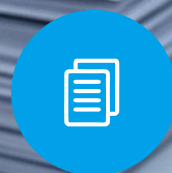




Guangdong Threenh Technology Co., Ltd.



International Standard
Compliance



Grade 1 Metrology
Compliance



M0-M3 Measurement
Conditions



Supports Multiple
Platforms



TS1010

Spectro-Densitometer (Base Version)

The TS1010 spectro-densitometer (base version) is a high-quality printing inspection device specifically designed for professional printing plants and packaging companies. Equipped with a dual-array 40-set silicon photodiode sensor, it can precisely measure key indicators such as optical density, dot area, dot gain, trapping, and supports density scanning to fully grasp the distribution of printing quality. With Grade 1 metrology certification, the TS1010 provides reliable data support throughout the entire production process.

Own the core tech: Top performance, budget price.



ISO9001



EXPERT PRECISION, TRUSTED AUTHORITY

TS1010 delivers comprehensive data support for printing plants.

The TS1010's advantages lie in “professional precision, authoritative reliability”: its plane grating spectroscopic technology delivers density repeatability of 0.001D; the density scanning function enables full-area quality analysis of printed materials. Whether it is quality control during printing or authoritative inspection before finished product shipment, the TS1010 delivers professional, accurate, and traceable measurement data, making it an essential tool for quality upgrading of small printing enterprises.



Comprehensive Printing Indicators — One-Stop Quality Control

Built-in density standards including ISO Status T, E, A, I, M, supporting professional printing indicators such as density value/difference, dot area and dot gain, trapping, print contrast, hue error and grayness, plate inspection, and density scanning, providing comprehensive data support for printing quality.



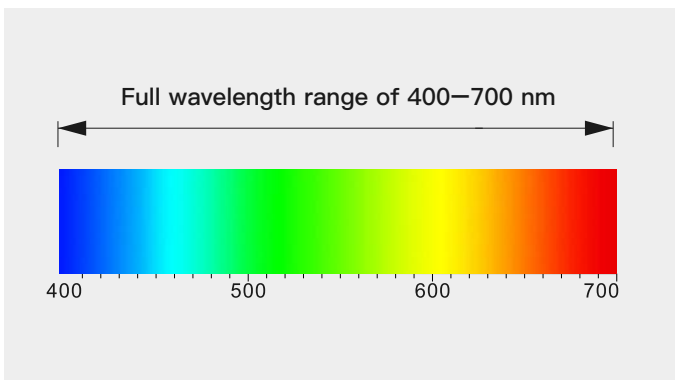
Three Interchangeable Apertures — Versatile Sample Handling

Standard supplied with $\Phi 11\text{mm}$, $\Phi 6\text{mm}$, and $\Phi 3\text{mm}$ measurement apertures. The large aperture is suitable for homogeneous surfaces such as paper and fabric, while the small apertures are dedicated to film dots, fine color bars, or PCB color patches, covering most professional printing measurement scenarios.



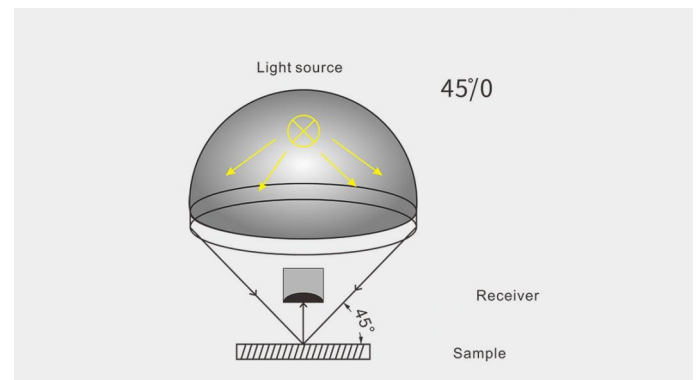
400–700 nm full-spectrum visualization

Wavelength range 400–700nm, precisely acquired at 10nm intervals, generating real-time spectral reflectance curves. The curve shape allows intuitive judgment of metamerism, providing a physical basis for color formulation verification and raw material incoming evaluation.



Standard 45/0 Optical Geometry

Adopts 45° annular illumination and 0° reception geometry, perfectly matching CIE No.15 standard. This structure effectively suppresses specular reflection interference from surface texture, directional gloss, or brushing processes, ensuring measurement data more closely matches the true color perception of the human eye.



Four Measurement Conditions (M0–M3) — Fully Compliant with International Standards

Complies with all four illumination conditions specified in ISO 13655:

M0 (Illuminant A)

For traditional color evaluation

M2 (UV Cut)

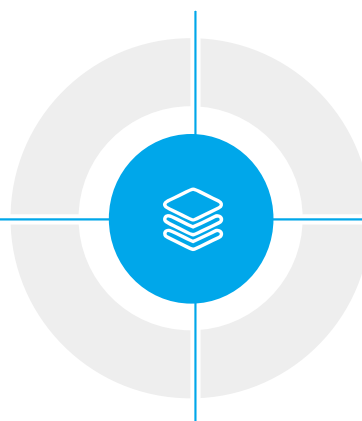
Eliminates ultraviolet fluorescence interference, specially for samples containing fluorescent whitening agents

M1 (Illuminant D50)

Simulates daylight, conforming to current mainstream international standards

M3 (polarizing filter)

Effectively eliminates surface glare, suitable for density measurement of high-gloss prints or metallic materials



Multi-Platform Software Support – Effortless Data Management

The supporting software is fully compatible with Android, iOS, Windows, HarmonyOS, and WeChat Mini Programs, enabling easy data export, report generation, and remote collaboration. With Netmetric network calibration, calibration parameters can be updated online, ensuring data consistency and long-term stability among multiple devices.



