

MANUAL FOR BREAKOUT BOARD HG08



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**INFORMATION IS SPECIFIC TO OUR PRODUCTS AND CAN CAUSE
DAMAGE IF USED WITH NONE COMPATIBLE PRODUCTS SO PLEASE
CHECK WITH YOUR SUPPLIER FOR COMPATIBILITY**

These drawings are supplied as a guide no guarantees are implied or given. Caution when wiring and check with a qualified professional if unsure. It is your responsibility to check you have complied with your local legislation as to safety requirements for your country as machines can cause injury to users.

By using these diagrams you agree to the above safety warning.

Documentation will be updated amended at the discretion of CNC4YOU Ltd.

Please Read Carefully Before Wiring Your Machine

CONDITIONS OF USE

Certain laws and regulations apply to your use of CNC machines and automated equipment and it is essential you comply with your local and any international regulations for construction and use of automated equipment.

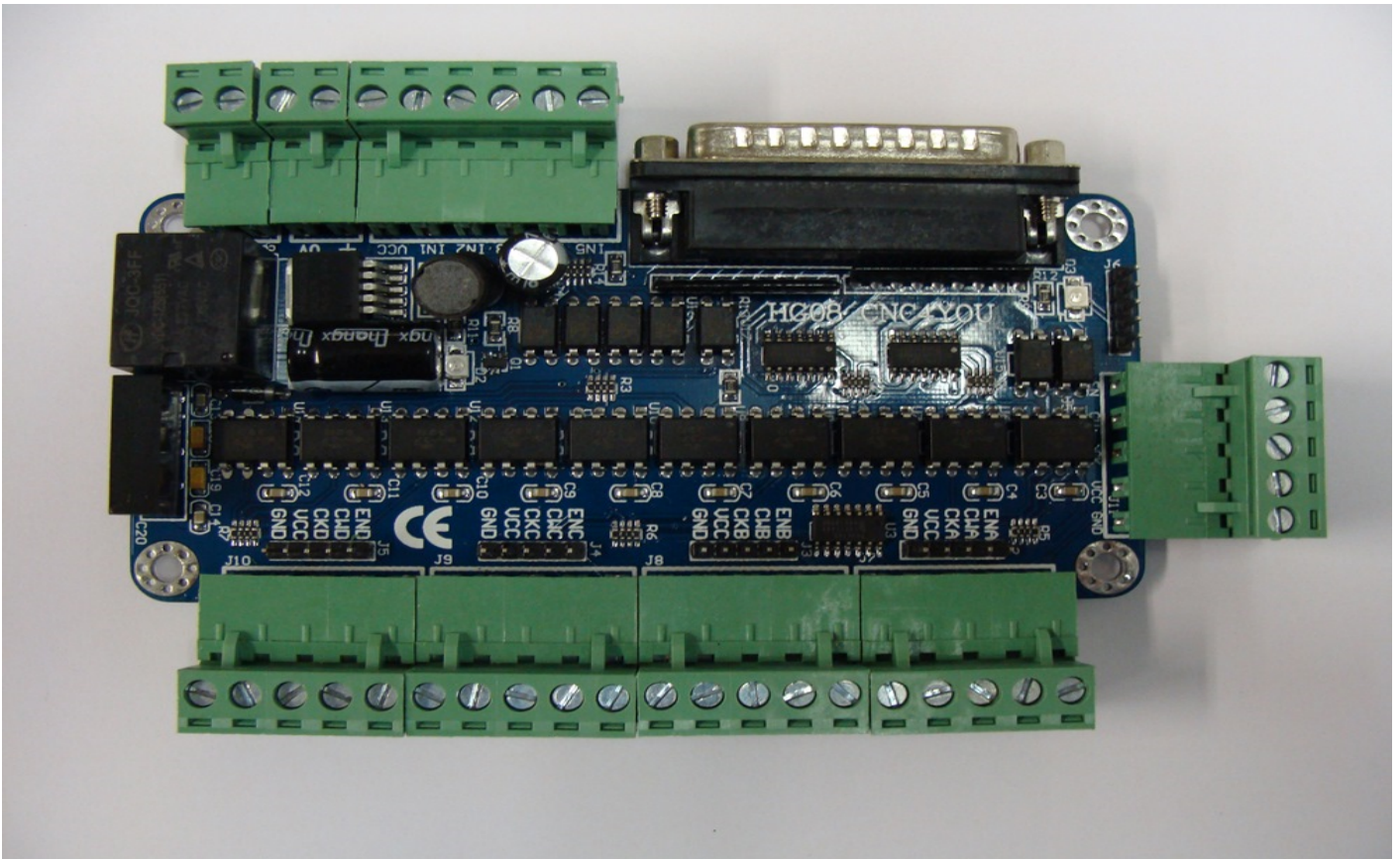
These diagrams are a guide to wiring your machine and do not constitute advice or direction to complying with your legal obligations and any health and safety requirements you must comply with. It is crucial you understand the dangers and safety implications when automating your machine or system and special care must be taken when automating your spindle or other cutting tools or equipment and we are showing a simple setup which will be amended without notice to show the complexity of automating cutting tools, but you are again responsible for meeting and understanding your specific end customer use and or meeting all necessary safety regulations and these can and do change regularly so consult your local regulations and make sure you observe all safety regulations .

You are required and agree to maintain compliance with all applicable laws and regulations. You understand and agree that you are solely liable for compliance with such laws and regulations, and under no circumstances shall CNC4YOU Ltd. be responsible or held liable for such compliance. You understand that breach of such laws and regulations may result in both criminal and civil sanctions against you. In accordance with these terms and conditions for CNC4YOU Ltd. you agree to indemnify CNC4YOU Ltd. for any violation of such laws and regulations. If in doubt seek professional advice if you are unsure of your legal obligations.

