G25 CNC Shield v2018.03.15

Thank you for purchasing the G25 CNC Shield. Please begin by verifying that each kit contains all the necessary parts.

- ☐ Shield PCB
- ☐ DB25 Right angle female connector
- ☐ 1x40 male header
- ☐ 2 shunts / jumpers

If you have any missing parts or if any parts are broken, please contact us immediately for a replacement by emailing Sales@KCLinear.com

The following instructions will guide you through the assembly process. This guide is intended to show you the steps to assemble the kit and is not meant to be a safety lesson.

Required Tools:

- Soldering Iron
- Solder
- Small wire cutters

Feel free to email us with questions. We would also love to see pictures of you completed project!

Thank you

Ron

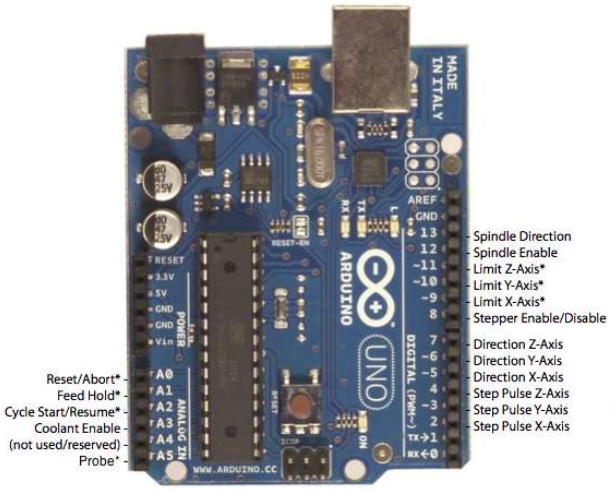
Sales@KCLinear.com

Assembly Instructions: http://KCLinear.com/G25

Selecting the pinout

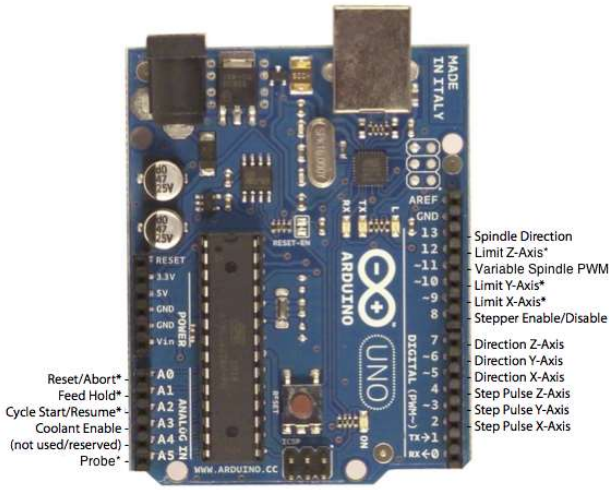
There are two ways to set up GRBL. The v0.8 and v0.9 “Traditional” layout and then there is the v0.9 “PWM Enabled” layout. https://github.com/grbl/grbl/wiki/Connecting-Grbl

v0.8 & v0.9 Traditional layout



* - Indicates input pins. Held high with internal pull-up resistors.

v0.9 PWM Enabled Layout



* - Indicates input pins. Held high with internal pull-up resistors.

GRBL Traditional Layout

Description	Arduino	db25
Reset/Abort	A0	10
Feed Hold	A1	
Cycle Start	A2	
Coolant Enable	A3	
Probe	A5	15
Step X	D2	2
Step Y	D3	4
Step Z	D4	6
Direction X	D5	3
Direction Y	D6	5
Direction Z	D7	7
Stepper Enable	D8	
Limit X	D9	11
Limit Y	D10	12
Limit Z	D11	13
Spindle Enable	D12	17
Spindle Direction	D13	1

GRBL PWM Layout

Description	Arduino	db25
Reset/Abort	A0	10
Feed Hold	A1	
Cycle Start	A2	
Coolant Enable	A3	
Probe	A4	15
Step X	D2	2
Step Y	D3	4
Step Z	D4	6
Direction X	D5	3
Direction Y	D6	5
Direction Z	D7	7
Stepper Enable	D8	
Limit X	D9	11
Limit Y	D10	12
Limit Z	D12*	13
Spindle PWM	D11*	17
Spindle Direction	D13	1

Common CNC LPT Pinout

Pin	Description
1	Output
2	X Direction
3	X Step
4	Y Direction
5	Y Step
6	Z Direction
7	Z Step
8	A Direction **
9	A Step **
10	Reset / Abort / E-Stop
11	X limit
12	Y limit
13	Z limit
14	A limit **
15	Probe
16	Enable **
17	Output
18 - 25	Ground

*Pins are swapped to use internal PWM ** Pinned out on PCB, but not mapped.

