

OmniPlex Windows 10 Migration Guide

Version 1.2 (February 27, 2020)

Overview

All Plexon OmniPlex systems include a system controller PC, which until late 2019 consisted of a carefully optimized Dell workstation running the 64 bit version of Microsoft Windows 7 (W7/64). The original version of OmniPlex used a Windows XP system controller, but this Guide assumes that these older systems have been upgraded to or replaced with a W7/64 Dell PC. Microsoft's current operating system is Windows 10 (W10), and Microsoft support for W7 ended on January 14, 2020. Although it is possible to continue operating W7 OmniPlex systems after Microsoft support ends, such systems will no longer receive security and other system updates, and they may become increasingly vulnerable to malware and system instabilities, if connected to the Internet. Sooner or later, most existing OmniPlex system controller PCs should be upgraded to W10 or replaced with a new W10 PC.

The following sections describe several options for upgrading your OmniPlex system to W10 and some of the tradeoffs involved. Step-by-step instructions are provided for performing an in-place upgrade from W7 to W10.

This Guide only covers the upgrading of OmniPlex systems.; upgrading of other Plexon products installed on the same PC as OmniPlex is not described here. A separate CinePlex migration guide is available from Plexon; for other products, please contact Plexon for additional information.

Migration Options

There are two main options for migrating to W10. Which option is best for your system depends on factors such as the model and age of your PC and the amount and type of non-Plexon software installed on the system.

Replacing the system controller PC

You can purchase a new system controller PC from Plexon, which will be ready to use and optimized for use with your OmniPlex system. This option ensures that you have the latest high performance PC hardware which will run Windows and Plexon applications efficiently; for example, older PCs typically have a conventional hard drive, whereas all current OmniPlex PCs use solid-state drives (SSDs). A new PC will also usually have more memory, faster graphics cards and interfaces, and so on.

In fact, some older PCs are not capable of running W10 at all due to limitations of their processors or other system hardware. The Microsoft Windows 10 Upgrade Assistant application (described below) will refuse to perform a W10 upgrade on such systems. You can also consult the Dell website for information on which Dell PCs can support W10:

<https://www.dell.com/support/article/us/en/04/sln297954/dell-computers-tested-for-windows-10-november-2019-update-and-previous-versions-of-windows-10?lang=en>

In-place upgrade to Windows 10

Assuming that your current OmniPlex PC is capable of being upgraded to W10, you have the option of upgrading

the operating system from W7 to W10, without replacing the PC itself. Most of the remainder of this Guide describes the procedure for performing an in-place upgrade.

One advantage of this option is that you will not have to reinstall any applications on a new PC or copy any files from your old PC to the new one, since an in-place upgrade will not delete existing applications or files. However, Plexon cannot be responsible for issues involving licenses or operation of non-Plexon applications and/or hardware, so you may wish to consult the vendor of any non-Plexon software or hardware which you have installed in your OmniPlex system controller PC before deciding to perform an in-place upgrade to W10.

Last but not least, an in-place upgrade is free, assuming that you are using the original Plexon-provided system controller PC, which always includes a licensed and activated copy of Windows. As of this writing, a licensed and activated W7 system can be upgraded in-place to W10 without having to purchase a new Windows license.

Although Microsoft provides a mechanism for reverting an upgraded system from W10 back to W7, this is not recommended. The recommended approach is to create a system image (exact backup copy of the entire C: drive) before upgrading to W10, and then, if it is necessary to roll back to W7, restoring the C: drive from the saved image. It is unlikely that you will need to revert to W7, but it is important that you have the option available if it becomes necessary.grading to W10, and then, if it is necessary to roll back to W7, restoring the C: drive from the saved image. It is unlikely that you will need to revert to W7, but it is important that you have the option available if it becomes necessary.

Requirements

As mentioned previously, you can determine whether your PC hardware is recent enough to support W10 either by consulting the Dell website or by attempting to perform the upgrade and allowing the Upgrade Assistant to check your system's compatibility.

Any OmniPlex system which is currently operating with a Plexon-provided and configured Dell W7 PC which is compatible with W10 can be upgraded to W10. This includes both OPX-A (AD64) and OPX-D (DigiAmp, MiniDigi or DHP) systems.

Preparing for Migration

Before upgrading your OmniPlex PC to W10, you should make sure that you are running the latest version of OmniPlex. You must update to OmniPlex 1.19.5 (Release 19.5) or later in order to run on W10; earlier versions have a bug which can cause a crash when running on W10.

1. Use *Check for Updates* in Windows Update to make sure that your W7 system is up to date before upgrading it to W10. Reboot your system if instructed to do so by Windows Update.
2. Update the PC's system BIOS. Details of how to perform a BIOS update on Dell PCs are here:
<https://www.dell.com/support/article/us/en/04/sln129956/dell-bios-updates>
3. After performing the above updates, reboot and run OmniPlex to verify that it is operating as expected. See the later section on *Verifying OmniPlex system performance* for details.
4. Create a system image of your C: drive using *Backup and Restore* in the Windows Control Panel.



Typically, you will use an external USB drive or other external media with sufficient free space to hold a full copy of your C: drive. Details of creating a system image are available online, e.g.

<https://support.microsoft.com/en-us/help/17127/windows-back-up-restore>

5. After you create the system image, Windows may ask you if you want to create a system repair disc. This function is also available directly from Backup and Restore, as shown above. If you have not previously done so, you should create a repair disc, which requires very little space and will easily fit on a single CD or DVD. The combination of system image and repair disc allows you to completely restore the state of your system's C: drive and operating system.

Since a system image is not a normal backup from which individual files can easily be restored (it is possible by treating the image as a vhd, but this is beyond the scope of this Guide), you may wish to also create a regular backup of any important files on your C: drive if you do not have recent backups of them.

Before proceeding to the main upgrade procedure, close any running applications and restart Windows.

Using the Windows 10 Update Assistant

As of this writing, you can download the Windows 10 Update Assistant from one of the following links:

<https://www.microsoft.com/en-gb/software-download/windows10> ("Create Windows 10 installation media")

<https://go.microsoft.com/fwlink/?LinkId=691209> (direct link to Windows 10 Update Assistance)

Once you have downloaded the Assistant, run it and follow the prompts to start the update. *If you are asked if you wish to preserve existing applications and files, make sure to answer yes.*

The update procedure is quite lengthy, especially if you have a slow Internet connection, and includes multiple automatic restarts of your PC, but once you have started it, it will run unattended until it has completed.

