MX4660 Spindle / VFD Setup Guide

v2022Q1.1

MX4660 Connections

The first step in setting up your Spindle will be to connect your MX4660 Control Unit with your VFD. You should have received a 14-pin SP/THC cable and strain relief fitting with the Plug and Play Spindle / VFD System.

> **ℹ SP/THC Cable**
>
> SP/THC cables included in Plug and Play Spindle / VFD Systems purchased after November 2020 are black in color, as opposed to the gray cable pictured. Where relevant, differences between these two cables will be noted in the instructions.

If you choose to house your MX4660 in an enclosure, the included strain relief can be used to affix the SP/THC cable to your control unit. Simply install it in any unused hole of appropriate size in your enclosure.
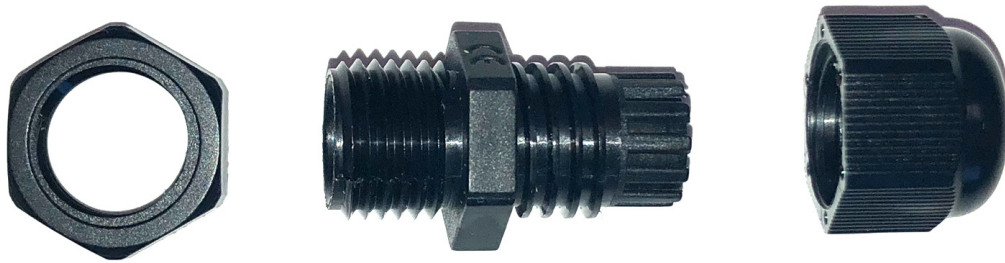
The left (as shown) threaded end of the strain relief should be installed into the gland plate of the control unit, from the exterior. The clamping collar (at left in photo) should then be threaded onto the strain relief, from the interior, to hold it in place on the gland plate.
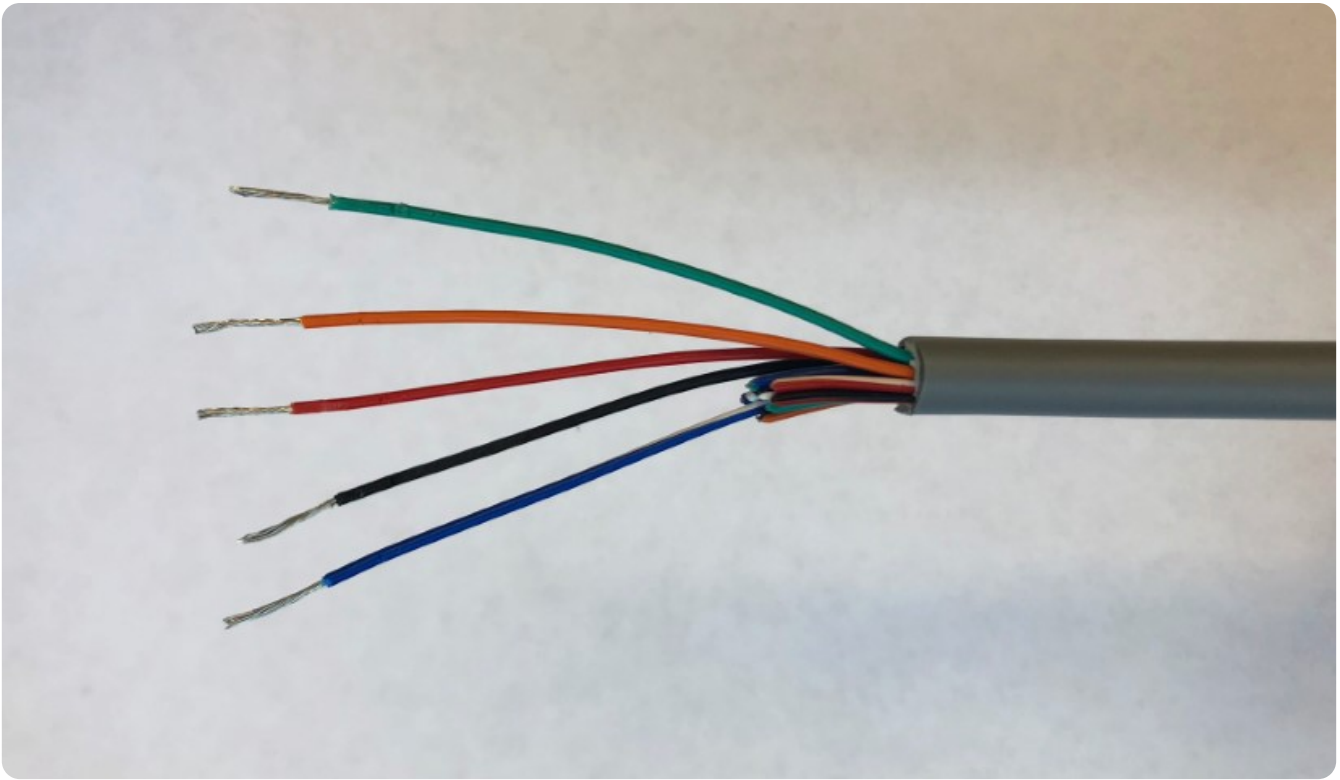
At this point, one end of the SP/THC cable should have the 14-pin connector removed with the wires stripped to bare leads as shown in the photo series below.

