



Non-contact, zero pollution, accurate color measurement without loss

Non-Contact Spectrophotometer YL72

The YL72 online non-contact spectrophotometer employs nano spectroscopy technology to collect color data from liquids, pastes, powders, and delicate surfaces quickly and without damage. Designed specifically for automated production lines, it supports stable operation without manual intervention, combining high-speed measurement with versatile communication capabilities. It can be flexibly installed on conveyor belts or robotic arms, enabling real-time monitoring and data feedback to deliver precise and efficient quality control.





1. Measurement Performance: Precision and Efficiency

Non-Contact Measurement

The YL72 adopts a 45/0 optical structure and operates at a 7.5mm non-contact distance, enabling measurement without direct contact between the probe and the sample. It is designed for precise color measurement of special samples on automated production lines, including liquids, pastes, powders, and delicate surfaces.

High-Accuracy Measurement

The YL72 achieves exceptional colorimetric repeatability with $\Delta E^*ab \leq 0.015$, while instrument-to-instrument variation is controlled within $\Delta E^*ab \leq 0.2$. This ensures consistent measurement results across different batches and devices, redefining industry quality standards.

High-Speed Measurement

With a measurement speed as fast as 0.11 seconds, the YL72 supports both instrument-triggered and online control-triggered operation. It allows flexible configuration for single or multiple averaged measurements, seamlessly integrates with production lines, and enables real-time online monitoring, significantly boosting production efficiency.

2. Powerful Hardware

Silicon Photodiode Array Sensor

Featuring a dual-row 20-element silicon photodiode array with a large-area design, it ensures no saturation under strong light while maintaining high sensitivity in low-light conditions. The spectral response range covers 400–700 nm with 10 nm output, and the reflectivity measurement range spans 0–200%, accurately capturing visible light information.

Nano-Integrated Spectroscopic Module

Equipped with nanometer-level spectral dispersion capability, it precisely separates light of different wavelengths, providing robust assurance for data accuracy across all bands.

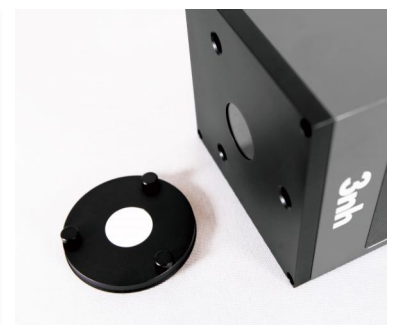
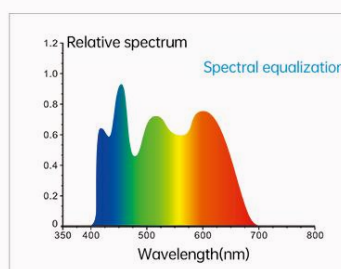
Full-Spectrum Long-Life LED Light Source

The instrument's illumination source covers the full spectrum from 400–700 nm, offering ample spectral distribution throughout the visible range. This eliminates the spectral gaps common in white LEDs and ensures measurement accuracy. With a service life of up to 5 years, the light source supports over 3 million measurements.



Intelligent Automatic Calibration

Built-in intelligent auto-calibration performs quick calibration upon startup without manual intervention, ensuring long-term stable operation. Paired with a magnetic calibration stand, operation is simple and user-error is minimized.



3. Integration Design for Automated Production Lines

Versatile Interfaces Supporting Multi-Unit Collaborative Measurement

Equipped with a variety of mainstream interfaces including USB, RJ45, RS485, and RS232, the system supports multi-unit communication and coordinated operation. It can be quickly integrated into various automated production lines to build a complete distributed color measurement system, enabling simultaneous color monitoring at multiple points across complex production setups.

High Protection Rating

With an IP66 protection rating, it is waterproof and dust-tight, capable of withstanding demanding industrial environments.



4. Multiple Color Spaces + Observation Light Sources

It provides color spaces including CIE LAB, XYZ, Yxy, LCh, CIE LUV, Munsell, s-RGB, HunterLab, β_{xy} , DIN Lab99, as well as multiple observation light sources: A, B, C, D50, D55, D65, D75, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, CWF, U30, U35, DLF, NBF, TL83, TL84, ID50, ID65, LED-B1, LED-B2, LED-B3, LED-B4, LED-B5, LED-BH1, LED-RGB1, LED-V1, LED-V2, meeting specific measurement requirements under various conditions.



