

# UV/VIS Spectrophotometers



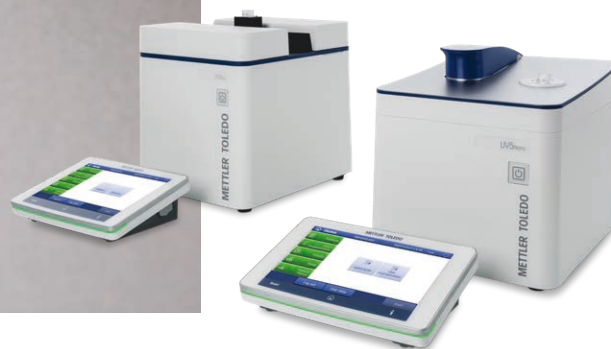
**Excellence UV/VIS  
Spectrophotometers**

UV5Bio

UV5Nano



reddot design award  
winner 2016



## **FastTrack™ UV/VIS Spectroscopy** Designed for Life Sciences

**METTLER TOLEDO**

# OneDrop UV/VIS Spectroscopy

## Minimize Sample, Maximize Performance

The UV5Nano is the micro-volume spectrophotometry specialist for life science applications. FastTrack™ UV/VIS technology makes the instrument a powerful, compact stand alone device, which can be easily operated thanks to the One Click™ user interface. The automatic pathlength selection allows measurements over a large concentration range with only 1  $\mu\text{L}$  of sample. Just pipette and measure!

### Save precious sample



Micro-volume UV/VIS measurement is the method of choice if small sample amounts or if high absorption samples need to be measured. Only 1  $\mu\text{L}$  of sample is required for reliable measurements. The pure sample is pipetted on the measurement surface and the arm is automatically locked to a precisely defined pathlength. Measurement errors are avoided as the sample does not need to be diluted.

### Measure wide concentration ranges fast and precisely

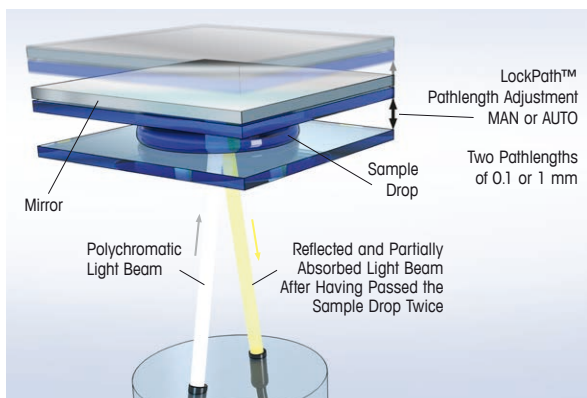


LockPath™ enables the measurement of wide concentration ranges from 6 to 15,000 ng/ $\mu\text{L}$  of dsDNA without further dilutions. This and measurement accomplishment within 2 seconds per pathlength saves a lot of precious time. The arm design effectively prevents drying out of sample during measurement, which stabilizes measurement repeatability.

### Powerful applications wrapped in ergonomic design



The UV5Nano is two instruments in one for micro-volume and cuvette based measurements. Once the arm is at 90 degrees position the measurement surface can be easily accessed with a pipette from either the left or the right side. The curved lid on top of the instrument allows convenient positioning of the operator's hand to securely guide the pipette tip.



**Avoid errors with LockPath™**

LockPath makes sure that the available pathlengths at 0.1 and 1 mm are accurately defined. Thanks to the rugged patented design, pathlength drift is excluded, which eliminates expensive recalibration and downtime. The arm is securely locked and cannot be opened until the measurement is completed. Measurement errors are minimized and result accuracy is ensured.

# Speed up Your Measurements

## Optimize Your Analytical Workflow

The UV/VIS Excellence instruments for Life Sciences effectively optimize spectroscopic workflows as the instruments are always ready for measurement. Smart automation accessories automate applications efficiently and the PC Software LabX<sup>®</sup> fosters fast spectral data management. Ergonomic RAININ pipettes support convenient and secure sample pipetting in the micro-volume platform of the UV5Nano.

### An instrument at the ready



FastTrack UV/VIS technology guarantees that the instrument is ready at all times. No warm up time is needed for the Xenon flash lamp to reach stability, which speeds up measuring time. As the lamp is only used for real measurements, its lifetime is greatly increased.

### High workflow efficiency with automation



Sample loading is easily automated with the FillPalMini, which pumps the sample safely into the flow cell. It can also be used for sample recovery and cuvette cleaning. Multiple samples are efficiently analyzed using the Plug & Play CuvetteChanger, including the measurement of sample series on the UV5Bio.

### Manage your spectral data quickly and securely



LabX UV/VIS PC software expands the UV5Nano and UV5Bio with a sophisticated graphical editor for spectra evaluation. Data analysis and management are simplified in one software package, with no need to have a PC close to the instrument. Choose where to work: at the terminal or at the LabX PC.



