

# **1394 Analyzer Quickstart Guide**

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**FS1600,FS3200**

# Table of Contents

<b>Chapter 1. Hardware</b>	<b>3</b>
<b>1.1 Third Generation Analyzers</b> .....	<b>3</b>
Main Feature Summary .....	3
Specifications .....	4
FireSpy 1600,3200 .....	5
FireSpy Front .....	5
FireSpy Rear .....	6
<b>Chapter 2. Installation</b>	<b>7</b>
<b>2.1 Windows</b> .....	<b>7</b>
Installing the Software .....	7
Installing the Driver .....	11
Windows Driver installer.....	11
Older Windows versions .....	14
Manual driver (un)installation.....	18
<b>Chapter 3. Getting Started</b>	<b>19</b>
<b>3.1 FireSpy Standalone Tools</b> .....	<b>19</b>

# Chapter 1. Hardware

## 1.1. Third Generation Analyzers

In order to support the higher speeds this new generation of 1394 bus analyzer has been completely redesigned. And the 1394 interface is entirely based on DapTechnology's Firewire IP solution FireCore™ which combines both the Physical as well as the Link Layer functionality in one IP block.

### **Important!**

**Do not connect or disconnect the FireSpy when the computer is powered on.**

**Please turn on the connected FireSpy 1600/3200 before starting the computer and do not turn it off until after the computer is powered down.**

### 1.1.1. Main Feature Summary

#### **General**

- S1600 (S3200 for FireSpy3200) capable 1394 PHY is implemented in FPGA allowing more low level analyzer flexibility
- Supports S800 and S1600 (and S3200 on FireSpy3200) port speeds
- Host connection via PCI Express x4
- Firmware field upgradeable to enable future expansions
- External Trigger Input: 2.5V, (not implemented yet)
- AUX connector for:
  - Trigger input and output functions
  - Recording external event (not implemented yet)
- Software runs on Windows™ XP and Windows™ 7
- Configurable 1394 Behaviour like:
  - Configuration Rom
  - Cycle master Capable
  - IRM Capable

#### **Monitor**

- Displays bus activity:
- Counts packets according to type, speed, ack and error condition
- Counts number of bus resets

#### **Commander**

- Reading and/or writing of local and reading of remote PHY registers
- Reading and/or writing of remote memory locations (incl. CSR register space)
- Possibility to graphically view the current Topologies
- Sending of user definable packets (currently only legal packets)
- IIDC Camera Support (under development, requires IIDC Protocol license)

#### **Recorder**

- Time stamping of all packets and status events
- Packets hidden by slower connections are visible as 'prefix only' packets
- Extensive packet/event filtering/trigger/search capabilities
  - Packet type
  - Transmission speed
  - Boolean combination of 4 programmable packet sets
  - Data payload patterns
  - Error conditions
  - Various status events

- Graphical Trigger Sequencer
- Different kinds of packet display views, including:
  - Time View, displays all packets on a time line, including the prefix
  - Packet View, displays packets as list plus selected packet options
  - Transaction View, displays transactions as list or flow graph
  - Topology View, graphical topology displays as is during recording
  - Protocol View, displays packets decoded to selected protocol
- Precise time measurements
- Marking of individual packets or packet ranges

## 1.1.2. Specifications

<b>Dimensions:</b>	170 mm x 67 mm x 175 mm (W x H x D)
<b>Weight:</b>	915 g
<b>Power Requirements:</b>	12 V, 10 Watt maximum (Bus Power not included)
<b>Compliance:</b>	FCC Class A
<b>Connections:</b>	PCIe External interface to host-computer 3 IEEE 1394-connectors (Beta Only) BNC-connector for external trigger-input
<b>Indicators:</b>	Green/Red LEDs for: Active, Generating, Recording, Trigger Ready
<b>Switches:</b>	Tumble switch for Power On/Off Push button for manual triggering
<b>Package Content:</b>	FireSpy1600 Power Adapter (12V, 10.0A) PCI Express External Cable PCI Express External Host Adapter Card 2 x 1394b Cable (Beta9 – Beta9) Trigger Cable
<b>Product warranty:</b>	36 months limited warranty
<b>Part Number:</b>	FS016
<b>Optional Configuration:</b>	
<b>SW Add-on modules:</b>	IIDC protocol software package

### FCC Class A Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

## 1.1.3. FireSpy 1600,3200

### 1.1.3.1. FireSpy Front



#### IEEE1394b Connectors (3x)

With these connectors the FireSpy 1600 can be connected to the IEEE1394b buses to be analyzed. All connectors are beta ports. This means that they only can be connected to a 1394b (beta) port S800 or S1600.

#### Active led

Off: Power is off  
 Red: Power on, PCIe Link not active  
 Red and Green: Power on, PCIe Link active  
 Green: Power on, Link operational

#### Generator LED

Reserved for future use.

#### Record LED

Off: Recorder not active  
 Green: Recorder is active  
 Red: Recorder buffer full. This means the host can not keep up with writing the data to hard driver during recording. Please try pointing the temporary recording file to a faster hard driver (SSD).

#### Trigger LED

Off: No trigger occurred  
 Green: A trigger occurred

#### Manual Trigger

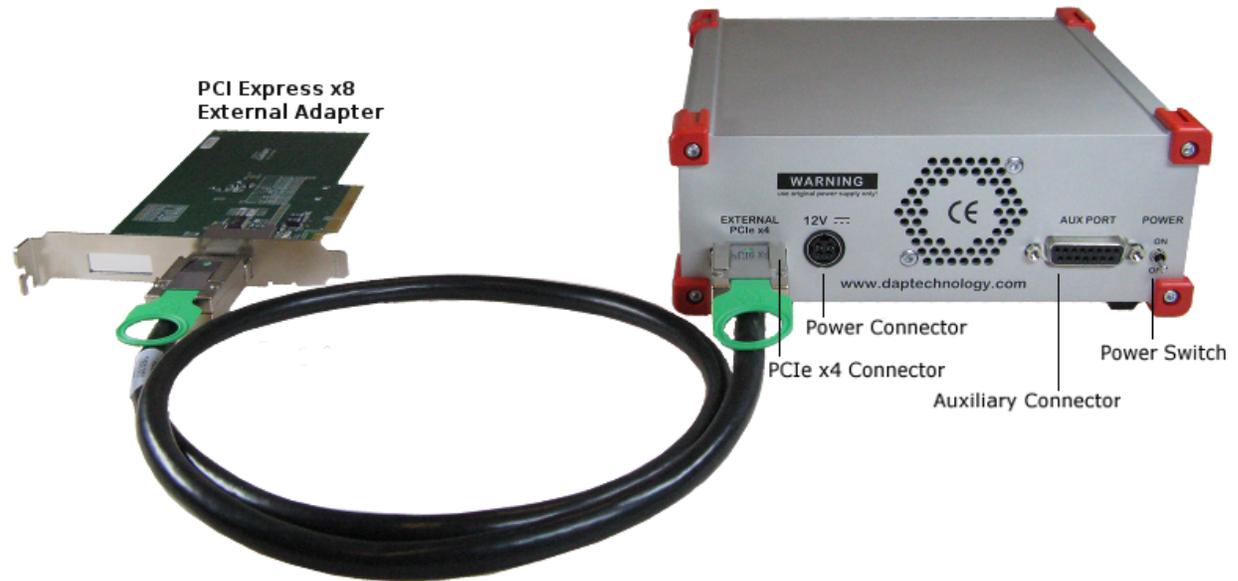
Pressing this button during Recording marks a trigger point in the current recording

