

Lumilux 5100

Fluorescence Spectrometer

The SCINCO Lumilux 5100 fluorescence spectrometer offers unparalleled sensitivity for precise and accurate measurements.



Lumilux 5100

Fluorescence Spectrometer

Illuminate Your Science

The SCINCO Lumilux 5100 fluorescence spectrometer offers unparalleled sensitivity for precise and accurate measurements. Elevate your analysis to a new level of clarity with its industry-leading 0.5 nm spectral bandwidth for both emission and excitation measurements.

Our extensive line of accessories enables you to build a complete laboratory system, while the LuxMaster software empowers you to move seamlessly from data acquisition to results reporting.





Lumilux 5100

Fluorescence Spectrometer

From life sciences to materials, photophysics to quantitative analysis, the Lumilux 5100 fluorescence spectrometer is designed to provide the research-quality data you need at scan speeds of up to 60,000 nm/min.

Designed and manufactured to the highest standards, it offers both high sensitivity and throughput in a rugged and reliable system.

The resourceful SCINCO LuxMaster software makes data acquisition, analysis and reporting straightforward. With features such as fluorescence, chemi/bio luminescence, and phosphorescence measurements, simultaneous excitation and emission spectra using two independent monochromators, and various sample measurement modes (Prescan, Spectra Scan, Kinetics, Lifetime, Quantification, Single Read, and Synchronous Scan), you can quickly move from spectra to answers.

Our software's auto-recognition feature allows you to easily switch between a wide range of optional accessories without any downtime, increasing sample throughput and productivity. Qualification documentation is also available to assist with instrument qualification.

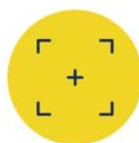
We understand that your laboratory requires more than just an instrument, which is why we offer a complete fluorescence system that includes software and various accessories to create a flexible instrument for shared research laboratories or a dedicated QA/QC.

A Complete System



High-Resolution System

The Lumilux 5100 uses 20 cm focal length monochromators to deliver a narrow, 0.5 nm spectral bandwidth for high resolution measurements. Its independent excitation and emission monochromators provide efficient acquisition of both spectra, as well as synchronous scan capabilities.



Fast Scanning Drive

Acquire data at speeds up to 60,000 nm/min with the precision wavelength drive of our fluorescence spectrometer. Streamline synchronous and 3D experiments to maximize your sample throughput.



Variable Spectral Bandwidth

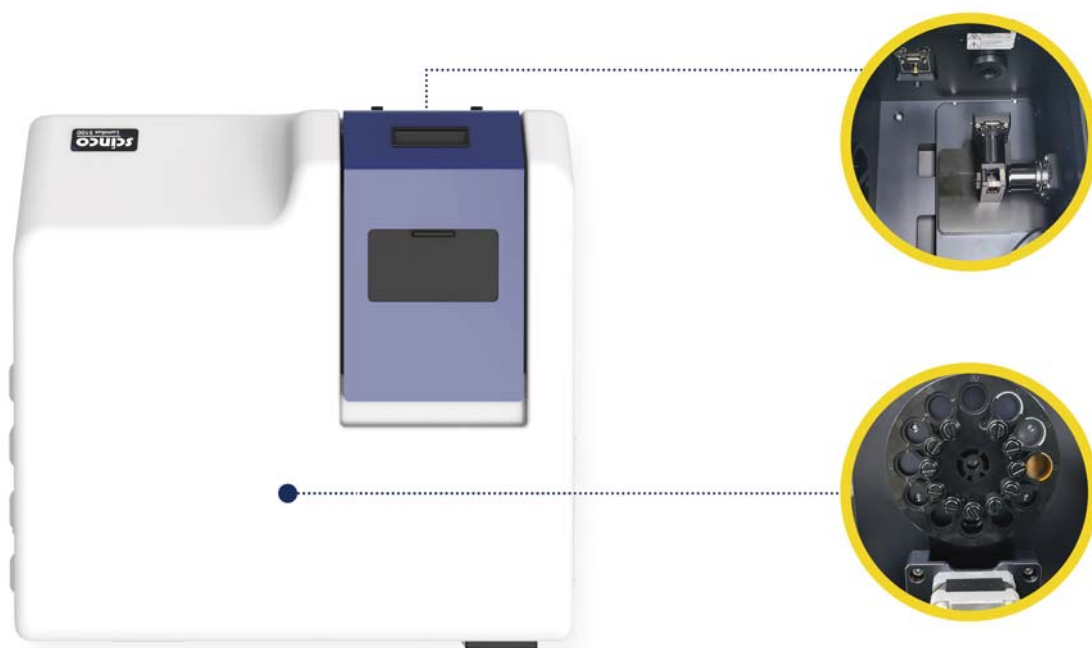
Match the resolution you need with the compound you are analyzing by selecting the appropriate spectral bandwidth for your measurement. Choose from 0.5, 1.0, 2.5, 5.0, 10, or 20 nm bandwidths for both excitation and emission monochromators.



