SOFTWARE UPDATE NOTIFICATION
MASTERSIZER **3000** SOFTWARE v3.40: PSS0223-18

PARTICLE SIZE

Introduction

This document details the release of software PSS0223-18: version 3.40 of the software for the Mastersizer 3000 laser diffraction system and the Mastersizer 3000E system. It covers software issues fixed and new features introduced. This information is required to perform a risk analysis to determine if the software should be installed. In this risk analysis the benefits of the new features provided and resolved software issues must be weighed against the risk of new issues that may be introduced to vital areas of the software or possible changes to the results of future analysis. Installation instructions are provided.

Installation

It is assumed that you have authority to install or update software within your facility. It is also assumed that you have Administrator rights for the system upon which the software is installed, as this is a requirement of the installation process. If you do not have this authority please consult with your I.T. support department before proceeding.

Recommended System Requirements

The minimum requirements for running this software are highlighted in table 1 below. Although the software can be operated using Windows 10 (64 bit), Windows 8.1 Enterprise (64 bit), Windows 8 Enterprise (64 bit) and Windows 7 (32 bit), it has been fully tested under Windows 7 (64 bit). Windows 7 (64 bit) is therefore the preferred operating system.

Supported Languages

The Mastersizer 3000 software currently supports operation in the following languages:
- English
- French
- German
- Japanese
- Chinese (simplified)
- Russian
- Polish
- Spanish

The language used by the application is automatically configured based on the operating system settings. If you want to force the application to use English instead of the operating system language, you need to start the application using the **Mastersizer 3000 (English)** start menu shortcut.

Table 1: Minimum system requirements for the Mastersizer 3000 software.

Feature	Specification
Processor Type	Intel Core i5 Processor
Memory	4GB
Hard Disk Storage	250GB
Additional Storage Media	CD-ROM or DVD +/-RW drive
Display Resolution	1024 x 768
Connectivity	1 high speed USB2 or USB3 port
Operating System	Windows 7 (32 bit and 64 bit)
	Windows 8 Enterprise (64bit)
	Windows 8.1 Enterprise (64 bit)
	Windows 10 (64 bit)

Installation Instructions

The software suite comes on an auto-loading CD-ROM. Inserting the drive into a system configured to Auto-run a CD will run the installation program automatically. If your system does not support this feature, run the **\Mastersizer 3000\setup.exe** program from your CD drive. If you are installing the software from a web download then browse to the folder where the files have been extracted to and then launch the **\Mastersizer 3000\setup.exe** program.

Note: It is important that the software is installed before the Mastersizer 3000 / 3000E instrument is connected to the computer and switched on. This will ensure that the instrument drivers are enabled, and that the firmware updates associated with this release are correctly downloaded to the instrument.

Note: Any firmware updates required for your system will be installed at the same time as the software. It is important to keep the firmware and software 'in sync', since this is the configuration that will have been tested by Malvern Instruments prior to release of the software.

Installing the Malvern Access Configurator (MAC) Application

The software suite includes a copy of the Malvern Access Configurator tool that allows you to manage the security aspects of the Mastersizer 3000 / 3000E. The MAC software may be installed either on the PC used to control the instrument or a separate networked PC. Installing on a separate PC allows you to manage the security centrally.

Note: The MAC software does not auto-install. To install this software, navigate to the **_Malvern Access Configurator_** folder on the software CD-ROM and run the **setup.exe** file.

As with all Windows applications, the MAC software must be installed by a user who is an administrator on the host computer. In addition, the MAC software uses the existing Microsoft Windows users and groups configured on the host computer to control access to the Mastersizer 3000 application. As such, prior to installing the MAC, it is important to ensure that the computer

running the Malvern software is installed on its host network. If the computer is a stand-alone system, the required users and groups must be configured on the computer prior to the use of the MAC.

Given the above requirements, it is advised that a user's local IT department should review the requirements for use of the MAC application. An IT representation should also be present during the software installation process.

> **Note:** Please read **MRK1828-xx - Guide to setting up access permissions in the Malvern Access Configurator Application** and **MRK1747-xx - Mastersizer 3000 - 21 CFR Part 11 Guide** for more information as to how to use the MAC application, particularly when operation is required in a 21CFR Part 11 compliant environment.
>
> **Note that operation in 21CFR Part 11 mode is not available for Mastersizer 3000E users.**

Uninstall Procedure

The software can be uninstalled using the standard **Add/Remove Programs** feature in the Windows Control Panel.

Main New Features Description
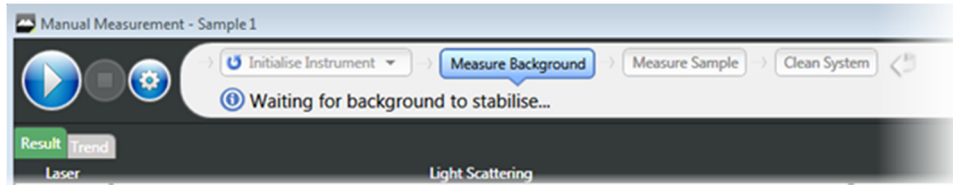
Background stability function

An important part of the laser diffraction particle size measurement process is the measurement of the background light scattering signal from the dispersant. This signal is subtracted from the light scattering signal measured for your sample in order to generate the data used to calculate the sample's particle size distribution. It is therefore important that the background is stable before it is measured, as it is assumed that it will remain the same during the sample measurement process.

