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CAUTION
STATEMENTS

SHERLINE
PRODUCTS
INCORPORATED 1974

CNC 4-axis Driver Box

P/N 8760

Connecting the Driver Box

The Sherline 8760 driver box is designed to power as many as 4 individual stepper motors at one time. The female plugs on the cables will attach directly to the male plugs on the P/N 67127 stepper motors available from Sherline. Each axis is labeled on the plug. There is a 25-pin cable that plugs in to the printer (parallel) port of your computer. The power supply that plugs into the wall will automatically adapt to either 115 VAC or 230 VAC current, so no manual switching is necessary.

Operation

It is recommended that the driver box power switch be left in the “Off” position while the computer is turned on and the control program is loaded. Once EMC or whatever control program you are using is fully loaded, turn on the “Power” switch on the driver box to the “On” position to power up the stepper motors. Once powered up, it is not possible (or at least very difficult) to turn the motors by hand using the handwheel. Therefore, it is recommended that any manual positioning of the axes be done before the power to the motors is turned on.

Emergency Stop

Should you find that you have accidentally started a program running with the cutter in some position other than the home position or that some other physical damage is about to occur, the On/Off switch on the driver box can be used as an emergency stop switch. Switching it to the “Off” position while a program is running will simply stop all motors immediately but will not damage the computer or program. The program will continue to run but the axes will not move. Then, shut off the spindle motor, stop the program on the computer, relocate the axes to their home position manually or with the jog control, turn power back on to the motors and spindle and run the program again from the beginning.

Linux Installation

Sherline does not guarantee that the Linux operating system provided on the enclosed CD will install on any given computer. Component compatibility is sometimes an issue. It is recommended that anyone attempting to install Linux themselves on their own computer should have a fairly high level of familiarity with Linux. Sherline does not provide technical support for installation of Linux or EMC,

but help is available online through the Linux group at <http://linuxcnc.org/>. An installation sheet is provided with the CD to help you navigate the screens while installing the program.

Safety Fuses

A fuse is now included on each axis to protect the driver chips. Their locations are noted in the photo below. Two extra fuses are included. If a single axis stops working, try replacing its fuse as a first step. The spares are wrapped in plastic and taped inside the cover lid. Use needle nose pliers to grasp the old fuse by the wire near the top and pull straight up. Do not grip it by the green part. Install the new one the same way. Once installed, determine why the fuse was forced to protect the circuit. In most cases it is because the motor is being worked too hard. Reduce feed rate or depth of cut to keep from blowing more fuses.

If replacing the fuse does not solve the problem, refer to the CNC troubleshooting page at sherline.com/troubleshooting-cnc/.

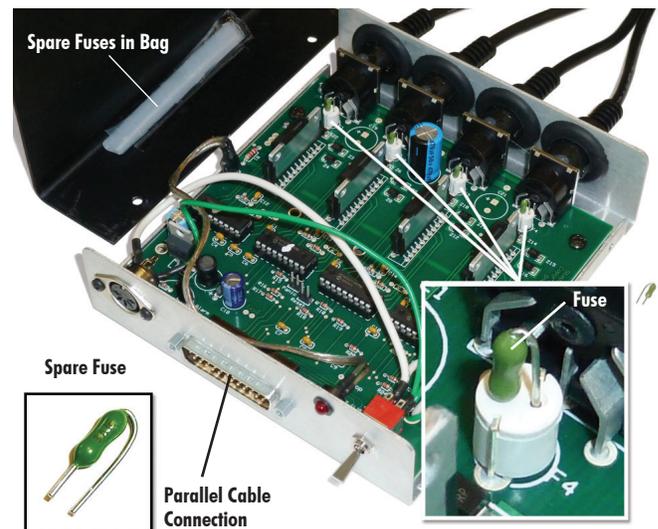


Figure 1—The driver box with the cover removed and individual axis fuse locations shown.

CAUTION! Make sure the female power plug is fully seated in the power supply unit socket. A blue light should be lit. A poor connection can short out components on the driver board.

Included Components

- Driver box with 4 motor cables
- 3.7 amp, 24 volt power supply with cord
- 25-pin parallel cable
- 2 CD set with Linux/EMC2, utilities and instructions
- Two spare fuses

Minimum Computer Requirements

In order to install and run a Linux based system from the CDs provided, it is recommended the computer have at least the following minimum specifications:

- Processor speed: 800 MHz or faster (Pentium III class or equivalent processor)
- RAM: 512 Mb (Sherline provides 1 Gb)
- Hard Drive: 20 Gb or larger
- 25-pin parallel port (printer port)*
- Laptop computers are not recommended

For the most current information on hardware requirements for LinuxCNC EMC2 see http://wiki.linuxcnc.org/cgi-bin/wiki.pl?Hardware_Requirements.

Disclaimer

Because programs are constantly evolving, Sherline cannot guarantee that any computer other than the ones we build and test specifically to run Linux and EMC2 will work with this driver box and software, even if it meets the requirements set forth above and on the LinuxCNC website. In cases where the driver box does not perform properly with a computer you supply, your least expensive choice in the long run may be simply to purchase a computer from Sherline that is designed specifically to run this operating system and program. In order to save money, some companies producing single-board computers do not provide the necessary drivers to run Linux/EMC2. Sherline cannot be responsible for analyzing problems with operation of this driver box when used with a non-Sherline computer.

* **NOTE:** A 25-wire parallel port is required because EMC2 is designed to be capable of running up to six axes simultaneously. Even though the Sherline driver box only uses four of those axes at one time, a 2-wire serial USB port cannot transmit data to multiple axes fast enough for glitch-free CNC operation.

CAUTION STATEMENTS!

1. Do not "hot plug" the stepper motors. Always turn the power off to the driver box before plugging in or unplugging a stepper motor. Failure to do so can burn out a chip in the driver box.
2. When unplugging axis and motor cables, always grip the plastic connector. Do not pull on the wires themselves.
3. **Mach 3 and 4 software will NOT work with the Sherline driver box without the addition of a special dongle.** The dongle has a small computer on the parallel side to avoid dropping steps as it converts from parallel to USB. Mach 3/4 does not work well parallel/parallel either, so you must use a dongle. Contact Sherline for the information needed to purchase this dongle. In addition, the free version of Mach 3 does not run satisfactorily with or without the dongle, the paid version is provided with customer support.
4. **Sherline takes extra care to ensure our motherboards and the parallel ports are a match with the correct power needed to run EMC2.** There are no published plus/minus tolerances on parallel ports. As noted the port must have enough power to run up to six axes. If you are using your own computer and having problems transmitting data, it is highly recommended you add Sherline's parallel port signal booster. (P/N 8763, \$50.00).