

#6 UV Vis Spectrophotometer Data Management

Introduction

The NanoPhotometer® family of UV Vis spectrophotometers provides a well-structured data management portfolio to store different types of file formats in dedicated folders on different control devices, internal data storage, USB flash drives or network folder. Data saved on the internal NanoPhotometer® memory can easily be shared or transferred to computers or data devices by using an USB, LAN/WLAN or password secured WiFi connection. Furthermore, all data files are automatically stored after each reading to prevent data loss.

File Formats

Measured data can be saved in IDS (Implen Document Source), Excel or PDF format. The proprietary IDS format contains an encrypted copy of all readings from each run and is optimized to archive data for documentation purposes. IDS files can only be opened with the NPOS software. IDS files cannot be altered or changed, however, data can be exported to Excel and PDF at any time for further data analysis or archiving. Excel files provide a summary of all results and method settings when opened (Figure 1A). All absorbance readings from 200 – 900 nm for each sample with graph overlay (Figure 1B) and the corresponding graph for single channel methods are included in individual tabs named after the sample (Figure 1C).

#	Name	Conc.	Units	Method	1/2	A230 (10 nm)	A260 (10 nm)	A280 (10 nm)	Abs.	A260/A280	A260/A230	Dilution
1	Blank 1	0.0000	ng/ml	dsDNA 50.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
2	15.505	16.550	ng/ml	dsDNA 50.00	0.180	0.340	0.224	0.009	1.540	1.936	15	
3	29.545	31.000	ng/ml	dsDNA 50.00	0.291	0.629	0.423	0.009	1.498	2.199	15	
4	60.112	60.000	ng/ml	dsDNA 50.00	0.530	1.226	0.654	0.014	1.443	2.349	15	
5	117.66	117.90	ng/ml	dsDNA 50.00	0.960	2.376	1.709	0.018	1.394	2.503	15	
6	234.43	233.30	ng/ml	dsDNA 50.00	1.831	4.691	3.431	0.025	1.370	2.584	15	
7	468.71	468.45	ng/ml	dsDNA 50.00	3.654	9.409	6.929	0.040	1.360	2.585	15	

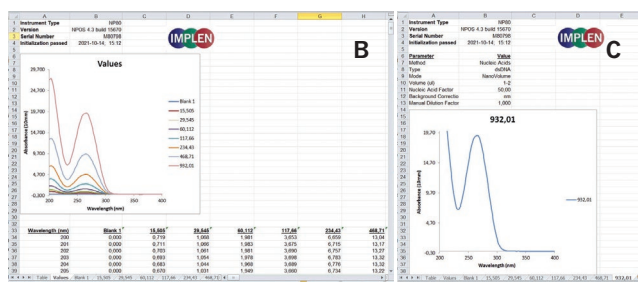


Figure 1: Single spreadsheets for (A) results in table format, (B) graph overlay of all absorbance values in 1 nm increments; (C) each graph (only available for single sample instruments/methods)

PDF files are read-only, cannot be changed or altered, and are optimized for data documentation, printing, and archiving. PDF files display measurement parameters results in table format as well as the graphs from all readings in overlay graph windows.

Data Storage

The NPOS operating system offers multiple data storage options including: internal instrument memory, optional USB flash drive, network folder or control devices. Data can always be stored on the internal 32 GB (NanoPhotometer® N120: 128 GB) instrument memory providing space for around 50,000 data sets (data set (IDS, Excel and PDF) depending on method and number of measurements). Optional saving is possible on a connected USB flash drive or a network folder.

To set up a network folder in the NanoPhotometer® preferences, the NanoPhotometer® needs to be connected to the local network either via LAN or WLAN. If a control device like a computer, tablet or smartphone is used, data (Excel or PDF) can be stored directly on the control device for easy data access, transfer, and downstream data analysis.

The NPOS software offers a file directory in Stored Results with access to all NanoPhotometer® folders, USB flash drive, and network folder depending on connection. Files and/or folders may be easily copied or moved between all available storage locations.