In previous software versions, users had to monitor the background in order to determine if it was stable prior to it being measured. In v3.40 Malvern have included a new SOP feature which allows the background data stability to be checked automatically. This is available within with Measurement Duration section of the SOP settings:
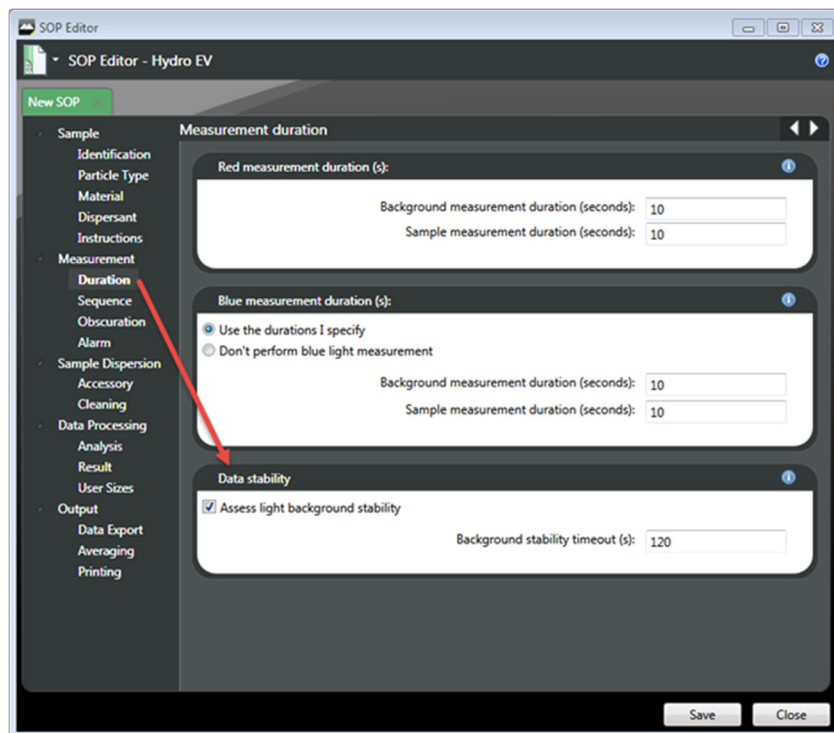
The background stability check is switched on by enabling the **Assess light background stability** option with the **Data stability** section of the **Measurement duration** settings. When this option is enabled, the software requests a **Background stability timeout** time. This is the maximum length of time the software will wait for the background light scattering to become stable before reporting a background error.

If you enable the background stability option, the measurement workflow will proceed in the same way as before. However, when the background measurement is started, a message stating that the system is waiting for background stability will appear:


The system will monitor the background stability during this phase of the measurement. If the background is stable then the software will automatically start the background measurement. If the background does not stabilize then an error will be reported. You will then have the option to repeat the background stability assessment or abort the measurement.

Custom Graph Widget

In v3.40 of the Mastersizer 3000 software Malvern have completed the suite of custom calculation options by providing a custom **graph output calculation**. This can be selected as a custom calculation widget and is set-up in a similar way to the text output calculation and table output calculation options.

To create a custom graph, first select to either create a new report or edit an existing report. Then, select the container type you want to use. In this case, a single pane container is selected:
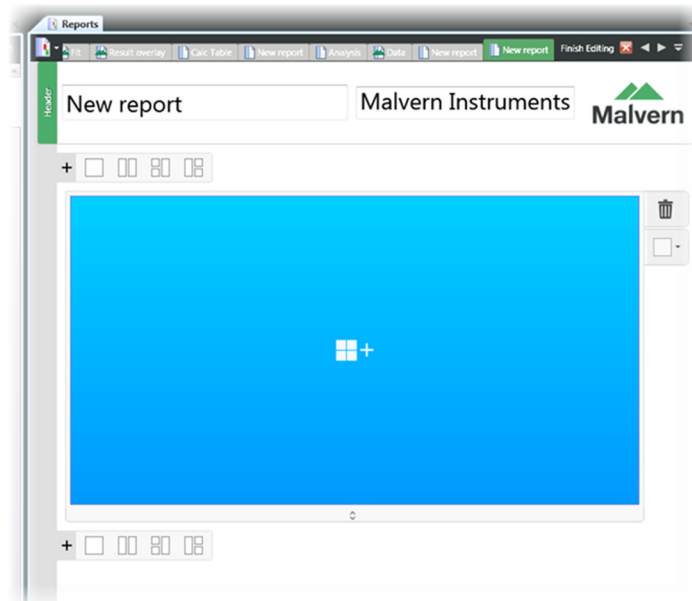

