

Software Update Notification



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Product	PartNo.-Issue
Software suite	PSS0012-09

Product	PartNo./Version
Zetasizer Nano series	PSW0085/4.00
Firmware	PFW0044/1.30

Manuals	PartNo./Version
Zetasizer Nano series	MAN0317/2.10
MPT-2	MAN0318/2.10
HPPS	MAN0314/2.00

Software update summary

Main features
Addition of protein software, including a solvent builder and protein utilities
Support for research software (Requires purchase of feature key)
New MPT-2 autotitrator functionality, including additive/conductivity titrations and size, zeta potential and intensity at each point, and pre-scan function to shorten titration times
The record view headings have been shortened to allow more parameters to be displayed. See installation in section 4 for how to install these
The example results have been updated. See the installation in section 4
Measurements of zeta potential using monomodal and general purpose are now consistent
The peak in the result at the modulator frequency due to flare is now removed from the data
Addition of a range of new reports
The record view can now be printed using the 'file', 'print' menu
An error in the zeta potential monomodal analysis has been corrected
Advice and Help added on all new features

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1. Overview

This document is the software release note for Zetasizer Nano series software P/N PSW0085 on software suite PSS0012-09 in accordance with DCO4053

1.1 Main feature comments

1.1.1 Protein software utilities

This is a utility accessible from the tools menu. It enables a number of scenarios to be tried without having to edit the result. This could be the investigation of the sensitivity of changes in the input parameters to the result, or removing or adding points to the Debye plot.

It also enables estimations of the shape to be done from input of the molecular weight and hydrodynamic diameter.

1.1.2 Solvent builder

The dispersant properties database now contains a facility to estimate the refractive index, viscosity and dielectric constant of a solvent or dispersant from a combination of its constituents if these are known. The estimate will usually be within the accuracy required for the measurement, and avoids having to measure these properties. The effect of each property for each additive is stored as a change per mole added. The total change is assumed to be a simple sum of all the individual effects.

For example, for complex buffers at high concentrations the effect on viscosity may be as high as 10%. Without correction by using this facility or the measured values, this will lead to an error in the size or zeta potential measured of 10%.

1.1.3 Research software

The research software is activated by purchase of a feature key in the form of a program on CD. Activation will enable a range of extra features within the main software, including a range of extra reports and extra parameters in the parameter list.

The main features are control of the configuration of the correlator and access to a 1000 channel linear extension to the correlator, post processing options for all analysis algorithms, the CONTIN algorithm and a new algorithm for the conversion of mobility to zeta potential called the White and Mangeldorf method.

A key can also be obtained for demonstration purposes.

1.1.4 High temperature option

During the installation an option is given to install the software for a new higher temperature instrument option that has yet to be released.

This option is made available so that the option can be added without having to release a new version of software.

The purpose of all of the options given during installation is so that an SOP for the instrument specified can be written off line.

As soon as an instrument is connected to the computer the software will be updated with the correct instrument type connected. If the SOP written off line is inappropriate for the system connected the user will be informed of this.

1.1.5 New reports and parameters

A whole range of new parameters and reports have been made available. The addition of new parameters means that some user defined reports may not display the correct parameters. See section 3.5.3

1.1.6 Zeta potential monomodal analysis

An error has been found and corrected in the monomodal analysis method for zeta potential. For some samples at low conductivities this error could have given an 8% difference in comparison with the general purpose mode.

The monomodal analysis is particularly useful for autotitration measurements to reduce the titration duration, and in this case the Iso-electric points reported were not affected. Re-analysis of the data with the new software will not change the reported result.

1.1.7 Cell wall flare

Flare from the cell wall can cause a peak to be displayed at positive mobilities and zeta potentials. This is due to the way the data is processed. The data that causes this peak has now been removed before the analysis is done. The effect of this procedure is that this peak no longer appears, but it does not affect the ability to measure zero mobility particles.