CNC4YOU Ltd assumes our equipment will be integrated into Industrial control equipment and as above integrated safely to avoid injury to yourselves or third parties. This equipment has not been designed for implicit use for life support applications or intrinsically safe designs where life threatening or critically safe use is required. Our products have not been specifically designed as fail-safe equipment. It is advisable to give adequate training and safety procedures to operators using automatic equipment.

Before using any drawings or wiring diagrams please check on our website for latest version, all wiring diagrams should have a version number if not please contact us so we can amend and issue version information.

MANUAL FOR BREAKOUT BOARD HG08



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1. FUNCTION INTRODUCTION

Use a front end filter and separate regulated PSU of between 9V and 24Volts.

Standard parallel port with onboard noise suppression and buffering using the 74HC14 high speed CMOS hex Schmitt inverter fabricated with silicon gate C2MOS technology all the inputs have 20% VCC hysteresis level.

This, together with its Schmitt trigger function, allows the device to be used on line receivers with slow rise/fall input signals wide operating range of high input voltage typically about 2.7Volts makes these boards more likely to accommodate new PC output levels but no guarantee can be given or presumed due to large variations in operating environments and design constraints on modern systems.

All inputs are equipped with protection circuits against static discharge and transient excess voltage.

On board power regulation is provided by using the LM2576HV series of regulators are monolithic integrated circuits that provide all the active functions for a step-down (Buck) switching regulator, with excellent line and load regulation.

Requiring a minimum number of external components, these regulators are simple to use and include internal frequency compensation and a fixed-frequency oscillator.

The LM2576 series offers a high-efficiency replacement for popular three-terminal linear regulators. It substantially reduces the size of the heat sink, and in some cases no heatsink is required as in our circuit as we are only using 300mA.

Other features include a guaranteed $\pm 4\%$ tolerance on output voltage within specified input voltages and output load conditions, and $\pm 10\%$ on the oscillator frequency. External shutdown is included, featuring 50mA (typical) standby current.

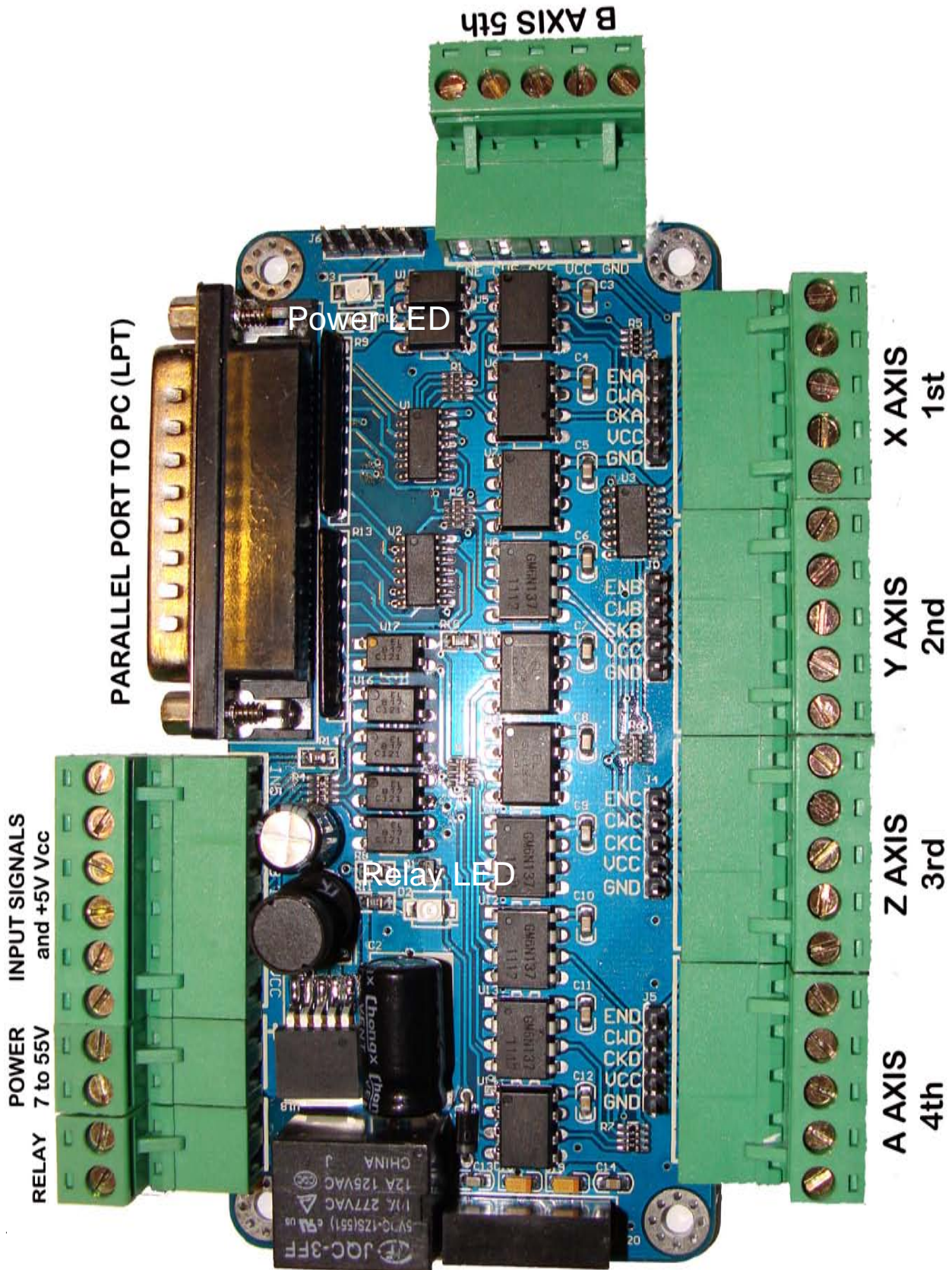
The output switch includes cycle-by-cycle current limiting, as well as thermal shutdown for full protection under fault conditions.