Once W10 is installed and running, you will be presented with a screen containing a number of privacy options. These should be set according to your personal preferences.

Verifying Basic Operation

Your existing OmniPlex desktop shortcuts for PlexControl and OmniPlex Server should be available on the desktop as in Windows 7. Before optimizing your Windows 10 configuration for optimal performance and reliability, you may wish to run OmniPlex first to see if there are any problems, such as drivers that need to be reinstalled.

Since operation at high channel counts and/or low latency is not possible without the optimizations described below, make sure that your “test run” uses a very low channel count, e.g. 32 channels, and that low latency mode is not enabled. We recommend simply starting and stopping data acquisition a few times and verifying that you see signal traces in the OmniPlex continuous views each time, with no errors reported.

If you encounter any problems when you start data acquisition in OmniPlex, see the section on Troubleshooting Driver Issues. If you see data drops (“Drop” count in red in the lower right corner of the main PlexControl window) or a “DHP buffer overflow” error, this is likely due to not yet having performed the optimizations described in the next section, and you can ignore these errors for now.

Optimizing Your Windows 10 Configuration

Optimizing your Windows 10 configuration is necessary for smooth and reliable operation of your OmniPlex system, especially at higher channel counts and/or when low-latency operation is enabled for online clients and closed-loop applications. Symptoms of an unoptimized or incompletely-optimized system can include:

- “Stuttering,” jerky updating in the continuous displays in PlexControl
- Dropped data (nonzero “Drop” count in red in PlexControl status bar)
- “Buffer overflow” or “Restart data acquisition” errors in Server
- Extended pauses or delays when interacting with PlexControl

The optimizations which prevent or resolve such problems consist of enabling or disabling a list of options and features in Windows and in the PC’s BIOS settings. Unless the following optimizations are applied, Plexon cannot take responsibility for any issues with OmniPlex performance or reliability.

BIOS Settings

From the Start menu, click on *Power*, the bottom icon in the left area, then click on *Restart*, the icon that appears just above *Power*. Your system will restart. When you see the Dell logo on the startup screen (before Windows itself restarts), press F12 (or F2 on some systems) to display a screen with a boot menu. There should be an option titled *BIOS Settings*. Select this option with the keyboard or the mouse to proceed to the *BIOS settings* screen. This screen will vary slightly depending on the model of Dell PC, but there should be a section titled *Performance* (or on some systems, the following options may be directly visible without having to expand a separate *Performance* section).

- Find the BIOS options for *Speedstep* and *C-states* and make sure that both are disabled (OFF).
- If there are BIOS options for *Turbo boost* and/or *Hyperthreading*, make sure both are enabled (ON).

The settings screen should indicate which key(s) to press in order to save the new BIOS settings and exit. Do so and the system will start Windows with the new settings.

Windows settings

For many of the following settings, a shorthand description will be used, for example:

Start >> Background Apps >> *Let apps run in the background* OFF

This means:

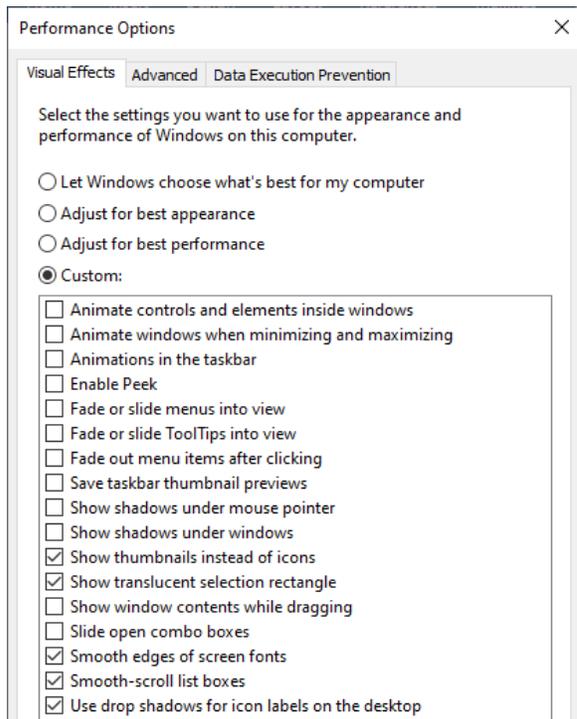
- Press the Windows key to bring up the Start menu, or alternatively, click on the Windows icon at the left end of the Windows toolbar at the bottom of the screen
- Type "background apps" (without quotes)
- Click on the closest search result corresponding to what you typed, in this case, *Background apps / System settings*. This will usually be the top item and will be highlighted.
- The *Background apps* control panel is displayed
- Click on the Let apps run in the background option to uncheck (disable) it, if it is not already unchecked (disabled)
- Close the *Background apps* control panel

If more than one setting in a particular control panel should be changed, these will be indented and listed below the initial numbered step.

These are the required Windows optimizations:

1. Start >> Background Apps >> *Let apps run in the background* OFF
2. Start >> Adjust the appearance and performance of Windows >>

Animations, Peek, fades and slides, and other options all OFF as shown below:



3. Start >> Power and sleep settings >>

3a. Sleep >> *Never*

3b. Additional power settings >> *Ultimate performance*

Note: if you do not see the *Ultimate performance* option, select *High performance*