Holding this button during power-up loads the factory fallback firmware into the FPGA. Only the programmer is active, used for recovering from a faulty firmware upgrade.

#### External trigger

Using this connector, the FireSpy can be triggered with an external electrical signal when recording is in progress and the Recorder is not yet triggered.  
 The FireSpy is triggered when it detects a positive pulse .....

### 1.1.3.2. FireSpy Rear



#### External PCIe 4x Connector

The FireSpy must be connected to the computer using this connector. A PCIe 4x cable, which is part of the FireSpy-package, is connected between this connector and the PCI Express External Adapter card installed in the computer.

#### Power Connector

Connect only the original power supply to this connector.

#### Auxiliary Connector

The auxiliary port will be discussed in a separate chapter. See Auxiliary connector ports.

#### Power Switch

Using this switch the FireSpy can be switched on (powered) and off. When turned on, the FPGA is configured from flash. This takes +/- 1 second.

#### Serial Number (on the bottom)

Each FireSpy has an 11 character serial number. This number is also programmed into the FireSpy and can be read with the License Manager of the FireSpy application. Part of the software will only work when license keys are installed for the serial number of the currently connected FireSpy. See License Manager for more information on license keys.

## Chapter 2. Installation

DapTechnology analyzers are not packaged with any software-installation media. This is because we would like our customers to use the very latest software available and not an old version that happened to be the latest when we packaged the product.

You will be able to download the latest software version from our website: <http://www.daptechnology.com>

Click on the support button at the top of the web page and after inserting the serial number of your FireSpy, which can be found at the back of the unit, you will get access to your custom download page. On this page you will find the license keys for your analyzer as well as links to the software downloads available for your analyzer. (latest recommended or latest beta version)

