

Cosmetics Sun Protection Factor Analyzer SPF-660 Series

Why do you need a Caipu SPF-660 Series Instrument?

Save Money: Test your products in-house before sending them for expensive human trials, ensuring success and avoiding wasted costs.

Compliance: It is a required tool for regulatory in vitro testing.

Boost Efficiency: Get immediate data after formula adjustments during R&D, without waiting for third-party reports, allowing your new products to hit the market faster than your competitors.

Typical Applications

R&D and Quality Control: In vitro rapid analysis for SPF/UVAPF, formula verification, and production batch stability monitoring.

Multiple test objects: Various sunscreen cosmetics and raw materials, including lotions, creams, powders, liquids, and cushion-type products.

Entire cosmetics industry chain: Empowering brand owners, OEM/ODM manufacturers, and sunscreen ingredient companies with R&D innovation.

Authoritative testing institutions: Suitable for food and drug regulatory authorities, customs technical centers, and third-party testing laboratories.

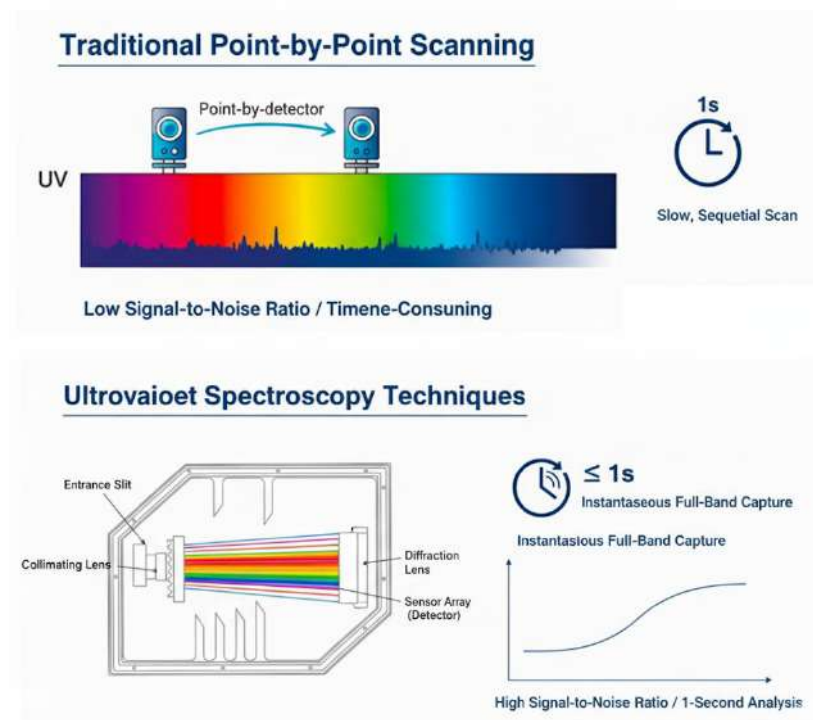
Academic research: Supporting universities and dermatological research institutions in photobiology and new sunscreen material research.

Core Advantages

1. Transient UV Spectrum Acquisition: Full-Band Scan in 1 Second

Advanced 500KHz high-speed spectral acquisition technology fundamentally revolutionizes the slow point-by-point scanning mechanism. Detector arrays enable nanosecond-level synchronous response, completing full-band data collection from UVA to UVB (280–500nm) within 0.1ms integration time. Parallel computing supports the entire workflow—from data capture and signal averaging to SPF result analysis—completed in just 1 second.

Outstanding SNR: Ultra-fast acquisition enables thousands of real-time averages in a very short time, easily achieving $\text{SNR} > 1000:1$, ensuring fast and accurate SPF evaluation.



