## Reason

Because Sentinel GIS mobile software runs on Windows devices, more people are attempting to use consumer Windows tablets.  We only support using approved Sentinel GIS devices.  Although we recommend using professional equipment such as the Juniper Systems Mesa 2 or Mobile Demand T1550 (primarily because GPS and serial ports are built in, in addition to ruggedness, screen visibility, and battery life), we do support using other devices if they are sent in for testing and are added to the approved device list.

This support note summarizes best practices and recommendations for using consumer Windows devices with Sentinel GIS.  *Note: Android tablets and Apple devices are not supported in Sentinel.  FieldSeeker GIS does support Apple devices and soon will support Android and Windows devices as well.*

## Solution

1. Verify the COM ports for built-in GPS or serial ports.  To do this, open Windows Device Manager (right-click Computer > Properties > Device Manager).  *Please Note: most tablets will not have a built-in serial port (9-pin RS-232 input), but some may have built-in GPS.  If GPS is built in, test in a real-world environment (e.g. in the cab of a spray truck) to verify performance. If performance of built-in GPS is unsatisfactory, you will need to select a USB or Bluetooth GPS.*
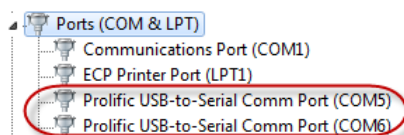


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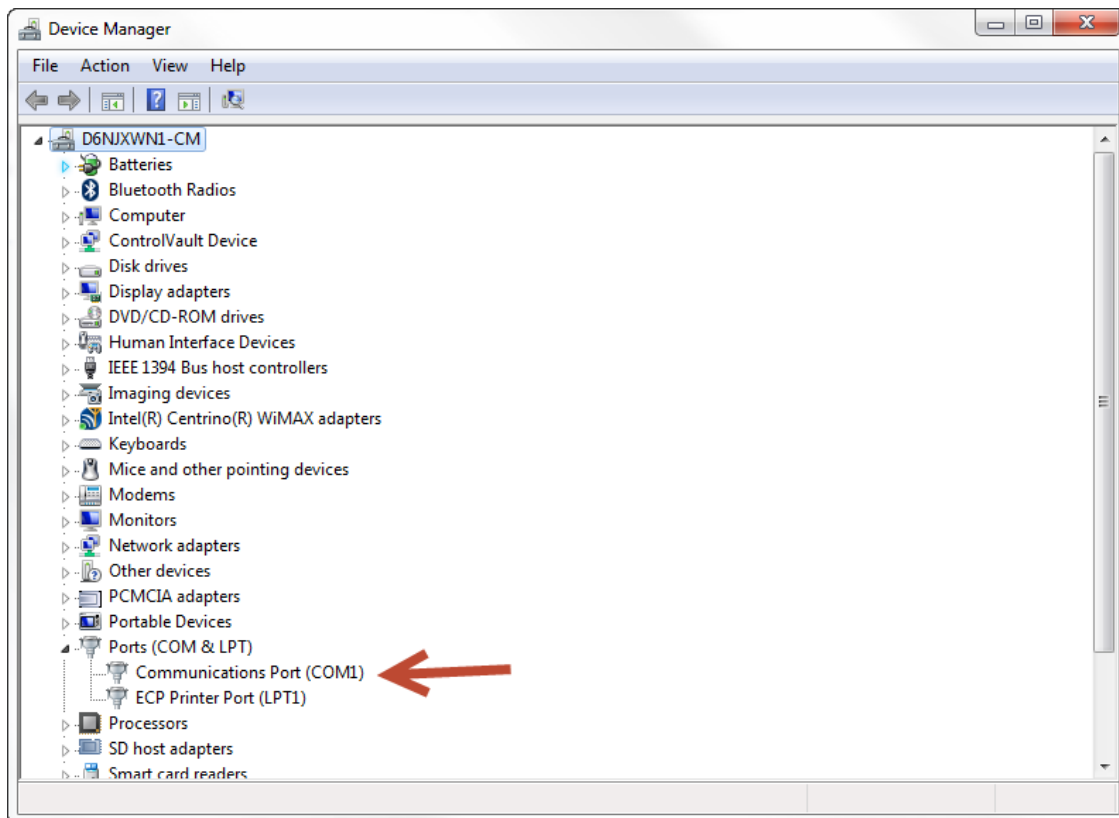
2. Select high-quality GPS and serial adapters.  There are lots of manufacturers out there, so check customer reviews on places like Amazon.com.  Make sure there are drivers available for your operating system (e.g. Windows 7/8/10 64-bit) before you purchase. Currently, many USB serial adapters use the *Prolific PL2303HX chipset*.  We have used and would recommend the **Plugable** brand. We have used and would recommend **GlobalSat** GPS receivers (BU-353 USB GPS with antenna cable, ND-100S USB Dongle with no cable, BT-359C or BT-368i Bluetooth), all of which use the *SiRF Star III GPS chipset*, the same as is used on Garmins and Trimble Junos.  Avoid using additional USB adapters or extension cables.  Every additional connection is another possible failure point.