4. Start >> Windows Update settings >> *Change active hours*

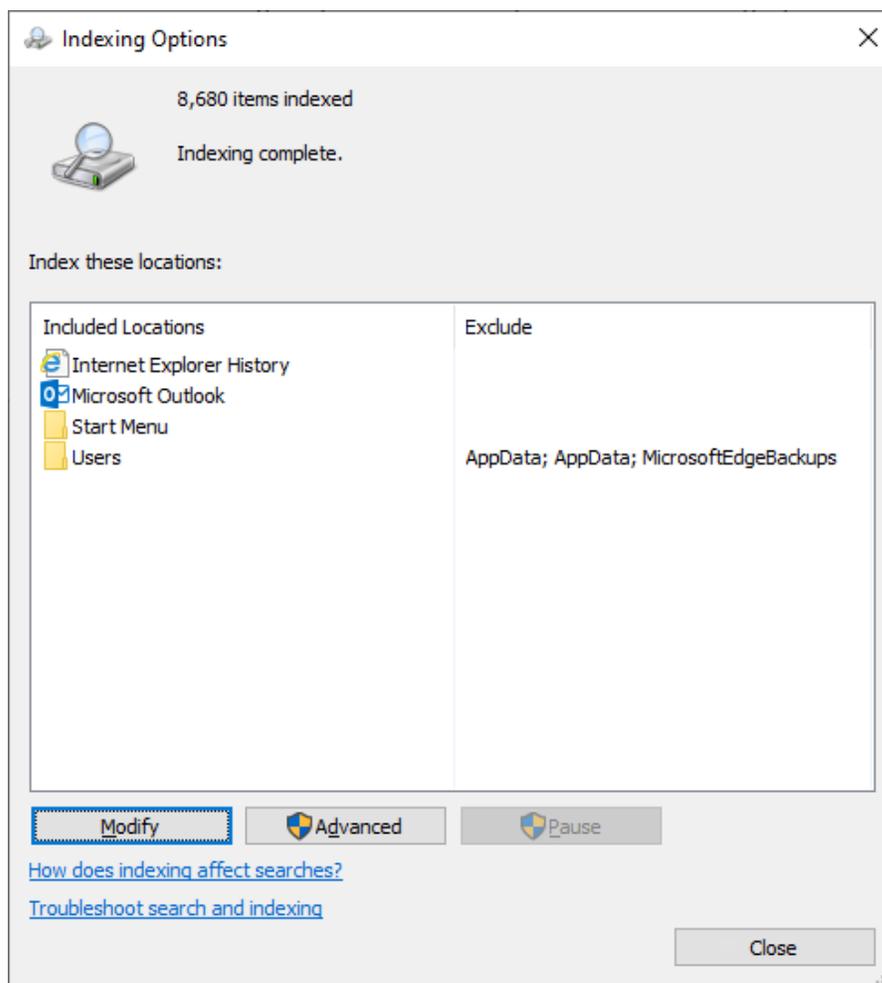
4a. Set the active hours to times when the system will typically be in use, e.g. 8 AM – 11 PM.
For extended usage periods such as multi-day recordings, you can also *Pause updates*.

4b. *Automatically adjust active hours for this device based on activity* OFF

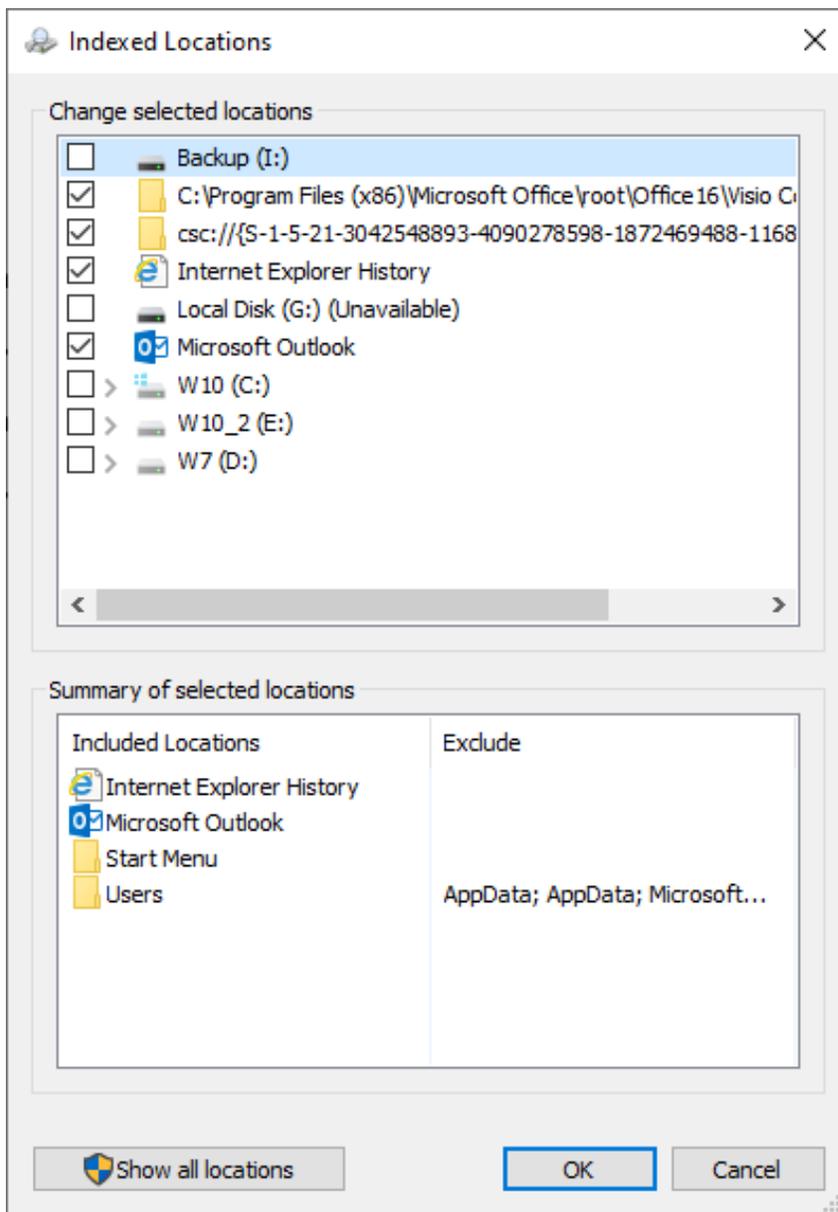
4c. Advanced options >> Delivery optimization >> *Allow downloads from other PCs* OFF

5. Start >> Indexing options

The *Indexing Options* dialog is displayed:

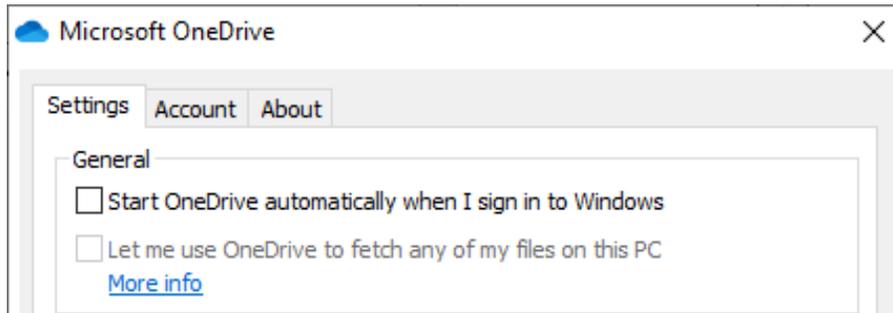


Click *Modify*. The *Indexed Locations* dialog is displayed:



Click *Show all locations*, then uncheck everything, i.e. disable all indexing, then click *OK*. Then click *Close* to close the *Indexing Options* dialog.