Cut the headers

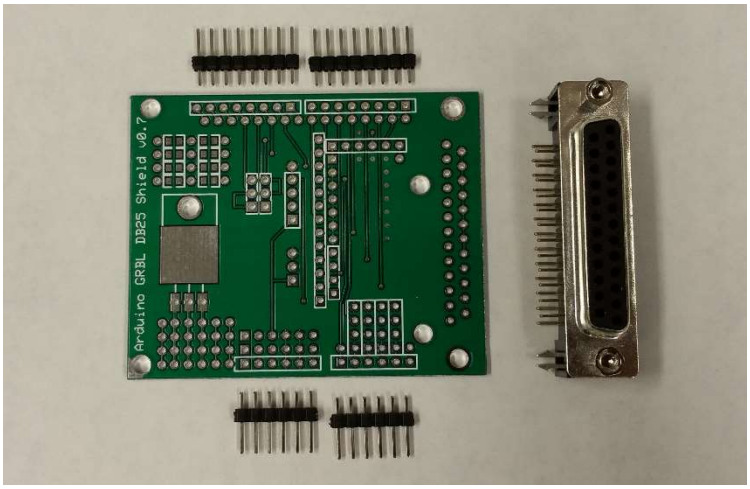
Break or cut the 1x40 male header into the following smaller headers.

1 – 1x6 (A0 to A5 header)

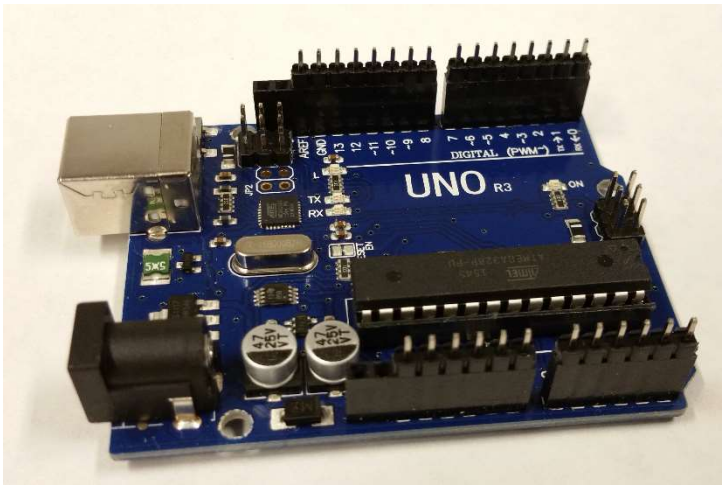
1 – 1x6 to 1x8 depending on board (Vin, GND,5v, 3.3v ect)

1 – 1x8 (D0 to D7)

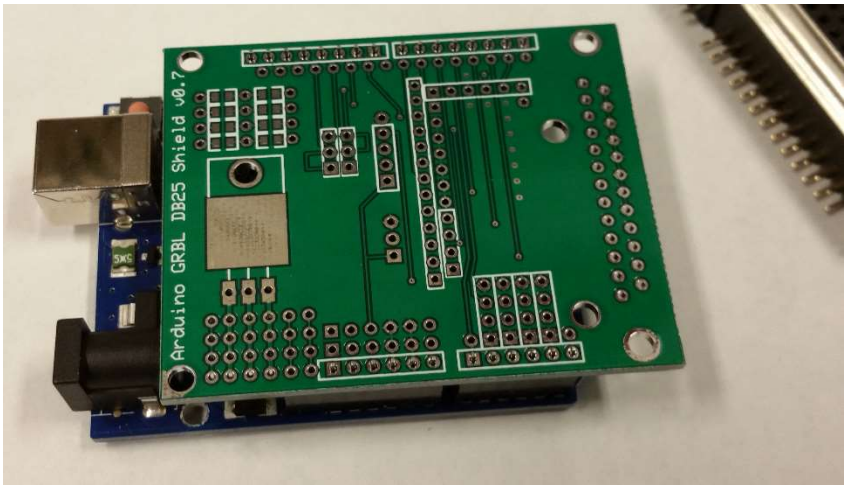
1 – 1x8 (D8 to D13, gnd, aref)



