USB Communication Cable History

Communication between devices and the Tuning Software is done via a USB Cable manufactured by Spitronics. The electronic components for communication was put in a separate cable to reduce production cost and board space on the devices. The cable can work on all the current devices and are only required for tuning. The electronics in the cable consist of the USB converter as well as isolation devices. This cable will protect the laptop during high voltage interference. This cable requires drivers to be installed to operate on a laptop. They can be downloaded from the Spitronics website under Downloads – USB Drivers. The baud rate to all products are 19200.

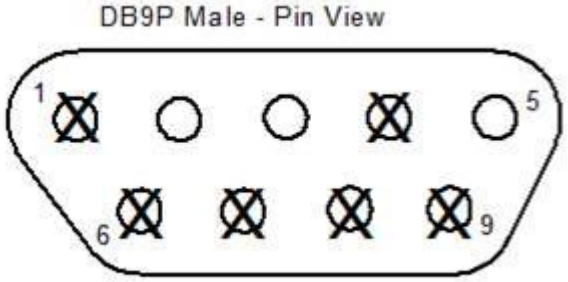
As development progressed over the years these products were upgraded as well. Spitronics started out when USB was only in the beginning stage and very expensive to use on micro design level. They started out using a standard USB to RS232 converter for laptops that did not have serial ports. Nowadays these serial com ports are discontinued so the RS232 were abandoned and changed over to UART directly. This saved the 2 RS232 chips. One in the cable and one on the device. Later we found that during tuning the 9pin D-Sub connectors were coming loose during tuning and were also prone to static discharge doe to the metal housing. So they changed to the

clip-in Molex connector which is the current cable and will stay like that for a while. So keep in mind that cables between the products do differ. In some cases, you may require an adapter to use the USB cable on older products. See below for explanation on the different types over the years. The current cable (left) clips into the device and won't fall out during tuning. It will also not be vulnerable to statics as the metal counterpart. This will be the style for the future.

History

1. **TCU, EMU** and **Titan** units were the fore runners. They used a RS232 to USB converter with a 9 Pin Male D-Sub connecter. With these units you had the option of a third party converter and breaking out pins. Note that this connecter is the same as the Mercury and Neptune one but the cable electronics is different. The electronics is not compatible with Venus, Mercury, Mercury2, Neptune, Neptune2, Pluto or Pluto2. Mark them properly so that you do not get confused. It may damage the other devices as higher voltage levels were used. Below is a picture of the cable and connecter.

The **Prolific RS232 to USB converters** were popular in the old days and could be used only for **TCU, EMU** and **Titan** units. Note however that you had to break-out pins 1, 4, 6, 7, 8 & 9. This is due to other connections from the ECU to the 9 pin D-sub connector. Use a small screwdriver and bend them outwards and then inwards till they break out. Do not damage the other pins. There are small numbers inside. Below is an illustration of the layout.



If you have the skills and equipment like a hot air de-solder machine, you may modify your TCU or Venus to work with the new style USB/UART cables. You need to install two connection links as well. Then you will require also the converter cable and maybe adapter to make the connection to

the 9 pin D-Sub. Do mark the box that it is now using the new cable so that other dealers can see if they work on it. Below are photos that illustrate this modification. Blue is TCU and green is Venus.

2. **Venus** used a USB to UART converter with a 9 Pin Female D-Sub connecter. This was to stop confusion and the different connectors was easy to identify the product it was used for. But the male pins on the ECU were susceptible for static spikes. During the era of the Venus the cable changed to the isolation cable due to laptops that “hang” with interference wiring. Some of the cables had the electronics in the wire covered with heat shrink and most have it in the D-Sub holder. Below is a picture of the cable and connecter.

3. **Mercury, Neptune** and **Venus2** were using the same electronics as the Venus cable except with the 9 Pin Male D-Sub connecter. We changed this unit back to the standard connector due to static electricity on the male pins that were exposed. Spitronics do solder the 9 Pin D-Sub connecters back to back to make USB converters between Venus, Mercury and Neptune compatible. See further in this section for details. Do not use a gender changer as the pins are mirrored and will not work. Below is a picture of the cable and connecter.

4. **Pluto, Pluto2, Mercury2, Neptune2 and Orion** use the new generation cable. It will be standard to all the new products released. Here Spitronics have done away with the D-Sub connecter and go for a 6 Pin Molex connecter which is the same type as the harness

connectors. The reason is it is plastic which eliminates the static connection with the human body and it clips in place preventing it from falling out during tuning. It is also more durable. With this cable the electronics is also in the wire covered with a plastic enclosure. Again these USB cable's electronics is compatible with Venus, Mercury and Neptune. You only require a converter cable harness to make it work. Below is a picture of the cable and connecter.

Converter Cables
Spitronics made converter cables to interchange cables between similar products.

The cable below could convert your **Mercury, Neptune** and **Venus2** USB cable to fit the new **Pluto, Pluto2, Mercury2 Neptune2 and Orion** products.

The cable below could convert your **Pluto, Pluto2, Mercury2 Neptune2 and Orion** USB cable to fit the older **Mercury, Neptune** and **Venus2** products.

These bare connectors could be soldered back to back in male/male or female/female pairs to cater for Venus2 or Venus Racing cable converters. The heat shrink only covers the pins. Solder all the pins in 9 pairs.

Note that only the Spitronics USB cables are compatible with their products. They are not expensive cables.