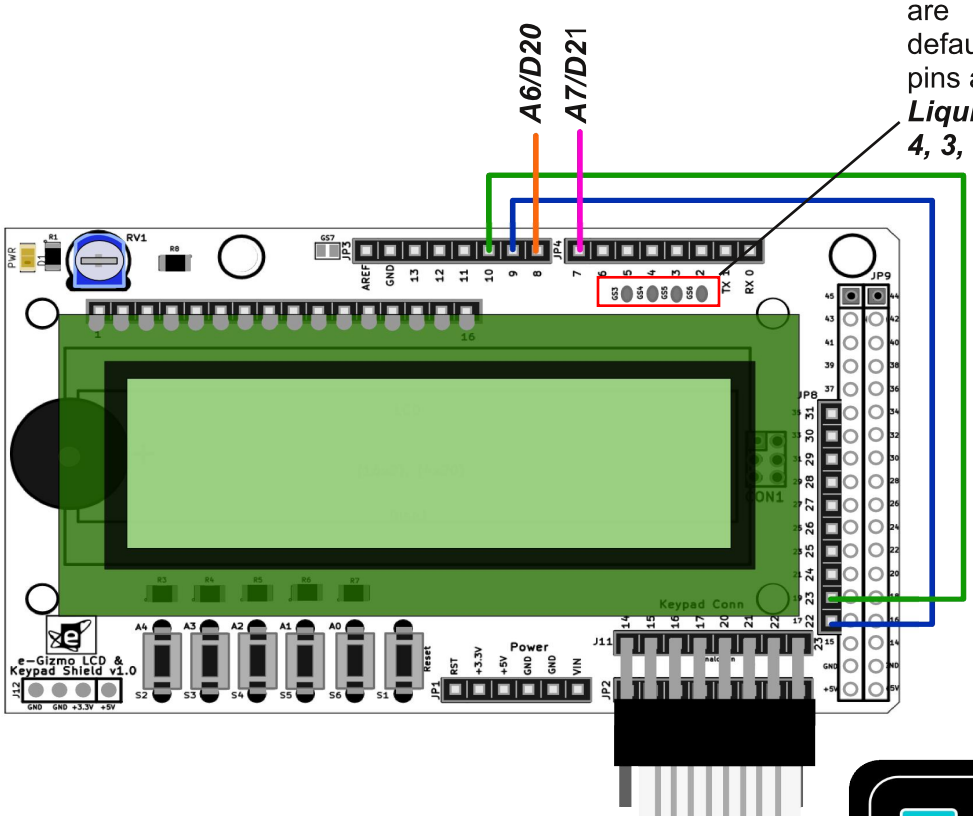


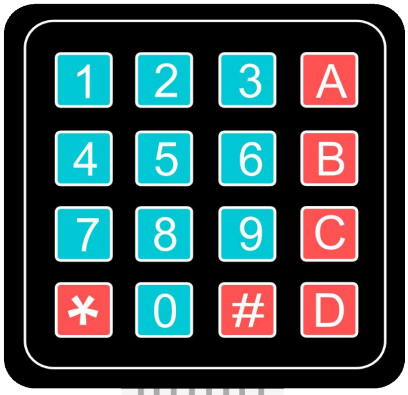






Make sure the GS1 to GS6 are connected. If you're default pins for Liquid Crystal pins assignments are;
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);





