ZS XPLORER SOFTWARE: v3.1.0 (PSS0048-16)
SOFTWARE UPDATE NOTIFICATION

Introduction

This document details the release of **Zetasizer XPLORER software version 3.1.0** (**PSS0048-16**) for the Zetasizer Advance range of instruments. Here forward referred to as ZS XPLORER.

This release supports the Zetasizer Advance range of instruments only (including Pro (ZSU5800) and Ultra (ZSU5700) models).

ZS XPLORER is not compatible with the Zetasizer Nano series of instruments (Nano S90, Nano ZS90, Nano S, Nano ZS, Nano ZSE, Nano ZSP, Zetasizer μV and Zetasizer APS) nor can it read the *.dts file format from the Classic Zetasizer series software 8.01 or earlier. However, it is possible to have both the ZS XPLORER software and the Zetasizer software 7.02 or above installed on the same computer.

For the latest version of this document please check our website at
https://www.malvernpanalytical.com/en/support/product-support/software/zetasizer-ultra-pro-zs-xplorer-software-update-v3.10

Installation

It is assumed that you have authority to install or update software within your company's SOPs. If you do not have this authority, please consult with your I.T. support department before proceeding.

It is assumed that you have Administrator rights for the computer. This is required by the installation process. For ZS XPLORER software, Windows 10 and later will not allow an installation if the user does not have administrator access. This is in line with Microsoft's Logo policy and is standard practice.

> **IMPORTANT:**
> Only Windows 10 64-bit Operating System is supported
>
> Microsoft user accounts are not supported
>
> Before installation of the software, the instrument should be switched off and disconnected.
>
> Regulated Environment customers upgrading to ZS Xplorer V2.3.1 or later, will need to also upgrade to OmniTrail and OmniAccess V1.4.
>
> In some cases, the installer will require the user to restart the PC, in this case it is required that the Administrator logs in to the PC for the first time, following the restart. Failure to do so may cause the software to crash. In this case reinstalling the software on the Administrator account will fix the issue.

Recommended System Requirements

The recommended computer system requirements for running this software are highlighted in table 1 below.

Table 1 Recommended system requirements for ZS Xplorer software.

Feature	Specification
Processor Type	8th Gen+ Intel Core i7 Processor (or better)
Memory	16 GB RAM
Solid State Drive	512GB or greater
Display Resolution	1920 x 1080 full HD screen resolution minimum
Connectivity	2 free USB2.0 or higher ports
Operating System *	Windows 10 64 bit. * The ZS XPLORER software is not compatible with 32-bit Operating Systems

Supported operating systems

ZS XPLORER is compatible with Windows 10 (tested on Windows 10 1909 version or later). Only 64-bit Professional versions are supported.

Supported Languages

· English (US)
· Chinese (simplified)
· Japanese

Installation Instructions

Installation process

The software suite is available as a web download. The downloaded extractor contains the ZS XPLORER Setup, License Manager Setup and .NET Framework 4.8 Setup files. License Manager and .NET Framework 4.8 are prerequisites of ZS XPLORER. even if you are not using OMNITRUST regulated environment software suite.