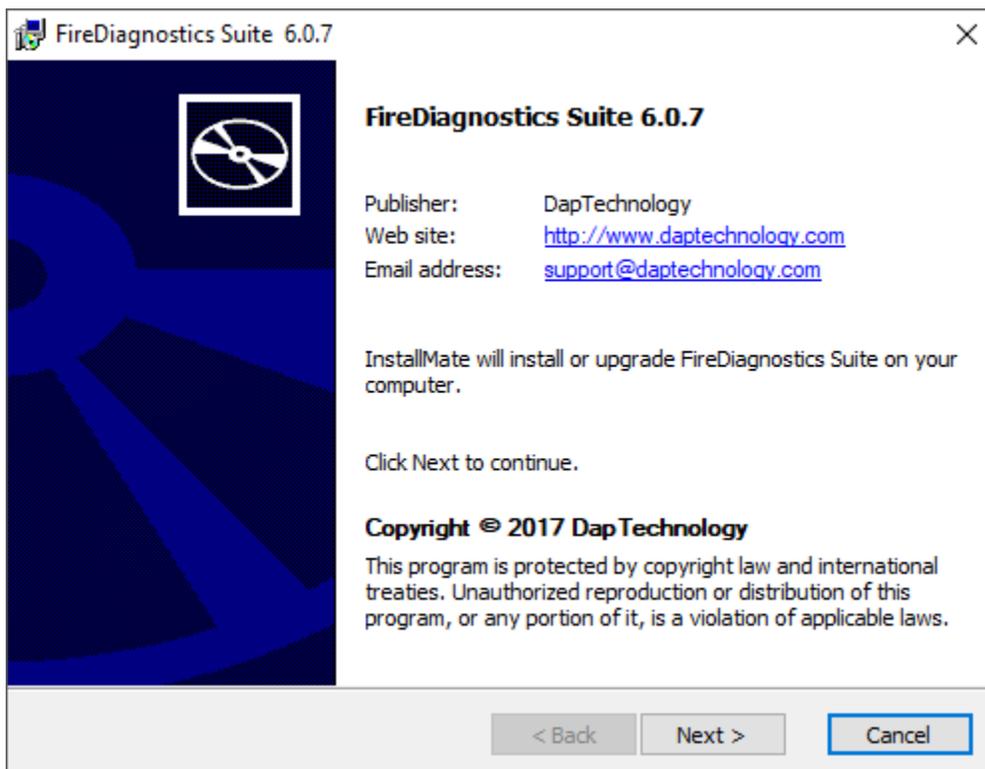
### 2.1. Windows

#### 2.1.1. Installing the Software

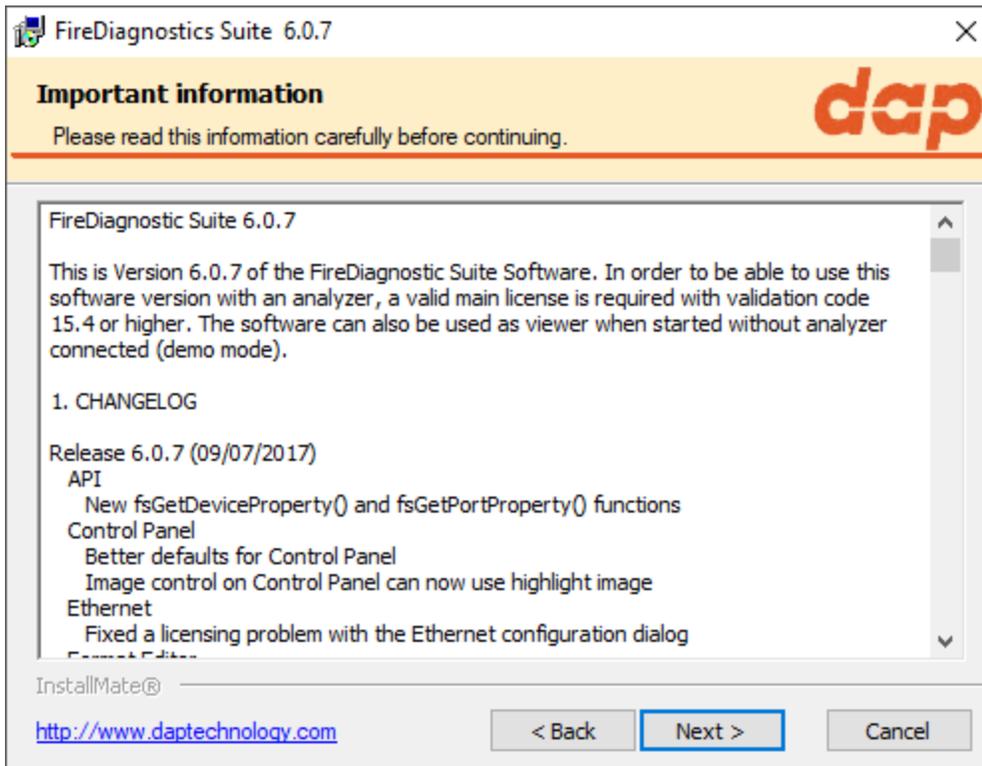
After downloading the FireDiagnostics Suite version of your choice from DapTechnology's website, please open the compressed folder and locate the file setup.exe. Run the setup.exe file, by one of the following ways:

- double click on the setup.exe file
- select 'Start->Run', browse to the setup.exe file and click 'OK'
- click with the right mouse button on setup.exe and select 'Open'

After starting the setup.exe program, the following window will be displayed. Note that the software version could be different if you are installing another version of the software.



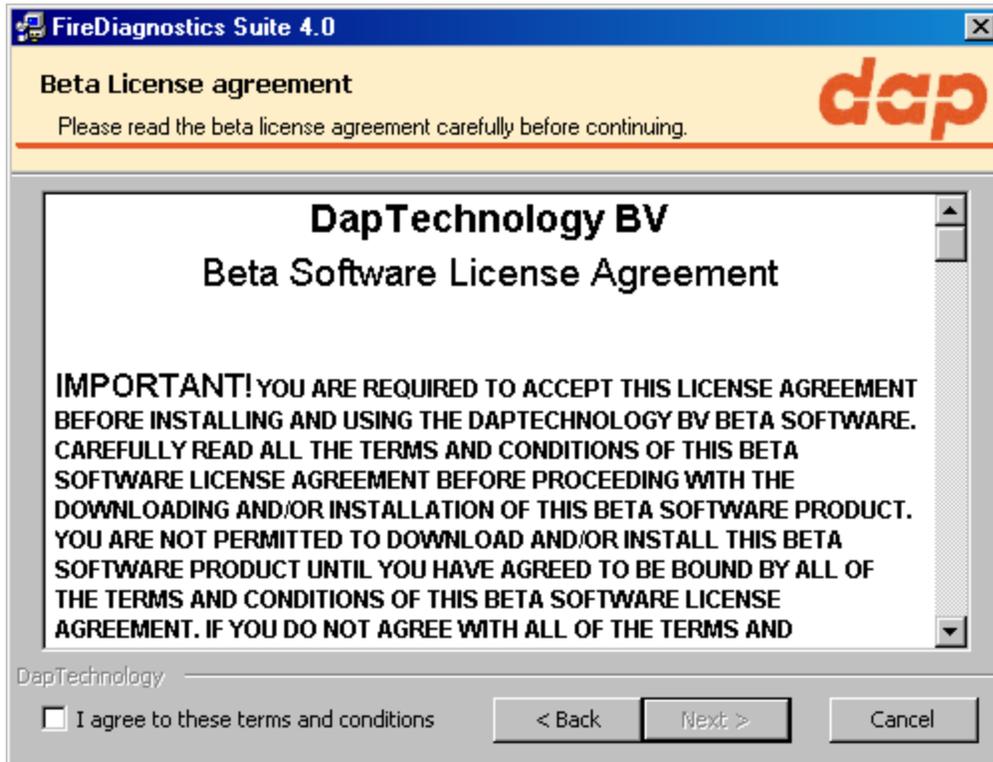
After clicking on "Next", the following window will be showed. It contains the latest information about the version of the software you are about to install. Please read it carefully before proceeding to the next step. The picture below contains just some example information.



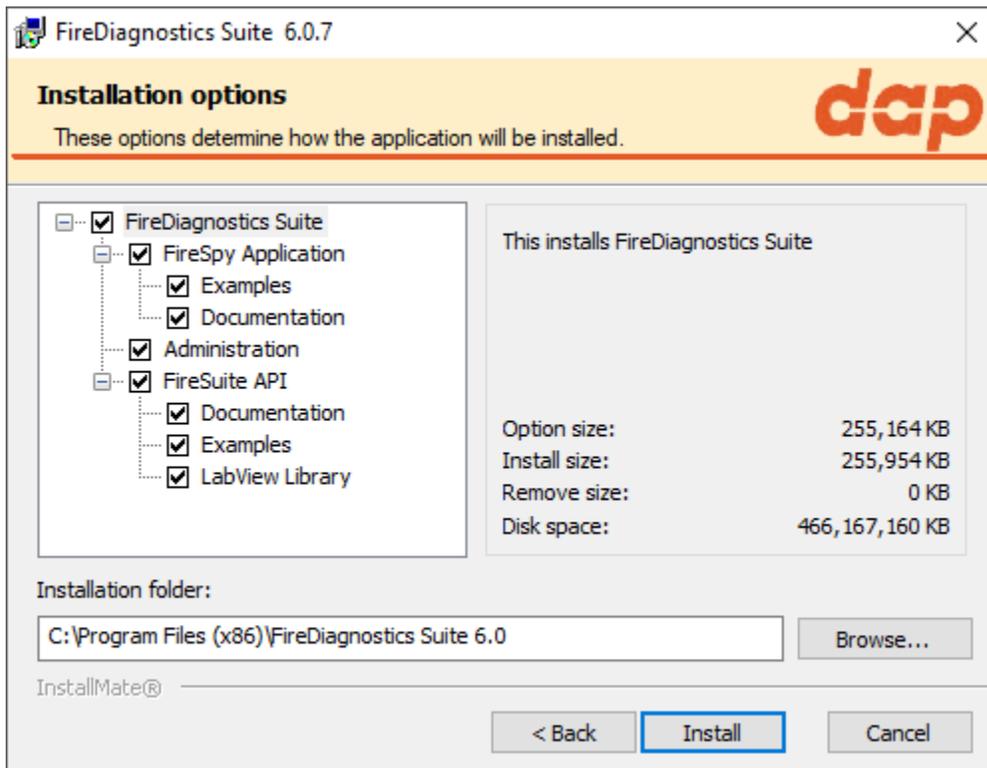
After clicking on "Next", the following window will be showed. It contains the License Information for the software you are about to install. Please read it carefully and check the checkbox to agree to the license agreement before proceeding to the next step.