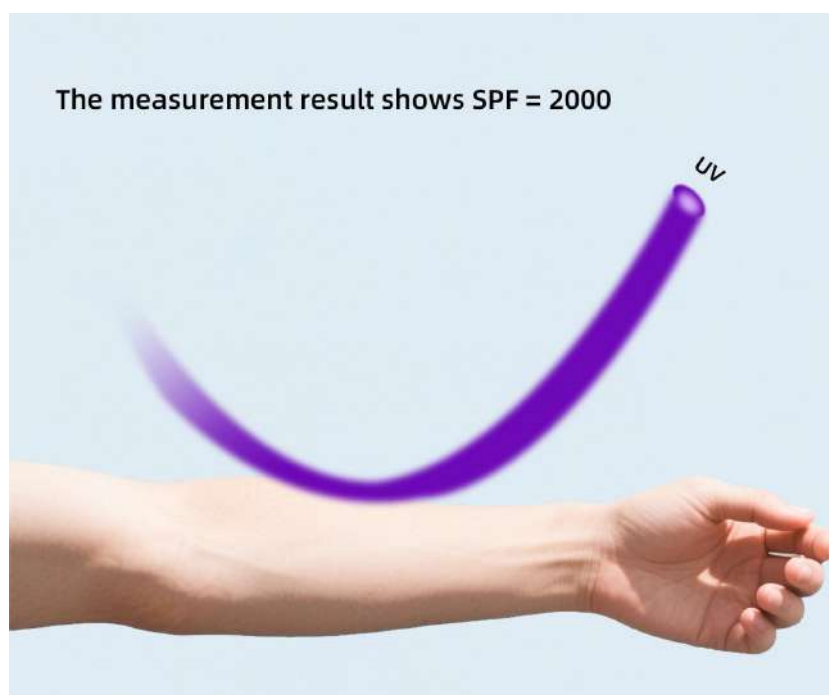
2. Intelligent Integrated Control System with Built-In Touchscreen

Equipped with a high-performance quad-core industrial processor and an optimized embedded OS, eliminating dependence on external PCs. All operations are performed via an industrial-grade capacitive touchscreen following SOP-driven logic, reducing the learning curve and minimizing errors. From spectrum acquisition and dark current correction to SPF value and UVA/UVB transmittance calculations, a single button initiates automated sequences for seamless "sample-to-result" processing.



3. High Dynamic Range Photodetection: SPF Measurement up to 2000

Equipped with a research-grade high dynamic range photodetector array, it achieves an ultra-wide dynamic range of 50,000:1, ensuring precise capture of signals from high light transmittance to sunscreen. The quantum efficiency in the ultraviolet band is close to 90%, making signal response more sensitive. Advanced cooling technology suppresses dark noise to an ultra-low level of <0.1 mv/rms, allowing clear signal acquisition even with millisecond-level exposures. It easily handles extreme challenges with ultra-low transmittance below 0.05%, with a detection sensitivity of up to SPF 2000.

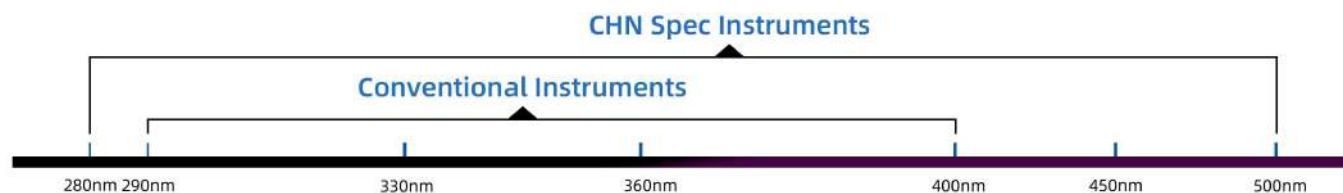


4. Ultra-Wide UV Coverage: Comprehensive UVA/UVB Evaluation

Adopting a symmetrical optical path design and research-grade back-illuminated area array detectors, it achieves an ultra-wide ultraviolet spectral measurement range from 280nm to 500nm. This not only fully covers the UVB (280–315nm) and UVA (315–400nm) bands defined by international standards, but also extends the measurement range into the UVA-I long-wave region up to 500nm, ensuring the capture of even the finest spectral details.

Exceeding Standard Requirements: It far exceeds the 400 nm upper limit specified in standards such as ISO 24443, ISO 23675, FDA 2012 & 2019, providing decisive data support for the evaluation of cutting-edge sunscreen products.