When the extractor is run (see Figure 1) it will extract the required installers to a folder named 'MPInstallers' in the location the extractor is run, and the folder and a readme with important information will be opened (see Figure 2).
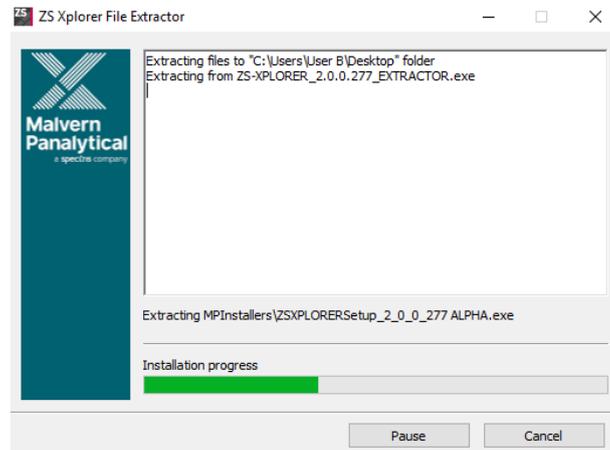
Figure 1 ZS Xplorer Self-Extracting Installation files
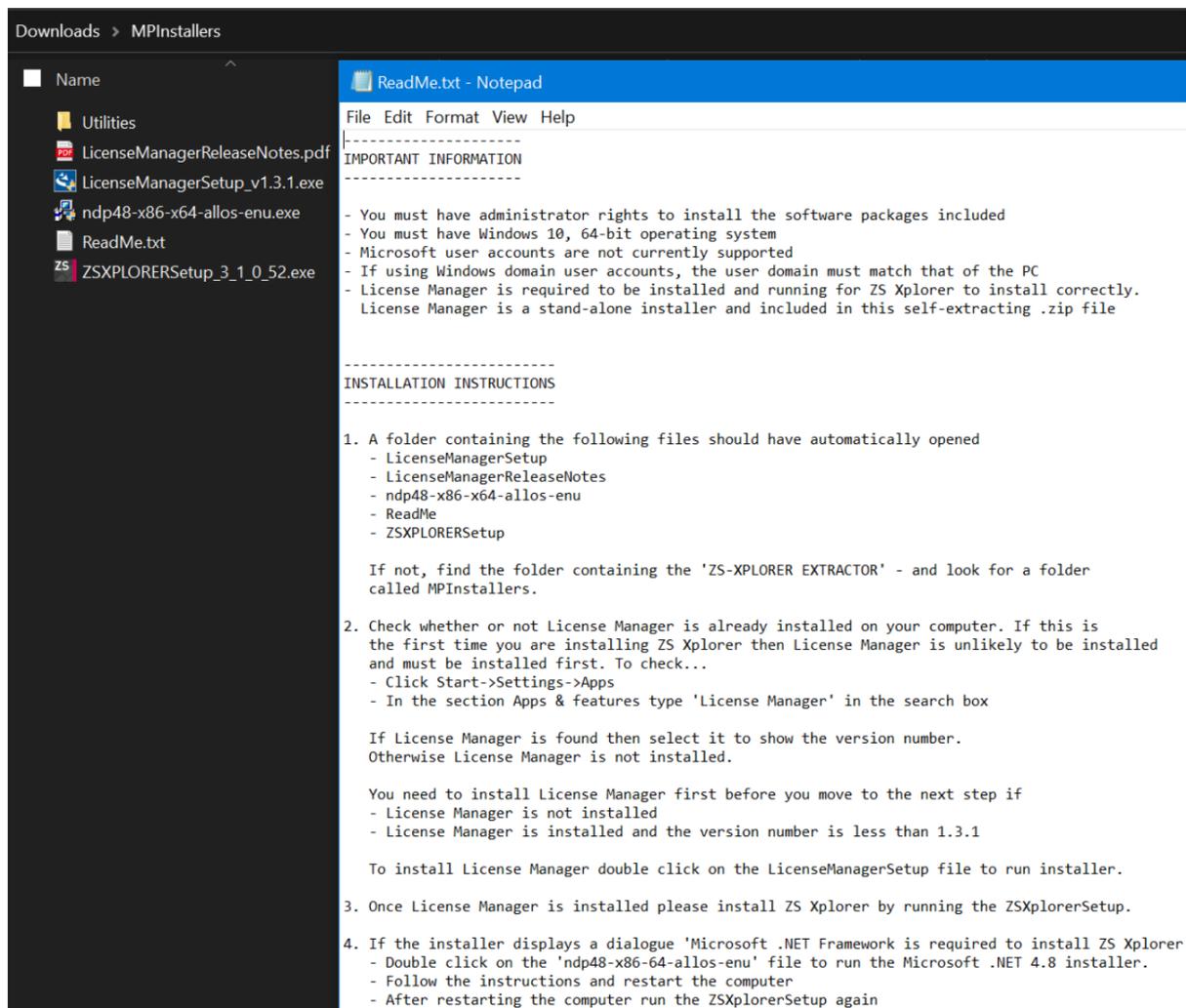
Figure 2 Extracted installation files and ReadMe file.

.NET Framework 4.8 Installation

Microsoft .NET Framework 4.8 component is a requirement for ZS Xplorer software to run correctly and must be installed prior to the installation of ZS Xplorer. If you do not have the correct version installed the ZS Xplorer installer will warn you and won't proceed until the correct version of .NET Framework is installed. Windows 10 versions from 1903 include .NET 4.8 or higher and will not require updating.

License manager Installation

The Malvern Panalytical license manager component is a requirement for the ZS XPLORER software to run correctly and must be installed prior to the installation of ZS XPLORER. Please note that users upgrading from 2.00 or later are not required to re-install License Manager. Those upgrading from ZS Xplorer vers.1.50 or earlier must install License manager.

ZS XPLORER Installation

During the installation process, you will be prompted with the following message (Figure).
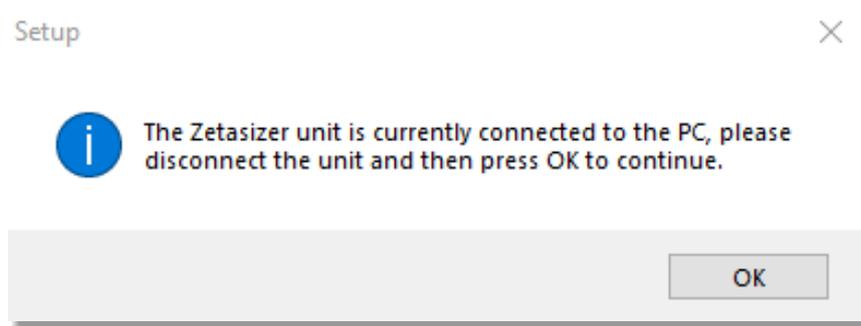
Figure 3 "Disconnect Zetasizer Unit" message

> **Note**:
> You must unplug the USB cable from the computer or Zetasizer and then press OK. If you press the OK button without performing these previous steps, then the installation will not continue.

Microsoft ASP.NET Core Runtime Hosting Bundle 6.0.5 and Microsoft C++ Redistributable

