

Hardware Installation Instructions for Upgrade:

Important:

The following upgrade procedure should be followed and performed only by experienced and trained individuals who understand these machines. It is important to follow safety procedures necessary for any such upgrade work. You should not attempt to carry out these upgrade procedures, if you do not possess proper knowledge of such systems and the required safety procedures. The safety knowledge may require understanding of the electric hazards, hazards posed by sharp tools used to work on harder materials, mechanical complexity, etc. The safety knowledge may require use of gloves, goggles, hardhat, and other protection devices. Solustan is not responsible for any damages because of the installation of our upgrade kit.

It is important to note that the electronics is sensitive to static charge. It is a safe and a good idea to discharge static electricity, ground the controller and ground your self before you touch and work on any electronic components. Static electricity can ruin electronics.

IT IS ABSOLUTELY ESSENTIAL THAT YOU HAVE A 3 PIN AC OUTLET WITH A TRUE GROUND PIN. THE FOLLOWING HAS TO BE CONNECTED TO THE GROUND LINE FOR PROPER OPERATION:

PC COMPUTER, AMPLIFIER UNIT, YOUR MACHINE and THE STEP MOTORS IN ADDITION TO THE MACHINE. IT IS BEST IF THE STEP MOTORS ARE INSULATED FROM THE METAL OF THE MACHINE TO REDUCE THE MECHANICAL NOISE.

Place the Amplifier unit near the engraving table. Make sure that the surface is flat on which the Amplifier unit is sitting. It is necessary to have at least 3 inch clearance around the Amplifier unit for the cooling. The fan pulls the cool air in from the one side and the hot air exits from the other side.

Follow the picture diagram to make all cable connections. You should have a Power cable, USB cable for Linkmotion USB product, Parallel Port cable (for virtual controller LinkMotion for Parallel port) and a Machine cable.

The switched AC outlet is available to connect your machine's AC spindle motor. Do not plug DC Spindle motor in the Amplifier box. Please, contact us if your machine has a DC spindle motor.

Remember to invoke the LinkMotion/MaxMotion application before turning on the Amplifier

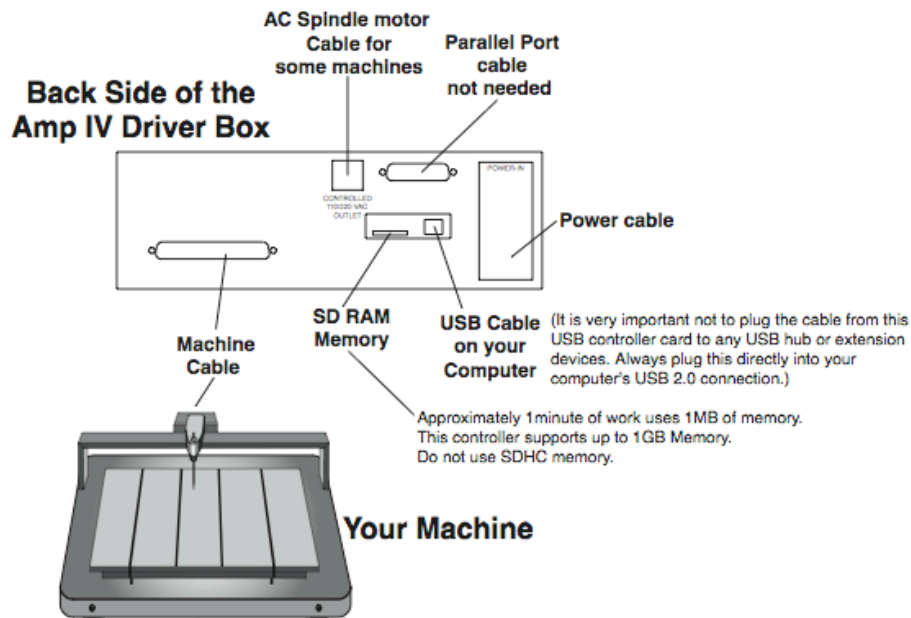
unit. It is possible that the spindle motor may turn on when you turn on the power to the Amplifier unit and if the LinkMotion/MaxMotion software is not on. It is always a good practice to connect all the cables and turn on the PC computer before turning on the amplifier. Also turn off the Amplifier first before you turn off the computer.

