



Novakon Systems Ltd

CD-100

COMPUTER DRIVER

OPERATOR'S MANUAL



CHAPTER 1

INTRODUCTION

1.1 Thank you for your order

Congratulations on your purchase of CD-100 Computer Driver. With proper set-up and maintenance, your computer driver should provide many years of quality work and enjoyment. This manual covers general instructions regarding machine set-up, operation, maintenance and troubleshooting for the CD-100 Computer Driver.

1.2 Important

Before opening your CD-100 Computer Driver, this instruction and any accompanying manual should be read carefully. Instruction manuals should be kept in a safe place where they are always easily accessible for reference during the operation of the machine.

While this manual has been compiled to give the general description and usage of the CD-100 Computer driver, changes are possible due to continuous design and development efforts.

Remember, safety comes above all else. Carefully read, follow, and understand the safety information outline in Chapter 3 of this manual and always let common sense be your guide.

1.3 Suggestions or Comments

We are interested in any suggestions you might have to improve our products and services. Feel free to contact us with your suggestions by phone or in writing.

If you have any comments about this operator's manual, or if you'd like to share with us, contact:

NOVAKON SYSTEMS LTD.
160 Gibson Drive, Unit 11
Markham, Ontario
L3R 3K1
Canada

If you have questions regarding our products, we are available from Monday to Friday from 10:00 a.m. to 6:00 p.m. Eastern Time; or you may also e-mail your questions 24 hours a day to sales@Novakon.net. If you are calling outside Canada, please dial 1-905-258-0366 or 1-905-258-0566. You may also fax your questions to 1-905-258-0633.

1.4 Customer Information

Please record your information below about your CD-100 Computer Driver. Having this information readily available will save time if you will need to contact Novakon Systems Ltd for questions, service, accessories, or replacement parts.

Model Number: _____

Serial Number: _____

Purchase Date: _____

Delivery Date: _____

We look forward to a long working relationship with you, and thank you for putting your trust in Novakon Systems Ltd.

CHAPTER 2

WARRANTY

Novakon Systems Ltd warrants its CD-100 Computer Driver and machines for a period of one (1) year to the original purchaser from the date of purchase. If within (1) year from the date of purchase, the CD-100 Computer Driver and machines fails due to a defect in material or workmanship, Novakon system Ltd will at their choice repair and/ or replace components with new or remanufactured parts free of charge.

Most warranty repairs and/or replacements are handled routinely, but sometimes request for warranty service may not be appropriate. This warranty does not apply to defects due to either directly or indirectly misuse, abuse, negligence, accidents, repair or lack of routine maintenance.

An investigation will be made by Novakon Systems Ltd to determine whether the warranty applies or not. To qualify, listed below are some of the causes of machine failure that this warranty does not cover.

1. **Normal Wear** – All mechanical devices need periodic parts service and replacement. This warranty does not cover repair when normal use has exhausted the life of the parts or components.
2. **Improper Maintenance** – The life of the machine and computer driver depends upon the conditions under which it operates, and the care it receives. Application of this machine may be in dusty and dirty environment, which can cause what appears to be premature wear. Such wear when caused by dirt, dust, cleaning grit, or any abrasive material is not covered under warranty.
3. **Machine Installations** – Improper installation of the machine or computer driver can prevent starting, causes unsatisfactory performance and can shorten machine life.
4. **Parts damaged** by excessive speed or overheating. Refer to the instruction manual for the recommended working environment and maintenance schedule.
5. **Parts broken** by excessive vibration caused by improper mounting of the machine or tools, installation, unbalances set-up, improper attachment of work pieces or other abuse in operation.
6. **Parts** which are determined to have failed due to improper use or excessive wear caused by continuous use in a production environment. In cases such as this, Novakon systems Ltd will inspect the machine or part and will be the sole judge of the merit of the claim.
7. **Mishandling**, improper operation or using the machine for operations other than what they were intended for.

Transportation charges of parts and/or components submitted for repair and/or replacement under this warranty are the responsibility of the purchaser. Before returning the machine or component, a Return

Merchandise Authorization (RMA) number must be assigned in order for us to accept the return shipment.

No warranty registration is necessary. Please provide your invoice as proof of purchase. In the event that it is not provided, the date at the time of warranty will be determined by the purchase date and will be used to determine the warranty period.

In no event shall Novakon Systems Ltd be liable for indirect, incidental or consequential damages from the sale or use of the product. This disclaimer applies to both during and after the terms of this warranty.