This then feeds a 1Watt isolated DC/DC converter B0505LS-1W with a high Efficiency up to 80% and 1KVDC Isolation to further enhance protection from machine to PC interface.

All outputs with the exception of the Enable line (74HC14 output) use the 6N137 single channel optocouplers consist of a 850 nm AlGaAS LED, optically coupled to a very high speed integrated photo-detector logic gate with a strobable output. This output features an open collector, thereby permitting wired OR outputs. The coupled parameters are guaranteed over the temperature range of -40°C to $+85^{\circ}\text{C}$. A maximum input signal of 5mA will provide a minimum output sink current of 13mA (fan out of 8).

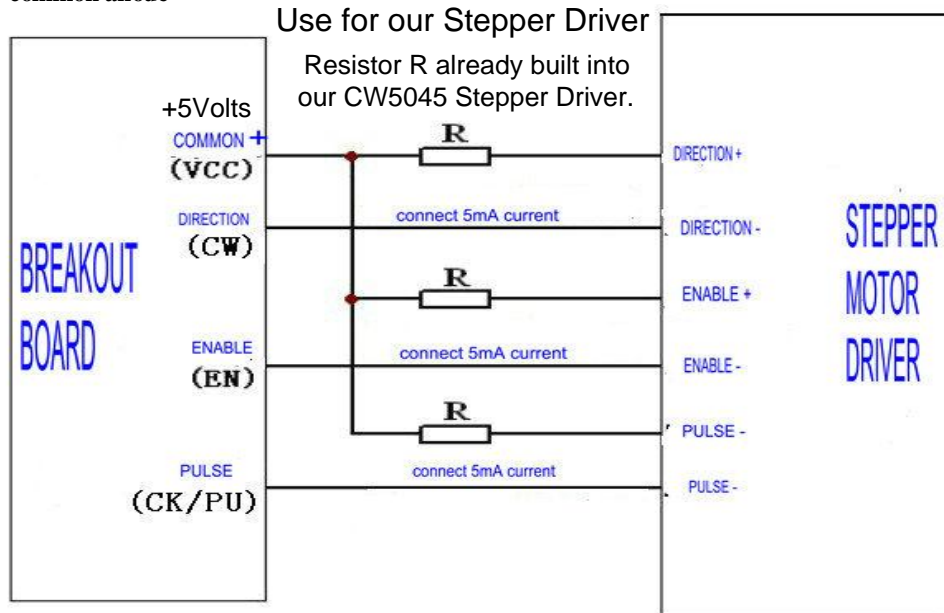
An internal noise shield provides superior common mode rejection of typically 10kV/?s.