Select which Amplifier model you have and follow proper diagram instructions from the following pages:

Cable connections for Amp IV Module with USB controller, Your Computer and Your Machine

Important Warnings:

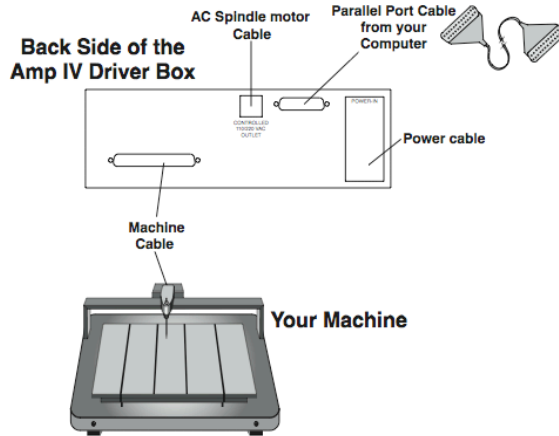
Always turn on your computer first, let your operating system launch completely, make sure LinkMotion is launched and ready in the systems tray at the bottom right of the computer screen and then turn on the power last for your Amp IV driver module. Similarly turn this AmpIV driver module first before turning off the computer. Do not plug DC Spindle motor in the back of the Amp IV driver module.



Cable connections for Amp IV Module for Virtual controller (Parallel port) Your Computer and Your Machine

Important Warnings:

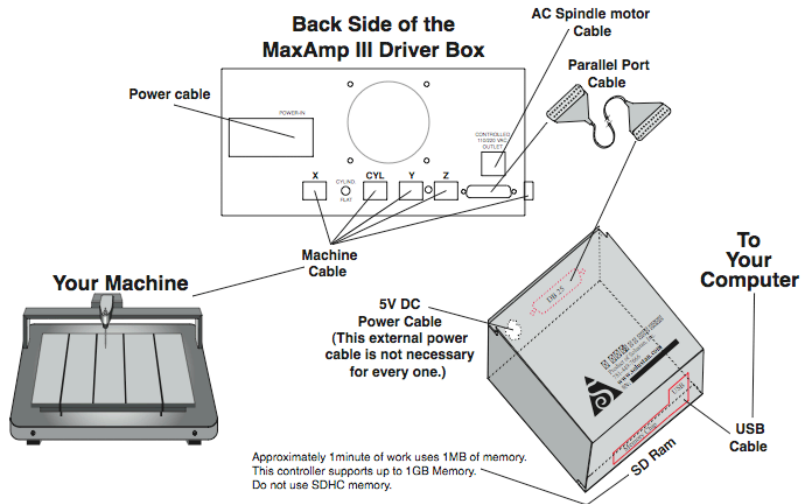
Always turn on your computer first, let your operating system launch completely, make sure LinkMotion is launched and ready in the systems tray at the bottom right of the computer screen and then turn on the power last for your Amp IV driver module. Similarly turn this AmpIV driver module first before turning off the computer. Do not plug DC Spindle motor in the back of the Amp IV driver module.