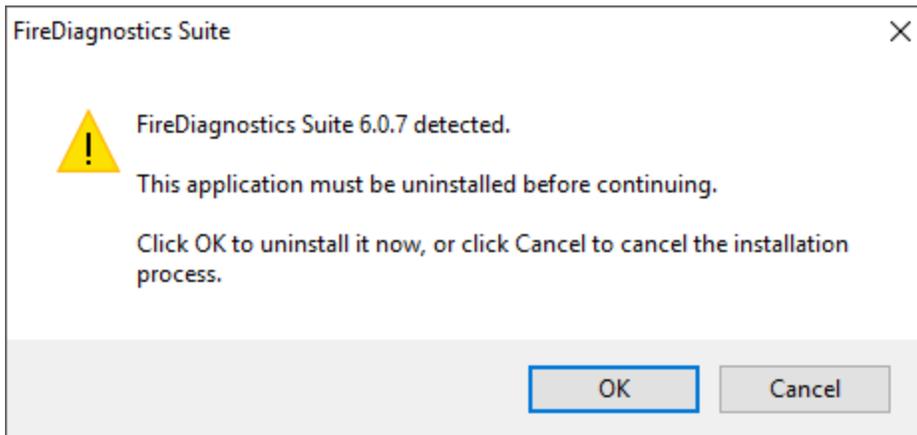
If you are installing a beta software version, an additional license agreement needs to be agreed with before continuing the installation process. Please check the checkbox and click next.



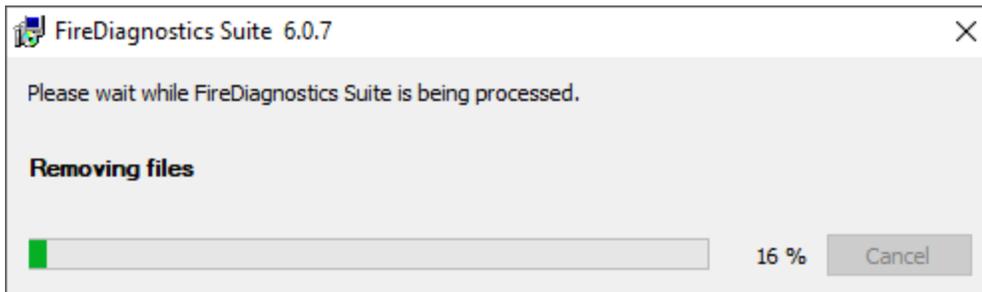
The installer options dialog as shown below allows the user to select which components to install. We recommend installing all components, however it is also possible to leave some components out.



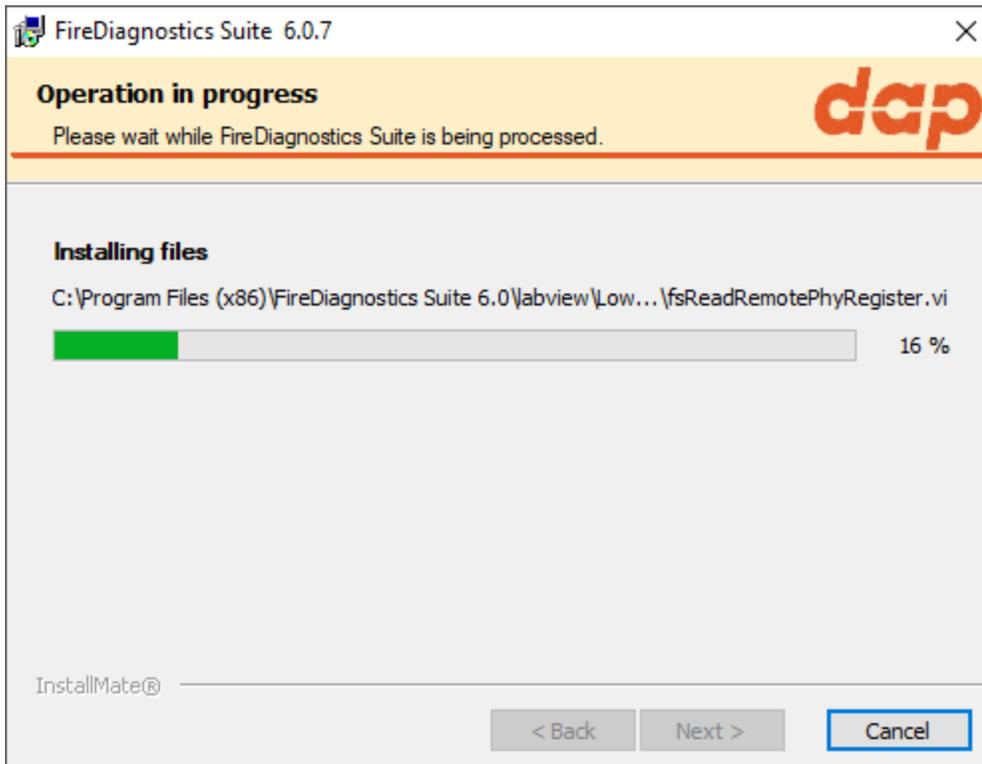
If another FireDiagnostics Suite installed version with the same main version number is found it needs to be reinstalled before the installer is able to continue. Software versions with a different major version number can be used alongside each other. Please click ok to proceed with the uninstallation process.