2. OVERALL WIRING PINOUT

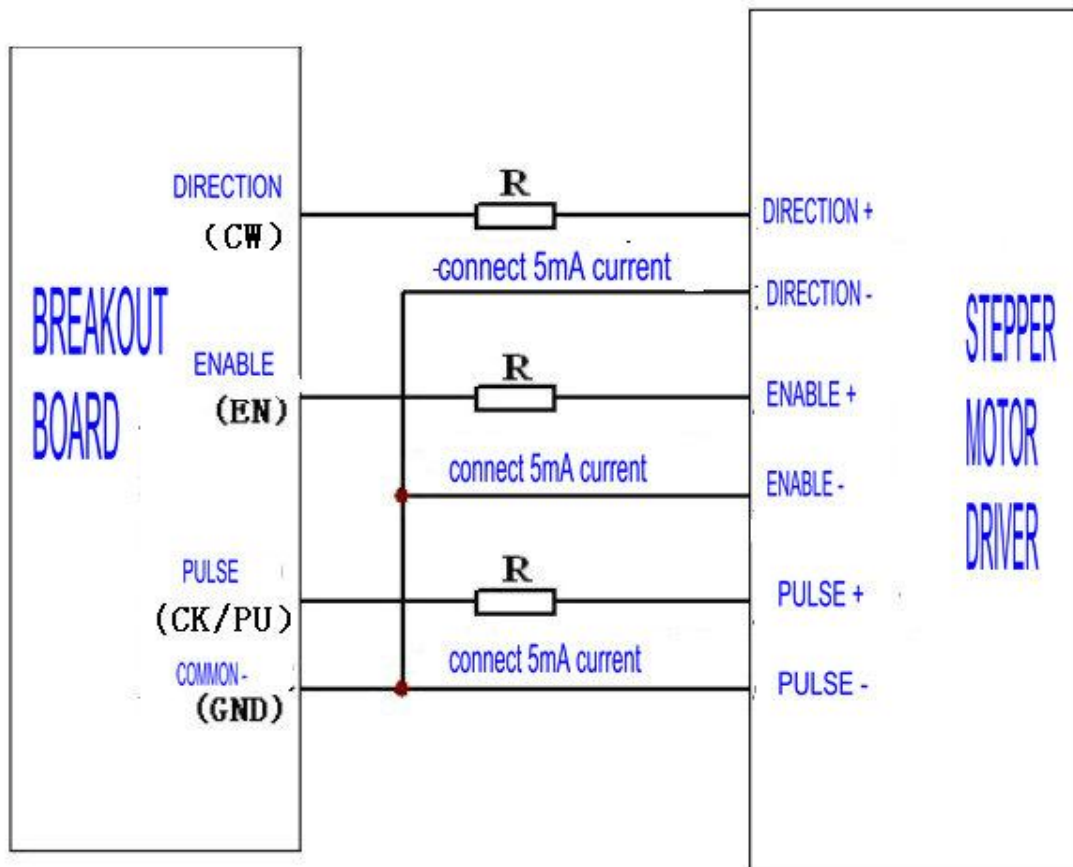


3. CONNECTION WAY FOR BREAKOUT BOARD AND STEPPER DRIVER

common anode



common cathode



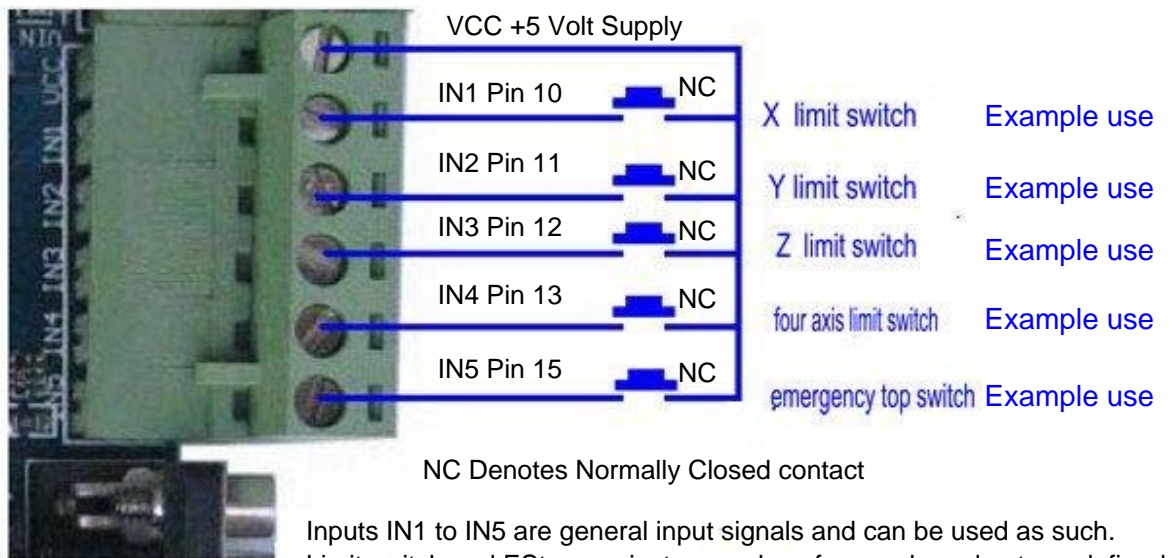
4. CONNECTION DIAGRAM FOR LIMIT SWITCH AND BREAKDOWN SWITCH

Input port pins are opto isolated and use isolated 5 Volts (VCC) for up to 1000V isolation thus helping to protect your PC or control electronics.

You can connect up to 5 lines with limit switches, emergency Stop switch, reset etc.

you can connect sensors for robots etc.

This is just an example of connection you can follow it or use your own circuit diagram.



Inputs IN1 to IN5 are general input signals and can be used as such. Limit switch and EStop are just examples of use only and not pre defined. We would normally recommend using one input for all limit switches and wire them through normally closed contacts in series.

5. CONNECTION WAY FOR RELAY CONTROL PORT



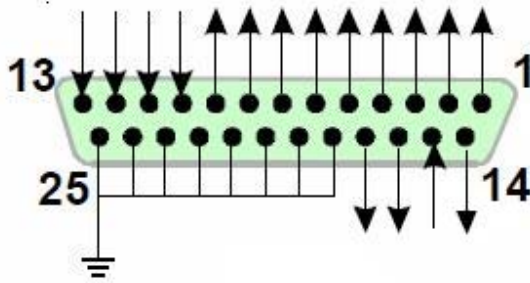
relay control

A maximum 10A @ 277V AC or 12A @ 125VAC can be switched. Best to use this to switch external relay as rather than have live vol;tages on board

Note: Relay state will be undefined until mach3 loaded and stable

Note:Please read Page 2 Safety warnings

6. OUTPUT DEFINE FOR 25 PINS



Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
ENA	DIR	PUL	DIR	PUL	DIR	PUL	DIR	PUL
ENABLE	Step X	Dir X	Step Y	Dir Y	Step Z	Dir Z	Step A	Dir A
Pin 10	Pin 11	Pin 12	Pin 13	Pin 14	Pin 15	Pin 16	Pin 17	Pin18-25
P10	P11	P12	P13	P14	P15	DIR	PUL	Gnd
Input 1	Input 2	Input 3	Input 4	Relay	Input 5	Step B	Dir B	0 Volts

Inputs IN1 to IN5 are general input signals and can be used as such.
 Limit switch and EStop are just examples of use only and not pre defined.
 We would normally recommend using one input for all limit switches and wire them through normally closed contacts in series.