3. Protect adapters and cables during use.  Do not shut GPS antenna cables in doors or windows or otherwise crimp or bend them.  Protect USB connections on your tablet or laptop.  Bending or breaking a USB connection on your tablet is usually an expensive repair that is not covered by hardware warranty, and some tablets only have one USB connection.

4. Select high-quality memory devices.  Use an SD card if possible.  We have used and would recommend **SanDisk Ultra** or **Extreme III**.  Do not use a MicroSD card with an SD adapter.  Remember, the fewer connections, the better.

5. Install the latest drivers for USB serial or GPS devices.  Go to the manufacturer Website to make sure you are installing the latest.  The drivers on the installation disk that comes with your device may not be the latest.

6. Verify that only one driver version is installed.  For example, if Windows lists "PL-2303 USB-to-Serial" more than once, there will be driver conflicts.

| Name | Publisher | Installed On | Size | Version |
|---|---|---|---|---|
| PL-2303 USB-to-Serial | Prolific Technology INC | 4/11/2013 | | 1.00.000 |
| Roxio Creator DE 10.3 | Roxio | 10/13/2011 | 96.6 MB | 10.3 |
| SAMSUNG USB Driver for Mobile Phones | SAMSUNG Electronics Co., Ltd. | 4/14/2013 | 42.9 MB | 1.5.14.0 |
| Sentinel GIS (Adulticiding) | | 4/15/2013 | | 3.1.2758 |
| Sentinel GIS (Larviciding) | | 4/10/2013 | | 2.1.2604 |
| Sentinel GIS (Service Request - Web) | | 4/10/2013 | | 1.1.2822 |
| Sentinel GIS (Service Request) | | 4/10/2013 | | 1.1.2501 |
| Sentinel GIS (Surveillance) | | 4/12/2013 | | 2.0.2609 |

7. Verify the COM Ports for peripheral devices (again, in Windows Device Manager).  Plug in the peripheral devices one at a time to verify which port is GPS and which is the serial adapter.  Be aware the COM ports can change when Windows is restarted, or if other devices are plugged in.

- Ports (COM & LPT)
  - Communications Port (COM1)
  - ECP Printer Port (LPT1)
  - Prolific USB-to-Serial Comm Port (COM5)
  - Prolific USB-to-Serial Comm Port (COM6)

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8. Verify Advanced Settings for USB devices.  In Device Manager, right-click the device and select Properties.  Verify the bits per second (**USB serial must match the sprayer baud rate, which is 4800 for London Fogger, and 9600 for Clarke SmartFlow, Curtis, and Target / B&G Phoenix**; typically 4800 for USB GPS though this may vary).
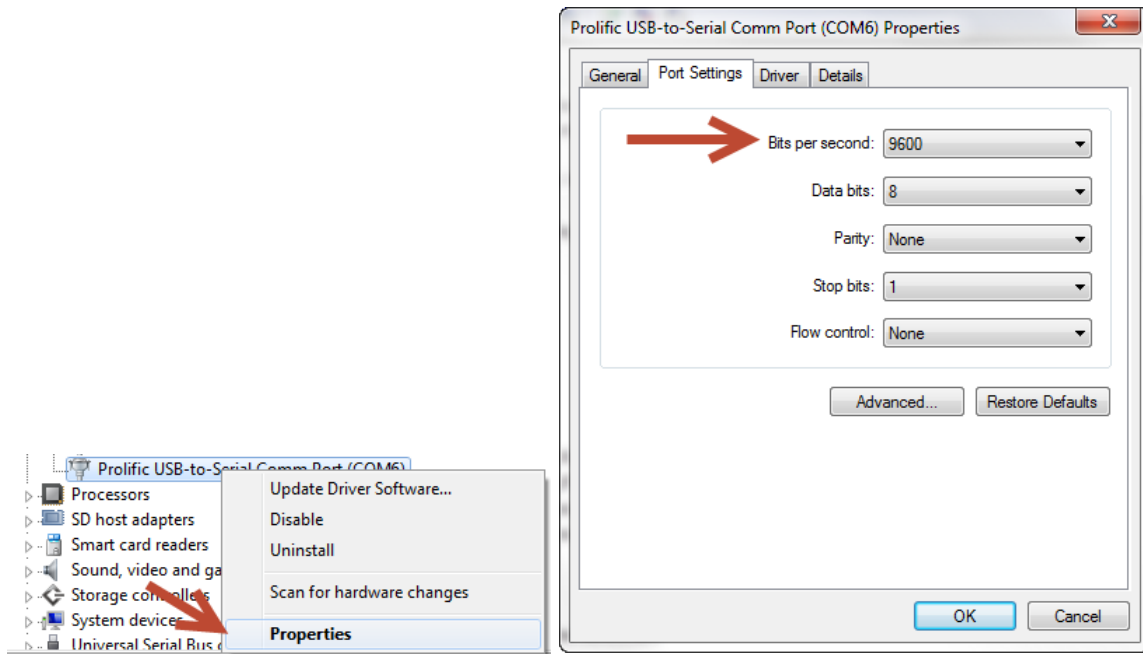