Clip one end of the SP/THC cable as shown above.
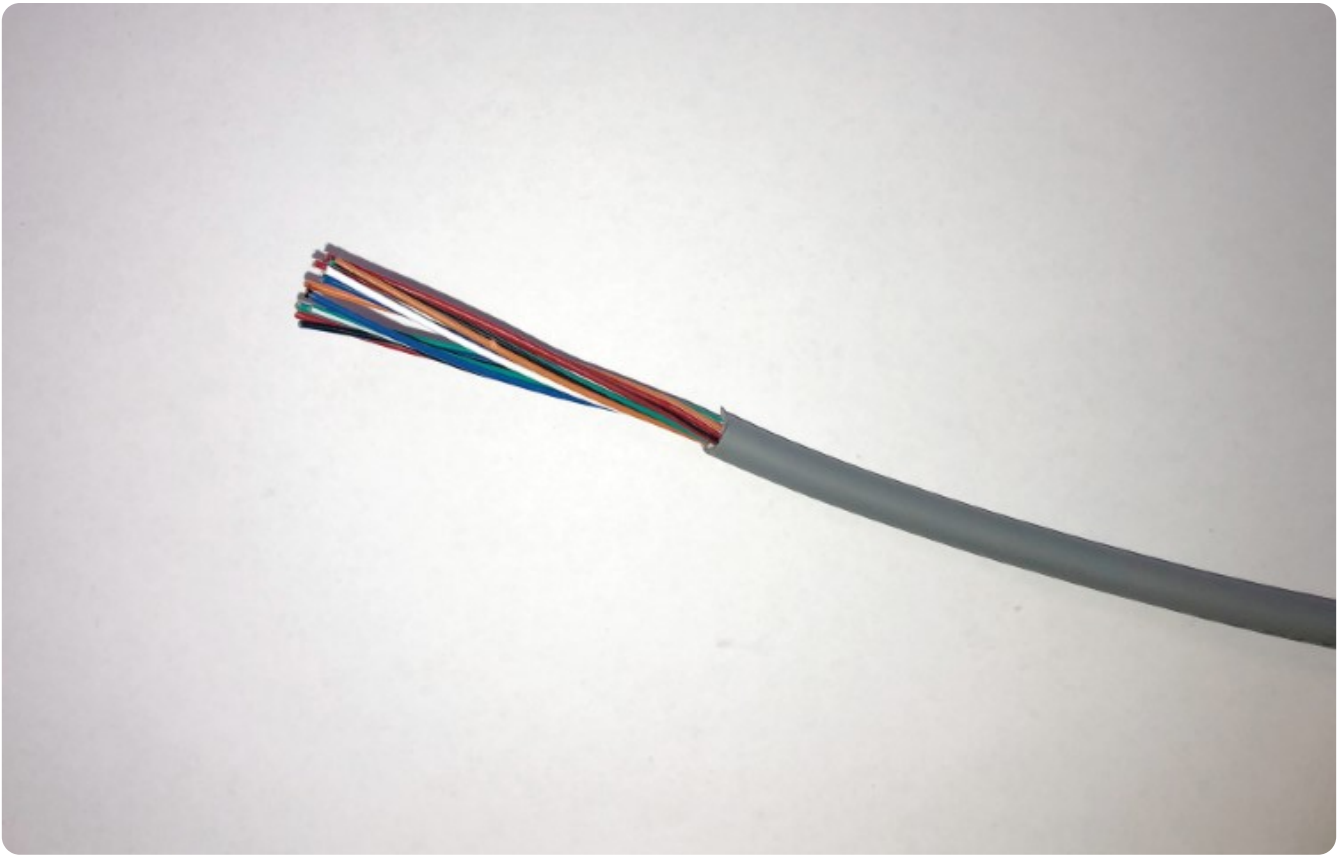
Strip the sheathing on the cable back at least 1.5" (it is easier to work with if you strip 1.5 - 3").