MACH 3 SOFTWARE SETUP

Mach3 software startup

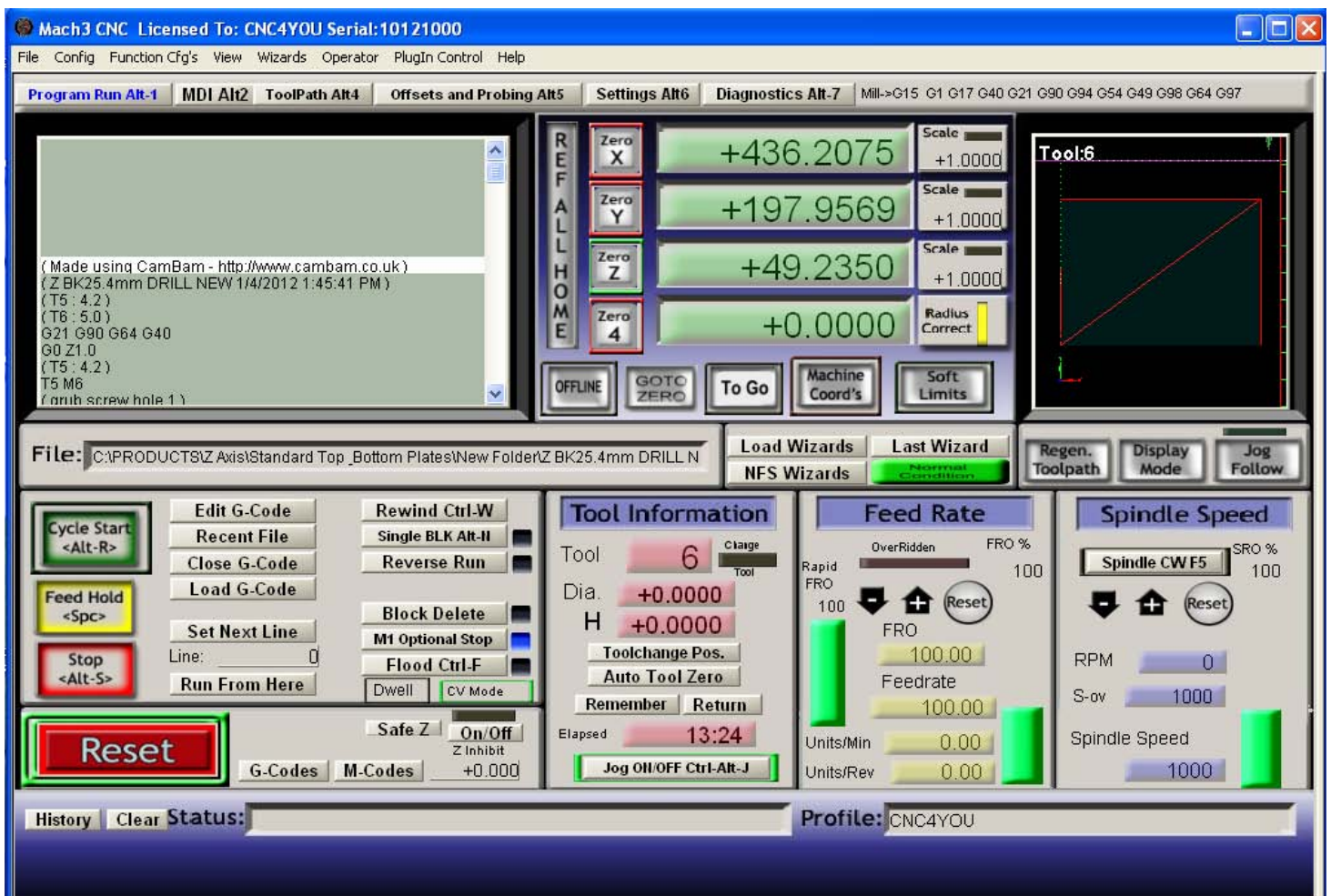
Download and install Mach3 software from the following link

<http://www.machsupport.com/downloads.php>

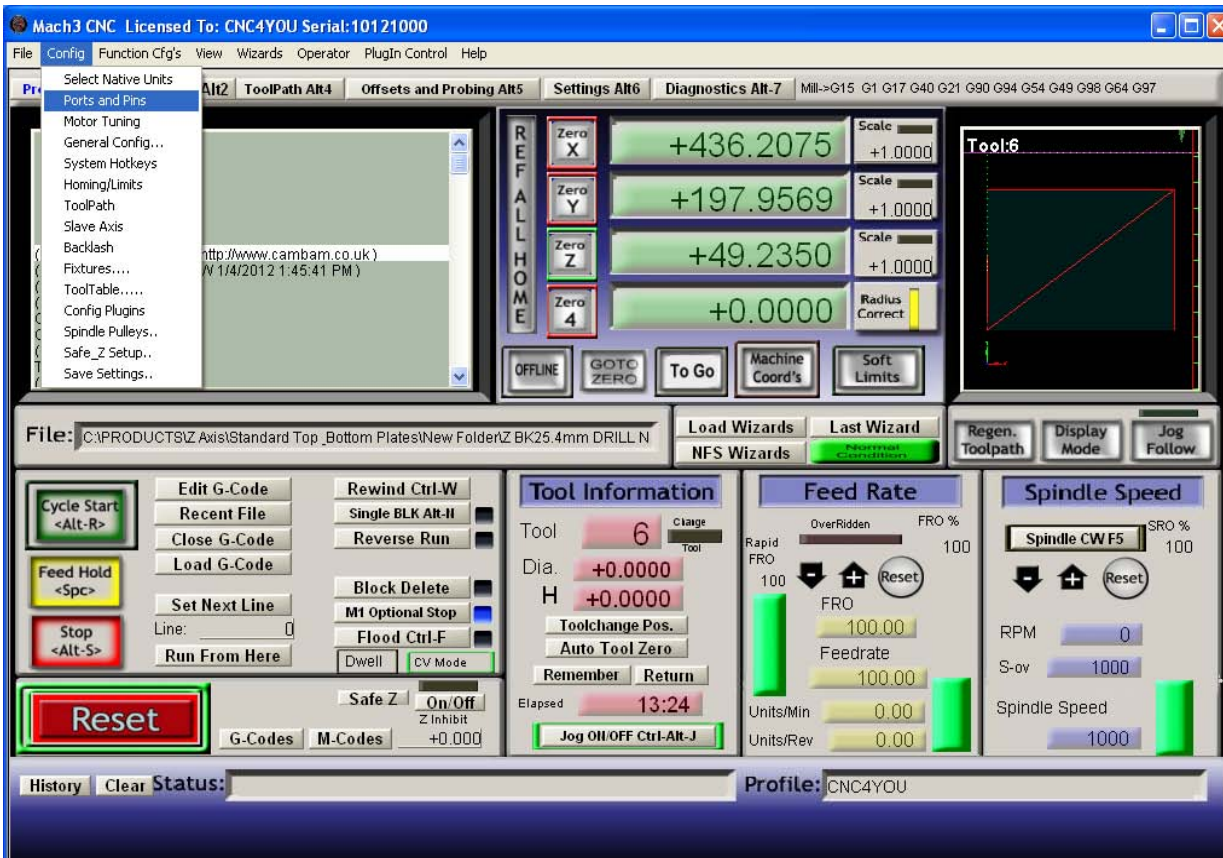
please select lockdown version if you are unfamiliar with Mach 3.