2. Compatibility

2.1 Optics unit

Version 4.00 software is compatible with all hardware variants of the Zetasizer Nano series and the HPPS.

2.2 Data

Version 4.00 will read data from all versions from 3.xx. It will not read data from Version 1.00 or V1.10 software. If data taken with a previous version is edited, even if only the sample name is changed, the result can change. See known issues.

2.3 Computer

2.3.1 Operating system

Version 4.00 is only compatible with Windows 2000 Pro (Sp4 or later) and Windows XP Pro (Sp1a or later)

Windows XP Pro is the preferred option as the complete alpha test has been performed on this operating system.

NOTE: Windows NT and Windows XP 'Home' version are not supported

2.3.2 Minimum Computer Requirements

Pentium PC 233MHz, 128MByte RAM, 20MByte free hard disk space, 1024 x 768 screen resolution, CD-ROM drive, 1 free USB port, Windows 2000 Pro (SP4 or higher) or Windows XP Pro (SP1a or later) operating system.

Use with the HPPS requires one free PCI slot

The software and system can be used with a laptop computer with a free USB port.

Use of a laptop with the HPPS requires a free type 2 PCMCIA slot and a special PCMCIA card. Please contact Malvern Helpdesk for details.

The PC must meet the minimum requirements of the operating system software.

2.3.3 Recommended Computer Requirements

Pentium P4 PC 2.6GHz, 512MByte RAM, 40GByte hard disk drive, 1024 x 768 screen resolution, CD-ROM drive, USB port, Windows XP Pro (SP1a or later) operating system.

The software and system can be used with a laptop computer with a free USB port.

Use of a laptop with the HPPS requires a free type 2 PCMCIA slot and a special PCMCIA card. Please contact Malvern Helpdesk for details.

3. Functional Features, changes since version 3.32

3.1 Additions

SCR	Description
3312	Addition of diffusion coefficient transform
3548	MPT-2 Manual control: Addition of forward/reverse control
3567	Addition of facility to override the measurement auto-stop with poor quality data, and continue measurement
3587	Edit result is possible for zeta potential measurements taken using ver. 3.00 onwards
3589	It is possible to store subruns from a zeta potential measurement
3676	MPT-2. It is now possible to prime each titrant individually
3801	The user now has the option of repeating the measurement of the scattering standard in a molecular weight measurement.
3980	A range of new reports has been added
4007	The record view can now be printed directly using the 'file', 'print' menu
4192	Buffers higher than pH9.2 are allowed as well as custom values
2702	Extra range checking now prevents errors such as division by zero
4312	Narrowband filter option added to SOP setting
4354	A warning message is now displayed when non-glass cuvettes are selected and temperature is set above 70°C.

3.2 Deletions

None

3.3 Changes

SCR	Description
3415	Zeta edit result now puts mobility distribution into the new record
3507	Icons in the dialog boxes are now displayed with Hebrew Windows
3888	Error message text is now clearer
4044	The coefficients for the dielectric value for water are now compensated for temperature changes
4070	MPT2: Manual Control dialog improved
4163	MPT2: Titrations now allow longer equilibration times if additions of titrant are large
4187	Stirrer control added to pH monitor dialog
4196	Default values for sample & dispersant are now set to polystyrene latex and water
4210	New example results have been added.
4308	Size diagnostics report now contains the D90 value
4340	Configure workspace dialog has been increased in size
4343	Summary workspace now includes the melting point report
4357	In the MW report the symbols are now the same colour as the lines
4358	The headers in the records view have been reduced in size to allow display of as much information as possible
4359	New reports have been added to the workspaces
4363	The measured pH field is now blank for measurements other than pH titrations
4380	Multimodal analysis limits have been increased
4396	Protein Utilities - Rg model has been made consistent with the application
4401	The pre-scan method has been implemented to shorten autotitration measurements

