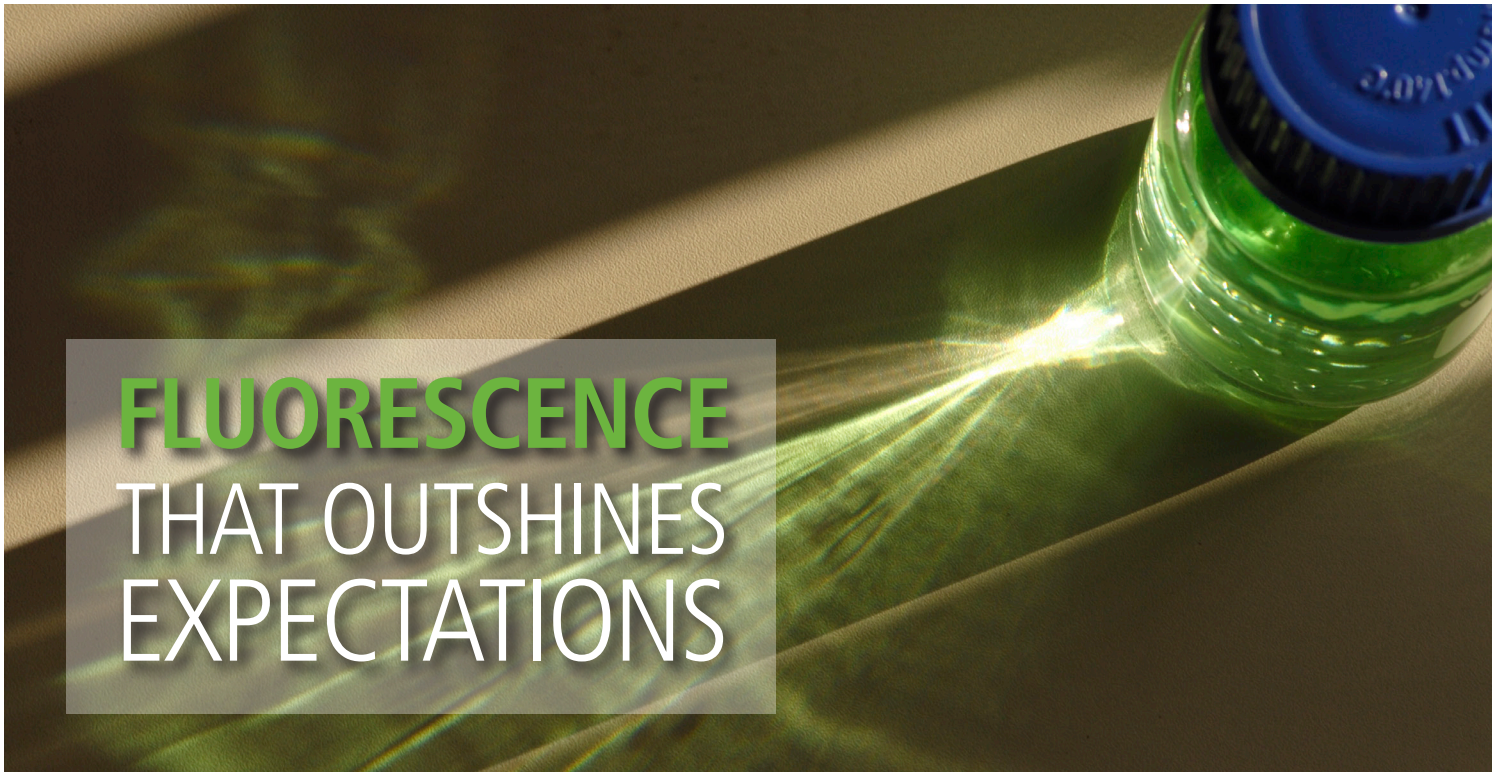

Introducing the FL 6500™ and the FL 8500™ Fluorescence Spectrometers

We know that high performance and reliability are top priorities for labs everywhere. That's why we've developed a complete fluorescence solution that enables confident and precise sample testing. Whether you're looking for a high-energy pulsed Xenon light source that will preserve the integrity of your sample (FL 6500), or a high-sensitivity source for testing diluted or small samples (FL 8500), our revolutionary instruments give you the speed and accuracy you need right at your fingertips.