The Microsoft ASP.Net Core Runtime Hosting Bundle 6.0.5 and the Microsoft Visual C++ Redistributable must be installed for the ZS XPLORER software to run. These are installed during the ZS XPLORER software installation progress and under certain circumstances can involve the computer needing to restart. Completion of this stage of the installation can take a few minutes and may take over 10 minutes. Whilst these components are being installed a window such as below will be displayed, figure 4.
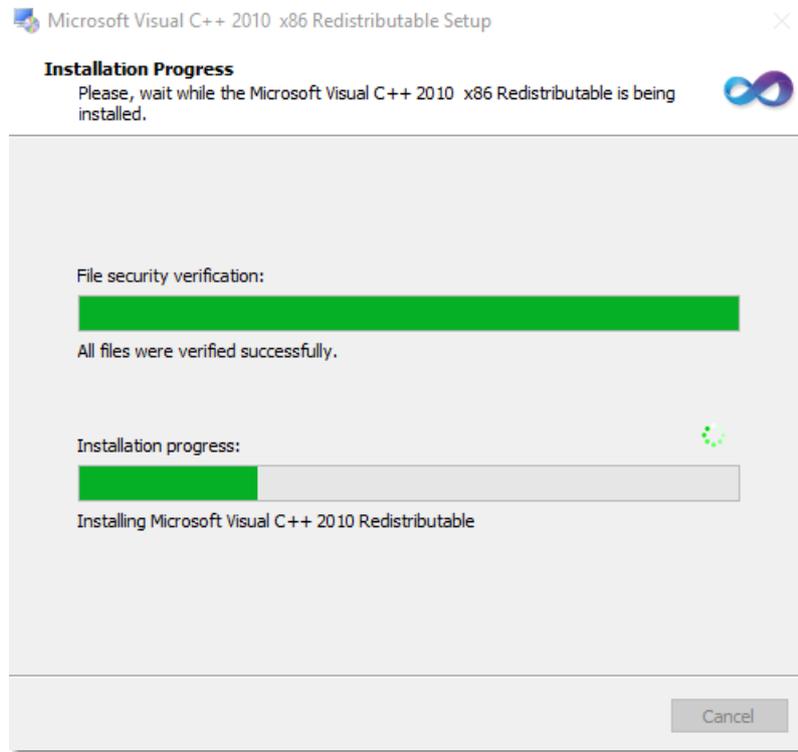
Figure 4 Microsoft Visual C++ Redistributable Installation Window

USB Driver Installation

During the installation of the USB drivers you may be prompted several times with a message as shown in *Figure 5*.
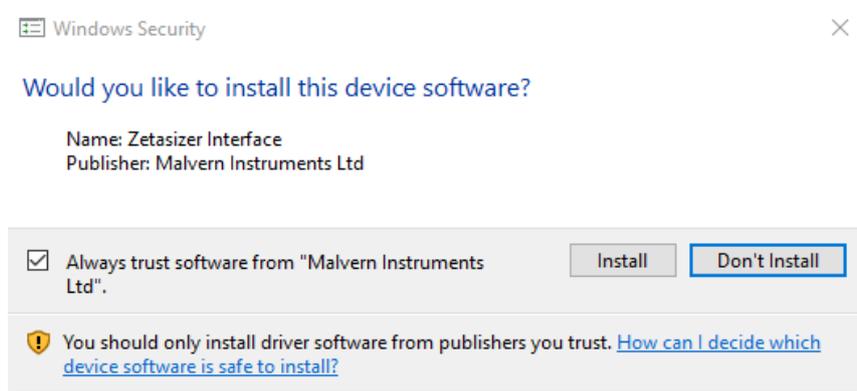
Figure 5 Install USB window

This warning can safely be ignored as the software installation has been fully tested on Windows 10. Press **Install** to continue installation of the USB drivers.

Connecting the Zetasizer to the computer

When the software has been installed and the instrument has been connected via the USB port, and switched on, the ZS XPLORER software may need to upgrade the firmware on the Zetasizer, in which case the status icon on the lower right of the software screen will indicate such (see *Figure 6*).

Figure 6 instrument firmware updating status icon

Users should not disconnect or power off their PC or instrument during normal firmware updating. In some rare occasions the firmware may fail to update correctly, in such circumstances a notification will be displayed indicating the issue – please restart the instrument and software to reset and repeat the firmware upgrade process.

With the correct firmware version installed the Zetasizer will connect to the instrument. A successful connection is indicated with an icon in the corner of the software (see *Figure 7*) showing green and with a tick.

Figure 7 Instrument connected icon

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Uninstall Procedure

The software can be uninstalled using the standard Apps & Features panel in Windows Settings.

Running the installer with the ZS XPLORER software running

If the installer is run whilst the software is running, the window in *Figure 8* will display.
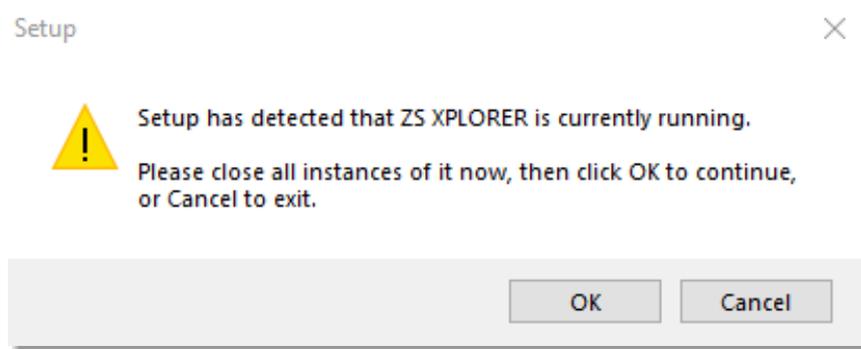
Figure 8 Running installer with software open

Connecting the MPT-3 Titrator to the PC

Ensure the computer is turned on and connected to a Zetasizer Advance system.

