

CNC driver HSSD-58-5.7 for highspeed spindles

The CNC highspeed spindle driver HSSD-58-5.7 is able to controll a asynchrone 3 phase high speed spindle. This driver can drive it to speeds well above 200.000 RPM, so almost all highspeed motors can be controlled by it. The driver works by converting an input frequency to an output frequency that is multiplied by a factor given by dipswitches. If for example the switches 5, 6, 7 and 8 are all off, the output frequency is 15 times the input frequency. So, if the controlling programm (like Mach3) puts out a frequency of 2 kHz, the motor will rotate with a speed of 30.000 RPM.

Configuration of the multiply factor

The output frequency is dependent on both the input frequency and the position of switches S5, S6, S7 and S8. It is given as:

RPM/KHz	S 5	S 6	S 7	S 8
15.000	Off	Off	Off	Off
7.500	On	Off	Off	Off
6.000	Off	On	Off	Off
3.750	On	On	Off	Off
3.000	Off	Off	On	Off
2.400	On	Off	On	Off
1.875	Off	On	On	Off
1.500	On	On	On	Off
1.200	Off	Off	Off	On
935	On	Off	Off	On
750	Off	On	Off	On
600	On	On	Off	On
468	Off	Off	On	On
375	On	Off	On	On
300	Off	On	On	On
235	On	On	On	On

Configuration of the current

The current the CNC driver outputs is dependent on the position of switches S1,S2 and S3. The current the driver needs to output is dependent on the motor it needs to control. The current is given as:

Cur	S 1	S 2	S 3
1.4 A	Off	Off	Off
1.9 A	On	Off	Off
2.6 A	Off	On	Off
3.2 A	On	On	Off
3.8 A	Off	Off	On
4.5 A	On	Off	On
5.2 A	Off	On	On
5.7 A	On	On	On

Powersupply of the driver

The driver can be powered by a voltage of 20 Vdc to 58 Vdc. The higher the voltage of the driver, the better the cnc highspeed spindle can follow the frequency of the driver. On the other hand, the higher the voltage of the driver, the warmer the motor can get, as it can output more power.

Power down of the driver

When the driver is not driving the highspeedspindle, there are two options of lowering the power consumed by the driver and the motor.

1) Autoreduction by the driver, by setting S4. Wenn this switch is turned on, the current through the motor will stay as indicated by S1, S2 and S3. If this switch is turned off, the highspeed spindle driver will reduce the current to half, effectively reducing the consumed power by the driver (and of course also the motor).

2) Reducing the power to the cnc highspeed spindle driver by using input ENA (ENA+ and ENA-). By activating this input, the driver will turn itself off, reducing the consumed power to a very low value. But this needs to be done by the computer.

Output to the motor

The cnc highspeed spindle is connected to the U,V and W outputs of the driver. In which order is not that important, the motor should turn anyway.

Direction of rotation of the motor

If the motor runs the wrong way, there are two ways of reversing the direction of the rotation of the cnc motor. They are :

1) : By using the DIR (DIR+ and DIR-) inputs. With this input, the computer can control the direction of the rotation of the tool. This is not used often, but occasionally this can be handy. Also it can be used to manually reverse the direction of rotation.

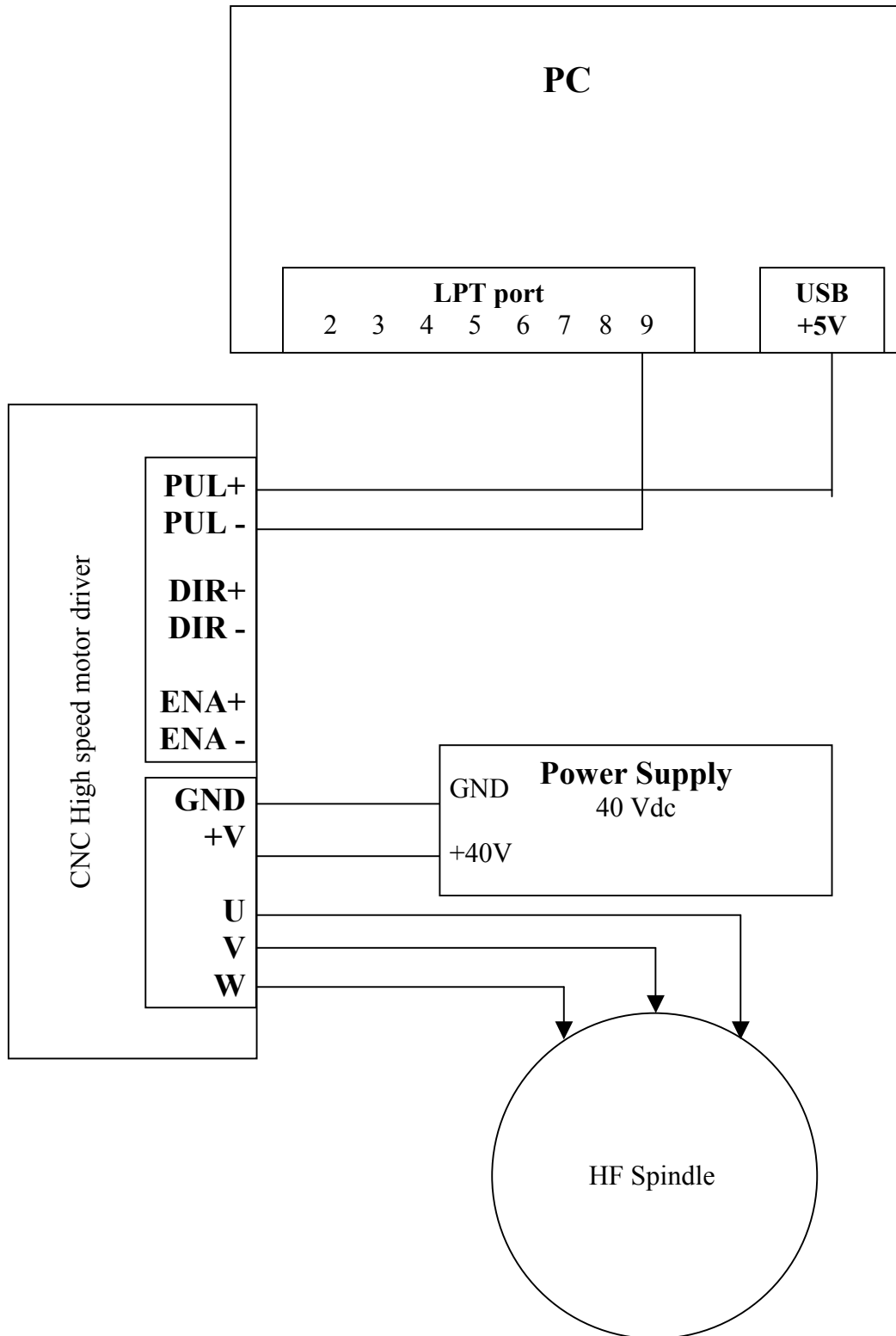
2) Interchanging two of the three (U,V and W) outputs (for example U and V).

Inputs of the driver

The inputs of the driver are optocouplers. This protects the controlling equipment. The optocouplers needs to be driven by a current of less than 8 mA (low), or more then 16 mA (high). There must be a constant high-low transitions to make the motor run. The higher the input frequency, the higher the output frequency and rotation of the high speed spindle.

Connection to a computer example

This connection example is just an example, there are very much ways of connection the cnc high speed spindle driver to a computer.



Standalone connection example

This is an example of how to connect the cnc highspeed spindle driver to a cnc highspeed spindle in a standalone system. Again, this is just an example, there are many more ways to connect them.