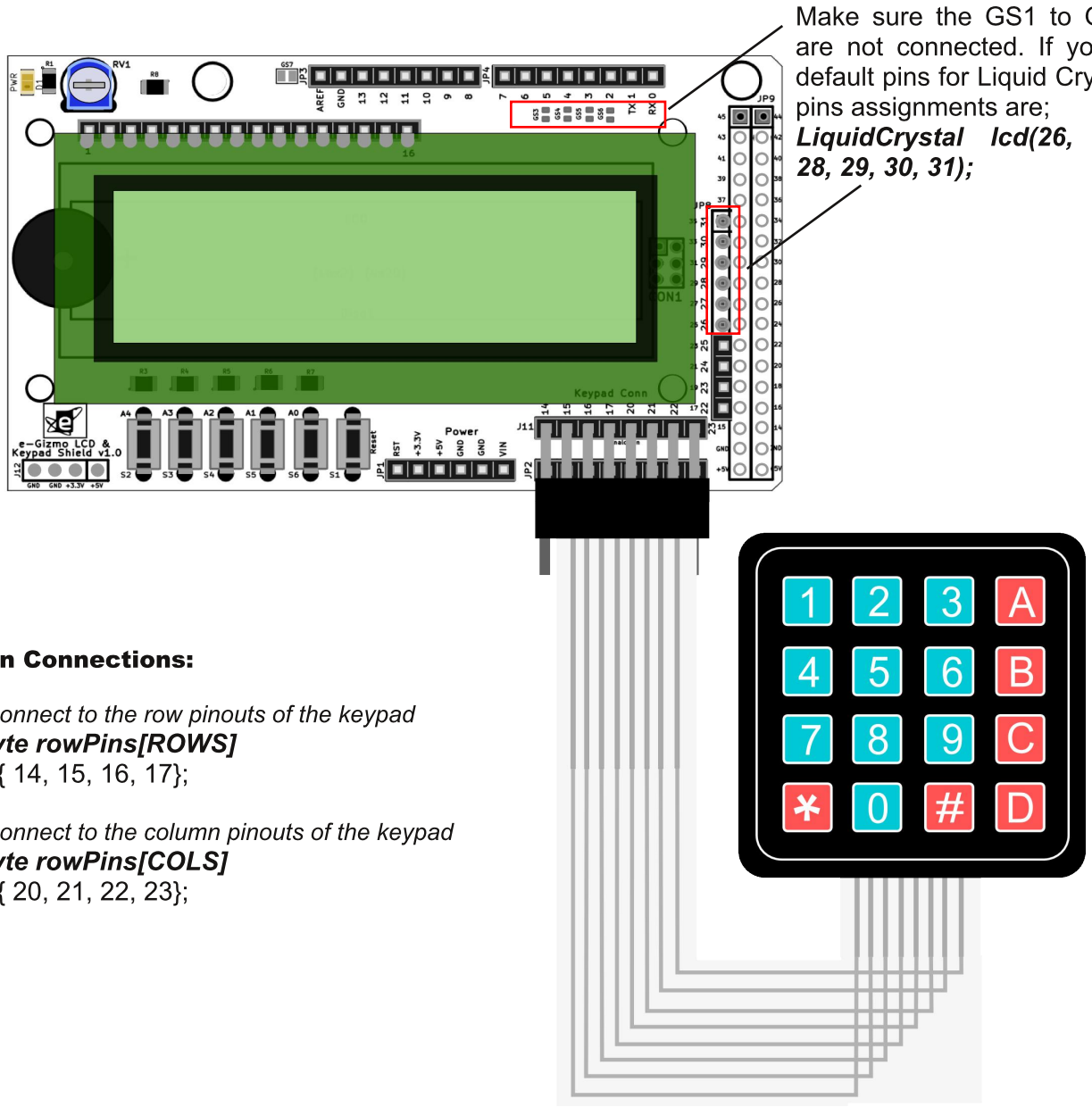
Pin Connections:

//connect to the row pinouts of the keypad
byte rowPins[ROWS]
= { 14, 15, 16, 17};

//connect to the column pinouts of the keypad
byte rowPins[COLS]
= { 7, 8, 9, 10};

Manual Wire Connections:
**When shield is attached to MCU GIZDUINO V*

Gizduino v5	-	LCD shield
D7 (JP4)	-	A7/D21 (JP2)
D8 (JP3)	-	A6/D20 (JP2)
D9 (JP3)	-	D22 (JP8)
D10 (JP3)	-	D23 (JP8)



Pin Connections:

//connect to the row pinouts of the keypad
byte rowPins[ROWS]
= { 14, 15, 16, 17};

//connect to the column pinouts of the keypad
byte rowPins[COLS]
= { 20, 21, 22, 23};

Figure 6. *Sample Application of e-Gizmo LCD and Keypad Shield with 4x4 Keypad Module pin connections*