6. Click on the OneDrive icon in the bottom right area of the Windows taskbar. Click on More >> *Settings*. In the *Settings* tab, uncheck *Start OneDrive automatically when I sign in to Windows*, then click *OK*.



7. Remove tiles (large icons) with active content from the Windows Start menu, i.e. tiles which animate, self-update with news, weather, advertising, etc. Disabling Background Apps (step 1) will make this superfluous in many cases, but it is still a good idea to remove active tiles in order to be sure. Unfortunately, there is currently no mechanism in W10 to allow multiple tiles to be deleted at once, so you must remove them one at a time by right-clicking on each tile and selecting Unpin from start from the popup menu. Tiles for standard Windows utilities and applications such as Office, Calculator, etc. can remain in the Start menu, and you can feel free to add tiles for OmniPlex-related apps such as Offline Sorter, Neuroexplorer, Matlab, etc, as these are “passive” tiles which only use a trivial amount of system resources.

8. Disable the Windows mitigations (security patches) for the Spectre and Meltdown vulnerabilities as described below. These mitigations incur a serious performance penalty for applications such as OmniPlex which make large numbers of calls into the Windows kernel. Note: disabling these mitigations could expose you to Spectre and/or Meltdown based malware, although for many users the risk will be minimal, if the PC is protected by Windows Defender and/or other malware protection and reasonable care is exercised in usage of the Internet and third-party applications. Nonetheless, *Plexon cannot take any responsibility for adverse consequences caused by disabling the Spectre/Meltdown mitigations, and users should feel free to consult with their system administrator or other IT professional before proceeding.* Also, note that smaller channel count systems may be able to withstand the performance “hit” caused by the mitigations; however, it is known that high channel count systems (128 channels and up) and systems running in low latency mode will be severely affected and mitigations must be disabled for reliable operation. Plexon recommends that the mitigations be disabled for all OmniPlex systems.

To disable the Spectre/Meltdown mitigations, download and run (as administrator) the free InSpectre utility program from this location: <https://www.grc.com/inspectre.htm>

When run, InSpectre will show whether you are currently protected again Spectre and Meltdown:



If you see the above (**NO!** for both Spectre and Meltdown), you do not need to take any additional action and can exit from InSpectre. However, if either mitigation is enabled (**YES!** for the protection status), then click the appropriate buttons, which will display Disable Meltdown Protection and/or Disable Spectre Protection, depending on which mitigations are enabled. After you have disabled both mitigations, exit from InSpectre, restart Windows, and run InSpectre again to verify that both mitigations are disabled (**NO!** is displayed for both).

After performing the above optimizations, restart Windows and run OmniPlex to verify that there are no performance problems. The following assumes that you are familiar with basics of using OmniPlex with a test signal played through a headstage tester unit (HTU). If not, please refer to the OmniPlex User Guide for more information.

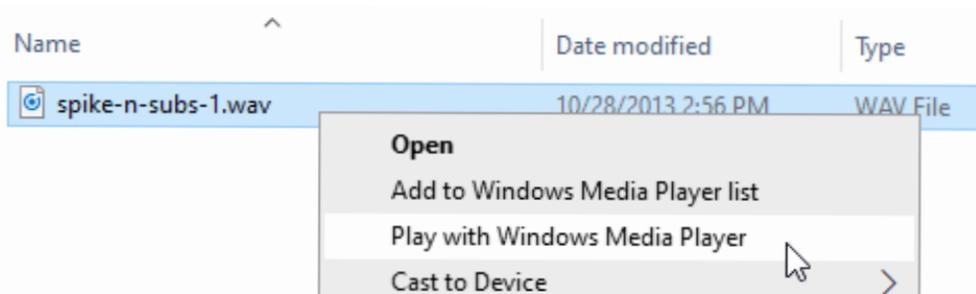
Verifying OmniPlex system performance

A standard procedure for verifying system performance is to create a topology (pxs) for the maximum number of channels supported by your system. Next, play the test wav file through one or more headstage tester units (HTUs) as required by the channel count, into your headstages, which are then connected to your DHP, DigiAmp, MiniDigi, or OmniPlex Amplifier in the usual way. Once you have verified that you see smoothly-updating continuous signal traces in PlexControl, you can do a Configure All Sources to automatically set thresholds and detect spikes (OmniPlex-A systems will also automatically set the gains). You can then proceed to do an Auto Sort current Source to generate sorted spikes. With the test wav file looping (repeating), leave the system running for an extended period of time (e.g. at least an hour) and verify that there are no data drops or errors. This will assure you that your system is correctly optimized for smooth and reliable operation.

If you do encounter problems, please review the preceding instructions and confirm that your BIOS settings and Windows settings have been configured as described previously. If this does not resolve the problem, perform the full reset-to-defaults troubleshooting procedure described in the OmniPlex User Guide, then create a new topology and repeat the test. If problems persist, consult the following section on Troubleshooting Performance Issues.

Note on playing test wav files

When playing a test wav file, it is preferable to use Windows Media Player rather than W10's Groove Music Player, as the latter can in some cases interfere with OmniPlex. To do so, simply right-click on the wav file and select Play with Windows Media Player.