II. APPLICATION AREAS

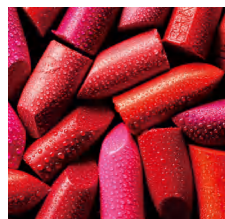
Suitable for automated production line requirements across multiple industries including food and beverage, cosmetics, printing, anodic oxidation, coatings, papermaking, automotive spray lines, textile production lines, and plastic production lines. It can be directly installed on conveyor belts or robotic arms to monitor product color in real time, transmits data synchronously, and delivers immediate feedback on product quality.



Food and Beverage



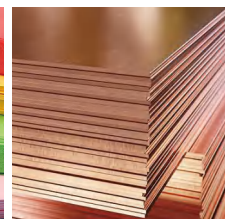
Plastic Production Lines



Cosmetics



Paper Making



Anodic Oxidation



Automotive Spray Painting Lines

III. MEASUREMENT CASES



V. PRODUCT SPECIFICATIONS



Product Model	YL72
Illumination Method	45/0 (45° annular uniform illumination, 0° reception)
Compliance Standards	CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO 7724-1, ASTM E1164, DIN 5033 Teil 7
Features	Non-contact measurement between probe and sample, enabling precise color measurement of liquids, pastes, powders, and delicate surfaces. Primarily used for accurate color measurement and quality control on automated production lines. Fastest measurement time: 0.11 seconds. Supports communication via 485 or USB with other systems, and includes PC software.
Light Source	Combined full-spectrum LED light source
Sensor	Silicon photodiode array (dual-row, 20 sets)
Measurement Wavelength Range	400–700 nm, 10 nm output
Display Precision	0.01
Reflectance Resolution	0.01%
Reflectance Measurement Range	0–200%
Measurement Aperture	Φ8 mm
Non-contact Distance	7.5 mm (±0.15 mm)
Sample Height	No thickness limit, uses only the test probe
Measurement Viewing Method	Visual observation
Measurement Interval	1 s
Measurement Mode	Instrument trigger or online control trigger
Color Space	CIE LAB,XYZ,Yxy,LCh,CIE LUV,Musell,s-RGB,HunterLab,βxy,DIN Lab99
Color Difference Formula	$\Delta E^*ab, \Delta E^*94, \Delta E^*cmc(2:1), \Delta E^*cmc(1:1), \Delta E^*00, \Delta E(Hunter), \Delta E99$
Other Chromaticity Metrics	Spectral Reflectance, Whiteness Index (WI) (ASTM E313, CIE/ISO, AATCC, Hunter, ISO 2470/R457, Taube, Berger, Stensby), Tint (CIE/ISO), Yellowness Index (YI) (ASTM D1925, ASTM E313), Metamerism Index (MI), Staining Fastness, Color Change Fastness, Strength, Opacity/Hiding Power, Blackness (My, dM), Color Density (CMYK)
Observer Angle	2°/10°
Illuminants	A,B,C,D50,D55,D65,D75,F1,F2,F3,F4,F5,F6,F7,F8,F9,,F10,F11,F12,CWF,U30,U35,DLF,NBF,TL83,TL84,ID50,ID65,LED-B1,LED-B2,LED-B3,LED-B4,LED-B5,LED-BH1,LED-RGB1,LED-V1,LED-V2
Display	Data, sample chromaticity values, color difference value/graph, color simulation, pass/fail results, adjustable tolerance display
Measurement Time	Fastest 0.11 seconds (typically around 0.2 seconds)
Calibration	Intelligent automatic calibration
Waterproof Rating	Ip66
Repeatability	Under optimal test mode (single measurement time 1.0 s): Chromaticity value: ΔE^*ab within 0.015 (after warm-up, average of 30 measurements on white tile at 5-second intervals)
Inter-instrument Agreement	ΔE^*ab within 0.2 (average of measurements from 12 BCRA Series II color tiles)
Accuracy Assurance	Compliant with Grade 1 metrology qualification
Measurement Modes	Single measurement, average measurement (2–99 times)
Weight	Approximately 1400g
Dimensions	100*100*140mm
Power Supply	24V DC, 3A power adapter
Light Source Lifetime	>3 million measurements within 5 years
Illuminant Life Span	More than 1.2 million measurements over 10 years
Interfaces	USB, RS485, RS232, Ethernet, external trigger, analog signal output
Display	TFT true-color 3.5-inch screen
Languages	Simplified Chinese, Traditional Chinese, English
Operating Environment	0~40°C, 0~85%RH (no condensing), Altitude < 2000m
Storage Environment	-20~50°C, 0~85%RH (no condensing)
Standard Accessories	Power adapter, user manual, USB cable, RJ45 Ethernet cable, RS485 multi-unit communication cable, RS232 communication cable, standard calibration plate, black calibration box