High-Resolution Analysis: With an optical resolution of 2 nm, it can accurately resolve every detail of the spectrum, enabling a more comprehensive and precise evaluation of the true broad-spectrum UV protection efficacy of cosmetic products. This ensures your test results maintain undisputed integrity and authority in all applications.



5. Global Standards Compatibility: Built-In Authoritative Testing Methods

Preloaded with multiple authoritative standards, including the Cosmetic Safety Technical Specification, ISO 23675 cosmetic sunscreen testing standard, and ISO 24443 UVA protection efficacy determination method. The system instantly locks all key parameters of the selected standard—specific wavelength range, data interval, and SPF calculation weighting—ensuring that every test complies with the requirements of the target regulations.

Structured Update Support: With a modular software architecture, when international standards are updated or new versions are released, you can quickly gain compatibility with the latest standards through a simple software upgrade package. This ensures long-term effectiveness of your investment

and keeps you aligned with the international forefront at all times.

 **Measurement Standards**

Cosmetics Safety Technical Standards

ISO 23675 Cosmetics — Sun protection test methods

ISO 24443 Determination of UVA protection efficacy

Save

Technical Parameters

Model	SPF-600	SPF-620	SPF-660
Wavelength range	280-400nm	280-450nm	280-500nm
Wavelength accuracy	±0.1nm		
Bandwidth (FWHM) Spectral resolution	< 2nm		
Wavelength step (data interval)	1nm		
Optical structure	D/0 (integrating sphere illumination, 0° viewing angle)		
Integrating sphere material	FPET		
Integrating sphere aperture diameter	1.27cm		
Sample irradiation area	1.26cm²		
Light source	Pulsed xenon lamp		
UV dose per measurement cycle / single test UV irradiation dose	< 0.2 J/cm²		
Sample stage	Manual three-dimensional positioning platform		
Measurement range: transmittance	0-100%		
Measurement range:	0-3.3A		

absorbance		
Measurement range: SPF value determination	1-1000	1-2000
Measurement range: single scan time	~1s	
Measurement indicators	SPF (Sun Protection Factor), UVAPF, UVA/UVB (UVR), Critical Wavelength, Spectral Transmittance, Absorbance	SPF (Sun Protection Factor), UVAPF, UVA/UVB (UVR), Critical Wavelength, Spectral Transmittance, Absorbance, High Energy Visible Light (HEVIS)
Supported test methods and certification standards	<i>Cosmetic Safety Technical Specification, ISO 24443 UVA protection efficacy determination method, COLIPA (2011) in vitro UVA protection factor determination standard, Boots star rating (2011) UVA protection labeling standard</i>	<i>Cosmetic Safety Technical Specification, ISO 23675 cosmetic sunscreen testing standard, ISO 24443 UVA protection efficacy determination method, FDA 2012 & 2019 sunscreen product labeling and efficacy testing regulations, COLIPA (2011) in vitro UVA protection factor determination standard, Boots star rating (2011) UVA protection labeling standard</i>
Computer interface	USB 2.0, RS-232	
Power requirement	12V 5A	
Operating environment / working environment	0–50 °C, 0%–70% RH (non-condensing)	
Dimensions: including operation platform	523(D)*332(W)*290(H)mm	
Dimensions: excluding operation platform	325(D)*332(W)*290(H)mm	
Optional accessories	AS01 PMMA reference plate set	AS01 PMMA reference plate set AS02 PMMA test plate set

Material code

Name	Material code
AS01 PMMA reference plate set	1.51.01.0030-0
AS02 PMMA test plate set	1.51.01.0026-0

Agence Nord:

ZA Object'Ifs Sud - Lot A3
6 Allée Emilie du Châtelet
14123 Ifs
tél : 02.31.34.50.74
fax : 02.31.34.55.17

Agence Sud:

Bât Le Venango, 392 Rue Jean Dausset
AGROPARC - BP11575
84916 Avignon Cédex 9
tél : 04.90.27.17.95 fax : 04.90.27.17.52



Agence Est:

Parc Club des Tanneries
2 Rue de la Faisanderie
67380 Lingolsheim
tél : 03.88.04.01.81
fax : 03.68.93.01.52

www.deltalabo.fr
info@deltalabo.fr