If you wish, you can change the default player for all music files using Default apps:

Start >> Default apps >> Choose default apps >> Music player

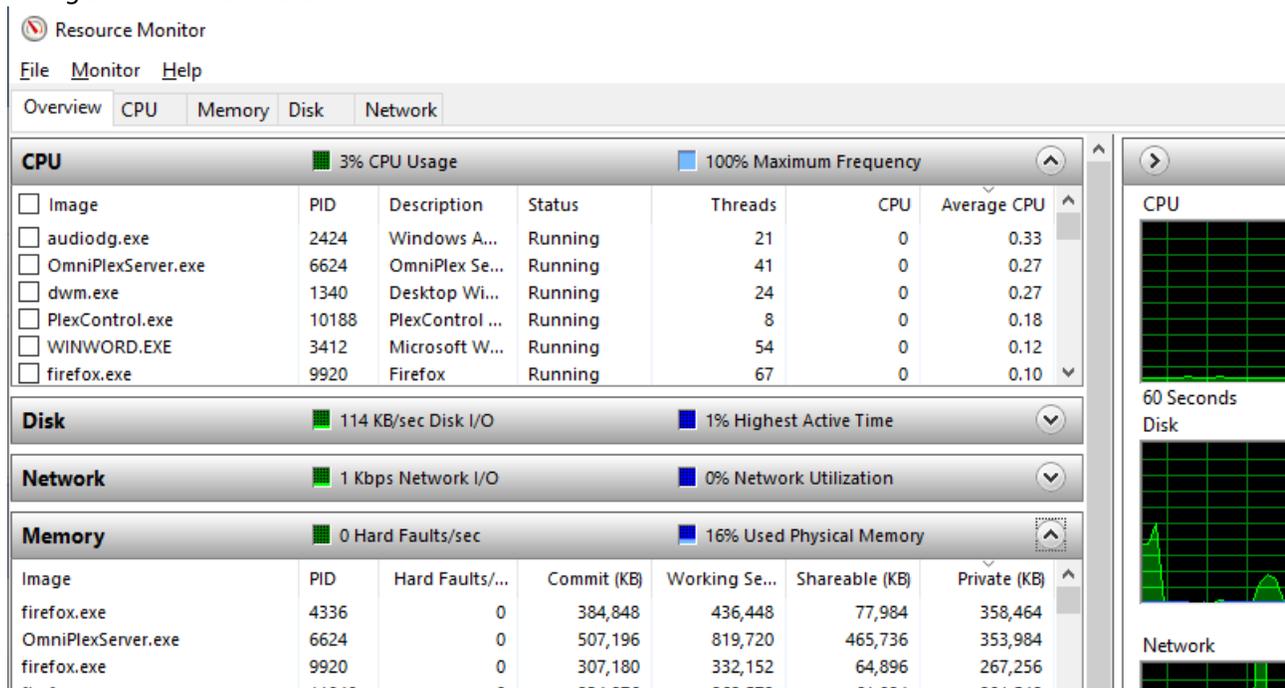
Click on Music player and select Windows Media Player.

Troubleshooting Performance Issues

Performance issues on an apparently properly configured PC can often be diagnosed with the help of the Windows Resource Monitor. To start the Resource Monitor:

Start >> Resource Monitor

Items of interest in the Resource Monitor are the CPU and memory usage for OmniPlexServer.exe, PlexControl.exe, and any applications or services which are using high amounts of CPU or memory. To begin, click the Overview tab and make sure that the *CPU* and *Memory* sections are expanded. You can select what values are monitored in each section by right-clicking on any column header and selecting *Select Columns* or *Hide Columns*. One possible configuration is shown below.



Left-clicking in a column's header will sort the applications (rows) in order of increasing or decreasing value. In the above example, we have sorted the *CPU* section in order of increasing CPU and the *Memory* section in order of increasing memory usage. This will place the "big consumers" at the top of each table, which is ideal for diagnosing problems. Here we see that the average CPU usage (less than 1% for OmniPlexServer and PlexControl) and memory usage (16% total) are both very low, typical of a case where you would not expect to see any performance problems in OmniPlex.

However, if you do see data drops, stuttering, or other indicators of performance problems, you could then examine the Resource Monitor to see which application(s) might be interfering with OmniPlex.

If there is no obvious "resource hog," try clicking on the *CPU* tab and expanding the *Processes* and *Services* sections, as shown below. Services are low-level system programs which run in the background without displaying a user interface, as an application would.

Resource Monitor

File Monitor Help

Overview CPU Memory Disk Network

Processes 3% CPU Usage 100% Maximum Frequency

Image	PID	Description	Status	Threads	CPU	Average CPU
audiodg.exe	2424	Windows A...	Running	21	1	0.34
OmniPlexServer.exe	6624	OmniPlex Se...	Running	41	1	0.28
dwm.exe	1340	Desktop Wi...	Running	24	0	0.24
PlexControl.exe	10188	PlexControl ...	Running	8	0	0.20
perfmon.exe	10484	Resource an...	Running	17	0	0.10
WINWORD.EXE	3412	Microsoft W...	Running	54	0	0.10
System Interrupts	-	Deferred Pr...	Running	-	0	0.09

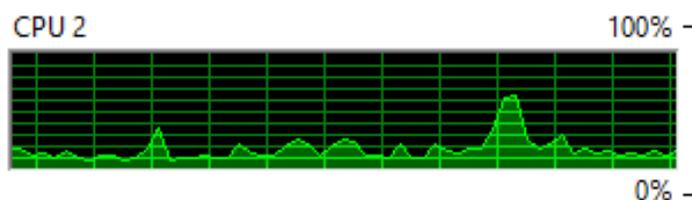
Services 0% CPU Usage

Name	PID	Description	Status	Group	CPU	Average CPU
Appinfo	10416	Application ...	Running	netsvcs	0	0.01
Dhcp	1568	DHCP Client	Running	LocalService...	0	0.00
StateRepository	3452	State Reposi...	Running	appmodel	0	0.00
niSvcLoc	4268	NI System W...	Running		0	0.00
WinHttpAutoProxySvc	2376	WinHTTP W...	Running	LocalService...	0	0.00
TeamViewer	4520	TeamViewer	Running		0	0.00
nimDNSResponder	7004	National Ins...	Running		0	0.00

In this case, all the running services are using very little CPU, but if, for example, Windows Update were interfering with OmniPlex, you might see a service named wuauclt in the Services section, using significant amounts of CPU. If you see a process or service that is using excessive CPU but do not recognize it from its name or description, you may wish to do an Internet search to learn more about it. You should never try to stop or terminate a running application or service unless you are sure that it is not an essential system service, or you could cause a crash, lockup, or other system malfunction.