Powerful Illumination

Experience consistent and intense illumination throughout the full wavelength range, from UV to near-IR, with the ozone-free 150 W Xenon lamp.





Customizable Filters

Easily customize your measurements with the automated 12-slot filter wheels that accept standard 12.5 mm round filters. Longpass filters are included to block excitation and scattered light, ensuring high spectral purity. The system comes with standard 290, 370, and 530 nm excitation filters, and 320, 430, and 515 nm emission filters, but additional filters and polarizers can be easily added to suit your specific measurement needs.



Horizontal Beam Geometry

Our fluorescence spectrometer features a horizontal beam geometry that provides optimum excitation to deliver the maximum fluorescence signal. Accurate measurements can be made with only 5 uL sample.



Large Sample Compartment

The Lumilux 5100's large sample compartment easily accommodates accessories for temperature control, multi-cell holders, integrating sphere, microplate reader, and polarization accessories. This allows you to customize the system to suit your specific applications and obtain the expected results from a high-resolution spectrometer.



Sensitive Detector

The Lumilux 5100 features a high-performance R-928 PMT detector with an extended measurement range of 190 to 900 nm, providing unparalleled sensitivity for the analysis of near-IR dyes, chlorophyll, or phthalocyanine compounds.

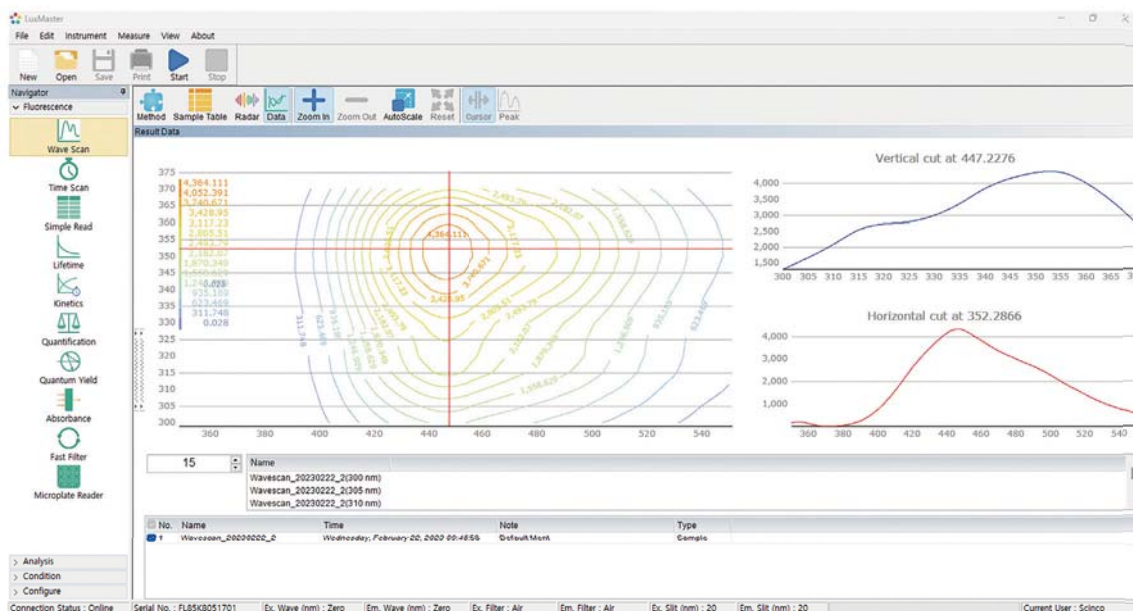
Powerful Software



The LuxMaster software provides comprehensive control over the Lumilux 5100 fluorescence spectrometer and its accessories. With integrated data acquisition and post-run spectral analysis, system validation, and diagnostic testing, LuxMaster offers a seamless platform for all your fluorescence measurements. The intuitive method setting allows you to easily configure measurement parameters, and the full suite of data processing tools enables in-depth analysis of your results. Moreover, LuxMaster allows for customization of reports, making it easy and effective to share your findings with others.