Click on the blue box to select the widget to be added to this container. This will bring up a widget selection dialogue. Within this the new **graph output calculation** is shown near the top of the widget list:

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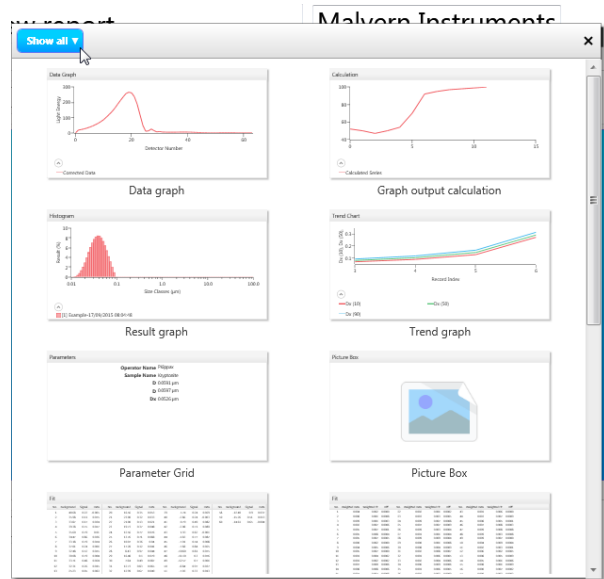
You can simplify this list by clicking on the **Show all** button and selecting a widget type. The graph output calculation will appear in the **chart** category.

Selecting the graph output option from the widget list will load the widget into the report container. To configure it, click on the pencil icon on the top right of the container:
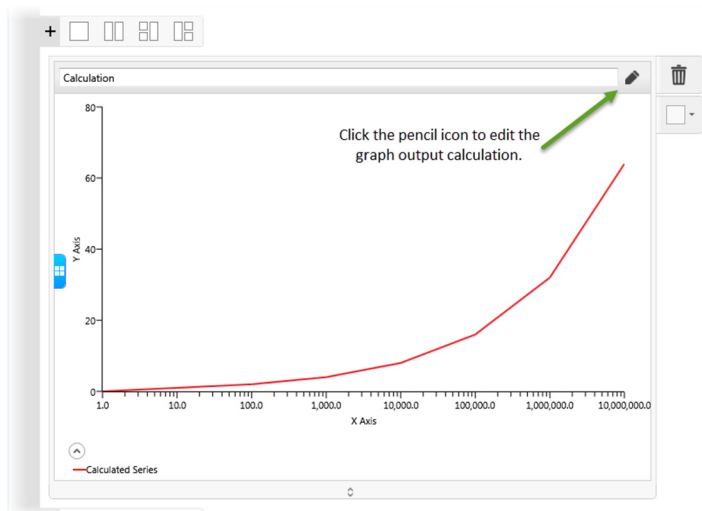
When you do this, a macro editor will appear where you can set the properties of the graph.

The first set of parameter you can define within the macro are the graph title and axis labels. These are set by editing the text in quotation marks within this section of the macro:

```
15
16  Public Function SeriesLabel As String
17      SeriesLabel = "Calculated Series"
18  End Function
19
20  Public Function XAxisLabel As String
21      XAxisLabel = "X Axis"
22  End Function
23
24  Public Function YAxisLabel As String
25      YAxisLabel = "Y Axis"
26  End Function
```

Next, you can select the axis scale type for the x-axis and y-axis. This is done by configuring the following parameters:

```
26    End Function
27
28    Public Function XAxisScale As XAxisScaleType
29        XAxisScale = XAxisScaleType.LOGARITHMIC
30    End Function
31
32    Public Function YAxisScale As YAxisScaleType
33        YAxisScale = YAxisScaleType.LINEAR
34    End Function
35
```

The x-axis can be set to the following scale types:

- XAxisScaleType.LOGARITHMIC: a log x-axis
- XAxisScaleType.LINEAR: a linear x-axis

The y-axis type can be set to:

- YAxisScaleType.LINEAR: a linear y-axis
- YAxisScaleType.PROBABILITY: a log-probability axis
- YAxisScaleType.ROSINRAMMLER: a log-log axis used for Rosin-Rammler distributions.