Separate out the wires listed below, depending on which SP/THC cable you have. They may now be ferruled or tinned if you desire, although they will function as bare wires. The remaining wires are not used and can be cut back.

Gray SP/THC cable:

- Black, Red, Blue/White, Green, and Orange wires.

Black SP/THC cable:

- Black, White/Black, Red, Brown, and White/Brown wires.

The clipped and stripped end of the SP/THC cable can now pass through the strain relief installed in your gland plate.

Ensure the cable nut (shown at the right in the strain relief image) is partially threaded onto the strain relief prior to inserting the cable.

Once there is a sufficient length of cable inside your control box to reach your MX4660, the cable nut can be tightened down onto the strain relief. This will secure the cable to the control unit.

The stripped and ferruled wires from the SP/THC cable can now be connected to your MX4660. Refer to the table below for the correct wire colors to used based on which SP/THC cable you have.
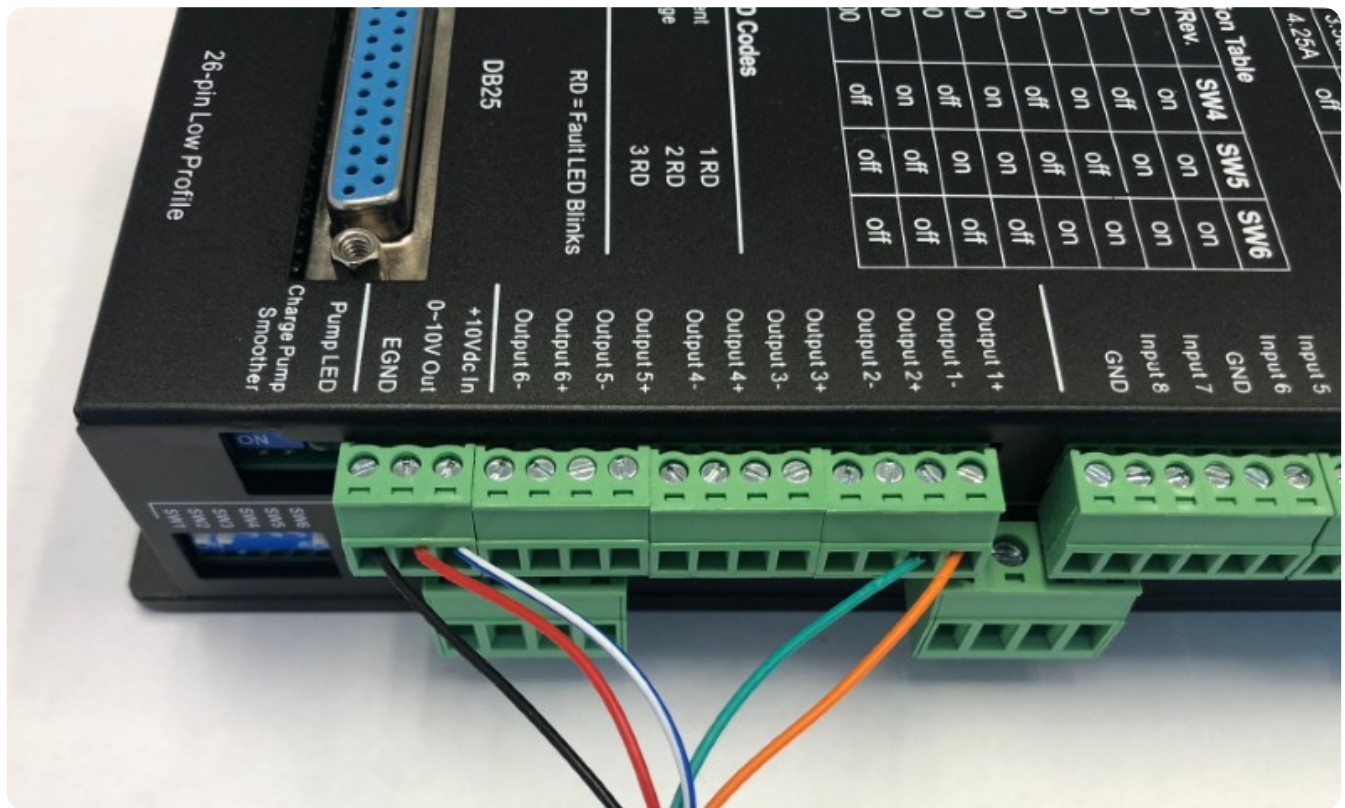
MX4660 Connection	Description	Wire Color (gray cable)	Wire Color (black cable)
EGND	PWM signal ground to VFD	Black	White/Black
0-10V Out	PWM signal 0-10v output to VFD	Red	Black
+10Vdc In	10V from input VFD required for PWM output	Blue/White	Red
Output 1-	Spindle Relay Ground	Green	White/Brown
Output 1+	Spindle Relay Signal	Orange	Brown

Spindle Controller Connections

14-Pin SP/THC Cable

Connect the 14-pin SP/THC cable to your Spindle Controller.

