3-in-1 next-generation measurement tool

Streamlines color adjustment in printing, even on substrates with fluorescent whitening agents

Spectrodensitometer
FD-7 / FD-5
A high-accuracy, compact, lightweight, handheld, next-generation spectrodensitometer that measures color, density, and illumination* for applications from R&D to quality control.

*FD-7 only

**Color**

The world’s first measuring instrument that corresponds to Measurement Condition M1 of ISO 13655

- Konica Minolta’s original VFS (Virtual Fluorescence Standard) technology enables L*a*b* measurements corresponding to ISO 13655 Measurement Condition M1.
- The FD-7 and FD-5 can take measurements corresponding to all four of the ISO 13655 Measurement Conditions. Measurements corresponding to M1 are enabled by Konica Minolta’s original VFS (Virtual Fluorescence Standard) technology, and measurements corresponding to M0 (CIE Illuminant A) and M2 (Illumination with UV-cut filter) can also be taken. In addition, by attaching the included polarization filter, measurements corresponding to M3 (M2+ polarization filter) can be taken.

**Scan measurements can be performed. (FD-7 only)**

- Manual scan measurements can be performed when the instrument is connected to a PC.
- With optional software basicColor catch all, the colorimetric values, density values, and spectral reflectance values of various test charts (MediaWedge EC12002, IT8.7/3, etc.) can be measured in a single operation.

**Spectral output (FD-7 only)**

- When the FD-7 is connected to a computer, the spectral reflectance data (380 to 730 nm) of samples under various illuminants and the spectral irradiance data (360 to 730 nm) of the environmental lighting can be measured and output to a computer. This makes the FD-7 ideal for research and development applications.

**Illumination**

**Illumination environment light can be measured. (FD-7 only)**

- The illuminance and color temperature in a color viewing cabinet or the actual ambient light under which printed materials will be evaluated can be measured.

**Measured environmental light can be set as illumination light source (user illuminant)**

- In the past, when measuring printed materials containing fluorescent whitening agents (FWA), large differences between measured values and visual evaluation sometimes occurred. But with the FD-7, colorimetric values can be calculated under the measured environmental light source, providing results which more closely correspond to on-site visual evaluation. This ensures customers receive the colors they want and eliminates time and labor lost resolving customer complaints due to the effects of FWA or metamerism.

**Density**

**Printing quality control functions including trapping, dot gain, etc.**

- A new industry-standard tool for commercial printing and packaging printing to improve productivity and quality at low cost.
- CMYK density • Dot area • Dot gain • Trapping • Simple density difference • PS plate dot area • PS plate dot gain • Spot color density

**Target Match function**

- Displays the color difference from the target color and the process color or spot color density adjustment needed to bring the measured color closer to the target color. By using the Target Match function, ink color adjustment can be performed without a computer or special software.
- Ideal for spot colors or process colors.
- Displays color difference and density.
- Displays estimated density adjustment needed to bring the measured color closer to the target color and the predicted color difference after adjustment.

**Functions corresponding to various printing standards**

- Pass/fail judgment against ISO, JapanColor, GRACoL®, SWOP®, PSO, or user-defined custom targets can be performed. The FD-7 and FD-5 are ideal for on-site printing quality control.
- ISO 10847 check 
- Color difference, TVI, and mid-tone spread can be evaluated.
- Gray balance
- Gray balance can be evaluated using the G7® evaluation method.

**Data Management Software FD-S1w**

*1 Target colors (color sets) must be set using the included FD Data Management Software FD-S1w.

*2 Backing conversion function converts the target values to enable evaluation even when backing conditions for samples do not match those of the targets.
**Optional accessories**

**XY Automatic Color-**

**Measurement Stage**

**ColorScout series**

The ColorScout series enables accurate, high-efficiency measurements of color charts with the Spectrodenstometer FD-7 and FD-5. It enables automatic positioning and measurement of the instrument, providing higher reusability and reducing labor compared to manual measurements.