Place your licence file in the following folder if default installation has been used or select folder location you have selected on installation. C:\Mach3

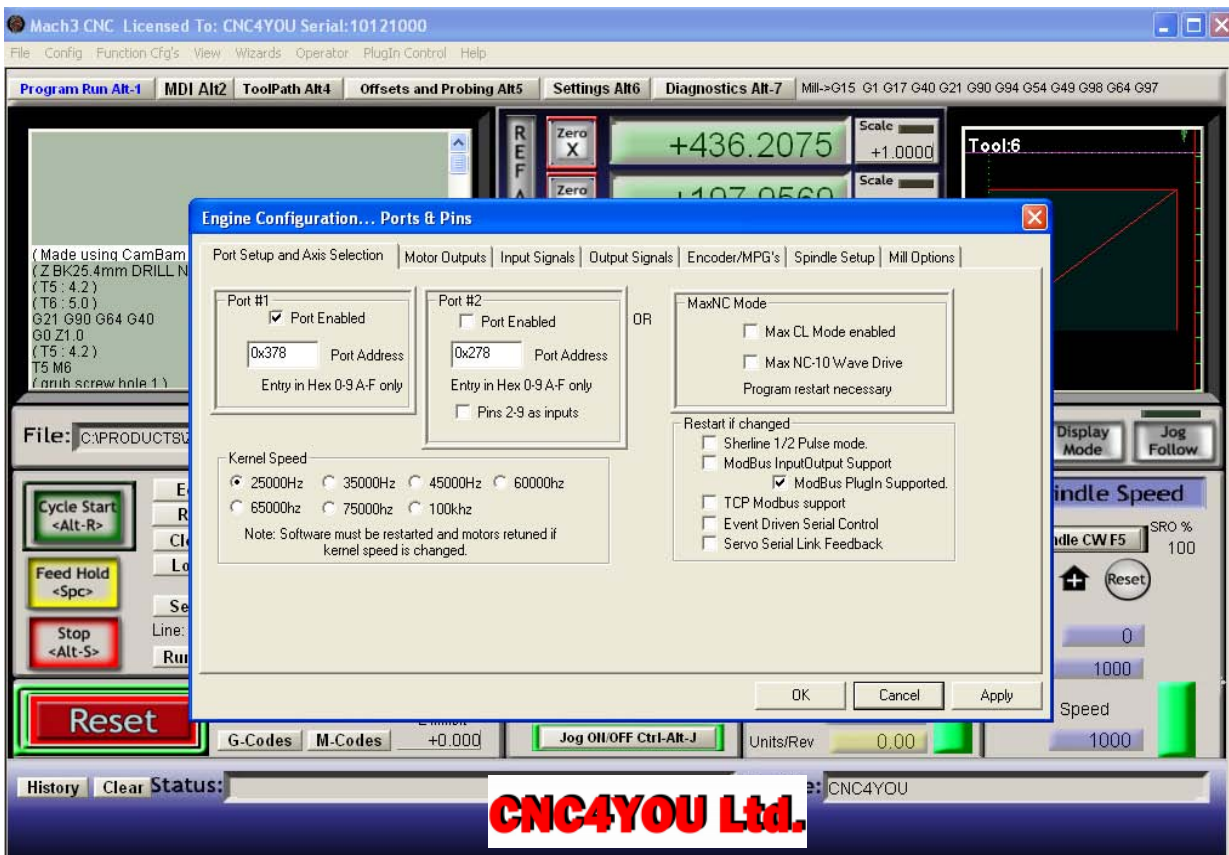
Open Mach 3 software and you should see a screen similar to the one below.