CHAPTER 3

GENERAL SAFETY GUIDELINES

3.1 Safety is # 1

CD-100 Computer Driver has been proven to be safe and reliable. However, if abused or operated improperly, it can cause injury to you or others. Please read the safety guidelines properly before starting up with your computer driver. Proper use will create a safe working environment and prolong the life of your computer driver.

All wires should be treated as HOT and suitably protected. Care must be taken that the user cannot come in contact with these volts above ground.

3.2 Basic Points of Safety

- There are high voltages terminals on the electrical control panel, when you switch it off make sure to wait for 3-5 minutes to allow the capacitor to discharge fully before touching any components of the driver.
- Make sure all cables are fitted before the power is switched ON.
- If any components are to be removed, first power down and turn off the computer switch and unplug the controller.
- Check all electrical cables for damage to prevent electrical shock.
- When you disconnect a cable, pull on the connector or its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in the locking tabs before you disconnect the cable. As you pull the connector apart, keep them evenly aligned to avoid bending any connector pins.
- Do not remove the motor cable if the high voltage power supply is still on, this may damage the motor drivers.
- Before you connect a cable, ensure that all connectors are correctly oriented.

CHAPTER 4

INSTALLATION & SET-UP

4.1 Set-up Clearances

When considering the permanent location for your CD-100 Computer Driver, the following should be taken into consideration.

- The computer driver should be installed on a flat surface so that it will not rock or slide during the operation.
- This location should be the machine's permanent location. For best results, use our professional work station to mount your computer driver system (see figure1).
- Improper installation and unlevelled machine can cause both numerical error and loss of precision in your operation.

4.2 Power Requirements

The power cord/plug that is supplied with your CD-100 Computer Driver has a capability for both 110 voltages and 220 voltages. Refer to Table 4.1 for the power requirement of your Computer Driver.

Voltage	HV Power	Computer Power
110	10 amps	5 amps
220	5 amps	2.5 amps

Table 4.1 Power Requirement

4.3 Stand Requirements

Your work station should be located in a vibration free area with a floor that is designed to support the full weight of the machine, accessories and materials.

If you purchased the optional Professional Work Station, it includes 4 power strip screws and 2 controller screws that are mountable to your workstation. (See figure 1)



Figure 1: Work Station

4.4 Start-up Connection

Our computer driver is easy to use; just follow the steps below to start up the connection of your CD-100 computer Driver.

Step1: Connect the monitor, mouse and keyboard to your computer. Use the supplied adaptor to connect the monitor to the video card digital output.

Step 2: Plug in the power cord to monitor.

Step3: Plug in the two (2) power cords to the back of the computer driver. One power cord is used for the computer operation and the other power cord is used for the high voltage stepper motor.

Step 4: Connect the parallel jumper cable between the computer parallel port and the driver card input. Secure the screws to hold the connectors in place.

Step 5: Connect the stepper motor cable between the driver card (stepper motor power) and the CNC machine.

Step 6: Connect the Limit Switch Spindle Control cable between the driver card (Limit Switch & Spindle Control) and the CNC Machine.

Step 7: Plug in the CNC machine power cord. (If you have the NM200 model, you will need to make special two- pole switch to your power)

Step 8: You may now begin to power up the system in the following order:

- Turn the computer switch to ON. The computer may auto start, or it may also need to be initiated by pressing the Computer Start (green) button.
- The computer will perform its windows XP start up procedure and will bring you to the windows desk top screen.

- From the desk top, you may select the appropriate icon to start your Bob CAD/CAM software or you can start the MACH3 Mill Program.
- Refer to the applicable operation manual for the operation of the software.

4.5 Installations

Now that your CD-100 has been set-up, you are ready to install your control system. If you purchased a Mach 3 system or PC Ready System, please refer to the documentation sent with your controller. If you have purchased the base machine, we have supplied you with a set of plugs that match the sockets on the junction box of the bed mill. You will be able to use these to wire your control system of choice to your bed mill. Please refer to the installation diagram below for easy guide.