The next section of the macro is used to set the values for data points shown on the graph. In this version of the graph output calculation only one data series can be displayed. The x values and y values for this series are set in this section of the macro:

```
36    Public Function CalcSeries As Double(,)
37
38        ' 2-dimensional array to hold series values
39        Dim seriesValues(1,7) As Double
40
41        ' X values
42        seriesValues(0, 0) = 1
43        seriesValues(0, 1) = 10
44        seriesValues(0, 2) = 100
45        seriesValues(0, 3) = 1000
46        seriesValues(0, 4) = 10000
47        seriesValues(0, 5) = 100000
48        seriesValues(0, 6) = 1000000
49        seriesValues(0, 7) = 10000000
50
51        ' Y Values
52        seriesValues(1, 0) = 0
53        seriesValues(1, 1) = 1
54        seriesValues(1, 2) = 2
55        seriesValues(1, 3) = 4
56        seriesValues(1, 4) = 8
57        seriesValues(1, 5) = 16
58        seriesValues(1, 6) = 32
59        seriesValues(1, 7) = 64
60
61        ' Return the series values
62        CalcSeries = seriesValues
```

Series values for the x- and y-coordinates are stored in a 2-dimensional array:

- seriesValues(**0**,x): these are the x-coordinate values
- seriesValues(**1**,y): these are the y-coordinate values

There must be an equal number of x and y coordinate values. These can be set to any numeric value. In the example above we have used simple number inputs to provide an example graph. However, you can assign any numeric parameter value to each coordinate.

GAMP 5 Software Categorization

The GAMP 5 guide provides guidance to pharmaceutical companies wishing to understand whether the computerized systems and software they used are fit for purpose and meet current regulatory requirements. As part of this, the GAMP committee has defined a series of software categories which are designed to help users in assessing the risk and validation requirements associated with using a specific software package.

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The Mastersizer 3000 software provides users with the ability to modify the results reported by the system to fit a user's specific application requirements. This is achieved through the use of custom calculations within reports and also through the application of emulation factors as part of the analysis settings. Given this, the software should be considered to be a Category 5 software package. Users are therefore encouraged to specifically validate the custom calculations and emulation factors applied within SOPs, and ensure these are documented. Where possible, we would encourage the use of the standard result reporting features, as this minimizes the risk of errors in the reported size distribution statistics.

Validation Support Documents

The Mastersizer 3000 software CD contains the following documents, which are provided to help users who work within validated laboratories:

- **21CFR Part 11 and Security System guides**: provide guidance on how to set up the features of the software in order to aid technical compliance to 21CFR Part 11. Gap analysis documents are also provided which detail the capabilities of the software and how these align with the requirements of 21CFR Part 11 and the equivalent rule set in Europe (Annex 11).

- **Generic Audit Questions and Answers**: provides users with answers to the common questions included within postal audit questionnaires.

- **IQ and OQ Documents**: preview copies of all of the current versions of the Installation Qualification and Operation Qualification documents for the Mastersizer 3000 optical bench and accessories.

- **Malvern Instrument's ISO Certificates**: copies of the current Malvern Instrument certificates for ISO9001:2008, ISO14001 and OHSAS 18001:2007.

- **QAS Measurement Procedures**: copies of the Malvern Quality Audit Standard data sheets and procedures.

- **Software Certificates of Conformance**: copies of the software certificates of conformance for all Mastersizer 3000 software versions.

- **Software Update Notifications**: copies of the software update notifications for all Mastersizer 3000 software versions, confirming the new features and bug fixes introduced for each version.

- **Software Update Verification Procedure**: a procedure users can follow for verifying the success of a software upgrade.

> **Note:** The documents provided on the software CD are those which were current at the date the software was released. Please contact your local Malvern representative if you need to verify if any updated documents are available.

Software License Files

The Mastersizer 3000 software requires a valid license file to run. When connected to an instrument, the system automatically generates this file and the user will be asked to accept the license.

> **Note:** If you wish to install the Mastersizer 3000 software on additional computers, you will need to follow the procedure below for sharing a software license.

Sharing a License for Mastersizer 3000 users

In order to enable the use of the Mastersizer 3000 on a computer which is not connected to a system, it is necessary for users to create a license. This can then be shared with other users, allowing them to gain access to the software.

To share a license, follow the steps below:

1. At the PC that is connected to the instrument, run the Mastersizer 3000 software and click on the **Application Menu** icon

    at the top left of the screen.

2. Select '**About**' and click on the **View License...** button.

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3.   Click on the **Share this License...** button. The system tells you what information the license file contains.

4.   To accept that information click Yes and choose a location to copy the file to (e.g. a memory stick).

5.   At the separate PC, install the Mastersizer 3000 software from the CD and start the program. At the license screen, click the **Install** button.

6.   Browse to the folder that contains the license file from step 4 above, and select the licensee file. The licensee details will be shown and you can now accept or decline the license.

> **Note:** The software license is specific to a given Mastersizer 3000 system. When a license is shared, detailed user and computer information is stored in the license file, ensuring it can be traced back to its source Mastersizer 3000 system. Users should only share the license with users within their organizations who need to analyze data off-line. **The software license must not be shared with other organizations without the consent of Malvern Instruments.**

Sharing a License for Mastersizer 3000E users

The Mastersizer 3000E system is provided with a simplified, basic version of the Mastersizer 3000 software. This basic software version is restricted to use on a single computer workstation attached to the Mastersizer 3000E system. As such, the license sharing facility offered for Mastersizer 3000 users is not available.