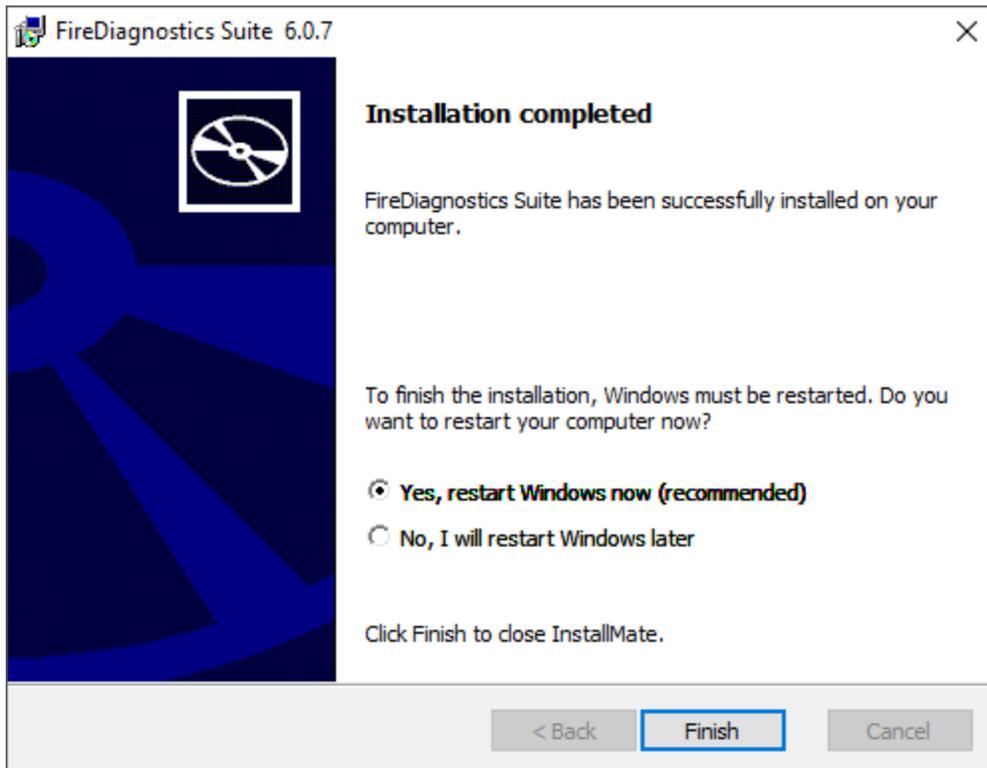
The following dialog will show uninstallation progress. Please wait until it finishes.



The following dialog will show installation progress. Please wait until it finishes.



After the installation is complete, the following dialog will appear. We recommend to always restart your computer after installing the FireDiagnostics software.



## 2.1.2. Installing the Driver

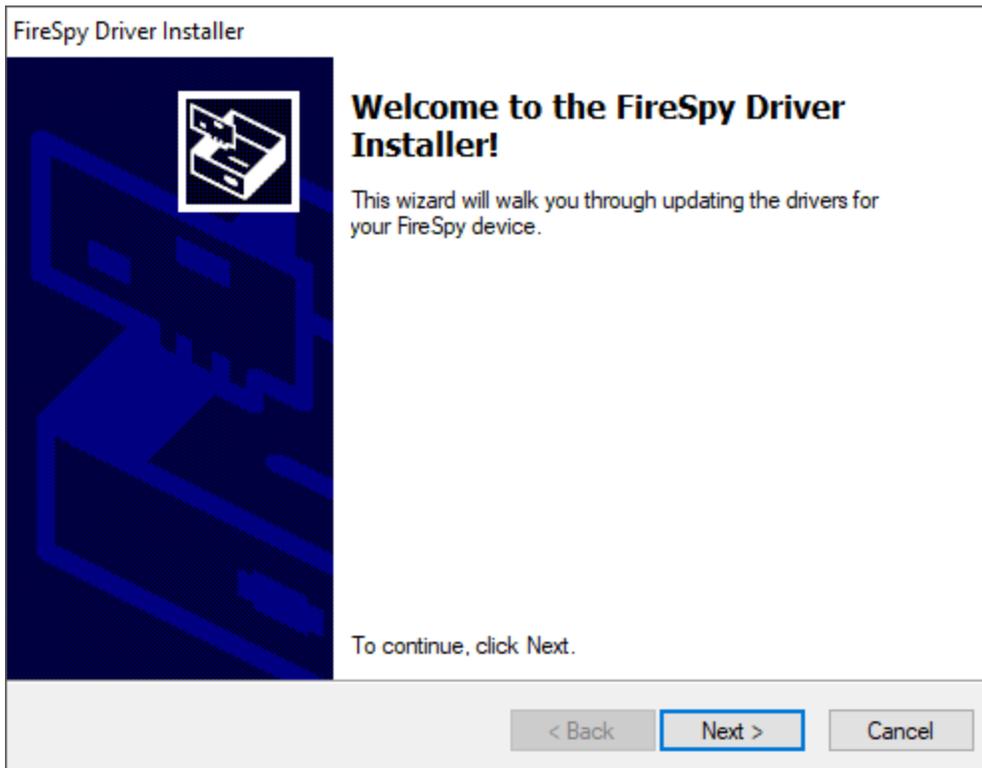
The driver installation will automatically start following the FireDiagnostics Suite installation, after the machine is rebooted. This installer will install the drivers for Windows 7 and Windows 10. Older Windows versions still work with the supplied drivers, but some additional steps may be required during installation. These steps are described in chapter [Older Windows versions](#).

After the device driver is installed the device ready to be used. Please continue reading at the "[Getting Started](#)" section.