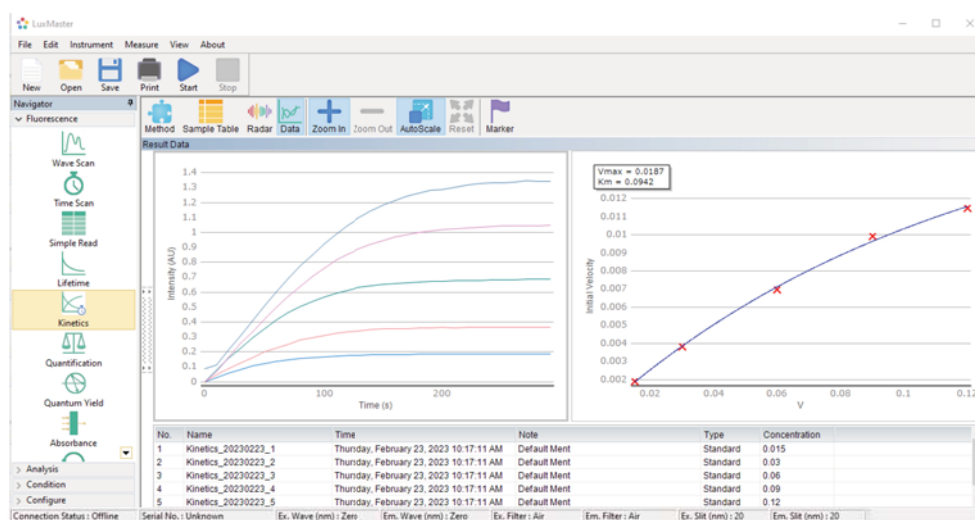
Wave Scan

- Full spectrum display (190 – 900 nm)
- Measurement of fluorescence, phosphorescence, and bioluminescence
- Analysis of mixtures with synchronous mode
- Automatic or manual identification of up to 50 peaks or valleys
- 3D scan mode for in-depth analysis of excitation and emission spectra



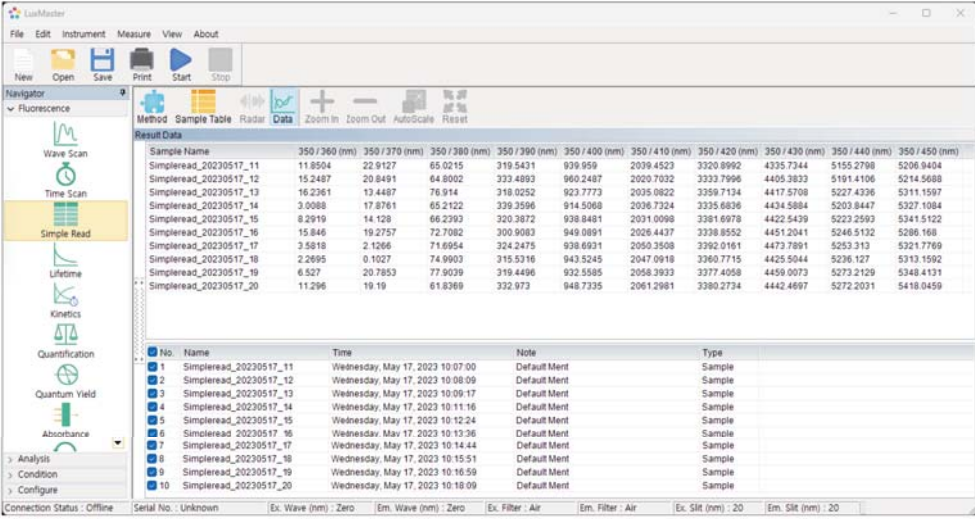
Time Scan / Lifetime / Kinetics

- **Time Scan** : Time-based analysis for studying dynamic changes in fluorescence signals over time
- **Lifetime** : Automatic calculation of phosphorescence lifetime of samples
- **Kinetics** :
 - Analysis of reaction rates using various kinetic models such as Initial Rate, Zero Order, First Order, and Delta AU
 - Measure reaction rate of enzyme-catalyzed reactions based on substrate concentration for studying enzyme kinetics
 - Calculation of Km and Vmax from each plot for determining enzyme parameters
 - Offer various analysis models such as Michaelis-Menten, Lineweaver-Burk, Hanes-Woolf, and Eadie-Hofstee for comprehensive kinetic analysis