Connect the MPT-3 Autotitrator to the computer using the USB cable provided, ensuring that it is turned on. Click on the settings button in the top left corner of the ZS XPLORER software. See *Figure 9*.
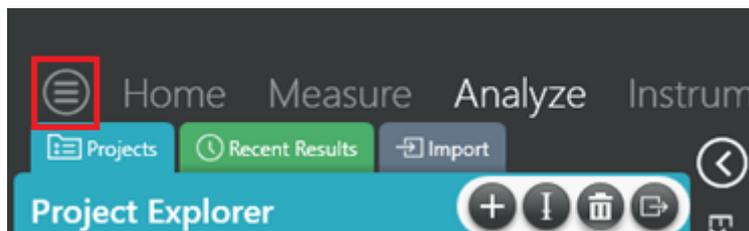
Figure 9 Software options

Click Options and navigate to the Titrator tab as seen in *Figure 10*.

Figure 10 Titrator options page

On the COM Port drop down menu, select USB Serial Port (COMXX) as shown in figure 11. (Note that the COM port number and description may vary). If the titrator has been detected on this port, then a green tick will be visible See *Figure 11*.

Figure 11 Titrator successfully detected

If the titrator is not detected on the selected COM port, then a red exclamation icon will be displayed with a message. See *Figure 12*.

Figure 12 Unable to detect titrator

Once the titrator has been detected, click to save the settings.

Once the settings are saved an icon and a saved message will appear next to the saved COM port as shown in *Figure 13*.

Figure 13 COM port saved

The titrator icon at the bottom right of the screen should turn green indicating that the titrator is successfully connected as shown in *Figure 14.*

Figure 14 Titrator successfully connected

ZS Xplorer – Backup & Restore

What to backup

By installation default, this version of ZS Xplorer application uses C:\ProgramData\Malvern Instruments\ZS XPLORER and its subfolders for configuration and user created output files. For ease, we would suggest this is the simplest folder to backup and restore.

To create a backup, we recommend that you consult your IT department to select the best method to achieve this. For pharmaceutical regulated environments, you should also consult your validation department - as they may have specific compliance requirements, and/or recommendations. Backup frequency and type e.g., full, incremental, or differential, along with consistency checking, should be considered when choosing the most appropriate backup methodology.

Table 2 provides information on the location and details of the important files and folders used by ZS Xplorer as well as our recommendations on backing up of data.

It is at the discretion of individual organization to define a backup process that is appropriate to their needs and the criticality of their data.

All file types used by ZS Xplorer can be copied to a secure location, we recommend that this be done at times when the system is not in use. Backups should be full backups (not differential) and a history of backups is retained to avoid overwriting a good backup with a corrupt version.

How to restore

In this section we cover the two most likely reasons why you want to restore backup files. The first being accidental deletion of files, or to replacing corrupted files for a working installation of the ZS Xplorer application.
The second reason might be because the primary drive, on which the ZS Xplorer application was install upon, has been replaced or a fresh operating system has been installed, both of which requires the reinstallation of the ZS Xplorer application software.
It is important to note that when reinstalling the ZS Xplorer application, the version being installed must be same or later, as some files may not be backwards compatible with earlier versions of the application software.

Scenario 1 - restoring files to an existing installation:
1. Make sure the ZS Xplorer application is NOT running.
2. Restore/copy the required files from your backup to the destination folder, replacing the deleted or corrupted file/s.
3. Start ZS Xplorer and verify the recovered file/s are working as expected.

Scenario 2 – restoring files for a fresh reinstallation of ZS Xplorer.
1. If your backup contains the complete ZS Xplorer folder, subfolder, and files, simply restore/copy this folder to C:\ProgramData\Malvern Instruments\. This folder will need to be manually created.
2. Install your existing version of ZS Xplorer or later.
3. Start the application as normal and verify everything works as expected and that the software connects to the Zetasizer instrument.

Table 2 - ZS Xplorer file structure

File Name	File Extension	Location	Backup?
Cells	.data	*%ProgramData%\Malvern Instruments\ZS XPLORER\Cells*	Not required – auto-regenerated if deleted
Materials & Dispersants	.data	Shared: *%ProgramData%\Malvern Instruments/ZS XPLORER\Materials* Individual: *%userprofile%Documents\Malvern Instruments\ZS XPLORER\Materials*	Defaults are auto-regenerated, however can be user configured – backup recommended
Measurement data (export location)	.zmes	*Location set via option in ZS Xplorer*	This is a temporary export location only – so user discretion on importance of any files here
Methods	.zskd	Shared: *%ProgramData%\Malvern Instruments\ZS XPLORER\Methods* Individual: *%userprofile%\Malvern Instruments\ZS XPLORER\Methods* Also, any other folders the user selects.	Recommended if custom methods used
Reports	.zrep	Shared: *%ProgramData%\Malvern Instruments\ZSXPLORER\CustomReports* Individual: *%userprofile%\Malvern Instruments\ZS XPLORER\Reports* For reports with custom headers or logos, there is an additional folder: *%ProgramData%\Malvern Instruments\Malvern.Reporting*	Default reports auto-regenerated on deletion – recommended if custom reports used
pH probe calibration	.cal	*%ProgramData%\Malvern Instruments\ZS XPLORER\Titrator*	Not necessary as can be re-calibrated

Scattering standard	.data	*%Program Data%\Malvern Instruments\ZS XPLORER\ScatteringStandards*	Recommended
Working file	.db	Shared: *%ProgramData%\Malvern Instruments\ZS XPLORER\Working File* Individual: *%userprofile%\Malvern Instruments\ZS XPLORER\Working File*	This is the main working database file that holds measurement records – highly recommended
Program data folder	various	*%ProgramData%\Malvern Instruments\ZS XPLORER*	This is the main programme data and can be restored by re-installation of the software
Titrator configuration	.xml	*%ProgramData%\Malvern Instruments\ZS XPLORER\Titrator*	Not required as can be readily set-up in ZS Xplorer
Storage configuration	.xml	*%ProgramData%\Malvern Instruments\ZS XPLORER\WorkingFileSettings*	Not absolutely required as can be set-up in ZS Xplorer

New Features

Improvements to Studies/Concentration Trends

Side-scatter support

Studies and the concentration trend measurement therein are now able to support Zetasizer Advance systems with 90-degree, side-scatter, capabilities. This means that running concentration trends is now possible on Zetasizer Lab systems (red & blue) as well as optionally supporting 90-degree measurements on Zetasizer Ultra (red & blue) systems.