Figure 4.5 Installation Diagram

4.6 Computer Connections

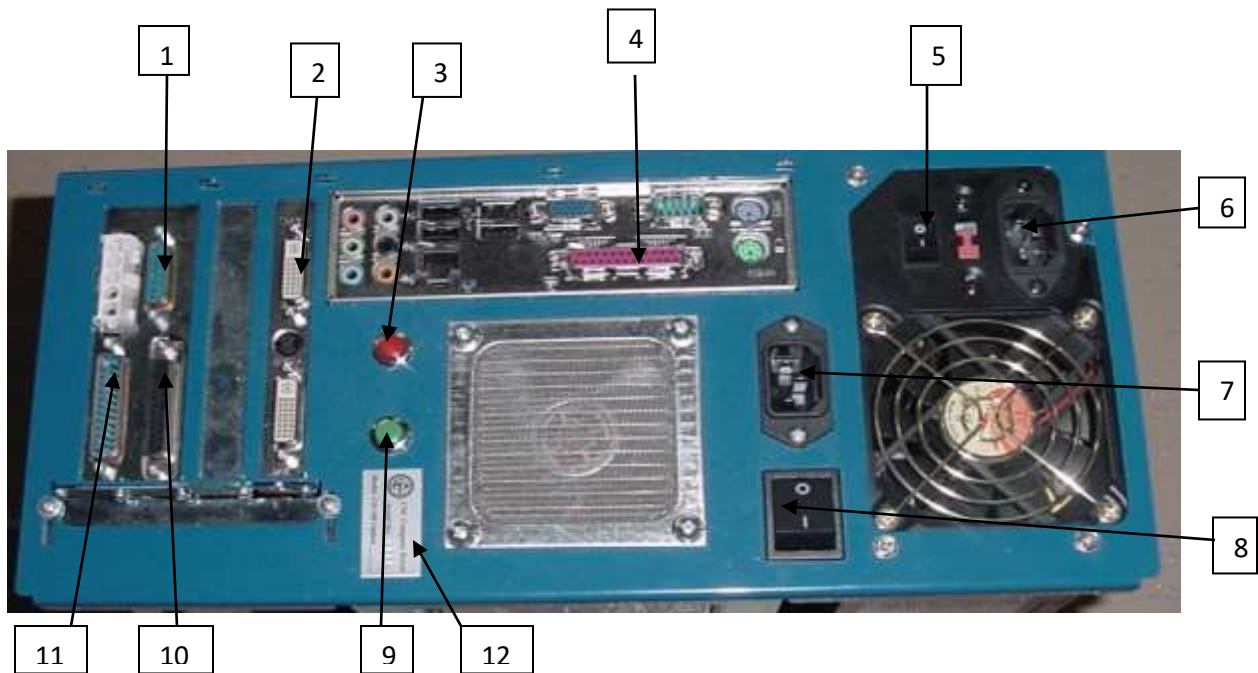


Figure 4.6 Controller Connections

1. Limit switch & spindle control
2. Video card output
3. Computer reset
4. Parallel port
5. Computer switch
6. Computer plug
7. High voltage plug
8. High voltage switch
9. Computer start
10. Driver card input
11. Stepper motor power
12. Model & Serial Numbers

CHAPTER 5

COMPUTER COMPONENTS, IDENTIFICATION & FUNCTION

5.1 OVERVIEW

This chapter will help you familiarize yourself with the major components and function of your CD-100 Computer Controller also known as SMART DRIVE (see figure 5.1)



Figure 5.1 CD-100 Computer Controller

The CD-100 is a software controlled system which was comprehensively designed from the ground up to host a variety of CNC machines. It contains a powerful computer and driver for sophisticated software stepper motor operation. It comes complete with four (4) fully functional axes control drivers utilizing the power of the popular Mach3 software. Add one of our high performances Bob CAD-CAM software packages and you will have all the capability you need in one complete and compact unit. You can now plug our professional controller into any of our mills, your home projects or any other stepper motor controlled machine without making tedious adjustments. It also features special circuitry that identifies the attaching machine requirements and automatically selects the proper voltage and current settings for your CNC machine. With the 1050 VA transformer, the controller drives each stepper motor up to 7 Amperes @ 75 volts. Our controller has become a true Plug & Play device for your shop. Refer to the specifications below for more detailed features of our CD-100 computer driver.

5.2 Specifications

Physical:

Size	6-3/4" W x 14 1/2" L x 15" L
Weight	42 pounds
Chassis	16 gage cold roll sheet, zinc plated
Finish	blue base/ yellow cover powder coated
Shipping weight	102 pounds

Electrical:









Voltage	110/220 Volts AC 50/60 cycles
Input Power	1500 Watts Maximum
Output Voltage	38/75 Volts Selectable
Output Stepper Drive	4 axes @ 7 Amps, 75 Volts Maximum
Output Spindle Control	0-10 Volts DC Variable
4 th Axis Control	User Definable

Computer (Full System)

Intel Core 2 Dual Processor 2 GHz 2MB Cache 800 MHz & MB
1 GB RAM
450 Watt Power Supply
512 MB Graphics Card
80 GB SATA-II Hard Drive
Windows XP Operating System
Mach3 Control Software <http://www.machsupport.com>
19" LCD Monitor
Keyboard, mouse and Interface cables

5.3 Components

The CD-100 Computer Driver has several components which includes the following:

Description	Product Photo
<p>Power Cords -There are two power cords, one power cord is used for the computer operations and the other one is used for the high voltage stepper motor power.</p>	
<p>Parallel jumper Cable - To be connected in the computer parallel port to driver card input.</p>	
<p>Motor Driver Cable To be connected in the driver card and the CNC machine</p>	
<p>Spindle / Limit Switch Control cable To be connected in the driver card and the CNC machine</p>	
<p>Mach3 Control Software Version 3 of the PC based CNC control software which is preloaded in your computer.</p>	
<p>Drivers and Manuals for your motherboard, video card, RAM, and hard drive.</p>	
<p>Microsoft XP Operating System It is preloaded in your computer driver</p>	
<p>Optical Mouse, keyboard and 19" Samsung mountable LCD monitor These are to be connected together to your computer.</p>	

CHAPTER 6

PARTS & DIAGRAMS

6.1 Manual Parts & Diagrams

This chapter will help you familiarize yourself with various parts and diagrams of CD-100 Computer Driver. The photograph in this section shows the interior part the computer controller driver.

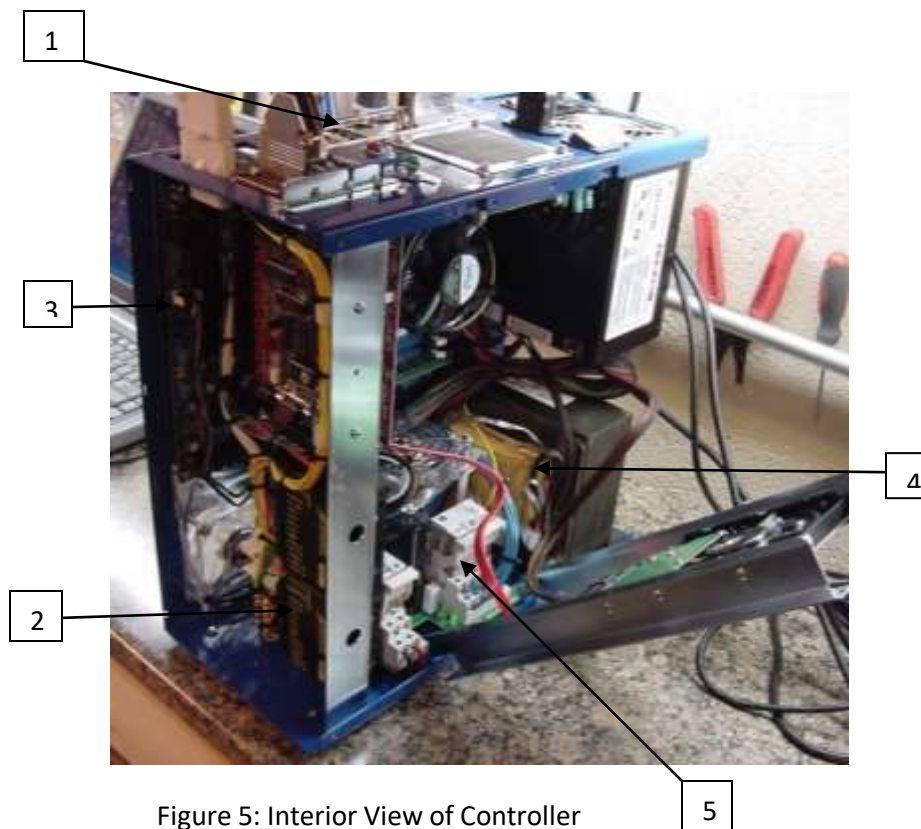


Figure 5: Interior View of Controller

1. Computer Interface
2. Controller Driver Card Assembly
3. Mother Board
4. Transformer
5. Power Supply Regulator

6.2 Controller Driver



Figure 6.2: Controller Driver

1. C11G Break out Board
2. Gecko Drivers
3. Fuses

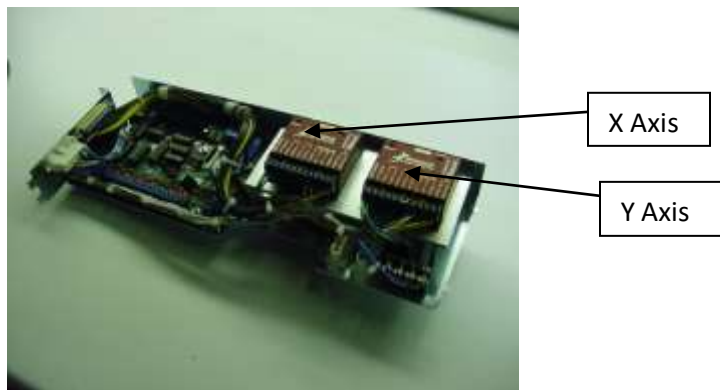


Figure 6.3A: X & Y Axis

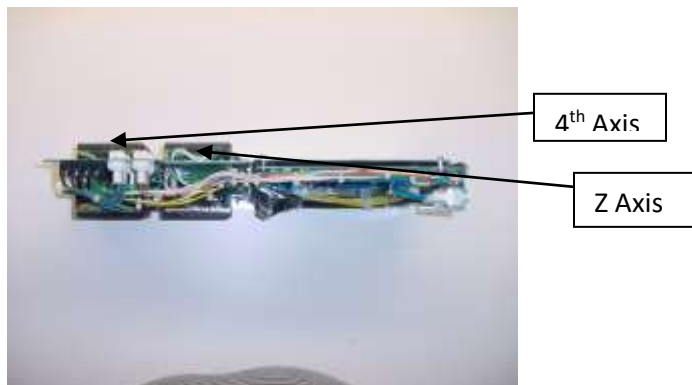
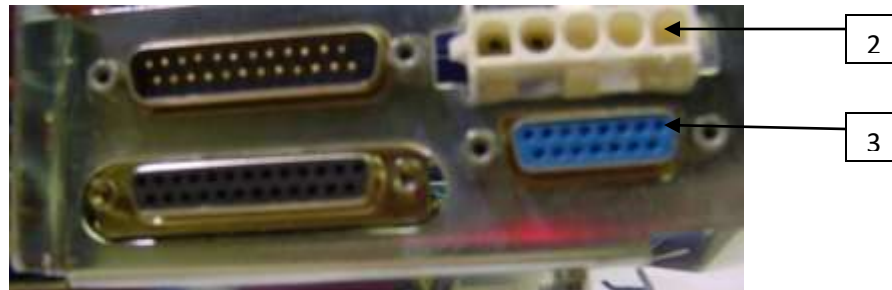


Figure 6.3B: Z-Axis & 4th Axis

6.3 UNI-Mate Connectors