### **Pipetting sticky samples smoothly**

Sticky and viscous liquids such as DNA or proteins can be easily pipetted with the new Low Retention (LR) tips from METTLER TOLEDO. The advanced repellent surface of the tip allows liquids to glide effortlessly for precision pipetting. By minimizing the residual sample volume in the LR tips the accuracy of the pipetting system is improved.

# As Easy as it Gets

## Simple One Click™ Operation

The Life Science UV/VIS Excellence instruments include One Click, an easy and intuitive way to run tasks from the terminal. The large, seven inch high-resolution terminal provides clear color representation of spectra and results at a glance. The user is always securely guided through step-by-step instructions. UV/VIS spectroscopy in Life Sciences has never been so quick to learn and easy to use.

### Easy configuration and shortcuts



One Click UV/VIS Spectra – the home screen shortcuts allow you to start such tasks as direct measurements or manual operations with just One Click. Irrespective of which submenu you are in, one keystroke takes you directly back to the home screen. With this intuitive interface, even customizing shortcuts is easy.

### Ready-to-use Life Sciences applications



Choose pre-programmed life science applications for an instant start; select either direct measurements or METTLER TOLEDO methods. Where required, these parameters and calculations can be adapted with a self-explanatory editor to meet specific automation workflows. Both direct measurements and dedicated methods can be started by One Click shortcuts.

### Unsurpassed user guidance



The user interface is intuitive and ensures efficient handling. With a large crisp touchscreen and clever usage of colors, spectra and results are clearly represented. For a closer look, pinching or stretching with two fingers on the touchscreen quickly zooms in on spectrum details, even when wearing protective gloves.



### **Keeping the overview**

One glance at the terminal's StatusLight and you know whether measurement is running or needs attention - even from a distance. Meaningful instructions displayed on the terminal seamlessly guide you through the measurement workflow.

# Trust Your Results

## Ensure and Maintain High Performance

**UV/VIS Excellence instruments are made to last; their high performance is stable throughout their entire life cycle. FastTrack UV/VIS technology ensures exceptional ruggedness and optical performance. Precision can be verified with traceable, certified reference substances. The correct installation, usage and maintenance of the instrument are supported by the unique Good UV/VIS Practice (GUVP™) services, giving you peace of mind in your daily tasks and confidence in your results.**

### Keeping track of accuracy, automatically



The CertiRef™ allows to quickly and easily verify the performance of the UV5Bio. It automatically verifies the resolution, photometric and wavelength accuracy, and stray light. Certified reference materials traceable to NIST are used and a comprehensive report documents all results. Performance verification has never been so easy, efficient and secure.

### High performance, low maintenance



Exceptional ruggedness and reliability, thanks to the lack of moving parts in the optical section, long-lasting Xenon flash lamp and state-of-the art optical fibers. Their flexible connectivity to printers, PC, storage devices and barcode scanners, makes UV/VIS Excellence instruments a sound, sustainable investment for the future.

### Secure measurement quality



Good UV/VIS Practice GUVP provides comprehensive services that include installation and operational qualification, performance qualification recommendation, definition of maintenance qualification including calibration and LabX software validation support. GUVP covers the entire lifecycle of the instrument and helps to improve quality while reducing risks and costs.





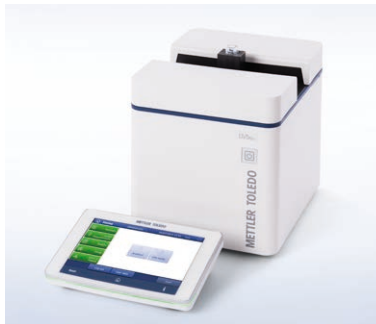
### **Ready at the start**

Each UV/VIS Excellence instrument is shipped ready for immediate use, no need for adjustment during installation. Simply power up the system and measure!

# Comparison Table

## UV5Bio – UV5Nano

**The UV/VIS Excellence instrument line for Life Science applications includes one model for conventional cuvette measuring techniques and one dedicated to micro-volume measurements.**



### **UV5Bio – the Life Science Specialist**

The UV5Bio is a dedicated instrument for standard cuvette measurements in life sciences. It includes a 7-inch touchscreen terminal and a 1 cm standard cuvette holder. It comes with a wide range of pre-defined direct measurement applications and METTLER TOLEDO methods that are tailor-made for Life Sciences (biotech and biopharma), e.g. concentration determination of nucleic acids and proteins. The One Click™ interface provides intuitive and efficient ShortCut operation.



### **UV5Nano – the Life Science Micro-Volume Master**

The UV5Nano allows micro volume measurement with only 1 µL of sample as well as standard cuvette applications. LockPath™ secures precise and accurate micro volume measurements. As with the UV5Bio it comes pre-loaded with direct measurement applications and METTLER TOLEDO methods. It provides the same optical performance as the UV5Bio.