FL 6500 Pulse Fluorescence Spectrometer

- Built for bioresearch, including cell-biology, molecular biology, immunology, enzymology, and protein analysis
- Unique adjustable power settings are ideal for phosphorescence and avoiding photobleaching

FL 8500 Continuous Wave Fluorescence Spectrometer

- Made for material characterization; industrial tracing and manufacturing R&D; agricultural and environmental analysis; and analysis of LEDs, solar cells, and organic electroluminescent materials
- Fast scanning of 60,000 nm/min minimizes scan time

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Software Features and Functionality

- Spectra Scan
- 3D Spectra Scan
- Quantification
- Scanning Anisotropy/Polarization
- Single Read
- Anisotropy/Polarization
- Time Drive
- Kinetics
- Intracellular Ion Concentrations
- Quantum Yield (Relative and Absolute)
- Quenching
- Wavelength Program
- Lifetime
- Absorbance
- Validation
- Sipper Control
- Service Utility
- Sample Table
- Integrating Sphere for Absolute Quantum Yield and Total Fluorescence
- Pre-Scan Mode
- Synchronous Scan Mode (Constant Energy and Wavelength)
- 3D Synchronous Scan
- Read FLWinLab Data Files
- Read UVWinLab Data Files

Interchangeable Accessories

Our broad accessories are specifically designed for the FL 6500 and FL8500 and versatile enough to handle virtually any type of sample.

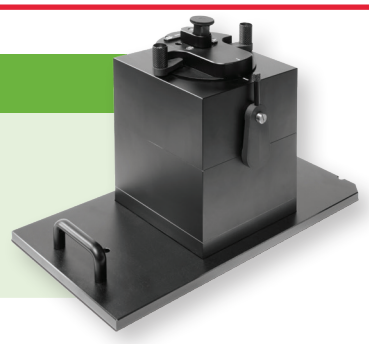
Accessories	Part Number
Single Cell Holder	N4201010
Single Cell Water-Jacket Holder	N4201011
Single Cell Water-Jacket Holder with Stirrer	N4201012
Micro Cell holder	N4201015
Micro Cell Water-Jacket Holder with Stirrer	N4201016
4 Position Multi-Cell holder	N4201025
4 Position Multi-Cell Water-Jacket Holder	N4201026
4 Position Multi-Cell Water-Jacket Holder with Stirrer	N4201027
Single Cell Peltier Holder	N4201029
4 Position Multi-Cell Peltier Holder	N4201030
Solid Sample Holder (for powders also require N4201032)	N4201013
Variable Angle Solid Sample Holder (for powders also require N4201032)	N4201014
Precision Cell for Powder Sample (used with N4201013 & N4201014)	N4201032

Accessories	Part Number
Vis Automated Polarizer	N4201022
UV-Vis Automated Polarizer	N4201019
Manual Polarizer Holder	N4201023
Rapid Mixing Accessory	N4104014
Rapid Mixing Accessory with Pneumatic Drive	N4104015
Rapid Mixing Accessory Cover (only needed with N4104015)	N4201020
Absorbance Module	N4201018
Fiber Optic Probe	N4201021
Microplate Reader	N4201024
Fast Filter (excluding filters)	N4201028
Auto Sipper (including Front Plate & FL Flow Cell)	N4201031
Auto Sampler S10	N2020004
Integrating Sphere	N4201017

FEATURED ACCESSORY

Integrating Sphere

Measure absolute quantum yield for liquid and solid samples. Achieve flexibility even with low absorbency and low quantum yield samples.