Users of the Mastersizer 3000E system who want to be able to use the software on multiple workstations will need to purchase a software upgrade. This upgrade will enable the premium features associated with the Mastersizer 3000 software, including the ability to create shared licenses. Please contact your local Malvern representative if you would like to purchase this upgrade.

Software Guides

The Mastersizer 3000 software includes a comprehensive help system, which provides a functional description of each of the software elements. In addition to this, the software includes a series of 'MiniGuides', which provide an introduction to useful software tools and new features. These are accessed via the MiniGuides option on the Home ribbon bar:
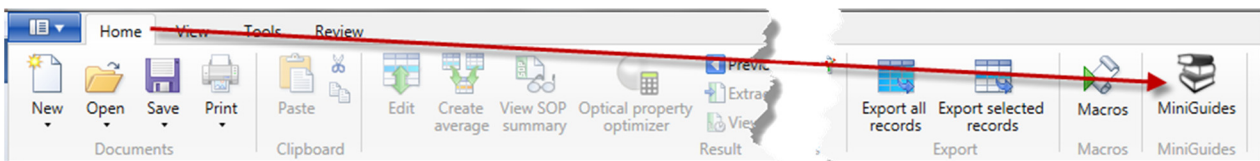
New Features List

Version 3.40 of the Mastersizer 3000 and 3000E software includes the following new features:

Reference(s)	Feature
25963	Provide access to live scattering and obscuration data via the Malvern Link 2 automation interface.
49865	Change the "press reset to continue" message within the measurement manager to state "press reset to retry".
50337	Improve handling and logging of ultrasound errors.
36608	Ensure the alignment data quality calculation provides reasonable advice for Mastersizer 3000E users.
47029	Provide a background stability assessment tool to aid automated SOP measurements.

*See the Headline New Features section above for more information.

Details of the new features developed for previous software releases can be found in the Software Update Notification documents stored on the software CD-ROM.

Fixed issues list

The main issues fixed in this release of the Mastersizer 3000 and 3000E software are listed below.

| Reference(s)	Issue	Comment
45234	Ultrasound can cut-out if the demand is changed by a large increment.	Fixed
45891	Stirrer speed does not return to the correct level following a clean cycle	Fixed
46318	Software becomes unresponsive when the measurement manager is closed during the emptying of a Hydro dispersion unit.	Fixed
36407	Analysis mode drop-down menu box in the Optical Property Optimizer window is blank when first accessed.	Fixed
41702	Ultrasound cuts off intermittently during a measurement	Fixed
47597	Analysis result can sometimes change depending upon whether a model is already generated	Fixed
48327	Maintenance reminders do not work with Japanese characters	Fixed
48336	Data is truncated within the performance verification certificate when it is viewed in German.	Fixed
48420	Result table report widget is not displayed correctly in Japanese.	Fixed
48491	The multiple modes report does not show any values for custom calculations when printed.	Fixed
48507 48509	Changing the parameters displayed on a trend table report widget does not cause the table settings to be saved.	Fixed
48646	The Optical Property Optimizer result and data graphs are very small.	Fixed
48807	Software crashes if the software licence becomes corrupted.	Fixed
49041	Text-based custom calculations appear in the list of table-based custom calculations.	Fixed
49124	A spurious empty result is created when running dry powder measurements with averaging selected.	Fixed
49377	Cannot copy the trend table report widget as an image.	Fixed
49460	Error log becomes overloaded with entries when a user inputs an invalid stirrer speed.	Fixed
49463	A software exception is reported when the background alarm warning message is displayed.	Fixed
49579	The result and data selection tick boxes do not operate correctly within the Optical Property Optimizer interface.	Fixed
49665	A print dialog is displayed at end of an SOP measurement if a printout is requested, causing the SOP to pause.	Fixed
49784	The accessory control window disappears behind main program window within the Mastersizer 3000E software, making it difficult to control the accessory during a manual measurement.	Fixed
47665	The live result view within the measurement manager is confusing for dry measurements, as it always shows a result based on poor data collected at the beginning or end of the measurement process.	Fixed
47883	Cannot copy the parameter grid report widget as an image.	Fixed
48066	Japanese characters not imported correctly for Mastersizer 2000 records.	Fixed
50446	Ultrasound may not start correctly for SOP measurements after switching between accessories.	Fixed
51023	The View SOP Summary menu option causes the software to crash when using French language settings.	Fixed

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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 for each issue when operating the software.