Cable connections for MaxAmp III Module, USB controller module and Your Computer and Your Machine

Important Warnings:

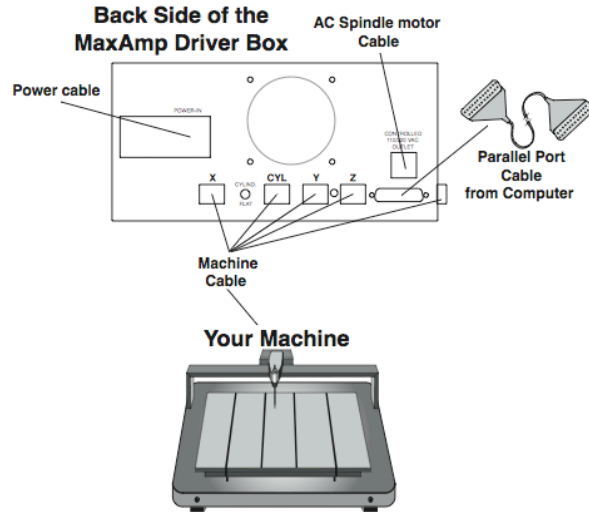
Always turn on your computer first, let your operating system launch completely, make sure LinkMotion is launched and ready in the systems tray at the bottom right of the computer screen and then turn on the power last for your Amp IV driver module. Similarly turn this AmpIV driver module first before turning off the computer. Do not plug DC Spindle motor in the back of the Amp IV driver module.



Cable connections for MaxAmp III Module for Virtual controller (Parallel port), Your Computer and Machine

Important Warnings:

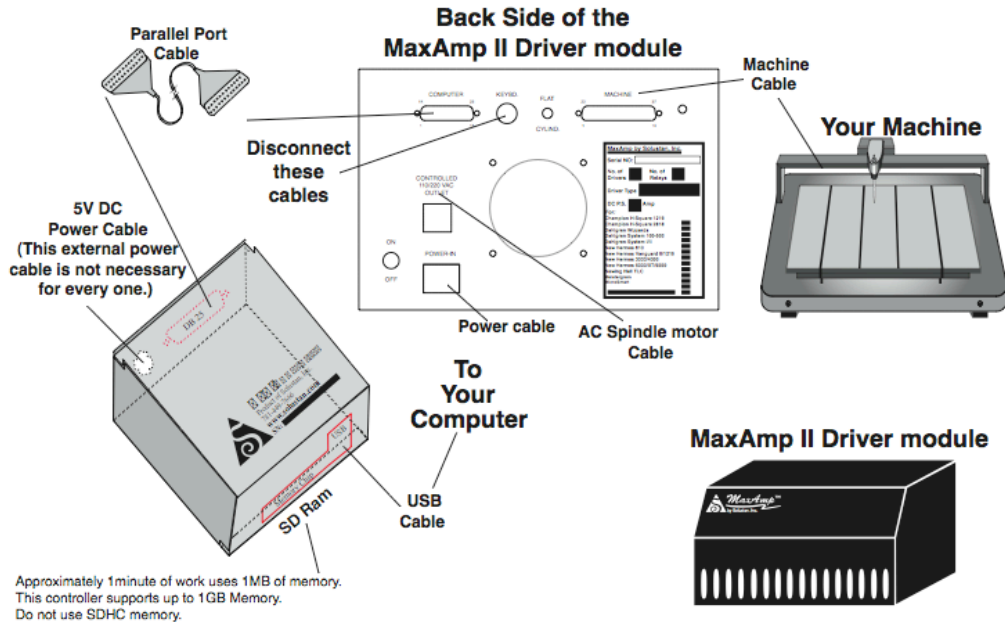
Always turn on your computer first, let your operating system launch completely, make sure LinkMotion is launched and ready in the systems tray at the bottom right of the computer screen and then turn on the power last for your Amp IV driver module. Similarly turn this AmpIV driver module first before turning off the computer. Do not plug DC Spindle motor in the back of the Amp IV driver module.



Cable connections for your MaxAmp II Driver module, USB controller module, Your Computer and Your Machine

Important Warnings:

Always turn on your computer first, let your operating system launch completely, make sure LinkMotion is launched and ready in the systems tray at the bottom right of the computer screen and then turn on the power last for your Amp IV driver module. Similarly turn this AmpIV driver module first before turning off the computer. Do not plug DC Spindle motor in the back of the Amp IV driver module.