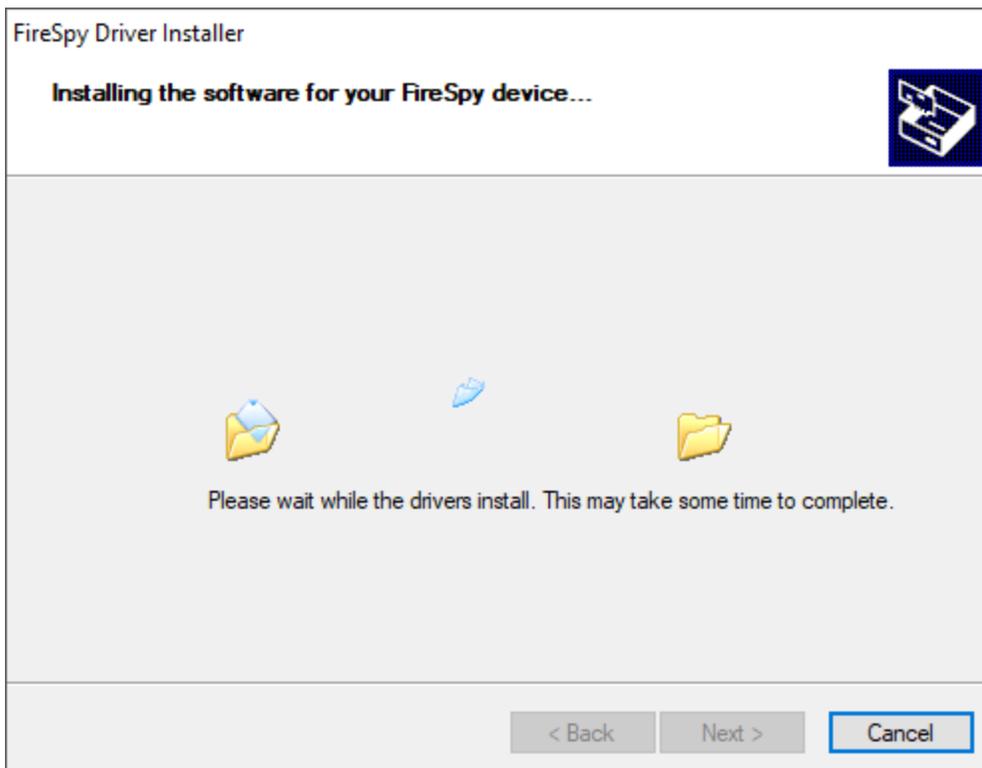
### 2.1.2.1. Windows Driver installer

At this point it is required to reboot the machine in order to install the device drivers. The device drivers will pre-allocate some memory that can be used for performing DMA operations and this needs to be done as early as possible after system startup. If done at a later point during system run it can take a very long time to load the driver.

After rebooting the machine, the following window will be displayed. Note that the software version could be different if you are installing another version of the software.



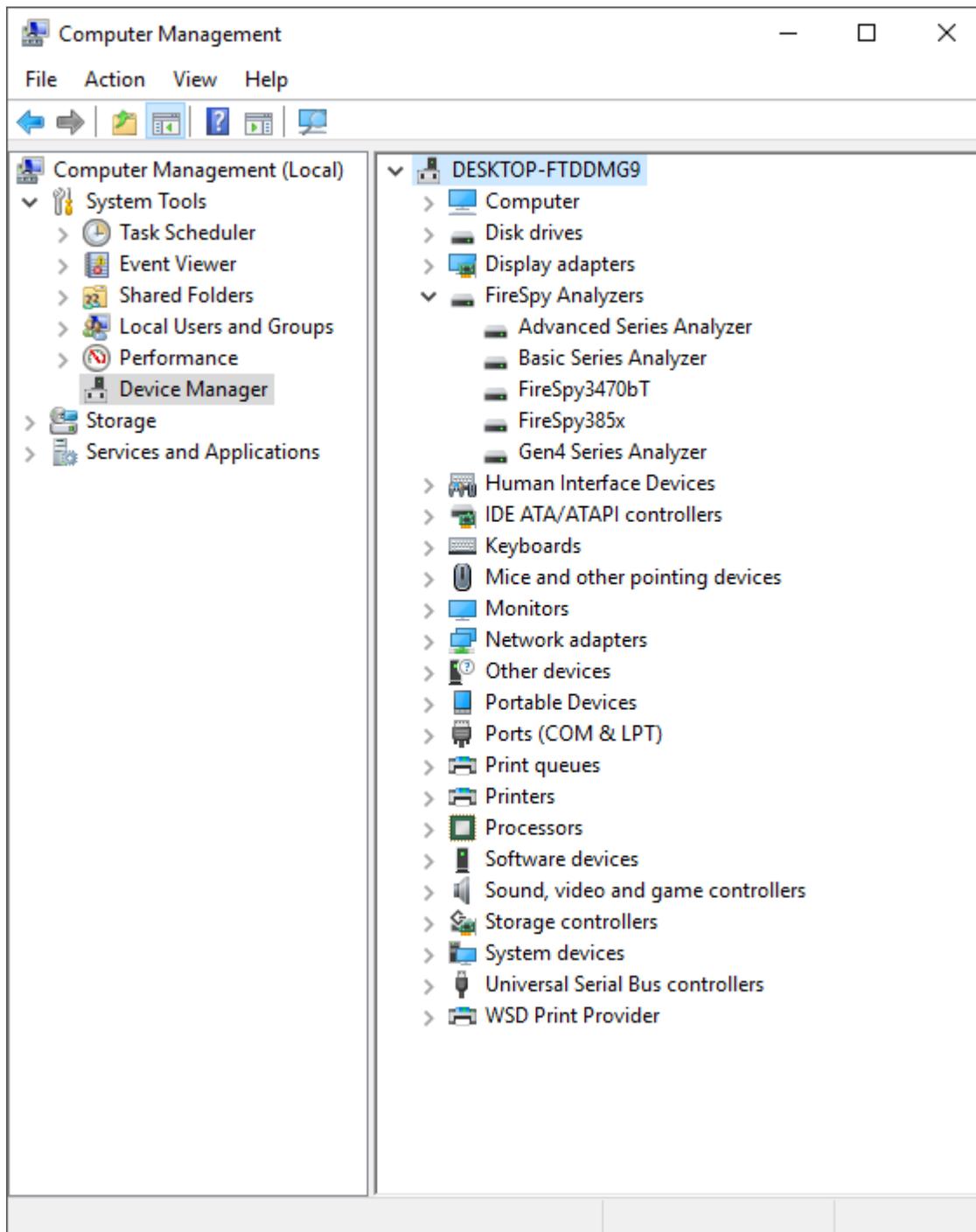
After clicking "Next", the drivers will be installed. Please wait until it finishes.



After the drivers are installed the following window will be showed. Click "Finish" to close the installation.



After you are booted to the desktop, you may check the device manager if the install has succeeded. The device manager will show a FireSpy under "Multifunction adapters". Here you find a several functions the device has.



#### 2.1.2.1.1 Older Windows versions

For Windows versions older than Windows 7 some additional steps during the Driver installation may be required.