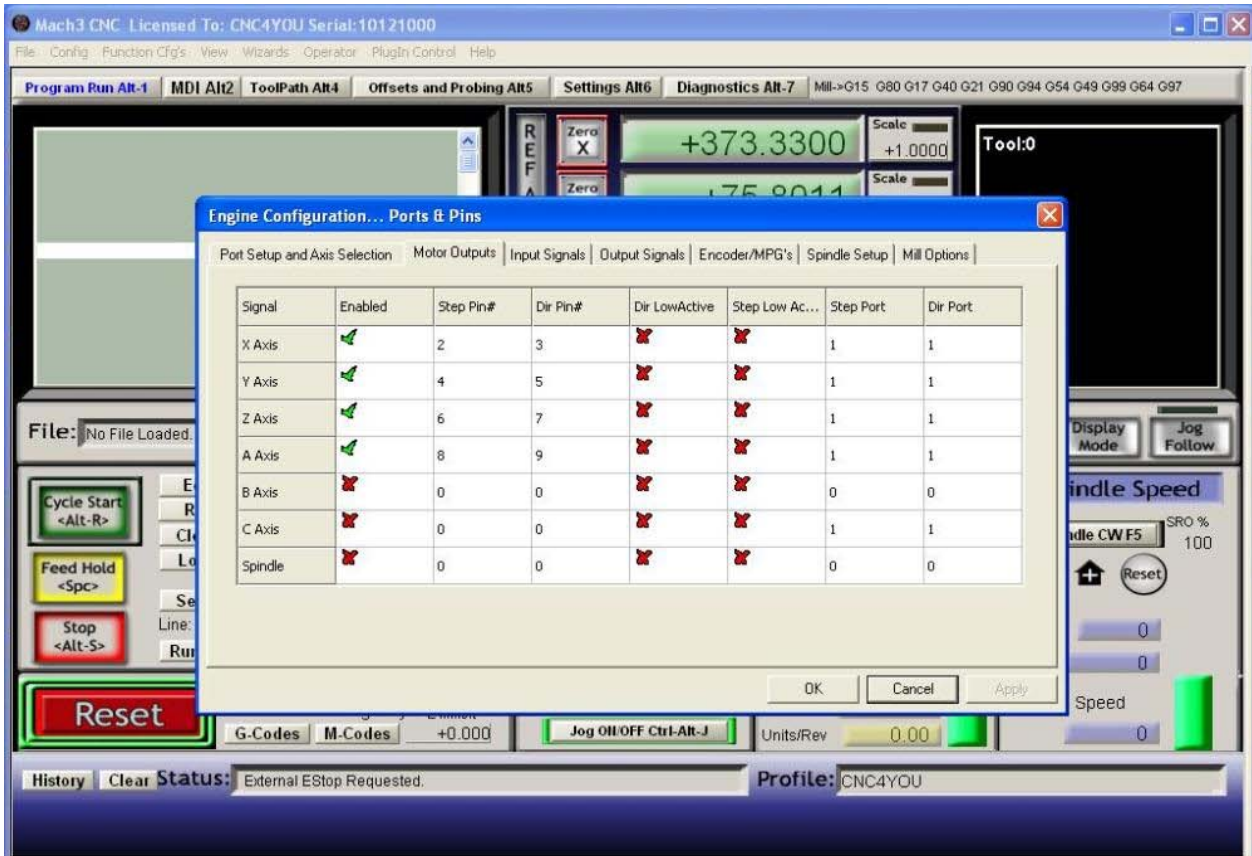
Along the top Menu Bar under Config go to ports and Pins as highlighted in Blue in the dropdown Menu and right click mouse button to select.



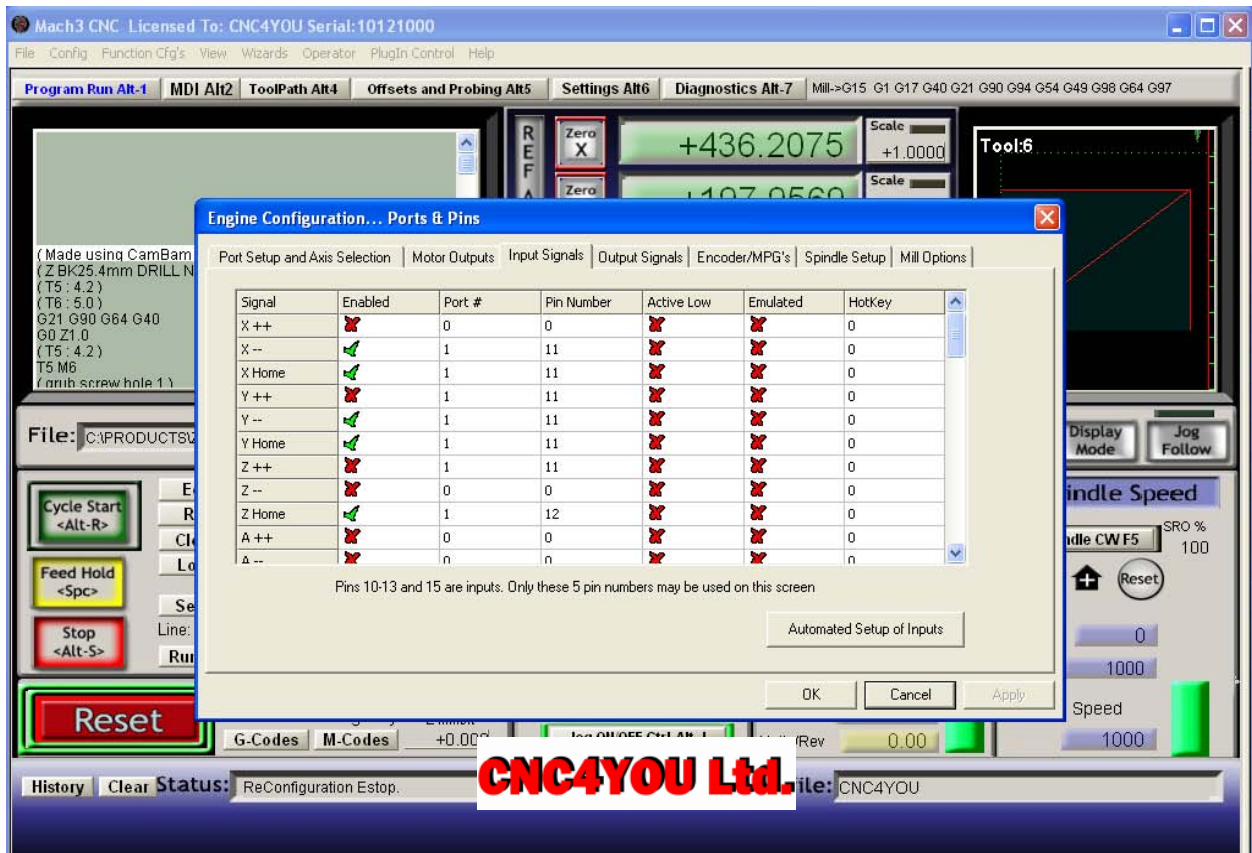
The following screen should appear this has information as to your port address chosen operating frequency etc. Under most circumstance these default setting are best used unless you have specific requirements or different port address.