Note that you can also sort CPU usage by short-term CPU (the column CPU, as opposed to Average CPU) in order to track down very brief but high-CPU problems, but in most cases you will want to view the Average CPU usage first.

There are also scrolling graphs of per-CPU usage which can be displayed in the right-hand section of the Resource Monitor. These can be very useful in that even if the total CPU usage (sum of all CPUs) is low, there can still be problems if any one core is at or near 100% usage. However, brief peaks are typical and should be of no concern as long as no problems are seen in OmniPlex. Also, it should be expected that some CPUs may be much busier than others, and that this will vary with the current system activities (recording, auto configure, and so on).



Startup Apps and the Task Scheduler

The preceding section describes how to use the Resource Monitor to locate applications and services which are interfering with OmniPlex. In some cases, this information will be enough to resolve the problem; for example, if a MATLAB script is using a high amount of CPU, the obvious solution would be to not run MATLAB. But in other cases, it may not be obvious why a specific application or service is running. In order to investigate the reason for a running application or service, it can be helpful to be familiar with the Startup Apps settings and the Windows Task Scheduler. Detailed information on these topics, especially the Task Scheduler, is beyond the scope of this Guide, but a brief overview is provided below.

Startup Apps

To see the list of applications which Windows runs automatically each time that you start or restart Windows:

Start >> *Startup Apps*

The Startup Apps page is displayed:

Startup

Startup Apps

Apps can be configured to start when you log in. In most cases apps will start minimized or may only start a background task.

Sort by: Name ▾

	CCleaner Piriform Ltd	<input type="checkbox"/> Off No impact
	HD Audio Background Process Realtek Semiconductor	<input checked="" type="checkbox"/> On Low impact
	HD Audio Background Process	<input type="checkbox"/> Off

You can use this page to enable and disable the startup apps. Be careful when disabling apps, since this can cause loss of functionality, application updates, etc, and should only be considered when there is specific evidence that an application is interfering with OmniPlex. If you disable an app but find that it makes no difference to the operation of OmniPlex, make sure to re-enable it.

Task Scheduler

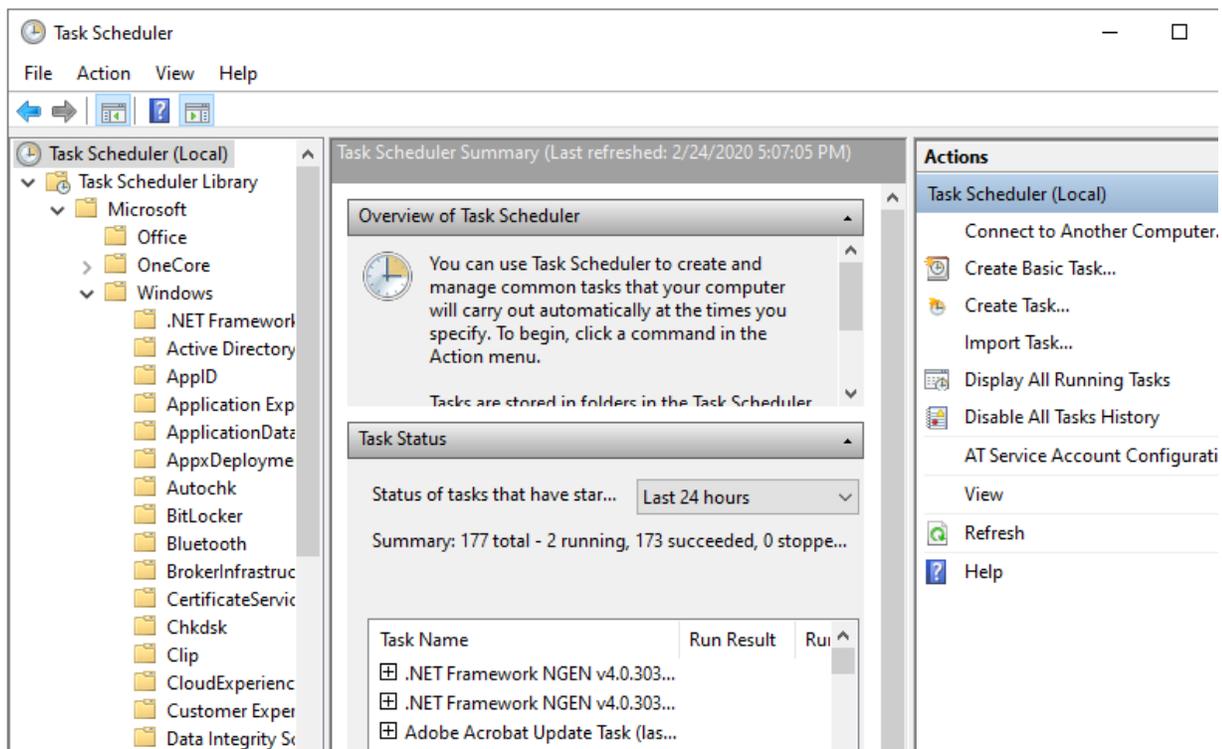
Note: this is an optional advanced topic and can be skipped on a first reading

The Task Scheduler is a Windows system program which is always running in the background, and as the name implies, it runs tasks (applications) according to a user or system defined schedule. Schedules can be specified in terms of time, such as "at 12:00 every day," or in terms of trigger events, such as "every time that a user logs on." The Task Scheduler can be helpful in identifying why an application which you have not manually started is running on your system.

To view the Task Scheduler:

Start >> *Task Scheduler*

The Task Scheduler window is displayed.



The leftmost of the three sections (columns) shows a tree containing all the tasks that are scheduled. You can expand the tree to "drill down" into specific groups of tasks. However, since there are large numbers of tasks in the tree, most of which are of no interest and should not be modified, it is usually more productive to examine the list of tasks that are currently or recently active. These can be found in the *Task Status* and *Active Tasks* areas in the bottom part of the the middle column. Scroll down the middle column if you do not see *Active Tasks*.

Task Status

Status of tasks that have started in the following time period: Last hour

Summary: 5 total - 1 running, 4 succeeded, 0 stopped, 0 failed

Task Name	Run Result	Run Start	Run End	Triggered By
Adobe Acrobat Update Task (las...				
GoogleUpdateTaskMachineUA (...)				
GoogleUpdateTaskMachineUA	Success	2/24/2020 4:40:...	2/24/2020 4:41:...	Time schedule
Office Feature Updates (last run...				
RefreshCache (last run succeed...				