3.4 Bug Fixes

SCR	Description
2736	Measurement termination (e.g. pulling the USB cable out) no longer causes an application error.
2853	Display of the scattering count rate is now correct on the Debye page.
3772	Viscosity of ethylene glycol corrected.
3795	Changing the analysis limits works correctly when editing results.
3956	In 21 CFR mode appending records to an existing SOP file now works correctly.
3990	The installer now does not uninstall any export templates created.
4043	Titration records can now be copied and pasted between files.
4087	The temperature range on user specified viscosity value dialog now matches the instrument range.
4173	Molecular weight records now show the correct measurement temperature.
4229	The export overwrite option now overwrites rather than appending data to the output file.
4233	Opening lid during "Setting temperature..." stage now abort measurement.
4265	Titration first point additions are now calculated correctly.
4285	It is now not possible to set the interval between trend points greater than the difference between the min and max settings.
4348	Complex solvent builder now works with foreign language operating systems.
4383	Information displayed in audit trail is now valid when audit trail view left open through midnight.
4390	Intensities are now a parameter in the dictionary.
4415	Results measured using the zeta potential monomodal analysis are now consistent with the general purpose method.
4306	RI and Viscosity Increments in solvent builder are now displayed to the correct number of decimal places.

3.5 Known Issues and comments

3.5.1 USB Detection

USB detection occurs automatically on new computers. On older computers the instrument is not always detected automatically and the instrument icon in the bottom right-hand corner of the status bar will remain greyed-out. This is fixed by closing the application, restarting the computer and restarting the software.

3.5.2 Dispersant database update

The samples database has been updated to correct an error in the viscosity of Ethylene glycol. This will mean subsequent measurements with the new database will give different results.

A temperature correction for the dielectric constant change for water as a function of temperature has been added. The effect of this is negligible at 25°C, i.e. less than 1%. However, if the default value for the dielectric constant was used at other measurement temperatures, then editing the result with version 4.00 software will give a different result, as the correct dielectric constant for water at the temperature used will now be applied. The following table gives an idea of the magnitude of the change.

Measurement temperature °C	Change in reported zeta potential in ver 4.00
2	+44%
25	-0.6%
90	-10%

3.5.3 Missing parameters in user reports

The parameter dictionary has been updated for this version of the software and some of the parameters have changed. For reports that the user may have created containing the affected parameters, the parameters will become undefined. This can be seen when a report is opened and the parameter displays the text 'No parameter has been selected' or nothing is shown next to the text label (i.e. the value appears blank). To fix this problem for each parameter carry out the following steps:-

- 1) Double-click on the affected parameter to bring up its property dialogue.
- 2) Click the 'Select' button to display the 'Select a parameter' dialogue.
- 3) Select the relevant parameter.

N.B. Remember to correct the affected parameters on both the screen and page layout views of the report.

3.5.4 Results

The analysis algorithms for the calculation of size, zeta potential and molecular weight, including data filtering, are being continually improved. The effect of this is that if data taken from a previous version of software is edited, the result may change, even if only the sample name is edited.

This is because the algorithms themselves are not stored with the record.

This does not apply to parameters stored with the record such as the viscosity, and refractive index etc. as the same parameters are always used in the recalculation of the edited result.

This does not of course change the result in the stored record, as after editing a new record is created. To tell if a record is the original or has been edited, the parameter 'Is edited' can be added to a report or the record view. This can be found in the measurement audit information section of the parameters list. It will display 'False' if the record has not been edited.

3.5.5 Manual measurement settings

Installing ver 4.00 software will cause the manual measurements settings to revert to their default values. After installation any changes are preserved between settings.