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For a complete listing of our global offices, visit www.perkinelmer.com/ContactUs

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SPECIFICATIONS

Fluorescence Spectroscopy

FL 6500™ - Pulse Fluorescence Spectrometer and FL 8500™ - Continuous Wave Fluorescence Spectrometer

With PerkinElmer's new fluorescence spectroscopy instruments, your laboratory can generate accurate and reliable fluorescence data, regardless of the operator's experience level. The FL 8500 uses a continuous wave excitation source for high sensitivity measurements at scan speeds of up to 60,000 nm/min. For samples where phosphorescence data is required, or when samples are at risk for being photo-bleached, the FL 6500 provides high quality results with a pulsed excitation source. Together, the instruments make up the most complete fluorescence portfolio, allowing your laboratory to tackle any application challenge. Both instruments have interchangeable, plug n play accessories that are auto-recognized by the software, minimizing downtime between accessory changes. The intuitive software mirrors your laboratory workflow to streamline method development and get you from lamp warm-up to data reporting in mere minutes.

Technical Description and Specifications*

	FL 6500	FL 8500
Illumination Source	Pulse Xenon lamp with user defined Power Settings	Xenon Arc (150 W) lamp Source
Technology	Preferred for Phosphorescence and with samples where photo-bleaching is a concern	Greater sensitivity and wavelength scan speed; instrument of choice when photo-bleaching is not a concern
Peak Power	Includes four Peak Power settings: (a) 120 Kw (b) 80 Kw (c) 40 Kw (d) 20 Kw	
Resolution	1.0, 2.5, 5, 10, 20 nm	
Wavelength Accuracy	0.5 nm	
Wavelength Reproducibility	0.2 nm	
Wavelength Scan Speed	Max. 24,000 nm/min	Max. 60,000 nm/min
Response	≥ 0.002, seconds	

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Technical Description and Specifications* - Continued		
	FL 6500	**FL 8500**
Communication	USB 2.0	
Detector	PMT R928	
Monochromator	1200 grooves/mm	
Sensitivity (S/N Ratio)	Min 750:1 (RMS)	4000:1 (RMS); 1000:1 (Peak to Peak)
Wavelength Range (Ex And Em)	200 - 900 nm standard	
Slit Width	1, 2.5, 5, 10, 20 nm	
Display Range	0 ~260000	
Filter Wheel	12 slots that accept standard 12.5 mm round filters	
Standard Excitation Filters	3 Excitation filters included (290, 370, 530 nm)	
Standard Emission Filters	3 Emission filters included (320, 430, 515 nm)	
Excitation Filter Options (Wavelengths)	Optional excitation filters available. These include, but are not limited to, H-polarizer and V-polarizer. Easily added either internally onto the filter wheel or in the manual polarizer holder.	
Emission Filter Options (Wavelengths)	Optional emission filters available. These include, but are not limited to 590, 610, 665 nm, H-polarizer, and V-polarizer. Easily added either internally onto the filter wheel or in the manual polarizer holder.	
Event Marker Button (Included)	The event marker electronically identifies where/when within the data stream the sample introduction occurred	
Injection Port (Optional)	This functionality enables users to physically introduce reagents into sample cuvettes in real time	
Software	Spectrum™ FL Standard Spectrum™ FL Enhanced Security (ES)	
Software Functionality	Spectra Scan 3D-Spectra Scan Quantification Anisotropy/Polarization (in Spectra Scan and Single Read) Single Read Time Drive Kinetics Intracellular ion conc. Quantum yield (Relative and Absolute) Quenching Wavelength Program Lifetime ((Phosphorescence/Lanthanide in milliseconds ONLY) Absorbance Validation Sipper Control Service Utility Pre-Scan Mode Synchronous scan mode (constant energy and wavelength) 3D Synchronous scan Sample Table Read FLWinLab Data Files Read UVWinLab Data Files	

