sylex FIBER OPTICS

SENTINEL 2.0

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SENTINEL D

Sentinel Quick Installation Guide

The current version, Sentinel: 1.1.63

The current version, Sentinel-D: 0.4.6

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Release date: 07th of October, 2024 | **Version:** 01 | **Revision:** 00

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1. Introduction

This quick installation guide aims to describe the installation and troubleshooting of the Sylex interrogator system S-line and the Sentinel software. The interrogator system from Sylex is a modular-based platform meaning that the configuration of the set-up can be later changed by exchanging certain modules like switches or splitters. All available modules from the S-line family have the same footprint and thus can be stacked on top of each other.

The system features the S-line Scan 800 with 80nm bandwidth, a maximum scanning frequency of 5kHz, and the possibility to use either static or dynamic switches. More information about the platform is available at the Sylex website: https://www.sylex.sk, under Sensing Systems.

1.1. Minimum hardware requirements

The Sentinel software was designed to have low hardware requirements for the driving PC, however, a certain performance of the computer is necessary for the proper working of the software. The Sentinel software is a Windows-based application and thus bear in mind that the operating system needs to be Windows-based.

A list of the hardware specifications for the driving computer with the Sentinel software is listed below.

- Operating system (**OS**): x64, Windows 7 - Windows 11[1] (Ubuntu 22.04[2] or newer)
- **CPU**: Intel Pentium N4200 or better (for optimal performance, 4 cores/threads are recommended with a frequency of 2,5 GHz)
- **RAM**: 8 GB RAM or more
- **GPU**: Intel® HD Graphics 505 or better
- **Storage**: SSD
- Available Storage **Space**: 10GB or more
- **I/O:** 1x free USB 2.0 (or later) port

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[1] The software can operate even on Windows XP; however, the OS is already discontinued and without the required security updates. We do not recommend running the software on an OS older than (IOT) Windows 7 x64.
[2] Sentinel can be run under Ubuntu 22.04 LTS in Demo mode using „wine" emulator.

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2. Hardware Installation

The installation of the hardware (interconnecting with all active and passive modules) is fairly simple. All modules including the computer, if ordered from Sylex, are pre-prepared in the production and tightened together using side plates for each floor. The interconnection between the interrogator and the S-line switch is done through a D-SUB connector located between the interrogator and the switch and is thus hidden. The power adaptors and small accessories are a standard part of the delivery.

The interrogator operates and is driven through the USB port and thus the connection to the computer is made through a free USB port[3]. If a third-party computer is used for driving the interrogator and the software, necessary steps need to be taken to ensure the recognition of the hardware and proper operation.

After connecting the system to the PC for the first time (third-party computer or additionally both S-line Comp), Windows OS will recognize the new hardware, *Figure 1*, through the USB bus (including a new flash drive). The new hardware represents the internal serial link and the internal spectrometer. The serial link is in most cases recognized by the system since it uses standard drivers, however, the spectrometer needs to be installed using the appropriate drivers.

Figure 1: Unknow hardware detected by the OS after connecting the unit to the PC for the first time.

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[3] The USB cable for interconnecting the interrogator to the computer is a part of the delivery.

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The newly discovered flash drive, *Figure 2*, which is an essential part of the S-line interrogator includes all necessary drivers, libraries, and tools to ensure that the hardware ad software will work properly. The missing drivers for the spectrometer are located on the flash drive inside the folder named: **bs_drivers**. Update the drivers within the Windows device manager (⊞ + r, and type: devmgmt.msc) and navigate to this folder within the flash drive.

We recommend that you install as well the drivers, and executables, inside the folder named: **itr_drivers**. You need to execute the installation using administration privileges otherwise the installation will fail.

Other folders are for troubleshooting purposes, error fixes, or administration tools. An important part of the flash drive content is the calibration file for the spectrometer. The file is located within the root of the drive and is named: **Calib_LT_Fxxxx.dat**. The file is saved while the software starts but for troubleshooting, make a note of the string since it represents the S/N of the spectrometer.
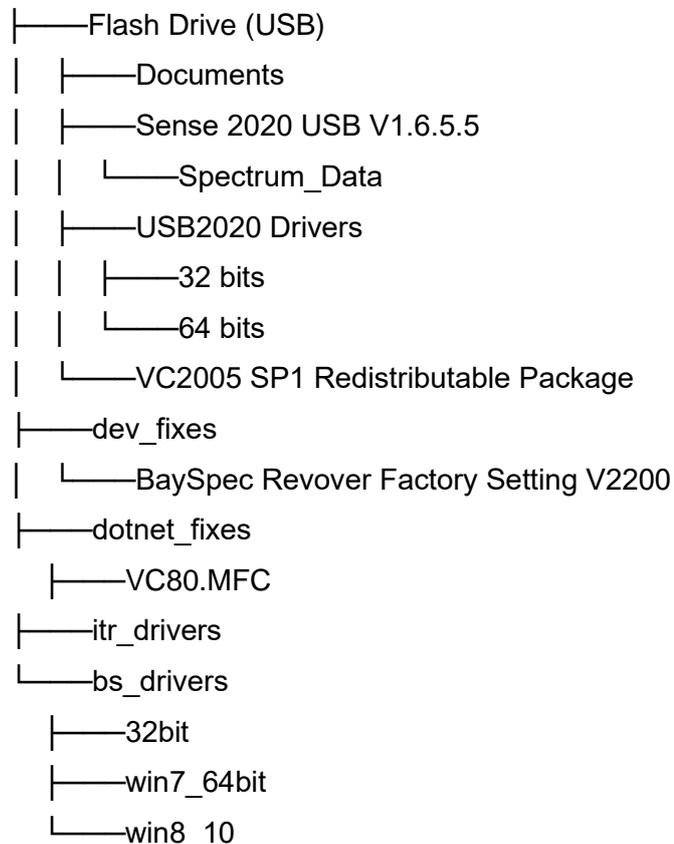
```
├──────Flash Drive (USB)
│    ├──────Documents
│    ├──────Sense 2020 USB V1.6.5.5
│    │    └──────Spectrum_Data
│    ├──────USB2020 Drivers
│    │    ├──────32 bits
│    │    └──────64 bits
│    └──────VC2005 SP1 Redistributable Package
├──────dev_fixes
│    └──────BaySpec Revover Factory Setting V2200
├──────dotnet_fixes
│    ├──────VC80.MFC
├──────itr_drivers
└──────bs_drivers
     ├──────32bit
     ├──────win7_64bit
     └──────win8_10
```