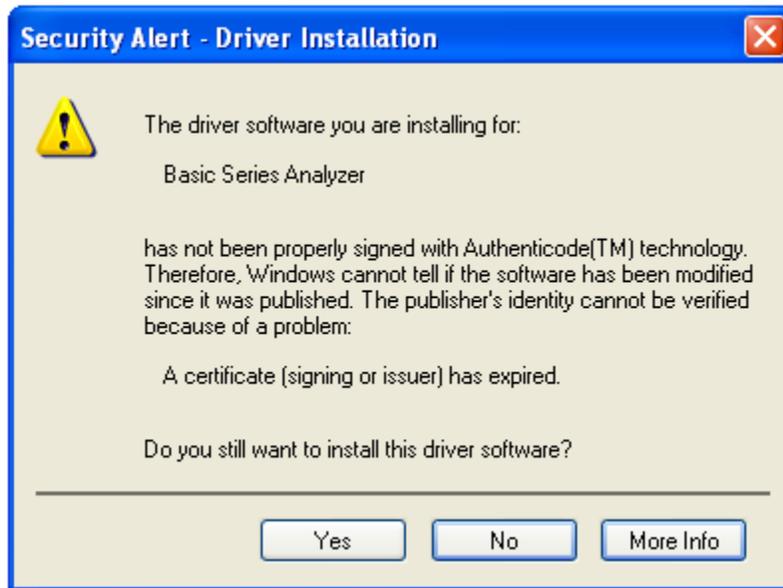
After the FireDiagnostics Suite installation, and after rebooting the machine, the Driver installer will start. During the installation the Windows Driver Wizard may appear, as shown in the following image. Please click "Cancel" to close the wizard for now, we need to install the drivers first before Windows can search for them.



At the start of the installation the following message may be displayed, saying the software has not passed Windows Logo testing. The FireSpy Logo testing is not supported for Windows versions older than Windows 7, but function on these Windows version regardless. Click "Continue Anyway" to continue with the installation.



During the installation of the Drivers, the following message may be displayed, saying the driver certificate has expired. As with the Windows Logo testing, the FireSpy driver signing is not supported for older Windows versions. Click "Yes" to continue installing the driver. This message may appear once or more during installation, depending on the number of FireSpy devices connected to the machine.

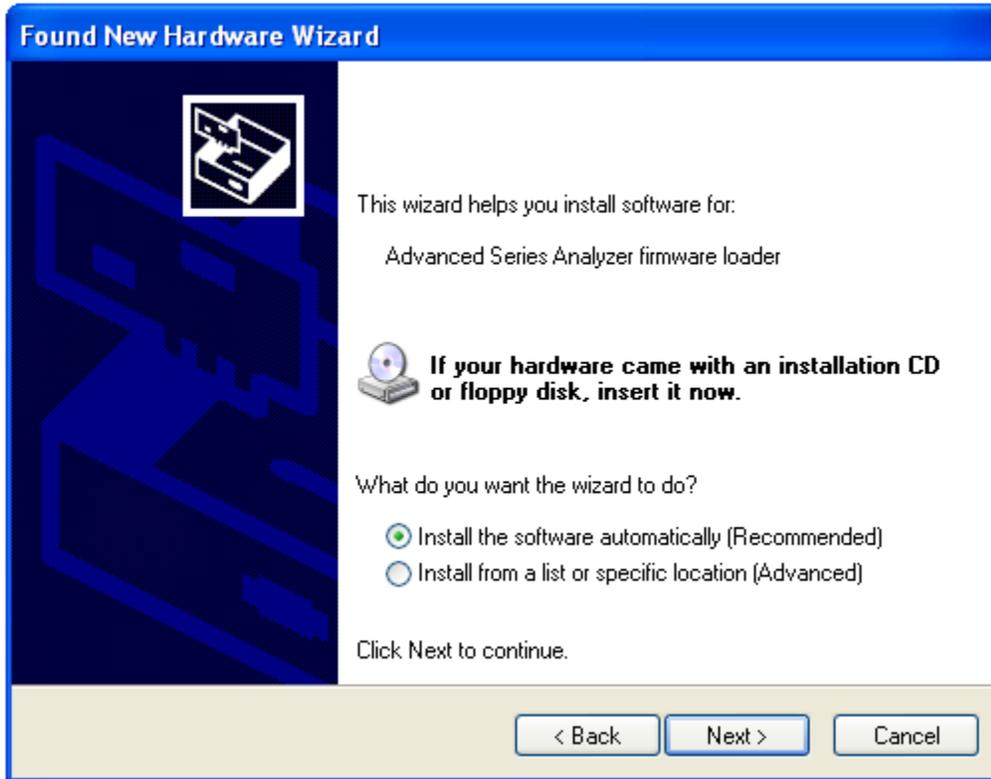


After the drivers are installed the following window will appear. Click "Finish" to continue starting Windows.

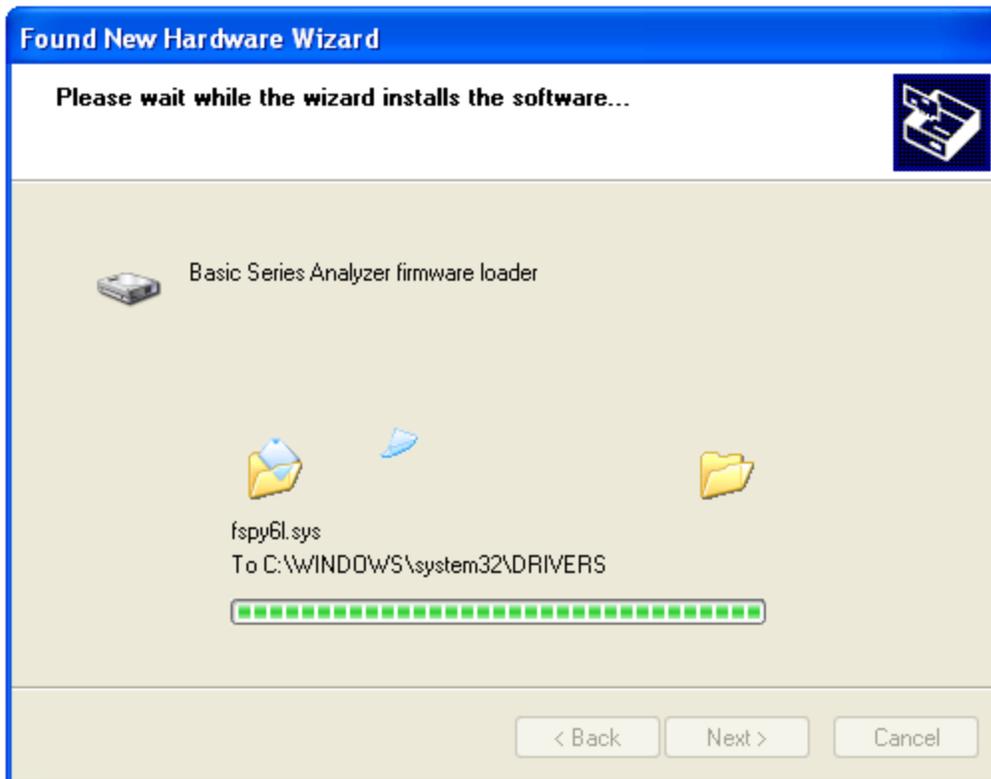


Any devices that were connected to the machine during the installation should work now. If there were any unplugged devices, please connect them to the machine now. The Windows Driver Wizard mentioned earlier should appear now. If it doesn't please reboot the machine. In the Driver Wizard, select the bottom option "No, not this time" to search for the already installed drivers, and click "Next" to continue.