Installation instructions for Dahlgren Wizzard, Wizzard II, Wizzard III, Wizzard XL machines:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

The unique interface cable from the Amplifier module to the Wizzard machine has four connectors. The three identical connectors are for the three axis X, Y, and Z. The cables are marked. The fourth connector is for limit switch connection.

There is a separate cable provided for the connection of 110 VAC spindle motor to the switched spindle outlet on the back of the MaxAmp module.

Turn the Wizzard machine upside down and remove eight screws along the edge of the machine. Turn the machine back and remove the top cover.

Note four screws inside the metal holding pan for the table. These screws are responsible for holding the table in place. Remove the screws.

Carefully, tilt the table sideways in order to see the underneath of the table. Note the controller electronics with a separate driver card in later models and one single board design in the earlier models.

Note that there are four different connectors (so far we have noticed red color small connectors) coming down from underneath the table and connecting on to the driver part of the board.

Three identical connectors are for the X, Y, and the Z axis step motors. Usually, there are labels on the cables. Disconnect the connectors from the driver board. Also, note a 8 pin connector for the limit switches. Disconnect it too.

Note a larger 3 pin connector in the back of the table going from the spindle motor to the power distribution board in the back. Disconnect this connector. You should be able to lift and set aside the table at this point.

You have two choices at this point. Remove all the electronics that you see in the unit. This includes the small 4 inch monitor, logic board, driver board if separate, power supply, power distribution unit, keyboard, etc. If you wish, you can sell it all as spare parts for others. The other choice is to leave everything alone inside the unit.

Note that the cable harness under the table is held in place by plastic ties. Remove some of the ties to stretch and extend the cables to the back of the unit and extending outside the unit.

Match and connect the connectors from the table to the interface cable provided by Solustan.

X axis to X axis, Y axis to Y axis, Z axis to Z axis, limit switch to limit switch connectors. The male and

the female connectors have locking lips to hold the two parts together. Make sure and connect them properly.

Connect the matching 3 pin connector to the spindle motor connector on the table and the other end of the power cable to the switched outlet in the back of the Amplifier module.

Here is an important connection to observe: It is important to connect the metal of the table to the ground wire from the Amplifier module. The ground wire is a green wire, part of the interface cable, with a metal lug. Note a big green wire attached to the table in the back. The ground wire can be connected right there.

If you find that the step motors are attached to the table with a rubberized gasket between the table and the step motor to reduce the noise, it is advisable to ground the motors. A green additional ground cable is provided with the kit. Please, loosen one of the four screws on each of the motors as well as the screw holding the ground wire in the back of the table. Take our green wire with a bunch of metal lugs and connect the two closest ones to the two motors on the right. Run the wires to the third motor in the back, another lug to the skin of the table and bring out the last part of the cable to the outside and in the back of the table. Connect this ground wire to the ground wire on the interface cable. This helps you to prevent the build up of static electricity.

It will be easier to guide the cables through one of the holes in the back of the shell if all the electronics is removed. If not, find a way to guide the cables through a convenient gap.

Run the machine before closing the machine back. In case you find that the Control Pad seems to be moving wrong axis, it is possible that connectors were switched by mistake.

Note that the setting shows that only the X and the Y axis limit switches are activated. The Z axis is not present. That is because there is no limit switch for the Z axis in this machine. This also means that you should study and learn to set the Z axis offset and lift properly for smooth functioning..

CAUTIONS

A. The limit switch wiring is connected for X and Y axis and it is to be used for going home. You can simply utilize the Home key in the control pad and the spindle will move to the Home position.

B. You should use our 10 key keypad implementation to jog the tool to the starting point of a job. SURFACE command is not necessary for this machine because the Z-axis is controlled by a solenoid and it is not motorized. Load your tools in a normal manner that you are used to. The software knows the starting and ending positions and it will automatically come back to starting position upon sending the next job.