Issue	Work Around	Comment
Some text still appears in English when running with a different language selected.	The translation of all software text will continue in future releases.	Low risk issue
Software does not open all files selected when they are opened using Windows Explorer.	Use the Open menu option in the Mastersizer 3000 software to open multiple files.	Low risk issue
Record number and detector number values are displayed to one decimal place on trend and data graphs.	No work-around available. A fix will be implemented in a future software release.	Low risk issue
The system audit trail displays duplicated columns for each language under which the system has been run when auditing has been enabled.	No work-around available. A fix will be implemented in a future software release.	Low risk issue
When graph symbols are displayed in reports, they do not show on printouts.	No work-around available. A fix will be implemented in a future software release.	Low risk issue
Various fields in the Edit result window lose their 'edited' blue background appearance when a different page in the editor is selected.	No work-around available. This is a display issue only, as the software correctly applies the edit values when the OK button is pressed.	Low risk issue
The manual measurement settings do not match the connected/active dispersion unit.	See know issue description below.	Intermittent Observation
Mastersizer 3000 driver errors appear when using the instrument with a USB 3.0 port.	We believe this is was an issue with early USB3 ports. Evidence suggests the software works with the current version of USB3 installed on newer computers. If you suspect there is an issue with your system, try switching the USB port used to connect to the Mastersizer or use a USB 2.0 port instead.	Intermittent Observation
Wet accessories can go into standby mode unexpectedly when switched on for a long period of time (>24hrs).	When this happens, stop all measurements and then select the Manual Measurement, SOP Measurement, or Accessory Control options to reactivate the accessory.	Intermittent Observation
Instrument disconnects after firmware upgrade	An issue has been seen for some installations whereby the instrument will become disconnected from the PC following a firmware upgrade. Turning the instrument off and on again will cause it to successfully reconnect to the software.	Intermittent Observation
SOPs load slowly from the SOP selection dialog	The SOP selection dialog may load slowly if you have stored many SOPs in the default SOP folder. A fix for this issue will be implemented in a future software release. In the meantime, if you group your SOPs into sub-folders, then the dialog will only attempt to load SOPs for the selected folder. This will speed up the operation of the software.	Intermittent Observation

Some parameters are not imported from Mastersizer 2000 measurement records	When importing Mastersizer 2000 measurement records into the Mastersizer 3000 software, some SOP parameters from the Mastersizer 2000 records do not get imported. However, all of the parameters required for result review or recalculation are present.	Low risk issue
Warnings are displayed about corrupt measurement files	The software has built in detection of when measurement files are at risk of being corrupted. If you see one of these messages, you are probably creating too large a measurement file.	Intermittent Observation
Manual measurement errors are reported if the Aero dispersion unit configuration has changed between measurements.	The manual measurement feature in the software stores the last used settings. This includes configuration of the Aero dry powder disperser. If you change the configuration between measurements and then open a manual measurement, the software will report an error stating that configuration is wrong. If this happens, close and re-open the manual measurement window and change the manual measurement settings to match your new Aero configuration.	Low risk issue
Software exception is reported if the software is closed when a macro is running.	All currently running macros must be closed before closing the software.	Low risk issue
Accessories may not automatically be selected by the software.	In order to better support the use of manual accessories, we have had to limit the operation of the automatic accessory selection system. As such, it may be necessary to select the active accessory from the status bar in the software when you change measurement cells. Note that automatic checking of the accessory type still works correctly when running SOPs.	Low risk issue
Trend table print out is limited by paper size.	Report widgets are designed to fit on one page, and will not wrap over pages. If you select lots of measurement records, the trend table widget will expand to fill the page. However if you select more measurement records than can fit in a trend table on a single page then the displayed records will be truncated at the page boundary. The only work around for this issue is to print the report on a larger paper size. Paper size A4 has a limit of 56 records in a trend table, whereas paper size A3 has a limit of 86 records.	Low risk issue
Some report widgets are truncated in the print preview view.	Some report widgets may not be displayed correctly within the print preview screen. However, if the report is printed all of the information within the widget will be shown.	Low risk issue
Software may crash when exporting data with custom sample identifiers which start with a number	Exporting measurement data with custom sample identifiers beginning with a number will cause the software to crash when you select an export template that contains sample identifiers. The only work-around is to prefix sample identifiers with letters.	Low risk issue

Manual measurement settings do not match the connected / active dispersion unit

Occasionally, users may see the wet accessory related manual measurement settings when a dry unit is attached, or visa-versa. If this occurs, open the manual measurement settings window and click the **New** menu item from the Window Features menu:
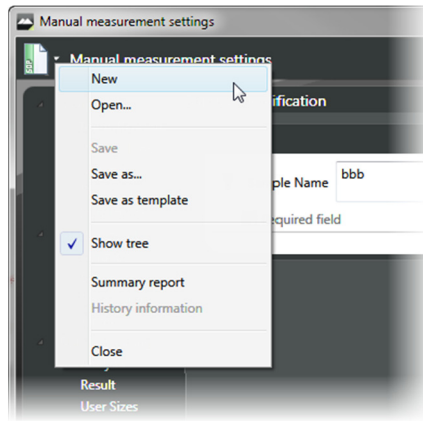
This will reset all measurement settings to their defaults for the active accessory type. This issue has been reported after upgrading from early versions of the software, but does not occur on all systems.

Measurement File Format

In v3.40 of the Mastersizer 3000 software we have re-introduced the file format used in older versions of the software (v3.10 and earlier) due to an incompatibility issue we discovered when the software's 21 CFR Part 11 features are enabled. This format is now selected by default and offers the advantage that it is compatible with all earlier versions of the software.