9. Always plug peripherals into the same USB ports.  Windows will often assign the different COM port numbers if a USB GPS or USB Serial adapter is plugged into a different USB port.
10. Adjust Windows power plan.  Make sure that Windows will not turn off the display or put the computer to sleep while you are trying to collect data.



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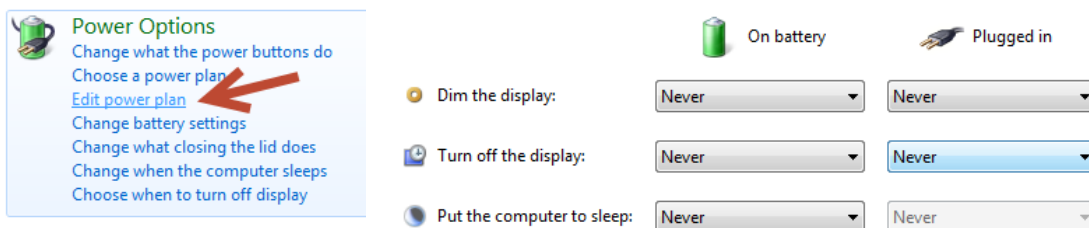
11. Be aware that Windows settings may be tied to a Windows user profile.  Test with every Windows user that will use the system.  We recommend using a 'headless' user account, e.g. "Sentinel User" or "Spray Truck," because Sentinel records the software user with the data.
12. Set Sentinel GIS settings to match.

*Note: Device settings for memory devices default to the following:*
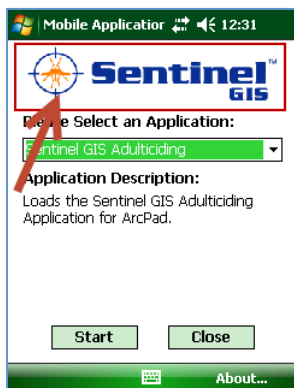
*GPS: COM4, NMEA, 38400*
*AUX: COM1*

*To change these settings for all memory devices:*

1. Navigate to the configured DataLink GIS Hand-Held Software path > Program Files > Elecdata.
2. Make a backup copy of ElecData.Mobile.ApplicationManager.config.
3. Open ElecData.Mobile.ApplicationManager.config in a text editor.  Modify the following element as needed for the **Generic** device.  The AuxPort is the port your sprayer cable connects to if you are using the Adulticiding module.

```
<DeviceType>
<ID>17</ID>
<Name>Generic</Name>
<GPSProtocol>NMEA</GPSProtocol>
<GPSPort>2</GPSPort>
<GPSBaud>38400</GPSBaud>
<AuxPort>1</AuxPort>
<AuxBaud></AuxBaud>
</DeviceType>
```

*To change these settings on one device:*

1. Run Sentinel GIS.
2. Left-click on the Sentinel GIS logo.



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3. Uncheck the box to "Use Defaults" and set the GPS Port and AUX port (the serial port that the sprayer plugs into). Press OK. Settings will be saved on the device.

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