C. Be sure to read the help section and latest help files from the web site.

Installation instructions for Dahlgren System I machine:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

The unique interface cable from the Amplifier unit to the System I table will have a three connectors at the end of the cable. This will connect directly to the matching interface connector in the back of the engraving machine.

Attach the spindle motor cable to the spindle motor outlet provided on the amplifier box. The spindle motor will be controlled to turn on and off automatically with the job.

CAUTIONS:

- A.** There are no limit switches exist on Dahlgren System One series of machines.
- B.** You should use our 10 key keypad implementation to jog the tool to the starting point of a job. Next, you should NOT use the SURFACE command to set the Z axis. Simply use Z down key to actuate your selected solenoids. You may have selected either left or right or both solenoids.
- C.** Be sure to read the help section and latest help files from the web site.

Installation instructions for Dahlgren System II machine:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

The unique interface cable from the Amplifier unit to the System II table will have a 25 pin connector at the end of the cable. This will connect directly to the matching interface connector in the back of the engraving machine.

You do not need to attach any spindle motor cable to the spindle motor outlet provided on the amplifier box. The spindle motor will be controlled to turn on and off automatically with the job. The spindle motor interface is through the main 25 pin connector and as a result, a separate cable is not necessary.

CAUTIONS

- A.** The limit switch wiring is connected for X and Y axis and it is to be used for going home. You can simply utilize the Home key in the control pad and the spindle will move to the Home position.
- B.** You should use our 10 key keypad implementation to jog the tool to the starting point of a job. SURFACE command is not necessary for this machine because the Z-axis is controlled by a solenoid and it is not motorized. Load your tools in a normal manner that you are used to. The software knows the starting and ending positions and it will automatically come back to starting position upon sending the next job.

- C. We have designed the logic so that the stepper motors are running at a reduced current when they are not executing a job or the operator is not jogging the table. This will keep the motors running cool and will not allow build up of heat. Also, the amplifiers will run cool.
- D. Be sure to read the help section and latest help files from the web site.

Installation instructions for Newing Hall TLC machine:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

The unique interface cable from the Amplifier unit to the Newing Hall table will have a 25 pin connector at the end of the cable. This will connect directly to the matching interface connector in the back of the engraving machine.

CAUTIONS

- A. There are no limit switches exist on Newing Hall 100 to 400 series of machines.
- B. You should use our 10 key Controlpad implementation to jog the tool to the starting point of a job. Next, you should NOT use the SURFACE command to set the Z axis. Simply use Z down key to actuate your selected solenoids. You may have selected either left or right or both solenoids.
- C. Be sure to read the help section and latest help files from the web site.

Installation instructions for New Hermes 810 machine:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

Notice four white Molex connectors with X, Y, and Z written on three of them that are coming out of the amplifier box. These will go into the NH810 machine. The fourth Molex connector is smaller and it provides power to the spindle motor of the machine. The last one is a tiny 4 pin connector. Only two of the four pins are used. This is the connection for the limit switch for the Z axis.

Orient yourself such that you are facing the front of the NH810 machine.

The monitor and the electronics is situated to the left of the machine but attached to the machine.

Remove the monitor. Remove all the electronics and its power supply.

Note that there are cables coming from the machine side and they are the only remaining parts once the electronics is removed. Note the five connectors:

1. Three identical connectors for the X, Y, and Z axis.
2. The same cable that has the Z axis connector also has the tiny 4 pin connector for the limit switch for the Z axis.
3. Finally, the 3 pin Molex connector for the spindle motor.

Connect the appropriate connectors from the Amplifier unit to the connectors on the machine. The only mistake one could possibly make is to switch X and Y axis. If that is the case, just switch the connectors.