Active Tasks

Active tasks are tasks that are currently enabled and have not expired.

Summary: 114 total

Task Name	Next Run Time	Triggers	Location
GoogleUpdateTaskMachineUA	2/24/2020 5:40:38 PM	At 9:40 PM every day - A...	\
Adobe Acrobat Update Task	2/24/2020 6:00:00 PM	Multiple triggers defined	\
Consolidator	2/24/2020 6:00:00 PM	At 12:00 AM on 1/2/200...	\Microsoft\Window
CCleaner Update	2/24/2020 6:00:41 PM	Multiple triggers defined	\

Last refreshed at 2/24/2020 5:07:05 PM Refresh

You can use the *time period* dropdown in the upper right corner of *Task Status* to set the retroactive time interval over which tasks will be included.

If you double-click on a task in the *Active Tasks* list, a description of the task will be displayed, along with a set of tabs that allow you to see additional information, such as the history of when the task has run previously.

Name	Status	Triggers	Next Run Time	Last Run Time
Adobe Acrobat Update Task	Ready	Multiple triggers defined	2/24/2020 6:00:00 PM	2/24/2020 1:3...
CCleaner Update	Ready	Multiple triggers defined	2/24/2020 6:00:41 PM	2/24/2020 6:0...
CCleanerSkipUAC	Ready			10/2/2018 1:4...
GoogleUpdateTaskMachineCore	Ready	Multiple triggers defined	2/24/2020 9:40:38 PM	2/23/2020 9:4...
GoogleUpdateTaskMachineUA	Ready	At 9:40 PM every day - After triggered, ...	2/24/2020 5:40:38 PM	2/24/2020 4:4...
MATLAB R2019b Startup Accelerator	Ready	Multiple triggers defined	2/25/2020 8:10:00 AM	2/24/2020 1:1...
OneDrive Standalone Update Task-S...	Ready	At 4:00 AM on 5/1/1992 - After triqqere...	2/25/2020 10:37:04 ...	11/30/1999 1...

General	Triggers	Actions	Conditions	Settings	History
Name: GoogleUpdateTaskMachineUA					
Location: \					
Author:					
Description: Keeps your Google software up to date. If this task is disabled or stopped, your Google software will not be kept up to date, meaning security vulnerabilities that may arise cannot be fixed and features may not work. This task uninstalls itself when there is no Google software using it.					

General	Triggers	Actions	Conditions	Settings	History
Number of events: 1,958					
Level	Date and Time	Event ID	Task Category	Operational Code	Correlation Id
Inf...	2/24/2020 4:41:23 PM	102	Task completed	(2)	1995e46b-6...
Inf...	2/24/2020 4:41:23 PM	201	Action comple...	(2)	1995e46b-6...
Inf...	2/24/2020 4:40:39 PM	200	Action started	(1)	1995e46b-6...
Inf...	2/24/2020 4:40:39 PM	100	Task Started	(1)	1995e46b-6...
Inf...	2/24/2020 4:40:39 PM	129	Created Task P...	Info	
Inf...	2/24/2020 4:40:39 PM	107	Task triggered ...	Info	1995e46b-6...

Most background tasks run at low priority, use minimal system resources and cause no interruption to OmniPlex or other applications. You should only change the scheduling of tasks when there is a specific need to do so. Incorrectly modifying the scheduling of system tasks can render your system non-functional or impair its performance, and you should consult your system administrator or refer to the relevant Microsoft documentation before making any changes.

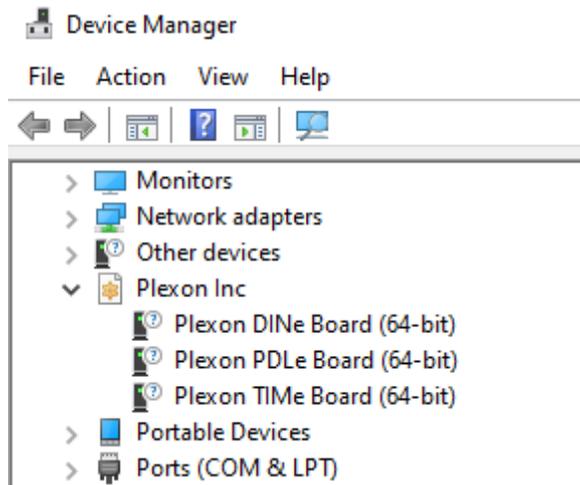
<https://docs.microsoft.com/en-us/windows/win32/taskschd/about-the-task-scheduler>

Troubleshooting Driver Issues

One of the many convenient aspects of performing an in-place upgrade from W7 to W10 is that Windows tries to preserve applications, app settings, and installed drivers, including the Plexon hardware drivers. However, if you encounter any issues with hardware not being detected by the OmniPlex software, and you have ruled out the usual causes like disconnected cables, chassis power off, etc, you may wish to inspect the driver status to make sure that the drivers are installed correctly. In order to do so, run the Device Manager:

Start >> Device Manager

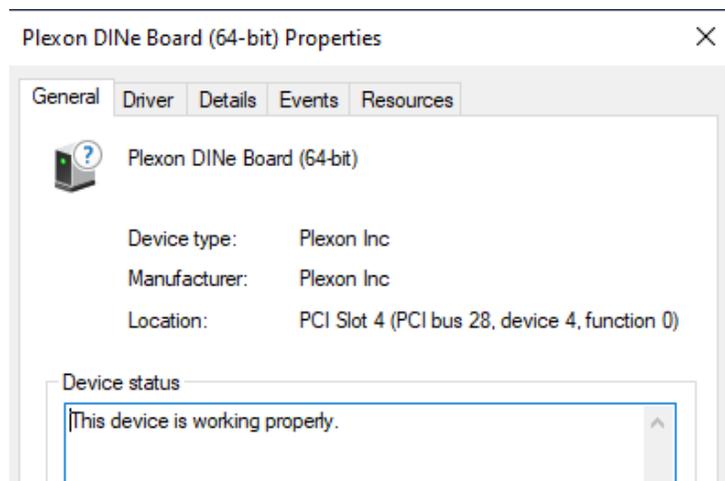
You should see a section similar to this, labeled Plexon Devices:



Depending on the version of your OmniPlex system, you may see minor variations of this, including:

- DIN instead of DINE
- PDL or PSL instead of PDLe
- TIM instead of TIME
- AD64 (on OPX-A systems only)

If you right-click on any of the Plexon devices and select *Properties*, it should report that the device is working properly:



If you do not see the Plexon devices in Device Manager, or they are not reported to be working properly, you will need to reinstall the drivers. For all OmniPlex systems not including OmniPlex-A (AD64) systems, you can do this by running the standard OmniPlex installer package, which you can download at the following link:

<https://plexon.com/software-downloads/>

If the installation process complains that it cannot install because OmniPlex is already installed, you will have to uninstall it first, using

Start >> *Add or remove programs*

For OmniPlex-A systems, the process is slightly more involved. The driver for the AD64 card is an “unsigned” driver, the installation of which is part of the full OmniPlex installer. On Windows 10, installing an unsigned driver requires the following procedure.

1. Restart Windows, holding down the Shift key while you select Restart.
2. In the blue startup screen, select Troubleshoot.
3. Select Advanced Options.
4. Select Startup Settings.
5. Select Restart.
6. Windows will restart.
7. The Startup Settings screen will be displayed.
8. Press F7 (“Disable driver signature enforcement”)
9. Windows will restart normally.
10. Run the OmniPlex installer to reinstall the application and all drivers.

Use Device Manager to verify that the AD64 driver has been installed:

Start >> *Device Manager*

Expand the *Plexon Inc* section. If the AD64 is installed correctly, an AD64 device should be listed:



In this case you can proceed to restart Windows, run OmniPlex, and verify that you can start data acquisition as usual.

However, if instead you see the following in Device Manager (you may need to expand the *Other devices* section), the AD64 has not yet been installed:

The *Other PCI Bridge Device* is the AD64 device. The next steps will describe how to manually install the AD64 driver.

1. Right-click on *Other PCI Bridge Device* and select *Update driver* from the menu. In the dialog box that is displayed, click on *Search automatically for updated driver software*:

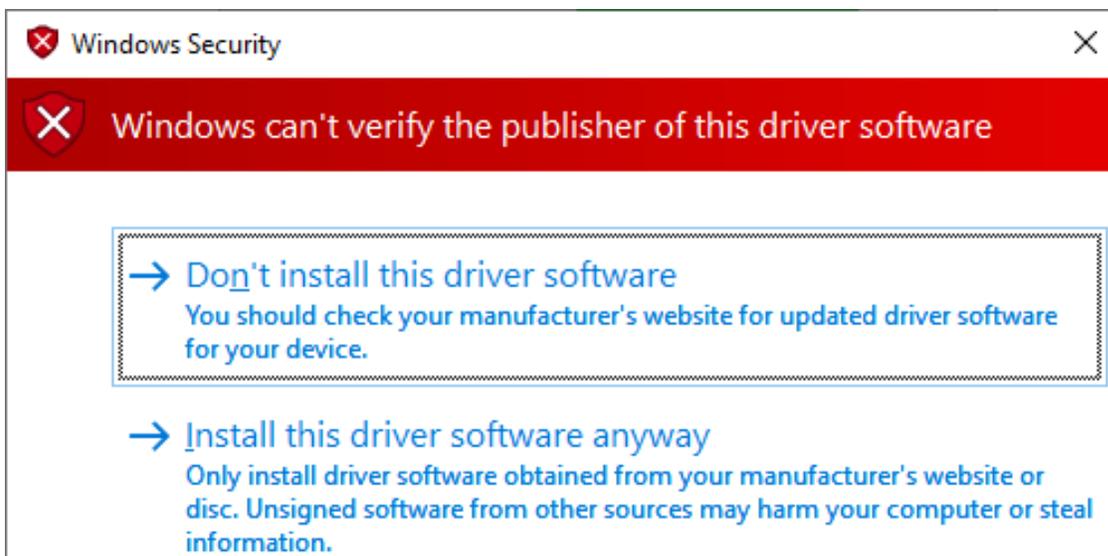
←  Update Drivers - Other PCI Bridge Device

How do you want to search for drivers?

→ [Search automatically for updated driver software](#)
Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.

→ [Browse my computer for driver software](#)
Locate and install driver software manually.

2. If the following security message is displayed, this is only because the driver is unsigned, not due to any actual security risk. Select *Install this driver software anyway*:



3. After the driver has been successfully installed, the following will be displayed:

←  Update Drivers - AD64 Board AMD64Bit

Windows has successfully updated your drivers

Windows has finished installing the drivers for this device:



AD64 Board AMD64Bit

4. Restart Windows, run OmniPlex, and verify that you are able to start data acquisition normally.

Hard Drive Replacement

A third upgrade option is to replace the system C: drive with a new Plexon-provided drive (SSD) with W10 and Plexon software pre-installed. This is a less expensive option than replacing the entire system controller PC and has the benefit of providing you with a clean install of W10 and the latest versions of Plexon applications on a fast SSD, without having to perform the upgrade to W10 yourself. You can maintain your old C: drive in the PC, e.g. as a D: drive, so that you can still access any data or other files on it. However, you will have to reinstall non-Plexon applications on your new C: drive and deal with any associated software licensing issues. This option is only available for specific recent OmniPlex systems. Contact Plexon for more information.

In Case of Questions or Problems

If you have questions about the options for upgrading your OmniPlex system controller PC, if you wish to purchase a new Windows 10 system controller from Plexon, or if you encounter problems when performing an in-place upgrade, please contact info@plexon.com.

About Plexon Inc

Plexon is a pioneer and leading innovator of custom, high-performance data acquisition, behavior and analysis solutions specifically designed for scientific research. We collaborate with and supply thousands of customers including the most prestigious neuroscience laboratories around the globe driving new frontiers in areas including basic science, brain-machine interfaces (BMI), neurodegenerative diseases, addictive behaviors and neuroprosthetics. Plexon offers integrated solutions for in vivo neurophysiology, optogenetics, and behavioral research – backed by its industry-leading commitment to quality and customer support. For more information, please visit www.plexon.com.

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Technical Support

If after reviewing this document, you would still like to access Plexon's Technical Support, we are available via several communication channels. You are invited to reach us through email, on the phone.

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