Select the top option "Install the software automatically" from the following dialog, to let Windows search for the installed FireSpy drivers.



After clicking "Next" the Wizard will install the driver for the FireSpy device. Repeat this process for any additional FireSpy device that was not yet correctly installed during the installation.



### **2.1.2.2. Manual driver (un)installation**

Drivers will be uninstalled when uninstalling the FireDiagnostics Suite. The uninstaller can be found in the Windows Start menu, under FireDiagnostics Suite x.x -> Uninstall FireDiagnostics Suite (for Windows 10), or FireDiagnostics Suite x.x -> Administration -> Uninstall FireDiagnostics Suite (for older Windows versions).

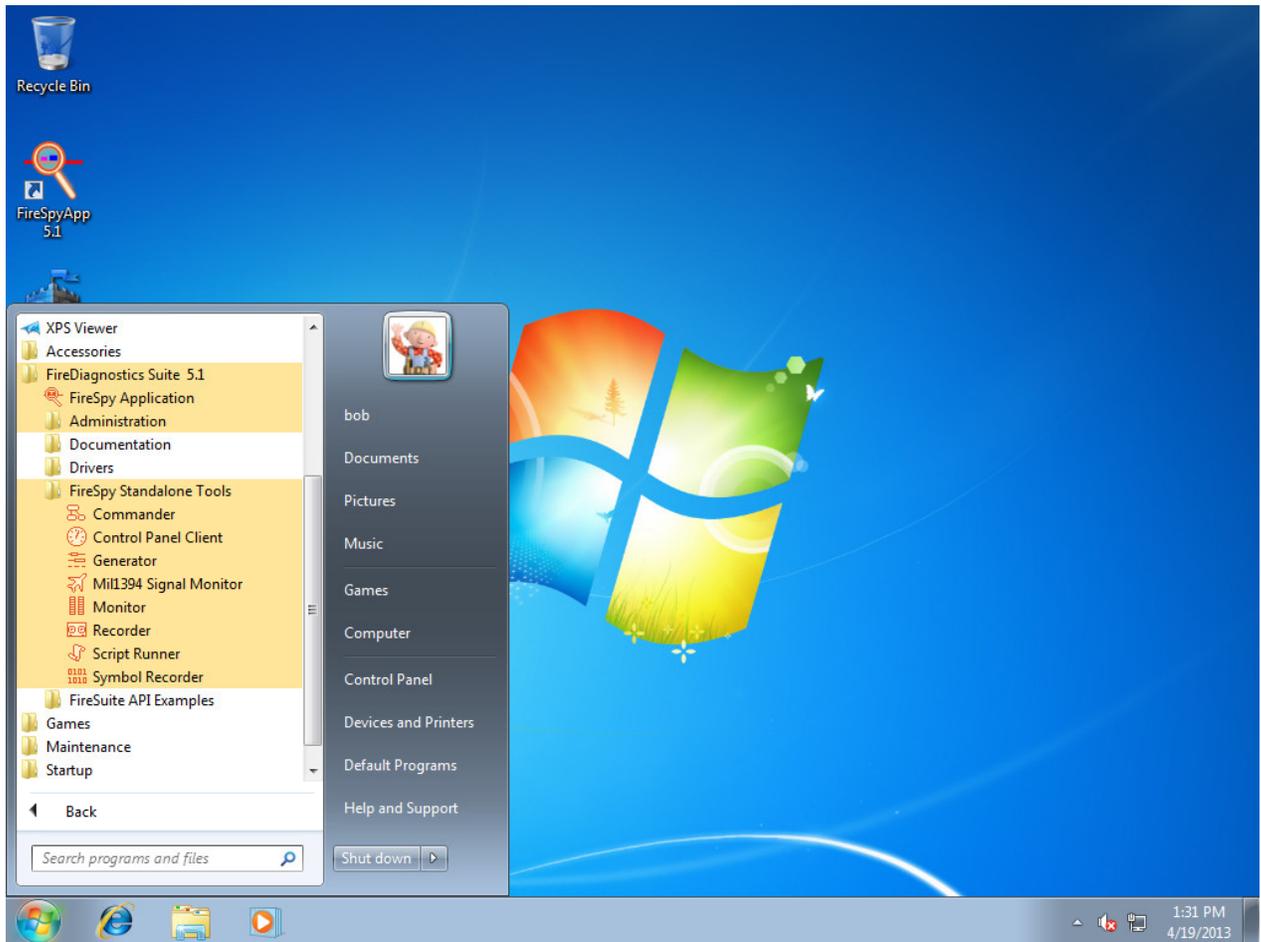
For example, when switching between versions of the FireDiagnostics Suite it may be needed to install a specific version of the FireSpy drivers manually without installing/uninstalling the complete FireDiagnosticsSuite software packaged, you can use the Driver Installer. This can be found in the Windows Start menu, under FireDiagnostics Suite x.x -> Install Drivers (for Windows 10) or FireDiagnostics Suite x.x -> Drivers -> Install Drivers (for older Windows versions). [A dialog will popup](#) and it will install the drivers.

## Chapter 3. Getting Started

This section of the manual provides a quick-start guide for your analyzer and software. If you need help installing the application, please take a look at the [Installation](#).

### 3.1. FireSpy Standalone Tools

In addition to the main FireSpy application with all main FireSpy modules embedded there is also a way to start each module as a standalone application. These standalone versions can be started through the Windows start menu and then navigating to "All Programs", "FireDiagnostics Suite X.X" and then "FireSpy Standalone Tools". The picture below shows where to find the standalone versions.



Multiple standalone FireSpy tools can be started at the same time, but each module can only be started once per FireSpy. The following standalone FireSpy tools allow controlling multiple FireSpy devices from within a single application:

- Recorder
- Monitor
- Symbol Recorder

All other modules only allow controlling one FireSpy device from a single application.