Note that files created using v3.20 and v3.30 of the Mastersizer 3000 software can still be opened, edited and saved using v3.40. The software will automatically switch to the correct file format if you select a file created in these versions. If you want to specifically create a file in the same format used by v3.20 and v3.30, select the **Measurement file (special compatibility)** option when creating a new measurement file:
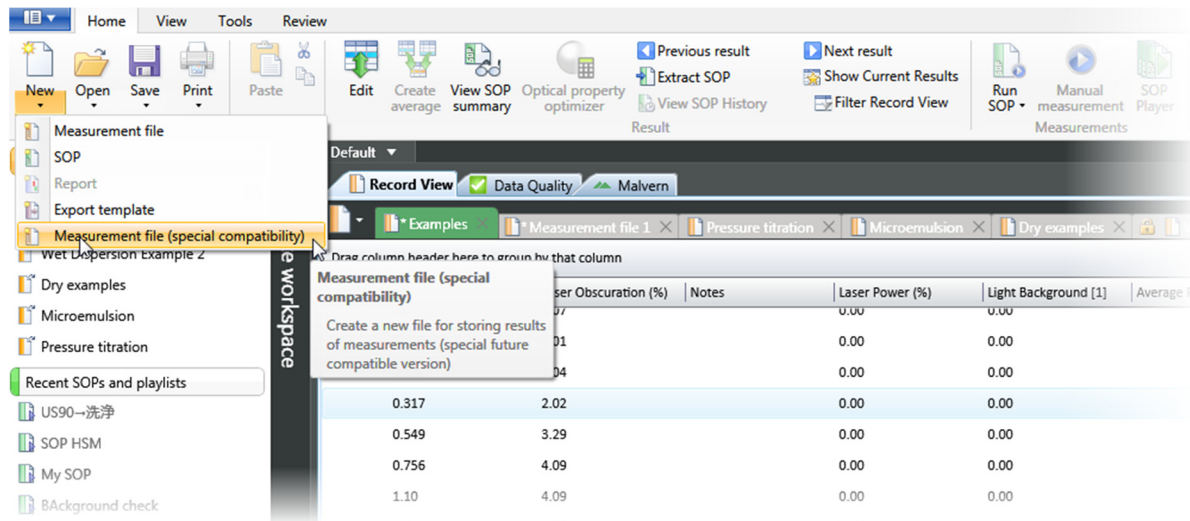
Measurement File Size and Corruption Warnings

Version 3.20 and higher of the Mastersizer software includes the ability to detect when measurement files are at risk of becoming corrupted. If you see one of these messages, you are probably creating too large a measurement file. We recommend that you keep measurement files to a maximum size of 1000 records, and advise that you try to remember to regularly create and use new files to store measurement records.

Note that Malvern are currently investigating possible alternative measurement file formats for use in future software releases, with the goal of increasing the maximum number of records which can be robustly stored within a single file.

Backward Compatibility

This software is only compatible with the Mastersizer 3000 (MAZ3000) and Mastersizer 3000E (MAZ3010) systems, and cannot be used with the Mastersizer 2000 (APA2000) or Mastersizer 2000E systems. It is possible, however, to review Mastersizer 2000 / 2000E results within the Mastersizer 3000 / 3000E software. Please refer to the user manuals and software help for guidance as to how this is achieved.

File Types and Locations

The Mastersizer 3000 software uses a series of different file types in order to store data and measurement settings. These are described below, in order to help users who wish to secure the Mastersizer 3000/3000E system using the Microsoft Windows security and access settings.

| File Type	Extension	Default Path	Advised security setting for 21CFR Part 11 Mode
21CFR11 mode: Audit trails (Mastersizer 3000 only)	.xml	C:\ProgramData\Malvern Instruments\Mastersizer 3000\Audit Trails	Prevent deletion of the files in this directory. However, read, write and modify access must be maintained.
User sizes	.siz	C:\ProgramData\Malvern Instruments\Mastersizer 3000\User Sizes	No control required as these settings are stored in SOPs.
User defined materials	.mmat	C:\ProgramData\Malvern Instruments\Mastersizer 3000\Materials	No control required as these settings are stored in SOPs.
User defined dispersants	.mdis	C:\ProgramData\Malvern Instruments\Mastersizer 3000\Dispersants	No control required as these settings are stored in SOPs.
Data quality addins (Mastersizer 3000 only)	.mdaq	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\Workspace\Data Quality Addins **Private workspace:** C:\Users\{user_name}\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Data Quality Addins	No control required as the data quality tool only provides advice.
Export data	.txt .csv .rtf	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\Workspace\Export Data **Private workspace:** C:\Users\{user_name}\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Export Data	If data export is a critical part of the SOP used for your samples then you should prevent deletion of the files in this directory. However, read, write and modify access must be maintained.
Measurement data	.mmes	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\Workspace\Measurement Data **Private workspace:** C:\Users\{user_name}\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Measurement Data	Prevent deletion of the files in this directory. However, read, write and modify access must be maintained.