Simple Read

- Quick and easy measurement at selected wavelengths for rapid data acquisition

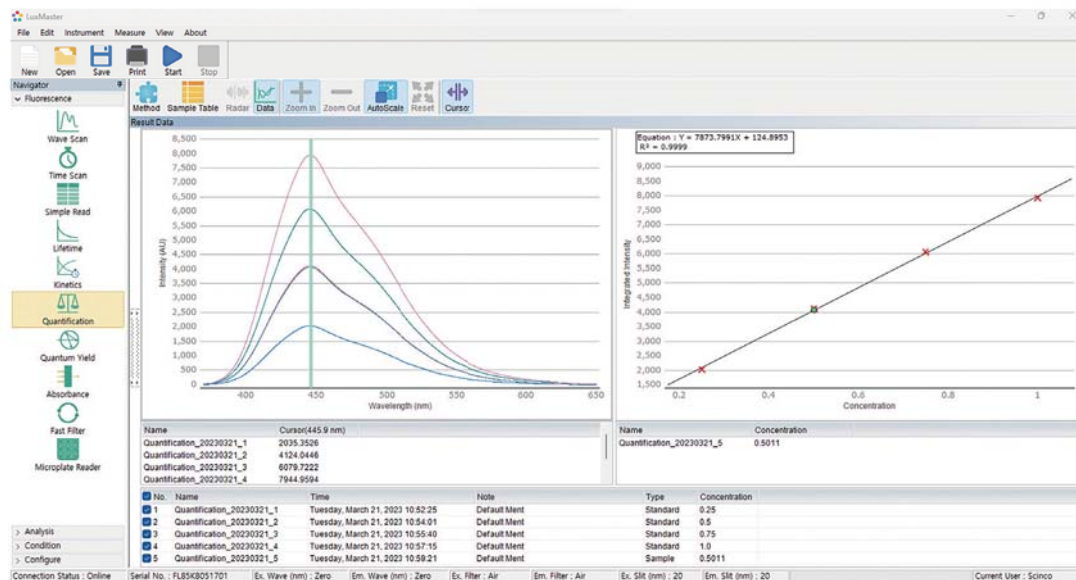


Sample Name	350 / 360 (nm)	350 / 370 (nm)	350 / 380 (nm)	350 / 390 (nm)	350 / 400 (nm)	350 / 410 (nm)	350 / 420 (nm)	350 / 430 (nm)	350 / 440 (nm)	350 / 450 (nm)
SimpleRead_20230517_11	11.8504	22.9127	65.0215	319.5431	939.959	2039.4523	3320.8992	4335.7344	5155.2798	5206.9404
SimpleRead_20230517_12	15.2487	20.8491	64.8002	333.4893	960.2487	2020.7032	3333.7996	4405.3833	5191.4106	5214.5688
SimpleRead_20230517_13	16.2361	13.4487	76.914	316.0252	923.7773	2035.0822	3359.7134	4417.5708	5227.4336	5311.1597
SimpleRead_20230517_14	3.0068	17.8761	65.2122	339.3596	914.5060	2036.7324	3335.6836	4434.5884	5203.8447	5327.1084
SimpleRead_20230517_15	8.2916	14.128	66.2393	320.3872	938.8481	2031.0098	3381.6978	4422.5439	5223.2593	5341.5122
SimpleRead_20230517_16	15.846	19.2757	72.7082	300.9083	949.0891	2026.4437	3338.8552	4451.2041	5246.5132	5286.168
SimpleRead_20230517_17	2.5818	2.1266	71.6954	324.2475	938.6931	2050.3508	3392.0161	4473.7891	5253.313	5321.7769
SimpleRead_20230517_18	2.2695	0.1027	74.9903	315.5316	943.5245	2047.0918	3360.7715	4425.5044	5236.127	5313.1592
SimpleRead_20230517_19	6.527	20.7853	77.9039	319.4496	922.5585	2058.3923	3377.4058	4459.0073	5273.2129	5348.4131
SimpleRead_20230517_20	11.296	19.19	61.8369	332.973	948.7335	2061.2981	3380.2734	4442.4697	5272.2021	5418.0459