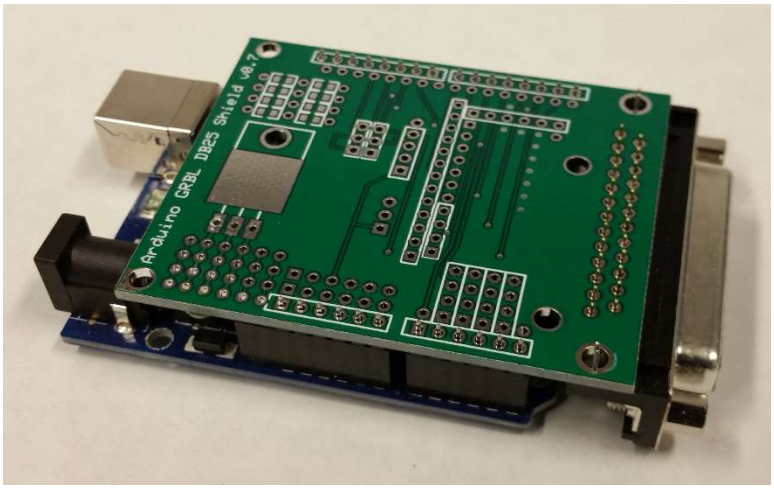
The easiest way to solder the headers is to insert them into your Arduino board.



Place the CNC PCB on top. Please pay close attention to the orientation.



Solder the DB25 female connector.



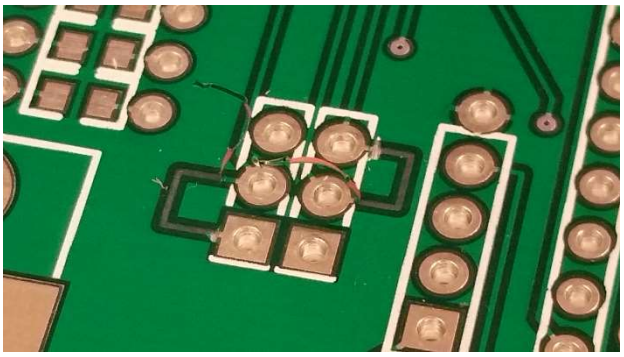
This kit comes with a female db25 connector as most cnc machines will come with a male to male db25 cable. However, if you need to use a make connector, you can. Just be sure to solder it to the top side of the board to keep the pin number correct. If you solder a male connector to the bottom all of the pins will

If you need a male db25 connector, you will need to solder it to the opposite (top) side of the board.

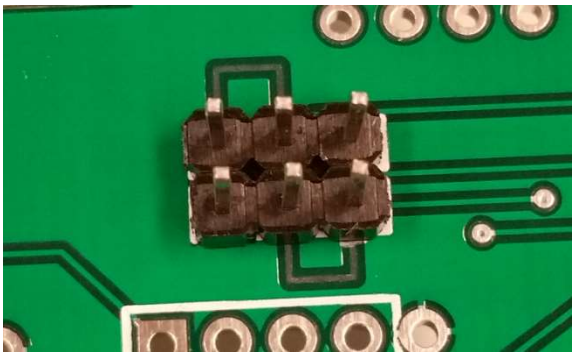
PWM Layout

If you are using GRBL v0.9 PWM Enabled configuration, then you need to do a few more steps.

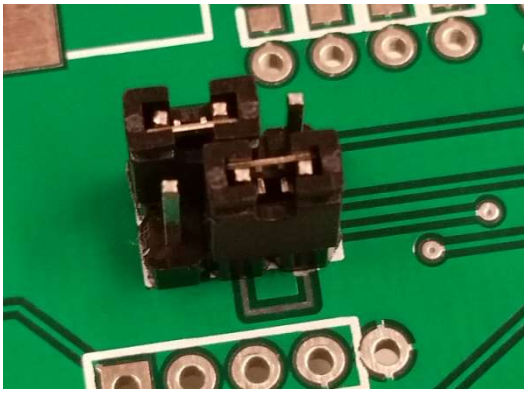
Cut the U shaped traces near the 2x6 pads.