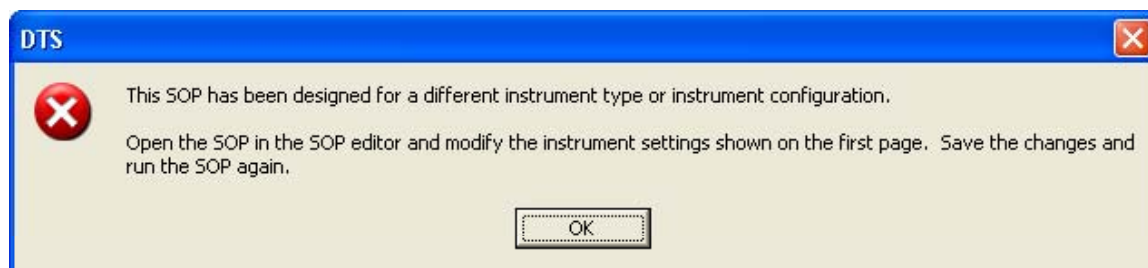
3.5.6 Application error when editing the analysis limits of existing zeta measurement records

Editing the zeta potential range of an existing record may cause an error, and the software will have to be shut down. This editing is mostly required when measuring samples in low dielectric constant media, or when using very low voltages.

A suitable range should be set before the measurement. For a sample in a dispersant with a very low dielectric constant such as hexane, the zeta potential range in the results calculation page, under the advanced button should be set to -500mV to 500mV

3.5.7 Latest firmware required when running SOPs created with version 4.00 software

This is a problem for existing users if an SOP is created with version 4.00 software without having the instrument connected on startup (so the firmware is not updated). If the instrument is then connected (without restarting the application) and an attempt made to run the SOP then it will fail with the error message shown below:-



The fix for this problem is to restart the application with the instrument connected.

3.5.8 The following SCRs detail issues that currently exist within the software.

SCR	Description
2735	Dragging records onto the desktop fails
2991	It is not possible to average results
3130	No warning message when running a zeta, molecular weight or melting point SOP on a HPPS instrument.
3131	User reports will not print unless they are added to the current workspace
3152	Graph x-axis settings are not retained the first time you open the properties dialog
3163	The active record in a multiple selection is always the record with the highest record number
3165	It is not possible to paste a table as an image into other applications
3267	List of open windows disappears if Windows menu is opened and then closed.
3273	The melting point graph should display temperature and Z-Average to 1 decimal place.
3337	The attenuation selection during a zeta measurement only averages over a short time
3352	Configuration of software is not saved upon exit
3355	Edit result menu option enabled without any records present.
3360	Volume graph data does not match table.
3542	The report footer text does not use the report margins
3667	No associated table with the oversize/undersize plots
3694	If screen view property is changed SOP print out will not be as expected by SOP designer
3714	Record browsing in print preview does not work
3736	Editing a zeta record taken in a previous version of the software causes the mean zeta value to change by over 2mV but not the mobility
3754	Data storage seems slow
4030	SOP needs to have narrowband filter setting
4067	User ->New User menu does not force values in password and password confirmation boxes.
4123	Not possible to change the name of a Workspace
4125	Report Designer -size distribution by intensity Graph X Axis does not autoscale
4126	Report Designer - cumulants residuals graph only part of data shown
4127	Report Designer - Chart Line configuration, reset to no symbols fails on some graphs
4161	Creation of 'unknown directory' when ER/ES enabled causes directory to be created

SCR	Description
4168	When password uniqueness is set to "Remember the last 3 Passwords it is possible to use the same password again
4169	Audit trail does not record the copying of records
4197	Positioning of widgets is lost when copying between screen and print views in report designer.
4232	Option to append measurement number to sample name should be available in zeta and size trend SOPs.
4252	pH calibration dialog does not check against the greatest and least pH buffers selected
4267	Intensity scale during zeta measurement wrong
4286	Number of runs still tries to limit the measurement to 6 hours, instead of allowing 10,800 runs
4292	The ability to save correlogram even if sample cannot be analysed is not available
4316	The Mie correction cannot be turned off in the research version of the software
4345	Record appears selected when it isn't
4384	21 CFR help missing
4400	Melting Point Measurements parent record temperature is recorded as 0.0
4407	The ability to use increment and points option in dilution titration is not available

4. Installation

4.1 Installation Procedure for Windows 2000/XP Pro

You must uninstall the previous version before installing the new version. See the 'Uninstall procedure' below.