Temperature settings now supported

Concentration trends now supports the setting of temperature at which the measurements are taken. Previous iteration only supported measurements at a default of 25C.   The temperature can now be defined in the trend builder, the actual temperature range available will depend on cell type chosen and the dispersant chosen.   Users can choose to have the system return to default temperature at any of the concentration steps within the trends method. See figure 16 for changes to the trends builder interface to support these changes.

Figure 16- Trend builder with new functions highlighted in red boxes.

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Data export improvements

Exporting study results

When exporting a study there is now an option to include the measurement results as part of the study. In this way study data can be transferred between systems/repositories.

Exporting concentration trend tables and graphs

Users can now export data as CSV files from concentration trends tables and graphs, graphs can also be exported as image files, see figure 17.
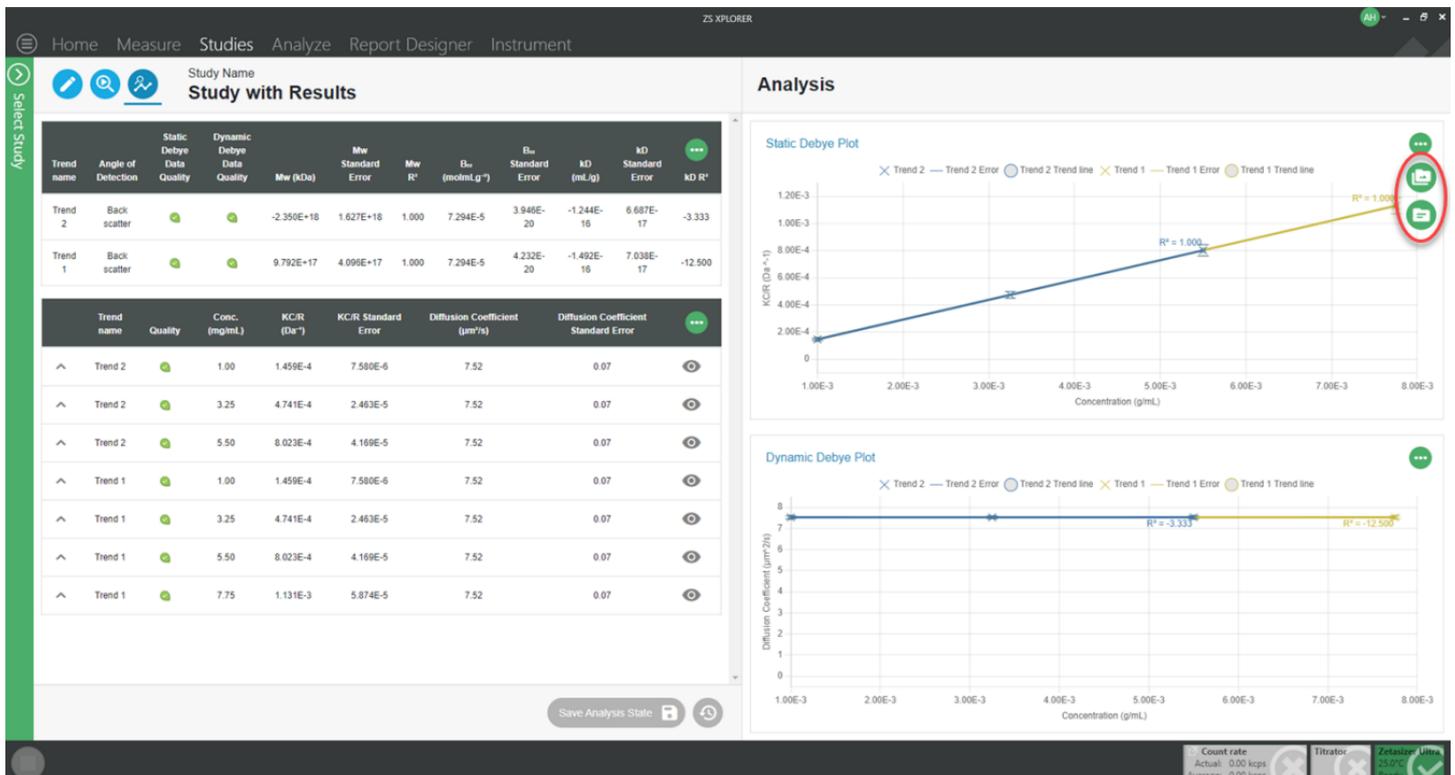
Figure 17 Illustration of export options on a concentration trend graph