Figure 6.3: Rear View of UNI-Mate Connectors



1. DB15 Connectors
2. UNI-Mate J3
3. DB15 Connector

6.3 Controller Driver Wiring Connection

Wire color	Start Location	Pin Number (End location)	Function
Black	DB25, J1-1	Driver X, pin 3	X axis, stepper motor A+
Black	DB25, J1-2	Driver X, pin 4	X axis Stepper motor A-
Black	DB25, J1-3	Driver x, pin 5	X axis stepper motor B+
Black	DB25, J1-4	Driver X, pin 5	X-axis, stepper motor B-
Black	DB25, J1-5	Driver Y, pin 3	Y axis, stepper motor A+
Black	DB25, J1-6	Driver Y, pin 4	Y axis, stepper motor A-
Black	DB25, J1-7	Driver Y, pin 5	Y axis, stepper motor B+
Black	DB25, J1-8	Driver Y, pin 6	Y axis, stepper motor B-
Black	DB25, J1-9	Driver Z, pin 3	Z axis, stepper motor A+
Black	DB25, J1-10	Driver Z, pin 4	Z axis, stepper motor A-
Black	DB25, J1-11	Driver Z, pin 5	Z axis, stepper motor B+
Black	DB25, J1-12	Driver Z, pin6	Z axis, stepper motor B-
Open	Open	Open	Open
Black	DB25, J1-14	Driver A, pin 3	A axis, stepper motor A+
Black	DB25, J1-15	Driver A, pin 4	A axis, stepper motor A-
Black	DB25, J1-16	Driver A, pin 5	A axis, stepper motor B+
Black	DB25, J1-17	Driver A, pin 6	A axis, stepper motor B-
Yellow	DB25, J1-18	Driver X, pin 11	Driver X, current set
Yellow	DB25, J1-19	Driver X, pin 12	Driver X, current set
Yellow	DB25, J1-20	Driver Y, pin 11	Driver Y, current set
Yellow	DB25, J1-21	Driver Y, pin 12	Driver Y, current set
Yellow	DB25, J1-22	Driver Z, Pin 11	Driver Z, current set
Yellow	DB25, J1-23	Driver Z, pin 12	Driver Z, current set
Yellow	DB25, J1-24	Driver A, pin 11	Driver A, current set
Yellow	DB25, J1-25	Driver A, pin 12	Driver A, current set