## Tailored to Your Needs

### Life Sciences-specific Applications

**Ready-to-use direct measurement applications and METTLER TOLEDO methods cover a large selection of typical measuring modes and workflows for the Life Sciences.**



- Nucleic acid analysis: 260/280 nm ratios (with optical reference at 320 nm) for nucleic acid purity
- Protein analysis: Biuret (Modified) Lowry, Bradford, bicinchoic acid, and trinitrobenzene sulfonate protein quantification methods
- Kinetics tests such as enzyme activity
- Standard cuvette or micro-volume down to 1 µL sample size

## Feature comparison UV5Bio/UV5Nano Excellence Line

	Feature / Parameters	UV5Bio	UV5Nano
<b>Optical performance</b>	Wavelength range [nm]	190–1100	190–1100
	Resolution (toluene in hexane)	>1.5	>1.7
	Wavelength accuracy (measured with NIST2034 holmium oxide) [nm]	±0.9	±0.9
	Wavelength repeatability (measured with NIST2034 holmium oxide) [nm]	<0.15	–
	Photometric accuracy (measured with NIST935 potassium dichromate) [A]	±0.005 (≤1A)	±0.006 (≤1A)
	Photometric accuracy (measured with NIST930/1930 neutral density filter) [A]	±0.005 (≤1A)	–
	Photometric repeatability (measured with NIST935 potassium dichromate) [A]	<0.002	<0.003
	Photometric repeatability (measured with NIST930/1930 neutral density filter) [A]	<0.003	–
	Stray light at 198 nm (measured with KCl)	>2.0A (<1.0% T)	>1.7A (<2.0% T)
	Stray light at 220 nm (measured with KI)	>3.5A or <0.03% T	>3.5A or <0.03% T
	Stray light at 340 nm (measured with NaNO <sub>2</sub> )	>3.7A or <0.02% T	>3.7A (<0.02% T)
	Noise [A]	<0.002	<0.003
	Baseline flatness [A]	<0.002	<0.003
	Tested according to USP and Ph. Eur.	no	no
Minimal scan time full range [s]	1	1	
<b>One Click™ UV/VIS spectroscopy</b>	Shortcuts per user	24	24
<b>Temperature control</b>	CuveT thermostating unit	•	–
<b>Automation</b>	Peristaltic pump FillPalMini	•	•
	CuvetteChanger	•	–
	InMotion Sample Changer	•	•
	CertiRef™ automatic performance verification	•	–
	LinSet™ automatic linearity verification	–	–
	Peristaltic pump SPR200	•	•
<b>Applications and methods</b>	Direct measurements	5	5
	Pre-defined METTLER TOLEDO methods	22	21
	Method editor	•	•
	Max. number of methods	50	50
	Pre-defined bio applications: Protein, nucleic acids, protein (dye), nucleic acids (dye), protein assay, OD600	•	•
	Pre-defined shortcuts for bio applications: dsDNA, RNA, Protein 280, Bradford, Lowry, OD600	•	•
<b>Results</b>	Number of results stored in instrument	50	50
	Result storage on USB stick	•	•
	Result transfer via TCP on remote PC	•	•
<b>PC software</b>	LabX® UV/VIS software	•	•
<b>Languages</b>	English/German/French/Spanish/Italian/Chinese/Russian/Portuguese/Japanese	•	•
<b>Connectivity</b>	USB memory stick storage of results at terminal	•	•
	USB devices (bar code reader, printer)	•	•
	Ethernet (PC, network printer)	•	•
	RS232-C Interface	•	•
<b>Terminal</b>	7" QVGA Color TFT 800 x 480 resolution touch sensitive screen	•	•
<b>Instrument dimensions</b>	Width x depth x height (without terminal) [mm]	208 x 255 x 228	208x255x217
	Weight incl. terminal [kg]	6.4	7.2

The data above apply to hardware version 2 and firmware 3.0.1 or later.

# Accessories

## Software



### LabX® UV/VIS PC Software

Full instrument control, FDA 21 CFR part 11/EU annex 11 compliance and system integration.

## Printer



USB-P25, -P56, -P58 compact printer and HP and EPSON protocol network printer.

## Performance verification



### CertiRef™ and LinSet™ modules

Automated performance verification module with certified standards, compliant with Ph. Eur. and USP.

## Cuvettes & cuvette holder



**Cuvettes:** 1 cm, 5 cm pathlength optical and quartz glass, 700 µL micro cell quartz glass, 440 µL flow cell quartz glass.

**Holders:** 1 cm, long pathlength, solid sample, tube.

## Automation



**CuvetteChanger:** Up to 8 cuvettes, thermostatable.

**FillPalMini:** Peristaltic pump, to be used with flow cell cuvette.

**InMotion:** For automatic sampling.

## Data input, user identification



RAININ Pipet-Lite XLS+ pipette with Low Retention tips. For secure sample pipetting of sticky samples. For the UV5Nano.

[www.mt.com/UV-VIS](http://www.mt.com/UV-VIS)

For more information

## METTLER TOLEDO Group

Analytical Division  
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Marketing UV/VIS / MarCom Analytical



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