Solder two 1x3 male headers



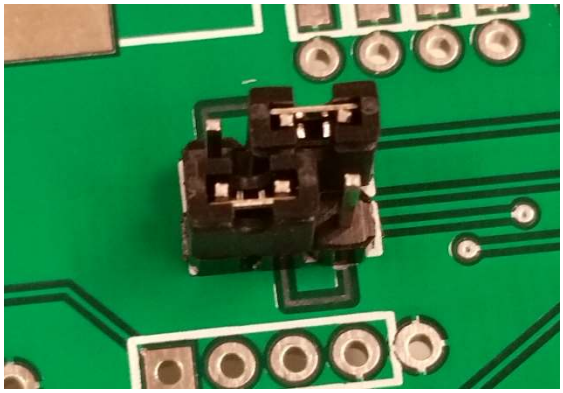
"Traditional Layout"



D11 – Z Axis Limit

D12 – Spindle Enable

"PWM Enabled Layout"

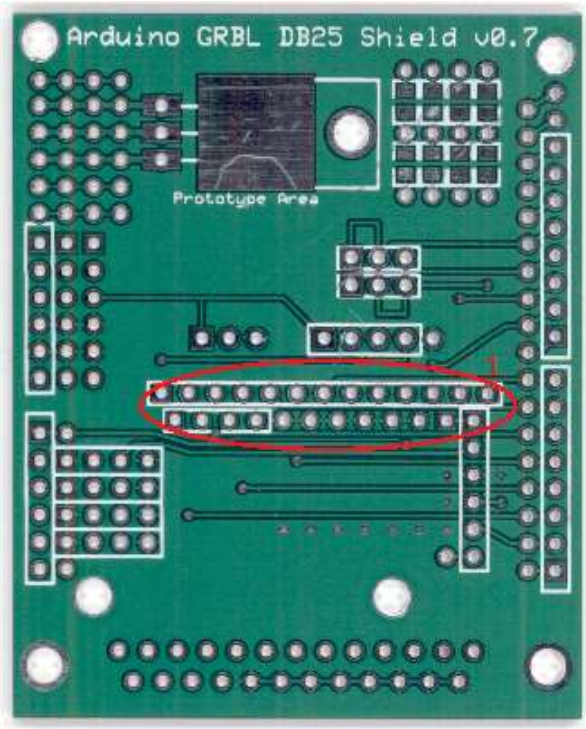


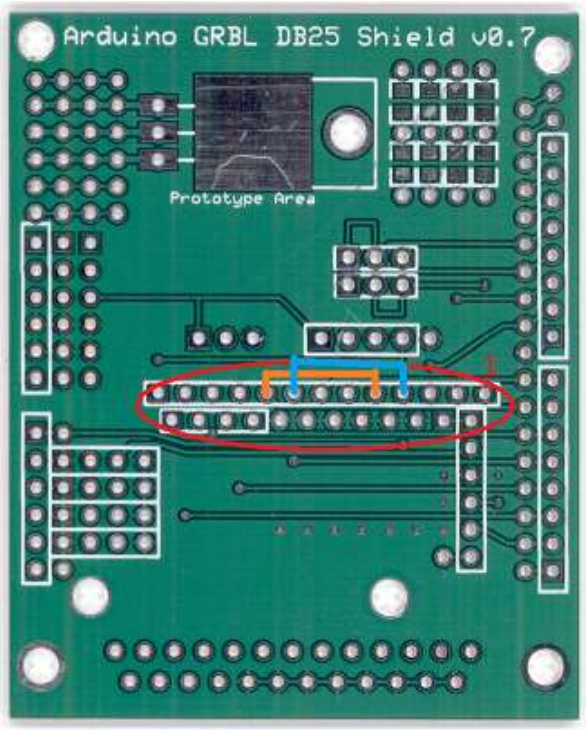
D12 – Z Axis Limit

D11 – Spindle Enable

More Modifications

All the db 25 pins (used or unused) have been pinned out. The circled are is the db25, pins as 0.1 headers (Pin 1 is on the right)





GRBL does not support an ‘A’ axis, but if your cnc mirrors the ‘Y’ and ‘A’ axis, you can do that with two jumpers.

Connect pin 4 (Y Dir) to pin 8 (A Dir). And connect pin 5 (Y Step) to pin 9 (A Step).

Now, Y Dir will be on db25 pins 4 and 8. Y Step will be on db25 pins 5 and 9

The “Prototyping Area” can be used for whatever you want. Status LEDs, Mosfet for controlling the spindle or pump.