CAUTIONS

- A. The Z-axis limit switch wiring is connected for your 810 table.
- B. You should use our 10 key Controlpad implementation to jog the tool to the starting point of a job. Next, you should use the SURFACE command to set the Z axis. If you are repeating similar jobs with the same plate dimensions and positioning the new plates in the same place, you need not bring the tool back by jogging. The software knows the starting and ending positions and it will automatically come back to starting position upon sending the next job.
- C. Be sure to read the help section and latest help files from the web site.

Installation instructions for Hermes 1219/Meistergram 1912 machine:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

Notice a 25 pin female connector that is coming out of the amplifier module for the machine cable You may need to disconnect the existing interface connector from the 1219 controller.

Attach the spindle motor cable to the spindle motor outlet provided on the amplifier box. The spindle motor will be controlled to turn on and off automatically with the job.

CAUTIONS

- A. The limit switch wiring is connected and it is to be used for going home. You can simply utilize the Home key in the control pad and the spindle will move to the Home position.
- B. You should use our 10 key Controlpad implementation to jog the tool to the starting point of a job. Next, you should use the SURFACE command to set the Z axis. If you are repeating similar jobs with the same plate dimensions and positioning the new plates in the same place, you need not bring the tool back by jogging. The software knows the starting and ending positions and it will automatically come back to starting position upon sending
- C. Be sure to read the help section and latest help files from the web site.

Installation instructions for New Hermes 3000 machine:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

Notice three white Molex connectors with X, Y, and Z written on them that are coming out of the amplifier module. These will go into the NH3000 machine.

Orient yourself such that you are facing the back of the NH3000 machine. Disconnect power supply.

Also, disconnect interface to the existing front end by disconnecting the 34 pin black connector.

Note that there are two plate covers one on the left and the other on the right side of the back of the machine.

The one on the left houses the spindle motor while the one on the right houses the Y axis motor and the motor cable assemblies.

Unscrew the four screws of the right plate. Remove the plate. Notice the step motor at the top and the three cable harnesses with white Molex connectors for the three motors. There might be X, Y, and Z written on the Molex connectors for the three stepping motors.

Disconnect the three sets of Molex connectors. Connect the three female Molex connectors from the Amplifier module to the three male connectors properly for X, Y, and for Z axis.

Do not pull the connectors apart by pulling on the cables. Grab the male and the female connectors and pry them loose. You can route the motor wire assemblies either from the bottom of the table so that the plate can go back in place as before or simply from the opening of the plate and not put the plate back in place.

Attach any standard computer power cord to the spindle motor cable so that it can be plugged into the spindle motor outlet provided on the amplifier box. The spindle motor will be connected to the amplifier module and is controlled to turn on and off automatically with the job.

CAUTIONS

A. The limit switch wiring is connected and it is to be used for going home. You can simply utilize the Home key in the control pad and the spindle will move to the Home position.

B. You should use our 10 key Control pad implementation to jog the tool to the starting point of a job. Next, you should use the SURFACE command to set the Z axis. If you are repeating similar jobs with

the same plate dimensions and positioning the new plates in the same place, you need not bring the tool back by jogging. The software knows the starting and ending positions and it will automatically come back to starting position upon sending.

C. Be sure to read the help section and latest help files from the web site.

Installation instructions for Dahlgren System 300 machine:

Make sure and connect the Amplifier unit and all the cables per installation instructions in the picture.

The unique interface cable from the Amplifier unit to the System 300 table will have a three connectors at the end of the cable. This will connect directly to the matching interface connector in the back of the engraving machine.

Attach the spindle motor cable to the spindle motor outlet provided on the amplifier box. The spindle motor will be controlled to turn on and off automatically with the job.

CAUTIONS:

- A.** There are no limit switches exist on Dahlgren System 300 series of machines.
- B.** You should use our 10 key keypad implementation to jog the tool to the starting point of a job. Next, you should NOT use the SURFACE command to set the Z axis. Simply use Z down key to actuate your selected solenoids. You may have selected either left or right or both solenoids.
- C.** Be sure to read the help section and latest help files from the web site.