Exporting data as CSV files from Analyze workspace

Both statistic and parameter tables that are part of a workspace within the Analyze tab can now be exported to file in CSV format. This allows for easy transfer of your preferred parameters to third-part software, such as Excel. See figure 18.
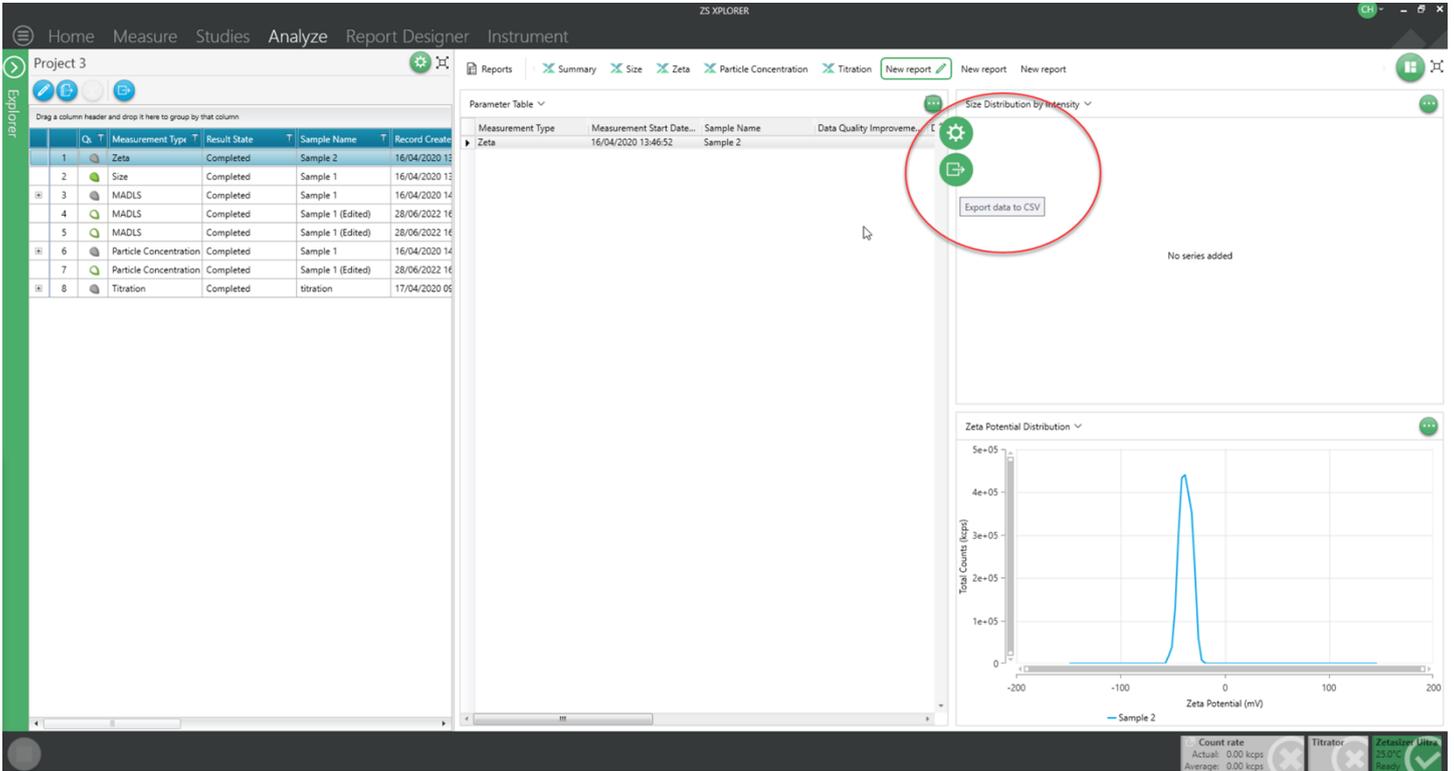
Figure 18 Export to CSV option shown circled from a parameter table

Zeta Data Quality Advice

Zeta data quality advice has been further refined to improve explanations and better categorize some issues. The zeta quality advice is available on all newly made measurements. Previously ran measurements may be re-analyzed to generate the data quality advice, should the user wish. See figure 19.
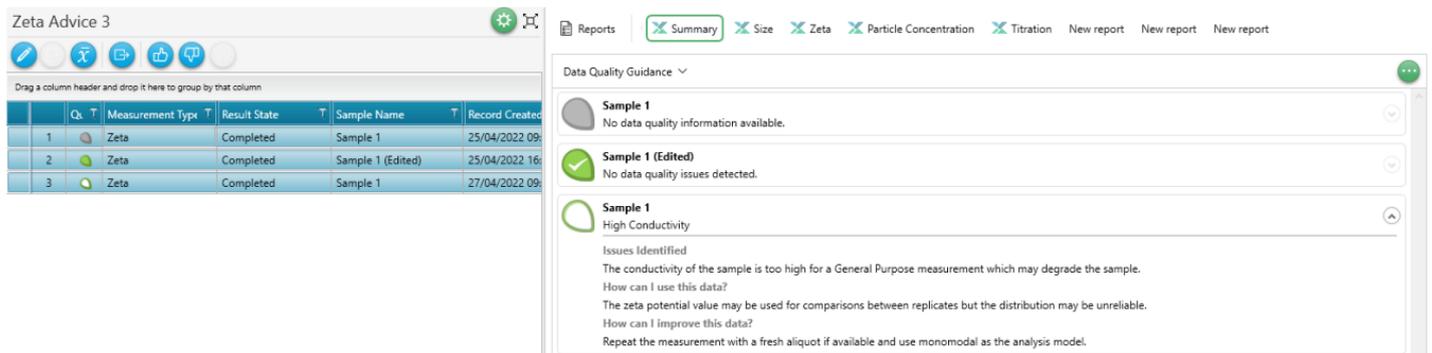
Figure 19 example of zeta data quality advice

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GAMP 5 Software categorization

In its standard mode of operation, the Zetasizer Xplorer software provides users with a series of standard interfaces and functions that enable the software to be configured to meet specific user business requirements. These interfaces include the ability to define Standard Operating Procedures (SOPs) for sample measurement and create report definitions using pre-defined functions. If users apply these functions, then the software can be considered to be a Category 4 product.