Technical Description and Specifications* - Continued

	FL 6500	FL 8500
Sampling Accessories	Single Cell Holder Water Jacketed Single Cell Holder Water Jacketed Single Cell Holder w/Stirrer Solid Sample holder Variable Angle Solid Sample Holder Micro Cell Holder Water Jacketed Micro Cell Holder w/Stirrer Integrating Sphere Absorbance Module UV/Vis Automated Polarizer Rapid Mixing Accessory Fiber Optic Probe Vis Automated Polarizer Manual Polarizer Holder Microplate reader** 4-Position Multi-Cell Holder** Water Jacketed 4-Position Multi-Cell Holder** Water Jacketed 4-Position Multi-Cell Holder w/ Stirrer** Fast Filter** Single Cell Peltier Holder** 4-Position Multi-Cell Peltier Holder** Auto Sipper** S10 Autosampler**	
Operating System	Windows® 10, 64 bit	
Power Supply	100-240V at 50-60Hz	
Physical Dimensions (approx.) Width X Height X Depth	66 cm (26") x 36 cm (14") x 64 cm (25")	
Weight	Approx. 47 kg	

Note: *FL 6500 and 8500 do NOT require attenuators. Attenuators are used to prevent saturation. The FL 6500 and FL 8500 allows the user to select from 0 V to 700 V, preventing saturation by controlling the PMT voltage.*

* Subject to change without notice

** Software automation to be available December 2018

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PREPARING YOUR LAB

FL 6500 Pulse Fluorescence Spectrometer and FL 8500 Continuous Wave Fluorescence Spectrometer

Fluorescence Spectroscopy

Preparation Checklist

- Order Overview
- Site Requirements
- Electrical Requirements
- Environmental Requirements
- PC Configuration
- Installation Overview

Order Overview

Upon receipt of the system, please review the order. Record any discrepancies between the PerkinElmer order and your Purchase Order, along with any agreements or commitments made by your PerkinElmer Sales Representative that are NOT listed on the order. Let your Customer Care Representative know about any discrepancies and/or commitments when you submit your Site Readiness confirmation.

Site Requirements

The FL 6500 and FL 8500 systems must be installed on a flat and level bench. The bench must be strong enough to support the weight specified below in addition to any ancillary equipment without warping, wobbling or swaying. Make sure that there are no overhanging shelves, and no water pipes or faucets that could leak onto the system.

Bench Space/Instrument Weights

Table 1. Bench Space/Instrument Weights.

Dimensions*				
Instrument	**Width**	**Depth**	**Height**	**Weight**
FL 6500	66 cm	64 cm	36 cm	47 kg
FL 8500	66 cm	64 cm	36 cm	47 kg

**The dimenstions and weights listed above do not include the PC/Monitor.*

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The workbench where the FL 6500 and FL 8500 systems and PC are to be located should be at a suitable height to allow the user to work comfortably and must be strong and vibration free.

The bench space required should be slightly larger than the above dimensions to allow the user to work safely and comfortably when analyzing samples.

Specifically, there must be at least 13.5 in or 34.3 cm clear room above the instrument to allow the sample compartment lid to open.

Note: *Floor vibrations or noise from heavy manufacturing equipment can affect the performance of the system. Avoid proximity to intense magnetic fields.*

Electrical Requirements

Power Consumption

Max power consumption is 65 VA (approximately 40 W).

Maximum power consumption is experienced when the FL 6500 and FL 8500 systems are powering the (optional) wireless router.

In power save mode the mains power consumption is <10 VA (approximately 6 W) and the DC power consumption is 0.2 W.

Power Specifications

Any fluctuation in the line supply must not exceed ±10% of the nominal voltage.

The FL 6500 and FL 8500 Systems: 100 V to 230 V, 50 Hz or 60 Hz

Power Outlets:

Three (one for the FL 6500 and FL 8500, two for the PC/Monitor)

- If the electricity supply does not conform to the above specifications, please consult PerkinElmer prior to installation. If the supply of power is erratic please use an uninterruptible power supply (UPS). Incorrect shutdown, power fluctuations or brown-outs may damage the spectrometer or system.
- If possible, do not use photocopiers, discharge lamps, radio transmitters or other equipment with large or frequent transient loads on the same supply circuit as this may affect the performance of the system.
- Make sure that the power outlets at the electrical supply sockets to the system are not obstructed.