Table 6.1: DB25 Connectors

Wire Color	Start Location	End Location	Function
Blue	DB15, J2-1	Board Ac relay	AC relay
Blue	DB15, J2-2	Board AC relay	AC relay
Orange	DB15, j2-3	Board DC relay NO	Mech. relay N.O
Yellow	DB15, J2-4	Board Analog 0-10 V	Spindle sheet
White	DB15, J2-5	Board 10	Emergency stop
White	DB15, J2-6	Board 11	X,Y,Z axis limit switches
White	DB15, J2-7	Board 12	AUX 1 input
White	DB15, J2-8	Board 13	Aux 2 input
White	DB15, J2-9	Molex, J5 -4	Group 2 Select
Orange	DB15, J2-10	Board DC relay COM	Mech. Relay Com
Green	DB15, J2-11	Board Analog GND	Analog GND
Blue	DB15, J2-12	Board IN 12 VDC	Group 2 select (12VDC)
Blue	DB15, J2-13	Molex, J5-5	Neg. 12 VDC
Green	DB15, J2-14	Board In GND	Limit Switches COM
Blue	DB15, J2-15	Board IN +12 VDC	12 VDC

Table 6.2: Electrical Connection

Wire Color	Start Location	End Location	Function
Blue	Molex J3-1	Board AC relay	Coolant Pump
Blue	Molex J3-2	Board AC relay	Coolant Pump
Green	Molex J4-1	Terminal Board	Driver ground
Green	Terminal Board	Driver X, pin 1	Driver Ground
Green	Terminal Board	Driver Y, pin 1	Driver ground
Green	Terminal Board	Driver Z, pin 1	Driver ground
Green	Terminal Board	Driver A, pin1	Driver ground
Blue	Fuse holder 1	Driver X, pin 2	X Axis power
Blue	Fuse holder 2	Driver Y, pin 2	Y Axis power
Blue	Fuse Holder 3	Driver Z, pin 2	Z Axis power
Blue	Fuse Holder 4	Driver A, pin 2	A Axis power
Blue	Molex J4-2	Fuse holder 1	X axis high power
Blue	Molex J4-3	Fuse holder 2	Y axis high power
Blue	Molex J4-4	Fuse Holder 3	Z axis high power
Blue	Molex J4-5	Fuse Holder 4	A axis high power
Green	Molex J5-1	Board power ground	Low voltage ground
Blue	Molex J5-2	Board power 12V	12 volts DC
Red	Molex J5-3	Board power 5 V	5 volts DC
Blue	Molex J5-4	DB 15, J2-9	Group 2 select
Blue	Molex J5-5	DB15, J2-13	Neg. 12VDC

Table 6.3: J4 & J5 Electrical Connection

6.4 Break out Board

Overview

This card has been designed to provide a flexible interface and functions to your computer numerical control projects by using parallel port control software. This board comes as a response to many users that have been asking for a faster way to connect devices and reduce the possibility of wiring errors. (See Figure 10)



Figure6.5: C11G Breakout Board

Wire color	Start Location	End Location	Function
White	Breakout Board 2	Driver X, pin 9	X step clock
White	Breakout Board 3	Driver X, pin 8	X direction clock
White	Breakout board 4	Driver Y, pin 9	Y step clock
White	Breakout board 5	Driver Y, pin 8	Y direction clock
White	Breakout board 6	Driver Z, pin 9	Z step clock
White	Breakout board 7	Driver Z, pin 8	Z direction clock
White	Breakout Board 8	Driver A, pin 9	A step clock
White	Breakout Board 14	Driver A, pin 8	A Direction clock
	Breakout Board 10	Breakout Board +5VDC	Pull up Resistor 1KOhm
	Breakout board 11	Breakout Board +5VDC	Pull up Resistor 1KOhm
	Breakout board 12	Breakout Board +5VDC	Pull up Resistor 1KOhm
	Breakout board 13	Breakout Board +5VDC	Pull up Resistor 1KOhm
Green		Board Power GND	DC/DCV-in-
Blue		Board power +12V	DC/DC V-in+
Green		Analog GND	DC/DC V –out-
Blue		Analog +12V	DC/DC V-out-

Table 6.4 Break-out Board Wiring Table

6.5 Breakout Board Adjustment

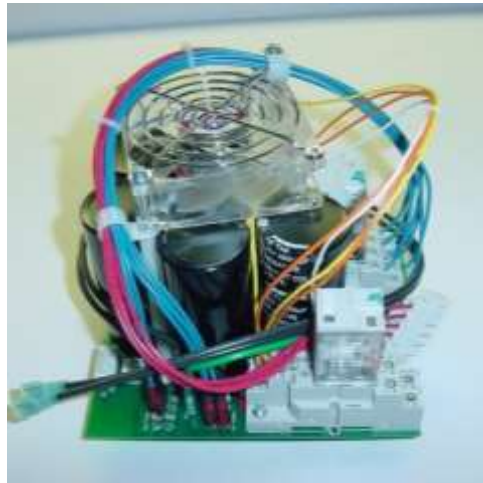
C11G breakout board has an analog 0-10 VDC output that will convert a step signal into an analog signal that can be used to command a commercial VFD (Variable Frequency drive). But with the use of

voltmeter put on the pins showed in the diagram below, you can adjust the output speed set on Mach3. In order to adjust your voltage, set your control software at maximum speed and then turn the pot until you reach the desired output voltage. Make sure that when you reach the max speed in your software you get 10 VDC out. This adjustment is made to calibrate the VFD for maximum speed.