Powerful Software

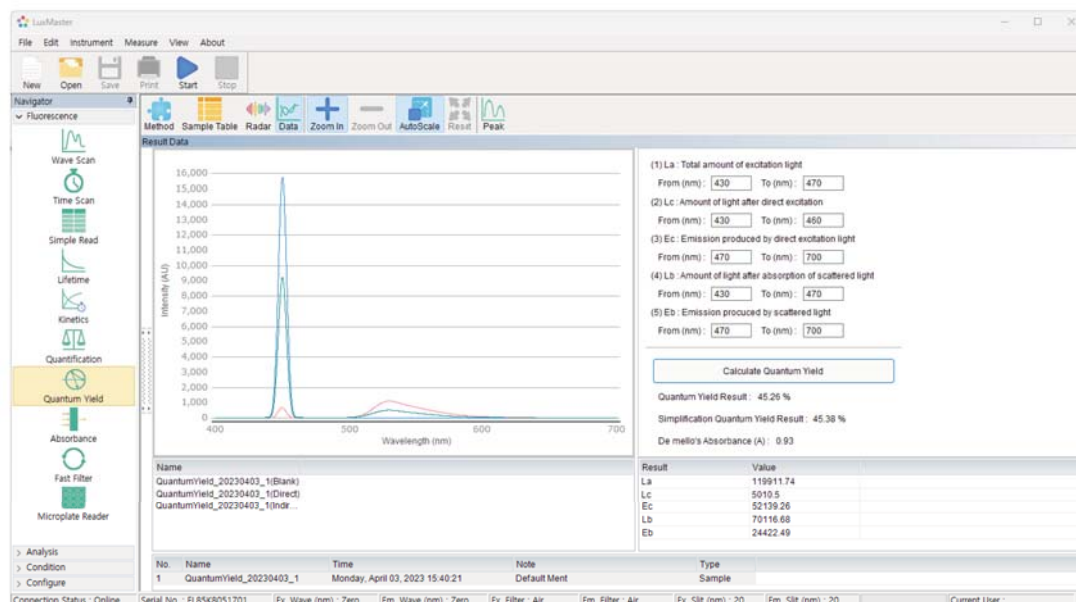
Quantification

- Selectable wavelength or scan method
- Provide options for first, second, and third-order curve fitting to data for accurate quantification
- Automatically calculate the concentration of unknown samples
- Ability to change the wavelength for creating a calibration curve after measuring standard samples



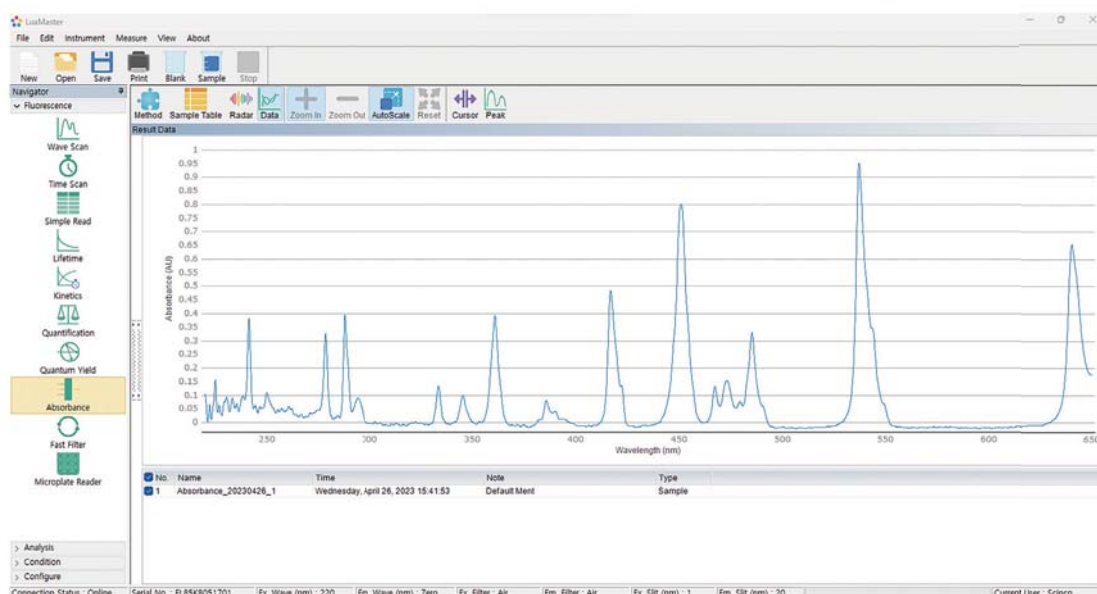
Quantum Yield

- Measure absolute quantum yield of samples
- Automatically calculate quantum yield
- Recalculate quantum yield data by loading the saved data
- Offer valuable insights into the quantum efficiency of samples for various applications, such as material characterization, chemical analysis, and biological research