Security Advisories

The following section and table 3 details any security updates that have been addressed in this release, including fixes for identified vulnerabilities.

> **Note:**
> We always recommend updating to the latest software version which will provide you with new features, bugfixes and most importantly, security updates.

> **Note:**
> Other products may also be affected by any issue described here. We recommend you regularly check the Software Updates Notifications (SUNs) for all your Malvern Panalytical products, and register on our website to receive updates.

Table 3 Security updates

Reference	Description	Recommendation
HEN-1042	Version 2.00 and earlier of the ZS XPLORER software contains a vulnerability which could allow an attacker to craft malicious measurement (.zmes) and schedule (.zskd) files. Loading one of these malicious files could result in arbitrary code execution. Version 2.10 introduces a fix to completely mitigate this vulnerability.	Upgrade to version 2.10 or later of the software. Never open files from an untrusted source, even if they appear to be non-executable.
HEN-572	Version 1.50 and earlier of the ZS XPLORER software contains a vulnerability in the reports feature which could allow an attacker to craft a malicious report file. Loading a malicious report file could result in arbitrary code execution. Version 2.00 introduces a fix to completely mitigate this vulnerability.	Upgrade to version 2.00 or greater of the software. Never open files from an untrusted source, even if they appear to be non-executable.

Changes and fixed issues

The main changes and issues fixed in this release of the software are listed in table 4.

Table 4 changes and fixed issues in version 3.1.0 ZS Xplorer software

Issue key	Summary	Issue Type
HEN-1799	Add angle detection to count rate meter api	Story
HEN-1798	Display angle of detection on trend overview page	Story
HEN-1797	Add angle of detection to sample builder	Story
HEN-1800	Add option to select angle of detection to count rate tool ui	Story
HEN-1959	Move Trend Service to .Net 6	Story
HEN-1864	Add R squared (R^2) to both debye plots	Story
HEN-1875	Users should be able to export graphs	Story
HEN-2003	CT - Decimals on trends, graphs, analysis table and live analysis table not using commas, on French regional	Bug
HEN-2002	CT - No min max concentration values visible when using French regional windows	Bug
HEN-1985	Match unit test projects to the actual project structure	Story
HEN-1945	CT - Outliers remain on graph when a trend is hidden	Bug
HEN-1949	Overall testing of lab support	Story
HEN-1904	CT - Excluding/including outliers re-adds any plots that the user had removed	Bug
HEN-1983	Verify trend calculations for side-scatter with the RnD	Story
HEN-1982	Adjust prevention of measurement based on machine capability	Story
HEN-1803	Display angle of detection on trend analysis page	Story
HEN-1802	Update scattering standard value	Story
HEN-2034	CT - Initial implementation of temperature setting	Story
HEN-2035	CT - Keep measurements at temperature when in a single run	Story
HEN-1984	Concentration Trends - Spelling / grammar / unit issues	Story
HEN-1747	CT - Study measurements are left in a running state if crash occurs while measuring	Bug
HEN-2001	CT - Enable exporting results	Story
HEN-1991	Users should be able to export tables to CSV	Story
HEN-2047	CT - add temperature setting to solvent scattering	Story

HEN-2066	Adjust dark count rate based on angle of detection	Story
HEN-2084	CT - Update fallback screen to give better user feedback when service is unavailable	Story
HEN-2122	CT - Session expiring during measurement	Bug
HEN-1618	CT - Lack of validation on individual concentration edit pop-ups	Bug
HEN-2024	CT - Migrations on import	Story
HEN-2051	Instrument service installer fix	Story
HEN-1711	Zeta measurements display expert advice	Story
HEN-1710	Open or Edit Zeta measurement displays advice	Story
HEN-1708	Expert advice logic	Story
HEN-971	Manual export from parameter/stats table	Story
HEN-2046	ZSX/Instrument upgrade/downgrade testing for v3.1 release	Story
HEN-2086	Fix manual export from parameter/Statistics table issues	Bug
HEN-2096	Take out dotNETFramework from ZSX installer	Story
HEN-2068	Update Zeta Data Quality Guidance	Story
HEN-2114	Fix manual export missing custom parameter values.	Bug

Known Issues

The following software bugs have been discovered within the software and will be investigated as part of a future release. Please follow the suggested work-around where they are provided.