Application Industries

- **Professional Printing:** Precision density measurement and quality control for packaging printing and commercial printing.
- **Packaging Companies:** Comprehensive inspection of printing quality for color boxes, labels, and flexible packaging.
- **Publishing Printing:** Printing quality control for books, albums, and periodicals.
- **Quality Inspection Agencies:** Authoritative measurement equipment for third-party testing and quality certification.
- **Ink Production:** Ink R&D, quality control, and factory inspection.



Professional Printing



Packaging Companies



Ink Production



Publishing Printing

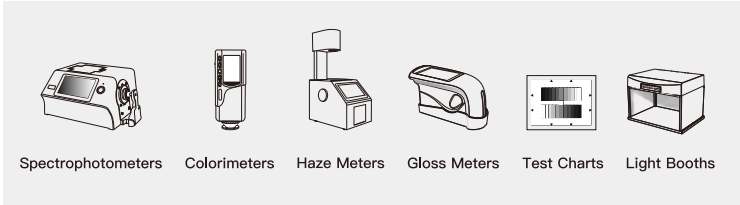


Quality Inspection Agencies

Technical Specifications

Product Model	TS1010
Illumination Geometry	45/0 (45° annular uniform illumination, 0° reception); compliant with ISO 5–4, CIE No.15
Features	High–precision spectro–densitometer, widely used for precise color measurement and quality control in ink printing, film processing, textile dyeing, plastics & electronics, etc., especially suitable for accurate measurement of optical density, dot gain, and other indicators.
Illumination Light Source	Combined LED light source + UV light source
Spectrophotometry Method	Plane grating spectroscopy
Sensor	Silicon photodiode array (dual–array 40 sets)
Measurement Wavelength Range	400nm–700nm
Wavelength Interval	10nm
Half Bandwidth	0–200%
Reflectance Measurement Range	10nm
Reflectance Resolution	0.01%
Measurement Conditions	Complies with ISO 13655: M0 (CIE Illuminant A), M1 (CIE Illuminant D50), M2 (UV–excluded illumination), M3 (M2 + polarizing filter)
Density Standards	ISO Status T、E、A、I、M
Density Range	0.0 D — 3.0 D
Density Indices	Density value, density difference, dot area, dot gain, trapping, print characteristics, print contrast, hue error and grayness, plate, density scanning
Measurement Apertures	Φ11mm,Φ6mm,Φ3mm
Color Spaces	CIE LAB,XYZ,Yxy,LCh,CIE LUV,HunterLAB,s–RGB,βxy,DIN Lab99,Munsell
Color Difference Formulas	ΔE*ab,ΔE*uv,ΔE*94,ΔE*cmc(2:1),ΔE*cmc(1:1),ΔE*cmc(1:c),ΔE*00, DINΔE99,ΔE(Hunter)
Other Colorimetric Indices	Spectral reflectance; Whiteness (ASTM E313–00, ASTM E313–73, CIE, ISO2470/R457, AATCC, Hunter, Taube, Berger, Stensby); Yellowness (ASTM D1925, ASTM E313–00, ASTM E313–73); Tint (ASTM E313–00); Metamerism Index MI; Staining fastness; Color change fastness; Strength (dye strength, tinting strength); Hiding power; 555 Hue Classification; Blackness (My, dM)
Observer Angle	2°/10°
Observation Light Sources	D65,A,C,D50,D55,D75,F1,F2(CWF),F3,F4,F5,F6,F7(DLF),F8 ,F9,F10(TPL5),F11(TL84),F12(TL83/U30),B,U35,NBF,ID50,ID65, LED–B1,LED–B2,LED–B3,LED–B4,LED–B5,LED–BH1,LED–RGB1,LED–V1,LED–V2,LED–C2,LED–C3,LED–C5
Measurement Time	Approx. 1 s
Display Precision	Density: 0.001; Colorimetric: 0.01
Repeatability	Density: within 0.001D; Colorimetric: ΔE*ab within 0.02 (after warm–up and calibration, average of 30 measurements of white plate at 5 s intervals — except M3)
Inter–instrument Agreement	ΔE*ab within 0.25 (average of BCRA Series II 14 color tiles — except M3)
Measurement Modes	Single measurement, average measurement (2–99 times)
Positioning Method	Integrated physical positioning hole
Dimensions (L×W×H)	170 × 75 × 91.7 mm
Weight	Approx. 600 g
Battery	Lithium battery, 5,000 measurements within 8 hours
Light Source Lifespan	5 years or >3 million measurements
Display	TFT true color 3.5–inch capacitive touchscreen
Interfaces	USB, Bluetooth
Data Storage	10,000 records
Software Support	Android, iOS, Windows, WeChat Mini Program, HarmonyOS
Languages	Simplified Chinese, English, Traditional Chinese, Russian
Operating Temperature Range	0–40°C, 0–85% RH (non–condensing), altitude below 2000 m
Storage Temperature Range	–20 to 50°C, 0–85% RH (non–condensing)
Network Calibration	Supports Netmetric
Accuracy Assurance	Guaranteed Grade 1 metrology compliance
Standard Accessories	Power adapter, data cable, built–in lithium battery, user manual, quality management software (download website: http://www.3nh.com/en/client_en_14.html), black/white calibration box, protective cover, polarization filter box
Optional Accessories	Micro printer, Netmetric

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