

USB troubleshooting 101

We all get questions surrounding different aspects of our USB sensors. I wanted to put together some good to know subject matter to help us better understand the issues as well as support our customers.

The “Heartbeat”: Most of you have noticed that when you plug in a USB sensor you get your own personal LED light show. That LED show is actually providing you with some valuable information. When the USB sensor is first plugged into a computer you see a blue LED light come on and stay blue for a second. This is actually the sensor enumerating with the computer, establishing a connection. This happens quickly and then you see a slow and steady flashing “the Heartbeat” this means that the USB sensor is connected and communicating with the computer. When in operation like taking power measurements you will notice that the LED changes in frequency pending on the data being transmitted through the device. This is normal for operation. Things to note that are not normal with the LED light. You should always see some sort of LED light if no light exists this is an indication that you have no power. This could be due to a number of reasons but most common are the USB port is not delivering enough current to support the device. Other problems are too much length in extension cables. Or even that the sensor itself is damaged. Without the LED light you need not perform any software troubleshooting.

The “Sensor dropout”: For some reason the sensor is no longer connected. There are a bunch of reasons for this to happen and very few of these are related to the sensor itself. When you get a customer stating that every day this is happening, so it will be important to know when its happening and what applications are running in the background of the computer, I have seen this caused by antivirus utilities, windows updates, backups, idle time settings, additional applications that are updating. Com port utilities that are addressing or competing for the use of the com ports. This could also be hardware related like a low power com port or hub. When the computer is idle something is interrupting the usb links. If you unplug and plug in the sensor and it causes the USB to connect its likely your sensor is functioning correctly. That may not be much help but unfortunately it’s going to take some computer specific investigation to uncover what is interrupting the sensor operation.

“Long distance USB”: Many customers want to run there USB sensor long distance. First of all what is long distance for a USB? Our standard offering USB includes a 3M cable. Anytime the customer wants to extend this distance depending on their computer they will need to consider the use of a powered USB hub. Here is a link for a brand that we have had success with. <https://www.sabrent.com/product/HB-USB30/usb-3-0-4-port-high-powered-hub-4a-power-adapter/> . Our EnergyMax-USB products are specified for a USB 2.0 interface. These devices typically pull around 5 V and 150 mA when running. USB ports on computers are by design supposed to be able to supply around 5 V and a minimum of 100 mA and up to 500 mA for USB 2.0 devices. Some devices that require above 100 mA will request a higher current from the computer and may or may not have that higher current delivered depending on what is currently available from the USB bus. So you can see why we require that the extension cables that are used require additional current to be supplied. We have had requests for longer runs of distance where we would recommend the use of CAT5 cable. This can get the distance out to about 300ft. The Icron USB Extender brand works for this, information can be found here. <http://www.icron.com/products/icron-brand/usb-extenders/> . The important point to note is that the USB to CAT5 ranger 2201 version does not require its own address. Our sensor must just see a USB device at the end of the connection and devices that require their own IP address cause communication problems.

“Software problems”: The most common software problem I have seen relates to the customer looking for a device driver for the sensor. The fact that they are in need of a driver tells us that they have experienced some sort of software installation failure. This is because the software package we have has inside of it all of the device drivers needed for its installation. There are many reasons why the software installation has failed and I will try to touch on the most common once again. The customer may not have the proper permissions to load software. The procedure seems to install right up to the part where changes are needed to be made to the computer configuration and this is where the device driver is not allowed to load. One potential solution to this is to right click with your mouse over the setup file and select run as administrator. This will get through about eighty percent of the permissions failures. A common additional failure to permissions is that the customer will download the package from our website and then find that by the time they try to run the installation package the software is corrupt. Many antivirus packages are looking for files like .exe and .dll as potential dangers and removing or corrupting them so that they cannot be operated as originally intended. One approach to this seems to get by is to have the customer download the software package on a personal computer and load the file via CD or USB drive. If this does not work you may even suggest that the customer contact their IT administrator to assist in the software download.

The next most common reason for the software installation to fail is at the end of the software install the instructions ask you to launch VISA runtime and NI packages that are required add-ons to our software script. When you refuse to load the add-ons the software will not complete the installation. The ending result is your software does not work. For more tips on the actual software installation, or uninstallation process please see the PowerMax-USB_troubleshooting guide. You will find the link below, in the PowerMax-USB section, look for PowerMax-USB-RS Software installation and quick start guide. <https://www.coherent.com/measurement-control/measurement/laser-measurement-and-control-help-center>