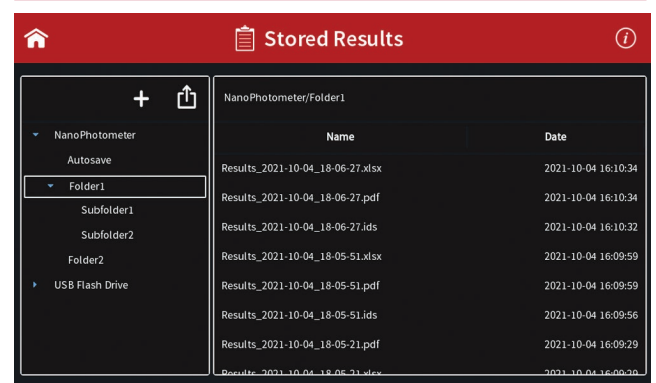


Figure 2: UV Vis Spectrophotometer File Directory NPOS Software

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Autosave

To prevent data loss, all measurements are automatically stored as IDS files on the internal memory of the NanoPhotometer® right after each reading. These backup copies can be accessed in the Autosave folder (StoredResults /NanoPhotometer/ Autosave) on the device for up to ten days. Files contain the base name Backup, the method name, and a time/date stamp. After ten days the autosave files are moved to an Autosave Archive folder for long term backup. The Autosave Archive folder can only be accessed via the file server option.name, and a time/date stamp.

Data Transfer via File Server

All data saved on the NanoPhotometer® can easily be accessed from and transferred to a computer within the lab through LAN/WLAN, USB cable, or a password secured WiFi Hotspot connection. File server access can be restricted by activating password protected user accounts in Preferences.

File Server Access via LAN/WLAN:

The NanoPhotometer® needs to be connected to the local network (Preferences). For file server connection the serial number or the NanoPhotometer® IP needs to be entered in the address bar of the Windows Explorer (e.g. \\M80798\ or \\Assigned IP Address\). For Mac OS X open the “Connect to Server” dialog in the “Go” menu of the Mac OS X Finder and enter the serial number or the NanoPhotometer® IP address in the server address field to connect.

File Server Access via USB cable:

The NanoPhotometer® needs to be connected with a USB A/B cable to the computer and \\192.168.7.1\ entered in the address bar of the Windows Explorer or server address field in the Connect to Server option (Mac).

File Server Access via WiFi:

The WiFi Hotspot needs to be activated in the NanoPhotometer® Preferences and the computer connected to the NanoPhotometer® WiFi Hotspot (SSID: NanoPhotometer® serial number; password: Implenuser). Enter \\192.168.8.1\ to the address bar of the Windows Explorer or on Mac in the server address field of the Connect to Server option.

UV Vis Spectrophotometer Printing

The NPOS software allows printing of full page reports on HP printers via USB and through a network connection. Adhesive labels and cryo labels can be printed on DYMO label printers. Supported printers include AirPrint/IPP version 2.2 compatible printers supporting PDF format, printers with HP universal printer driver capability and DYMO LabelWriter 4XL (label size 10.3 x 15.8 cm) and the DYMO LabelWriter 450 (5.4 x 10 cm and cryo label 26 x 12.7 mm and 9.5 mm circle (landscape).

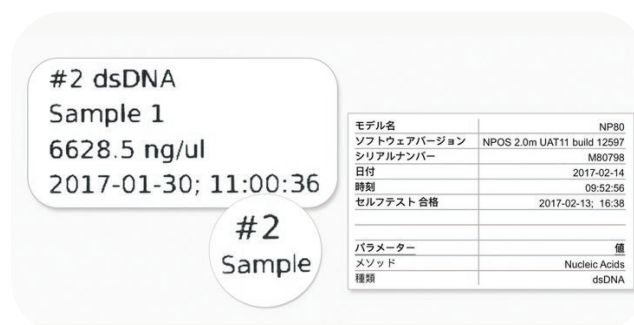


Figure 3: Label printing