- **Supports A3+ and A4+ sizes.** Measurements can be efficiently done without cutting, folding and switching in and out important color charts.
- **Definitions files can be easily created for charts using the ClrChrt application that comes standard with the product.**
- **Data can be saved in ANS87 or CGATS5 format and exported to profile editing software.** Colors can be reproduced closer to what is perceived with the human eye, by using M1 light sources or user-defined light sources.
- **The ES series uses electostatic attraction to immobilize charts during measurement.**

**Color Management Software basiICColor series**

The software contains interfaces for all models of the FD series and enables users to handle everything from measuring colors to creating, analyzing and managing the quality (pass/fail judgment) of ICC profiles.

**For major efficiency increases in daily color control work.**

- Enables color measurement, ICC profile creation, and quality control (pass/fail evaluation and certification).
- Incorporates a variety of profile evaluation functions, such as tone curves for 2D/3D color gamuts and ΔE comparison and display, and supports functions that improve profile quality (measurement data smoothing, duplicate patch correction, defect [measured value] correction).
- Enables profile creation with multi-channel data (seven colors at most) having more colors than CMYK full color as well as normal measurement and normal profile creation.
- Supports device link profile creation, editing, and evaluation. Can automatically create and output PDF reports.

**Color Data Software SpectraMagic® NX**

Ideal for color-difference control of spot colors relative to target colors.

Achieves overall ease of use with free selection of evaluation equations and report formatting.

With the new E*ab and E90 color difference equations as well as a user interface that allows users to freely set their own evaluation equations, SpectraMagic® NX can meet a wide variety of user needs.

Measurement data can be displayed in list form or in objects such as spectral graphs, color-difference graphs, etc. That the user can freely lay out, and those objects can be copied and pasted as is into other software such as Excel® for easy data control. In addition, printing screens can also be designed using the same objects to create user-defined formats for easy-to-read reports.

**Optional accessories**

*§ Measurements with polarization filter attached cannot be performed.*

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**Measurement data**

**Chart design screen**

**Minimum computing requirements**

**Spectrodenstometer FD-7/FD-5**

- **OS:** Windows 8.1 Pro 32-bit, 64-bit, Windows 7 Pro 32-bit, 64-bit, Windows® XP Pro 32-bit, 64-bit
- **CPU:** Intel Pentium 4-Processor
- **Memory:** 4GB or more
- **Hard disk:** 3GB or more available disk space

**Minimum computing requirements**

**Spectrodenstometer FD-A04/FD-A06**

- **OS:** Windows 8.1 Pro 32-bit, 64-bit, Windows® XP Pro 32-bit, 64-bit
- **CPU:** Intel Pentium 4-Processor
- **Memory:** 1GB or more
- **Hard disk:** 165 MB (256 MB recommended)

**Dimensions (Units: mm)**

- **FD-7/FD-5 (commercially available)**
  - **Width:** 260 x 460 mm
  - **Height:** 165 mm
  - **Depth:** 70 mm

- **FD-A04/FD-A06 (standard accessories)**
  - **Width:** 260 x 460 mm
  - **Height:** 165 mm
  - **Depth:** 70 mm

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**Industry’s first automatic wavelength compensation function**

- Wavelength compensation is performed during white calibration without requiring additional work.
- Until now, wavelength compensation could only be carried out as one part of manufacturer servicing. This task is now performed whenever white calibration is done, helping to maintain the high reliability of measurement values until the next periodic servicing.

**World’s lightest**

- The main body weighs only about 350g, and even with the target mask attached it’s only about 430g, lighter than any previous spectrophotometer.
- This reduces the load on the user’s arm during work, improving efficiency when taking measurements over a long time.