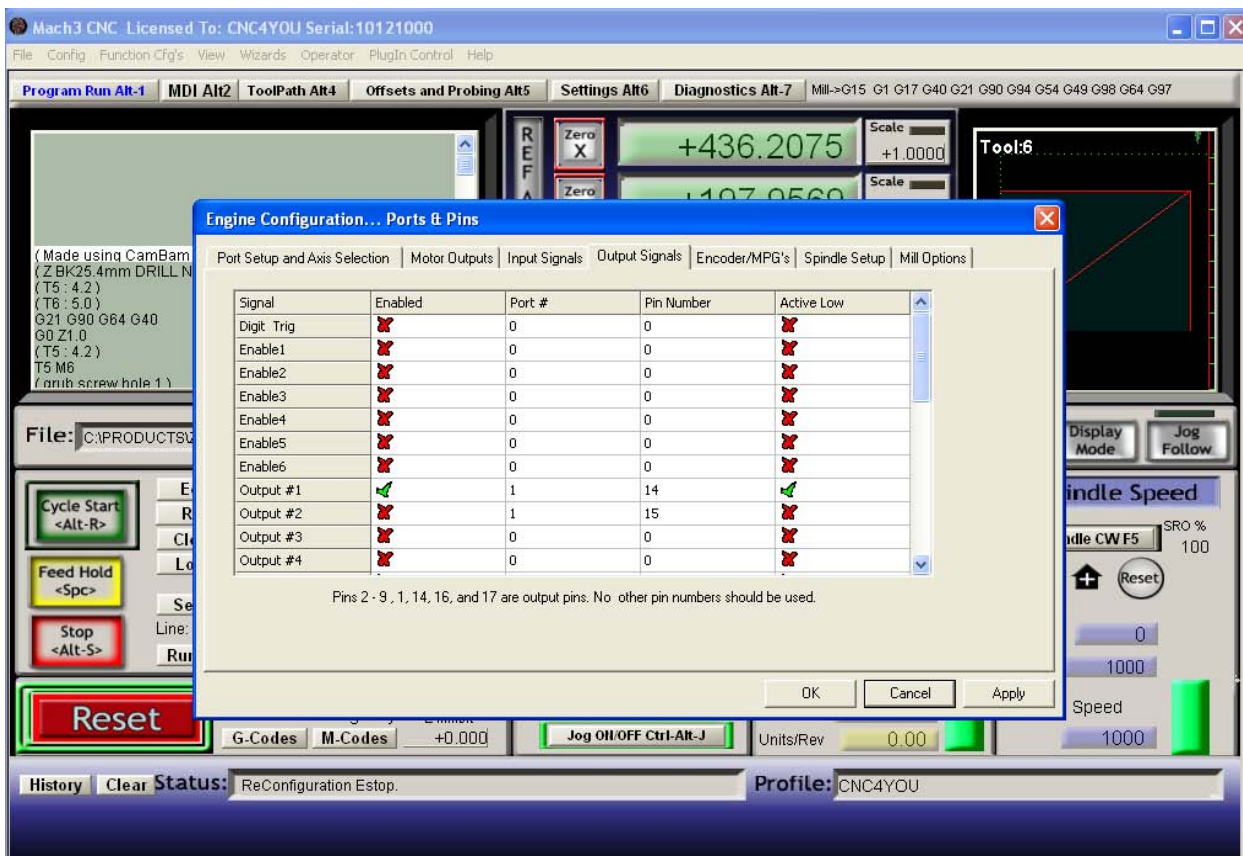
On inset menu along the top menu selection please click on Motor output to set, pin numbers for out put to your drivers. A four axis setup is shown but just populate B Axis with pins 16 and 17 in step and direction, enable axis and set outputs to port 1.



On inset menu along the top menu selection please click on Input Signal to set limit, E-Stop inputs these example are for normally closed contact switches. please note button at bottom of open window Automatic Setup of Inputs this allows for ease of setup automatically by Mach3.



On inset menu along the top menu selection please click on Output Signal to set pin for relay operation.



On inset menu along the top menu selection please click on Spindle Setup to set operation of relay under Mach3 control for automatic switching spindle On and Off. Make sure Disable Spindle Relays is unchecked and at least M3 Clockwise is set to output 1.