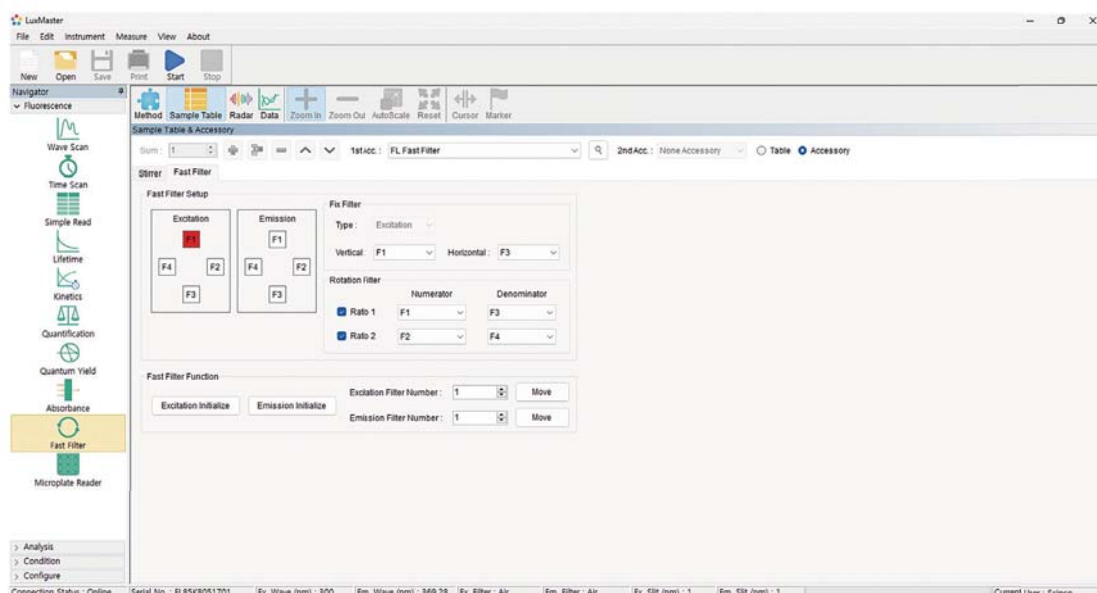
Absorbance

- Selectable wavelength or scan method
- Wavelength mode : Measure absorbance at a selected wavelength, allowing for quick and specific measurements
- Scan mode : Display complete absorbance spectrum across the full wavelength range of 190 - 900 nm



Fast Filter

- Enable rapid acquisition of ratiometric data using the Fast Filter accessory, allowing for real-time monitoring of intracellular ion concentrations, such as Ca^{2+} and Mg^{2+}
- Polarization and anisotropy measurements providing valuable insights into the structure and dynamics of fluorescent molecules



Condition

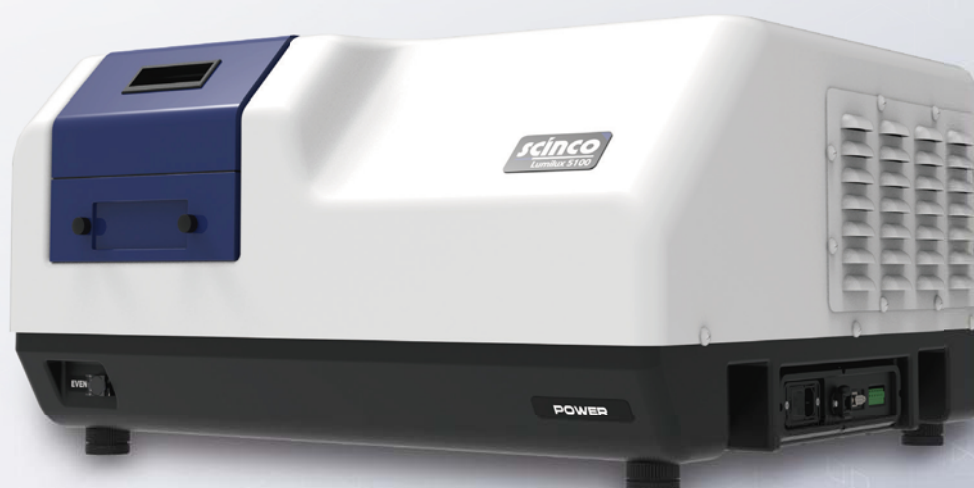
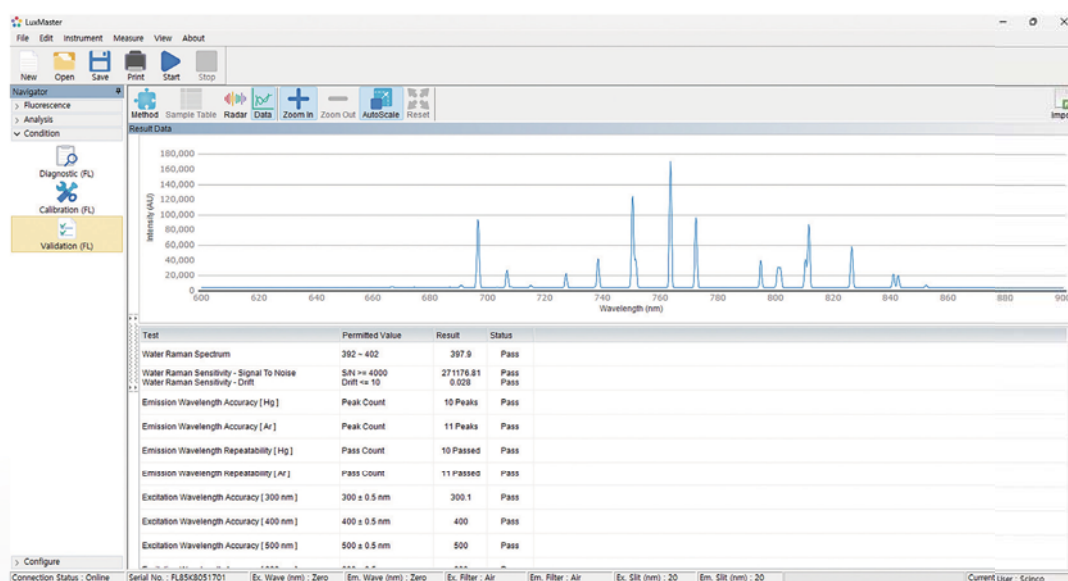
Diagnostic / Validation