M23 Spindle Cable

Connect the male end of your M23 spindle cable to your Spindle Controller, aligning the arrow on the cable connector with the arrow on the panel mount connector.

Power Cable

Plug the power cable from the Spindle Controller into an appropriate receptacle, based on your application below.

3 HP and 4 HP Plug and Play Spindle / VFD System

- L6-30 receptacle (200-240VAC single-phase)

8.7 HP Plug and Play Spindle / VFD System

- L21-30 receptacle (200-240VAC three-phase)
- If running on single-phase, refer to **power requirements** for this system.

Spindle Connection

3 Avid HP Spindle

Connect the female end of the M23 spindle cable to the spindle, aligning the arrows as in the previous step.

4 Avid HP Spindle

M23 Cable Seated

M23 Cable Fully Tightened

Connect the female end of the M23 spindle cable to the spindle. Ensure the connector is seated before tightening.

> 🔧 **Assembly Note**
>
> It may be necessary to rotate the M23 cable to allow it to seat properly. During this process you will feel the connector drop into place when the pins and sockets of the connector align.

Mach4 Setup

After the physical connections are complete, the next step is to configure Mach4 for your spindle. If you have not configured Mach4 for your machine, follow the steps in the **CNC Software Setup Guide**.

If you are currently using Mach4, you will need to update your Mach4 configuration using the **Avid CNC Mach4 Configuration** menu. When selecting a Cutting Tool, choose "Spindle" (or "Spindle / Plasma" for dual-use machines) and the appropriate Spindle Type.
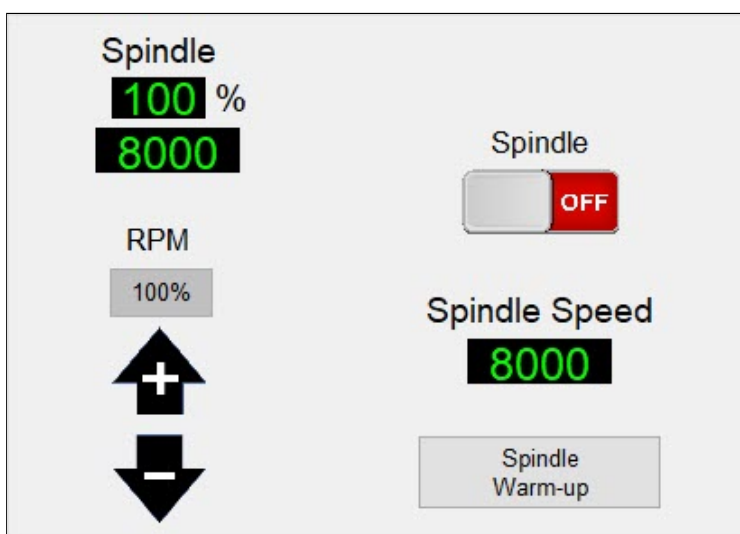
Once you have configured Mach4 with a Spindle cutting tool, you will see the spindle control functions shown above. For more detail about each of the buttons and DROs, refer to the **Mach4 Users Guide**. Each spindle type has a pre-defined minimum and maximum speed, as shown in the table below.

Spindle Type	Min Speed (RPM)	Max Speed (RPM)
3 HP Avid CNC spindle	8000	24,000
4 HP Avid CNC spindle	6000	24,000
8.7 HP Avid CNC spindle	1000	24,000

To manually adjust the spindle speed, enter a speed within your spindle's range into the Spindle Speed DRO. If you enter a value too low, it will bump up to the minimum, too high and it will bump down to the maximum.

Once you have input a valid spindle speed, click the Spindle toggle button to turn the spindle on and run it at that speed (Mach4 will need to be enabled to turn the spindle on).

Check that you can adjust speed while the spindle is on by entering various speeds (between your spindle's min and max speeds) into Spindle Speed DRO and hit enter.

If the spindle responds to these speed commands, your VFD and Spindle package is ready for use!

If you experience any trouble while following this guide, please feel free to Contact Us.