



Guangdong Threenh Technology Co., Ltd.

TS1050 SPECTRO-DENSITOMETER

Precision Control of CMYK Density Across Every Print.



Plane grating spectrophotometry



Dual-array sensor



0.001D repeatability



Certified Grade 1 Metrology



The TS1050 spectro-densitometer (professional edition) is a high-precision quality control device specifically designed for large and medium-sized printing enterprises, professional quality inspection agencies, and packaging groups. Employing planar grating spectrophotometric technology and equipped with a dual-array 40-set silicon photodiode sensor, it delivers density repeatability of 0.001D and supports density scanning to comprehensively assess printing quality distribution. With Grade 1 metrology certification, it ensures authoritative and traceable measurement data, meeting the diverse, high-precision, and high-data-volume measurement needs of professional users.

Own the core tech: Top performance, budget price.



ISO9001





ONE-STOP SOLUTION FOR PRINTING QUALITY CONTROL.

Professional. Accurate. Efficient. Comprehensive. Redefining excellence in printing quality control.



The TS1050's advantages lie in "professional versatility, precision and efficiency": it is equipped with 5 measurement apertures covering everything from large color patches to fine details, an inter-instrument agreement of 0.20 ensures data consistency across multiple devices, and a large-capacity storage of 20,000 records meets batch testing traceability requirements. Whether for daily production quality control, unified management across multiple machines, or large-batch finished product inspection, the TS1050 delivers professional, accurate, and efficient measurement solutions — making it an indispensable quality management tool for large and medium-sized printing enterprises.

Excellent Repeatability — Rock-Solid Data Stability

Built on planar grating spectrophotometric technology and a dual-array 40-set silicon photodiode sensor, the TS1050 achieves:

Density repeatability: $\leq 0.001D$

Colorimetric repeatability: $\Delta E^*ab \leq 0.02$
(based on 30 measurements of a white plate, M3 condition excluded)

Inter-instrument agreement: $\Delta E^*ab \leq 0.20$

For enterprises with multiple devices and workshops, this ensures highly consistent measurement data across different instruments, enabling unified quality standards management and reducing communication costs and quality risks across departments and production lines.



Five Measurement Apertures — One Instrument, Multiple Scenarios

Equipped with $\Phi 11mm$, $\Phi 10mm$, $\Phi 6mm$, $\Phi 5mm$, and $\Phi 3mm$ measurement apertures, users can flexibly choose the aperture based on sample size and measurement needs. From large color patches to medium-sized graphics, one instrument covers multiple measurement scenarios — eliminating the need for frequent equipment changes and significantly improving inspection efficiency.



$\Phi 11mm$



$\Phi 10mm$



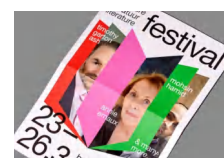
$\Phi 6mm$



$\Phi 5mm$



$\Phi 3mm$



1-Second Fast Measurement — High Efficiency, No Downtime

A single measurement takes only about 1 second, making batch inspection more efficient, reducing worker waiting time, and improving production line inspection efficiency.



Density Scanning Function — Comprehensive Printing Quality Assessment

Supports density scanning, enabling continuous multi-point density measurement of printed materials to generate density distribution curves that intuitively show the uniformity of the entire print. The scanning data quickly identifies local density deviations, uneven ink layer thickness, and other issues, helping process engineers rapidly diagnose press conditions and efficiently assist in color tracking and correction to improve overall print quality.



CMYK Density measurement



Spectral reflectance measurement



Hue error and grayness measurement

Grade 1 Metrology Certification — Authoritative and Traceable Data

Guaranteed Grade 1 metrology certification ensures measurement data is more authoritative and traceable, meeting the requirements of ISO quality system certification, customer audits, third-party testing, and other professional scenarios. This helps enterprises successfully pass high-end customer factory inspections and enhance market competitiveness.

- ISO quality system certification
- Grade 1 metrology compliance
- Third-party testing
- Customer audit

Multi-Platform Software Support — Professional Data Management

Supports Android, iOS, Windows, WeChat Mini Programs, and HarmonyOS for multi-platform synchronization. Enables real-time data syncing, cloud-based color library searching, creation of personal color libraries, and enterprise-level shared color library management. Automatically generates professional reports, simplifies data analysis, and allows one-click report export.



Netmetric Network Calibration — Ensuring Data Consistency

Supports Netmetric network calibration, allowing users to correct cumulative errors from long-term instrument use, as well as systematically calibrate all instrument groups within the enterprise and across the supply chain — significantly reducing inter-instrument measurement errors. For group enterprises with multiple factories and production lines, this enables unified quality standards management and significantly reduces communication costs and quality risks in cross-plant collaboration.



Application Industries



Professional Printing



Packaging Companies



Ink Production



Publishing Printing



Quality Inspection Agencies

Technical Specifications

Product Model	Ts1050
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	CMYK Density value, density difference, dot area, dot gain, trapping, print characteristics, print contrast, hue error and grayness, plate, density scanning
Measurement Apertures	Φ11 mm, Φ10 mm, Φ6 mm, Φ5 mm, Φ3 mm
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–second intervals — except M3)
Inter–instrument Agreement	ΔE*ab within 0.20 (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 (LxWxH)	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	20,000 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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