For configuring Mach3 follow these steps:

- Go to config/ motor tuning/spindle motor movement profile. On steps per unit 1000, for velocity 1500.
- Under step pulse length, use a number from 1 to 5 micro second. This number is directly proportional to the final voltage you will get in the analog output.
- Use this number and the fine tuning pot to adjust the voltage you want to get max speed.

6.6 Power Supply Board



Wire color	Start location	End location	Function
Blue	Low voltage Bus	Relay 1, pin 1	Group 1, X-axis
Blue	Low voltage bus	Relay 1, pin 2	Group 1, Y-axis
Blue	Low voltage bus	Relay 1, pin 3	Group 1, Z axis
Blue	Low voltage bus	Relay1, pin 4	Group 1, A axis
Blue	High voltage bus	Relay 1, pin 5	Group 2, X axis
Blue	High voltage bus	Relay 1, pin 6	Group 2, Y axis
Blue	High voltage bus	Relay 1, pin 7	Group 2, Z axis
Blue	Low voltage bus	Relay 1, pin 8	Group 2, A axis
Green	UNI-Mate P5, pin 1	PS board ground	High voltage ground
Red	UNI-Mate P5, pin 2	Relay 1, pin 9	X axis power
Red	UNI-Mate P5, pin 3	Relay 1, pin 10	Y axis power
Red	UNI-Mate P5, pin 4	Relay 1, pin 11	Z axis power
Red	UNI-Mate P5, pin 5	Relay 1, pin 12	A-axis power
	Computer PS Cable	UNI-Mate P4, pin 1	Computer PS Ground

Table 6.5: Power Supply Wiring Connection

6.7 Gecko Driver (G203V)

The G203V is gecko driver's new generation CPLD-based micro step. It has a short circuit protection for the motor outputs, over-voltage and under-voltage protection, over temperature protection, reversed power supply polarity protection and will survive accidental motor disconnects while powered up. The "V" in G203V stands for "vampire" as in unkillable.



Figure 6.7: G203V Driver

Specifications

Supply Voltage	15 to 80 VDC
Phase current	0 to 7 amps
Auto current reduction	71% of set current, 1 second after last Step pulse
Size	2.5"W, 2.5"D, .85"H
Mounting pattern	4 6/32 screws, 1.75" by 2.375"
Weight	3.6 oz. (100gm)
Quiescent Current	20 Ma or less (drive disabled)
Short circuit trip current	10a, 3uS response time
Step frequency	0 to 333 kHz
Step pulse "0" time	2uS min (step on rising edge)
Temp	0 to 70 C
Humidity	0 to 95% (non-condensing)
Power dissipation	1 to 13 W (0 to 7 amps)

Table 6.6: G203V Specifications

6.8 Gecko Driver

For Gecko G201 only

Wire Color	Start Location	End location	Function
Red	Board power 5V	Driver X, pin 10	Driver enable
Red	Driver X, pin 10	Driver Y, pin 10	Driver enable
Red	Driver Y, pin 10	Driver Z, pin 10	Driver enable
Red	Driver Z, pin 10	Driver A, pin 10	Driver enable

Table 6.6A: Gecko G201 Configuration

For Gecko G203V

Wire color	Start Location	End Location	Function
Green	Board Ground	Driver X, pin 10	Driver enable
Green	Driver X, pin 10	Driver Y, pin 10	Driver enable
Green	Driver Y, pin 10	Driver Z, pin 10	Driver enable
Green	Driver Z, pin 10	Driver A, pin 10	Driver enable

Table 6.6B: Gecko G202/203V Configuration

6.9 Gecko Driver's Adjustment

The G203V reduces motor phase current to 71% of the set current value 1 second after the last step pulse is set. The G203V also change to a special recirculation current mode to nearly eliminate motor heating. This driver adjusts the motor for the smoothest possible low speed operation. Set the motor speed to about $\frac{1}{2}$ revolutions per second and then turn the trim pot until a distinct null is noted in the motor's vibration. This will result in the most even micro step placement for a given motor and power supply voltage. The default setting for this trim pot is at $\frac{1}{2}$ turn and the setting for your motor will be within $\pm \frac{1}{4}$ turn off default setting.