Environmental Requirements

Laboratory Environment

Operating Temperature Range: 0 °C to 50 °C*

Storage Temperature Range: -20 °C to 60 °C

Maximum Relative Humidity: 90% non-condensing

**If you intend to operate the instrument regularly at temperatures of 40 °C or higher, for optimum performance, it is recommended that you repeat the Wavelength Calibration at the appropriate operating temperature. Refer to the on-screen software help for more information.*

- The laboratory should be relatively free of dust, corrosive fumes and vibrations.
- The laboratory bench should be free from vibration and, if possible, isolated from other equipment that may induce vibration.
- Do not leave the instruments in direct sunlight.
- Make sure that there are no overhanging shelves, and no water pipes or faucets that could leak onto the instrument.
- Ensure there is sufficient clearance underneath the instrument to allow an adequate flow of cooling air.
- Major changes in temperature should be avoided – if the instrument is moved to a different environment which has a temperature difference, it should be left to stabilize before data collection can begin.

Safety Requirements

Electrical Safety

Connect the instrument power supply to a power outlet that includes a switch or other means of disconnection from the electricity supply.

Only plug the instrument power supply into a power outlet that is provided with a protective earth connection.

Do not operate the instrument with any covers or parts removed.

Servicing should be carried out only by a PerkinElmer service representative or similarly authorized and trained person.

Disconnect the instrument from all voltage sources before opening it for any adjustment, replacement, maintenance, or repair. If afterwards, the opened instrument must be operated for further adjustment, maintenance, or repair, this must only be done by a skilled person who is aware of the hazard involved.

Use only fuses with the required current rating and of the specified type for replacement. Do not use makeshift fuses or short-circuit the fuse holders.

Whenever it is likely that the instrument is no longer electrically safe for use, make the instrument inoperative and secure it against any unauthorized or unintentional operation.

The instrument is likely to be electrically unsafe when it:

- Shows visible damage.
- Fails to perform the intended measurement.
- Has been subjected to prolonged storage under unfavorable conditions.

PC Configuration

A pre-configured PC, which meets the system requirements, can be provided as part of the FL 6500 or FL8500 order, in which case, the system can be installed as normal.

If a customer-supplied PC is to be used, it must meet the following minimum specifications and hardware requirements:

Component	Requirement
Operating System	Windows® 10 (64-bit)
Processor	Intel Core i5-7500
Memory	8 GB (1x8G) 2400 MHz DDR4
HDD Size / HDD Spindle	1 TB 7.2k RPM SATA 6 Gbps
WWAN	Intel DB WLAN 8265 Software

Any extra time taken for the installation that is caused by issues encountered from trying to install the system on a PC which does not meet these requirements (or is otherwise unsuitable) will be billable at the current service rate.

PerkinElmer may not provide maintenance service on customer-supplied items.

Software Requirements
The FL 6500 and FL8500 instruments are operated with the Spectrum FL™ software.

NOTE: *It is important to note that you must be logged on at Administrator level before installing the software.*

The latest Microsoft Service Packs can be downloaded from: www.microsoft.com/msdownload/default.htm.

Installation Overview

The customer is recommended to remove the FL 6500 and FL 8500 instruments from the shipping box. The instrument should be placed on the bench along with associated components.

Customer to Hold Packing Material for CSE
When PerkinElmer is installing the instrument, the packing material must be retained until the installation is fully signed off (recommend to retain for the warranty period).

Physical Installation (Instrument Only)
The FL 6500 and FL 8500 instruments are small enough to be handled by a single person using the two handholds underneath on the ends of the instrument.

Physical Installation (Accessories)
As required.

Installation Test Standards
When PerkinElmer installs the instrument, the Service Engineer will test the instrument in order to ensure that its performance meets PerkinElmer's installation specifications.

Customer Orientation
When PerkinElmer installs the instrument, the service engineer will familiarize you with the basic instrument and software operation. If further training is required, please contact your local Sales representative.

Ensure that a staff member, who will have ultimate responsibility for the FL 6500 and FL 8500 System, is available during the installation.

Related Documents
The FL 6500/8500 instrument User's Guide informs you how to use the Fluorescence instrument. On-screen HTML Help Systems are supplied with all software applications.

Manuals for the PC and for the operating system of the PC are supplied with the PC (if purchased from PerkinElmer).

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