• Diagnostic

Equipment status can be periodically checked through simple measurements

• Validation

- The Validation Wizard in the Validation Software for LuxMaster can verify the instrument performance
- The 4Q document covers the Design, Installation, Operation and Performance Qualification
- Various tests such as Water Raman, Sensitivity, Wavelength Accuracy, Wavelength Repeatability, and Stray Light Test can be performed



Various Accessories

The Lumilux 5100 has a broad range of accessories to support various applications.

Single Cell



FL Single Cell Holder



Water Jacketed
FL Single Cell Holder



Water Jacketed FL Single
Cell Holder w/ Stir

The single cell holder can accommodate standard cuvettes / cells with dimensions of 12.5 x 12.5 mm.
Optional temperature control through a water bath, as well as stirring, is available.

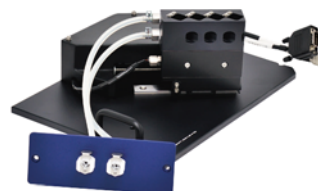
4 Pos Multi-Cell



4 Pos FL Multi-Cell Holder



4 Pos Water Jacketed
FL Multi-Cell Holder



4 Pos Water Jacketed
FL Multi-Cell w/ Stir

Accommodate up to 4 cuvettes / cells simultaneously and is controlled through the LuxMaster software.
Optional temperature control through a water bath, as well as stirring, is available.

Micro Cell



FL Micro Cell Holder



Water Jacketed FL Micro Cell Holder w/ Stir



Micro Cells

Adjustable micro cell holder (8.5 mm to 15 mm center/z height of cell) used with microcell cuvettes allows to measure the volume as low as 5 μ l. Optional temperature control through a water bath, as well as stirring, is available.

Peltier Accessory



Peltier Temp.
Controller



FL Single Cell
Peltier Holder



4 Pos FL Multi-Cell
Peltier Holder



FL Peltier Powder
Sampling Accessory

Deliver the power of Peltier temperature control for extreme temperature accuracy and reproducibility from -5 to 100 $^{\circ}$ C. Temperature probe accessories allow you to monitor temperature in two cuvettes during measurement.

Various Accessories

The Lumilux 5100 has a broad range of accessories to support various applications.

Solid Sample Holder



FL Solid Sample Holder



FL Variable Angle
Solid Sample Holder



FL Precision Cell for
Powder Sample

Useful for the measurement of high-concentration liquid, powders, films, paper, plastic samples, etc. Optional Quartz Powder Cell is available.

Allow for complete 360 degree rotation and enables the measurement of high-concentrated liquid, powders, films, paper, plastic samples, etc. Optional Quartz Powder Cell is available.

Microplate Reader



Microplate Reader



Microplate Reader
Cover



Microplate Reader
Thermostatic Accessory

Enable high-throughput screening of proteins and enzymes with 96 or 384 well plates on the Microplate Reader. Optional temperature control through a water bath and Microplate Reader Thermostatic Accessory is available.

Rapid Mixing Accessory



Rapid Mixing Accessory



Rapid Mixing Accessory w / Pneumatic Drive

The Lumilux 5100 enables the measurement of reaction kinetics in solution using the stopped-flow technique, with its 20 microsecond data acquisition time providing accurate kinetic data. The pneumatic drive allows for push-button operation and ensures high accuracy for zero time measurements.



FL Integrating Sphere

Enable measurement of absolute quantum yield for liquid and powder samples.



FL Absorbance Module

The photo diode detector mounted on the accessory enables measurement of sample absorbance in the UV-Vis range.

Various Accessories

The Lumilux 5100 has a broad range of accessories to support various applications.