Figure 2: Folder structure of the flash drive located inside the S-line module.

3. Software Installation

For a newly installed system, we suggest installing the .Net fixes that are supplied on the internal drive of the interrogator one by one and both the x86 and x64 distributions. This should solve the most common problems and prepare the Windows environment for the Sentinel software. The recommended sequence of installation of .Net fixes from the root folder "dotnet_fixes" is below:

- dotNetFx40_Full_x86_x64
- NDP40-KB2468871-v2-x64
- NDP40-KB2468871-v2-x86
- vcredist_x64
- vcredist_x86
- VC80.MFC/vcredist_x64
- VC80.MFC/vcredist_x86

The downloaded software is a pre-compiled comprised package and does not require installation. However, administrative privileges are required for certain features. The package can be unpacked anywhere on the hard drive since it is not dependent on any other third-party package. The software uses .Net 4.0 which should be standardly available in all supported operating systems.
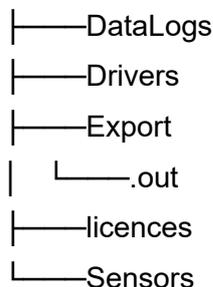
```
Application root:
├──────DataLogs
├──────Drivers
├──────Export
│      └──────.out
├──────licences
└──────Sensors
```

Figure 3: Root folder structure of the Sentinel application.

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4. Sentinel, Sentinel-D troubleshooting guide

The table below aims to help you with troubleshooting the unit, connectivity with the unit, etc… It summarizes the most seen issues with the running of the S-line Scan interrogators and Sentinel software.

Behavior or Error message	Error cause and fix
Behavior: The S-line Scan 800 unit is not recognized by the computer	The S-line Scan 800 unit can be without power or the USB cable is not connected properly. Make sure the LED on the power switch is on and that USB cable is connected to the computer.
Error message: The power LED is not lit up	Please, make sure the power adapter is plugged correctly into the outlet and into the unit.
Error message: Unable to connect to the device	Please, verify that the internal flash drive is visible within the computer management to verify the unit's USB cable is plugged into the computer. Make sure that "device manager" – devmgmt.msc, recognize the spectrometer/unit.
Error message: Device serial number mismatch	Please, verify that the internal flash drive is visible within the computer management since the calibration file is located on this flash drive. Please, restart the computer and turn off/on the unit.
Error message: Side-by-side configuration is incorrect	This issue is caused by missing software fixes for the .net framework. Please, install all files from within the folder "dotnet_fixes", located on the flash drive of the unit.
Error message: Microsoft Dynamics CRM error	Related to a registry issue. Please, navigate to the folder "dev_fixes" located on the flash drive and run "!reg_fix" with administrative privileges - Allows you to register or save performance counter name and registry settings in a file and designate trusted services.

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Behavior or Error message

Error cause and fix

Error message:

Microsoft.VC80.MFC – could not be loaded

This issue is related to the 64bit libraries and missing software fixes for the .net framework. Please, install all files from within the folder "dotnet_fixes/ VC80.MFC", located on the flash drive of the unit.

Behavior:

The API server is not running

Please, verify that the application was run with administrator privileges and that the firewall is not blocking the default 8024 port.

Error message:

Value cannot be null. Parameter name: value

This issue is caused by a generation change in the firmware of one of the key components. A possible workaround is to use either an older version of the software or run the software with a "legacy" driver.

Behavior:

Only noise is visible in the spectrum view

Please, verify that the OS recognized the serial to USB converter, and within the device manager, COM ports are present.

Error message:

No error message, the software will crash on start-up screen

Please, verify if the "log.txt" located in the root directory includes an ERROR message: *ERROR %timestamp% – Cannot load Counter Name data because an invalid index " was read from the registry*. If yes, please, navigate to the folder "dev_fixes" located on the flash drive and run "!reg_fix" with administrative privileges - Allows you to register or save performance counter name and registry settings in a file and designate trusted services.

Error message:

Value cannot be null. Parameter name: value

Please, make sure that the Vcredist_x64 and Vcredist_x86 located on the internal USB are installed. If unsure, please, install them once more.

If none of the above helps to solve your issue, please, feel free to contact us.

For more information contact our sales team at sales@sylex.sk

* Specifications are subject to change without notice