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 **lsetup.exe** program from the root directory of your CD drive.

4.1.1 Record view headings

The record view headings have been shortened to allow the display of more parameters. The current headings are stored in a file automatically named as the user currently logged on to the computer with a '.wrkspc' extension'. e.g. JOHN SMITH.wrkspc
To access the new headings this file must be deleted or renamed after the uninstallation procedure.

After uninstalling the software navigate to the 'C:\Program Files\Malvern Instruments\DTS' directory. This will contain the user workspace. This can either be deleted, in which case a new user workspace will automatically be created during the installation process, or it can be renamed to allow its use later. Note the '.wrkspc' extension must be used. During the installation the new record headings will then be displayed.

4.1.2 Example data

The examples data file has been updated.

To access the new examples file the old file must be deleted or renamed after the uninstallation procedure and before the new software version is installed.

After uninstalling the software navigate to the 'C:\Program Files\Malvern Instruments\DTS\Measurement Data' directory. This will contain the example results.dts file. This can either be deleted, or it can be renamed to allow its use later. Note the '.dts' extension must be used to enable access to the file from within the application. During the installation the new example results will be installed.

The example data is most conveniently viewed in the summary workspace as all the reports to view the data are available in this workspace.

4.1.3 General Issues

Note: If the system has a previous version of 3.xx installed, then this must be uninstalled before version 4.00 is installed as it cannot be co-resident. Version 1.10 (HPPS) can be left on the system and version 4.00 installed

Note: On the instrument selection screen, the type of instrument, laser wavelength and scattering angle must be specified. Text information is supplied on this screen to help with your selections.

Note: For DTS Series software, Windows 2000™ Pro and Windows XP™ Pro 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.

Note: Windows 2000™ Pro systems require service pack 4 or later in order to install the software.

Note: Windows XP Pro may give the following warning during the installation. This warning can safely be ignored by clicking 'Continue anyway' as the software installation has been tested on Windows XP.



4.2 USB Driver Installation

Note: Driver installation on Windows 2000™ Pro and Windows XP™ Pro will fail if the user does not have administrator access. This is in line with Microsoft's Logo policy and is standard practice.

4.2.1 Windows 2000 Pro

With the software installed the instrument should be connected via the USB port. The drivers should now be installed automatically without any user input.

4.2.2 Windows XP Pro

With the software installed the instrument should be connected via the USB port. This will result in the found new hardware dialogue appearing:



This should be left with the default selection of 'Install the software automatically' and the 'Next' button should be pressed so that file transfer begins. During file transfer a similar warning dialogue as appeared in section 4.1.3 may be displayed. Once again the 'Continue Anyway' button should be pressed so that file transfer completes. Once file transfer has completed the 'Finish' button should be pressed to complete the installation.

4.3 Uninstall Procedure

The software can be uninstalled using the standard Add/Remove feature in the Windows 'Control panel'

5. Customer deliverables

5.1 Application Software Suite

The software is contained on one CD-ROM. The disk is labelled PSS0012/09

The installed software requires about 80Mbytes of hard disk space.

5.1.1 Disk contents

- Operating software including update help files for all new features plus tutorials

- Zetasizer Nano series operators guide, Issue 2.10
- MPT-2 Operators guide, version 2.10
- HPPS Operators guide, Version 2.0 (Covers up to version 3.00 software. Later features are covered in the help files)
- Firmware version 1.30
- USB drivers for the Zetasizer Nano
- Hardware drivers for the HPPS, for both desktop and laptop operation
- Software Update Notifications for all versions of software from version 3.00 to present
- Adobe Acrobat reader