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Reports	.mrep	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\Workspace\Reports **Private workspace:** C:\Users\{user_name}\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Reports	Prevent deletion of the files in this directory. However, read, write and modify access must be maintained. Note: it is important that users are prevented from deleting reports via the software interface as well. This can be done using the MAC application.
SOP templates	.msot	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\Workspace\SOP Template **Private workspace:** C:\Users\{user_name}\Documents\Malvern Instruments\Mastersizer 3000\Workspace\SOP Template	No control required.
SOP	.msop	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\Workspace\SOP **Private workspace**: C:\Users\{user_name}\Documents\Malvern Instruments\Mastersizer 3000\Workspace\SOP	Prevent deletion of the files in this directory. However, read, write and modify access must be maintained.
Data export templates	.mext	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\Workspace\Data Template **Private workspace:** C:\Users\{user_name}\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Data Template	No control required.
Various system wide configuration files	Various	C:\ProgramData\Malvern Instruments\Mastersizer 3000	Full access must be maintained to this directory for the program to function correctly.

Changing the destination path for a particular file type

The following folders can be configured from within the Mastersizer 3000/3000E software:

- SOP
- Measurement Data
- Reports
- Export Data

For Mastersizer 3000 users and those who have upgraded the Mastersizer 3000E software, the default file location for these files can be configured via the Target Folders section of the Workspace viewer. To do this, click on the pencil icon which appears when you hover over the directory shortcut:

![Malvern logo] Malvern | Material relationships
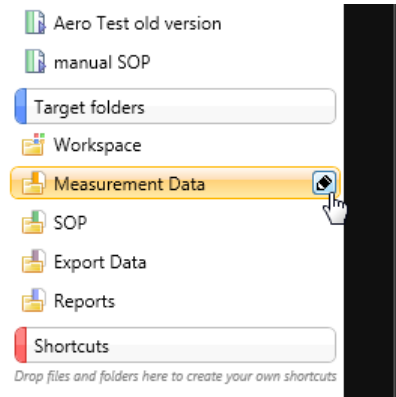
Changing the directory associated with this shortcut will change the default directory accessed by the Mastersizer 3000 software for the selected file type.

Configuration of the target directories can also be configured from the User Preferences-Folders section of the Options menu:
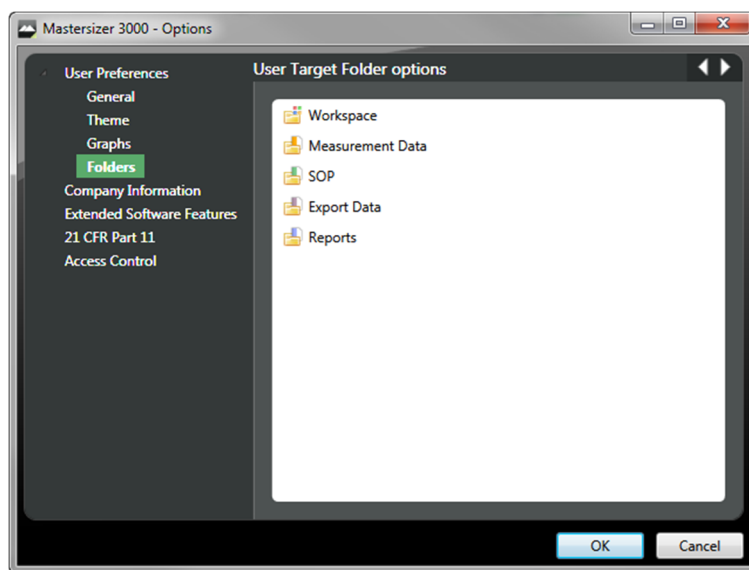
Again, hover over the shortcut and click on the pencil icon in order to change the target directory. Note that this is the only place in the software where the target directories can be configured when using the Basic software for the Mastersizer 3000E.

Making a backup of the files

The Mastersizer 3000 software does not create backup copies of any of the file listed above. However, there are third-party software tools that will allow you to schedule regular backups, if required, for each of the file locations.

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Analysis Error codes

The following error codes may be returned by the analysis routine as a result of data collection or result calculation errors:

Error Code	Description
1 4 5 44	Error detected with the selected material or dispersant optical properties.
3 6 7	Unable to load or generate a scattering matrix.
8	Unable to initialise the result calculation routine.
9	There is no raw data to analyze.
10	Unable to apply the selected analysis settings.
11 12	Error occurred during generation of the scattering matrix.
13	Error occurred during raw data handling.
14 15	Unable to configure the result calculation routine.
16 17	Unable to generate a result based on the input raw data.
18 20 22	Could not find any particle size distribution modes in the result.
19	The analysis residual is greater than 99.9%.
23 24	Error occurred when using the Fraunhofer analysis model.
25	Corrupt analysis settings detected.
40 41 42	Scattering matrix calculation settings errors detected.
43	Error occurred while generating the scattering matrix.
45	Matrix generation is currently busy.

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