CHAPTER 7

OPERATIONAL VISUAL INDICATORS

7.1 G203V Indicators

POWER LED –The GREEN POWER indicator is lit whenever the G203V has power supply voltage applied.

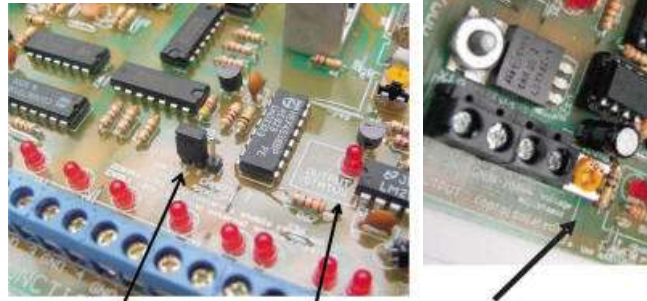
FULL POWER LED – The YELLOW FULL POWER LED indicator is lit when the motor is turning fast enough to generate maximum possible mechanical power. Power is torque times RPM and power output reaches its maximum value when this indicator is lit. Use this indicator to verify your motor is optimally geared to the load.

ERROR LED – The RED ERROR is lit when:

- During power on reset for 1 second when power is first applied to G203V.
- While the disable input is active.
- When there is a short circuit on any motor output. Momentarily activate the DISABLE input to reset.
- During over temperature shutdown. The LED automatically resets when the drive temperature drops.

7.2 Break out Board Indicators (C11G)

- **POWER LED** – the red power indicator is lit whenever the break out board has power supply voltage applied.
- **OUTPUT STATUS** – this LED indicates if the outputs are enabled.
- **Status LEDs** on all inputs and outputs connection – you can see all your signals when the power supply is applied.
- **In all cases the EN pin** must receive +5vdc in order to enable the inputs. You can hardwire the EN pin with +5vdc if you do not need to install an external enable switch. If your E-stop works as NC (normally closed) with a +5vdc signal, you can also send this signal to the EN. That way your system would have to wait for the control software to stop.



Built-in Safety
Charge Pump with
enable jumper

Outputs Status LED

Pot for fine tuning
the analog output.

- If you are going to use the built in safety charge pump, configure your software to output the safety charge signal to pin 17 and place the jumper on position 2-3. If you are not going to use this feature, place the jumper in position 1-2. If you hardwire the EN pin and disable the safety charge pump your outputs will be enabled at all times. Confirm at this time that the output LED is lit. This indicates that the output signals are getting through.

CHAPTER 8

TROUBLESHOOTING

8.1 GECKO DRIVER (G203V)

- If the GREEN LED is not lit, either the G203 has no power supply voltage connected or something very bad caused its internal fuse to blow. Check the power supply voltage using a multi meter set to “DC VOLTS” on terminal screw heads 1, 2 of the drive.
- If the RED and GREEN indicator led are lit then the motor is miss-wired, the motor has a wire shorted to ground, is shorted to another motor wire or the motor is bad. Secondly, if everything ran ok but the RED LED lit a while later. Check the drive temperature; it may have overheated because of inadequate heat sinking. Also see that the disable isn't being activated.
- If the motor has no holding torque and the RED LED is off while the GREEN LED is on, check the CURRENT SET resistor with a multi meter. Re-calculate the resistor value. Check to see if the motor is connected to the G203V.
- If the motor has holding torque but won't move, check your STEP, DIRECTION, DISABLE (if used) and COMMON interface. Verify COMMON goes to your controller GND.
- If the motor runs rough at low speed, try adjusting the ADJUST trim pot setting. Verify you are using the correct CURRENT SET resistor. If you are using a “round” motor, it won't be as good as a “square” motor.
- If the YELLOW LED never lights, you are not going fast enough to get full power from your motor. If you don't need to go faster, use a lower power supply voltage. This indicator is a good application diagnostic for motor gearing and power supply voltage choice. Using it correctly will help you to optimize your system.

8.2 BREAK OUT BOARD (C11G)

- If the output and input led are not lit, check the wiring connections, you only have to screw on the wires to make all the connection tight.
- The board requires +5vdc in the EN pin. If it is not present, it will send all the outputs to ground. You can use this to enable or disable the system manually, or you can install an external safety charge pump or other external devices.
- This card can be used to opto isolate any existing set up just by connecting this card between the computer and current control box. That way, you can also see and access all the signals.