**Worry-free after-sales service**

- Worldwide service centers provide rapid support when needed.
- A comprehensive service network is in place to ensure that your instrument is always in top shape.
Main specifications

**Function**

<table>
<thead>
<tr>
<th>Function</th>
<th>FD-7</th>
<th>FD-5</th>
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<tbody>
<tr>
<td>Density measurement functions</td>
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</tr>
<tr>
<td>Dot area</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Dot gain</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Trapping</td>
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<tr>
<td>PS plate dot gain</td>
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<td>●</td>
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<tr>
<td>Spot color density</td>
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<tr>
<td>Gray balance</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Midtone spread</td>
<td>●</td>
<td>●</td>
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<td>ISO 12647 check</td>
<td>●</td>
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<tr>
<td>Target match</td>
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</tr>
<tr>
<td>Other functions</td>
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<tr>
<td>Manual scan</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Automatic function (density, dot area, color)</td>
<td>●</td>
<td>●</td>
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<tr>
<td>PASS/FAIL judgment</td>
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<td>●</td>
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<tr>
<td>Software</td>
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<td>basI Color series</td>
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<tr>
<td>SpectraMagic NX</td>
<td>●</td>
<td>●</td>
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<tr>
<td>CirChrt (Included with ColorScout series)</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

**Main specifications**

- **Density, density difference**
- **Dot area, Dot gain, Trapping, PS plate dot area, PS plate dot gain, Spot color density, Gray balance, Midtone spread, ISO 12647 check, Target match**
- **Other functions**
  - Manual scan
  - Automatic function (density, dot area, color)
  - PASS/FAIL judgment
- **Software**
  - basI Color series
  - FD-S1w
  - SpectraMagic NX
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**Illumination/viewing system**

- **45°: 0° (annular illumination)**
- **Conforms to CIE No. 15, ISO 7724/1, DIN5033 Teil 7, ASTM E 1164, and JIS Z 8722 Condition a for reflectance measurements.**

- **Spectral separation device**: Concave grating
- **Wavelength range**: Spectral reflectance: 380 to 730 nm; Spectral irradiance (FD-7 only): 360 to 730 nm
- **Wavelength pitch**: 10 nm
- **Half bandwidth**: Approx. 10 nm
- **Measurement area**: Ø3.5 mm
- **Light source**: LED
- **Measurement range**: Density: 0.00 to 2.5D; Reflectance: 0 to 150%
- **Short-term repetitability**: Density: ±0.01D
- **Measurement time**: Approx. 1.4 s (single-point reflectance measurement without polarization filter)
- **Power**: Rechargeable internal lithium-ion battery
- **Size (W x D x H)**: 70 x 165 x 83 mm (Body only); 90 x 172 x 84 mm (With target mask attached)
- **Weight**: Approx. 350 g (Body only); Approx. 430 g (With target mask attached)
- **Operation temperature/humidity range**: 10 to 35°C, 30 to 85% relative humidity with no condensation
- **Storage temperature/humidity range**: 0 to 45°C, 0 to 85% relative humidity with no condensation
- **Inter-instrument agreement**: Within ±E0.0 0.3 (Average of 12 BCRA Series II color tiles compared to values measured with a master body under Konica Minolta standard conditions, without polarization filter)

**Inter-instrument agreement**

- **Corresponding to ISO 13655 Measurement Conditions M0 (CIE Illuminant A), M1 (CIE Illuminant D50), M2 (illumination with UV-cut filter), and M3 (M2 + polarization filter); User-defined illuminant**
- **A, C, D50, D65, ID65, F2, F6, F7, F8, F9, F10, F11, F12, User-defined illuminant**
- **Observer**: 2° or 10° Standard Observer
- **ISO Brightness**: D
- **Correlated color temperature**: 6500K
- **Fluorescence index**: 85
- **Illuminant Observer**: CMC (10)
- **Illuminance measurement functions**: Illuminance, Correlated color temperature
- **Paper index**: WI/Tint (ASTM E313-96)
- **ISO Brightness (ISO2470-1)**
- **D50 Brightness (ISO2470-2)**
- **Spectral reflectance**
- **Spectral data output**
- **Memory**
  - Target density: 30
  - Target color: 30
- **Color sets of 15 colors each**
- **Other functions**
  - Manual scan
  - Automatic function (density, dot area, color)
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