Table 5 Known issues in ZS Xplorer version 3.1.0

Reference	Severity	Issue	Workaround
NA	Normal	Regulated Environment customers upgrading to ZS Xplorer v3.1.0 may need to also upgrade to OmniTrail and OmniAccess V1.4 if previous version earlier than v2.3.0	Check or Install Omnitrail V1.4 and OmniAccess V1.4 when using ZS Xplorer v3.1.0 in a regulated environment if upgrading from ZS Xplorer versions 2.3.0 or earlier
HEN-945	Normal	Edited records display the original record created date – this is a display issue and underlying data is correct	Changing projects or re-starting the software will cause the display to be refreshed and display correctly
HEN-377	Normal	Software locks-up if you cancel a measurement during the enable for size step	None- force close the application
HEN-1894	Normal	Edit study button may not reactivate at the end of a measurement	Navigate to an intermediate page to refresh the status
HEN-1996	Normal	Occasional error thrown when navigating from edit to analysis in Studies	Click the reload dialog that is shown when this occurs
HEN-1922	Normal	User is able to edit study whilst measurement in progress – this is a bug in an underlying component	Do not edit studies whilst measurements in progress
HEN-1899	Normal	Studies not in order	No workaround
HEN-1876	Normal	Some parameters display too many decimal places	No workaround
HEN-1615	Normal	ZS Xplorer hamburger menu can become obscured when in trends tab – issue with underlying component	No workaround
HEN-1866	Normal	Count rate live display is not showing during Concentration Trend measurements	No workaround
HEN-2022	Normal	Crash can occur if user publishes a study in which at least one measurement point has been completed and the study has been renamed since	Avoid renaming partially complete studies

HEN-2026	Normal	Whilst a measurement is running UI can become slow if user navigates to study selector	Avoid using study selector whilst measurements are proceeding
HEN-2095	Normal	If a user includes a custom dispersant in a study and then updates the dispersant the change is not pulled into the open study until a new study is created or ZS Xplorer is restarted	Avoid editing custom dispersants during creation or measurement of a study without restarting software first
HEN-2095	Normal	Aborting a concentration trend measurement and then selecting all measurement points and re-running will cause the trend to start at the previously aborted measurement point and not the first	All measurement points are measured but may be confusing to users so be aware of issue.
HEN-2119	Normal	If a session expiry event occurs whilst running a concentration trend the system is supposed to set the running measurement to failed. However, it may set all completed measurements to failed	Re-run any failed measurements to correct the error

Error Reporting

Should persistent problems occur contact the local Malvern Panalytical Helpdesk. To speed up response time include all the following.

A full-screen screen shot of any error message and everything behind it.

Full description of what was happening at time of issue and ideally leading up to it.

Instrument serial number (e.g. MAL1060289), instrument serial number can be found inside the sample cell basin and on the instrument back panel.

The software version, which can be found as described in a section below.

The log information described below.

And, if relevant and possible, export the relevant measurement data as described in the last section below.

Extracting log information

If an error occurs, further information about the error can be found from the Windows Event Viewer.

Click the Windows Start Button.

Type Event Viewer and press enter.

Navigate to Applications and Service Logs/Zetasizer All Events.

The window will display the most recent errors that have occurred with the ZS XPLORER software.

Error information can be selected and then exported with the Save selected Events button allowing this information to be passed to the Malvern Panalytical team for troubleshooting.

The contents of the measurement log window are logged to file at *Documents\Malvern Instruments\ZS XPLORER\logs*

Software version

The Software Version is vital to determining the cause of problems. To retrieve the version number:

Click on **Application Menu** button (*Figure 19*)
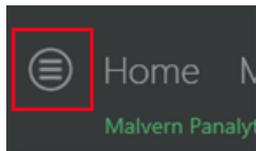
Figure 19 Application Menu button

Click on the **About** button

Read version number (Figure 20)
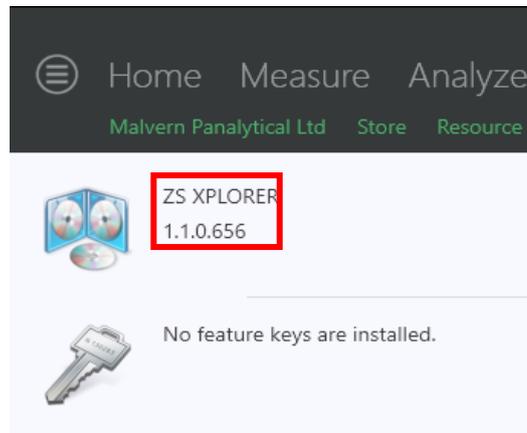
Figure 20 Software Version Number

Extracting measurement data to send

In situations where the errors appear to be related to a specific record or records, the affected records can be exported from the software by selecting them and pressing the export icon, *see Figure 21*, and send the *.zmes file to the Malvern Panalytical team for investigation.
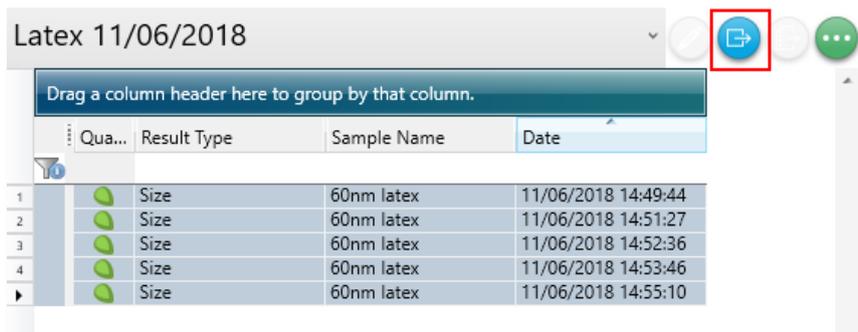
Figure 21 Exporting selected record

MALVERN PANALYTICAL

Malvern Panalytical Ltd.
Grovewood Road, Malvern,
Worcestershire, WR14 1XZ,
United Kingdom

Malvern Panalytical B.V.
Lelyweg 1, 7602 EA Almelo,
The Netherlands

Tel: +44 1684 892456
Fax: +44 1684 892789

Tel: +31 546 534 444
Fax: +31 546 534 598

info@malvernpanalytical.com
www.malvernpanalytical.com

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