Fast Filter



FL Fast Filter



FURA-2 Filters : Excitation: 340/380 nm, Emission: 510 nm



INDO-1 Filters : Excitation: 351 nm, Emission: 400/480 nm



Wire Grid Polarizer VIS or UV-VIS Range

Used for fast data acquisition in the biochemical studies, such as intracellular ion concentration calculation using various ion probes (FURA-2, INDO-1, etc.). Additionally, polarization and anisotropic applications are available by mounting polarizers on the accessory.

Polarizer Accessory



UV-Vis/Vis Automated Polarizer FL



FL Manual Polarizer Holder

Useful for measuring polarization and anisotropy, the instrument offers the option of using either automated polarizer filters that can be easily installed in the inner filter wheel or a manual polarizer accessory.



FL Fiber Optic Probe

Well-suited for the measurement of liquid and powder samples and is commonly used for process and on-line monitoring applications.



FL Low Temperature Sampling Accessory

Allow for the measurement of fluorescence and phosphorescence at cryogenic temperatures using liquid nitrogen.



FL Auto Sipper

Provide complete software control for automation of liquid sampling.

Wide Range of Applications

Fluorescence measurements provide valuable insights into molecular properties and behavior through a spectroscopic window. The SCINCO Lumilux 5100 fluorescence spectrometer offers exceptional sensitivity and high resolution for accurate and reliable performance in both research and routine laboratory analysis. The Lumilux 5100 is suitable for a wide range of applications, meeting the demands of various scientific fields.



Material Characterization

- Analysis of fluorescence characteristics of organic and inorganic materials
- Development of versatile materials using Quantum Dots
- Study of the excitation and emission spectra of LED, OLEDs, and high-intensity fluorescence for displays
- Characterization of nanoparticles and nanostructures



Analytical Chemistry

- Identification and detection of fluorescence materials
- Analysis of chemical reactions
- Verification of characteristics in the excited state
- Measurement of quantum yield and phosphorescence lifetime



Life science

- Basic research on biological reactions
- Quantification of DNA, RNA, and proteins
- Enzyme activation analysis
- Investigation of protein-DNA/RNA interactions using polarization, FRET, BRET, etc.
- Measurement of intracellular ion concentration using various ion probes (FURA-2, INDO-1, etc.)



Pharmaceutical

- Analysis of structural information of chromosomes
- Morphological research of the viruses
- In vivo mechanism and concentration distribution tracing of antibiotics



Environment

- Quantification of fluorescence whitening agents
- Distribution analysis of organic compounds in water samples
- Highly sensitive detection and distinction of organic and inorganic toxic materials in air, water, soil, and other environmental samples
- Characterization of crude oils and Polycyclic Aromatic Hydrocarbons (PAHs) present in water, soil, seawater, and other environmental samples
- Measurement of chlorophyll a and b
- Determination of aluminum concentration in water samples



Foods

- Assess food quality and nutrient conditions in the agriculture and food industries
- Measure histamine levels for food safety confirmation
- Quantify vitamin concentration in food



Others

- Qualifying the spreading condition of paint, polymer, fluorescence brightening agent, etc.
- Identifying counterfeit currency, passport, driver licenses, etc.

Specifications

Lumilux 5100	
Light Source	150 W Xenon-Arc Lamp
Detector	Photodiode for reference PMT for Excitation and Emission Spectrum
Monochromator	1,200 grooves/mm
Slit Width	0.5, 1, 2.5, 5, 10, 20 nm
Wavelength Range	190 - 900 nm for Excitation and Emission
Wavelength Accuracy	$\leq \pm 0.5$ nm
Wavelength Repeatability	≤ 0.2 nm
Wavelength Scan Speed	Max. 60,000 nm/min
Sensitivity	4000 : 1 (RMS) 1000 : 1 (Peak to Peak)
Interface	USB
Dimensions	66 (W) x 64 (D) x 36 (H) cm
Weight	approx. 47 Kg
Power Requirements	100 - 240 V at 50/60 Hz

Computer Requirements

LuxMaster	
Processor	Intel® Core i3 CPU or faster processor
RAM	At least 4GB
Communication	USB Port
Operating System	Microsoft® Windows 10 or 11

Warranty

One-year full warranty provided for the complete system



SCINCO

627, Bongeunsa-ro, Gangnam-gu, Seoul 06083 KORFA **Tel** +82-2-2143-8200 **Fax** +82-2-2143-8355

R&D Center / Daejeon Office

746, Daedeok-daero, Yuseong-gu, Daejeon 34055 KOREA **Tel** +82-42-610-7400 **Fax** +82-42-610-7500



www.scinco.com



scinco@scinco.com